

# Research into barriers to use of food scraps collections

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## Contact Details

Sunshine Yates Consulting Limited  
54 The Bullock Track  
Mahurangi West  
Auckland 0983

Phone: 021 268 2957  
[sunshine@sunshinyatesconsulting.co.nz](mailto:sunshine@sunshinyatesconsulting.co.nz)  
[www.sunshinyates.co.nz](http://www.sunshinyates.co.nz)

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## EXECUTIVE SUMMARY

In 2022, The Ministry for the Environment (the Ministry) commissioned this research to examine the reasons why some households don't use council provided food scraps collections. The research was undertaken across four councils that provide food scraps collections, and included a participation survey, an attitudinal survey, a waste audit and focus groups.

The participation survey found that, on average, 41.5% of households across the four councils participate in the food scraps collections.

The attitudinal survey found that for households that had never used the food scraps collection, the main reason was that they already compost, or feed their food scraps to animals (72% combined). Just over half (51%) of households that don't use the food scraps collection anymore say that it is because of the smell and flies associated with the collection. Households that use the bin sometimes, state that it is because they already compost (41%) or don't have enough food scraps (18%).

Over half of households (53%) think that they throw out a small amount of food scraps, and another 17% think that they throw out no food scraps.

However, the waste audit found that only 6% of households set out no food scraps in their kerbside rubbish, 23% set out less than 1 kg of food scraps, and 32% set out between 1 kg and 3 kg of food scraps. A further 39% set out more than 3 kg of food scraps per household set out of kerbside rubbish.

Only 20% of households said that they used their rubbish bin, among other disposal options, to dispose of food scraps. Fifty-seven per cent of households claim to use a compost or worm farm, and a 26% say they use an in-sink disposal unit.

Therefore, regardless of the methods households use to dispose of food scraps, a significant amount of food is still being disposed of through rubbish bins.

Based on the findings of this research, it would appear that the two main barriers to the use of the food scraps collection are:

1. Many households believe that they only throw out a small amount of food scraps and that they already use appropriate disposal methods to dispose of them e.g. home composting, worm farming, feeding animals and in-sink disposal units. These households appear unaware of the quantity of food scraps being disposed of to their rubbish bin.
2. Some households have used the food scraps collections and found that they smell bad and / or attract flies / maggots (or have had another practical issue with their use) and have stopped using them.

The focus groups found that households were not necessarily aware of the environmental impacts of disposing of food scraps to landfill or of the environmental benefits of using compost. Equally many households did not know where or how compost made from food scraps was being used.

While concerns over the potential for food scraps collections to smell and attract flies is likely to be a barrier that cannot be overcome for some households, other households could be encouraged to participate if they were provided with a better understanding of the benefits of the collection.

It may be more effective to encourage and support households that are already home composting or feeding food to animals to continue to do this, and to increase their food scraps diversion through these methods, rather than trying to persuade them to use a food scraps collection. Some of these households may also be able to be encouraged to divert food scraps that they don't want to compost to the food scraps collection.

# 1. INTRODUCTION

## 1.1 Background

This research project has been undertaken for the Ministry for the Environment (the Ministry). The aim of the research is to better understand the reasons why some households do not participate in kerbside food scraps collections provided by their local council, and what can be done to increase participation.

The findings are expected to inform and support future council rollouts of food scraps or food organics and garden organics (FOGO) collections.

The Ministry consulted with councils during project development to ensure that the key needs of councils with regards to implementing food scraps collections were identified. It was as a result of this consultation that the Ministry discovered that the reasons for non-use of food scraps collections was an area requiring further research.

Due to budgetary constraints, the Ministry requested that the research only be undertaken in council areas that have food scraps only collections, rather than FOGO collections. At the time this research was undertaken there were five councils in Aotearoa New Zealand providing food scraps only collections (beyond trial stage)<sup>1</sup>:

The Ministry requested that the project undertake the following research in each selected council area:

1. Identify households which have not set out a kerbside food scraps bin
2. Survey households that do not set out bins to understand why they do not use the provided kerbside food scraps collection
3. Audit rubbish bags/bins from households that do not set out food scraps bins to determine how much food and green waste is disposed of to landfill
4. Undertake focus groups to understand in more detail the barriers to using food scraps collections and how these could be overcome.

## 1.2 Research locations

Five councils currently provide a food scraps only kerbside collection beyond trial phase. The four councils included in this study are not named directly for confidentiality reasons. The fifth council, not included in the study was New Plymouth District Council.

Waste collection services offered by these councils differ. An outline of the different services provided by each council is shown in Table 1.1.

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<sup>1</sup> It is noted that a food scraps collection is also provided to households in Raglan Whāingaroa in the Waikato District, but this collection is deemed too small for the purposes of this research



**Table 1.1 – Waste collection services provided by councils with food scraps collections**

	<b>Waste collection</b>	<b>Recycling collection</b>	<b>Food scraps collection</b>	<b>Garden waste collection</b>
<b>Council A</b>	Fortnightly collection of 120-litre wheelie bins, rates-funded	Fortnightly collection of mixed recyclables in 240-litre wheelie bin and fortnightly collection of glass in crate	Weekly collection, 23-litre bin	No collection
<b>Council B</b>	Fortnightly collection of 140-litre wheelie bins (option for other size bins), rates-funded	Fortnightly collection of mixed recyclables in 240-litre wheelie bin and fortnightly collection of glass in crate	Weekly collection, 23-litre bin	Opt-in fortnightly or 4 weekly collection, 240-litre wheelie bin
<b>Council C</b>	Weekly collection of 140-litre wheelie bins with pre-paid tags	Fortnightly collection of mixed recyclables in 240-litre wheelie bin and fortnightly collection of glass in crate	Weekly collection, 23-litre bin	No collection
<b>Council D</b>	Weekly collection in pre-paid 60 or 35-litres rubbish bags	Weekly collection in crate	Weekly collection, 23-litre bin	No collection
<b>New Plymouth</b>	Weekly collection of 120-litre wheelie bin, rates-funded	Fortnightly collection of mixed recyclables in 240-litre wheelie bin and fortnightly collection of glass in crate	Weekly collection, 23-litre bin	No collection

Based on the available budget, it was proposed that the research be undertaken at four locations. The preferred locations were all four council areas other than New Plymouth. Reasons for leaving out New Plymouth included the fact that research had already been undertaken on its food scraps collection,

and that it has a waste collection system similar to councils A and B, so there would not be as many additional learnings to be gathered. It is also more geographically distant.

Including the other four locations allows for comparisons to be made between areas with fortnightly rates-funded wheelie bin rubbish collections, areas with weekly pre-paid rubbish bag collections, and areas with weekly pay-as-you-throw (pre-paid tag) wheelie bin rubbish collections.

Councils A, B and C do not allow the use of compostable plastic bin liners in the food scraps collection bin, while council D allows them and supplies them to residents. Council D also supplied each household with a kitchen caddy for bench top use.

Food scraps collections were implemented in each council area during the following months:

- Council A – August 2020
- Council B – July 2021
- Council C – July 2021
- Council D – October 2020.

All four councils experienced disruptions in collections services at least once during COVID.

## 2. METHODOLOGY

This research project involved four distinct stages. The methodology for each of these stages is outlined in this section.

Confidentiality of household details was ensured throughout the research. Households were identified through unique IDs throughout the study, and at no stage in this research is any identifying information made public.

### 2.1 Participation survey

As the main aim of the research was to gather information on why some households do not use food scraps collections, the first step in the research was to determine which households in each council area do not use the service.

The best way to determine this is to undertake a participation survey. A participation survey records, in specific areas, over a period of three weeks, which households set out a food scraps bin, and which ones do not.

In each of the four council areas, a selection of streets was chosen with assistance from the local council. Each council was asked to select a relatively low income area and a relatively high income area for the survey.

Two surveyors were contracted to undertake the participation survey in each council area. Each surveyor gathered data on bins set out at kerbside from at least 200 households per area.

In council areas C and D, two days of surveying were undertaken, each week for three weeks. In council areas A and B one day of surveying was completed each week for three weeks. The project was designed in this way as the kerbside collection systems in council areas A and B are similar (fortnightly rates funded kerbside rubbish collections in wheelie bins and a weekly food scraps collection). Council area D on the other hand has a weekly kerbside rubbish collection in bags, while council area C has a weekly user-pays wheelie bin kerbside rubbish collection. By surveying for longer in Council areas C and D, the potential impact on food scraps collections of the three different kerbside rubbish collection systems could be better compared.

On the first week of the participation survey, in each council area, two surveyors walked down selected streets, recording, for each address, whether a food scraps bin was set out for collection. This was then repeated, for the same addresses, and on the same day of the week, over the following two consecutive weeks. Use of other waste services were also measured during the participation survey, namely waste disposal, recycling collections, and green waste collections where these were provided by the council.

In council area E longer distances had to be travelled to enable the surveyors to include sufficient households each day, so the two surveyors worked together, and a vehicle was used to travel between the surveyed addresses. In this council, areas that were predominantly holiday housing were avoided as they were not likely to be inhabited at the time of the survey.

On completion of the participation survey the data was analysed and the households that had set out a food scraps bin on any of the three weeks of the survey were identified. This allowed for the

calculation of the participation rate (the number of households that participated in the food scraps collection during the three-weeks of the survey).

Set out rates were also identified for each week of the survey. The set out rate is the number of households that use a food scraps bin in any specific week during the survey.

## 2.2 Attitudinal survey

An attitudinal survey was designed for households that did not use the food scraps collection. The attitudinal survey was printed and delivered to the letterbox of each household that did not use their food scraps bin during the first two weeks of the participation survey. Delivery of the survey took place in week two of the participation survey due to project time constraints. All households that had not set out a food scraps bin in week 1 or 2 had an attitudinal survey placed into their letterbox.

The survey was on paper and included an addressed, pre-paid return envelope. An option to complete the survey online was also provided, along with a QR code to facilitate easy digital access to the survey. The online survey was longer and included skip logic.

Each paper survey was provided on council letterhead.

The attitudinal survey gathered basic demographic details on the household (e.g. number of residents, age of residents, etc) and asked a series of questions relating to the household's disposal of food scraps.

Four \$100 supermarket vouchers were provided as a prize drawer in each council area as an incentive to ensure a higher survey return rate.

A copy of the attitudinal survey is provided in Appendix 1.

Unfortunately, the online survey was set up with five options for the amount of food waste generated, while the paper survey had six options. For this reason, in the subsequent analysis households that used the paper survey and said that they disposed of 'hardly any' or 'a small amount' of food waste were both coded as disposing of 'a small amount'.

## 2.3 Waste audits

The aim of the waste audits was to determine the quantity of food scraps that is disposed of to landfill by households that don't use the food scraps collection.

A list of households that completed and returned the attitudinal survey was used for the waste audit sample collection. To ensure that the waste audit included a maximum number of households, and as only limited numbers of households returned an attitudinal survey, the waste audit collection crew was provided with a list of addresses of households that had returned the attitudinal survey and an additional list of households that had not returned the survey but had also not set out their food scraps bin within the three weeks of the participation survey.

In each area, the waste audit took place on the same day of the week as the participation survey was undertaken. On the morning of the audit, two collection crew and a collection vehicle visited the participation survey area and collected rubbish set out at kerbside from the households that did not use the food scraps collection (as outlined above). In council area D, all rubbish bags set out by each

selected household were collected, while in the other areas, the contents of the rubbish wheelie bins were emptied into large plastic bags. A unique identifier was attached to each bag of rubbish collected.

The waste was then transported to a local transfer station for auditing. The audit sorted each household's waste individually. The waste was sorted to identify food scraps and green waste. The Ministry requested that green waste be identified as this data may be of assistance to other projects.

A checklist was used to identify the main types of food scraps (e.g. fresh fruit and vegetables, bones, left overs etc.) and green waste (e.g. leaves, lawn clippings, weeds, etc) in each bin. The different types of food scraps and green waste were not weighed separately. Three weights per household were collected: the total amount of waste set out, the total amount of food scraps, and the total amount of green waste.

Once the audit had been completed the data was analysed and matched, where possible, with the results of the attitudinal survey.

The results of the attitudinal survey and the waste audit were compared, at a household level, to determine whether the households' responses in the surveys matched the reality found in their kerbside rubbish. That is, for households that state in their survey that "we don't generate any food waste" or "we compost all of our food waste", how much food waste is in their kerbside rubbish bin?

## 2.4 Focus groups

The final piece of the project was a series of four focus groups, with participants selected from the households that returned the attitudinal survey. This work was outsourced to AK Research, a market research company with focus group expertise.

This qualitative research was included to explore the reasons why households do not use the food scraps collection service. The focus groups provided an opportunity for households to explore their current experiences with food scraps and with the food scraps collection service. They also discussed the reasons why they weren't using the food scraps collection and what would make the collection easier for them to use.

Altogether 26 people participated in one of four separate focus groups.

The outcomes of the focus groups are provided in a separate report available [here](#)<sup>2</sup>. These outcomes are discussed, in part, in Section 4 and 5 of this report.

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<sup>2</sup> <https://environment.govt.nz/publications/food-scrap-collection-services-qualitative-research/>

## 3. RESULTS

### 3.1 Participation survey

One of the purposes of a participation survey is to determine the participation rate. The participation rate is the number of households that use a particular service over the period of the survey (three-weeks in this research).

A total of 2,421 households were included in the participation survey, from across the four council areas. The food scraps collection participation rate, across all households from all four council areas, was 41.5%, which means that 41.5% (or 1,004) of the households surveyed set out their food scraps bin at least once during the three weeks of the participation survey.

Table 3.1 shows how many times, over three weeks, households set out their food scraps bins. Results for the four individual councils are presented in Appendix 2.

**Table 3.1 – Use of food scraps bin over three-week survey**

	<b>Of participating surveyed households</b>	<b>Of all surveyed households</b>
<b>Used 1 time only</b>	31.2%	12.9%
<b>Used 2 times only</b>	30.5%	12.6%
<b>Used 3 times</b>	38.3%	15.9%
<b>Use over 3-week participation survey</b>	<b>100.0%</b>	<b>41.5%</b>
<b>Not used in 3 weeks</b>	-	<b>58.5%</b>

A participation survey also allows for the calculation of a set out rate. A set out rate is the number of households that use a service on the week of the survey.

The average set out rate across all four council areas was 28.6%, which means that on any given week, on average 28.6% of households set out their food scraps bin. Set out rates varied each week, as shown in Table 3.2.

**Table 3.2 – Weekly set out rates**

<b>Average set out rate</b>	28.6%
<b>Set out in week 1</b>	31.2%
<b>Set out in week 2</b>	26.4%
<b>Set out in week 3</b>	28.4%

In Table 3.3 the data presented in the previous two tables is presented again, but separately for the higher income and lower income areas.

The participation rate in the higher income areas was 43.2%, and the participation rate in the lower income areas was 40.4%.

**Table 3.3 – Use of food scraps bin over three-week survey, comparison between higher and lower income areas**

	Higher income		Lower income	
	Of participating households	Of all households	Of participating households	Of all households
<b>Used 1 time only</b>	26.9%	11.6%	33.9%	13.7%
<b>Used 2 times only</b>	31.5%	13.6%	29.8%	12.1%
<b>Used 3 times</b>	41.5%	17.9%	36.3%	14.7%
<b>Use over 3-week participation survey</b>	100.0%	43.2%	100.0%	40.4%

Participation rates between higher and lower income areas varies between each council area, as shown in Section 4.3.

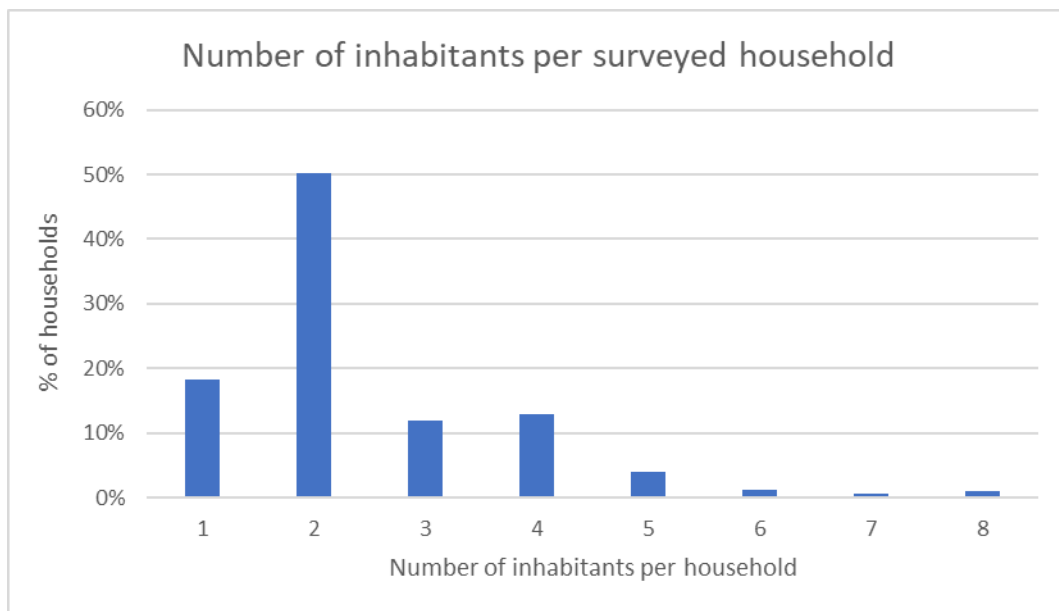
## 3.2 Attitudinal survey

Altogether 328 households completed the attitudinal survey, 209 (64%) returned paper surveys and 119 (36%) completed electronic surveys. The attitudinal survey had an overall return rate of 22%.

### 3.2.1 Demographics

The attitudinal survey asked households a series of questions about the households' demographics, including how many people live in the house, what age groups these people fall into, and what ethnic/cultural groups the households most identify with.

Figure 3.1 provides an overview of the number of residents living in each of the households that returned an attitudinal survey. Demographic results for the four individual councils are presented in Appendix 3.



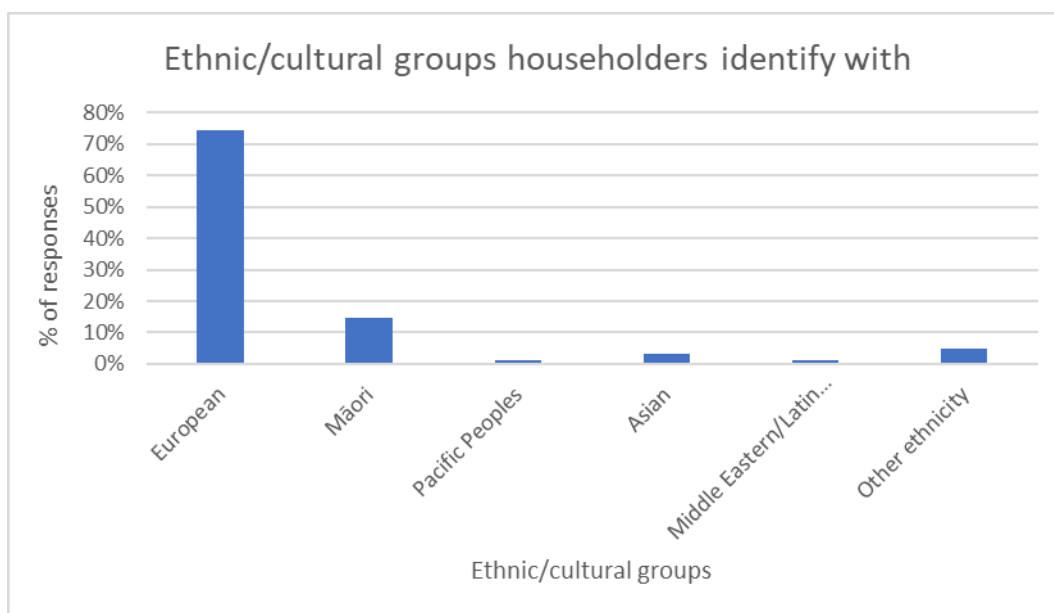
**Figure 3.1 – Number of residents per household that returned an attitudinal survey**

Half of households that completed an attitudinal survey live in a household with two residents, and 18% of households have a single resident. Seven per cent of households have five or more residents.

Households were asked to select the age groups into which their residents belonged. Twenty-five per cent of households included occupants aged between 0-20 years and 46% of households included occupants aged 65 years and above. Thirty-eight per cent of households only had residents aged 65 years and over.

The survey asked the households to note which of the listed ethnic/cultural groups they identify with. The responses are shown in Figure 3.2. Several households identified with more than one ethnic/cultural group. Results for the four individual councils are presented in Appendix 3.





**Figure 3.2 – Ethnic/cultural groups households identify with**

Three quarters of households had residents that identified as European, and 15% of households had residents that identified as Māori. Almost half of the 5% of households that stated that they had residents of Other ethnicities, listed those ethnicities as NZ European or New Zealander or Pakeha.

### 3.2.2 Does your household currently use the food scraps collection?

The attitudinal survey asked households whether they currently use the food scraps bin. Their responses are listed in Table 3.4. Results for the four individual councils are presented in Appendix 4.

**Table 3.4 – Households’ use of food scraps bin**

Stated use of food scraps bins	I use it every week	I use it sometimes	I don’t use it anymore	I have never used it
Number of responses	64	54	58	152
% of respondents	20%	16%	18%	46%

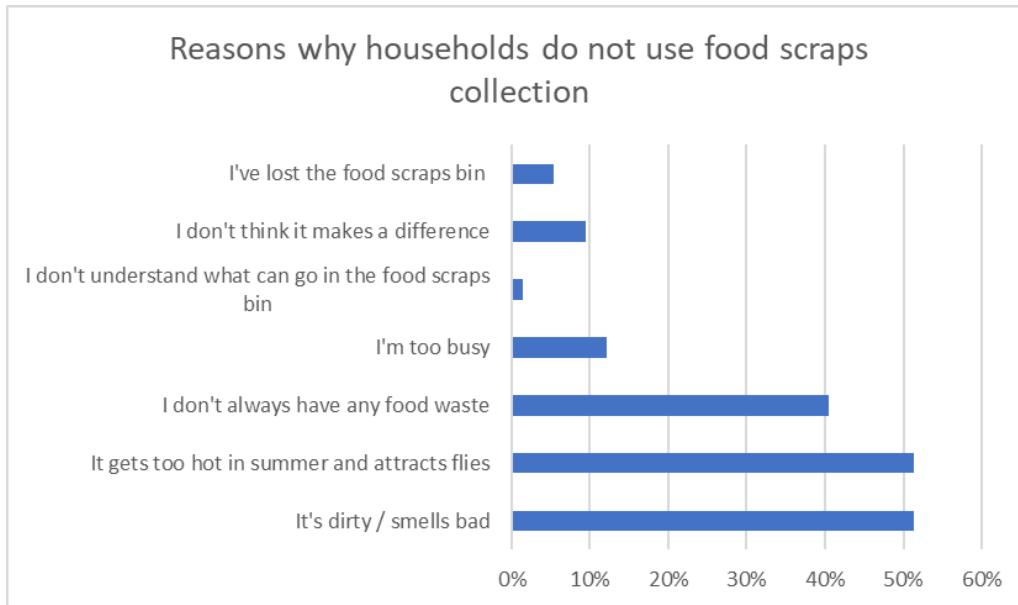
Despite the attitudinal survey only being distributed to households that had not used the food scraps bin during the first two weeks of the participation survey, 20% of households stated that they used their food scraps bin weekly.

Just over half of households (54%) had used the food scraps bin at some stage, while 46% of households had never used it. These numbers cannot be applied to the overall population as the attitudinal surveys were specifically targeting households that didn’t use the service.

### 3.2.3 If your household doesn’t use the food scraps bin, why is that?

The attitudinal survey asked why their household didn’t (or didn’t always) use the food scraps collection. Households that used the paper survey were asked to write out an answer to this question, while households that completed the online survey were given a list of seven options to select from, and the opportunity to provide additional feedback.

In Figure 3.3 the answers from seven options are provided, for all 119 households that completed the online survey. Results for the four individual councils are presented in Appendix 4.



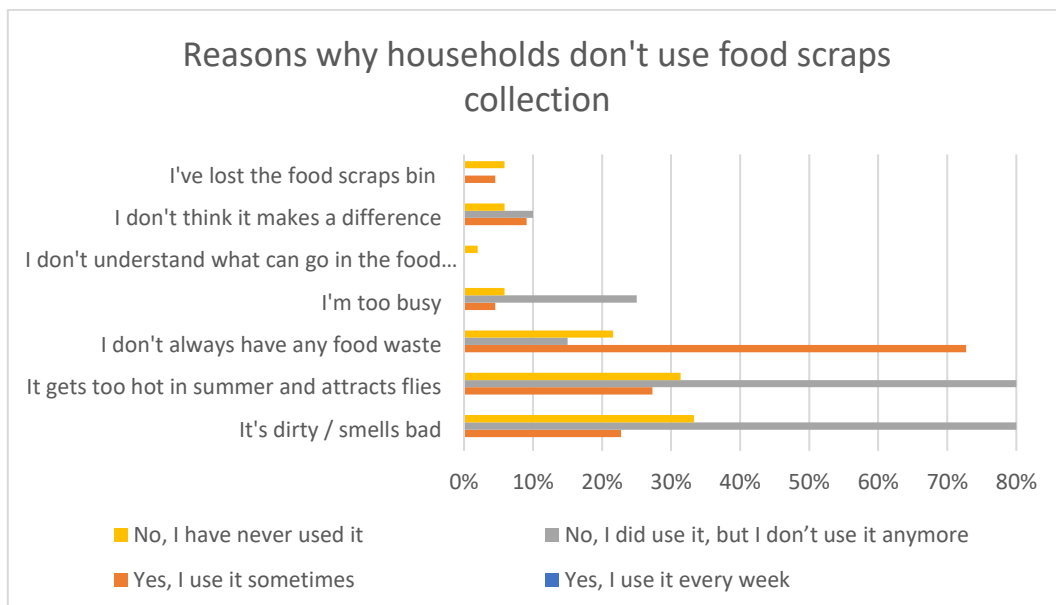
**Figure 3.3 – Reasons why households do not use food scraps collection**

Note: Households often listed more than one reason

The most common reasons people gave for not using their food scraps bin were that 'It's dirty / smells bad' and 'It gets too hot in summer and attracts flies' (both selected by 51% of households).

A further 41% of households selected the 'I don't always have any food waste' option.

These same results are presented in Figure 3.4, linked to their use of the food scraps collection.



**Figure 3.4 - Reasons why households do not use food scraps collection, linked to use of service**

The option that was not made available in the survey, was ‘I don’t use it because I compost/worm farm/feed to animals/use an in-sink disposal unit’.

The long form answers to the question, on the paper survey and the online survey, provide a more rounded set of responses. These have been summarised in Table 3.5. The full responses from all councils are provided in Appendix 5.

**Table 3.5 – Reasons given for not using food scraps collection**

	I use it sometimes	I don’t use it anymore	I have never used it
# of responses	22	55	146
We compost	41%	15%	58%
We feed animals	0%	4%	14%
It smells / attracts flies etc.	18%	51%	12%
We use an in-sink disposal unit	9%	5%	7%
We don’t have many food scraps	18%	4%	4%
Other reasons	14%	22%	5%

Interestingly, among the group that had never used the food scraps bin, the main reason was that they already compost, or feed their food scraps to animals (72% combined). Only 12% of households that have never used the food scraps collection say that it is because it would smell or attract flies.

However, amongst the group of respondents who don’t use the bin anymore, 51% say that it is because of the smell and flies.

Households who use the bin sometimes, mostly state that it is because they already compost (41%). A further 18% say that they don’t have enough food scraps, and 18% state that it is because of the smell and flies.

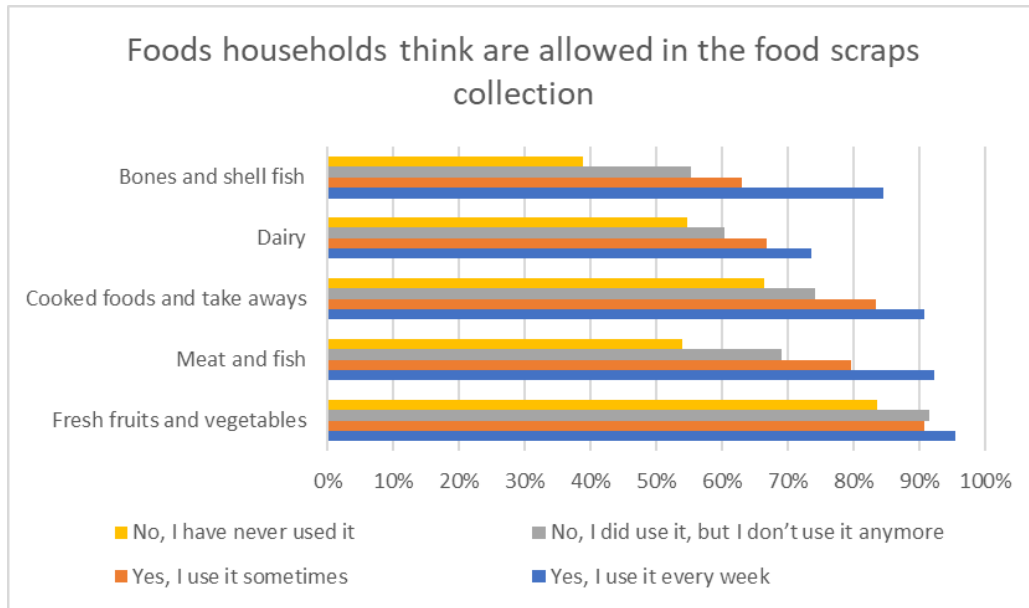
### 3.2.4 Which foods do you think are allowed in the food scraps collection?

The next question in the survey asked households to select the types of food scraps that they believe can be placed into the food scraps collection. The answers to this question are outlined in Table 3.6 and Figure 3.5. Results for the four individual councils are presented in Appendix 4.

**Table 3.6 – Foods households think are allowed in the food scraps collection**

	I use it every week	I use it sometimes	I don’t use it anymore	I have never used it
Number of responses	64	54	58	152
Fresh fruits & vegetables	95%	91%	91%	84%
Meat & fish	92%	80%	69%	54%
Cooked foods & take aways	91%	83%	74%	66%
Dairy	73%	67%	60%	55%
Bones & shellfish	84%	63%	55%	39%

Note: Responses under 70% have been highlighted

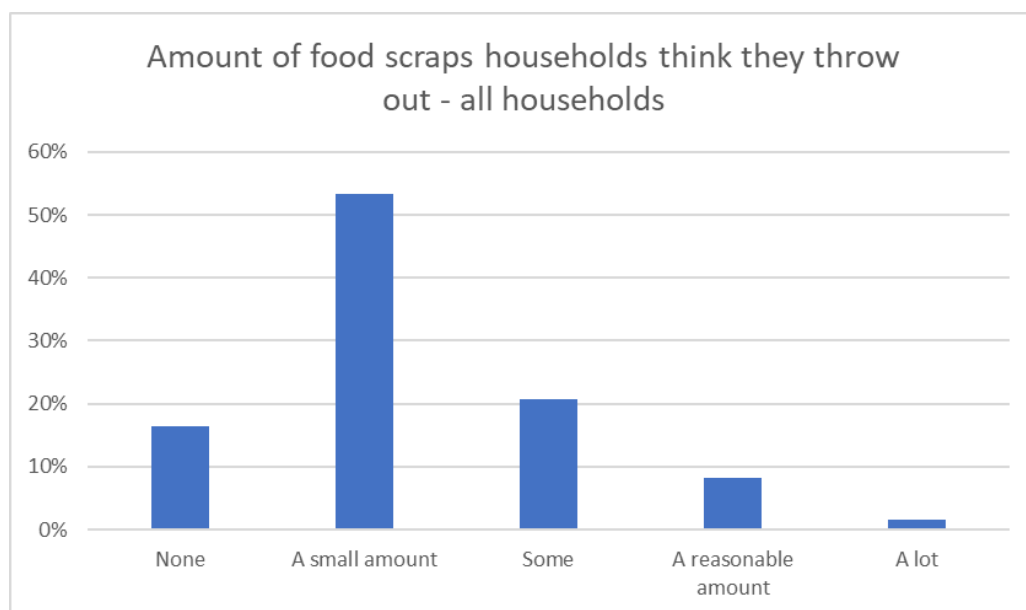


**Figure 3.5 – Foods households think are allowed in food scraps collection, linked to use of service**

All the listed foods are in fact accepted in the food scraps collections. Households that use the food scraps collection every week appear to be relatively well informed, though only 73% of these households think that dairy is accepted in the collection. Households that have never used the food scraps collection are the least knowledgeable about what is accepted, with only 54% thinking that meat and fish are accepted, and only 39% thinking that bones and shellfish are accepted.

### 3.2.5 How much food waste does your household throw out each week?

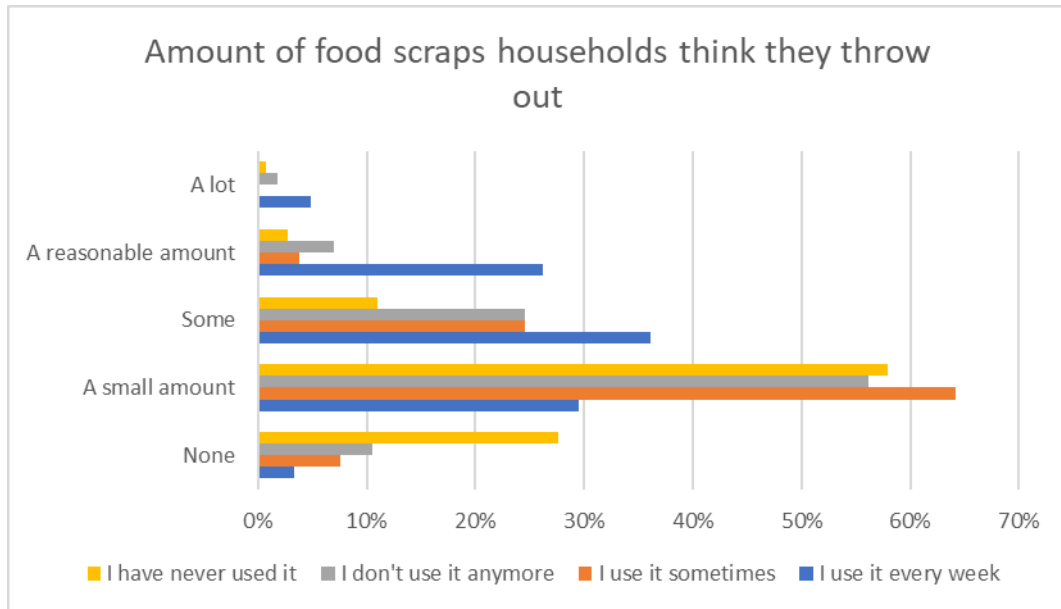
Households were asked ‘how much food waste does your household throw out each week’, on a scale from none to a lot. Their responses are provided in Figure 3.6. Answers for the four individual councils are presented in Appendix 4.



**Figure 3.6 - Amount of food scraps households think they throw out, all households**

Over half of households (53%) think that they throw out a small amount of food scraps, and another 17% think that they throw out no food scraps.

These same results are provided in Figure 3.7, but split according to their use of the food scraps collection.



**Figure 3.7 – Amount of food scraps households think they throw out**

The majority of households say that they throw out a small amount of food scraps. Proportionally, households that use the food scraps collection every week appear to think that they throw out more food scraps than households that don't use the service. This may be due to additional awareness of the amount of food scraps they generate, as they are setting these aside for the collection.

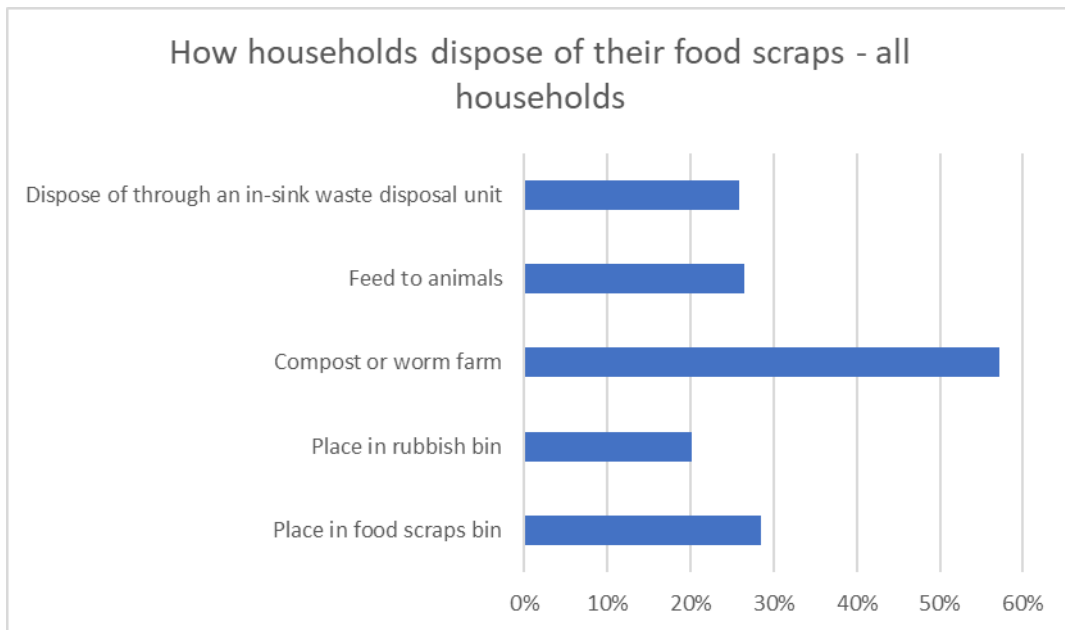
It is acknowledged that this question is about people's perceptions rather than any specific food scraps quantities.

It is also worth noting that in most households, the person completing the attitudinal survey is one of several people living in that household. It is possible that they are disposing of only small amounts of food scraps, while other members of the household have different disposal habits.

### 3.2.6 What are the main ways your household disposes of food waste?

Households were asked in the attitudinal survey what their main disposal methods are for food waste. They were provided with a list of five options. Many households listed several disposal methods.

The answers to this question are shown in Figure 3.8. Answers for the four individual councils are presented in Appendix 4.

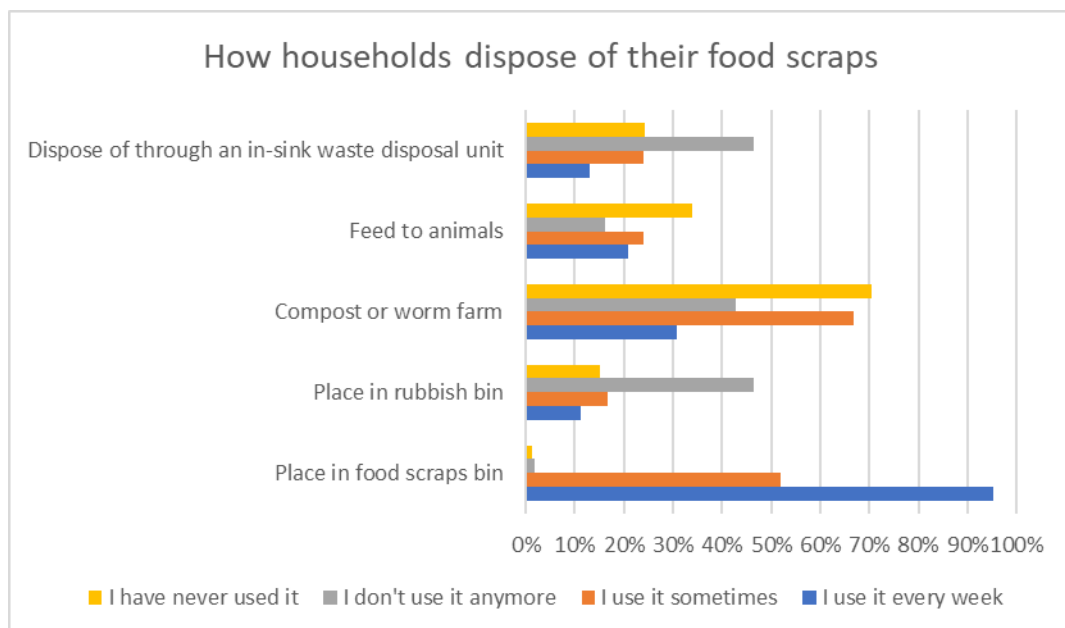


**Figure 3.8 – How households dispose of their food scraps, all households combined**

Note: Many households listed more than one disposal method

The most common method for food scraps disposal, amongst the attitudinal survey participants, is composting and worm farming, with 57% of households claiming to use a compost or worm farm to dispose of some of their food scraps. Only 20% of households claim to use their rubbish bin to dispose of food scraps.

Figure 3.9 shows the relationship between stated food scraps disposal methods and a household’s use of the food scraps collection.



**Figure 3.9 – How households dispose of their food scraps**

Households who use the food scraps collection every week, unsurprisingly say that they place their food scraps in the food scraps bin. Seventy per cent of households that say that they have never used the food scraps collection and 67% of households that say that they sometimes use the food scraps collection, claim to compost or worm farm.

### 3.2.7 Additional comments

Some households that returned an attitudinal survey included an additional comment on the survey. Some of these comments supported the food scraps collections, and some outlined their reasons for not using or liking the food scraps collection. Most of the negative responses are already captured in the feedback provided to the question 'If your household doesn't use your food scraps bin, why is that' (see Appendix 5). The positive feedback is provided below:

#### **I use it every week:**

- Very good idea, thank you
- GREAT SERVICE
- It's brilliant!
- I think the food scraps collection is AMAZING! It's soooo good that our little region is leading the way in eradicating food waste going to landfill - both for our zero waste goals and the environment.
- Love this service
- Great service
- All good
- love the service
- Use it every 3rd week - small household, scraps frozen

#### **I use it sometimes:**

- No - I think it's a great service - it takes care of food waste that I don't want to put in my compost bin and that's great.
- Please keep the service going.
- Top marks to those people who collect.
- Use the food scraps collection every fortnight. Y.M.C.A. menu. Yesterday's menu cooked again! My favourite.
- I love that we have the option to have the food scraps collected
- Great design
- such a good bin / compost waste
- I think it's a great idea, but I don't need to use it every week
- I put my food scraps in the freezer until I have enough to go in the bin. I then use a paper supermarket bag inside the bin and put the frozen waste into that. This stops it stinking and stops the bin from getting disgusting.

#### **I don't use it anymore:**

- Good initiative but we use the alternative.

- Even though we use our worms and compost pile now, I love that there is a kerbside service available for others to get rid of their food scraps in a sustainable way, so I'd love to see the scheme continue!

**Never used it:**

- I believe it's a great service for those without other ways of disposal. Maybe if we had a community garden we could also have a community compost bin? Would it be more economical to have a staff member doing that to offset the cost of the current food waste collection? I'm not sure but could be an interesting discussion.
- I love that you provide this option for people who don't have the capacity to adequately dispose of their food waste. As a rate payer, I fully support paying for this important service even though I don't personally use it. Keep up the good work team!



### 3.3 Waste audit results

When the results from the research in the four council areas are combined, a total of 284 households had their kerbside rubbish audited, and 26% of these households (75 households), also completed an attitudinal survey.

#### 3.3.1 How much, and what types, of food scraps were in kerbside rubbish?

The 284 households included in the audit did not set out a food scraps bin in the three weeks of the participation survey or the week of the waste audit.

The kerbside rubbish from each household was audited individually and food scraps separated and weighed. The types of food scraps present were also recorded.

It is not possible to tell how many weeks' worth of rubbish are set out in each household's kerbside rubbish. The kerbside rubbish collection is fortnightly in Council A and B, and some households may set their bin out less often. The kerbside rubbish collection is weekly in Council C and D, though households may not set out their rubbish bin every week.

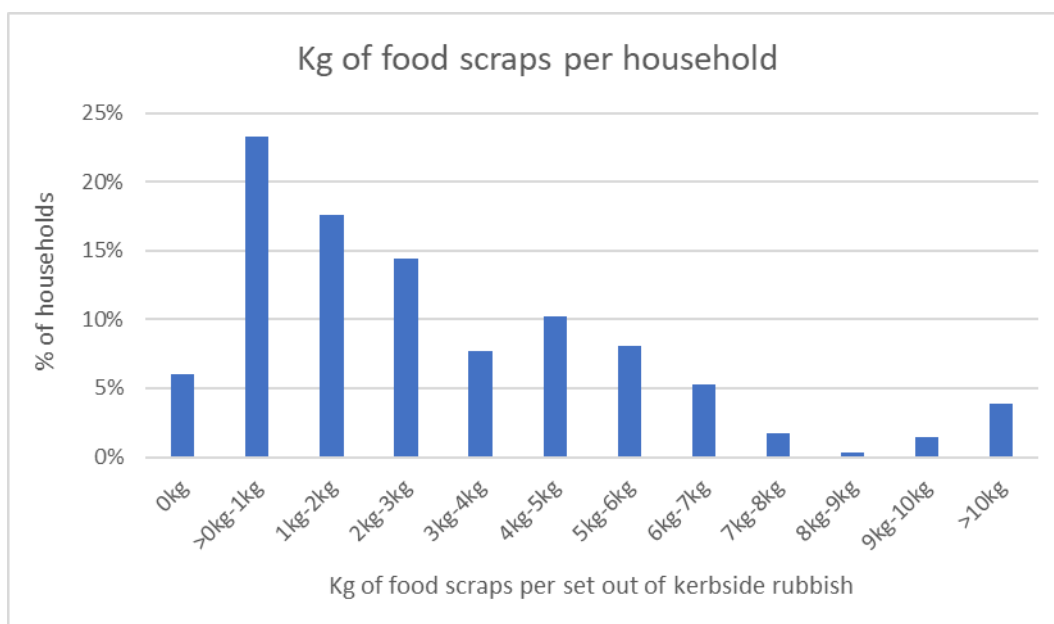
Table 3.7 provides the average breakdown of food scraps in the kerbside rubbish set out by households in each of the four council areas included in the waste audit. While these numbers are based on the materials present when the household sets out their kerbside rubbish, the weight of food scraps cannot be equated to a weekly or fortnightly set out.

**Table 3.7 – Food scraps per household set out of kerbside rubbish**

	<b>Council A</b>	<b>Council B</b>	<b>Council C</b>	<b>Council D</b>
Food scraps (kg) per household set out of kerbside rubbish	2.28 kg	2.96 kg	4.34 kg	2.27 kg
Food scraps as % of materials in household set out of kerbside rubbish	22.0%	29.8%	30.6%	34.2%
<b>Total kerbside rubbish per household set out</b>	<b>10.38 kg</b>	<b>9.92 kg</b>	<b>14.20 kg</b>	<b>6.65 kg</b>

Across all 284 households 17 households (6%) set out no food scraps.

Figure 3.10 provides an overview of the distribution of the food scraps weights across all 284 households.



**Figure 3.10 – Distribution of kg of food scraps per household set out of kerbside rubbish**

Six per cent of households set out no food scraps, and 23% set out less than 1 kg of food scraps. Thirty two per cent of households set out between 1 kg and 3 kg of food scraps, and 39% set out more than 3 kg of food scraps.

When analysed according to household income (lower income households and higher income households), there is very little difference in the amount of food scraps set out – on average the 167 households based in lower income areas of the four council areas set out 3.1 kg of food scraps in their kerbside rubbish while the 117 households based in higher income areas set out 3.0 kg of food scraps.

The audit recorded the types of food scraps disposed of. The different types of food scraps were not weighed individually, instead their presence in a household’s rubbish was recorded. Table 3.8 shows the proportion of households included in the audit that had each type of food scraps in their kerbside rubbish. The food scraps types are based on food groups used in previous Love Food Hate Waste<sup>3</sup> research, and are outlined in Appendix 6.

**Table 3.8 – Types of food scraps in domestic kerbside rubbish**

Types of food scraps	% of households with item type in kerbside rubbish
Fresh vegetables	62%
Fresh fruits	60%
Meat and fish	58%
Bakery	44%
Homemade food	31%
Dairy	30%

<sup>3</sup> Sunshine Yates Consulting, 2018, New Zealand Food Waste Audits, WasteMINZ

<b>Types of food scraps</b>	<b>% of households with item type in kerbside rubbish</b>
Drinks	25%
Pre-prepared meals	25%
Snack foods	23%
Condiments	19%
Staple foods	18%
Processed vegetables	8%
Desserts	5%
Fats	4%
Processed fruit	6%
Other	0%

The most common types of food scraps were Fresh vegetables (present in the kerbside rubbish of 62% of households), followed by Fresh fruit (present in 60% of households' rubbish), followed by and Meat and fish (58% of households).

Probably more interesting is the fact that 38% of households had no Fresh vegetables in their rubbish, and 40% had no Fresh fruit. It is possible that some households do not purchase any fresh fruit and vegetables, however it is unlikely that 40% of household do not purchase fresh fruit and vegetables. As there are few fresh fruits and vegetables that do not create some type of non-avoidable food scraps, such as banana peels, apple cores, lettuce stalks, potato peelings etc, it is likely that many of these households are disposing of their food scraps in alternative ways (such as composting, worm farming, feeding them to animals or disposing of them through an in-sink disposal unit).

### 3.3.2 How much, and what types, of green waste were in kerbside rubbish?

The Ministry requested that green waste also be separated during the audit to determine how much green waste is disposed of on average per household through kerbside rubbish collections.

When the kerbside rubbish from each household was audited the green waste was separated and weighed and the types of green waste present were recorded.

Table 3.9 provides the average breakdown of green waste in the kerbside rubbish set out by households in each of the four council areas included in the waste audit. While these numbers are based on the materials present when the household set out their kerbside rubbish, the weight of green waste cannot be equated to a weekly or fortnightly set out.

**Table 3.9 – Green waste per set out of domestic kerbside rubbish**

<b>Average per household included in waste audit</b>	<b>Council A</b>	<b>Council B</b>	<b>Council C</b>	<b>Council D</b>
Green waste (kg) per set out	0.37 kg	0.81 kg	1.27 kg	0.00 kg
Green waste % of materials per set out	3.6%	8.2%	9.0%	0.0%
<b>Total kerbside rubbish per set out</b>	<b>10.38 kg</b>	<b>9.92 kg</b>	<b>14.20 kg</b>	<b>6.65 kg</b>

Across all 284 households, 207 households (73%) set out no green waste. When a household did set out green waste, it set out on average 2.3 kg.

Other research has found that kerbside rubbish collections in bags contain less green waste than kerbside rubbish collections in wheelie bins, which is also demonstrated in this research.

Table 3.10 shows the proportion of households included in the audit that had each type of green waste in their kerbside rubbish. A description of the different types of green waste are set out in Appendix 7.

**Table 3.10 - Types of green waste in domestic kerbside rubbish**

<b>Types of green waste</b>	<b>% of households with item type in kerbside rubbish</b>
Leaves	11%
Prunings	10%
Dead/cut plants	5%
Weeds	4%
Lawn clippings	3%
Potted plants	1%
Cut flowers	1%
Other	0%

Only 27% of households' kerbside rubbish contained green waste, and the most common types of green waste were Leaves (present in 11% of households' rubbish), followed by Prunings (10% of households).

These numbers are likely to be affected by seasonality with the amount of green waste and the types of green waste increasing and decreasing according to the seasons and the amount of vegetative growth and gardening taking place. November 2022 was a relatively wet month, which may have impacted green waste quantities in kerbside rubbish.

### 3.3.3 How do the results of the attitudinal survey compare with the waste audit results?

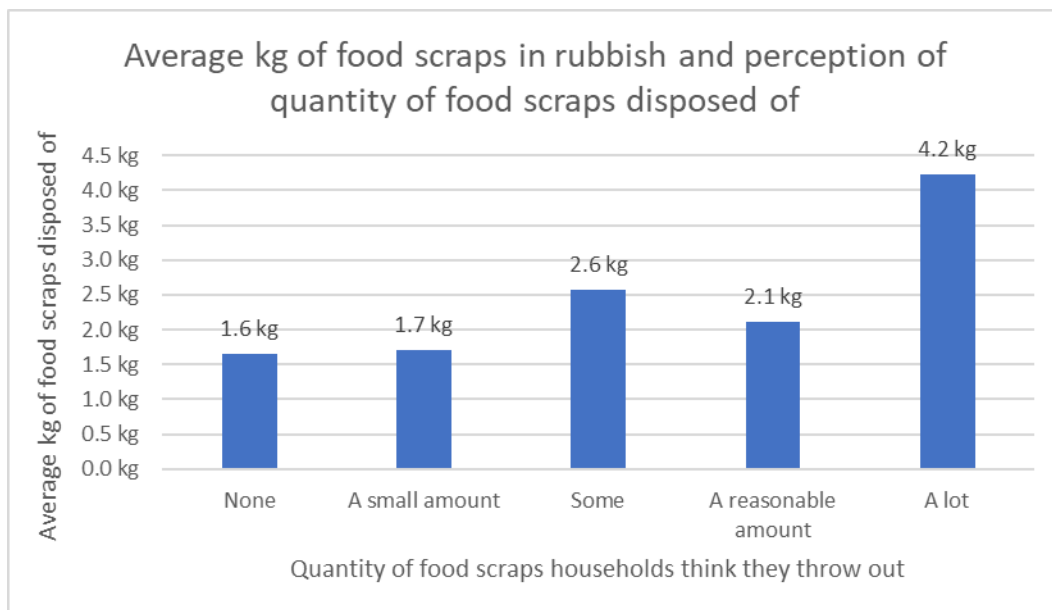
SYCL attempted to include as many households as possible in the waste audit that had completed an attitudinal survey. However, as households do not always set out their rubbish on every collection day, and as some households set out their rubbish immediately prior to the rubbish collection, it was not possible for the waste audit collection crew to collect a sample from each household that had completed an attitudinal survey. Seventy-five households (or 26%) of households included in the waste audit had completed a survey.

The results of the attitudinal survey and the waste audit are analysed together in this section.

It should be noted that the analyses presented in this section are based on a small sample size (75 households) and are not expected to be representative of the overall population.

In the attitudinal survey, households were asked whether or not they use the food scraps collection. Of the 75 households that were audited and surveyed, four (5%) said they use the food scraps collection every week, 8 (11%) said they use it sometimes, 19 (25%) said they used to use it, but don't anymore, and 44 (59%), said they had never used it.

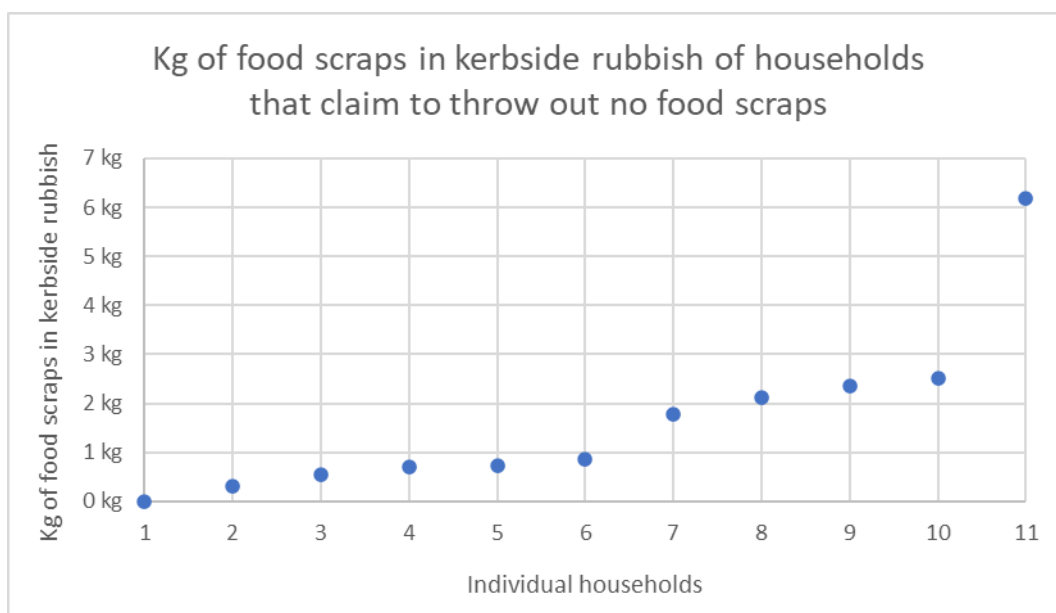
They were also asked about the quantity of food scraps they think they throw out. In Figure 3.11 this is shown alongside the actual quantity they throw out (as an average of all households that say they throw out that amount of food scraps).



**Figure 3.11 - Actual quantity of food scraps disposed of versus perception of food scraps disposal**

Only one household stated that they dispose of 'A lot' of food scraps, and they had 4.2 kg of food scraps in their kerbside rubbish.

Of the 11 households that stated that they set out no food scraps, only one had no food scraps in their kerbside rubbish. The food scraps in the set out of kerbside rubbish from households that claimed to throw out no food scraps varied from zero to 6.2 kg, as shown in Figure 3.12.

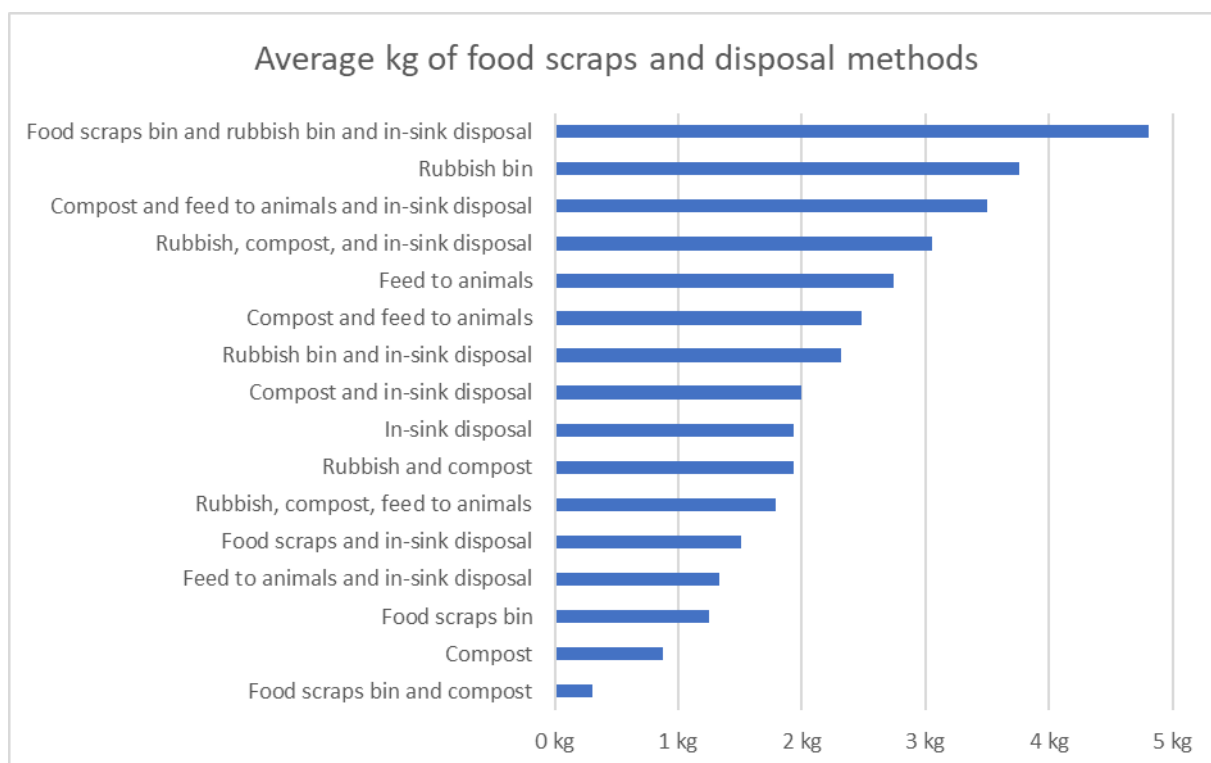


**Figure 3.12 – Weight of food scraps set out to kerbside rubbish by households that claim to not throw out any food scraps**

It would appear from this data that households are not necessarily aware of the true quantity of food scraps that they throw out.

Households were also asked how they dispose of their food scraps. Many households listed several disposal methods. The answers to this question have been grouped in Figure 3.13 to show the various food scraps disposal methods used and the average weight of food scraps in the kerbside rubbish for each set of disposal methods.

The average weight of food scraps per household set out across the 284 households included in the waste audit was 3.06 kg and the average weight of food scraps from households that completed the attitudinal survey was 1.83 kg. As stated above, the sample of households that completed the attitudinal survey and had their kerbside rubbish audited is small, and therefore not necessarily representative.



**Figure 3.13 – Average weight of food scraps in kerbside rubbish and claimed disposal methods**

While the samples are small, 20 households stated that they only compost, and these households set out on average 0.88 kg of food scraps. Three households claimed to only use the food scraps bin – two of these households set out approximately half a kilogram of food scraps in their kerbside rubbish, while the third set out 2.61 kg. Only one household claimed to use the food scraps bin and to compost, and they set out 0.31 kg of food scraps.

### 3.4 Focus groups

Four separate focus groups were undertaken with a total of 26 participants. The outcomes of the focus groups are provided in a separate report available [here](https://environment.govt.nz/publications/food-scrap-collection-services-qualitative-research/)<sup>4</sup>. The focus group participants are from households that were included in this research. It is recommended that the focus group report be read alongside this report.

<sup>4</sup> <https://environment.govt.nz/publications/food-scrap-collection-services-qualitative-research/>

## 4. DISCUSSION

This research was commissioned to answer a series of questions that the Ministry and councils had formulated around the reasons why some households do not participate in food scraps collections, and what the barriers to participation and opportunities for increased participation might be.

The following sections attempt to answer these questions, based on the results of this research.

### 4.1 How do participation rates compare with other research?

One of the important outcomes of this research was to determine the food scraps collection participation rate for each of the council areas. The participation rate is the proportion of households that set out their food scraps bin at least once during the three weeks of the participation survey. The average participation rate, across the 2,421 households over the four council areas included in the participation survey was 41.5%. The participation rate per individual council ranged from 48.6% for Council A through to 37.7% for Council D. The range of participation rates is provided in Table 4.1.

**Table 4.1 – Participation rates**

	Council A	Council B	Council C	Council D
Participation rates	48.6%	40.2%	42.0%	37.7%

A similar participation survey for the food scraps collection was undertaken in New Plymouth over a four week period in 2021<sup>5</sup>. The participation rate there was 53%.

In 2009, the UK organisation WRAP (Waste & Resources Action Programme) undertook an evaluation of food scraps collection trials across the UK. In their report *Evaluation of the WRAP Separate Food Waste Collection Trials*<sup>6</sup>, WRAP reviewed data from 20 food scraps collection trials and found participation rates ranging between 72% and 21%. Their key findings were that participation rates tend to decrease over time, and that areas with fortnightly kerbside rubbish collections generally achieve higher food scraps collection participation rates than areas with weekly collections.

In the current study, councils A and B have fortnightly kerbside rubbish collections, while councils C and D have weekly collections. However, this is somewhat complicated by the fact that the two councils with fortnightly rubbish collections provide this service through rates-funded wheelie bin collections, while council C provides a weekly user-pays wheelie bin collection and council D provides a weekly user-pays rubbish bag collection. It is not known whether the types of collection receptacle provided (wheelie bins versus bags), or the type of funding used to pay for rubbish disposal (rates versus user-pays) have more influence on disposal behaviours than the collection frequency. Further research would be required to better evaluate the impacts of these different factors.

<sup>5</sup> New Plymouth District Council, Food Scraps Collection Participation Survey, 2021

<sup>6</sup> WRAP, Evaluation of the WRAP Separate Food Waste Collection Trials, 2009



A 2021 WRAP report entitled *Household food waste guide*<sup>7</sup> ranked participation rates in food scraps collections as follows:

- Poor participation = <35%
- Average participation = 35–55%
- Good participation = >55%

Based on this analysis, the four councils included in this study have average participation rates in their food scraps collections.

## 4.2 How do set out rates compare with other research?

Across all four council areas, on any given week, on average 28.6% of households set out their food scraps bin. However, as shown in Table 4.2, the set out rate varied between the councils. Council A had a relatively high set out rate of 37.8%, while Councils B, C and D, had similar set out rates of between 25.5% and 28.7%.

The New Plymouth research reported a set out rate of 27%.

**Table 4.2 – Set out rates**

	<b>Council A</b>	<b>Council B</b>	<b>Council C</b>	<b>Council D</b>
Set out rates	37.8%	25.6%	28.7%	25.5%

In the 2009 *Evaluation of the WRAP Separate Food Waste Collection Trials* report, WRAP found that set out rates across the 20 trial areas varied from 59.2% to 17.6%.

The average set out rate across all four councils was 12.8% lower than the participation rate. This ranged from 10.8% in Council A to 14.6% in Council B. The New Plymouth study found that the set out rate was 26% lower than the participation rate.

The 2009 WRAP evaluation report found that average set out rates were between 4% and 23% lower than average participation rates.

## 4.3 Are participation and set out rates different in higher and lower income areas?

Households in each council area were divided into higher and lower income areas. Overall, the participation rate was higher (43.2%) in higher income areas than in lower income areas (40.4%), as was the set out rate (30.9% in the higher income areas and 27.3% in the lower income areas). However the differences between participation rates and set out rates in higher and lower income areas across the four councils were split, as shown in Table 4.3. Two of the councils had higher participation and set out rates in higher income areas, while two had higher participation and set out rates in lower income areas.

<sup>7</sup> WRAP, Household food waste guide - section 3 - final key performance attributes, 2021

**Table 4.3 – Participation and set out rates for higher and lower income areas**

	Council A	Council B	Council C	Council D	Average
<b>Participation rates</b>					
Higher income areas	44.5%	35.3%	46.1%	44.7%	43.2%
Lower income areas	53.1%	43.7%	37.8%	36.9%	40.4%
<b>Set out rates</b>					
Higher income areas	34.0%	25.5%	31.9%	31.6%	30.9%
Lower income areas	42.0%	25.7%	26.8%	24.8%	27.3%

The 2021 WRAP *Household food waste guide* found a relationship between levels of deprivation and food scraps collection participation rates, but only when other factors are controlled for.

As the higher and lower income areas selected for this study were specifically not selected from the lowest and the highest deprivation areas, the differences may also be less clear.

#### 4.4 Are participation and set out rates different in urban and rural households?

This research was not designed to measure differences in use of food scraps collections in urban and rural areas. However, two of the councils (A & B) are cities, and two (C & D) are districts. While most of the data was gathered from urban areas, the urban areas in the two districts were small townships.

Based on the participation rates outlined in Table 4.1 and set out rates in Table 4.2, there does not appear to be a clear difference between urban and rural areas.

#### 4.5 Did many households have no food scraps in their kerbside rubbish?

Of the 284 households included in the waste audit, only 6% had no food scraps in their kerbside rubbish.

While households may divert food scraps from kerbside rubbish, they may still place the odd item into the kerbside rubbish bin (for example tea bags or citrus if they are unwilling to compost these items). Sixteen per cent of households in the waste audit had less than 0.5 kg of food scraps in their kerbside rubbish.

Of the households that set out less than half a kilogram of food scraps, and returned an attitudinal survey (13 households), 10 said that they compost or worm farm, three said that they feed their scraps to animals, and one said that they use an in-sink disposal unit.

## 4.6 Do households that compost have less food scraps in kerbside rubbish?

Yes, based on the findings of this research, the average household that composts or worm farms sets out less food scraps in kerbside rubbish.

Of the 75 households that completed an attitudinal survey and had their waste audited, 57% included compost or worm farm as one of their (often multiple) disposal methods for food scraps.

The average amount of food in kerbside rubbish set out by households who said they compost or worm farm was 1.57 kg and the median amount was 0.94 kg. The average amount of food set out by households that didn't list compost or worm farm as a disposal option was 2.18 kg and the median was 1.78 kg. This means that household that don't compost or worm farm are setting out, on average, 39% more food scraps than households that do. However, these analyses are based on small samples sizes and should therefore be treated with caution.

Households that said they compost or worm farm were less likely to have fresh fruit (57% of households) and fresh vegetables (50% of households) in their kerbside rubbish than households that did not compost or worm farm (81% of households that did not compost or worm farm had fresh fruit waste in their kerbside rubbish and 71% had fresh vegetable waste). Households that compost or worm farm were also more likely to have meat and fish and homemade foods in their rubbish than households that do not compost or worm farm (32% of households that compost or worm farm had homemade foods in their rubbish bin versus 16% of households that don't, and 64% of households that compost or worm farm had meat and fish in their bin versus 42% of households who don't).

This supports a finding in research undertaken for the Ministry in 2021<sup>8</sup>, that found that most households that compost (83% of these households), include fruit and vegetable waste in their compost. However they are less likely to compost meat and dairy.

As shown in section 3.2.4, households that have never used the food scraps collection are less likely to know what types of food scraps are accepted in the collection. Therefore, some households that have never used the food scraps collection because they use other disposal methods, such as home composting, may not know that items such as bones, meat and dairy (which they may be less likely to compost) are accepted through the food scraps collection.

## 4.7 How much food scraps do councils collect?

Each of the councils included in the study was asked for data on the tonnage of food scraps collected in November 2022 (while this research was being undertaken). The total number of households that receive the service was also provided.

Table 4.4 shows the average weight of food scraps collected through the food scraps collection per household, in November 2022, for each of the four councils.

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<sup>8</sup> UMR, 2021, [General public attitudes to composting and compostable packaging – survey report](#), Ministry for the Environment, p23

The first row in Table 4.4 shows the average weight of food scraps collected in November 2022, across every household to which the service was made available. These weights vary from 5.27 kg per month in Council A to 2.25 kg per month in Council D.

The next row shows the average monthly weight of food scraps collected through the food scraps collection from households that participate in the service. On average, households that participate in the food scraps collection in Council A set out 10.83 kg of food scraps in November 2022, while those that participate in Council D set out 5.96 kg.

**Table 4.4 – Average kg of food scraps collected per household in November 2022**

<b>Food collected through food scraps collection – Nov 2022</b>	<b>Council A</b>	<b>Council B</b>	<b>Council C</b>	<b>Council D</b>
Average weight per household per month (Total weight of food scraps collected divided by total number of households provided with the service)	5.27 kg	3.92 kg	3.76 kg	2.25 kg
Average weight per participating household per month (Total weight of food scraps collected divided by number of participating households (total number of households times participation rate))	10.83 kg	9.75 kg	8.95 kg	5.96 kg

This same data was also obtained from New Plymouth District Council. The average weight per household per month (in November 2022) in New Plymouth was 3.74 kg, and the average weight per participating household per month (based on the participation rate of 53% from their research) was 7.06 kg.

There are a range of factors that potentially influence the amount of food scraps collected from each council area. These include:

- Rural / urban households
- Household demographics
- The age of the housing stock (and likelihood in-sink disposal units are available)
- The proportion of households that compost/worm farm/feed animals
- The size of kerbside rubbish receptacles
- The frequency of kerbside rubbish collections
- The proportion of holiday homes in a specific area.

All of these factors affect the four selected councils in different ways.

## 4.8 Does the kerbside rubbish collection service impact on the amount of food scraps in rubbish?

There are notable differences between the kerbside rubbish collections systems of the councils participating in this study. The impacts of these differences on participation and set out rates for food scraps is unknown. As set out in Table 1.1, two councils provide fortnightly, rates-funded kerbside

wheelie bin rubbish collections, one council provides a weekly user-pays wheelie bin rubbish collection, and one provides a weekly user-pays rubbish bag collection.

Unfortunately, the impact of these collection systems is not able to be ascertained in a research project of this size. While there are differences in the amount of kerbside rubbish and food scraps set out by households with the different kerbside rubbish collection systems, there is not sufficient data to determine the reasons for these differences.

Based on the waste audits undertaken as part of this research, the two councils with rates-funded fortnightly kerbside rubbish bin collections set out similar quantities of kerbside rubbish per household set out (10.38 kg for Council A and 9.92 kg for Council B). The quantity of food scraps in their kerbside rubbish per household set out was not dissimilar, with 2.28 kg in Council A and 2.96 kg in Council B.

The amount of food scraps set out by households in Council C, with a weekly user-pays kerbside rubbish collection, were considerably higher, at 4.43 kg.

In the first instance this appears unexpected, as the weekly collection contains more food scraps than the fortnightly collections. During the participation survey data was gathered on kerbside rubbish bin set out rates. Data was gathered on two weeks of kerbside rubbish bin set outs in Council B and one week in Council A (due to when fortnightly kerbside rubbish collections occurred during a three-week participation survey). While the kerbside rubbish set out rates are based on limited data, they are similar – on average 83.6% of households set out a kerbside rubbish bin in Council A each fortnight and 80.3% in Council B.

Three weeks of data was collected for Council C, as their kerbside rubbish collection is weekly. Their average weekly set out rate for kerbside rubbish was 40.6% (on average 40.6% of households set out a kerbside rubbish bin in Council A each week).

Therefore, on the fortnightly kerbside rubbish collection day in Councils A and B, about 80% of households set out a kerbside rubbish bin, while every week in Council C, about 40% of households set out their kerbside rubbish bin.

Unfortunately, the kerbside rubbish set out rate data is not reliable for Council D, as the kerbside bags had been collected in certain areas by the time of the participation data was being collected. Unlike with wheelie bins, which generally stay at the kerbside for a period after they have been emptied, there is no way to determine which households had set out rubbish bags once these had been collected.

Prior research has shown that it is very difficult to demonstrate differences between rates-funded and user-pays kerbside rubbish collection systems, but that the size of the rubbish receptacle impacts on the amount of rubbish disposed of.<sup>9</sup>

What is apparent in this research, and has also been demonstrated in previous research<sup>10</sup>, is that households with rubbish bag collections set out less green waste than households with wheelie bin collections. Council D, with rubbish bag collections, had 0.0% green waste in their kerbside rubbish

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<sup>9</sup> Based on research undertaken for local authorities by Waste Not Consulting and Sunshine Yates Consulting.

<sup>10</sup> Numerous Solid Waste Analysis Protocol audits of domestic kerbside rubbish undertaken by Waste Not Consulting and Sunshine Yates Consulting.

collection while in the other council areas, with wheelie bin collections, between 3.7% and 9.0% of their kerbside rubbish was green waste.

## 4.9 Do households have a clear idea of how much food they waste?

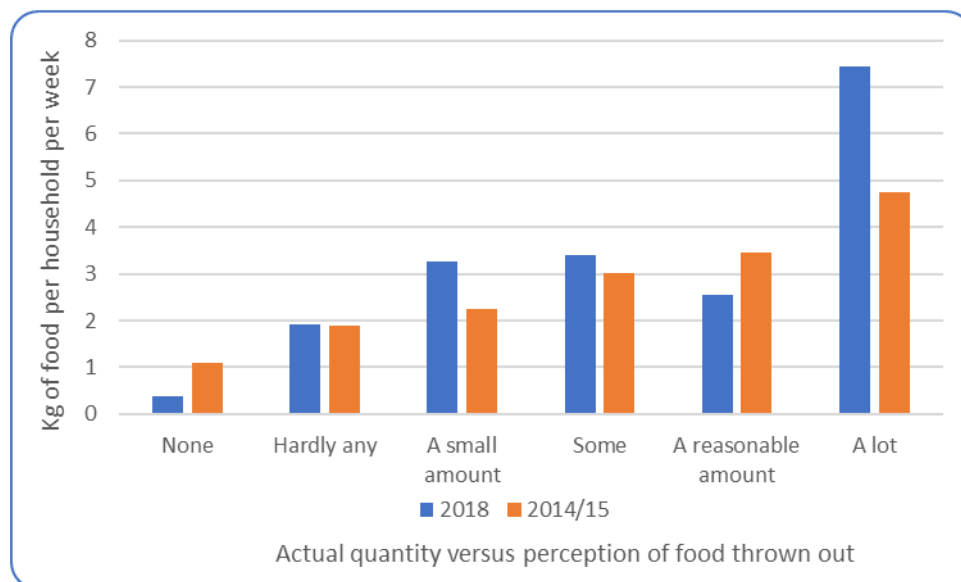
Seventy per cent of households that completed the attitudinal survey said that they throw out no food scraps or a small amount of food scraps.

The audit of kerbside rubbish found that almost a third (29%) of households had less than 1 kg of food scraps in their kerbside rubbish. A third (34%) had between 1 and 3 kg of food scraps, and 39% had more than 3 kg of food scraps in their kerbside rubbish.

The focus groups also found that participants don't think that they throw out much food scraps.

While households with smaller quantities of food scraps are likely diverting some to compost or an in-sink disposal unit (or some other method), there are a large proportion of households (39%) that are disposing of more than 3 kg of food scraps to kerbside rubbish, per set out.

Previous research undertaken by WasteMINZ for the Love Food Hate Waste programme, also included an attitudinal survey and waste audits. This research was undertaken in 2014-2015 and again in 2018. The surveys asked households to rate how much food they believe they throw away. In 2018, almost two-thirds of respondents (65%) stated that they dispose of 'hardly any' to 'a small amount' of food waste, and in 2014-2015, 66% of respondents stated that they dispose of 'hardly any' to 'a small amount' of food waste. Figure 4.1 shows the actual amount of food scraps disposed of by households in the LFHW research, and their perception of the amount they dispose of.



**Figure 4.1 - Actual quantity versus perception of food disposal in LFHW research (2014/15 & 2018)**

This research shows that households that think that they throw out 'none' to 'hardly any' food scraps throw out on average less than 2 kg per household set out, while households that think that they throw out 'a small amount' to 'a lot' throw out more than 2 kg per household set out. These are similar

results to those found in this current research, though the scale is different in this research, as it omits the 'hardly any' category. In this research the households that think that they throw out 'none' or 'a small amount' of food scraps throw out on average less than 2 kg per set out.

## 4.10 Limitations of current research

### 4.10.1 How should councils compare performance?

Comparing the effectiveness of a food scraps collection is less straight forward than for some other materials collected at kerbside. Most councils judge the performance of their kerbside recycling collection by recording how much waste is recycled and how much remains in the kerbside bin (determined through a Solid Waste Analysis Protocol (SWAP) audit). However, food scraps can be disposed of through a range of means, including home composting or worm farming, in-sink disposal units, burying in the garden, or feeding to animals. In fact, some councils have encouraged households to home compost for many years.

Variables that are likely to influence waste disposal trends, including food scraps disposal, include:

- Rural / urban household
- Household demographics
- The age of the housing stock (and likelihood in-sink disposal units are available)
- The size of kerbside rubbish receptacles
- The frequency of kerbside rubbish collections
- Whether kerbside rubbish collections are user-pays or rates-funded
- The proportion of households that compost/worm farm/feed animals
- The proportion of holiday homes in a specific area
- The amount of food waste generated per household

Therefore, one cannot directly compare the results, per council, of the participation survey or of the waste audit undertaken as part of this research, as the above variables also influence participation and food scraps disposal.

A more effective method may be to measure food scraps to landfill, as kg of food scraps in kerbside rubbish per capita per annum. This would provide a measure of whether food scraps to landfill are increasing or decreasing over time. This can be measured through SWAP audits, often undertaken by councils. This would not measure the effectiveness of food scraps collections per se but would measure the effectiveness of all food scraps diversion and reduction initiatives combined.

As more councils implement food scraps collections, it may be possible to draw some comparisons between councils with identical rubbish collection receptacles, the same frequency of rubbish collections, and the same charging mechanisms.

### 4.10.2 Is three weeks long enough for a participation survey?

The participation survey in New Plymouth was undertaken over four weeks, and had a participation rate of 53%, while this study undertook the participation survey over three weeks and had a participation rate of 41.5%.

In order to see whether the length of the participation survey impacts the participation rate, the number of additional households that set out a food scraps bin in week two and week three of the participation survey are provided in Table 4.5.

**Table 4.5 – Effect of participation survey length on participation rate**

	<b>Number of households that set out a food scraps bin</b>	<b>Proportion of participating households added to survey each week</b>
<b>Food scraps bins set out in week 1</b>	755	75%
<b>Additional food scraps bins set out in week 2</b>	156	16%
<b>Additional food scraps bins set out in week 3</b>	93	9%
<b>Total number of participating households over 3 weeks</b>	<b>1,004</b>	<b>100%</b>

In week 1, the participation rate was 31.2%, in week 2 it rose to 37.6%, and in week 3 it rose to 41.5%. One could expect a small number of additional households to set out a food scraps bin if a fourth week of surveying was undertaken. However, if the increase in new bins set outs in week 4 follows a similar decreasing trend as in week 2 and 3, a fourth week of surveying is likely to add about two percentage points to the participation rate.

The difference between the participation rate after three weeks of surveying and four weeks of surveying may not be worth the additional resource required to undertake an additional week of surveying.

#### 4.10.3 Are there other factors that impact participation surveys?

Other factors that can have an impact on participation surveys and should be considered in future surveys include:

1. The areas included in the survey – are they representative of the council’s population?
2. The timing of the participation survey and of the food scraps collection. As it takes a couple of hours for the surveyor to survey all of the households in their survey area, and as the survey should, ideally, be undertaken before the collection truck empties the bins, there are likely to be a small percentage of households that have not yet set out their food scraps bin when the surveyor visits their address, and a small number of households whose bins have been emptied and the bin collected from the kerbside by the time the surveyor arrives. It is very difficult to avoid these two scenarios, as the window of opportunity between when households set out their bins and when they are emptied is tight and varies from household to household and from street to street. Ideally a participation survey would involve a surveyor accompanying a collection vehicle and recording the addresses of the households from which materials are collected. In the future, AI could be investigated to make it easier to monitor participation rates.



Ideally, several distinct geographic areas, together representing the range of demographics in the council area, would be selected for surveying, and a separate surveyor would survey each area to ensure that the surveying is undertaken as soon before the food scraps bin collection as possible.

As each extra surveyor adds cost to the project, the number of areas selected for the participation survey has to be weighed up against the additional project costs.

#### 4.10.4 Could the sample of households that completed the attitudinal survey and had their waste audited have been larger?

One of the key limitations of the current research is the sample size of households that completed the attitudinal survey and then had their kerbside rubbish audited. Unfortunately, this sample only included 75 households, despite the best efforts of the project team.

There is no obvious solution to this problem. The project team began the project with a sample of over 2,400 households for the participation survey, however by the time these numbers were reduced to households that hadn't set out food scraps bins in week 2 (about 1,500), and then to households that completed an attitudinal survey (328), and then households whose kerbside rubbish was collected for the audit (284) and who had also returned an attitudinal survey, numbers were down to 75.

This means that the results of the analysis of what people say they do (in the attitudinal survey) and what they throw out (from the waste audit results) are not as robust as desired.

Attitudinal surveys pertaining to food scraps disposal were previously undertaken by SYCL as part of LFHW research. The LFHW research undertaken in 2014/15 had a survey return rate of 50%, and in 2018 the return rate was 29%. This attitudinal survey had a return rate of about 22%. The main difference in methodology is that the LFHW survey was delivered when the kerbside rubbish was collected for the waste audit, so every survey that was returned could be matched with a household that had been audited. In this research, the survey was distributed first, and the project team then attempted to collect samples of kerbside rubbish from the households that had returned a survey. However, not all of these households set out kerbside rubbish on the week the audit was undertaken.

To attempt to increase the number of households that returned a survey and were audited, a survey was placed into the letterbox of every household from which a sample of rubbish was collected, that had not already completed a survey. Unfortunately, this did not result in many further survey responses.

As the waste audit sample collection starts at 7am, to ensure it can collect from the selected collection streets before the rubbish collection vehicles, some targeted households (households that had completed an attitudinal survey) may have been missed as they had not yet set out their rubbish bins/bags. Asking the waste audit collection team to travel through the collection area a second time, immediately after the first collection, could possibly add a few additional households. This is only possible if the collection areas are in geographic proximity.

## 5. CONCLUSIONS AND RECOMMENDATIONS

Key learnings from this research are listed in this section, along with key recommendations. Recommendations are focused on reducing food scraps from landfill, whether that be through increased use of food scraps collections or another method.

### 5.1 Most households think they are already diverting food scraps

Most households that do not use the food scraps collection think that they are diverting the majority of their food scraps from landfill already, either to composting or worm farming (57%), feeding them to animals (26%), or disposing of them through their in-sink disposal unit (26%). Only 20% of households listed the rubbish bin as being one of their disposal methods for food scraps.

The focus groups backed this finding, with most participants saying that they used another method to dispose of food scraps and that they didn't think they disposed of food scraps to the rubbish bin:

- 'Those who are home composting consider they are already doing the right thing and feel penalised for having to pay for a food scraps collection service they do not use or need'.
- 'Those who use in-sink disposal units regard them as an essential kitchen appliance. The immediacy of a clean and tidy kitchen both during food preparation and clear up was the key attraction. There is no thought of what happens to the food waste with most thinking it went into waste water or sewage treatment'.

Households that have never used the food scraps collection are less likely to know what types of food scraps are accepted in the collection. Therefore, some households that compost or worm farm and have never used the food scraps collection, may not know that items such as bones, meat and dairy (which they may be less likely to compost) are accepted through the food scraps collection.

**Finding:**

Most households that do not use the food scraps collection believe they are already disposing of their food scraps in an appropriate manner. However, most of them are still disposing of considerable amounts to the rubbish bin.

**Recommendation:**

Encourage households that already compost or worm farm to divert more of their food scraps to this disposal method.

**Finding:**

Households that compost and have never used the food scraps collection may not realise that meat, bones and dairy (which they may not want to compost) are accepted in the food scraps collection.

**Recommendation:**

Remind households that already compost or worm farm that they can divert food scraps they don't want to compost or worm farm to the food scraps collection.

**Finding:**

Households that use in-sink disposal units give no thought to where the food scraps end up.

**Recommendation:**

Education around the treatment process of food scraps disposed of through an in-sink disposal unit and the impacts of this disposal method could be made available.

## 5.2 Households think they throw out small amounts of food scraps

Seventy per cent of households that completed the attitudinal survey said that they throw out no food scraps or a small amount of food scraps. The focus groups also found that participants don't think that they throw out much food scraps.

The audit of kerbside rubbish found that almost a third (29%) of households had less than 1 kg of food scraps in their kerbside rubbish. However, a third (34%) had between 1 and 3 kg of food scraps, and 39% had more than 3 kg of food scraps in their kerbside rubbish.

While households with smaller quantities of food scraps are likely diverting some to compost or an in-sink disposal unit (or some other method), there are a large proportion of households (39%) that are disposing of more than 3 kg of food scraps to kerbside rubbish, per set out.

**Finding:**

While most households believe they dispose of only small amounts of food scraps, almost 40% are throwing out more than 3 kg of food scraps to kerbside rubbish, per set out.

**Recommendation:**

Provide education on food scraps quantities being landfilled and their impact in landfills.

Encourage those who are home composting to compost as much as possible or to continue composting and use the food scraps collection for food scraps they don't want to compost.

## 5.3 Issues with food scraps collection system

There were a range of issues with the food scraps collection systems that were highlighted by participants in the focus groups and backed up by the attitudinal survey feedback.

These included:

- The food scraps bins smell and are dirty.
- The food scraps bins are poorly designed - they fall over in the wind and the lids open too easily.
- The bins are not large enough for some families.
- The collection crew do not take care when placing the bins back on the kerb.

- The bins are dirty after they have been emptied and often still contain food scraps.
- Several rural and urban households said that they have long driveways and that taking another bin to the kerbside was too hard.

**Finding:**

There are potentially design issues with the food scraps bins that put people off using them (shape, size, lid).

The collection system can be off-putting, with bins remaining dirty, issues getting bins to the kerb and how the bins are returned to the kerb post emptying.

**Recommendation:**

Research could be undertaken into alternative designs for food scraps bins.

Cleaning bins at kerbside post emptying would alleviate some households' issues with the smell and dirtiness factor.

Have an effective system for reporting missed collections or unsatisfactory collections.

Research could be undertaken into the amount of food scraps collected in FOGO food and garden waste bins. As the size of FOGO bins and the nature of materials collected addresses many of the issues raised e.g. the smell, the wind, the size.

## 5.4 Other reasons given for not participating

The focus groups and the attitudinal surveys showed that there are other barriers to households' use of the food scraps collection. These include:

- People got out of the habit of using the service after collections were paused due to Covid restrictions (all four councils paused their food scraps collections at least once)
- Confusion as to whether food scraps collections were restarted after they were paused due to Covid restrictions
- Confusion as to whether collections are weekly or fortnightly

**Finding:**

Basic information on collections has been missing for some people

**Recommendation:**

A new set of communication materials may be required to overcome the legacy of Covid collection disruptions.

Increase messaging that food scraps collections are weekly not fortnightly.

## 5.5 Different communications needed for different households

The survey divided households that don't use the food scraps collection into three categories – those that use the collection sometime, those that used to use it, but don't anymore, and those that have never used it. The responses as to why each of these groups don't use (or don't always use) the food scraps collection vary (see Section 3.2.3).

**Finding:**

Households that don't always use the food scraps collection tend to compost or use an in-sink disposal unit, and don't always have any food scraps.

Households that don't use the food scraps collection anymore say that it smells and attracts flies.

Households that have never used the food scraps collection tend to be composting or feeding their scraps to animals.

**Recommendation:**

Efforts to increase food scraps collection participation will require different strategies for different households. It may not be effective to attempt to get households that already compost or feed scraps to animals to switch to using the food scraps collection. Instead, these households could be encouraged to compost/feed animals more food scraps or use the food scraps collection for excess or unwanted food scraps.

Getting households who no longer use the collection to use it again will require a different approach. This may require improving the collection systems or providing them with strategies to decrease the smell and flies.

Further education on the quantity of food scraps being landfilled and their impact in landfills will likely have an impact on all three groups.

Only one person per household completed the attitudinal survey, and while they may have a certain method of disposing of food scraps, it is possible that other members of the family use different methods. In the focus groups some admitted that their children would prompt them to put the right thing in the right bin as they had learnt about recycling in school. Others felt that their children were the ones putting food scraps into the rubbish.

**Finding:**

Different members of a household may dispose of food scraps in different ways.

**Recommendation:**

Ensuring communications to school children during food scraps rollouts would encourage younger generations to use food scraps bins and could encourage their families to do so too.

A key theme to come out of the focus groups was that many people didn't understand why it was important to divert food scraps from landfill, and they didn't know what the food scraps were being used for after they were collected.

Different messaging was trialled in the focus groups, and the messages that resonated more strongly were the ones that focussed on 'addressing climate change for future generations' and providing 'compost to be used by their local council parks and reserves'.

**Finding:**

There is a lack of understanding as to why food scraps should be diverted from landfill and what happens to them post collection.

Messaging that most resonated for focus groups members was about looking after future generations and their local community.

**Recommendation:**

Ensure messaging ties the food scraps collection back to the local community – how diverting food scraps helps future generations, and how compost from the food scraps (if they are being composted) can be used in local communities or by local farmers.

Ensuring a proportion of the compost (if the food scraps are composted) is provided back to the local community could assist households to understand the closed loop nature of food scraps collections, and the benefits to their communities.

## APPENDIX 1 – SAMPLE PAPER ATTITUDINAL SURVEY

COUNCIL LETTERHEAD

31 October 2022

### THE XYZ COUNCIL FOOD SCRAP SURVEY

**Complete and return this survey by 21 November 2022 and go in to win one of four (4) \$100 Grocery Vouchers.**

Dear resident,

XYZ Council is undertaking research into the new food scrap collection service. This is part of a larger national research project on food scrap collections.

The research aims to better understand why people do and don't use the collection.

By answering a 5-minute survey on the back of this letter you can help us to understand a little more about how your household deals with food waste. Once you fill out the survey, please post it back to us in the free post envelope provided, or send it to:

Council address  
Council address  
Council address

You can also answer the survey online by using the URL or scanning the QR code provided.

**All completed surveys returned by Monday 21 November 2022 will go into the draw to win one of four (4) \$100 grocery vouchers!**

We will also be undertaking further research with a selection of households, including focus groups and waste audits to help us improve the service. If you do not want your household to be involved in any further research, please opt out by emailing [a council email address] with 'Research opt out' in the subject line.

Good luck and thank you for taking the time to complete and return the survey.

Regards,

If you have any questions regarding this survey, please call the XYZ Council and ask to speak with one of the solid waste team



COUNCIL LETTERHEAD

## FOOD SCRAPS SURVEY

*Please note: all information you provide in this survey will be kept confidential and no individual household information will be reported anywhere, at any time, ever.*

1. Does your household currently use the food scrap collection? Circle one:

- a. Yes, I use it every week
- b. Yes, I use it sometimes
- c. No, I did use it, but I don't use it anymore
- d. No, I have never used it

2. If your household doesn't use your food scrap bin (sometimes, not anymore or never), why is that? \_\_\_\_\_  
 \_\_\_\_\_

3. Which of the following foods do you think ARE allowed in the food scrap collection? Circle all that apply:

- a. Fresh fruits and vegetables
- b. Meat and fish
- c. Cooked foods and take aways
- d. Dairy
- e. Bones and shell fish

4. How much food waste does your household throw out each week?

0	1	2	3	4	5
None	Hardly any	A small amount	Some	A reasonable amount	A lot

5. What are the main ways your household disposes of their food waste. Circle all that apply:

- a. Place in food scrap bin
- b. Place in rubbish bin
- c. Compost or worm farm
- d. Feed to animals
- e. Dispose of through an in-sink waste disposal unit
- f. Other:

6. How many occupants are there in total (including yourself) living in your household? \_\_\_\_\_

7. Which of the following age bands does each member of your household fall? (write in number of occupants within each age band)

0-20 years \_\_\_\_\_ 21-40 years \_\_\_\_\_ 41-65 years \_\_\_\_\_ 65 years + \_\_\_\_\_

8. Which ethnic/cultural groups does your household most identify with? (please circle)

European                      Māori                      Pacific Peoples                      Asian  
 Middle Eastern/Latin American/African                      Other Ethnicity (please specify) \_\_\_\_\_

9. What are your residential contact details? (so we can contact you if you win a supermarket voucher)

House number: \_\_\_\_\_ Street name: \_\_\_\_\_

E-mail: \_\_\_\_\_ Mobile: \_\_\_\_\_



## APPENDIX 2 – PARTICIPATION SURVEY RESULTS FOR EACH COUNCIL

Results from participation survey	Council A	Council B	Council C	Council D
Participation rate in food scraps collection	48.6%	40.2%	42.0%	37.7%
Set out rate in food scraps collection	37.8%	25.6%	28.7%	25.5%
Average food weight in kerbside rubbish per household set out	2.28 kg	2.96 kg	4.34 kg	2.27 kg
Average % of kerbside rubbish that is food scraps	22.0%	29.8%	30.6%	34.2%
Average green waste weight in kerbside rubbish per household set out	0.37 kg	0.81 kg	1.27 kg	0.00 kg
Average % of kerbside rubbish that is green waste	3.6%	8.2%	9.0%	0.0%
Average total kerbside rubbish weight per household set out	10.38 kg	9.92 kg	14.20 kg	6.65 kg

## APPENDIX 3 – ATTITUDINAL SURVEY DEMOGRAPHICS

<b>Number of residents per household</b>	<b>Council A</b>	<b>Council B</b>	<b>Council C</b>	<b>Council D</b>
1 resident	13%	17%	20%	19%
2 residents	54%	48%	53%	47%
3 residents	9%	13%	11%	14%
4 residents	20%	17%	11%	8%
5 residents	2%	1%	4%	8%
6 residents	0%	1%	2%	1%
7 residents	0%	1%	0%	1%
8 residents	2%	17%	0%	2%

<b>Ethnic/cultural groups of residents</b>	<b>Council A</b>	<b>Council B</b>	<b>Council C</b>	<b>Council D</b>
European	72%	95%	94%	78%
Māori	17%	10%	5%	33%
Pacific Peoples	0%	1%	0%	4%
Asian	13%	3%	2%	3%
Middle Eastern/ Latin American/ African	0%	0%	0%	0%
Other ethnicity	11%	1%	4%	4%

## APPENDIX 4 – ATTITUDINAL SURVEY RESULTS FOR EACH COUNCIL

Use of food scraps collection - # of respondents	Council A	Council B	Council C	Council D
I use it every week	0	22	25	17
I use it sometimes	9	11	25	9
I don't use it anymore	10	22	18	8
I have never used it	28	23	45	56

Reasons why households do not use food scraps collection - % of respondents	Council A	Council B	Council C	Council D
It's dirty / smells bad	57%	70%	33%	36%
It gets too hot in summer and attracts flies	48%	65%	43%	36%
I don't always have any food waste	22%	40%	52%	43%
I'm too busy	9%	5%	19%	14%
I don't understand what can go in the food scraps bin	0%	0%	0%	7%
I don't think it makes a difference	13%	15%	5%	0%
I've lost the food scraps bin	4%	0%	0%	14%

Foods households think are allowed in food scraps collection - % of respondents	Council A	Council B	Council C	Council D
Fresh fruits and vegetables	90%	96%	94%	99%
Meat and fish	71%	85%	72%	68%
Cooked foods and take aways	83%	84%	79%	80%
Dairy	66%	73%	59%	68%
Bones and shell fish	59%	66%	58%	54%

<b>Amount of food scraps households think they throw away - % of respondents</b>	<b>Council A</b>	<b>Council B</b>	<b>Council C</b>	<b>Council D</b>
None	17%	11%	14%	22%
A small amount	76%	47%	58%	40%
Some	0%	27%	21%	26%
A reasonable amount	4%	9%	7%	11%
A lot	2%	4%	1%	0%

<b>How households dispose of their food scraps - % of respondents</b>	<b>Council A</b>	<b>Council B</b>	<b>Council C</b>	<b>Council D</b>
Place in food scraps bin	9%	36%	35%	23%
Place in rubbish bin	28%	24%	21%	10%
Compost or worm farm	53%	50%	63%	54%
Feed to animals	17%	11%	19%	54%
Dispose of through an in-sink disposal unit	47%	24%	30%	9%

## APPENDIX 5 – REASONS HOUSEHOLDS DON'T USE FOOD SCRAPS COLLECTION – COMBINED

<b>I only use the food scraps collection sometimes, because:</b>	
Compost	<ul style="list-style-type: none"> <li>• Have a compost.</li> <li>• Composting.</li> <li>• I am almost vegetarian. No bones or meat scraps. Vege scraps go in my compost bins.</li> <li>• The majority of food waste I compost myself.</li> <li>• Bury in garden.</li> <li>• Only buy food that I can eat while fresh, or in a reasonable time. All veg &amp; fruit skins go into compost. Some down waste disposal unit. Food scrap bin used for bones, fat &amp; skins.</li> <li>• 1 person household and what I generate I can either compost or burn.</li> <li>• I compost what I can for my garden. Stiff I can't compost goes in your bin.</li> <li>• Most is put in our compost bin except for citrus skins.</li> </ul>
Smells, flies etc	<ul style="list-style-type: none"> <li>• In summertime there are lots of maggots.</li> <li>• Too many flies around food scrap bin, maggots :(</li> <li>• I have a waste disposal unit. Also I don't like a week's worth of scraps to end up with maggots.</li> </ul>
In-sink disposal unit	<ul style="list-style-type: none"> <li>• Use the insinkerator. About to start using compost bin.</li> <li>• I have a waste disposal unit.</li> </ul>
Not enough food	<ul style="list-style-type: none"> <li>• I don't always have any food waste x 2</li> <li>• We don't have hardly and food scraps.</li> <li>• Because I'm the only one.</li> <li>• Don't have enough scraps to fill it, weekly. We appreciate the service but also appreciate it must be difficult to manage and the smell in summer?!!</li> </ul>
Other	<ul style="list-style-type: none"> <li>• I wake up late.</li> <li>• We do use it, we just forget sometimes (we have ADHD)</li> <li>• Affordability? Costings? Recycle bags once a month will fill the bin. Timing? Pending menu? 1-2? Guest?</li> </ul>

<b>I don't use the food scraps collection anymore, because:</b>	
Compost	<ul style="list-style-type: none"> <li>• We have a worm farm &amp; compost.</li> <li>• Composting x 3</li> <li>• compost all my organic waste, not a big meat eater, minimal waste live by myself</li> <li>• Started to compost food scraps for garden.</li> <li>• "We only eat vegetables at home and the scraps go into our worm farm.</li> <li>• We started throwing citrus peels into our garden waste bin instead of food scrap bin since the bin stinks."</li> <li>• I now have a worm farm and a compost pile that we add our food scraps to.</li> <li>• Because I now have a good compost bin &amp; investing in a worm farm.</li> <li>• We compost/have a 'worm farm'/have a dog/feed to the birds.</li> </ul>
Feed animals	<ul style="list-style-type: none"> <li>• Scraps go to the chickens.</li> <li>• We have a dog and a garbage disposal unit.</li> </ul>
Smells, flies etc	<ul style="list-style-type: none"> <li>• Because they don't empty properly, and they stink. Truck should have a rinsing hose when emptying them - using recycled water hose on truck.</li> </ul>

	<ul style="list-style-type: none"> <li>• It gets dirty/smelly. Easier to place food scraps in greenwaste bin. Hassle of having one more bin.</li> <li>• I stopped last summer because of all the decomposition. And it was too annoying to start again. Now, I just pay \$5.00 every two weeks to discard a large rubbish bag at the dump.</li> <li>• It needed a lot of cleaning. It attracted flies and maggots in summer.</li> <li>• Don't want rotten food around</li> <li>• Can't keep it inside, too smelly, attracts ants and rodents if we keep it outside</li> <li>• Because there were too many things that I could not put in it, and it smelt so awful and the suggestion from the council that I freeze the food scraps first was useless as I do not have that level of freezer space.</li> <li>• I am not at all keen on the smell from the rotting food scraps when the lid is opened. In the summer it must be disgusting! Also not keen on cleaning it out every week. Not interested in storing waste in the freezer either as has been suggested.</li> <li>• Bin became very smelly &amp; messy, even after lining it with newspaper, and had to be washed every week which wasted water. Now composting instead.</li> <li>• Made the bin too stink and not collection wasn't enough</li> <li>• Maggots</li> <li>• Hardly had anything to put in it &amp; was disgusting</li> <li>• It's a hassle and it smells.</li> <li>• Used only once. Came back with disgusting material on the outside of bin. YUK. A real health hazard. NO more.</li> <li>• Smell, unpleasant container to clean , unhygienic , attraction of vermin and dogs</li> <li>• Scraps start to smell and attract fruit flies, and maggots.</li> <li>• Because in the heat, by the end of the week, the scraps are just alive with maggots. Everything rots in it and it stinks, and has to be scrubbed out every week.</li> <li>• If you like have maggots in them, which I don't then I will never use it in the summer.</li> <li>• Too much hassle to clean it and also ended up with magots during summer.</li> <li>• Stinks, lined it with newspaper but that usually got left behind when emptied and couldn't be bothered cleaning it out every week as it took time and was always yuck</li> <li>• In the summer they just got disgusting sitting for a week. Smelled and attracted bugs even with a closed lid.</li> <li>• Because they are filthy and stinky and attract bugs and other pests.</li> <li>• Because the smell for a week.</li> <li>• Sometimes it doesn't get emptied properly. Have to wash it out every time and it attracts flies &amp; midges every time it's opened. Very impractical &amp; unhygienic.</li> <li>• Smelly</li> <li>• Did not have hardly any scraps.</li> <li>• Only ever had egg shells &amp; bones. When they didn't get picked up every week (covid) the smell was not pleasant. Unreliable collection service.</li> <li>• Can't store food scraps in kitchen, so waste usual bin liner in supplied kitchen bin. Need bin close by when preparing food. Easier &amp; cleaner (smell) to tie up all food waste in kitchen bin (which is lined and tie bag) &amp; put in rubbish bin.</li> </ul>
In-sink disposal unit	<ul style="list-style-type: none"> <li>• We have a waste disposal. However! Every time we put it out it wasn't collected. You try and hold food scraps for 3 weeks!!! We have rats next door and the front house is a dog kennel.</li> <li>• We use the insinkerator.</li> <li>• I use my waste master instead</li> </ul>
Not enough food	<ul style="list-style-type: none"> <li>• It's just too much bother. My food scraps are minimal and go out with the normal rubbish or put it in a bread bag &amp; put it in street rubbish container.</li> </ul>

	<ul style="list-style-type: none"> <li>• Live alone and have little.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Wasn't being picked up with lockdown so got out of the habit</li> <li>• I would put my food bin out weekly, my local street driver (para kai driver) would empty it and every week food would be left in my bin. It would be thrown on the ground, I would pick it up later and still with food in it.( I got discouraged). Now I compost in my garden!</li> <li>• Busy, too many bins to take up long driveway, two storey house. Have a waste disposal unit that is more convenient. A home composting system would make more sense.</li> <li>• Got too hard as had to have separate bin in kitchen and then transfer to other bin each day which in a two story house was a long way away</li> <li>• The service was stopped during covid, and I have never bothered re-starting it.</li> <li>• Just got out of the habit when collections stopped for a period</li> <li>• Got out if the habit but trying again!!!</li> <li>• We have found it easier putting in one bin. Should really get back into it.</li> <li>• I heard the green waste and the food scraps go to the same destination so I put the food scraps in the green bin now.</li> <li>• The bin we bought from council was too big (green bin) so we just put food waste on the compost.</li> <li>• Ran out of bags</li> <li>• Was advised not to.</li> </ul>

<b>I have never used the food scraps collection, because:</b>	
Compost	<ul style="list-style-type: none"> <li>• We have our own compost bin</li> <li>• "Too small...we produce twice as much organic waste. It smells and attracts insects especially in the summer.</li> <li>• We have a garden where organic waste is buried deep. This is what we have done for ever."</li> <li>• There is only my wife &amp; I and we only have very little food waste. We compost vegetable/fruit waste. We have about on ice-cream container of meat scraps every month. We freeze this and put it in the red bin. This saves cleaning the food bin.</li> <li>• Use it in my compost</li> <li>• Compost it instead</li> <li>• We make compost with the food waste</li> <li>• Got own compost.</li> <li>• Compost bin.</li> <li>• I have no reason to waste good compost and worm food on a smelly bin that attracts flies, ants and vermin.</li> <li>• Because we compost the bulk of our food waste.</li> <li>• We use the food scraps for our garden.</li> <li>• Have own compost. Don't like food scraps sitting around in provided bin.</li> <li>• I have compost bins</li> <li>• Most of our scraps are composted. We bury fat, most scraps and bones in the vegetable garden.</li> <li>• Because I have my own compost bins and make my own compost.</li> <li>• We make compost with the food waste</li> <li>• Have compost bin.</li> <li>• We compost &amp; have worm farm.</li> <li>• Compost on section.</li> <li>• We have a compost bin.</li> </ul>

	<ul style="list-style-type: none"> <li>• Because we use the food scraps for compost</li> <li>• Vegetarian household with compost bin &amp; worm farm.</li> <li>• Compost.</li> <li>• We have a compost bin.</li> <li>• We compost most food scraps and have very little non compostable food scraps. Not enough to justify the bin use</li> <li>• We create our own soil by composting.</li> <li>• Compost it.</li> <li>• We compost all we can.</li> <li>• Use compost bins/ducks/cows</li> <li>• Own compost bin.</li> <li>• We have got our own compost bin.</li> <li>• I have my own compost bin at home where the scraps go</li> <li>• I have a worm farm &amp; compost bin.</li> <li>• Use a compost bin. Eat left-overs. Last nights tea for lunch.</li> <li>• Compost bin. Plus worm farm.</li> <li>• I have my own scrap bucket.</li> <li>• Compost bin.</li> <li>• We dispose of our food scraps in our garden</li> <li>• I use the bin to collect scraps in the kitchen and then put the waste in compost outside, since it's mostly coffee grounds.</li> <li>• Most people with gardens like us have compost bins, burn bones to make potash for gardens, have animals that eat most scraps.</li> <li>• I compost everything.</li> <li>• As we put in our compost for our garden.</li> <li>• I have a compost bin in my garden.</li> <li>• We have our own compost</li> <li>• I compost.</li> <li>• Own compost back garden.</li> <li>• Compost bin.</li> <li>• I have a compost bin and Chickens</li> <li>• We compost and have chickens.</li> <li>• Because we have a compost bin.</li> <li>• Because we have a worm farm, chickens and a compost bin.</li> <li>• Have a compost bin.</li> <li>• We recycle our own - compost</li> <li>• We compost it. All our food scraps are composted, given away as dog tucker. If not composted or recycled it goes into a rubbish bag (4 bags a year)</li> <li>• Home composting</li> <li>• We have a worm farm.</li> <li>• We have a pig scrap bucket and compost bin.</li> <li>• Everything is composted on the property.</li> <li>• Compost &amp; waste disposal unit.</li> <li>• I live alone and compost food scraps as it is a small amount.</li> <li>• We recycle the food ourselves</li> <li>• We have a worm farm and a compost bin and we take other scraps once sorted to a person who raises pigs.</li> <li>• I have my own compost bin</li> <li>• Our own compost bin.</li> <li>• We compost/bury it.</li> </ul>
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	<ul style="list-style-type: none"> <li>• I compost.</li> <li>• Use compost bin.</li> <li>• I have a compost and a insinkerator.</li> <li>• We have our own compost bins, have done for 25 Plus years.</li> <li>• We have our own worm bin.</li> <li>• Because I like to make compost for my garden.</li> <li>• Compost. And I object to paying for a service I don't need.</li> <li>• Compost and in-sink waste disposal.</li> <li>• Have a compost bin &amp; worm farm</li> <li>• We compost 95% of food scraps.</li> <li>• All food waste is composted for our home garden</li> <li>• Compost garden</li> <li>• We have our own compost and bokashi bin. But it's great to have as a backup in case</li> <li>• I have my own compost bins.</li> <li>• My food scraps go into my worm compost.</li> <li>• I assiduously use a compost bin on my property and use the resultant compost on the garden.</li> <li>• Have a compost bin.</li> <li>• Vegetarian plus have a worm bin</li> <li>• Because we have a dog that eats leftovers, and we compost the rest.</li> <li>• Use insinkerator and compost.</li> </ul>
Feed animals	<ul style="list-style-type: none"> <li>• Got a dog &amp; chooks &amp; worms &amp; compost.</li> <li>• Scrapes goes to the goats.</li> <li>• Because we have pigs that we feed our scraps to.</li> <li>• We collect meat as dog scrap and all the rest as pig scrap for friends and family</li> <li>• Used for pig food.</li> <li>• Pig food.</li> <li>• Because any food scraps that aren't feed to the chickens or made into dog food is composted for the garden.</li> <li>• Give it to a friend for her chooks &amp; animals.</li> <li>• I feed my scraps to my chickens and pigs</li> <li>• We use our food scraps for a pig (animal feed).</li> <li>• Animal food - chooks - pigs - dog.</li> <li>• Freeze &amp; drop off to pigs in area.</li> <li>• Food scraps etc go to the pig.</li> <li>• We have chooks on our farm.</li> <li>• My scraps go to a friend's chickens</li> <li>• Give our food scraps to a friend to feed her pigs.</li> <li>• Scrapes go to Worms, pigs, chickens.</li> <li>• We give our scraps to our chickens.</li> <li>• We feed left overs to dogs &amp; goat. The birds eat whatever's left.</li> <li>• I take food scraps to feed the pig.</li> <li>• We have chooks ducks pigs cow's and dogs to eat, or we put in the garden</li> </ul>
Smells, flies etc	<ul style="list-style-type: none"> <li>• Smell, wash, smell, wash storage inside not allowed (nice) not convenient.</li> <li>• It attracts flies and maggots &amp; I have an insink waste disposal</li> <li>• It needed a lot of cleaning. It attracted flies and maggots in summer.</li> <li>• Because they are disgusting. Have a worm farm.</li> <li>• Can't stand the smell - sad but true :(</li> <li>• Flies in summer. Smell.</li> </ul>

	<ul style="list-style-type: none"> <li>• Disgusting having rotting food in a bin until it is collected</li> <li>• In summer it gets yuck. Putting it in our tiny freezer isn't an option and it's just not worth the admin</li> <li>• Smell</li> <li>• It's only taken every second week. Food gets to smelly</li> <li>• We don't feel the need is there for us and having to wash out the bin weekly would be a pain and with summer on the way the bin will get quite smelly &amp; disgusting.</li> <li>• It's stinky and gross, cats and dogs can get in, we put food waste into our greens waste bin which is less gross, too many bins to lug up our steep driveway</li> <li>• Not worth the hassle of having smelly food scraps</li> <li>• Because it attracts fruit flies etc.</li> <li>• Odours, ants</li> <li>• Smells too bad after 2 weeks, we have a waste disposal now</li> <li>• I don't want to keep cleaning the bin (worms) also I put recycled plastic in it at first- but they didn't take it!</li> </ul>
In-sink disposal unit	<ul style="list-style-type: none"> <li>• We have a waste disposal</li> <li>• I have an insinkerator for the majority. Rest i just put in the bin</li> <li>• We have a grinder</li> <li>• Produce such a tiny amount, waste disposer is used</li> <li>• We have a waste disposal &amp; also compost.</li> <li>• We have an insinkerator in our kitchen</li> <li>• Waste disposal unit.</li> <li>• We have a waste disposal in our sink</li> <li>• Dispose of through an in-sink waste disposal unit or compost</li> <li>• Have waste disposal. Don't want smelly bin to attract rodents etc. Would smell in summer.</li> </ul>
Not enough food	<ul style="list-style-type: none"> <li>• Not enough.</li> <li>• Because of the way I shop, and prepare food for one person, not really a lot of food waste to dispose of.</li> <li>• I live on my own and have very little food scraps. If and when I do - I feed the birds and or visiting cats.</li> <li>• Holiday house, short stays, don't generate much compost. (Have thriving compost bin system at home). Would use a central collection point.</li> <li>• Never needed to</li> <li>• Do not need to use it.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• I don't know about it and how to go about it.</li> <li>• Unneeded - complete waste of taxpayers' money.</li> <li>• Too much admin</li> <li>• We don't have a food scrap bin</li> <li>• Never received bin</li> <li>• I didn't get a scrap bin deliver to my address</li> <li>• Because since moving into the property we have never had a recycle bin or scraps bin but I think it maybe a little small for our very large family</li> </ul>

## APPENDIX 6 – FOOD GROUPS

<b>Food groups</b>	<b>Description</b>
Bakery	All bakery items, including bread, pastries, pies, scones etc.
Condiments	Includes condiments, sauces, herbs and spices, including garlic and ginger, dried and fresh herbs, seasoning sachets, jams, honey, salad dressing etc.
Dairy	All dairy products, including eggs. Includes cheeses, milk, yogurt etc.
Desserts	All cakes, puddings, ice cream etc. Does not include bakery type pastries.
Drinks	Tea bags, coffee grinds and granules, milkshakes, fruit juice, water, alcohol etc.
Fats	Oils, butter, margarine, lard.
Fresh fruits	All fresh fruit, including fresh fruit that has been cooked fruit, and excluding dried, canned or frozen fruit.
Fresh vegetables	All fresh vegetables, including fresh vegetables that have been cooked, and excluding canned or frozen vegetables,
Homemade food	All home prepared mixed foods, cooked or raw, including leftovers, homemade sandwiches, instant noodles, stews and soups.
Meat and fish	All meat and fish that are not included in a meal (which would then be categorised as homemade food). Includes shell fish, canned fish, bones etc.
Pre-prepared meals	All types of take away meals and snacks, including fish and chips, Indian and Chinese take away meals, coleslaw salads from take away restaurants, burgers, pizzas etc.
Processed fruit	Dried, canned or frozen fruits, when they can be identified as such, and is not included as an ingredient in another food.
Processed vegetables	Canned or frozen vegetables, when they can be identified as such, and is not included as an ingredient in another food.
Snack foods	Snack foods including sweets, biscuits, chocolate, nuts, crackers and chippies etc.
Staple foods	Rice and pasta, dry and cooked (but not included with other ingredients), cereals, flour etc.
Other	The other category includes unidentifiable food (categorised as Gunge), pet food, and baby food.

## APPENDIX 7 – GREEN WASTE TYPES

<b>Green waste type</b>	<b>Description</b>
Lawn clippings	Lawn clippings
Leaves	Dead leaves off trees. Note doesn't include flax leaves or cabbage tree leaves as they can't be home composted.
Prunings	Small branches off trees
Weeds	Could include tradescantia, dandelions, oxalis etc
Dead/cut plants	Vegetables that have gone to seed. Plants that are clearly dead. Whole plants.
Potted plants	Includes potted colour these are plants that flower for a short time then die
Cut flowers	Flowers purchased from a florist and placed in a vase
Other	Anything not covered above, please specify if possible e.g. flax leaves, cabbage tree leaves or otherwise type unknown