



Pilot Intervention Project with Wellington, Tauranga and Dunedin councils

1. Introduction

We have learned many things since Love Food Hate Waste was imported into Aotearoa in 2016. We know the many behaviours that lead to food waste. We know the best ways people can tackle these behaviours in their own homes. We know that food waste is difficult to measure.

Love Food Hate Waste's research from 2018 demonstrated that people who had heard of Love Food Hate Waste (and presumably tried out some of our tips and tools) had reduced their food waste by 27%. But what we can't do is reach people who don't know they need to reduce their food, don't care about reducing their food waste, or simply don't have the space in their brains to think about reducing food waste.

Enter the LFHW Pilot Intervention project.

The Aim: To work with councils to measure the effectiveness of different food waste messages on reducing food waste.

The method: The pilot programme used surveys and self-reported food waste measurement to determine the types of messages most effective in reducing food waste, and the best means of delivering these messages. A control group was included so a comparison could be made between food waste reduction between those receiving the intervention and those not.

The pilot project explored:

- whether households who don't seek out information on how to reduce their food waste will be motivated to do so if given resources to help them do so
- which kind of resources households find the most useful; and
- whether the mere act of separating out food waste leads to a reduction in the creation of food waste in that household.

Three councils - Wellington, Tauranga and Dunedin - put their hands up to take part in this very much experimental programme. This report outlines the overall results of the pilot programme.

1.1 The Pilot Programme

The pilot programme was delivered in the following steps:¹

1. Recruit participants - the number recruited by each council depended on the funding they had available to provide an incentive in the form of vouchers for the participants. Advice from an academic researcher was that each participant should earn a \$25 voucher for each week they participated, earning \$100 in total at the end of the project. The incentive was in recognition of the fact that we were asking people to add another chore to their household admin.
2. Divide participants into intervention and control groups. Both groups completed the same initial survey which asked questions about current shopping and food waste behaviour.
3. Start the project with all participants receiving a 7-litre container to collect their food scraps in (courtesy of Tauranga City Council who had some spare and shared them with the other councils). Participants were given instruction on weighing their food waste each week, and how to estimate the volume if they didn't have scales. Where volumes were provided by participants these were converted to weights using [WRAP's Food Waste Tracking Sheet](#).
4. Share physical and online resources with intervention participants. The physical resources included "Eat me first" stickers, New World's LFHW weekly meal planners, and a magnetic meal planner, and they also received online resources each week. All resources were grouped into the themes of: Planning; Storage; Leftovers and most wasted foods; and "best before" versus "use by" dates and portion sizes.
5. Remind both groups each week to submit their food waste weights to a quick online survey and to estimate the percentage of food thrown out that was "avoidable" or "unavoidable" with further information provided about what these terms means.
6. Send a final survey to all participants at the end, and follow up on completion of this prior to issuing vouchers.

Each council was responsible for recruiting the number of participants they wanted. Dunedin initially targeted university and polytechnic students via their student association social media, and by direct emails to clubs and societies at the university. They also contacted some community groups to top the numbers up.

Tauranga sent out a recruitment email to local groups that the council has a relationship with and who have interest in waste minimisation (such as EnviroHub, the District Health Board, Toi Ohomai Institute of Technology, and so on) and asked that they share with their contacts. They also asked some council staff to share with family, friends and sports teams, schools and ECE's, some of this done via FB.

Wellington City Council has a research panel which the waste minimisation team were able recruit participants from. Panel members must be over 18 so this potentially limited the number of recruits

¹ Initially the plan was to do a rubbish bin audit in a particular area, then provide half those households with resources over the next food weeks and provide no resources to the other half. A waste audit expert pointed out that a food waste audit can only capture a moment in time. If you audit the rubbish bins in any given week different factors will have contributed to how much food waste is in them. For example, someone may have had a party and ended up with lots of food waste, or conversely, someone may have been out of town in that period so generated less food waste than usual. Another way of measuring food waste in households is to get participants to keep a food waste diary, but there are limitations to these with under-reporting being common (see <https://www.sciencedirect.com/science/article/pii/S095965262031310X>)

from student/flatting households, however as this demographic was covered by Dunedin it wasn't felt to be an issue.

2. Demographics of participants

From 76 initial participants, 75 participants completed the project. 38 participants responded, which is a response rate of 51%.

2.1 Age

Group	Predominant age bracket	Percentage of respondents
All	30-49 age brackets	47%
Control group	over 55	57%
Intervention group	30-49 age brackets	73%

2.2 Gender

80% of the survey respondents identified as female (including transfemale) and 20% identified as male (including transmale).

This pattern was consistent over the control and intervention groups with 81% of the control group and 82% of the intervention group identifying as female (including transfemale), and the remaining 19% of control group and 18% of the intervention group identifying as male (including transmale).

2.3 Household type

Group	Predominant household type	% of respondents
All	<ul style="list-style-type: none"> • Couples • Couples with school aged children • One-person 	<ul style="list-style-type: none"> • 28% • 26% • 16%
Control group	<ul style="list-style-type: none"> • Couples • One-person • Couple with school aged children • Multi-adult 	<ul style="list-style-type: none"> • 32% • 22% • 16% • 16%
Intervention group	<ul style="list-style-type: none"> • couples with school-aged children • couples • multi-adult households • one parent with school-aged children 	<ul style="list-style-type: none"> • 37% • 21% • 13% • 13%

Group	Number and age of children	Percentage of respondents
All	<ul style="list-style-type: none"> • One under 5-year-old • Three under 5 year-olds • One 6-18 year-old • Two 6-18 year-olds • Three 6-18 year-olds 	<ul style="list-style-type: none"> • 7% • 1% • 15% • 16% • 5%
Control group	<ul style="list-style-type: none"> • One under 5-year-old • Three under 5 year-olds • One 6-18 year-old • Two 6-18 year-olds 	<ul style="list-style-type: none"> • 5% • 3% • 11% • 11%

Intervention group	<ul style="list-style-type: none"> • One under 5-year-old • One 6-18 year-old • two 6-18 year olds • four 6-18 year olds 	<ul style="list-style-type: none"> • 8% • 19% • 22% • 11%
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2.4 Occupation

Group	Predominant occupation	% of respondents
All	<ul style="list-style-type: none"> • Full or part time paid work • Tertiary student • Retired 	<ul style="list-style-type: none"> • 63% • 14% • 13%
Control group	<ul style="list-style-type: none"> • Full or part time paid work • Retired 	<ul style="list-style-type: none"> • 65% • 22%
Intervention group	<ul style="list-style-type: none"> • Full or part time paid work • Tertiary student 	<ul style="list-style-type: none"> • 63% • 21%

2.5 Income, combined household annual income before tax

Group	Predominant occupation	% of respondents
All	<ul style="list-style-type: none"> • over \$150,000 • unsure or prefer not to say • between \$100,000 to \$149,999 	<ul style="list-style-type: none"> • 24% • 21% • 17%
Control group	<ul style="list-style-type: none"> • over \$150,000 • between \$100,000 to \$149,999 	<ul style="list-style-type: none"> • 19% • 19%
Intervention group	<ul style="list-style-type: none"> • over \$150,000 • between \$100,000 to \$149,999 	<ul style="list-style-type: none"> • 30% • 16%

2.6 The average participant (demographics in a nutshell)



The average participant was:

- a female (including transfemale)
- between the age of 30-49
- in either a couple or a couple with school aged children household
- in full or part time work
- with a combined household income over \$100,000.

2.7 The average control participant

The average control participant was:

- a female (including transfemale)
- over the age of 55
- in either a couple or single-person household
- in full or part time work
- with a combined household income over \$100,000.

2.8 The average intervention participant

The average intervention participant was:

- a female (including transfemale)
- between the age of 30-49
- couple with school aged children
- in full or part time work
- with a combined household income over \$100,000 - 30% had incomes over \$150,000

2.9 High food wasters

According to Love Food Hate Waste research conducted in 2018, the demographic of households who are more likely to be high food wasters are:

- Those aged 16 to 24 years in the household responsible or jointly responsible for food shopping and preparation (i.e. flatting).
- Large households i.e., those with four or more people living in them.
- Households with children aged 15 years and under.
- Households with a high annual income (in 2018 this was considered to be over \$100,000 but due to high inflation impacting on housing, transport and foods costs it could now be considered to be \$150,000 per annum or more).

In this study the average intervention participant fits the high food waste profile more than the average control group participant, which means they had more ingrained food-waste behaviours.

3. Behaviours and motivations

At the start of the project, we asked a series of questions that prompted the participants to identify behaviours and motivations related to topics such as food, shopping, storage, cooking, disposal methods and more. The overview of the topics and responses are below.

3.1 Motivations

We presented 9 statements and asked survey respondents to select what extent do the following statements motivate the respondent to reduce their food waste.

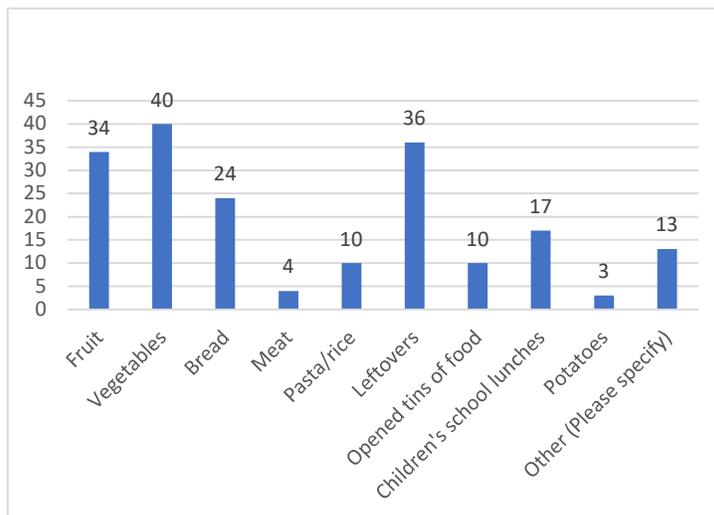
The responses of all statements had a majority that reflected the 'strongly agree' category, statements and percentage figures are presented below in order of strongest motivation.

Percentage strongly agreeing	Statement
69%	I value the food I buy and don't want to throw it away
68%	A desire to reduce my impact on the environment
57%	The possibility of saving money by not having to buy more food
56%	Feelings of guilt when I throw food away that could have been eaten
55%	Wanting to manage my home efficiently by not having so much food stored that some will get thrown away
55%	The satisfaction of providing wholesome home-cooked meals made from raw ingredients to my family or household
51%	The way I was brought up, or the influence of my parents
42%	Food shortages elsewhere in the world
39%	My cultural values include not wasting food

3.2 Most commonly wasted food

We asked survey respondents what they believe are the most commonly thrown out or wasted foods in their household, they could select as many as applies from a list.

Vegetables, followed by leftovers, fruit and then bread were identified as the most commonly wasted foods by the participants.



3.3 Milk waste

Participants were asked if they wasted any milk or milk alternatives and if so how much, and why they wasted it. 61% of participants stated they never waste milk or milk alternatives. 25% said they wasted under 1 cup per week, 3% each said they wasted 1 cup per week, 3 cups or more or know they waste it but have no idea how much per week. 72% of those who waste it said it is because the

milk goes off before they finish it, while another 12% each said it was from unfinished cups or tea or coffee with milk in them or from bowls of cereal.

3.4 Food waste disposal

We asked participants how they usually get rid of food waste in their household, and in this question they could select as many as applies:

Percentage	Methods of food waste disposal
59%	Rubbish bin
43%	Home compost
28%	Council food scraps collection ²
20%	Worm farm
16%	kitchen waste disposal unit or insinkerator
7%	give to chickens, pigs, or other animals including dogs and cats
5%	other disposal methods such as community garden composting, or a subscription to a compost collection service in their apartment building.
4%	bokashi

We then asked participants the main way they dispose of their food waste (one choice only):

Percentage	Primary method of food waste disposal
35%	Home compost
28%	rubbish bin
20%	council food scraps collection
7%	kitchen waste disposal unit or insinkerator
4%	worm farm
4%	bokashi
2%	other disposal methods such as community garden compost bins

3.5 Shopping

63% of participants were the main food shoppers, while 29% share the task.

3.5.1 Before shopping behaviour

Behaviour	Most common response
check what is in the fridge, freezer and cupboards before grocery shopping	<ul style="list-style-type: none"> 82% always or often
use a list when shopping	<ul style="list-style-type: none"> 77% always or often
use a meal plan	<ul style="list-style-type: none"> 40% never or rarely
use a meal delivery service	<ul style="list-style-type: none"> 88% never or rarely
stick to a budget when grocery shopping	<ul style="list-style-type: none"> 52% never or rarely
always stick to their meal plan and shopping list when shopping	<ul style="list-style-type: none"> 39% always or often 39% never or rarely

² Slightly less than the 30% of participants from Tauranga, who are the only ones with a council food waste collection system in this study.

3.5.2 When shopping

The survey used multiple slightly worded statements to test consistency of answers.

Two statements backed up the findings of each other:

Behaviour	Confirming behaviour
77% of participants disagreed or strongly disagreed that when food shopping they hardly ever think about how much they will use	73% of participants agreed or strongly agreed that when food shopping they always or often think carefully about how much they will use

Other results saw one statement being contradicted by the results of the one that followed:

Behaviour	Contradictory behaviour
33% agreed or strongly agreed that having children or other family members with them changed what they bought	96% agreed or strongly agreed that having children or other family members with them didn't change what they bought
30% agreed or strongly agreed that they like to purchase more than enough food (such as buying large pack sizes and pre-packaged produce)	However slightly more 40% agreed or strongly agreed that they limit the amount of food they buy (such as buying small pack sizes or loose produce).
82% agreed or strongly agreed that they are careful about only buying food they know they will use	58% agreed or strongly agreed that they will buy more food if it has a special deal or promotion such as 2 for price of 1.
50% agreed or strongly agreed that they will buy lots of fruit and vegetables even if they are not sure they will get eaten	75% agreed or strongly agreed that they will only buy the amount of fruit and vegetable they know will get eaten.

3.6 At home management of food

Behaviour	Most common response
Still use or freeze bread if it is not fresh for toast, breadcrumbs or cooking	<ul style="list-style-type: none"> 67% strongly agreed or agreed
Throw out bread as soon as it isn't fresh	<ul style="list-style-type: none"> 80% disagreed or strongly disagreed
Throw out bread that is mouldy	<ul style="list-style-type: none"> 66% agreed or strongly agreed
Cut off the mouldy parts of the bread, or throw the mouldy pieces of bread away and <i>use the rest</i>	<ul style="list-style-type: none"> 49% disagreed or strongly disagreed
Throw out fruit or vegetables that are bruised or over-ripe	<ul style="list-style-type: none"> 67% disagreed or strongly disagreed (backed up by 68% agreeing or strongly agreeing that they still use or eat fruit or vegetables that are bruised or over-ripe)

3.6.1 Leftovers

Behaviour	Most common response
put leftovers in the fridge and eat or reuse them afterwards	<ul style="list-style-type: none"> 94% always or often
put leftovers in the fridge and throw them out later	<ul style="list-style-type: none"> 73% never or rarely
put leftovers in the freezer and eat or reuse them at a later date	<ul style="list-style-type: none"> 50% always or often
put leftovers in the freezer and throw them out later	<ul style="list-style-type: none"> 87% never or rarely
throw leftovers out because someone in the household didn't eat them	<ul style="list-style-type: none"> 75% never or rarely
throw leftovers out because they made more than they had planned	<ul style="list-style-type: none"> 89% never or rarely
throw leftovers out straight after a meal	<ul style="list-style-type: none"> 93% never or rarely

3.6.2 Storage

Behaviour	Most common response
use air-tight containers and other accessories like pegs/clips, wraps and foil to make food last longer	<ul style="list-style-type: none"> 96% always or often
turn fruits and vegetables that are getting old into things like smoothies, soups, jams, chutneys etc. so they are not wasted	<ul style="list-style-type: none"> 54% often or always
freeze fruit and vegetables that are getting old for use later	<ul style="list-style-type: none"> 41% often or always
label leftovers and food when storing in containers or other accessories	<ul style="list-style-type: none"> 56% never or rarely
rotate products from back to front of shelf, fridge or freezer so the oldest food is at the front and the newest food is at the back.	<ul style="list-style-type: none"> 53% never or rarely
make space in the fridge, freezer or cupboard for items that need to be used up	<ul style="list-style-type: none"> 55% never or rarely
make a list of items that need to be used up	<ul style="list-style-type: none"> 89% never or rarely

3.6.3 – Cooking

Statement	Most common response
I am a confident cook and don't find cooking to be a chore.	<ul style="list-style-type: none"> 73% agreed or very strongly agreed
I am good at making meals from random ingredients	<ul style="list-style-type: none"> 66% agreed or strongly agreed
I only cook from set recipes	<ul style="list-style-type: none"> 76% disagreed or strongly disagreed
I like to cook meals based on what I feel like, and will buy new ingredients for this meal	<ul style="list-style-type: none"> 44% neither agreed nor disagreed

I look in the cupboard, fridge or freezer and make a meal from ingredients that need using up first	<ul style="list-style-type: none"> 71% agreed or strongly agreed
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3.6.4 - Portion sizes

This section threw up some contradictions:

Behaviour	Contradictory behaviour
47% said they always or often consider portion sizes and only make as much as is needed, and 46% they never or rarely make extra just in case it is needed	Yet, 75% said they always or often make extra for a future planned meal (e.g. lunch or dinner the next day)

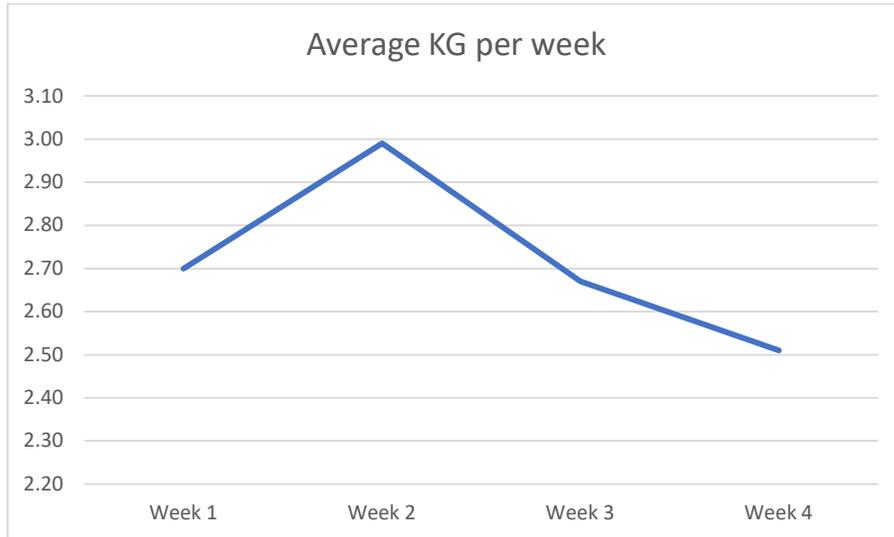
3.7 Use by and best before dates

Participants showed a good understanding of the difference between best before and use by dates with 79% of participants agreeing with the statement that “Foods are still safe to eat after [the best before] date as long as they not rotten or spoiled” and 49% agreeing with the statement “Foods must be eaten or thrown away by the [use by] date”.

87% of participants open a food item past its best by to look and smell to see if its still ok to eat, and 7% would just do a visual check.

4. Results of the Intervention Project

4.1 Food waste produced by the intervention group on average over the 4 weeks

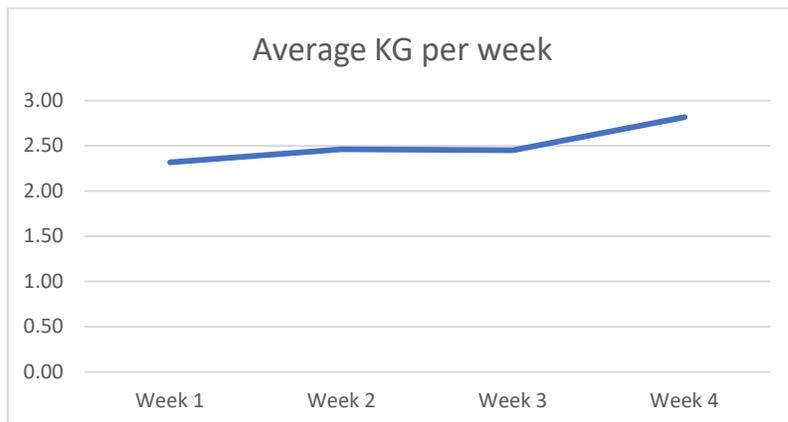


For the intervention groups, food waste went from an average of 2.7kg per week down to 2.5kg (with a peak of 3kg in week 2). Overall there was a 7% decrease in food waste for the intervention groups.

The results in this study include unavoidable food waste because it was difficult to ascertain the accuracy of participants' estimations of what was considered avoidable and what was considered unavoidable. The participants were given instructions with photos of examples, however one of the most common queries that Tauranga City Council fielded from their participants was how to determine what was avoidable and what was unavoidable. It also relied on participants being able to estimate accurately the % of the avoidable food included in their food waste for the week, which may be difficult if some food was obscured by other food on top of it.

The 2018 rubbish bin audit carried out by LFHW found that on average New Zealand households threw out 1.7kg of avoidable food waste per week and 3.17kg in total, meaning the intervention participants in this study pre-intervention wasted an average of 15% less food waste than the 2018 waste audit participants.

4.2 Food waste produced by the control group on average over the 4 weeks



For the control groups, food waste went from an average of 2.32kg per week up to 2.82kg. Overall there was a 22% increase in food waste over the 4 weeks for the control groups.

Wellington and Dunedin City Councils asked control participants if they had previously tried to reduce food waste and whether they had in the four weeks of this project. 94% had previously tried to reduce their food waste whereas only 29% of participants tried to reduce their food waste during the 4 week project.

This pattern of a small decrease in food waste by the intervention group and an increase in the food waste generated by the control group was replicated across all three areas but to varying degrees:

Dunedin:

- Intervention group: 1.72 kg down to 1.59kg = 8% decrease
- Control group: 1.18 kg up to 2.84kg = 141% increase

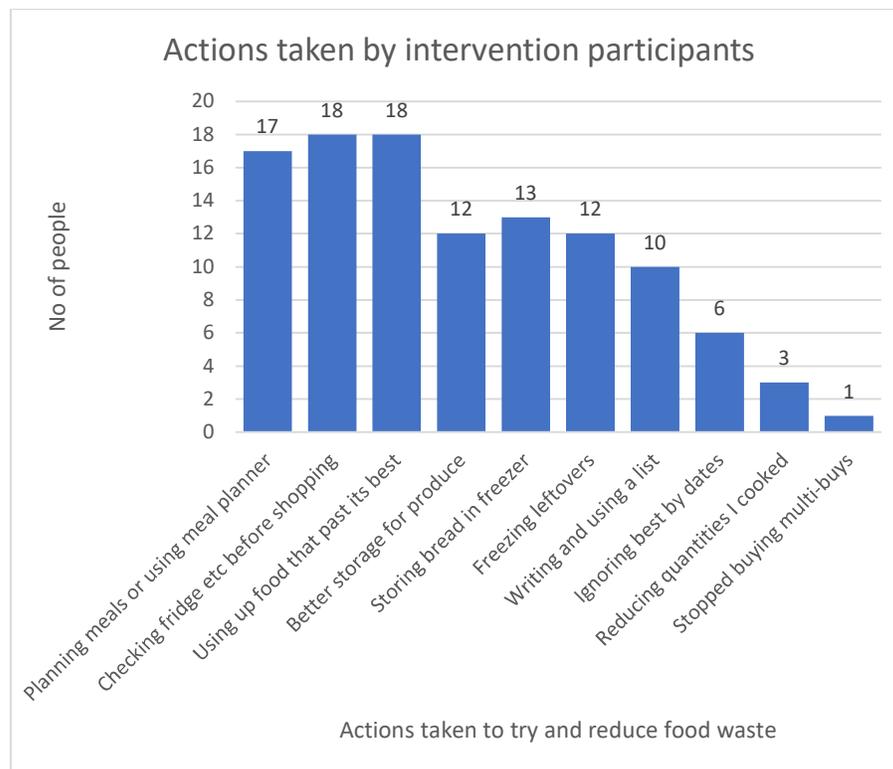
Tauranga:

- Intervention group: An average of 3.34kg down to 3.18kg = decrease of 5%
- Control group: An average of 3.33 to 3.43 = small increase of 3%

Wellington:

- Intervention group: An average of 2.58 down to 2.43kg = decrease of 6%
- Control group: An average of 1.97kg up to 2.41kg = increase of 22%

4.3 Actions taken by intervention group



In terms of the behaviours adopted by the intervention group, the most popular were checking the fridge, freezer, cupboards etc before going shopping and finding new ways to use up food that is past its best, followed by planning meals or using a meal planner.

The next popular actions were starting to store bread in the freezer, learning how to better store fresh produce, and freezing leftovers.

4.4 Most useful resources

Intervention participants were supplied with a variety of resources such as New World’s LFHW weekly meal planners, magnetic whiteboard meal planners, quick tips and other posters, videos, online resources, and eat me first stickers. In order of usefulness:

- 80% of respondents found the magnetic meal planner to be quite useful or very useful in helping them reduce their food waste. 11% didn’t use it.
- 74% of respondents found the “quick tips” and other posters to be quite useful or very useful in helping them reduce their food waste. 9% didn’t use them.
- 38% of respondents found that some or all of the online LFHW resources (Such as the A-Z storage guide and the recipe database) had helped them reduce their food waste, while a further 32% said they had given them lots of ideas to put into action in the future. 21% didn’t look at them
- 38% of respondents found that some of the videos helped them reduce their food waste, while a further 29% said they had given them lots of ideas to put into action in the future. 21% didn’t watch them.
- 36% of respondents found the ‘eat me first’ stickers to be quite useful or very useful in helping them reduce their food waste. 53% didn’t use them.
- 34% found the New World’s LFHW weekly meal planners to be quite useful or very useful in helping them reduce their food waste. 47% didn’t use them, with reasons given being their children didn’t like the meals or they had specific dietary requirements in their household, or they weren’t helpful for single person households.

5. Follow up Survey

Three months after the project finished, we sent out a follow up survey to all participants. The survey had a 51% response rate. Two of the respondents had not received any LFHW resources during the study (as they were in the control group and didn’t receive resources after the project ended).

5.1 Continued use of LFHW resources

61% of the respondents had used some of the resources since the completion of the project with use of specific resources outline in the table below.

Resource	Use of them since project ended
LFHW magnetic meal planner	73%
New World LFHW weekly meal planners	41%
Food scraps bins (not a LFHW resource as such)	27%
Eat me first stickers OR A-Z Storage OR Quick tips posters	23%
LFHW recipe database	18%
Other posters OR LFHW videos	9%

5.2 Resources and impact on reducing food waste

Participants were asked if they thought the resources they selected had helped them reduce their food waste:

Response	Percentage
The resources helped them reduce their food waste	55%
The resources maybe helped them reduce their food waste	32%
Unsure	5% (1 person)
No	5% (1 person)
Other (they didn't waste food in the first place)	5% (1 person)

5.3 Awareness of food waste

Participants were asked if since completing the study they were more aware of the food their household wastes:

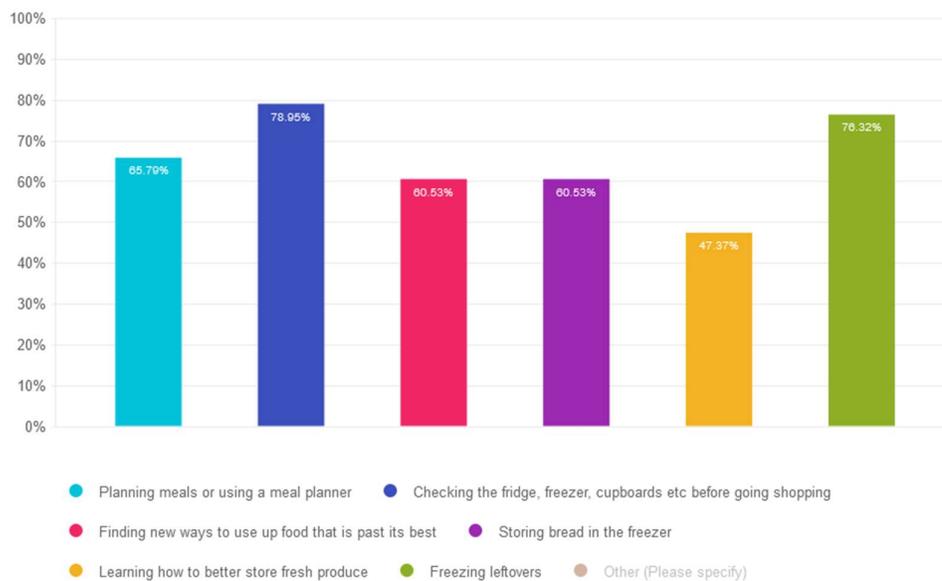
- 76% said yes
- 11% said no
- 13% said "other" because they were already very aware of food waste.

5.4 Behaviours continued or adopted since the project ended

Participants were also asked which behaviours they had started or continued to do since the project ended.

Which of the following behaviours have you started to do or continued to do since the study ended?

Answered: 38 Skipped: 0



"Other" responses included buying less or just general increased awareness.

37% of respondents said they had already been taking these actions before the study, with 61% saying that had taken some of the actions previously.

5.5 Awareness of and recommending LFHW

- 63% of respondents had not heard of LFHW before the study.
- 21% of respondents said they had recommended LFHW resources to family or friends with a further 55% saying that hadn't but would when it was relevant.

Comments about the study in general included:

"Really good awareness of own behaviours and how to improve. Grand daughter was inspired to do a science project on preventing food waste it generated a lot of interest with her peers and was forwarded to Wellington finals!"

"I enjoyed taking part in this project, it was interesting for me to see the food that my family wastes"

"[It] made the issue visible and our household more conscious of food wastage"

"I was surprised at the weight of waste. Probably higher for me who cooks everything from fresh and buys from the market (hence lots of broccoli stalks etc)"

"Having to consider which categories our weekly food waste fell into (avoidable, non-avoidable etc) was the most thought-provoking part of the project for me. Thanks for the opportunity!"

"I knew about LFHW beforehand but hadn't utilised the resources to the same extent and so very happy to have realised the wealth of info on there. Thanks for opportunity to take part."

Some other comments were focused on councils needing to provide food waste collections with participants noting that if this was done "it wouldn't be waste". This misconception that if food is composted it means it hasn't been wasted should be addressed more directly in any further studies.

Conclusion

This small pilot study was initiated to test:

1. Whether Love Food Hate Resources could help people reduce their food waste, even if they hadn't sought out the resources.
2. Whether the act of separating out food waste, without being given resources to help reduce your food waste, would lead to a reduction in food waste.
3. Which LFHW resources, if any, were perceived by participants to help them reduce their food waste

1. Due to the small sample size of the participants, this pilot study cannot conclusively state that LFHW resources can help people reduce their food waste even if they hadn't sought out the resources. However, this study somewhat supports this hypothesis because:

- Participants who were provided with LFHW resources reduced their food waste by a small percentage (ie on average by 7%)
- The intervention group fitted the high food waste criteria more than the control group which may have made it harder for them to reduce food waste
- The control group's food waste increased by an average of 22% which suggests the LFHW resources had an impact on the intervention group, influencing the 7% decrease

- The pattern was replicated across the three areas with decreases between 5-8% for the intervention groups and increases for the control groups ranging from 3%- 141%
- The LFHW resources provided were seen by intervention participants (by varying degrees) as helping them reduce their food waste over the 4 week period and after the study
- That being aware of LFHW increases awareness of the food wasted in one's own household

Further studies with a larger, statistically significant sample size, would be useful to test this hypothesis further. This study would also benefit from a longer duration to include the gathering of baseline data from households prior to the intervention being introduced. However, this may lead to people dropping out with a longer period of time they need to measure their food waste.

2. This study did not support hypothesis 2 that the act of separating out food waste leads to people making attempts to try and reduce the food waste they create. This could have been due to the short time period of the study however. In the follow up survey 27% of respondents said they found the food waste caddy they were provided with to be the most useful tool they were given to help them reduce food waste. The food waste caddies were not listed as a resource on the survey so this was an unpromoted response, which indicates that this hypothesis could be explored further.

3. The intervention participants were given a range of resources including physical and online. Some of the online resources were videos and some were recipe databases or A-Z storage tips. Physical resources were perceived by the participants to be the most useful in helping them reduce their food waste, in particular:

- The magnetic meal planners (80% found them to be useful or very useful)
- The quick tips and other posters (74% found them to be useful or very useful)

The most useful of the online resources were perceived to be:

- The online LFHW resources (Such as the A-Z storage guide and the recipe database) with 38% found they had helped them reduce their food waste, and 32% saying they had given them lots of ideas to put into action in the future.
- Some of the videos were found to help 38% of respondents reduce their food waste, while a further 29% said they had given them lots of ideas to put into action in the future.

In the follow up survey which had a 51% response rate, the magnetic meal planners were the resource still being used by 73% of the respondents, while interestingly the New World LFHW weekly meal planners which had not been identified as among the most useful resources were still being used by 41% of the respondents.

The results of this study are promising and the methodology will now be refined so it can be replicated by other councils throughout New Zealand or, subject to funding availability, expanded to a larger-scale national study producing robust results and insights to inform future behaviour change campaign development.