

Food Waste Behaviours: Influences and Impacts on Residential Waste and Waste Reduction

A Preliminary Report



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Executive Summary

Between May and August, 2016, a small scale, four part research project was conducted in Edmonton, with the purpose of gathering information about residential food-related waste (FRW) and avoidable food waste (AFW). Through this research, the objectives were to determine: what types of residential FRW were being produced; the reasons and factors that may contribute to production of FRW and AFW; residents' perceptions and understanding of food waste, including their own household food waste outputs; and resident habits and behaviours that may result in either increased or reduced production of AFW.

City of Edmonton staff visited a total of three Edmonton neighbourhoods to recruit households to participate in this study. Across these neighbourhoods, staff completed and received results for:

- 320 short (3-minute) doorstep surveys
- 64 interviews
- 26 waste audits (prior to completion of food waste diaries), and
- 32 week-long food waste diaries

Findings indicated that participants were familiar with the term 'food waste' and believe that food waste is an issue in Edmonton, but do not regularly hear anything about food waste in the media. Most participants reported during interviews that their households threw away very little AFW. However, the waste audit data showed that participant households threw away an average of 5 kg of FRW on a weekly basis. Leftover meals and spoiled produce comprised the majority of AFW in both the waste audits and the food waste diaries. The most common reasons participants provided for food being wasted were that they had made too much food for a meal, or that they had purchased too much produce and were not able to use it all before it spoiled.

The results of this project suggested that the majority of participants' primary motivations for reducing food waste were to eat healthy and to save money. Many participants cited that wanting to have a wide variety of foods on hand for healthy eating, and not knowing how to reduce food waste or having time to reduce food waste, were potential barriers to residents reducing AFW. These results will be helpful in developing a better understanding of public perceptions and behaviours associated with food waste, and will be used for designing future research projects and education programs to help reduce FRW and AFW in Edmonton.

This project contributes to the City of Edmonton's Environmental Strategic Plan, *The Way We Green* (City of Edmonton, 2001, pp. 58-59). One of the strategic actions included in the plan is to divert up to 90 percent of residential waste from landfill, in part by encouraging Edmontonians' participation in recycling, grasscycling, composting, and reuse. Residential waste habits significantly contribute to overall waste reduction and diversion goals.

Introduction

Municipalities and governments are recognizing the need to address food waste. Not only is organic waste a growing concern for waste management services and facilities, wasted food has additional economic, environmental, and social impacts. Initial prevention of food waste may be the best approach to the issue. However, a long-term solution will require a multi-faceted approach to address all factors, perceptions, practices, and behaviours that currently contribute to avoidable food waste (AFW) production throughout the entire chain, from producer to consumer. In order to develop and implement a long-term food waste strategy and action plan that will effectively engage all stakeholders, municipalities must first understand the current status of food waste within their regions, and the factors and behaviours that are currently contributing to food waste. Local research and studies need to be undertaken in order to assess the current state of food waste. As part of an overall food waste reduction strategy, food recovery and diversion efforts should also be implemented, as municipalities work toward their food waste prevention goals.

Only a few municipalities to date have developed and implemented food waste reduction programs. Of those that have had programs in place for at least five years, measurable successes of 21-25 percent reduction in residential food waste have been observed (Marsh, 2015; Waste and Resources Action Programme [WRAP], 2013). It is possible that a food waste reduction campaign, tailored to the needs and factors specific to Edmonton, could also be successful in reducing avoidable food waste.

Defining Food Waste

The term “food waste” encompasses all categories of waste that are related to food (Kelleher and Robbins, 2013), which include:

- Unavoidable – waste from food and beverage preparation that is not normally consumed (e.g., peels, fruit cores and pits, meat carcasses, bones, shells, tea bags)
- Possibly avoidable – food and beverages that some people eat but others do not (such as bread crusts), or that can be eaten depending on preparation (e.g., potato skins)
- Avoidable – food and beverages that could have been consumed at some point prior to disposal (e.g., food that was not eaten prior to spoilage, food items still in original, unopened packages)

Another category of food waste is packaging, which consists of wrappings and containers that are used to sell, contain, and store food. Such items, which may be made of either recyclable or non-recyclable materials, include beverage and food containers, serving trays, and plastic and foil wrap.

Food Waste Issues

Currently, Canada is wasting 170,000 tonnes of food annually, with losses of at least \$31 billion in direct food costs (Gooch et al., 2014). Other countries are facing similar losses of avoidable food waste, with approximately one-third of all food being wasted at different

stages along the food supply chain (Food and Agriculture Organization [FAO], 2011). The reasons for the production of excess food waste are complex, and vary by location and by sector (e.g., residential vs. commercial). Factors that may currently contribute to food waste include business practices, government legislation, food regulations, consumer habits, and waste management processes. Finding effective, long-term solutions to reduce overall AFW through prevention, diversion, and recovery will require a multi-faceted approach to address these same factors.

Wasted food has economic, environmental, and social implications. Financially, food waste represents lost money from product that is unable to be sold to generate revenue for profit and to cover operating costs, resulting in 15-20 percent higher costs for the food industry (Gooch et al., 2014). Not only are households throwing away an estimated \$2,000 CAD in food annually (Neff et al., 2015), increased costs of food and drink result in an additional 15 percent or \$1,000 CAD per year in household spending due to increased food prices (WRAP, 2009). Transportation and disposal of food waste also costs money, time, and fuel. When all costs related to food production and distribution are taken into account, Canada is losing an estimated \$107 billion annually (Gooch et al., 2014; National Zero Waste Council [NZWC], 2015).

Organic waste, a large percentage of which is food waste, has environmental impacts. Water use and water conservation is a concern in many municipalities, and wasted food represents wasted resources, including water use. When buried in landfills, organics do not decompose properly in an anaerobic environment, creating conditions for bacterial production of methane gas. Organic waste generates an estimated 3 percent of Canada's greenhouse gas emissions (NZWC, 2015). Many municipalities have banned organics from landfills, and are either diverting them into composting or digestion operations in an attempt to reduce emissions as part of their overall climate change mitigation strategy (United States Composting Council [USCC], 2012). Food waste diversion through tax incentive-based charitable donations could reduce Canada's emissions by a level equivalent to the elimination of 275,000 cars from roadways (NZWC, 2015). Donating and diverting

usable food is not only more environmentally-sustainable, it would help address some of the social issues associated with food distribution, food costs, and health care. An estimated 13 percent of households in Canada (NZWC, 2015), around 4 million individuals (Food Security Canada, 2015), are food-insecure. Food insecurity has been shown to increase risk for mental and physical illnesses (Tarasuk et al., 2013). Investment in food security initiatives is a key component of Edmonton's commitment to end poverty (End Poverty Edmonton, 2015).

Study Objectives

The primary objective of this research project was to collect information from residents about their food waste, as well as information about residential habits and behaviours that may contribute to or help reduce food waste, through a small-scale household study. Information was collected in the following areas: what types of food waste were being produced and thrown away by residents; residents' shopping, cooking, and food storage habits, and how these may have influenced the production of household food waste; public perceptions and understanding of food waste, and how these may relate to habits that could increase or decrease the amount of household food waste produced; and which behaviours residents might be most willing or able to alter in order to reduce their production of avoidable food waste (AFW).

Because this is a small scale research project, the secondary objective of the project was to test the research methodology and tools for assessment of residential food waste. Specifically, this included the small doorstep survey and associated ArcGIS mapping software, the in-person interview process, the waste diary process and format, and the waste audit procedures.

Results and recommendations from this project will be used to inform future food waste research projects, and to develop future social marketing and education programs that will encourage residents to reduce AFW.

Methodology

There were four main components to the research project: 1) a three-minute doorstep survey; 2) a 45-minute in-person or phone interview; 3) a pre-diary waste audit; 4) a one-week food waste diary.

For the purposes of this project, we were primarily interested in collecting and analyzing data in the food related waste (FRW), and avoidable food waste (AFW) categories. FRW included all three categories of food waste (avoidable food waste, unavoidable food waste, and food packaging). AFW included food still in its original packaging (both opened and unopened packages which contained some or all of the original contents), and edible foods such as leftover meals. Food waste (FW), when mentioned in this report, included both avoidable and unavoidable food waste categories.

All participants were asked in advance if they wanted to participate in this project. Participants who consented to participate in the interview, waste audit, and food waste diary components were provided an information letter and consent form, and were fully informed of their right to withdraw from the project at any time. Participants had to provide written consent to participate in each component of interest to them. They did not have to participate in all four components.

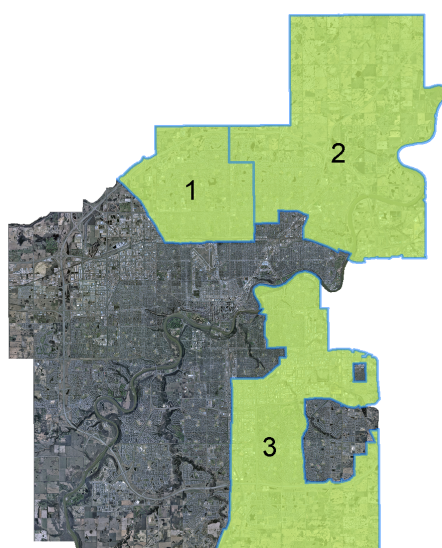
Doorstep Surveys

The canvassing phase of this project occurred between May 16 and June 30, 2016 in three selected neighbourhoods (located in the areas shown in Fig. 1). Canvassers conducted the survey with residents living in single-unit residences. The doorstep survey was designed to collect information about residents' knowledge, understanding, and awareness of food waste, whether or not this was a topic that was of concern to them, and what barriers and opportunities they felt they faced when it came to reducing food waste in their households (see Appendix A for survey questions).

Based on 2014 Municipal Census results, the three selected residential neighbourhoods had high percentages of residents living in single-unit detached housing, and had high

percentages of residents who had lived at their current residences for at least 3 years. These neighbourhoods also had waste collection routes where garbage and recycling were picked up by City staff. These factors were key to selecting neighbourhoods for this project, to ensure a greater likelihood that project participants had established at-home routines, and to facilitate collection procedures for the waste audit.

Figure 1: Waste collection areas in Edmonton. The sections highlighted in green represent the areas from which neighbourhoods were selected for the project.



The survey was also used as a selection tool to identify households and participants who were qualified and willing to complete an in-person interview. Participants qualified for the interview if they had lived at their current residence for at least three years, and if they reported that they cooked and ate meals at home at least three times during the week. These qualifying attributes were to ensure that participants were more likely to have established routines related to food shopping, food preparation, cooking, and waste disposal habits. The minimum target was 65 surveys per neighborhood, or 200 surveys across all three neighbourhoods. A total of 363 households were canvassed, with 320¹ surveys completed (equal to 320 participant households), for a response rate of 88%

¹ This response rate is based on percent of people who answered the door (not total residences visited).

(Table 1). Survey data were entered directly into ArcGIS software maps using iPad tablets, which allowed for direct data collection and updated information for canvassed areas.

In-Person Interviews

The second part of the study entailed a longer (up to one hour) structured in-person or phone interview, which included more in-depth questions about household habits surrounding food shopping, cooking and food storage habits, behaviours related to leftovers and food waste, and perceptions regarding food waste (see Appendix B for interview questions). The minimum target number of interviews was 16 per neighborhood, or a total of 50 interviews across all three neighbourhoods. Data collected by interviewers were entered either directly into Google Forms or onto paper forms for data entry at a later time. Participant households received a thank you item (City Attractions family admission pass or transit tickets) for their time and participation in the interview. A total of 64 interviews were conducted, approximately twenty per neighbourhood, with a response rate of 25% (Table 1). Following the interview, each participant was invited to partake in the one week food waste diary and waste audit.

Pre-Diary Waste Audits

Waste audits were conducted between June 17 and July 8, 2016. The minimum target number of audits was ten per neighbourhood, or a total of 30 audits across all three neighbourhoods. Waste audits were only conducted for households that also agreed to participate in the food waste diary component. For each household that agreed to participate, City staff collected garbage and recycling during the regular weekday collection date for the neighbourhood, up to two weeks prior to the start of the food waste diaries.

Up to six bags of waste, which included garbage and recycling, were collected for each household. This was due to the capacity of the vehicle used for waste collection, and the time limits for sorting waste at the facility on each sorting day. If households had more than six bags of waste, only six bags (1 or 2 bags of recycling and up to 4 or 5 bags of garbage) were taken for sorting. If households had bags containing only grass clippings or yard

waste, these bags were weighed at the curb with a luggage scale to record approximate weights, and were left at the curbside for regular collection. Collected waste from all households was taken to Kennedale waste collection facility, and sorted into several categories (see Appendix D for category list). The amounts of waste in each category were weighed and totaled. As a result of some residents not setting out waste for curbside collection during waste collection dates, waste audits were only conducted for a total of 26 households, approximately 8-10 per neighbourhood.

In this audit, food-related waste (FRW) was classified into a total of six categories:

- 1) Avoidable food waste (AFW)
 - a) In packaging (foods partially eaten, and intact items still in original packaging)
 - b) Edible (including leftovers and table scraps)
- 2) Unavoidable food waste (UFW)
 - a) Household compostable (vegetable and fruit peels, cores and trimmings)
 - b) Household non-compostable (bones, fats and oils)
- 3) Food packaging (FP)
 - a) Recyclable (paper, cardboard, plastic, and metal cans)
 - b) Non-recyclable (plastic, paper, foil)

Food Waste Diaries

Food waste diaries were completed from June 22 to July 19, 2016. The minimum target number of diaries was 10 per neighborhood, or a total of 30 diaries across all three neighbourhoods. Participants received a paper copy of a one-week food waste diary and a waste measuring kit in advance of their selected start date. Participants were asked to record the types and amounts of food thrown away at home for their households, the reasons for disposal, original quantities and conditions of those items purchased, and methods of food waste disposal (see Appendix C for diary example).

Once completed, diaries were collected from residents, and the data were entered by City staff into Microsoft Excel sheets for summary and analysis. Because varying measurements were used by participants to record food waste, all food waste data were standardized by converting reported quantities into litres (L), so that diary data could be aggregated. Participants who completed the waste diary were allowed to keep the waste measuring kit, and also received a thank you item (gift card for a local store) for their time. A total of 32 households, approximately 10-11 per neighbourhood, completed the food waste diaries.

Data Collection and Analysis

All data were collected and stored securely in City network folders. Consent forms and personal information were stored in secure, locked cabinets. Paper copies containing survey, interview, or diary data were shredded once all information had been entered electronically.

Because the participants in this study were not selected randomly, and the total sample size of the group of participants was small, the data and results of this project cannot be used to make city-wide generalizations or extrapolations for all single-unit residents. However, the data do provide a snapshot of individuals' food waste habits and how those habits and behaviours may affect the type and amount of food waste produced.

Some data were compared between neighbourhoods, to ensure consistency in methodology and to determine if there were any large variations between different areas of the city. It was determined that most of the data and results were comparable and consistent between the three neighbourhoods. Therefore, most of the data presented in the results section is aggregated, representing participating households across all three neighbourhoods.

Table 1: Numbers and percentages of participants involved with project components.

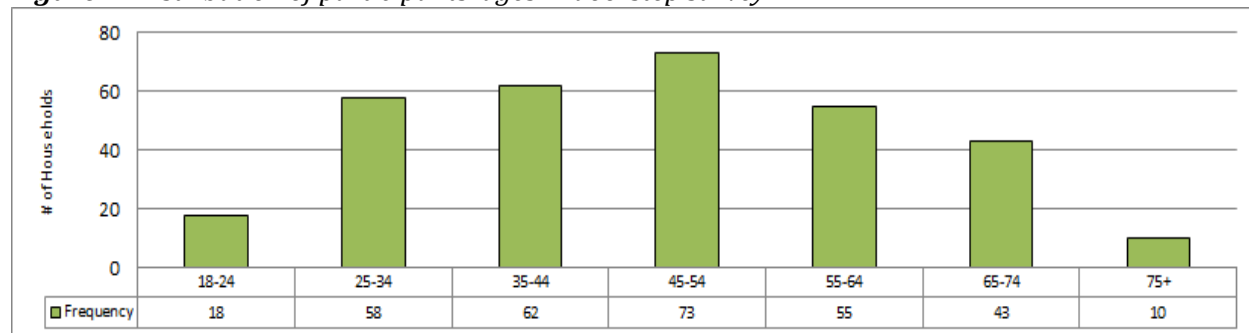
	People Canvassed	Completed Doorstep Surveys	In-Person Interview Offered	Completed Interviews	Completed Pre-Diary Waste Audits	Completed Food Diaries
Neighbourhood 1	130	114	89	22	8	10
Neighbourhood 2	119	105	80	20	10	11
Neighbourhood 3	114	101	89	22	8	11
Total	363	320	258	64	26	32
%	--	88.15	--	24.81	40.63	50

Results

Doorstep Surveys

Section 1: Demographics

Throughout this project, it was assumed that demographics of all survey participants (n=320) were consistent with those of Edmonton residents living in single family detached housing. Most participants (70%) had lived at their current residence for at least five years, owned their house (89%), and were either married or in a common-law relationship (74%). Most participants were between the ages of 35 and 64 years with the highest frequency of participants between the ages of 45 and 54 years (Fig. 2).

Figure 2: Distribution of participants' ages in doorstep survey.

While household sizes ranged from one to eleven people, the majority of participants lived in two- to four-member households (Fig. 3). Of the 300 participants who responded to the

question, 'Are there children under 18 years in the house?', over one-third (37%) said they had at least one child living with them (Fig. 4).

Figure 3: Distribution of household sizes for participants in doorstep survey.

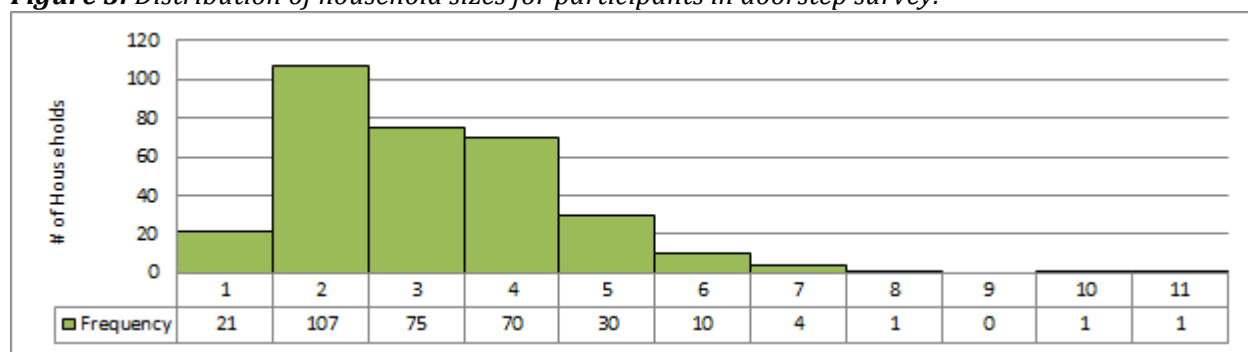
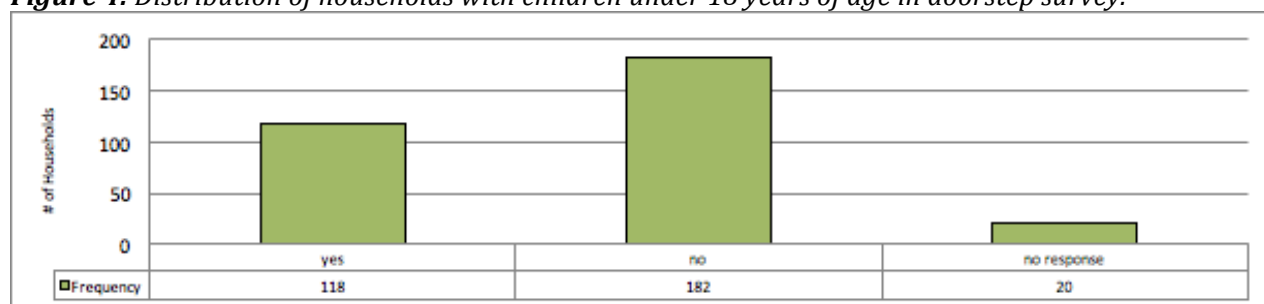


Figure 4: Distribution of households with children under 18 years of age in doorstep survey.



Section 2: Food Waste and Household Information

Most participants (83%) were aware of the term "food waste." A majority (79%) also thought that food waste was an issue in Canada, but slightly fewer (74%) thought of food waste as an issue in Edmonton. When asked if they had heard anything recently in the news or on social media about food waste, only 30 percent of participants agreed, with references to having heard about food waste through newspapers or on TV. Nearly two-thirds (64%) of participants said they had thought about food waste in their own household within the past year, either weekly or monthly (Appendix A).

Two-thirds (67%) of participants reported that they had tried to reduce the amount of household food waste in the past year, either on a weekly or monthly basis (Fig. 5). Of those (32%) that had not tried to reduce waste in their homes, the most common reasons for this were: they only had a bit of wasted food (40 responses) or never had food waste (11

responses); they did not know how or have the time to reduce their food waste (20 responses); food waste was unavoidable (13 responses) (Fig. 6).

Figure 5: Responses to the doorstep survey question: “In the past year, how often have you tried to reduce the amount of waste food in your household?”

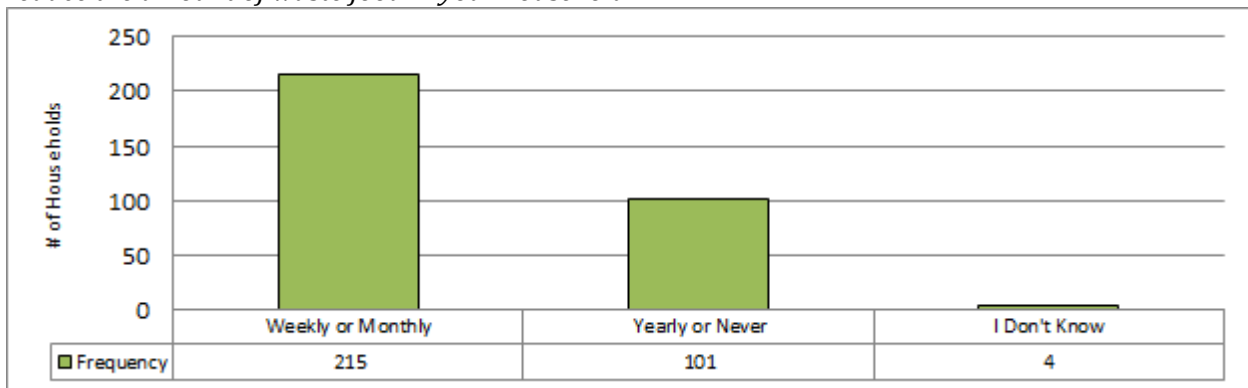
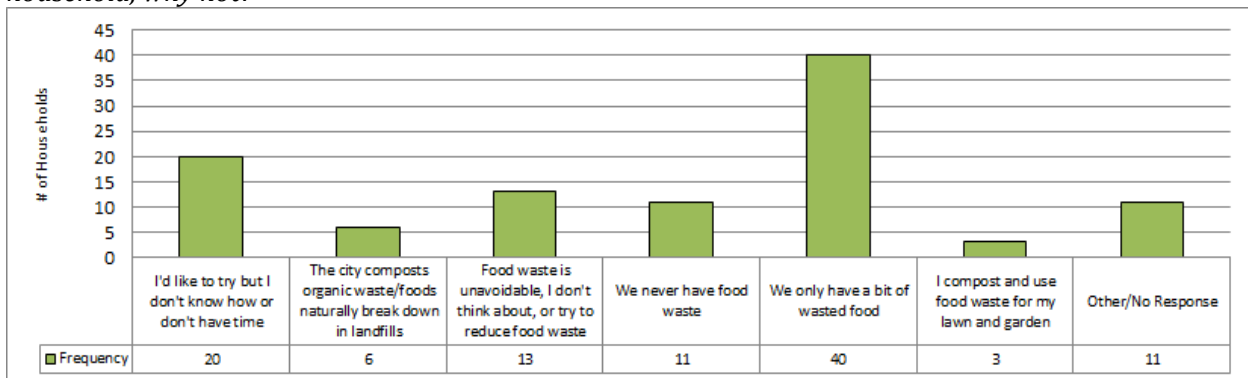
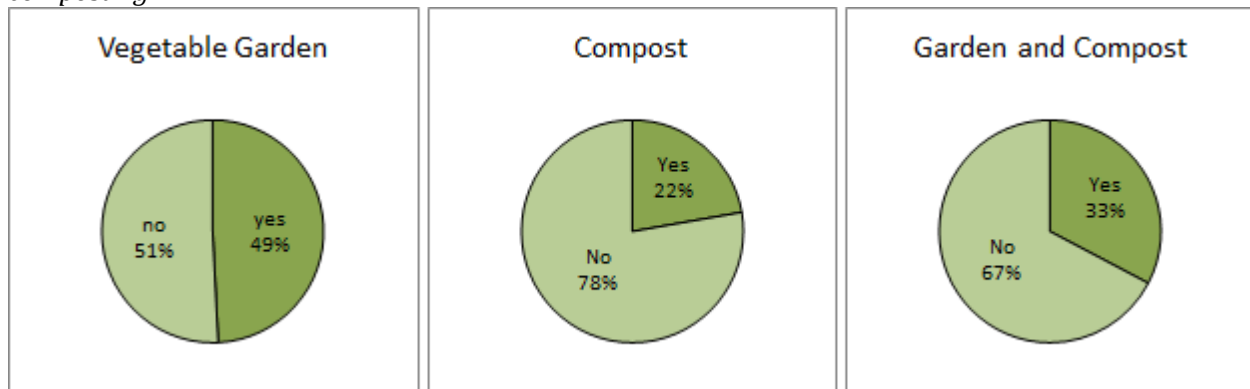


Figure 6: Responses to the doorstep survey question: “If you haven’t tried to reduce food waste in your household, why not?”



Almost half (49%) of respondents had some form of vegetable garden, either at home or elsewhere (Fig. 7). Approximately one-fifth (22%) of participants had either a composter or worm bin that they used for disposal of kitchen scraps, and one-third (33%) of those who gardened also practiced backyard composting or vermicomposting as a way of dealing with organic food waste produced in their homes.

Figure 7: Percentages of doorstep survey participants who had a garden and practiced home composting.



See Appendix A for the full list of survey questions and responses.

In-Person Interviews

Section 1: Demographics

A total of 64 participants (n=64) completed the interview. All were homeowners and 69 percent had lived in their house for five years or longer. Similar to the results from the doorstep survey, the most frequent age range of participants was 45 to 54 years (Fig. 8). Participants most commonly lived in two- to four-person households (Fig. 9), and over half (58%) did not have children under 18 years of age living at home (Fig. 10).

Figure 8: Distribution of ages of participants interviewed.

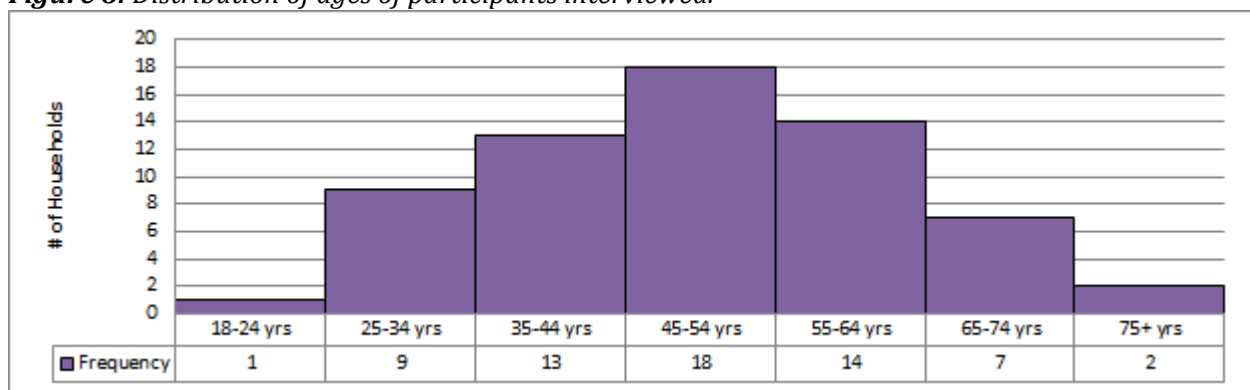


Figure 9: Distribution of household sizes for participants interviewed.

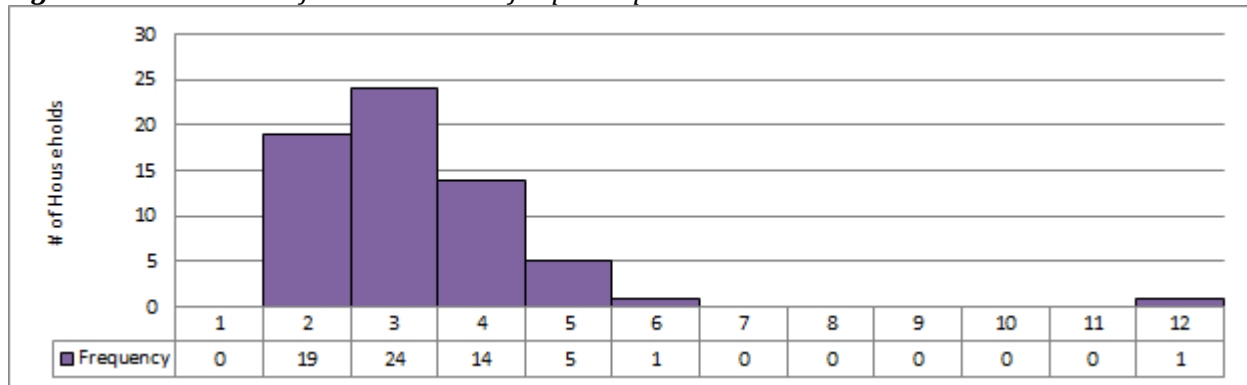
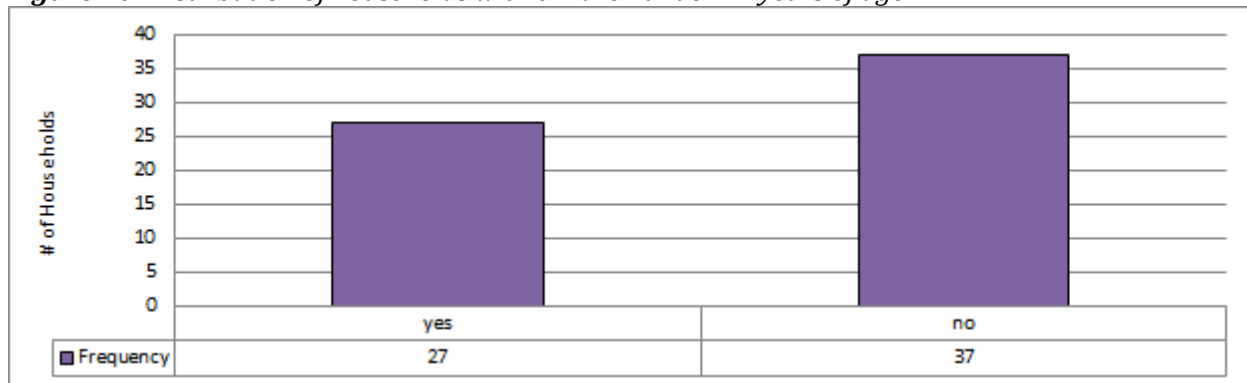


Figure 10: Distribution of households with children under 18 years of age.



Compared with the survey, a slightly higher percentage (75%) of interview participants said that they try on a weekly or monthly basis to reduce food waste in their homes (Fig. 11). Of the 16 participants who rarely or never tried to reduce food waste, their reasons were somewhat similar to those in the doorstep survey. Primary reasons given were that: participants composted in their backyard; that they would like to try but did not know how or did not have time; they felt that food waste was unavoidable (Fig. 12). Unlike the survey, having only a little or no food waste was not one of the primary reasons stated.

Figure 11: Responses to the interview question: “In the past year, how often have you tried to reduce the amount of wasted food in your household?”

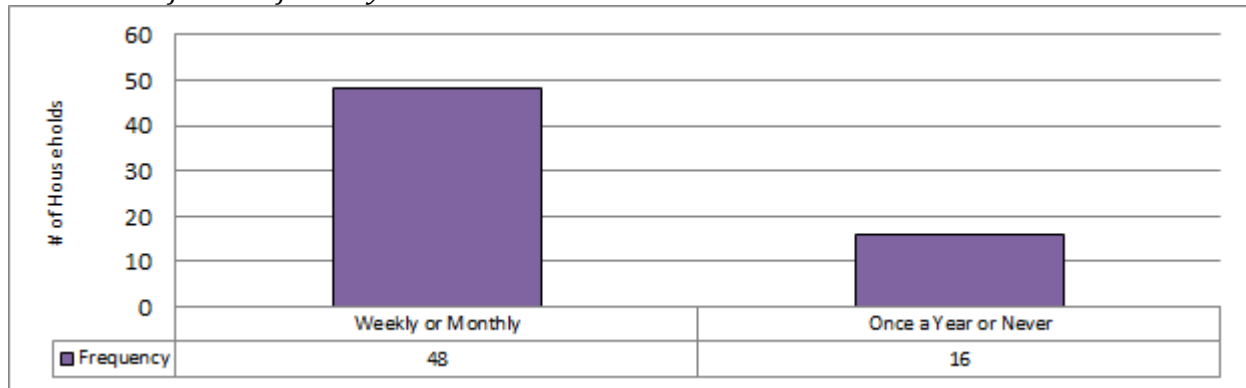
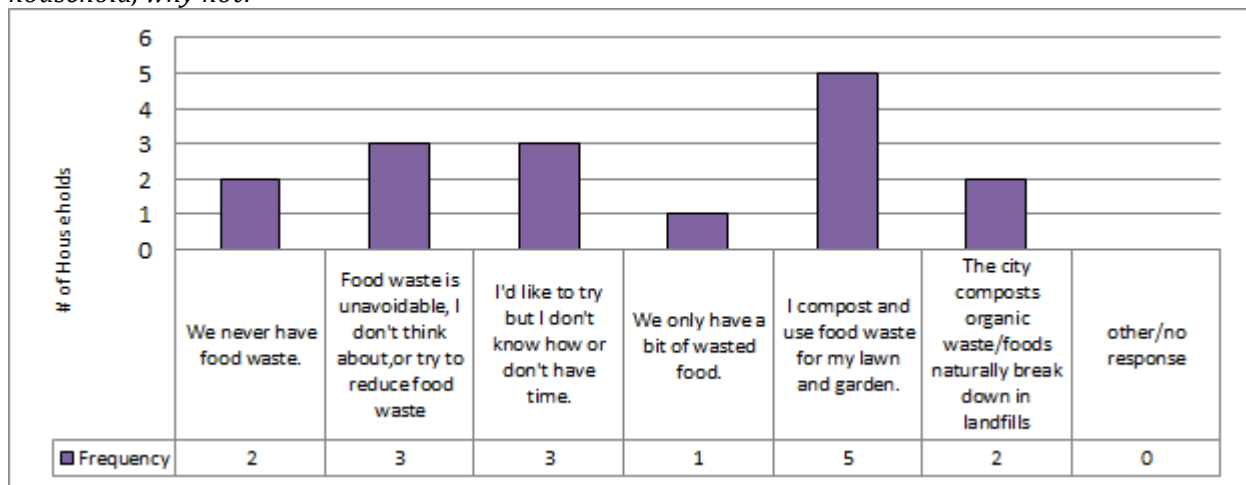
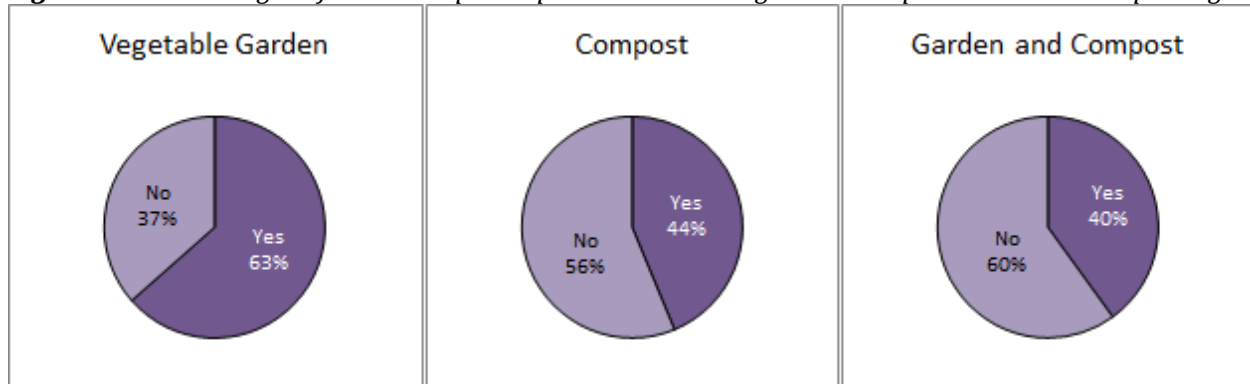


Figure 12: Responses to the interview question: “If you haven’t tried to reduce food waste in your household, why not?”



In contrast to the doorstep survey, where about half of the participants reported that they had a home garden, the percentages of gardeners and home composters were higher in the interview. Nearly two-thirds (64%) of those interviewed were home gardeners. Of those who gardened, over two-thirds (40%) had a compost or worm bin that they used for food waste (Fig. 13).

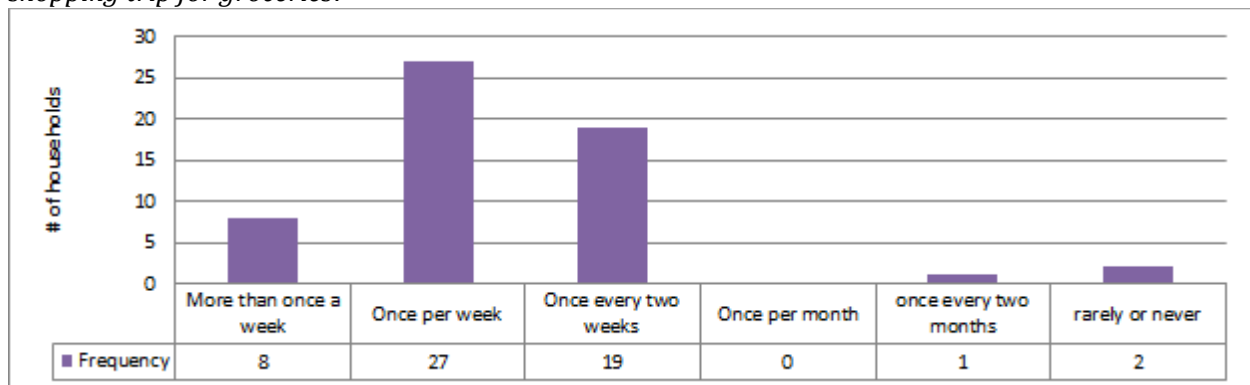
Figure 13: Percentages of interview participants who have a garden and practice home composting.



Section 2: Shopping Habits

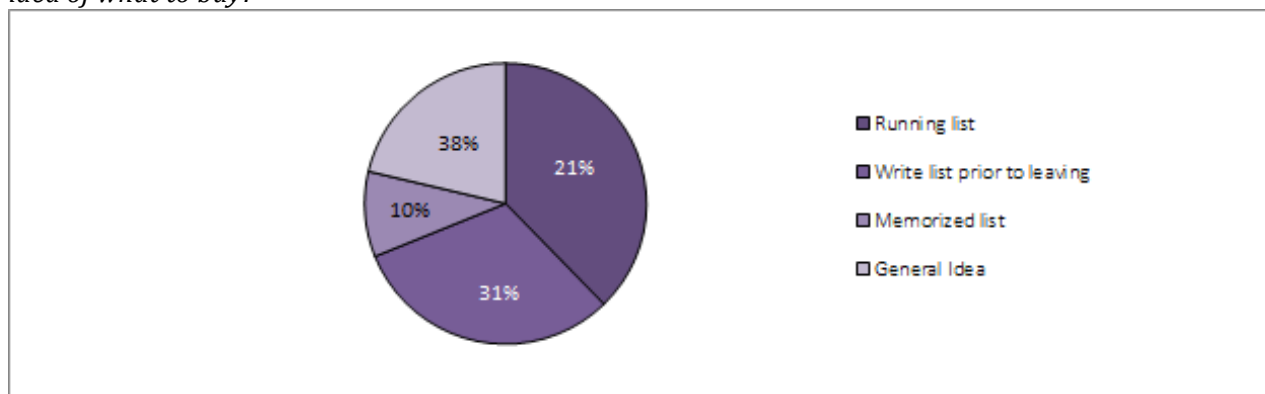
The majority of participants interviewed were responsible for most (67%) or at least half (14%) of the household shopping. Households most frequently went on a big shopping trip once per week (Fig. 14). Several households (40%) regularly shopped at only one type of store, which were the medium to large supermarkets (e.g., Sobey's, Superstore or Save-On-Foods) (88% of one-store households). Households most frequently shopped at two types of stores for food purchases (47% of households), which included the aforementioned supermarkets (50% of two-store households) as well as warehouse-type stores (e.g., Costco, The Grocery People) (32% of two-store households).

Figure 14: Responses to the interview question: "How often does your household go on a main shopping trip for groceries?"



While over half of participants (52%) used some form of written shopping list, whether it was a running list (21%) or a list made just prior to going on a shopping trip (31%), 48% of households used memory and habit to guide them through their shopping trips (Fig. 15). Regardless of whether or not participants used some kind of list, the majority of households (70%) bought items that were not on their list during their last big shopping trip.

Figure 15: Responses to the interview question: “BEFORE you go on a main shopping trip, do you usually: keep a written list, make a list prior to shopping, memorize what you need or have a general idea of what to buy?”



Section 3: Cooking Habits & Leftovers

Similar to responses for shopping habits, the participants interviewed were responsible for most (62%) or at least half (14%) of the cooking. The majority (89%) also stated that they ate at home every day or most (five or more) days of the week. Most participants (76%) decided what they were going to have for dinner that day or a few days ahead of time. Only four participants stated that they had some form of weekly meal plan. Nearly two-thirds (64%) of participants stated that all or part of their leftovers from their last meal were saved and used for another meal.

Participants were asked to describe the last time that food was thrown out in their households, and the reasons or circumstances for that particular food item being thrown away (Appendix B). The most common types of food that were thrown out were meal leftovers (51% of responses), followed by produce (25% of responses). The primary reason

for food being thrown was food that had been left or stored for too long, and food that had lost its organoleptically appealing qualities (i.e., it did not look, smell or taste good any more.) Another common reason for food being thrown away was household members' disinterest in consuming the leftover meal item. For example:

"We will throw out leftovers if they are more than three days in the fridge."

-35-44 year old female, parent

"Basically if it's getting to be more than five or six days, and no one's eating it, then it gets thrown away."

-45-54 year old male, parent

"I had pasta leftovers from the meal before, there was only a little bit left, and the second time I ate it, so I threw it out."

-25-34 year old male, no children

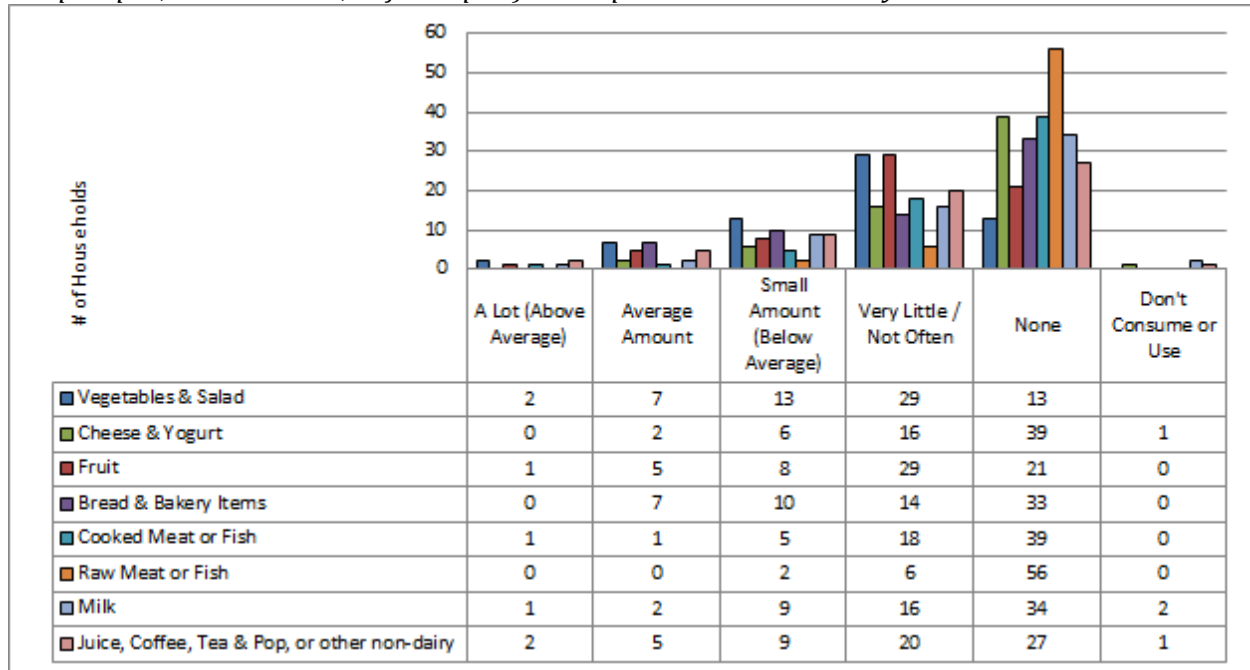
Section 4: Food Storage Habits

While most participants did say that they used their freezers to store home-made meals and leftovers, many (40%) participants stated that they do not use their freezer to store leftover food from meals.

Section 5: Food Waste

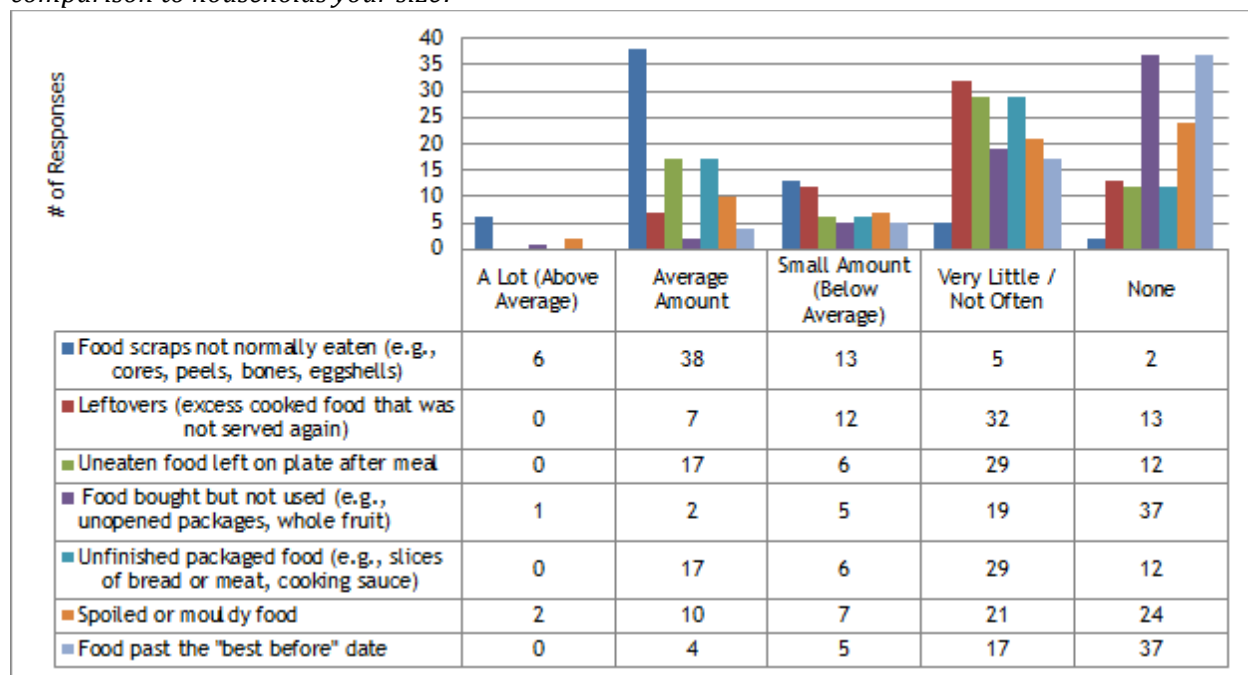
When participants were asked to consider their avoidable food waste (AFW) habits in relation to other households, participants predominantly stated that they thought they threw away less food than households of similar size (Fig. 16).

Figure 16: Types of food waste (FW) in the household. Responses to the question: “Over the past two weeks, how much of the following food types has your household thrown away (either in your garbage, compost pile, down the sink, or fed to pets) in comparison to households your size?”



There was a slight difference when asked about different types of food waste (FW), which included both avoidable (AFW) and unavoidable food waste (UFW). A higher number of participants reported that they threw out ‘a lot’ or ‘an average amount’ of UFW, such as food scraps, and AFW, such as uneaten food left on a plate, unfinished packages of food, and spoiled food (Fig. 17). Regarding participants’ overall perception of their food-related waste (FRW), the majority (84%) stated that they threw out a ‘below average’ amount in comparison to households of similar size (Appendix B, Section 5).

Figure 17: Types of avoidable (AFW) and unavoidable (UFW) food waste in the household. Responses to the question: “Over the past two weeks, how much of the following types of food related waste has your household thrown away (either in your garbage, compost pile, down the sink, or fed to pets) in comparison to households your size?”



Section 6: Food Waste Behaviours

When participants were asked “To what extent do you currently do any of the following to minimize the amount of food and food-related waste that your household throws away?”, the top three most frequent behaviours were: preparation and cooking of meals at home (60 responses); preparing meals from scratch (58 responses); and saving leftovers for another meal (54 responses) (Appendix B, Section 6).

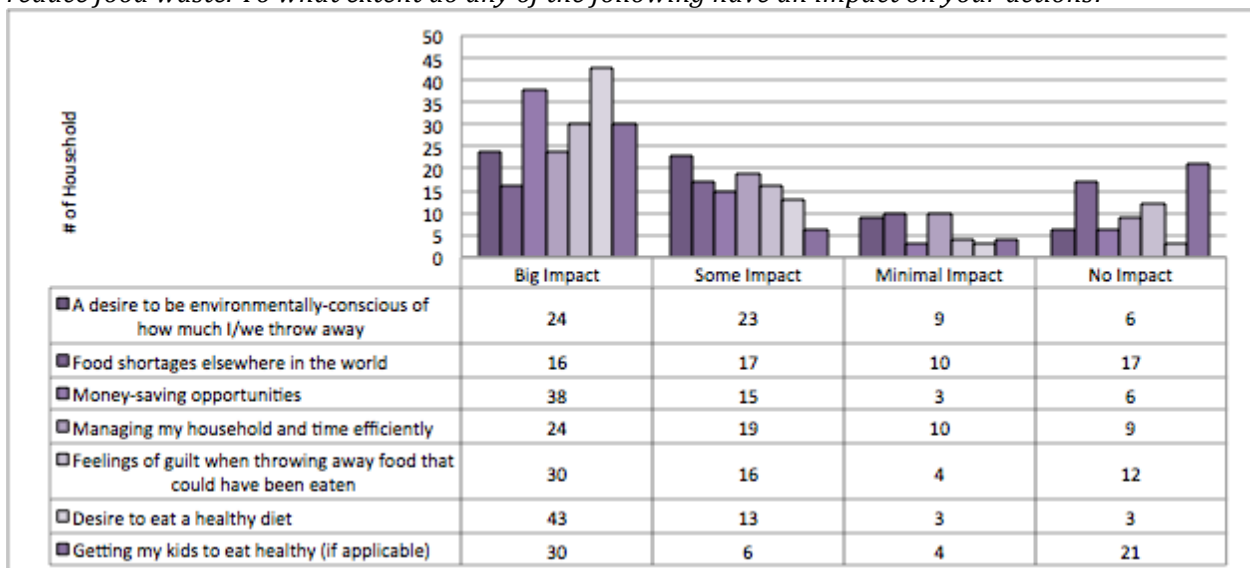
In terms of reasons that may prevent residents from trying to reduce food waste, 19 households reported that there were no barriers. Of the remaining households, the top two reasons provided were having lots of variety and choices on hand (26 responses), and needing to buy a wide range of food for healthy eating options (25 responses) (Fig. 18).

Figure 18: Responses to the question: “Which (if any) of the following reasons prevent your household from trying to reduce the amount of food that is thrown away?”



When participants were asked about their reasons that would encourage them to reduce food waste, the most impactful reasons were: eating a healthy diet (43 responses) or getting kids to eat healthy (30 responses); financial savings (38 responses); and feelings of guilt around throwing away edible food (30 responses) (Fig. 19).

Figure 19: Responses to the question: “Think about factors that might encourage your household to reduce food waste. To what extent do any of the following have an impact on your actions?”



See Appendix B for the full list of interview questions and responses.

Pre-Diary Food Waste Audits

Garbage

Of the 26 households (n=26) from which waste was able to be collected on their collection days, there was a total of 163.98 kg of food-related waste (FRW). This was approximately one-third (33%) of the total weight (502 kg) of garbage. The quantity of total garbage included yard waste but did not include recycling. Each household had an average of 4.95 kg of FRW (range of 0.54 - 19.76 kg) (Fig. 21). Amounts of FRW were similar between neighbourhoods (Fig. 22)

Figure 20: City staff conducting food waste audit.



Figure 21: Weight of food-related waste (FRW) in garbage for each household by neighbourhood.

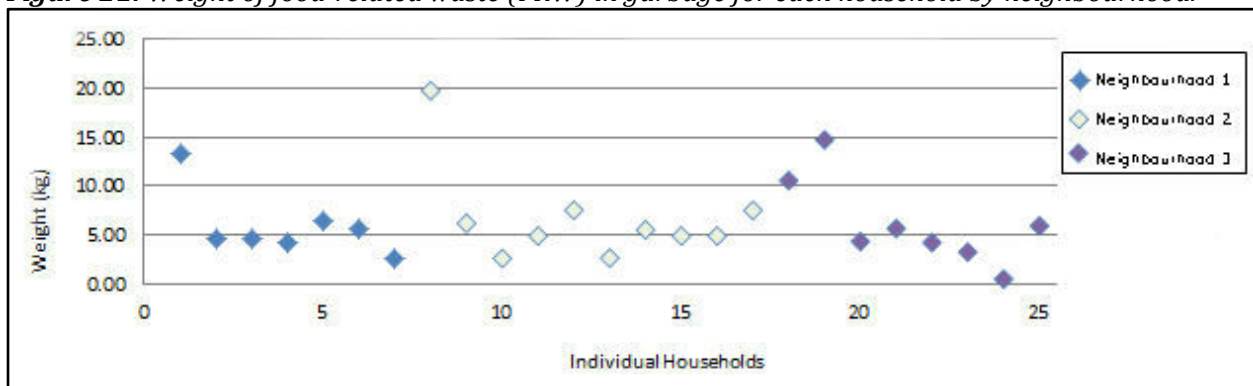
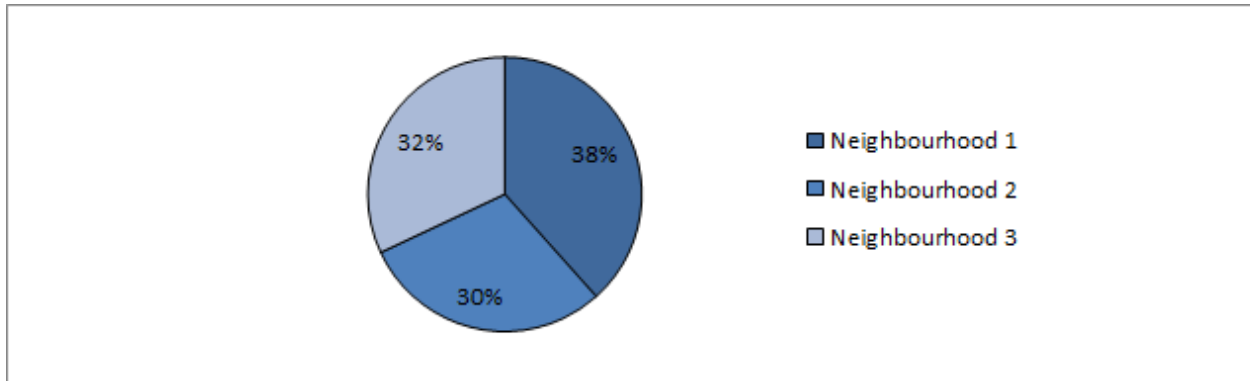


Figure 22: Percentage of food-related waste (FRW) in garbage by neighbourhood, as a percentage of the total weight of FRW across all three neighbourhoods.



Of the total FRW found in garbage bags, over one-quarter (27%) of this was food in original packaging (Fig. 23). Nearly one-quarter (24%) was edible food waste, the majority of which consisted of intact produce and leftover meal items. Nearly one-third (32%) was unavoidable, home-compostable food waste, including peels, cores, and stems that are not normally eaten. Over half (52%) of the total avoidable food waste (AFW) (83.13 kg) in the garbage was food in original packaging (Fig. 24).

Figure 23: Percentages of the six categories of food-related waste (FRW) found in garbage (recycling not included). Results include all neighbourhoods and all households.

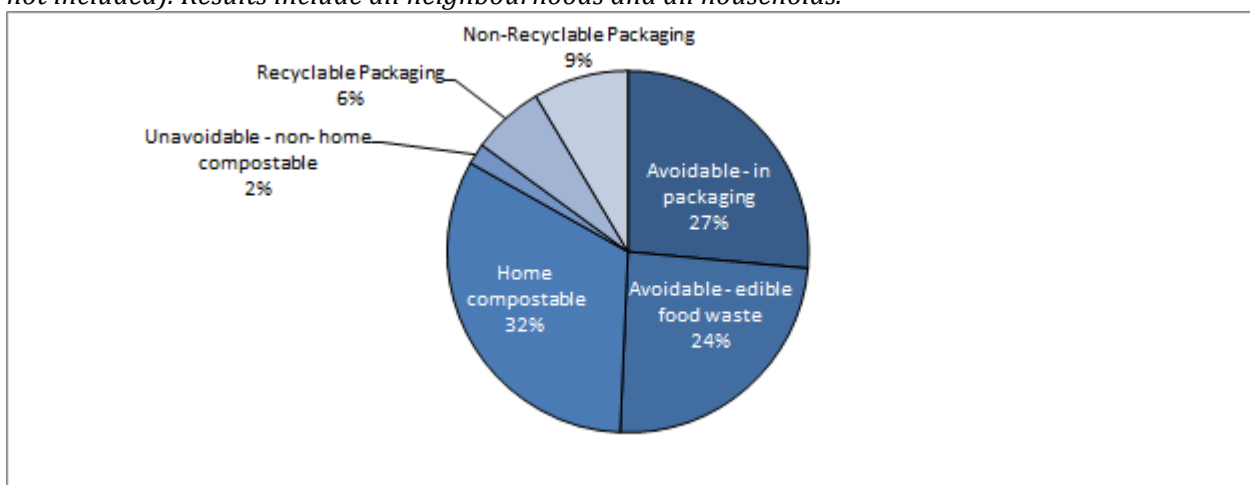
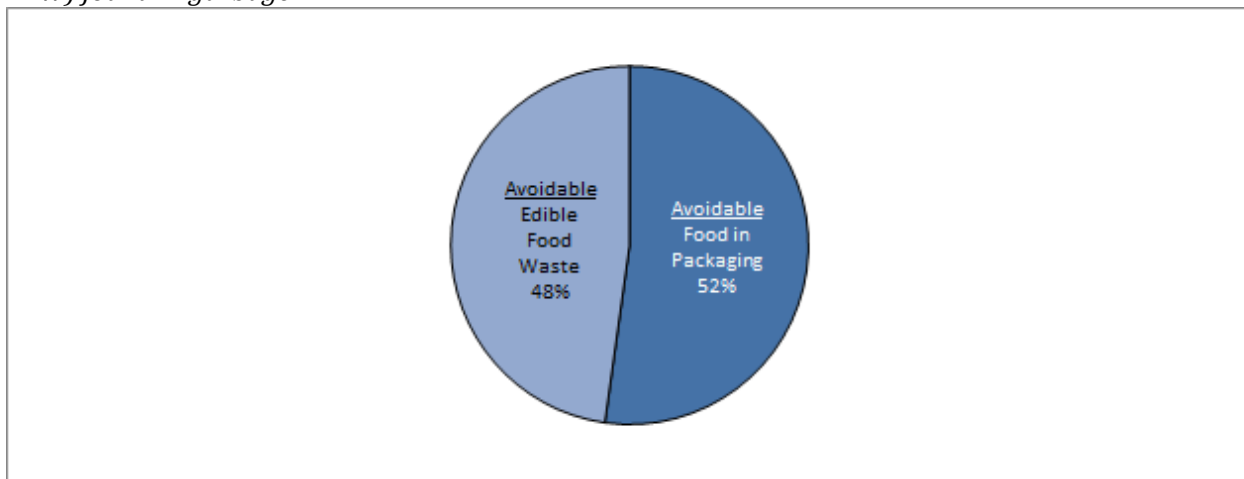


Figure 24: Percentages of edible food and food in packaging (two categories of avoidable food waste, AFW) found in garbage.



Recycling

Although similar waste audit data was also collected for recycling, these results are not presented in this paper. The primary focus of this report was to collect and analyze data as it pertained to FW and AFW in garbage.

See Appendix E for compiled results from the waste audit.

Food Waste Diaries

Quantities of Food Waste

A total of 206.23 L of food waste (FW) was recorded in journals completed by 32 participants (n=32). Each neighbourhood had an average of 68.74 L of total FW (range of 54 L - 83 L) (Fig. 25). Neighbourhood three recorded the least amount of FW (26%) and neighbourhood two recorded the most FW (41%) (Fig. 26). These results differ from the waste audit results where all three neighbourhoods had similar amounts of FRW (Fig. 22).

Figure 25: Amount of total food waste (FW) (includes avoidable and unavoidable) thrown away by households, as reported in one-week food waste diaries, separated by neighbourhood. Numbers below the graph indicate the volumes, in litres, of waste reported in the diaries.

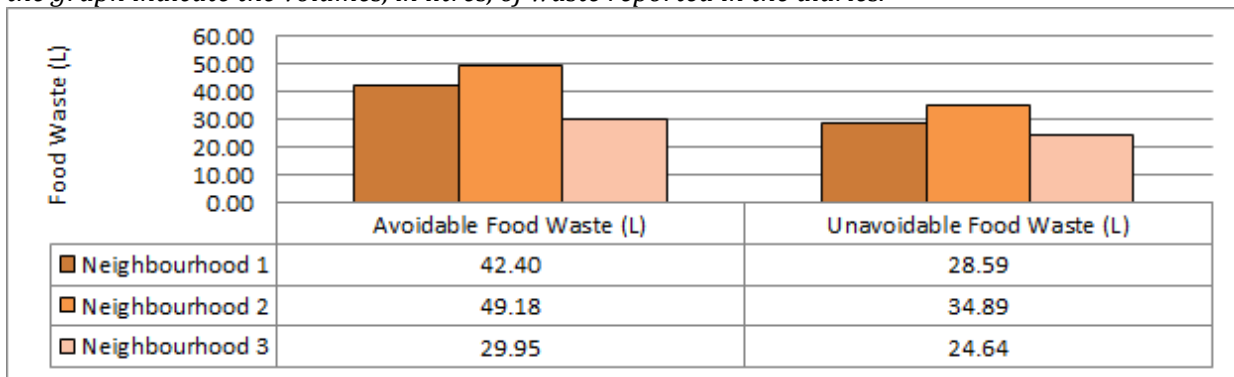
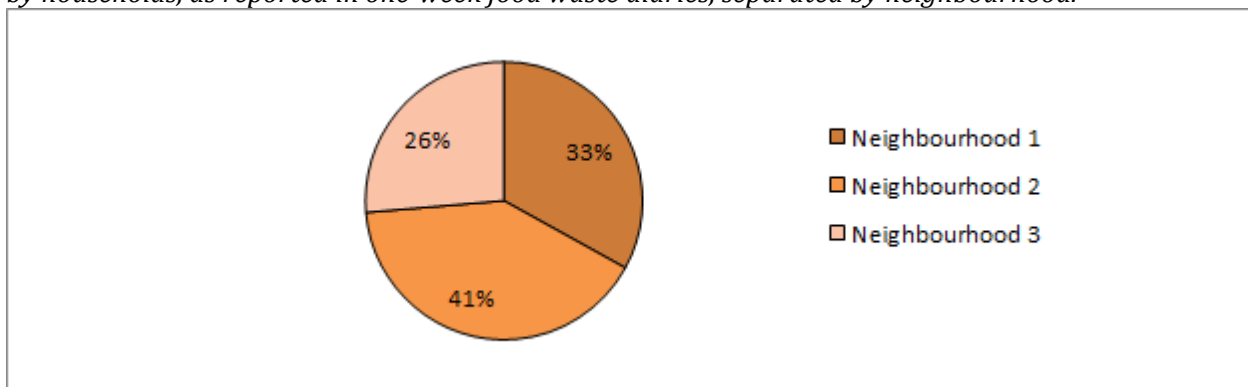
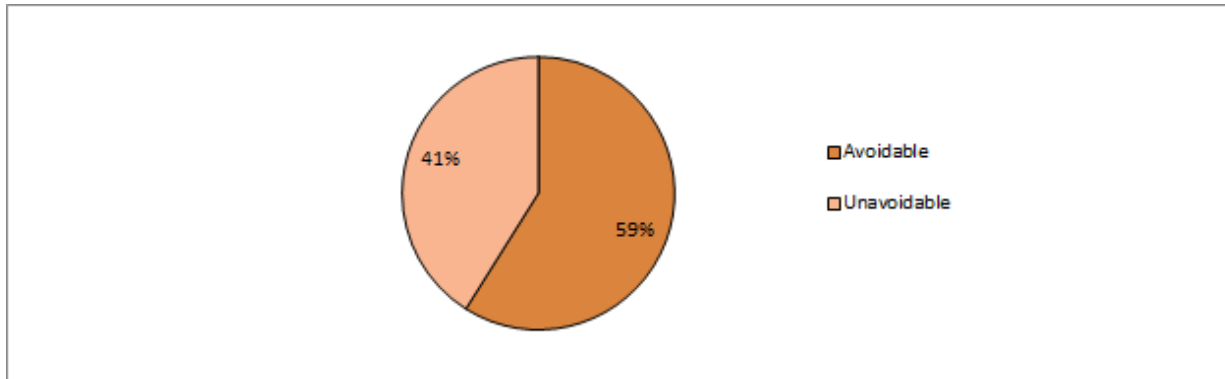


Figure 26: Percentages of total food waste (FW) (includes avoidable and unavoidable) thrown away by households, as reported in one-week food waste diaries, separated by neighbourhood.



Overall, there was more AFW (59%) than unavoidable food waste (UFW) (41%) (Fig. 27). Neighbourhood three had the least difference between AFW (30 L) and UFW (24 L) (Fig. 25).

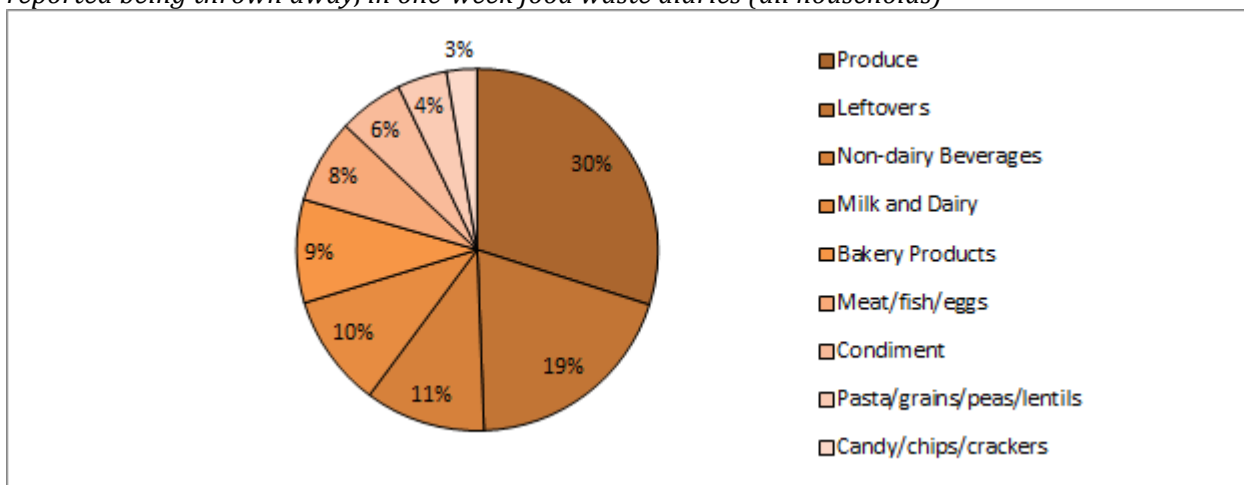
Figure 27: Percentages of total food waste (FW) thrown away by households, as reported in one-week food waste diaries. Results include all neighbourhoods.



Common Types of Food Waste

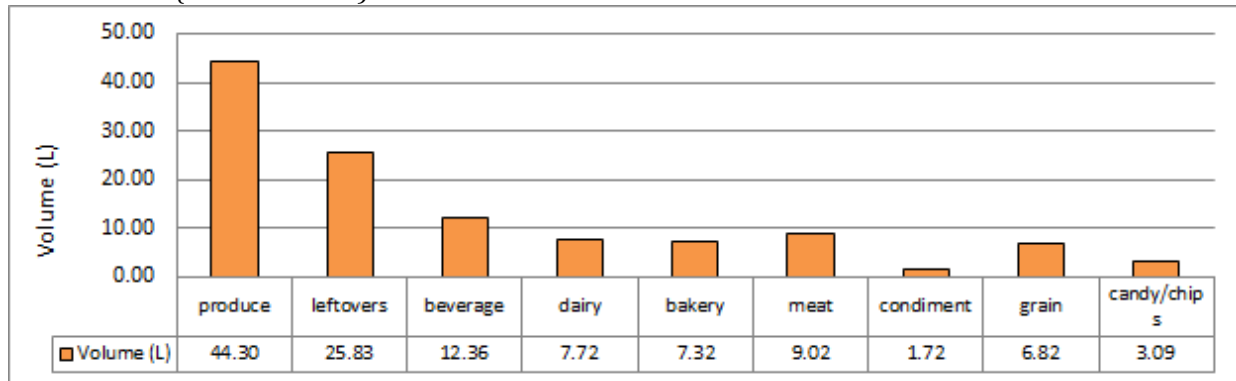
According to the diaries across all three neighbourhoods, the most common types of AFW were produce (30%) and leftovers (19%) (Figs. 28, 29). These results were consistent with the interview results, where participants reported that the most recent types of food waste thrown away were meal leftovers (51%) and produce (25%).²

Figure 28: Most common types of avoidable food waste (AFW), based on the frequency they were reported being thrown away, in one-week food waste diaries (all households)



² The differences in these results may be due to measuring. Waste audit materials were weighed in kilograms while waste diary items were reported in litres.

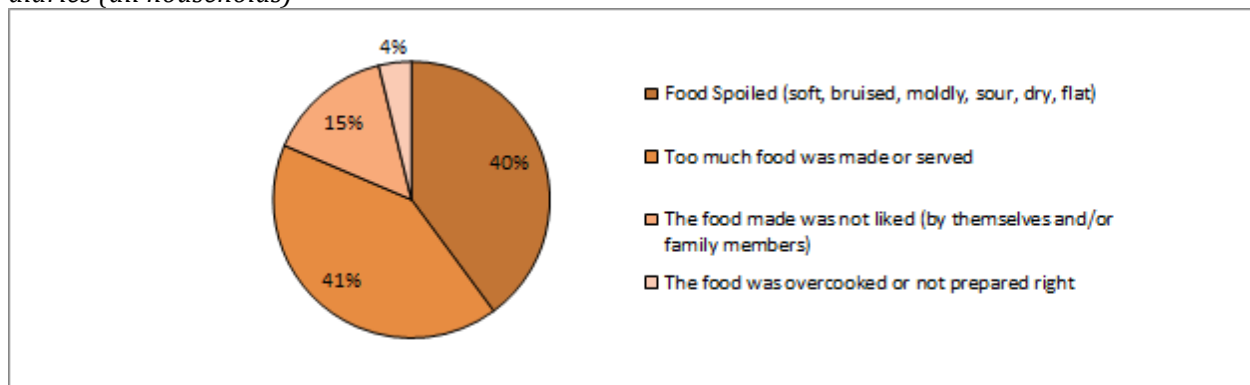
Figure 29: Volumes of avoidable food waste (AFW) food thrown away, as reported in one-week food waste diaries (all households)



Reasons for Food Waste

Out of 549 instances in the diaries where reasons were given for AFW, most of the time it was due to making too much food (41%), or because the food has spoiled (40%) (Fig. 29). Other reasons included food not being liked (15%), and that the food was not properly prepared (4%).

Figure 30: Reasons for avoidable food waste (AFW) food thrown away, as reported in one-week food diaries (all households)



See Appendix F for a compiled list of results from the food waste diary.

Comparison of Waste Audit Data with Interview Data

Time of Collection

During the study, the audit overlapped with the Canada Day long weekend. Although it was possible that celebrations or long weekend vacations could have resulted in either a spike or a significant drop in food waste produced by households, the results showed that there was little difference in FRW and AFW collected before the weekend (June 17, 30), compared with after the weekend (July 5, 7, 8) (Table 2).

Table 2: Averages and ranges of avoidable food waste (AFW) and food-related waste (FRW), grouped by date of waste collection.

Collection Date (# of households)	Food-Related Waste (kg)		Avoidable Food Waste (kg)	
	Range	Average	Range	Average
Before July 1 (14)	2.65-13.40	6.52	0.10-9.75	3.18
After July 1 (12)	10.54-14.74	5.79	0.30-7.95	3.12

Household Size

Two-member households generated the most FRW and AFW, compared with larger household sizes (Table 3).

Table 3: Averages and ranges of avoidable food waste (AFW) and food-related waste (FRW), grouped by size of household.

Household Size (# households)	Food-Related Waste (kg)		Avoidable Food Waste (kg)	
	Range	Average	Range	Average
2 (4)	4.60-13.40	8.77	3.25-9.25	6.06

3 (12)	0.54-5.61	3.97	1.03-3.40	2.04
4 (6)	3.30-14.74	7.52	0.35-7.65	3.48
5 (4)	2.65-19.76	8.23	0.10-9.75	3.39

Children in the Household

The total amount of FRW in garbage associated with the presence of children (under 18 yrs of age) was slightly higher (average 6.61 kg) compared with households that did not have children (average 5.69 kg). However, the average weights of AFW were similar between households with and without children (Table 4).

Table 4: Averages and ranges of avoidable food waste (AFW) and food-related waste (FRW), grouped by presence of children under 18 years of age.

Children (# households)	Food-Related Waste (kg)		Avoidable Food Waste (kg)	
	Range	Average	Range	Average
Yes (14)	2.69-19.76	6.61	0.10-9.75	3.37
No (12)	0.54-13.40	5.69	0.30-9.25	3.00

Number of Adults in the Household

From all the households where waste audits were conducted, eight out of the twelve households that did not have children under 18 years of age had more than 2 adults living in their household. Households with 3 or more adult members had considerably lower amounts of FRW (average 4.14 kg) and AFW (average 1.47 kg), compared with 2-adult households without children (averages of 8.77 kg and 6.06 kg, respectively) (Table 5). In the case of AFW, the two-adult households produced more than twice the amount, compared with households with 3 or more adults.

Table 5: Averages and ranges of avoidable food waste (AFW) and food-related waste (FRW), grouped by the presence of more than 2 adults.

3 or More Adults (# households)	Food-Related Waste (kg)		Avoidable Food Waste (kg)	
	Range	Average	Range	Average
Yes (8)	0.54-7.57	4.14	0.30-2.80	1.47
No (4)	4.60-13.40	8.77	3.25-9.25	6.06

Shopping Habits

Households who went shopping once per week had both lower average FRW (5.21 kg) and AFW (2.16 kg) (Table 6), compared with households who shopped either more or less frequently. Households that made a shopping list just prior to a shopping trip had lower FRW (average of 4.52 kg) and AFW (average of 2.12 kg), compared with households that did not make a shopping list, or that kept a running list of needed items (Table 7).

Table 6: Averages and ranges of avoidable food waste (AFW) and food-related waste (FRW), grouped by frequency of shopping trips.

Frequency of Shopping Trips (# households)	Food-Related Waste (kg)		Avoidable food waste (kg)	
	Range	Average	Range	Average
More than once per week (3)	5.71-13.40	8.45	2.85-9.25	5.60
Once per week (14)	0.54-14.74	5.21	0.1-7.65	2.16
Every two weeks (6)	2.59-19.76	7.02	1.03-9.75	3.65
Once per month or longer (3)	4.93-10.59	6.82	2.80-7.95	4.72

Table 7: Averages and ranges of avoidable food waste (AFW) and food-related waste (FRW), grouped by shopping list habits.

Shopping List Habits	Food-Related Waste (kg)	Avoidable Food Waste (kg)
With shopping list		
Without shopping list		

Shopping List Habits (# households)	Food-Related Waste (Kg)		Avoidable food waste (Kg)	
	Range	Average	Range	Average
Written Running List (11)	2.65-14.74	6.58	.35-9.25	3.34
Written list before shopping (9)	2.59-7.57	4.52	0.10-4.70	2.12
No list (6)	2.90-19.76	7.95	1.55-9.75	4.55

Home Composting

During interviews, home composting was listed by participants as a primary reason for not thinking about trying to reduce household food waste (Fig. 12). In order to determine if composting households had less food waste, we compared amounts of AFW and home compostable food waste in the garbage (Table 8).

Households that used a composter for disposal of food scraps had a slightly higher weight of avoidable food waste (average of 3.59 kg), and a slightly lower weight of home compostable food waste (average of 1.84 kg), compared with non-composting households.

Table 8: Averages and ranges of avoidable food waste (AFW) and home-compostable food waste, in composting and non-composting households.

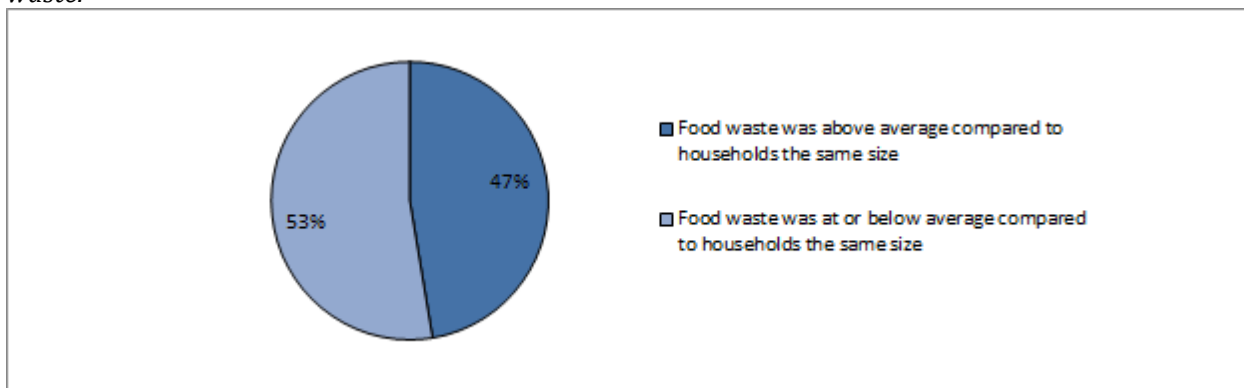
Composter (#households)	Avoidable food waste (kg)		Home compostable food waste (kg)	
	Range	Average	Range	Average
Yes (7)	0.54-9.25	3.59	0.03-4.70	1.84
No (19)	0.1-9.75	3.05	0.2-7.5	2.12

Food Waste Perceptions

When participants were asked about how their household's garbage compared to other similarly-sized households, 19 out of 26 participants (73%) stated they felt they generated a small amount or very little food waste by comparison. When these perceptions were

compared to the data from the waste audit per household, there was approximately a 50/50 split between perception and production of food waste (Fig. 31). Of households that perceived they wasted less than other households, over half (53%) of them generated the same amount or slightly less AFW than other households of similar size. Less than half (47%) the households produced more AFW by an average of 1.7 kg, in comparison with similarly-sized households.

Figure 31: Participant perceptions of household food waste, compared with actual AFW observed during waste audit, observed amongst participants who stated they produced very little or no food waste.³



Discussion

Key Findings

We found that food waste (FW) made up roughly 27% of black bag garbage produced by participant households (Appendix E), with just over half (51%) being avoidable food waste (AFW). This is consistent with the food waste diary data (59% or 121.53L of AFW). The food waste audit and the waste diaries indicate that participants were primarily throwing away leftovers and produce. In the audit, more leftovers than produce were thrown away. In the diaries, it was reported that more produce than leftovers were thrown out. This could have been due to differences in measurements used (by weight in the audit, by volume in the diary). Some types of food waste, especially fresh foods, are heavier, but occupy less volume.

³ These data only include the 19 households who stated they produced “a small amount” or “very little” food waste.

The interview and waste audit results showed that there was a distinctive difference between how much food waste participants thought they were throwing away, relative to other households, as opposed to how much food waste they were actually throwing away (Fig. 31). Resident perceptions and behaviours, such as purchasing and cooking habits, likely play a significant role in how much food waste is produced by households, and how much food waste residents think they produce.

Possible Factors Contributing to Food Waste

Factors that may contribute to the production of food waste include household size, the presence of young children in the household or additional adults in the household, frequency of household shopping, use of a shopping list, home composting, and perceptions of food waste.

Household Size and Presence of Children

Two-adult households generated more FRW and AFW than households with more than two adults. This may be the result of multiple socioeconomic, environmental, and lifestyle factors, many of which were not addressed within the scope of this project. It is possible that smaller households did not end up consuming food before it spoils, either because they purchased sizes of grocery items designed for families, or because of lifestyle considerations (e.g., eating out, or having less time to cook at home than anticipated).

It was interesting to note that the presence of children had a slight impact on increasing food-related waste (FRW). This may be due to the prevalence of single-serving food in disposable packaging, which are often used in children's lunches and snacks. Further analysis of the waste audit data would be needed to see if weights of recyclable and non-recyclable food packaging were also higher in households with children.

Shopping, Cooking, and Food Storage Habits

Two of the primary reasons given for AFW being thrown away were making too much food and spoiled food. From the results, it appeared that participants were buying more produce

than their households could consume before the food spoiled. This over-buying may be due in part to the primary reasons that participants cited as being barriers to reducing food waste, which were wanting to ensure a good variety of foods and a range of healthy food options for eating at home.

Participants frequently recorded that they were making and serving more food than what their household could eat in one meal. If they had only small quantities of leftovers, these were being thrown away because there was too little worth saving for another meal. Larger quantities of leftovers were being stored in the fridge, but if they were not eaten within a few days to a week, they were thrown away. In several instances, the stated reason for this behaviour was that 'nobody was interested in eating them', which further supports the statement that participants wanted a wide variety of available foods. Some of the interview comments suggested that eating the same leftovers too many times in a row can lead to "leftover fatigue", and loss of interest in eating still-edible foods.

In the interview, 40 percent of participants did not use the freezer for meal leftovers, opting to store them in the fridge for short-term storage. Use of the freezer instead of the fridge could help to reduce AFW for some residents, and may also help reduce "leftover fatigue". Larger amounts of leftovers could be frozen for a longer period of time, instead of forcing the idea that leftovers need to be consumed right away, over multiple consecutive days.

Home Composting

There could be several possible reasons for finding slightly higher amounts of avoidable food waste in the garbage of households engaged in home composting, compared with non-composting households. It is possible that residents familiar with composting are especially vigilant about what should and should not be put into compost bins, and prefer to err on the side of caution when it comes to mixed leftovers containing items that are not recommended for backyard composters. It is also possible that compost bins or piles are not being used to their full potential, or that some residents primarily used their composter

for yard waste. Additionally, some residents may feel that, since they do compost a fair amount of organic waste, putting extra food waste in the garbage is not an issue (i.e., the composter is being used to mitigate but not necessarily to eliminate food waste from entering the waste stream.) More research is needed to better understand the relationship between home composting and food waste. In the future, it may be helpful to ensure that educational information and messaging about food waste reduction are included in home composting information and educational materials.

Perceptions of Food and Food Waste

Most participants understood the term ‘food waste’, recognized the fact that they produced different types of food waste for different reasons, and had tried to reduce AFW at home prior to their participation in the project. However, the majority of participants were not fully aware of the amount of FRW and AFW they were throwing away. When asked during the interview “Overall, how much uneaten food would you say your household ends up throwing away?”, 83 percent stated that they produced below-average or very little waste compared to other households their size (Appendix B, Section 5). Compared with results from the waste audit and food waste diary, all households produced a fair amount of food waste. Indeed, while the average amount of household FRW was roughly 5 kg, some households produced up to 19 kg. While this may not seem like a large quantity, an average household with 5 kg of food waste per week would be producing 260 kg (equivalent to 13 garbage bags⁴) of food waste per year.

Participants may not have been aware of how much food waste they produced, because in most instances, only small quantities of food waste were being thrown away at a time. Of the 1,158 recorded incidents where food waste (AFW and UFW) was thrown out, 774 incidents (67%) involved quantities less than 120 mL ($\frac{1}{2}$ cup) in volume⁵. By throwing away only small amounts on a frequent basis, especially when interspersed with throwing

⁴ Based on 20 kg recommended bag weight as per the City of Edmonton’s Collection Safety Tips (2016)

⁵ Legal imperial measures were used to convert to metric where 1Cup=0.24L

away non-food items every day, it would be easy for residents to underestimate total quantities of food they're throwing away over a period of a week, month, or year. This pattern of behaviour (throwing away small quantities more frequently) would likely influence how a person perceives their overall food waste.

"This [research project] makes me more aware of waste.... we have a two door [refrigerator] and it is harder to organize -- leftovers go to the back. I need to organize on a weekly basis and also cut down on fresh fruit and veggies."

- 56-65 yr old female

Possible Factors That May Help to Reduce Food Waste

This project identified certain habits and perceptions that may be key to reducing residential food waste. The results of this project indicate that increasing residents' awareness of how to reduce or avoid food waste, and the benefits of reducing food waste, would be an important first step. Additional factors, such as shopping, cooking, and food storage habits, as well as personal motivations for healthy living and reducing food waste, should be considered in the development of future food waste reduction social marketing and educational programs.

Shopping Habits

In this project, three shopping habits seemed to be connected to having less food waste. Making a list just prior to going on a shopping trip, and shopping only once a week seemed to be related to less food waste in the audit. These are two very simple habits that could be encouraged and adopted easily by many households.

Purchasing too much produce for the household to consume before it spoiled was also a common occurrence observed in the waste audits and the diaries. This could be due to large packaging sizes, forms, and pricing of produce being sold in retail establishments. In some cases, the most common and economical sizes of packaged foods available at supermarkets may be suited for a household of four or more members, but may result in more AFW for a 2-person household. For instance, a family of two might find it difficult to

consume a pack of three English cucumbers before they spoil, but at the time of purchase, that three-pack may seem like the better deal. Encouraging people to purchase smaller quantities of perishable items could be a possible message to include in future education programs. Additionally, it may be beneficial for some households to consider joint produce shopping trips with other households, among family or friends. Households could save money by sharing costs, as well as splitting economy-size bags, baskets, or crates of produce, especially for foods that are available in large quantities when they are in season (e.g., ears of corn in July/August).

Cooking and Food Storage Habits

Some AFW could be reduced if more residents used a freezer to store larger meal leftovers. In food diaries, a common reason given for food being thrown out was that it spent “too many days sitting in the fridge.” Encouraging residents to use the freezer for leftovers, and labeling foods with the date of storage could help reduce the amounts of leftovers going into the garbage.

“Some times I made too much food but not enough to keep for leftovers.”

-35-44 yr old female, parent

Having a plan for leftovers before making larger meals may also help reduce AFW. In some cases, leftovers were thrown away because there was not enough left to save for another meal. For instance, if extra rice was made, planning how it could be used in another meal may help with diverting AFW from the garbage.

It is unlikely that an educational campaign that encourages residents to make less food would be very effective. It is culturally normative, especially in social situations, to prepare and make an abundance of food for family and guests. However, one behaviour that could be addressed may be to encourage residents to package and distribute leftovers for take-home among guests, so that one household is not solely responsible for eating the remaining leftover food. In family situations, more pro-active planning would be needed to determine who is going to use the leftovers, and how they will be used.

Other Habits and Lifestyle Factors

Overall, the process of participants completing a food waste journal provided considerable feedback stating participants' increased awareness of food waste, and their desire to further reduce household food waste. Participants also provided several thoughts and comments about their busy and complex life situations. The second-most frequent reason stated in the survey for not trying to reduce household food waste was that participants did not know how or have the time to reduce their food waste. Residents' busy lifestyles would likely reduce their willingness and ability to reduce food waste, especially if it meant that more time would be needed for planning and preparation. Additional lifestyle and socioeconomic factors that were not within the scope of this project may also affect residents' willingness and ability to reduce their food waste. Further study of these factors would likely be required to assess which of these may be the biggest barriers to overcome in reducing AFW. These preliminary findings indicate that any future education programs should target simple, easy-to-change habits that do not require a significant time or financial investment from residents..

"I will be happy when school is finished as the kids do not want sandwiches anymore"

-56-65 yrs old female

This study was conducted primarily in June and July. During this time, the big calendar events were the end of school, the start of summer, and the Canada Day weekend. Some parents reported that children were getting tired of lunch routines. Others reported that they had large amounts of food waste from barbecue get-togethers, and those who went camping over the weekend had very little food waste at home. Life events, changes in routines, social gatherings, and holidays or vacation plans can and do affect the amount of food waste produced, through purchasing, consumption, and disposal patterns.

Perceptions of Food Waste

The results highlighted some key perceptions and behaviours that may significantly impact residents' willingness to reduce household food waste. In order to develop an education or

social marketing program to help residents reduce their food waste, the program would need to effectively address concerns and topics that matter most to residents. In this study, the biggest motivations behind residents' food-related behaviours included: providing healthy food options for themselves and their children; having a wide variety of food options; saving money; and saving time (or not having enough time). Any food waste-saving ideas or suggestions that may be included in future programs should be low-cost, involve minimal time commitment, and provide residents with a variety of healthy options for using leftovers and produce.

An essential component of any future education of social marketing program for residents will be to provide information and to raise awareness about the types of food waste, the environmental and financial impacts of food waste, and to emphasize the important role that each resident has in reducing food waste on a larger scale (e.g., over time, on a city-wide scale). However, awareness on its own may not translate into behavioural change. A concerted effort over time would need to be made to demonstrate to residents how easy it is to reduce their own food waste, and to highlight the benefits of reducing food waste, without sacrificing desire for food quality, variety, health, or a good deal at the supermarket.

Conclusions

This preliminary research project, focused mainly on descriptive univariate analysis, was designed to test research methodology and to gain some initial insights to that will be helpful for designing future research projects and educational campaigns related to food waste reduction. The scope of this project was to find out what types of food waste were being discarded and why, participants thoughts and perceptions around food waste, and behaviours that impact food waste production in households. There are other complex factors (e.g., demographics, socioeconomics, urban geography, culture) that may have additional impacts on the production of food waste by residents, however these variables were outside of the scope of this project. Despite the small scale and scope of this project,

the results yielded some interesting observations and trends that should be further examined with additional data analysis or in future research projects.

Suggestions and Recommendations for Future Research

Given the small sample size of the home interview and waste audit, inferences cannot be made about Edmontonians' food habits as a whole. For future studies, it is recommended that a larger scale survey with random sampling be conducted, combined with a series of sub-sample waste audits. These results could be used to get a clearer image of how residents across Edmonton purchase, store, cook, use, and dispose of food-related waste.

Recommendations for Data Analysis

This report only provided summaries of data from each of the project components. Datasets should be further analysed with statistical software (e.g., SPSS or STATA) to find bivariate and multivariate relationships, as well as to test the strength of those relationships. The waste audit and home interview data, when combined, could produce interesting results in regards to how shopping habits relate to FRW and how household size factors into FRW.

Waste diary data should also be compared and correlated with home interview and waste audit data for analysis. Due to time constraints during this phase of the project, it was not possible to combine the waste diary data with the data from the interview and waste audit for this report. Once data are combined, it may be possible to further analyze if and how keeping a food waste diary affected the results from the diary. Participants who completed diaries were aware when their journal results would be collected and analyzed. However, participants did not know exactly when their waste audits would take place. The results and trends from the diary and waste audit data may therefore differ.

Recommendations for Data Collection

For future data collection, a full range of demographic information, including gender, income, occupation, and education, is recommended. These variables could provide further

insight regarding patterns and correlations seen in the data, as well as additional factors that may affect food waste production.

Recommendations for Further Development of Research Tools

1) User Interface of the GIS Map and Survey

Keeping track of the total houses visited. There is an accurate count of how many residents answered the door during canvassing for surveys, but there is not an accurate record of how many houses were visited in total. For future projects, it is recommended that a total count of houses canvassed be tracked and recorded.

Including opt-out functions into survey questions. The ability to skip questions in the survey resulted in missing data. Primarily this occurred with the question “Do you have children 17 years and under living at home?” Adding a “Prefer not to say” option would be preferable than having incomplete data for residences.

2) Home Interviews

Participants who took part in the home interview were often confused by the wording of Question 52 (Section 6, Question 4): “Which (if any) of the following reasons prevent your household from trying to reduce the amount of food that is thrown away?” The majority of listed statements were posed in way that may be counter to the values of participants, and may need to be reworded in future interviews for clarity.

Some questions needed to be pulled apart because they were asking about more than one food-related behaviour. For example, Section 6, question 1: “To what extent do you currently do any of the following to minimize that amount of food and food-related waste that your household throws away?” Responses included buying in bulk and buying food with less packaging. Some respondents answered that they did try to buy food with less packaging but not particularly bulk section products. Another question that could have been pulled apart was from the doorstep survey (Section B, Question B2): “Do you have a backyard composter or worm bin for composting food scraps?” By pulling this question

apart into two separate questions, there could be more detailed information about percentages of participants that use different types of composters.

There were some definitions that were not understood universally. In particular, the term “from scratch” was sometimes not understood by people who spoke English as a second language. As well, words such as “expired” had different meanings for people, and required further definition and explanation. Alternate wording may need to be considered in future surveys, to ensure participants fully understand the questions.

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<http://www.wrap.org.uk/sites/files/wrap/hhfdw-2012-summary.pdf> (Accessed Aug 15, 2016)

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Appendices

Appendix A: Doorstep Survey and Results

0.1 Date: _____

0.2 Neighbourhood: _____

0.3 Street Address: _____

Hello, I'm __ (Name) __, I'm with the City of Edmonton's Waste Management Services. We're in your neighbourhood today conducting a pilot study on food waste habits and perceptions. Do you have time to complete a three minute survey with me?

Are you able to spend a few minutes to take our survey?

Yes

No/Not Interested

By food waste we are talking about food, solids and liquids, that end up in the garbage. This includes table scraps, vegetable and meat trimmings and food that has gone bad. Based on previous studies, we know that about 47% of food waste in Canada is created by residents. In Edmonton, 42% of household garbage is food waste. The issue of food waste is becoming increasingly important for many cities in Canada and around the world.

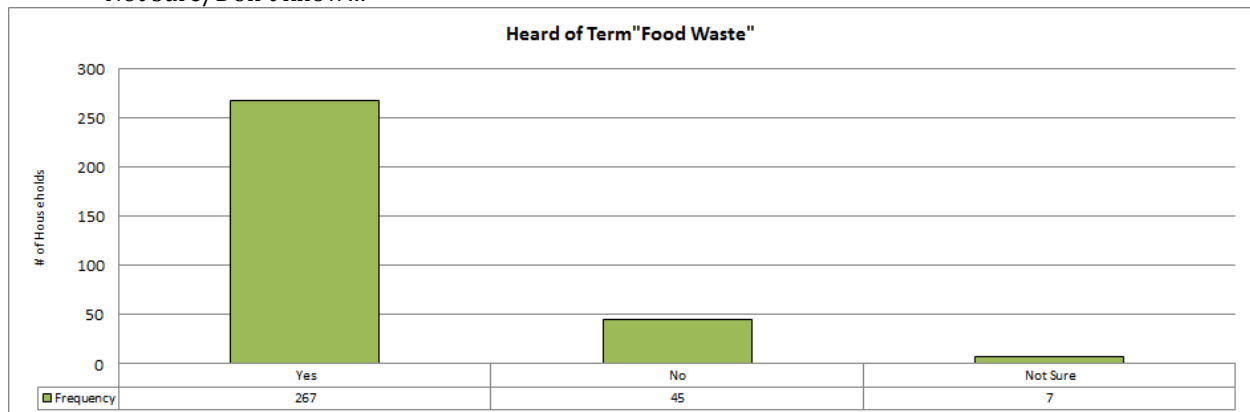
Food Waste Information (A)

A1. Before today, have you ever heard of the term "food waste"

Yes

No

Not sure/Don't know...



A2. Do you think that food waste is an issue in Canada?

Yes

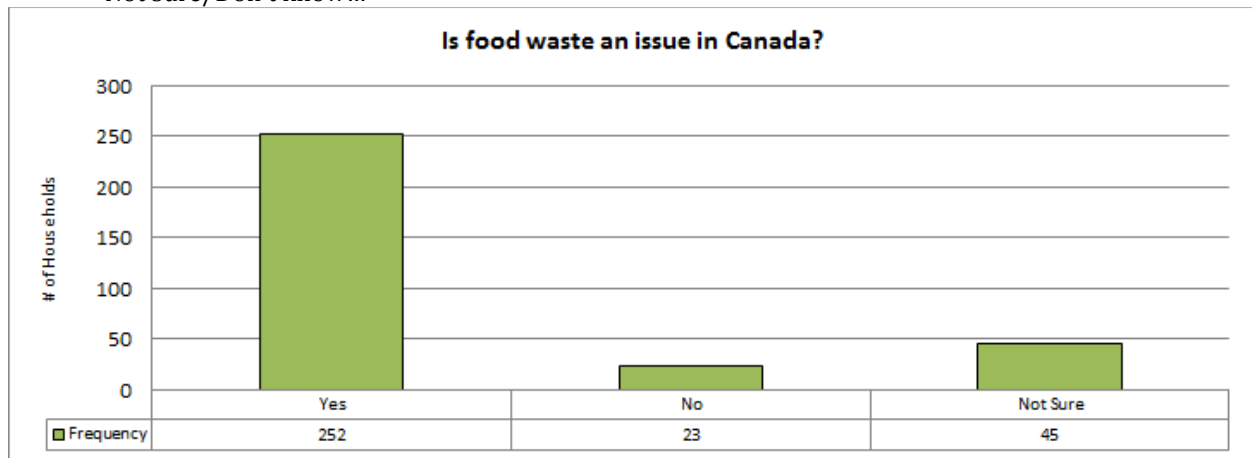
No

Not sure/Don't know...

A3. Do you think that food waste is an issue in Edmonton?

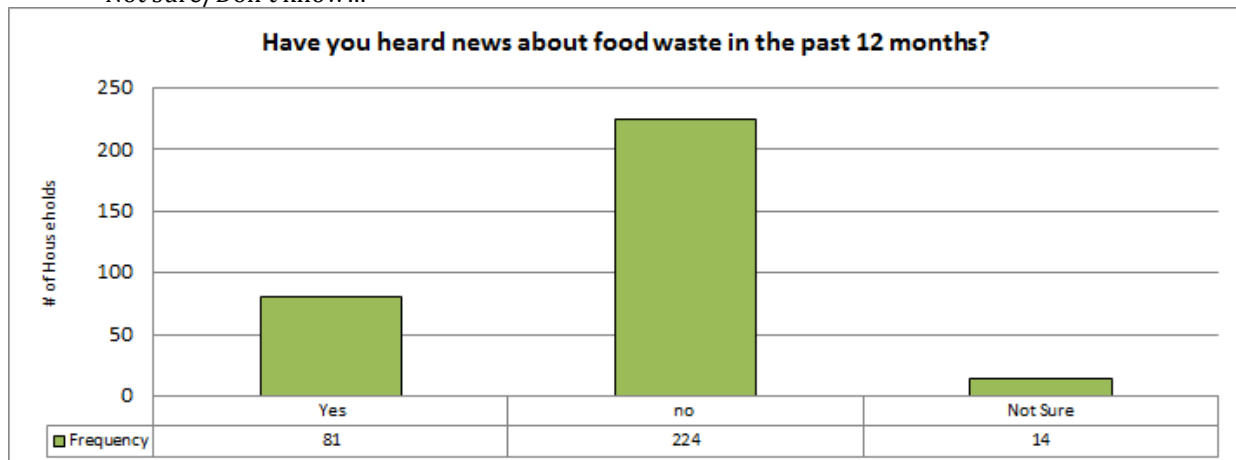
Yes

No
Not sure/Don't know...



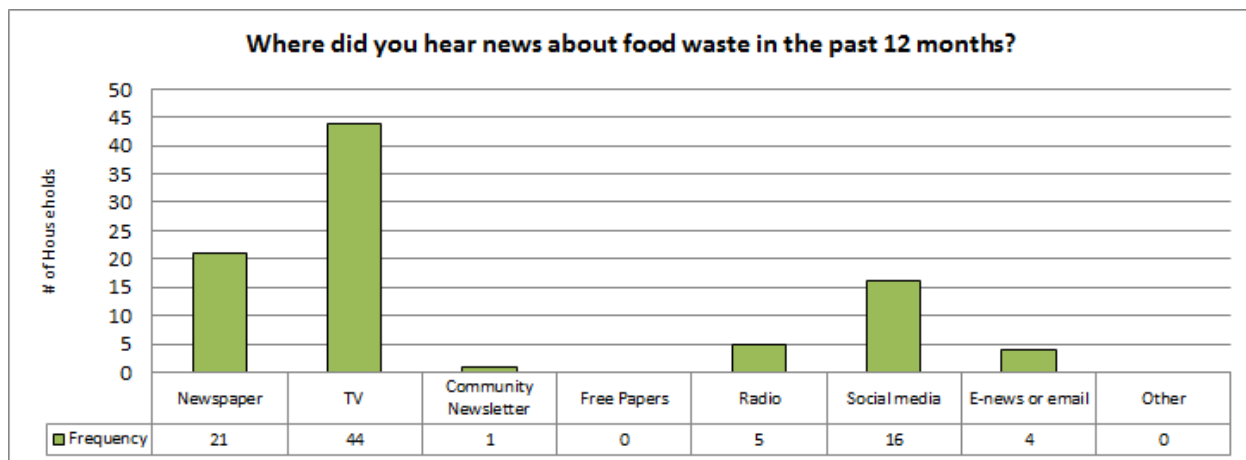
A4. Within the last 12 months, have you heard any news about food waste?

Yes
No
Not sure/Don't know...



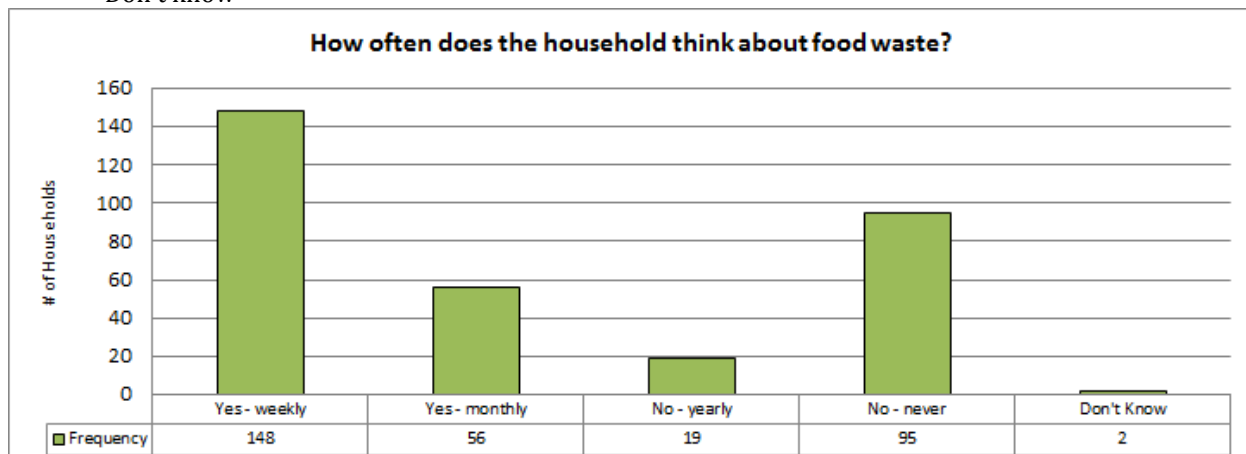
A5. If YES, where did you hear about food waste? (select all that apply)

- a) Newspaper
- b) TV
- c) Community Newsletter
- d) Free Papers
- e) Radio
- f) Social media
- g) E-news or email
- h) Other: _____



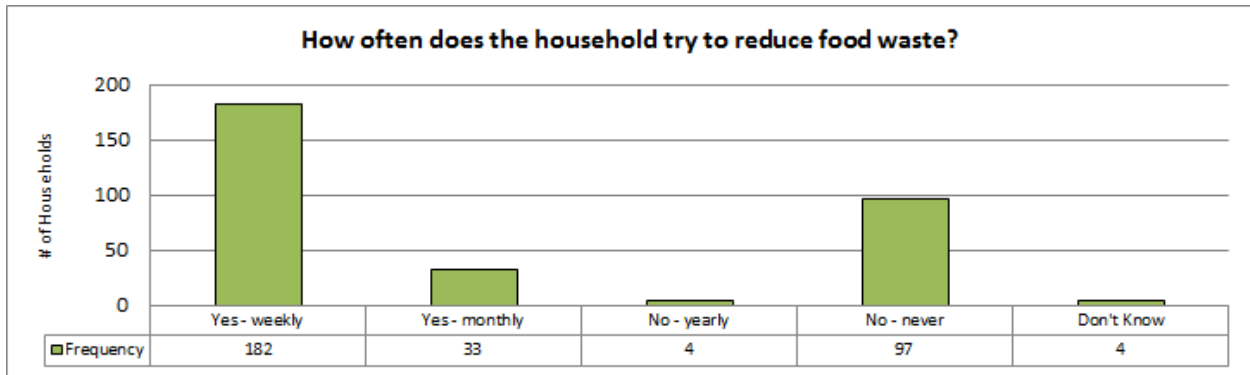
A6. Within the last 12 months, how often have you thought about wasted food in your household?

- Yes--at least once a week
- Yes--at least once a month
- No--A few times a year
- No--Never
- Don't know



A7. Within the last 12 months, how often have you tried to reduce the amount of wasted food in your household?

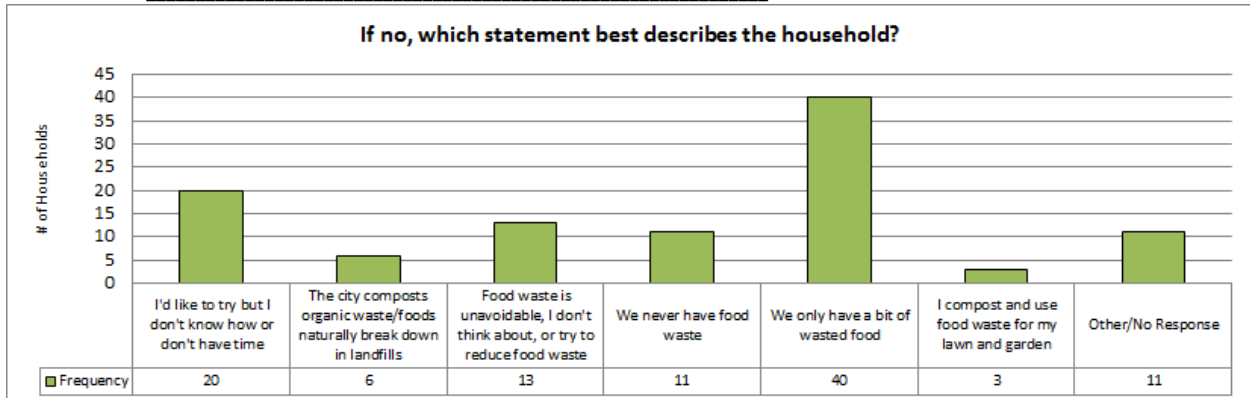
- Yes--at least once a week
- Yes--at least once a month
- No--A few times a year
- No--Never
- Don't know



A8. (If they answer "No" in the last question) Which of the six statements that best describes you?

1. I'd like to try but I don't know how or don't have time.
2. The city composts organic waste/foods naturally break down in landfills
3. Food waste is unavoidable, I don't think about, or try to reduce food waste
4. We never have food waste.
5. We only have a bit of wasted food.
6. I compost and use food waste for my lawn and garden.

A8a. Other: _____

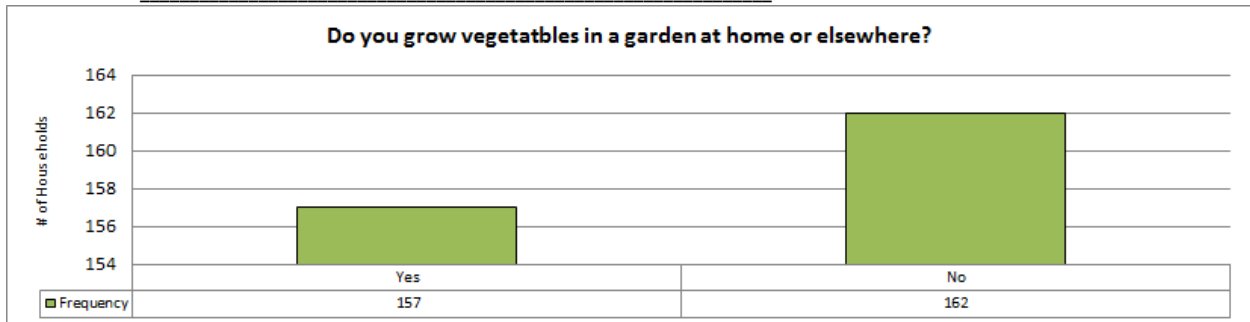


About Your Household (B)

B1. Do you have a home garden or garden plot where you grow food for personal consumption?

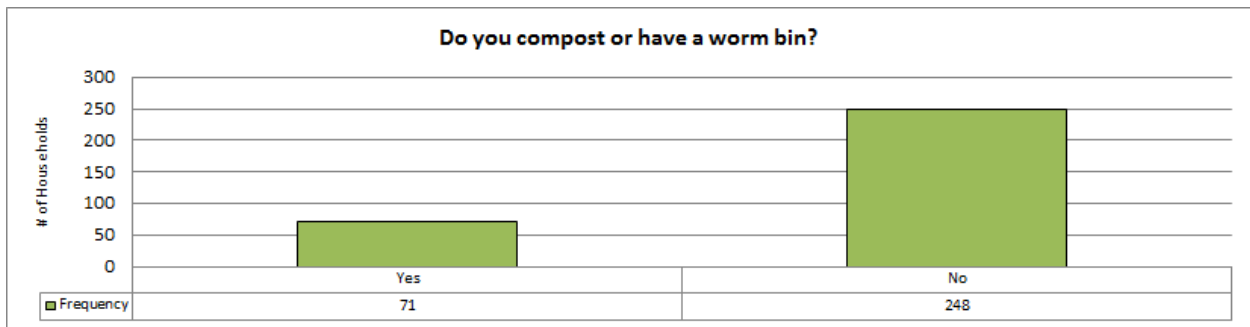
- Yes
No

B1a. Other: _____



B2. Do you have a backyard composter or worm bin for composting food scraps?

- Yes
No

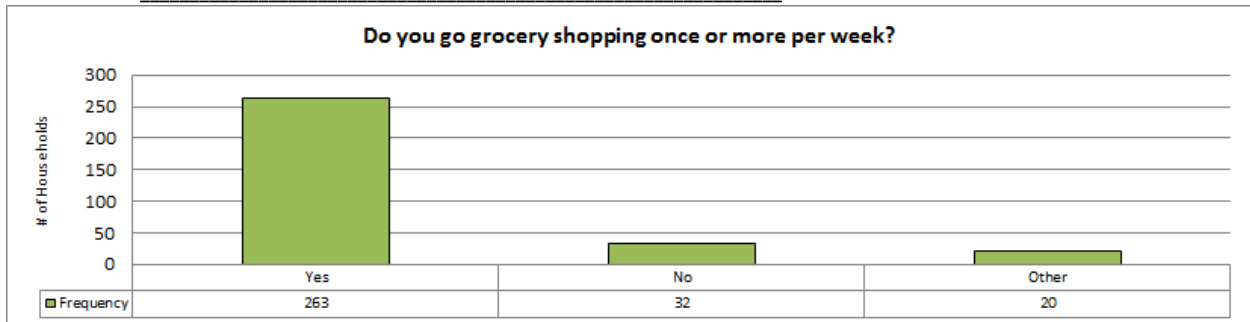


B3. Do you go grocery shopping once or more per week?

Yes

No

B3a. Other: _____



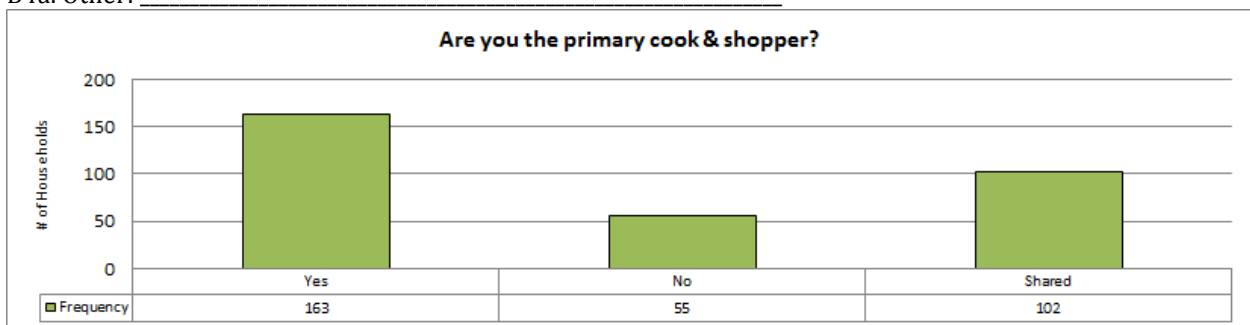
B4. Are you the primary shopper and/or cook in your household?

Yes

No--someone else is

I share the responsibility equally with another

B4a. Other: _____



B5. How often does your household cook and eat at home?

Every day or more than half the week**

2-3 times per week**6

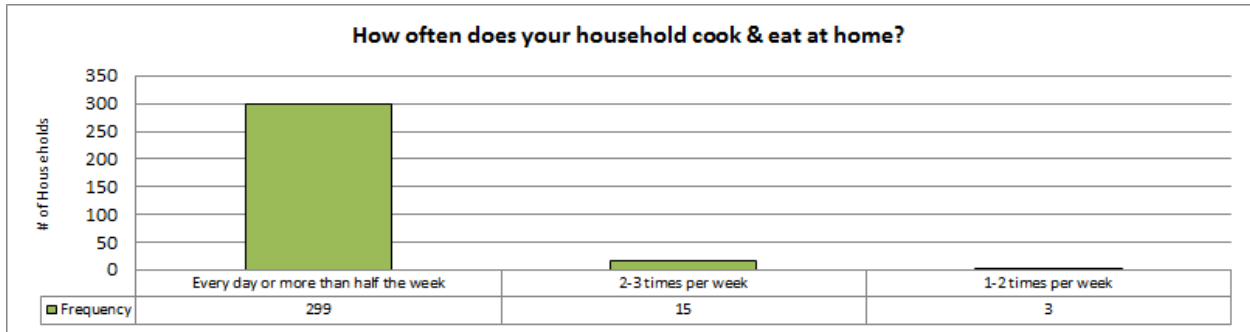
1-2 times per week

A few times per month

Rarely or on special occasions

⁶ **Only those who answered with these responses were invited to participate in the in-person interview

Never



Demographics (C)

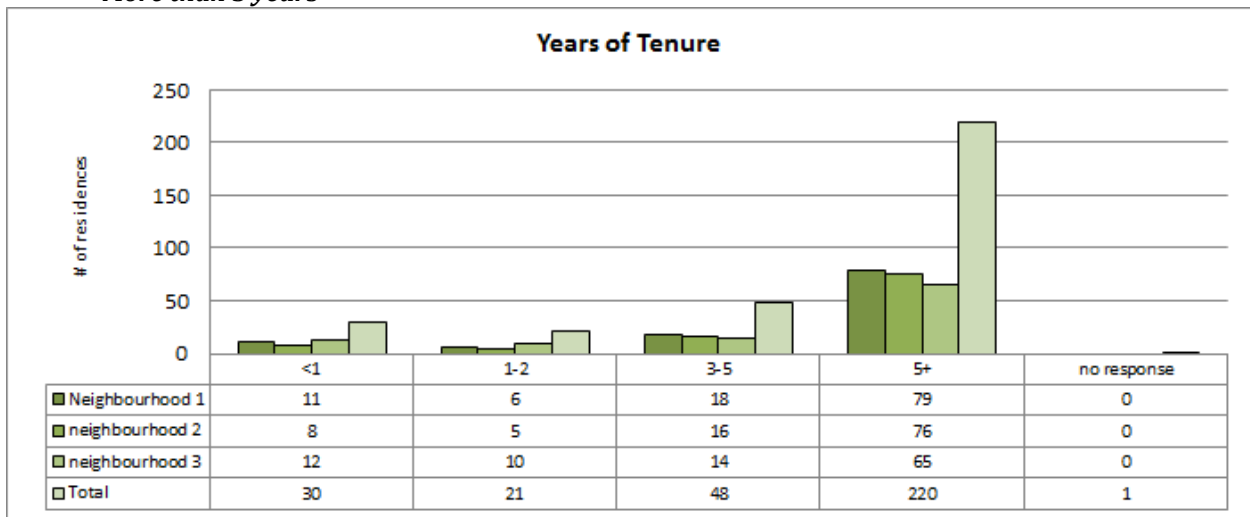
C1. How long have you lived at this residence?

Less than 1 year

1-2 years

3-5 years**

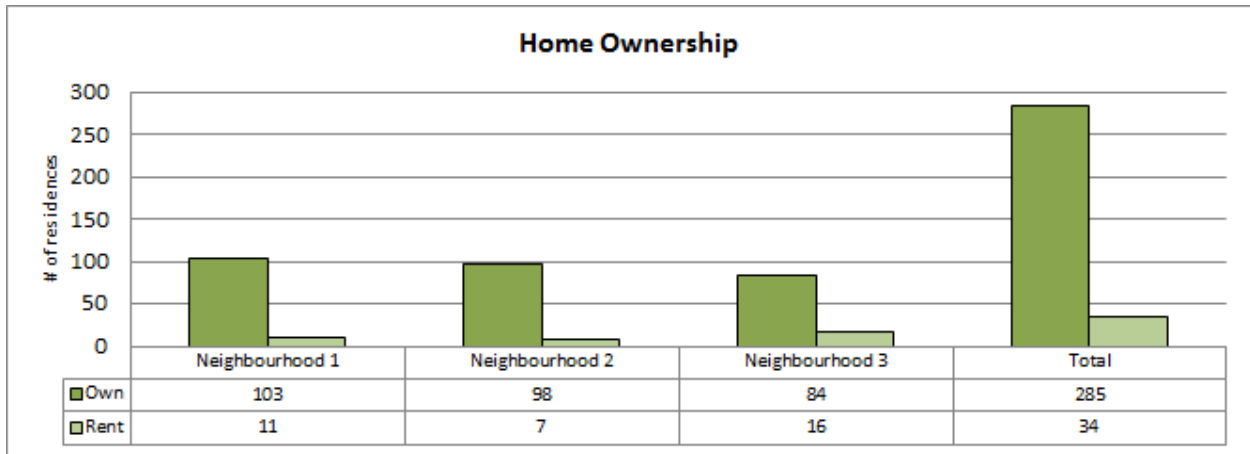
More than 5 years**



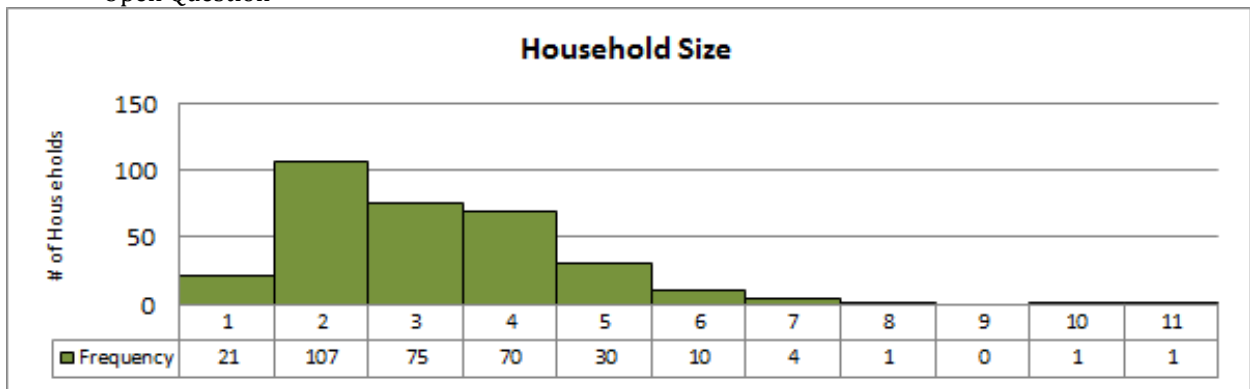
C2. Do you own or rent?

Own

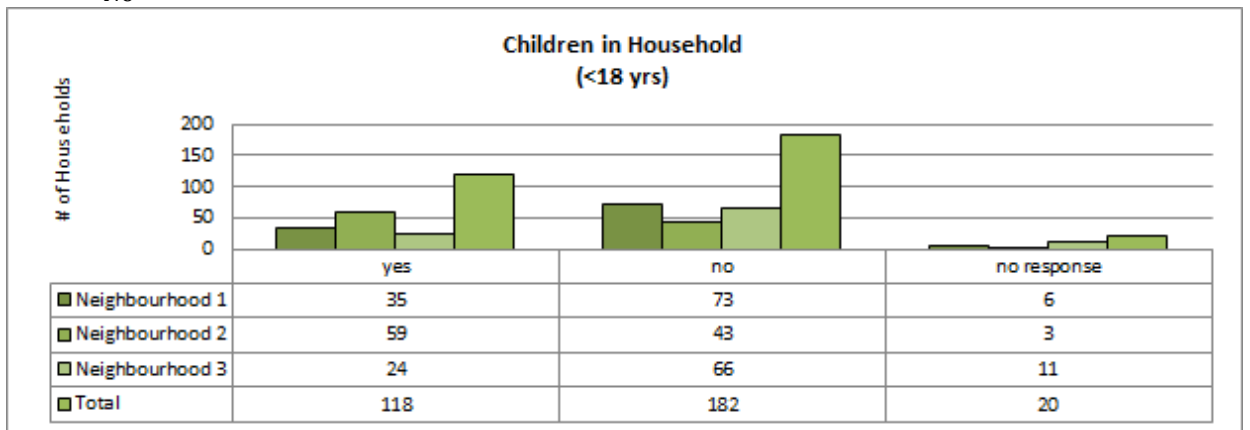
Rent



C3. How many members (including yourself) are living within your household?
Open Question

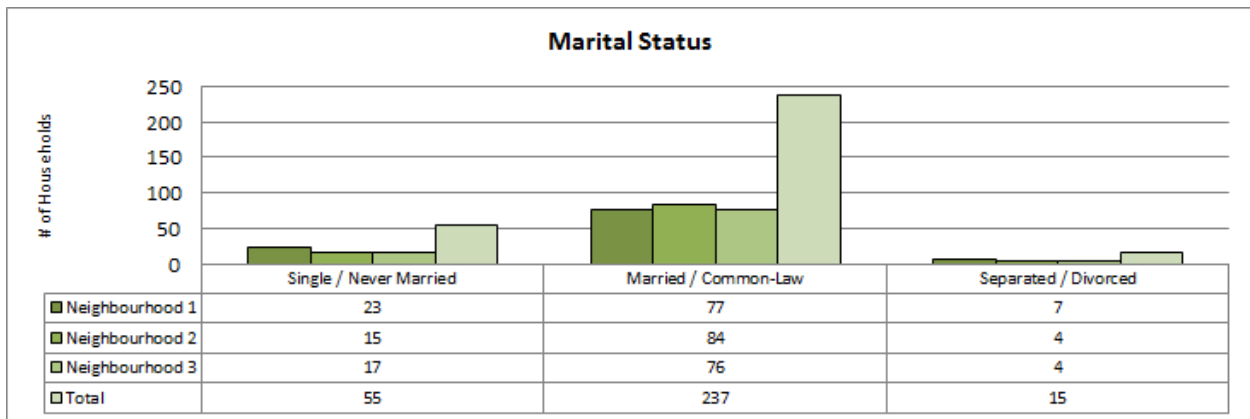


C4. Are there any children under 17 in your household?
Yes
No



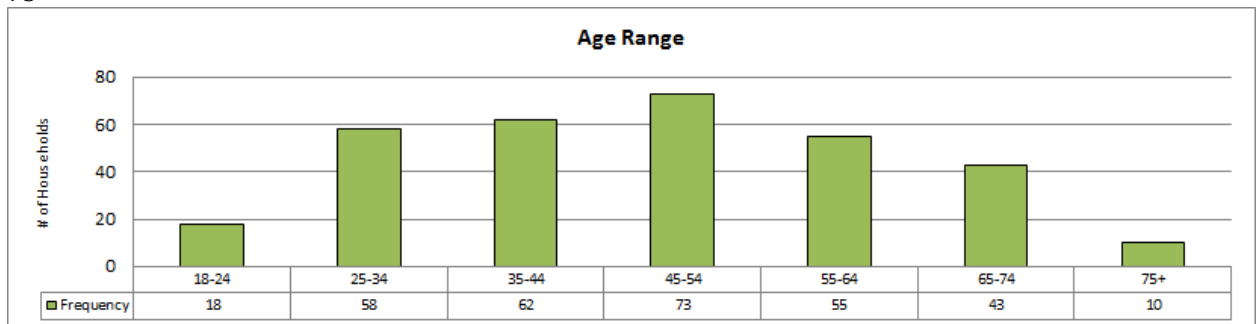
C5. How would you describe your marital status?
Single/Never Married
Married/Common-Law
Separated/Divorced
Widowed

C5a. Other _____



C6. What is your age range?

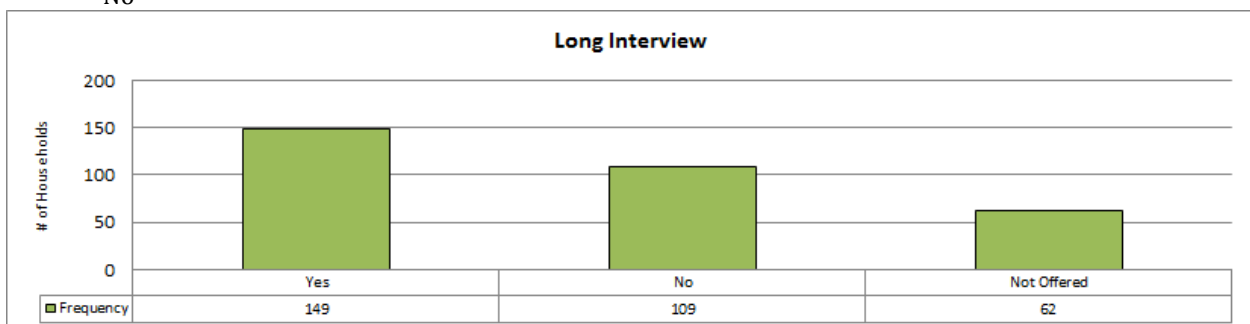
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75+



Offer of longer interview (D)

D1) Thank you for taking the time to answer our questions today. Based on your responses, we would be interested in interviewing you more in-depth. An in person interview would be about 45 minutes long and take place in a location of your choosing. You would be compensated for your time with a family pass to the Muttart Conservatory or the Valley Zoo or two books of bus tickets. Would that be something that would interest you?

- Yes
- No



D2) Can I schedule you now or should I contact you later to schedule a date and time?

Schedule now
Call/email me

D3: Interview Scheduler date: _____

D4: Interview Scheduler time: _____

D5: Name: _____

What is the best way to contact you?

D6: Phone: _____

D7: Phone Alternate: _____

D8: Email: _____

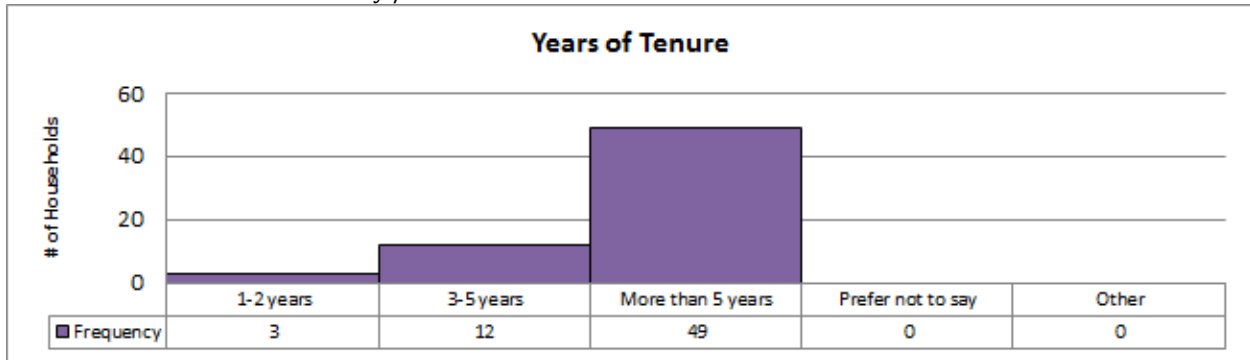
D9: What is the best time to reach you? (Day / Eve / Weekend)

Appendix B: Food Waste Interview and Results

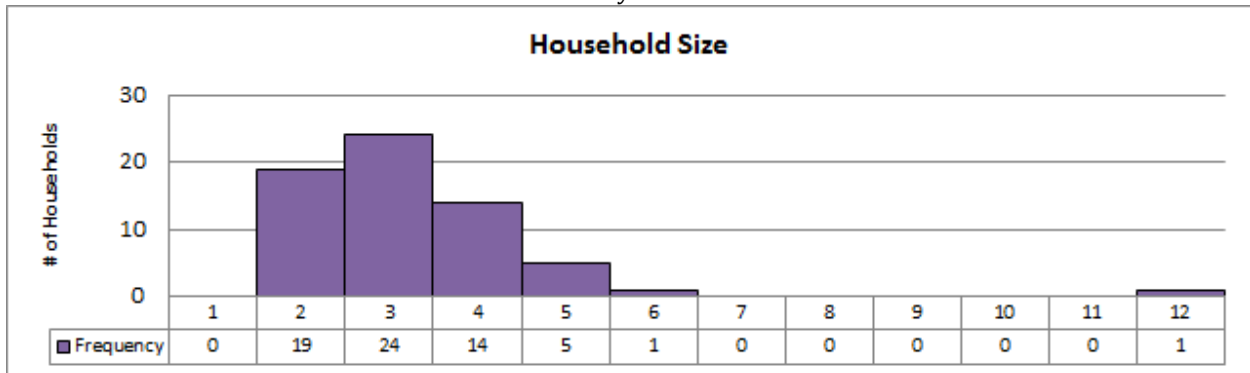
Section 1: Demographic Information (A)

A01. How long have you lived at this residence?

- 1-2 years
- 3-5 years
- More than 5 years
- Prefer not to say / Other

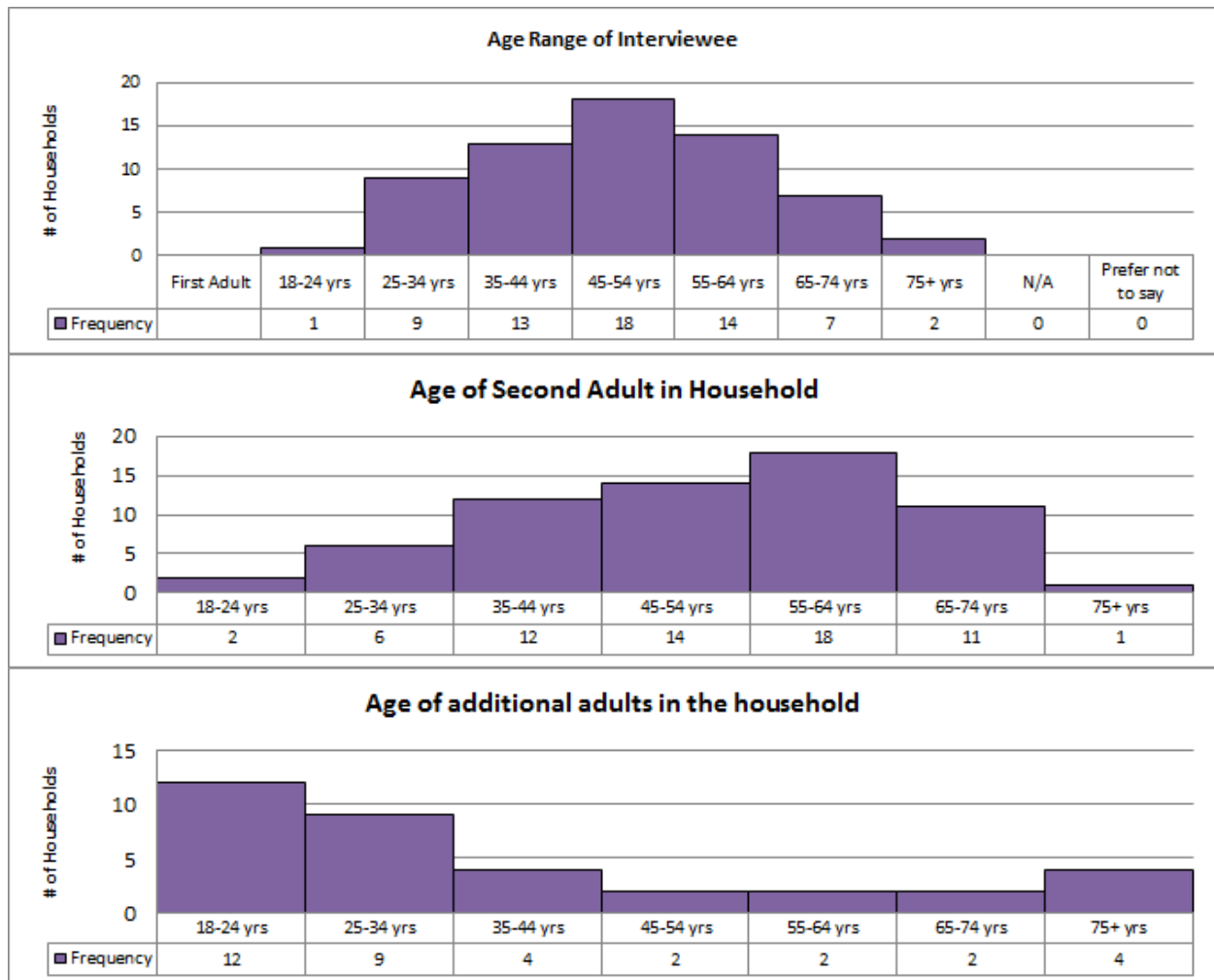


A02. What is the total number of residents in your household?



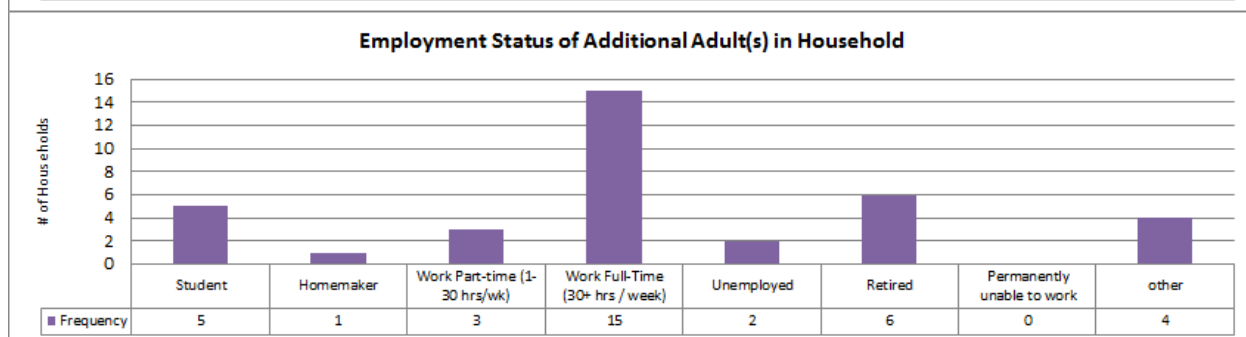
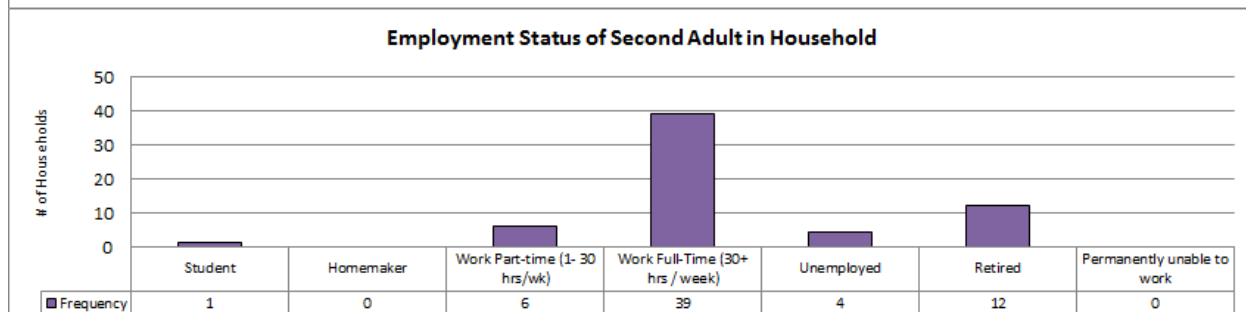
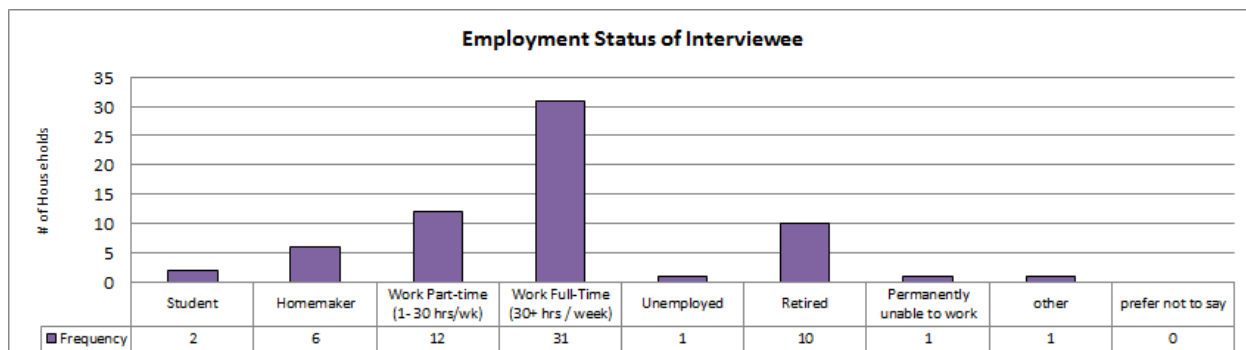
A03. What is the age range of adult(s) in your household?

- 18-24 yrs
- 25-34 yrs
- 35-44 yrs
- 45-54 yrs
- 55-64 yrs
- 65-74 yrs
- 75+ yrs
- N/A
- Prefer not to say

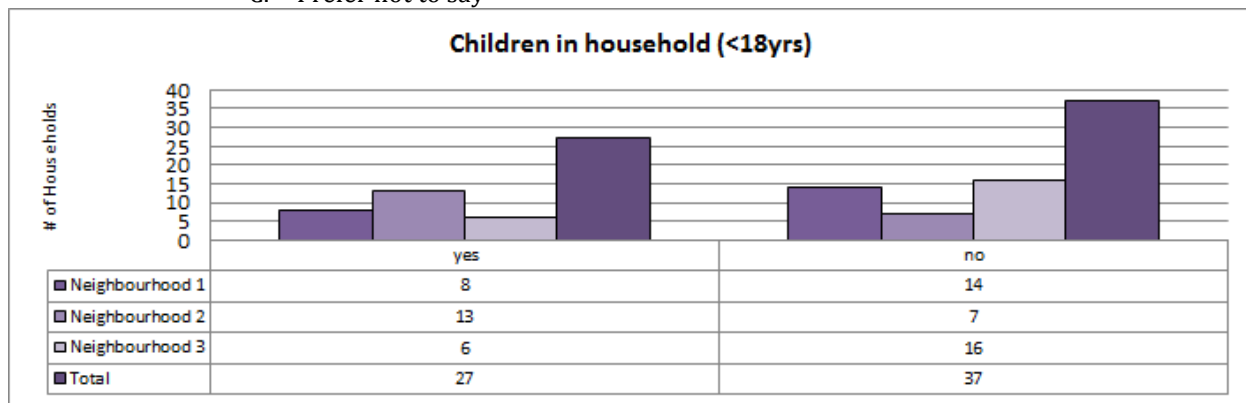


A04. What is the employment status of adult(s) in your household?

- Student
- Homemaker
- Work Part-time (1- 30 hrs/wk)
- Work Full-Time (30+ hrs / week)
- Unemployed
- Retired
- Permanently unable to work
- Other
- Prefer not to say

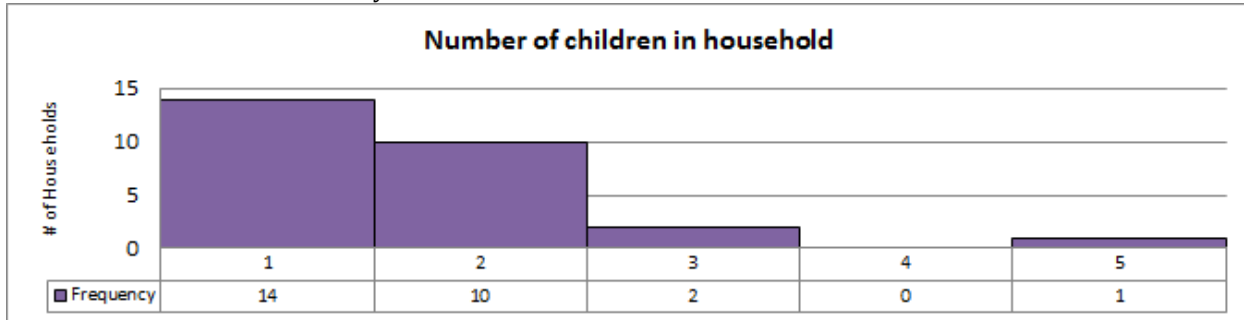


- A05. Are there any children (under 18 years) in your household?
- A. Yes
 - B. No
 - C. Prefer not to say



- A06. What is/are the age range(s) of the child(ren) in your household?
- A. 0-5 yrs
 - B. 6-10 yrs

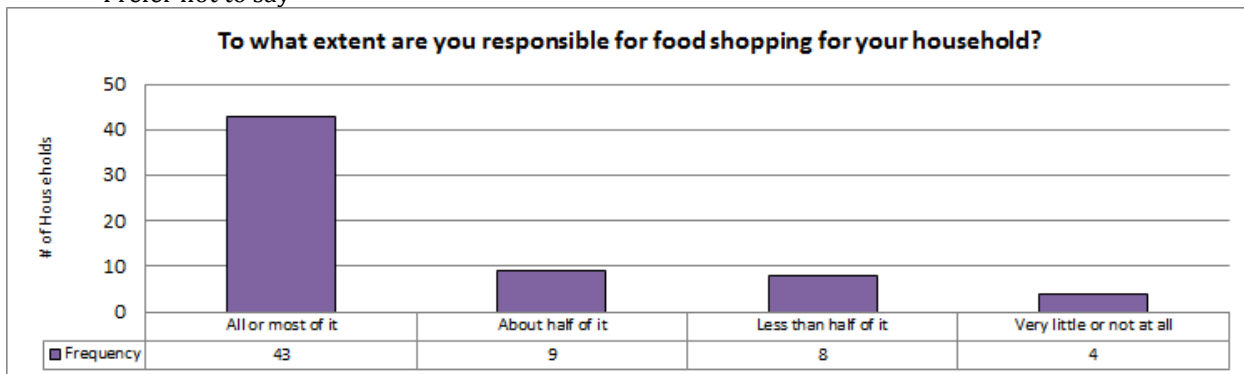
- C. 11-14 yrs
- D. 15-17 yrs
- E. None
- F. Prefer not to say



Section 2: Shopping Habits (B)

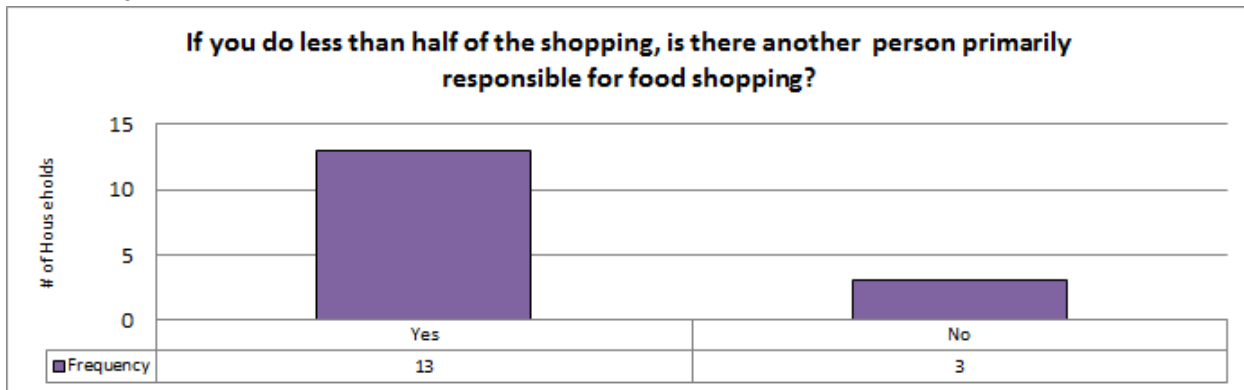
B1a. To what extent are you responsible for food shopping for your household?

- All or most of it
- About half of it
- Less than half of it
- Very little or not at all
- Prefer not to say

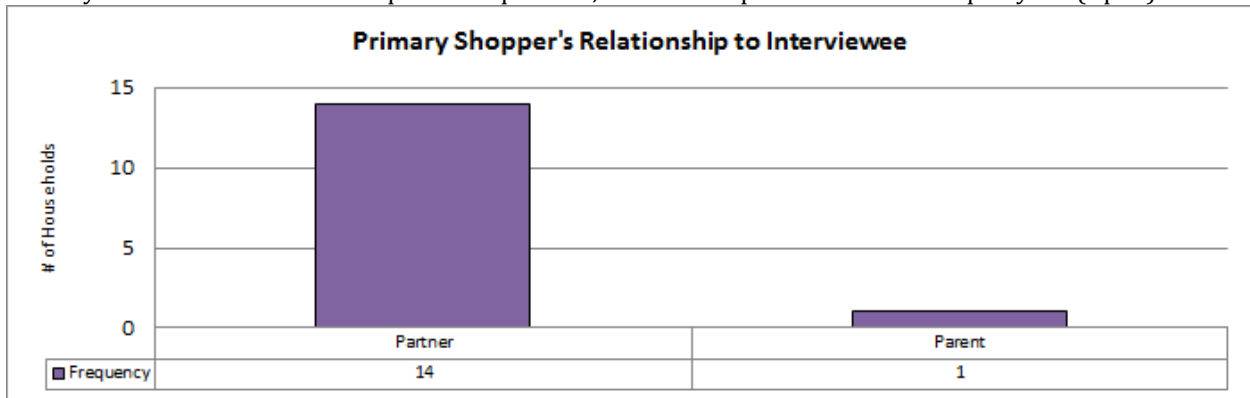


B1b. If you do less than half of the shopping, is there another person in your household that is primarily responsible for food shopping?

- Yes
- No

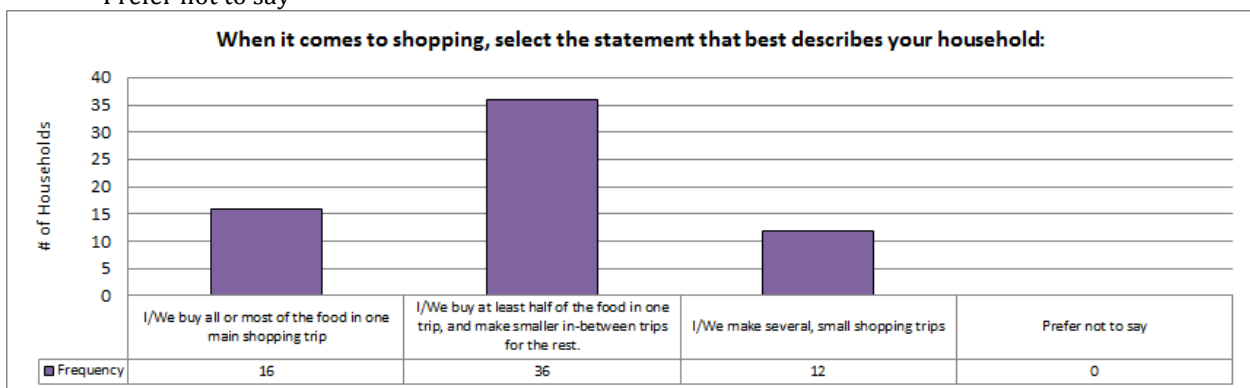


B1c. If you answered "Yes" to the previous question, what is this person's relationship to you? (Open)



B2. When it comes to shopping, select the statement that best describes your household:

- I/We buy all or most of the food in one main shopping trip
- I/We buy at least half of the food in one trip, and make smaller in-between trips for the rest.
- I/We make several, small shopping trips
- Prefer not to say



B3. In your own words, could you describe for me the last grocery shopping trip you made?

Types of Stores		
Code	Frequency	Definition
Medium to Large Supermarket	34	Including Safeway, Superstore, Save-On Foods, Sobeys.
Warehouse-type Stores	5	Including Costco, The Grocery People, and other warehouse-type stores.
Specialty Store	4	Stores specializing in produce, ethnic foods, imported foods, deli items, or baked goods.

Did not specify type of store	23	The interviewee did not specify the type of store they were shopping at in this instance.
Types of Products		
Code	Frequency	Definition
Produce	41	Vegetables, fruit, and herbs.
Dairy	24	Milk, ice cream, cheese, and other dairy products.
Dry Goods	6	Dried goods include pasta, crackers, rice, beans, and similar products.
Meat, Fish, and/or Eggs	20	Including fresh/raw and frozen meat and fish.
Juice, Pop, or Other Non-Dairy Beverages	3	Beverages, not including milk.
Canned Goods	3	Store bought canned goods such as fruit, chili, or corn.
Bakery Products	14	Includes bread, muffins, pastries, and desserts.
Did not specify type of products	11	The interviewee did not specify the type products they purchased.
Who went		
Code	Frequency	Definition
Household	60	Family and roommates living in the household in question.
Other Family	1	Family living outside the household in question.
Did not specify who did the shopping	3	The interviewee did not specify the people who were shopping.
Who it was for		
Code	Frequency	Definition
Household	61	Family and roommates living in the household in question.
Other Family	4	Family living outside the household in question.
Did not specify who shopping was for	3	The interviewee did not specify who the groceries were for.

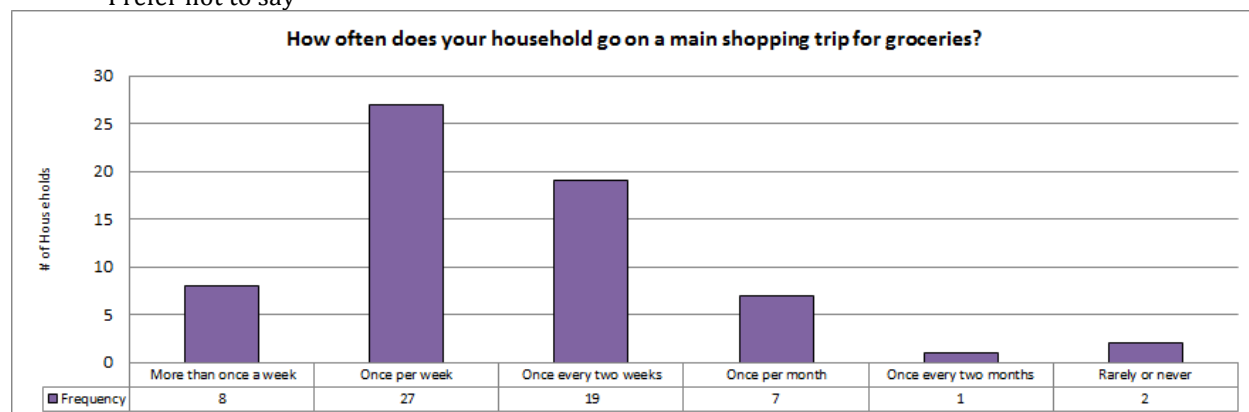
Verbatim Responses	
Sec 2 Q3. In your own words, could you describe for me the last grocery shopping trip you made?	
1	We went to Save-On Foods to buy milk and also picked up bananas and tea.
2	We had to buy meat and veggies for chilli at a gathering.
3	We went to Costco for fruits, vegetables, and other miscellaneous items.
4	We went to Superstore to buy toiletries and then on the way home we stopped at Save-On Foods for fruit and on-sale pop.
5	I went to Sobey's with my partner and roommate to get ground beef, tomatoes, cheese, and taco shells for dinner.
6	We went shopping for fresh produce and for my mother in law; we shop weekly for both of us.
7	We went to H&W specialty store for a couple days worth of produce.
8	I went with my husband to Save-On-Foods and bought about 1 week worth of groceries, mainly produce.
9	We went to Sobey's and bought 6 bags of groceries including meat, produce, canned goods, bakery goods, toiletries, and pet food.
10	Not applicable
11	Every two months we stock up on laundry soap, cleaning supplies, paper towel supplies, meats and condiments it is our big shopping trip. In between we go weekly and shop according to the sales in the flyers.
12	We went to get produce.
13	I went to get things I forgot in the big shopping trip, including groceries and diapers.
14	Yesterday, I went to Sobey's to buy produce.
15	We went to Save-On Foods to bought milk and fruit.
16	We went on Friday to No Frills and bought meat, produce, milk, and bakery products.
17	Today I got potatoes from Sobey's. We were going to eat potatoes and i checked the pantry to find there were none, so I ran out to the store.
18	We went to Walmart to buy meat and produce.
19	We went to a produce market where I picked up a week's worth of produce then to a medium to large supermarket to pick up eggs, milk, etc.
20	The whole family went to Wal-Mart and got meat, veggies, fruits.
21	We went Sobey's to buy fruits, vegetables, and dairy products.
22	My partner went on her weekly shopping trip with her mom and purchased produce and milk.
23	We went to Costco for milk and came out with lots more.

24	We went to Costco and bought vegetables, rice, bread, fruit.
25	We went to Safeway to buy bread and milk.
26	We went to Superstore and bought milk, veggies, and some ham.
27	We went to H&W produce for fresh vegetables and fruit.
28	Today I went to H&W for herbs, vegetables, fruits, and bread.
29	Yesterday we went to Superstore and Save-On Foods to get produce, dairy, and dry goods.
30	We got a bag of buns for hamburgers.
31	We went to Sobeyes to buy bread, toothpaste, and wine.
32	I went to No frills and did my weekly shop for everything.
33	Yesterday I went to Superstore for produce, meat, some canned goods.
34	We went to Costco and Walmart; Costco for boxed stuff (like grocery) and then Walmart for fresh stuff (deli, milk, juice).
35	We went to Sobey's for vegetables, milk, bread and fruits.
36	We went to Wal-Mart for bottled water, fruits, veggies, and dairy. It was a small trip that totalled approximately \$100.
37	We just bought food for the week, basic stuff for lunch and dinner.
38	We went to Superstore for pasta and meats in bulk, sauces, etc. We get fresh produce from Superstore or Sobey's.
39	We took a short run out to buy some odds and ends food, like milk and butter.
40	Today we got baby formula and some dessert for a dinner party tonight.
41	We went on one of the smaller trips for baby items and produce.
42	We took a quick run to the Superstore.
43	We went to Superstore for fruit, veggies and meat.
44	We went to Sobey's for a few ingredients for the dish we were cooking that night.
45	On our last trip my husband went to Costco to pick up a variety of food, mainly grocery and some produce. We made a small as well to get milk and bananas.
46	On Saturday and Sunday we went for produce and meat.
47	Went over to Co-Op to get tomatoes and cucumbers, because we forgot them at Superstore.
48	We went to Save-On Foods to buy items on sale; including household items, some gifts, candy, coffee, and cleaning supplies.
49	We went for sauerkraut, cheese, milk, and pharmacy items.
50	Not Applicable
51	We went this morning to 10% Tuesday to get all our food for a big event on June 29.
52	On the weekend we shopped at 2 stores: Save-On Foods for most items and Sobey's for a few other items.

53	I wasn't there so I don't know.
54	We went as a team and shopped for us and our mother. We bought dairy, meat, fruit, veggies.
55	We went to the Wal-Mart SuperCentre and got food for two weeks, including hamburger, chicken, pasta, sauces, potatoes, veggies (lettuce, cucumber, tomatoes, mushrooms, onions), and fruit (watermelon, oranges).
56	My wife went on Sunday for meat, bread, vegetables, and fruit.
57	We went this morning just for milk and eggs.
58	I only do one shopping trip every two weeks. I went for everything but mostly fruits, vegetables, meat, and dairy. I also got some canned stuff including beans and corn for chili.
59	We went to buy milk at Co-op.
60	Today I bought milk, bread, fruits, and vegetables.
61	We went to Save-on-Foods and bought mostly produce.
62	Half an hour ago we got a few things on the list and a couple extra things for dinner.
63	I bought bread, ice cream, cream, milk, vegetables, some meat, and potato chips for the grand kid.
64	We went to Save-On Foods Purchased mostly produce, chicken, and a few bread items.

B4. How often does your household go on a main shopping trip for groceries?

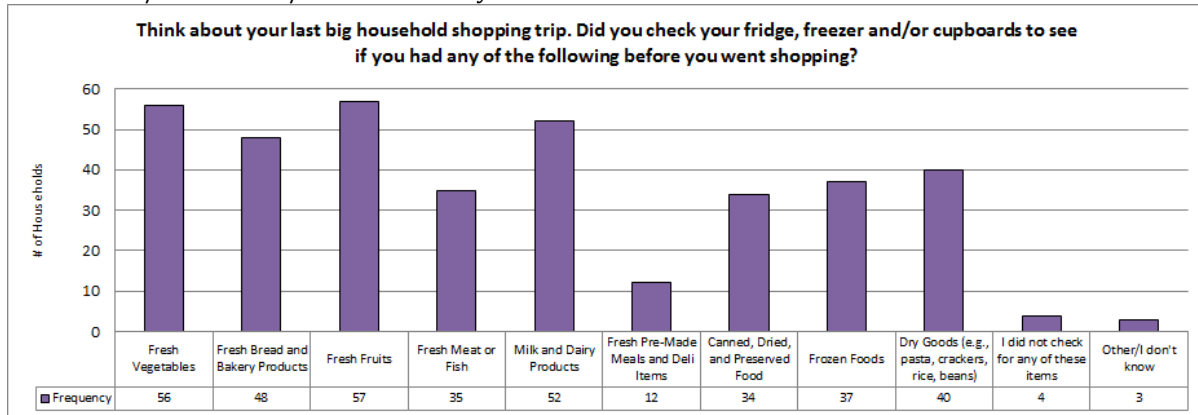
- More than once a week
- Once per week
- Once every two weeks
- Once per month
- Once every two months
- Rarely or never
- Prefer not to say



B5. Think about your last big household shopping trip. Did you check your fridge, freezer and/or cupboards to see if you had any of the following before you went shopping?

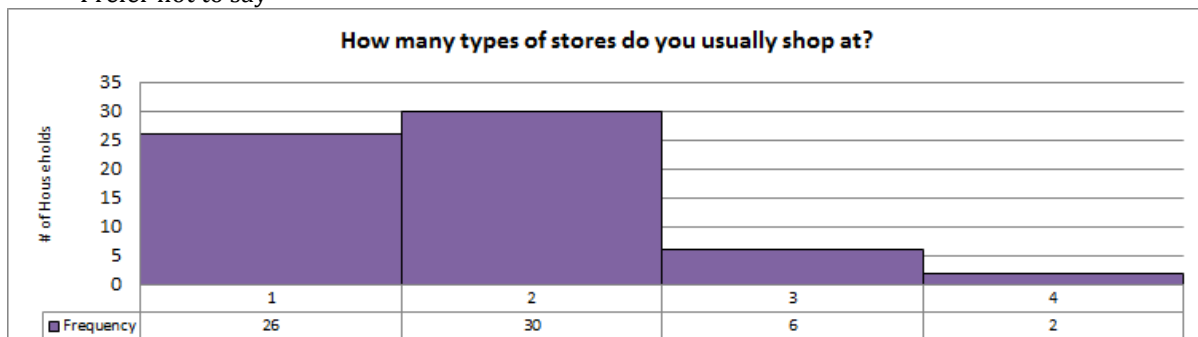
- Fresh Vegetables
- Fresh Bread and Bakery Products
- Fresh Fruits
- Fresh Meat or Fish
- Milk and Dairy Products

- Fresh Pre-Made Meals and Deli Items
- Canned, Dried, and Preserved Food
- Frozen Foods
- Dry Goods (e.g., pasta, crackers, rice, beans)
- I did not check for any of these items
- Other/Don't know/Prefer not to say



B6. At what type(s) of stores do you usually (50% or more of the time) shop for groceries?

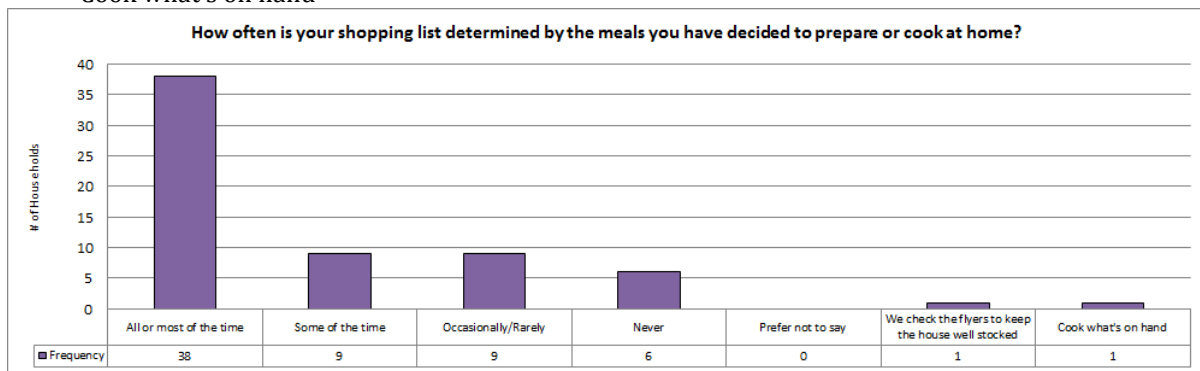
- Farmer's markets
- Specialty shops (e.g., ethnic foods, imported foods, small delis/bakeries)
- Bulk Stores (e.g., Bulk Barn)
- Warehouse-type stores (e.g., Costco, The Grocery People)
- Stores specializing in health food products and organic food
- Medium to large supermarkets (e.g., Safeway, Superstore, Save-On Foods, Sobeys's)
- Local corner stores and convenience stores
- Online / direct delivery services (e.g., Organic Box, Grocery Link)
- I do not shop at any of these locations
- Prefer not to say





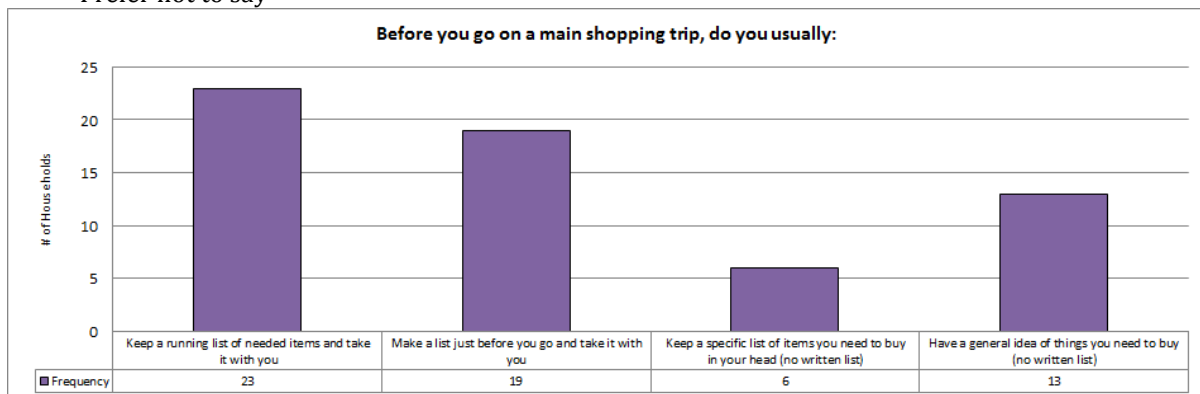
B7. How often is your shopping list determined by the meals you have decided to prepare or cook at home?

- All or most of the time
- Some of the time
- Occasionally/Rarely
- Never
- Prefer not to say
- We check these first to keep the house well stocked
- Cook what's on hand



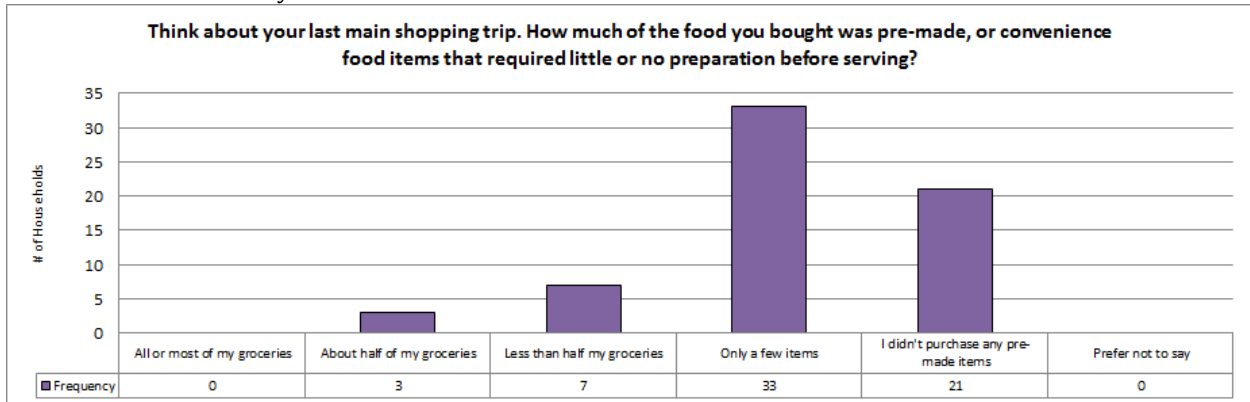
B8. BEFORE you go on a main shopping trip, do you usually:

- Keep a running list of needed items and take it with you
- Make a list just before you go and take it with you
- Keep a specific list of items you need to buy in your head (no written list)
- Have a general idea of things you need to buy (no written list)
- Have no plan ahead of time. When shopping, you buy based on what you find or want at that time.
- Prefer not to say



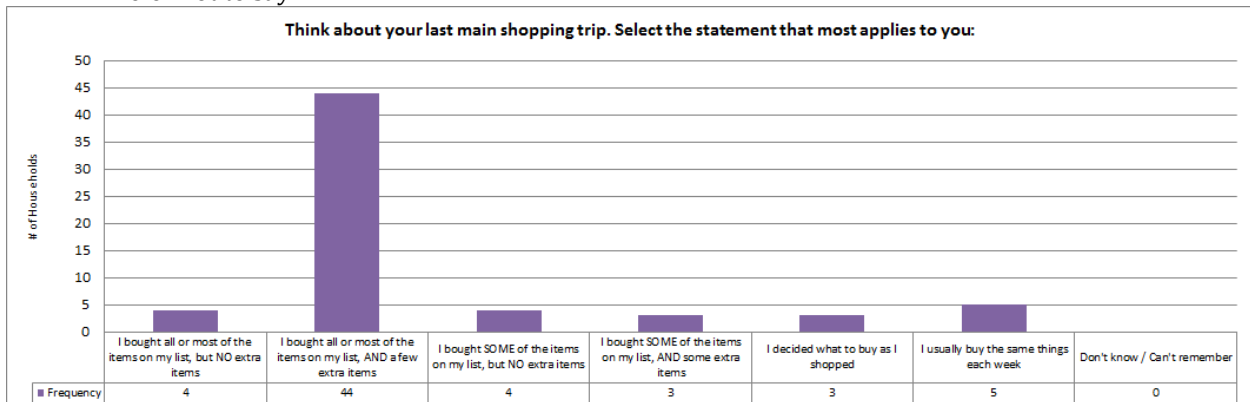
B9. Think about your last main shopping trip. How much of the food you bought was pre-made, or convenience food items that required little or no preparation before serving?

- All or most of my groceries
- About half of my groceries
- Less than half my groceries
- Only a few items
- I didn't purchase any pre-made items
- Prefer not to say



B10. Think about your last main shopping trip. Select the statement that most applies to you:

- I bought all or most of the items on my list, but NO extra items
- I bought all or most of the items on my list, AND a few extra items
- I bought SOME of the items on my list, but NO extra items
- I bought SOME of the items on my list, AND some extra items
- I decided what to buy as I shopped
- I usually buy the same things each week
- Don't know / Can't remember
- Prefer not to say



B11. Would you say your food purchases (types, quantities, brands) are influenced by others? This could include friends, family, and members of your household.

Influence		
Code	Frequency	Definition

Yes	39	Our purchases are influenced by other members of the household, family outside the household, and/or friends.
No	25	Our purchases are not influenced by anyone other than the person shopping.

Types of Main Influences

Code	Frequency	Definition
Household	37	Other members of our household influence our purchases.
Friends	12	Friends influence our purchases.
Family	17	Family influences our purchases.
None	25	Our purchases are not influenced by others.

Types of Other Influences

Code	Frequency	Definition
Brands	7	Brands influence our purchases.
Activities	2	Our purchases are influenced by activities we plan to take part in.
Local Food	2	Origin of products influences our purchases.
Season	1	Our purchases change based on the season.
Religious Preferences	1	Religious preferences influence our purchases.
Cost	1	Cost influences our purchases.
Organic	1	Availability of organic foods influences our purchases.
Fresh	1	Freshness influences our purchases.
No other influences described	49	The interviewee did not describe any other influences beyond household, family, and friends.

Sec 2 Q11. Would you say your food purchases (types, quantities, brands) are influenced by others? This could include friends, family, and members of your household.

Verbatim Responses

1	No, our purchases are not influenced by others.
2	No, our purchases are not influenced by others.
3	Yes, our friends influence our purchases.

4	Yes, other members of our household influence our purchases. If an event is happening, that will also affect our purchases.
5	Yes, other members of our household influence our purchases.
6	Yes, other members of our household and family influence our purchases. We make sure to buy the brands we like but we also shop for my mother-in-law.
7	No, our purchases are not influenced by others. We prefer quality local food rather than big brands.
8	No, our purchases are not influenced by others.
9	Yes, other members of our household influence our purchases.
10	No, our purchases are not influenced by others.
11	Yes, friends and family influence our purchases when buying new specialty items.
12	Yes, other members of our household influence our purchases. We buy white bread although I don't like it, because everyone else in the house does.
13	Yes, other members of our household and family influence our purchases. My sister told us that Heinz was no longer Canadian, so we switched to French's ketchup.
14	Yes, our purchases are influenced by friends and other members of our household.
15	Yes, other members of our household influence our purchases.
16	Yes, other members of our household influence our purchases. My elderly parents live here and they have religious food preferences. We also have to buy certain products for our new baby and for our daughter who won't be needing school lunches over the summer.
17	Yes, other members of our household and family influence our purchases. I do most of the shopping but I'm sure to consider my wife's brand preferences as well as that of our grandkids if they are coming to visit.
18	Yes, other members of our household and family influence our purchases.
19	Yes, other members of our household influence our purchases.
20	No, our purchases are not influenced by others.
21	No, our purchases are not influenced by others.
22	Yes, other members of our household influence our purchases.
23	Yes, other members of our household influence our purchases.
24	No, our purchases are not influenced by others.
25	No, our purchases are not influenced by others. Cost influences our purchases.
26	No, our purchases are not influenced by others.
27	No, our purchases are not influenced by others.
28	Yes, other members of our household and family influence our purchases.
29	No, our purchases are not influenced by others.
30	Yes, other members of our household influence our purchases. My daughter gets salad even though we don't really like it.

31	No, our purchases are not influenced by others.
32	Yes, other members of our household and family influence our purchases. About 33% of my shopping is influenced by family.
33	Yes, other members of our household, family, and/or friends influence our purchases, specifically with ethnic foods.
34	Yes, other members of our household, family, and/or friends influence our purchases. Brands also influence our purchases; we prefer Heinz ketchup and avoid no-name salad dressing.
35	Yes, other members of our household, family, and/or friends influence our purchases, but I usually know what to buy.
36	Yes, other members of our household influence our purchases.
37	Yes, other members of our household, family, and/or friends influence our purchases. Brands also influence our purchases.
38	No, our purchases are not influenced by others.
39	No, our purchases are not influenced by others.
40	No, our purchases are not influenced by others.
41	Yes, other members of our household influence our purchases.
42	No, our purchases are not influenced by others.
43	Yes, other members of our household influence our purchases.
44	Yes, other members of our household, family, and/or friends influence our purchases.
45	Yes, other members of our household and family influence our purchases. We get special cookies for our grandson and gluten free frozen dinners for when our daughter visits.
46	No, our purchases are not influenced by others.
47	Yes, other members of our household influence our purchases.
48	No, our purchases are not influenced by others.
49	Yes, other members of our household influence our purchases.
50	Yes, other members of our household, family, and/or friends influence our purchases.
51	Yes, other members of our household influence our purchases.
52	Yes, other members of our household influence our purchases.
53	No, our purchases are not influenced by others.
54	Yes, other members of our household, family, and/or friends influence our purchases.
55	No, our purchases are not influenced by others.
56	No, our purchases are not influenced by others.
57	Yes, other members of our household influence our purchases.
58	No, our purchases are not influenced by others.

59	Yes, other members of our household influence our purchases.
60	No, our purchases are not influenced by others.
61	Yes, other members of our household, family, and/or friends influence our purchases. We buy mostly organic products and fresh products instead of regular processed foods and grocery.
62	Yes, other members of our household, family, and/or friends influence our purchases, especially with Heinz ketchup.
63	No, our purchases are not influenced by others.
64	Yes, other members of our household influence our purchases.

B12. Think about your household's habits in regards to buying additional food as a result of discounts and special offers. Which of the following statements MOST applies to you?

I try to buy food on sale all or most of the time (discounts and special offers), even if it's not something I usually buy.

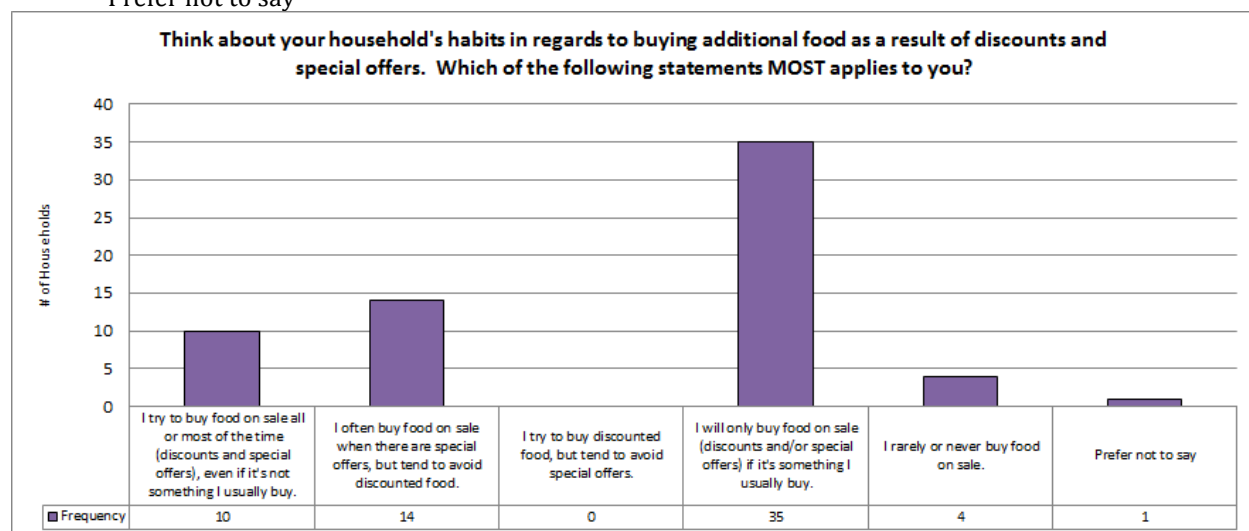
I often buy food on sale when there are special offers, but tend to avoid discounted food.

I try to buy discounted food, but tend to avoid special offers.

I will only buy food on sale (discounts and/or special offers) if it's something I usually buy.

I rarely or never buy food on sale.

Prefer not to say



Section 2A: Buying Discounted Food (B)

B13. Following up from the previous question: what is/are the main factor(s) that determine if/when you BUY discounted food?

If the food (e.g., fruit, canned or boxed goods) looks to be in very good condition, with no damage.

If I think I can use it all by the "best before" date.

If it's something I usually buy.

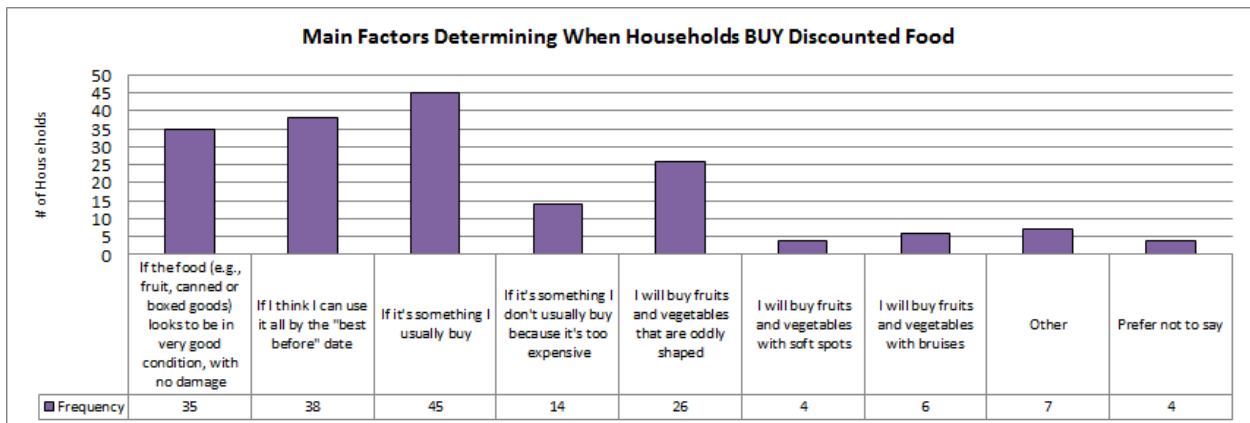
If it's something I don't usually buy because it's too expensive.

I will buy fruits and vegetables that are oddly shaped.

I will buy fruits and vegetables with soft spots.

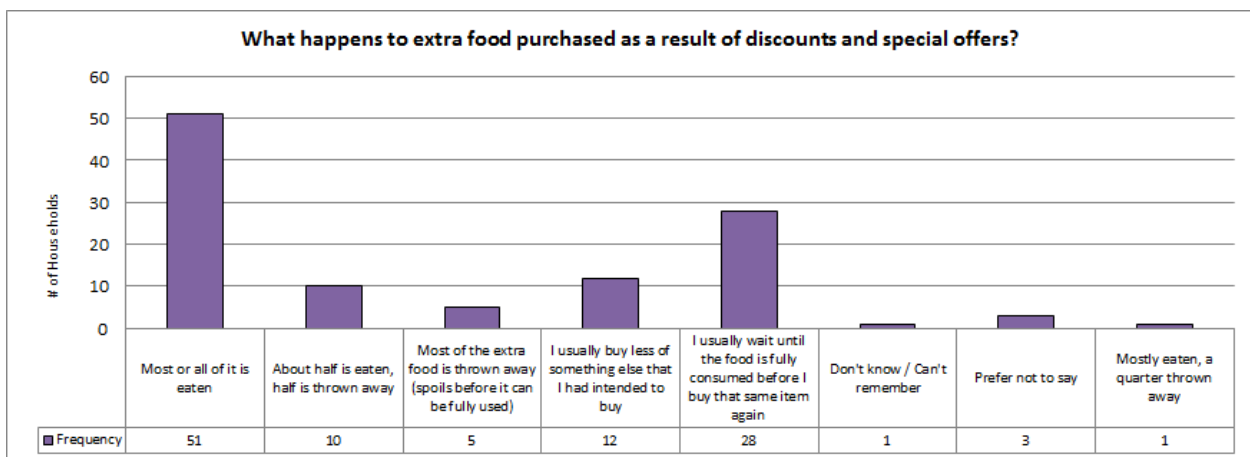
I will buy fruits and vegetables with bruises.

Other / Prefer not to say.



B14. In your household, what usually happens to extra food purchased as a result of discounts and/or special offers?

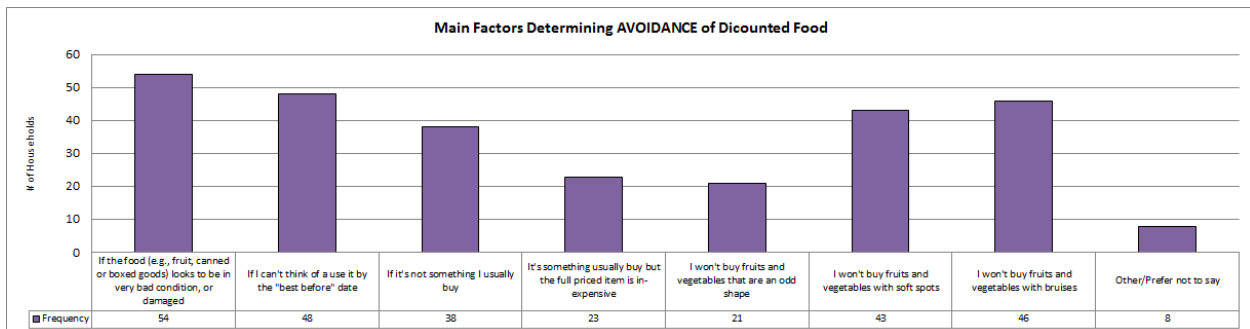
- Most or all of it is eaten.
- About half is eaten, half is thrown away.
- Most of the extra food is thrown away (spoils before it can be fully used).
- I usually buy less of something else that I had intended to buy.
- I usually wait until the food is fully consumed before I buy that same item again.
- Don't know / Can't remember.
- Prefer not to say
- Other



Section 2B: Avoiding Discounted Food (B)

B15. Following up from the previous question: what is/are the main factor(s) that determine if/when you AVOID discounted food?

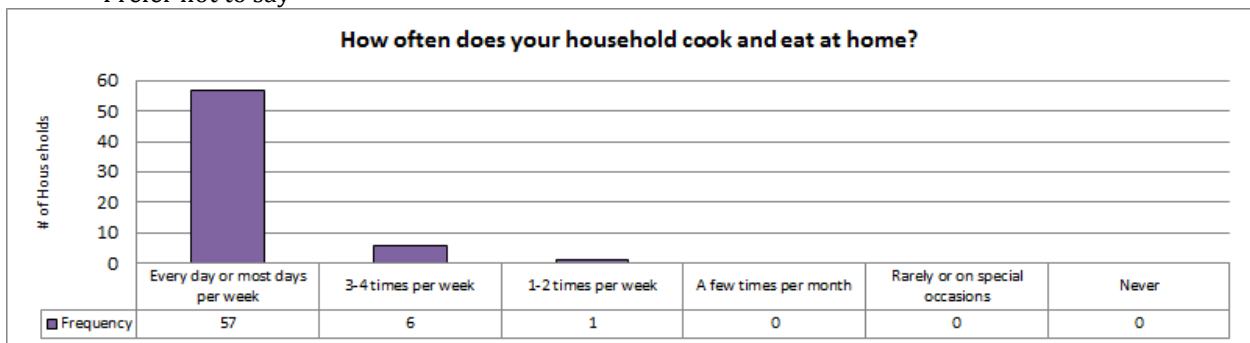
- If the food (e.g., fruit, canned or boxed goods) looks to be in very bad condition, or damaged.
- If I can't think of a use for it by the "best before" date.
- If it's not something I usually buy.
- It's something usually buy but the full priced item is in-expensive.
- I won't buy fruits and vegetables that are an odd shape.
- I won't buy fruits and vegetables with soft spots.
- I won't buy fruits and vegetables with bruises.
- Other / Prefer not to say.



Section 3: Cooking Habits & Leftovers (C)

C1. How often does your household cook and eat at home?

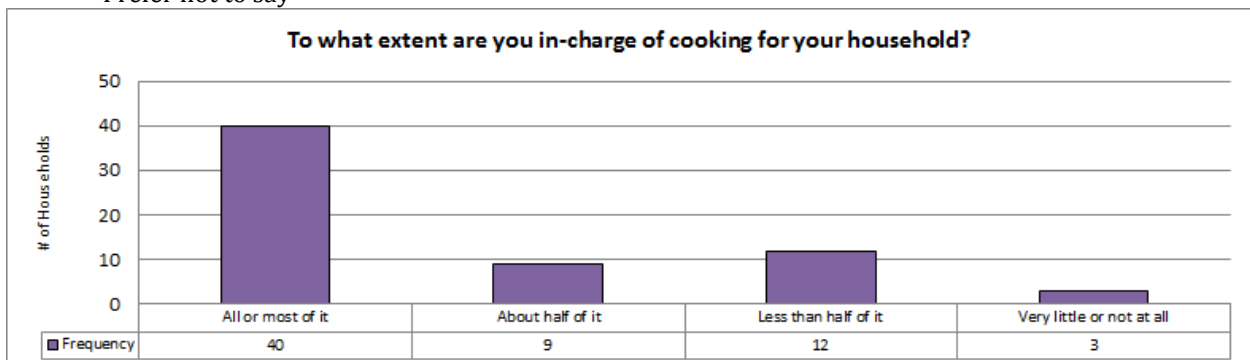
- Every day or most days per week
- 3-4 times per week
- 1-2 times per week
- A few times per month
- Rarely or on special occasions
- Never
- Prefer not to say



Section 3A: Meal Preparation (C)

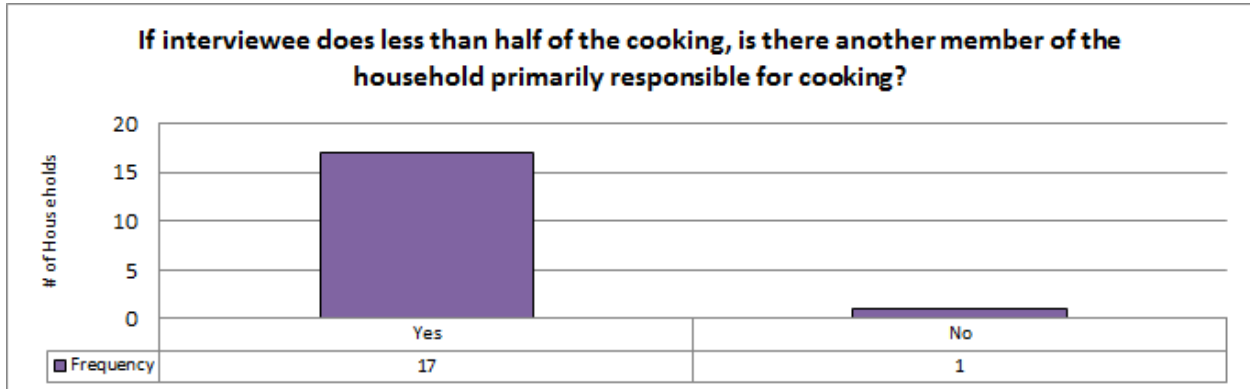
C2a. To what extent are you in charge of cooking for your household?

- All or most of it
- About half of it
- Less than half of it
- Very little or not at all
- Prefer not to say

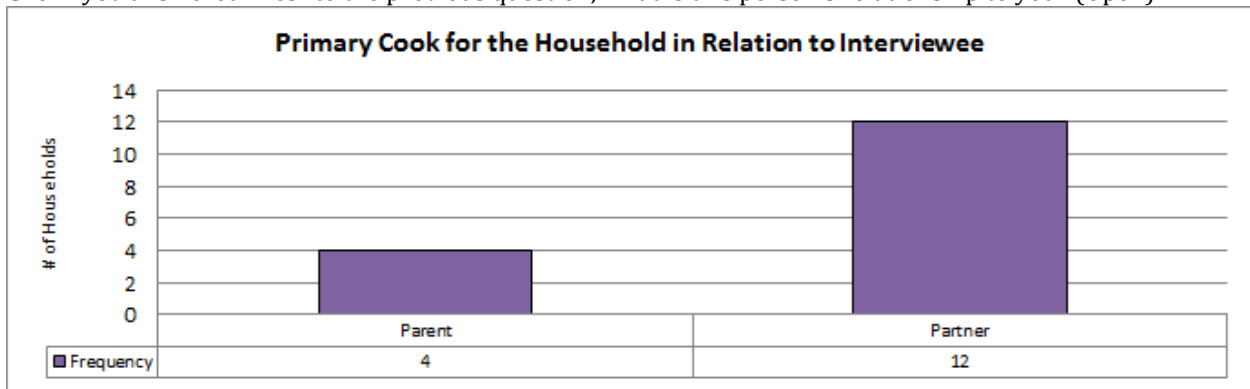


C2b. If you do less than half the cooking, is there someone else in your household that is primarily responsible for the cooking?

Yes
No
Other

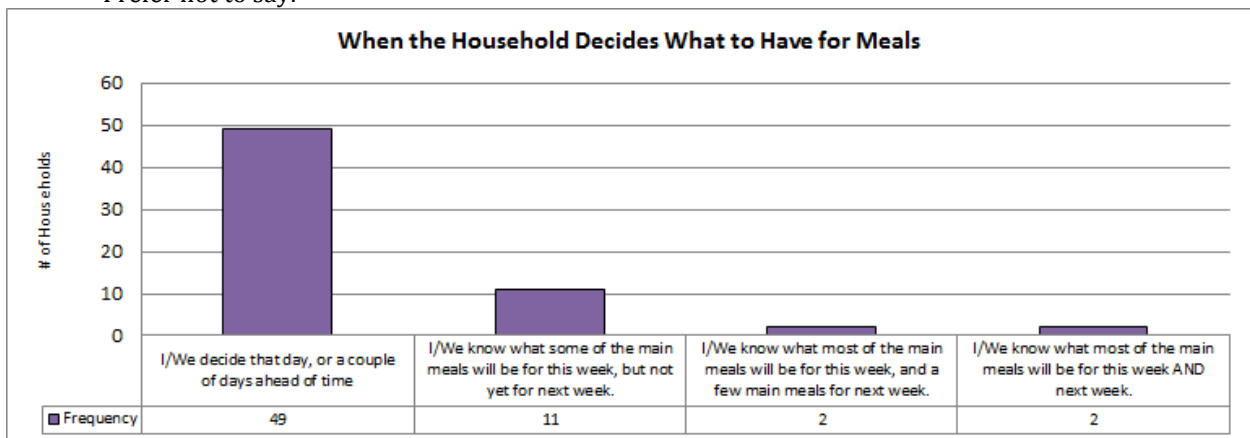


C2c. If you answered "Yes" to the previous question, what is this person's relationship to you? (Open)



C3. For main meals that are prepared at home, when do you decide what you're going to have?

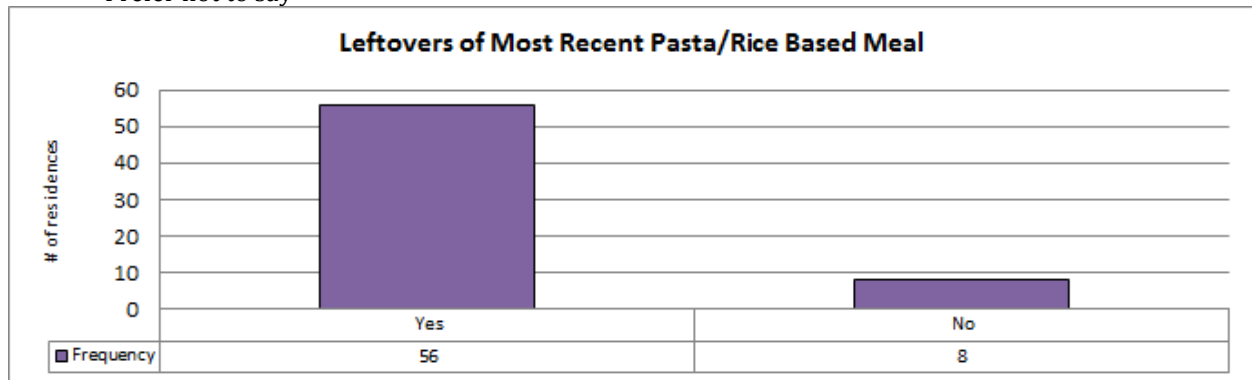
- I/We decide that day, or a couple of days ahead of time
- I/We know what some of the main meals will be for this week, but not yet for next week.
- I/We know what most of the main meals will be for this week, and a few main meals for next week.
- I/We know what most of the main meals will be for this week AND next week.
- Prefer not to say.



Section 3B: Leftovers (C)

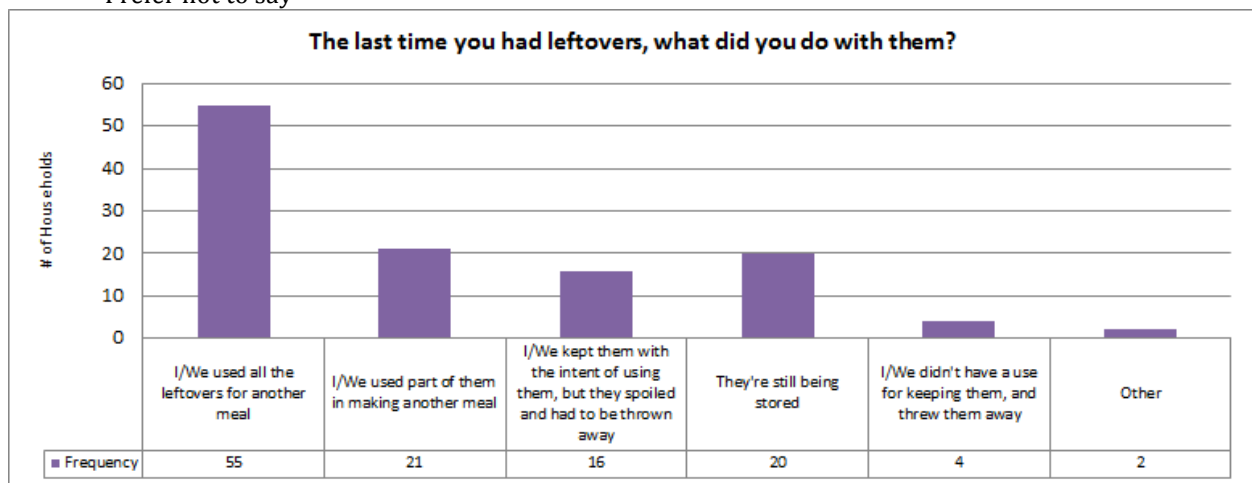
C4. Think about the last time you cooked a meal based on pasta or rice. Did you have any leftovers?

- Yes
- No
- Don't know / Can't remember
- I/We don't cook or eat this item
- Prefer not to say



C5. Think about the last time you had leftovers or made more food than was needed. What did you do with those leftovers?

- I/We used all the leftovers for another meal
- I/We used part of them in making another meal
- I/We kept them with the intent of using them, but they spoiled and had to be thrown away.
- They're still being stored.
- I/We didn't have a use for keeping them, and threw them away.
- Other / Don't know / Can't remember
- Prefer not to say

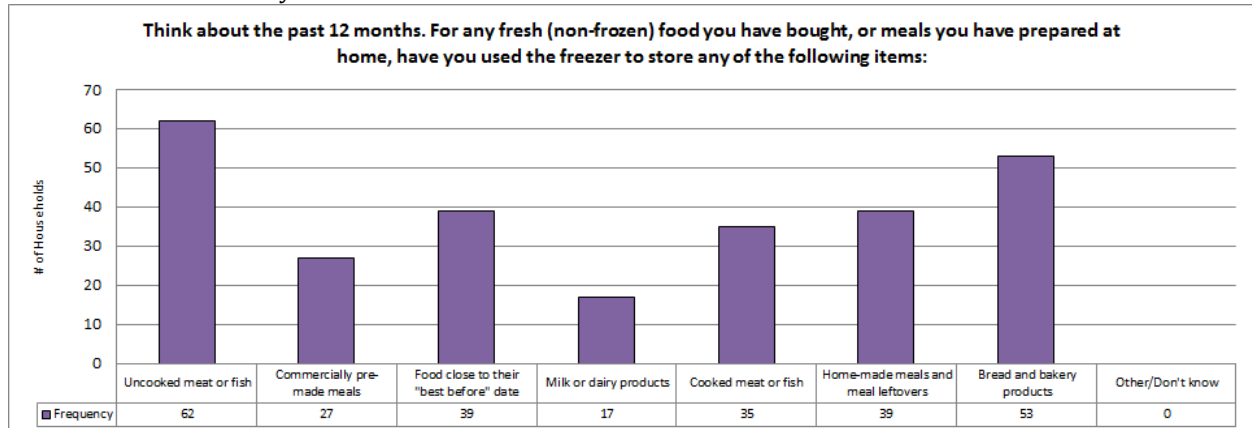


Section 4: Food Storage Habits (D)

D1. Think about the past 12 months. For any fresh (non-frozen) food you have bought, or meals you have prepared at home, have you used the freezer to store any of the following items:

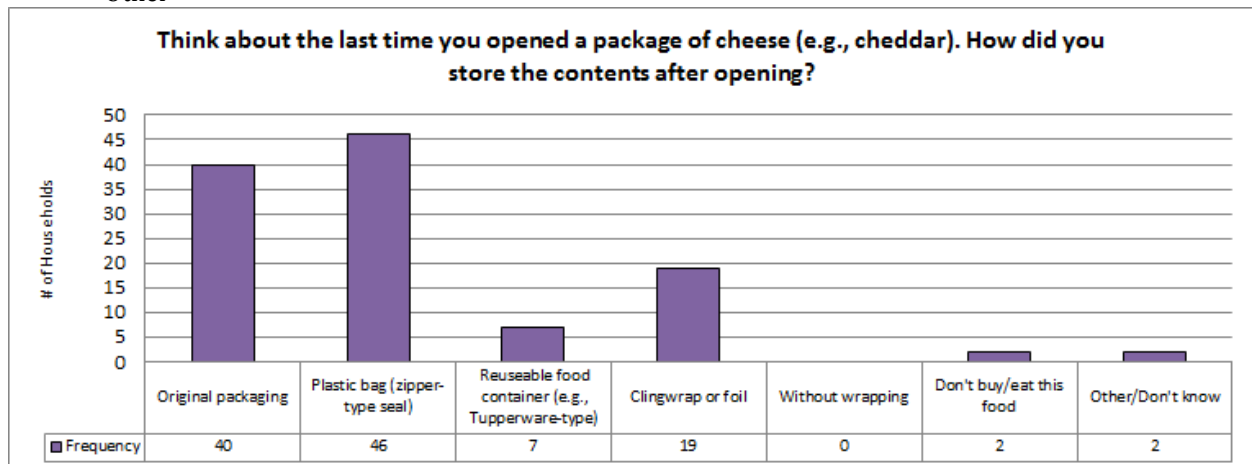
- Uncooked meat or fish
- Commercially pre-made meals
- Food close to their "best before" date
- Milk or dairy products
- Cooked meat or fish

- Home-made meals and meal leftovers
- Bread and bakery products
- Nothing (I don't use the freezer)
- I don't have a freezer
- Other / Can't remember / Don't know
- Prefer not to say



D2. Think about the last time you opened a package of cheese (e.g., cheddar). How did you store the contents after opening?

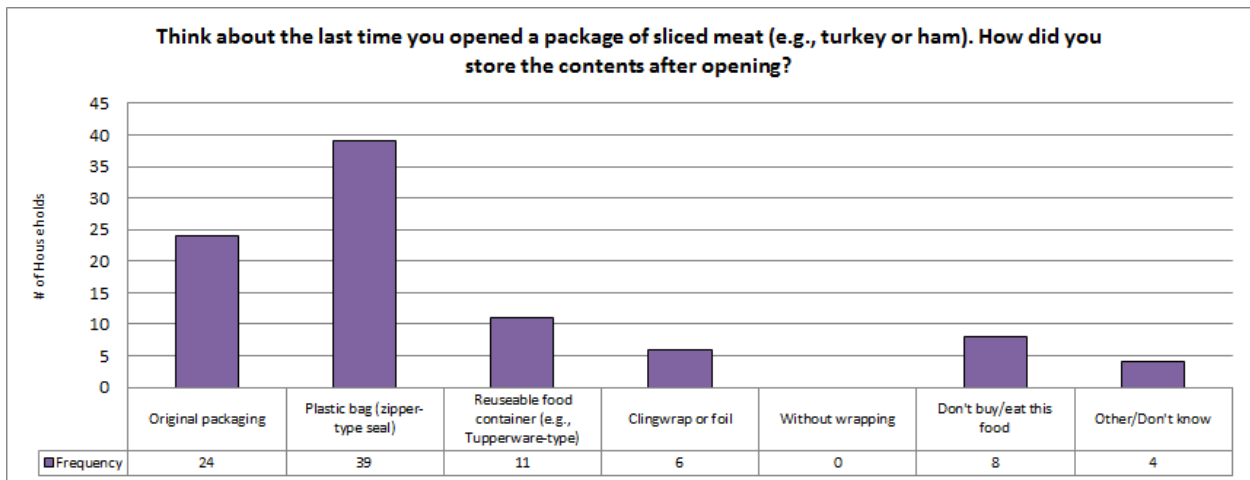
- Original packaging
- Plastic bag (zipper-type seal)
- Reuseable food container (e.g., Tupperware-type)
- Clingwrap or foil
- Without wrapping
- Don't know
- Don't buy/eat this food
- Prefer not to say
- Other



D3. Think about the last time you opened a package of sliced meat (e.g., turkey or ham). How did you store the contents after opening?

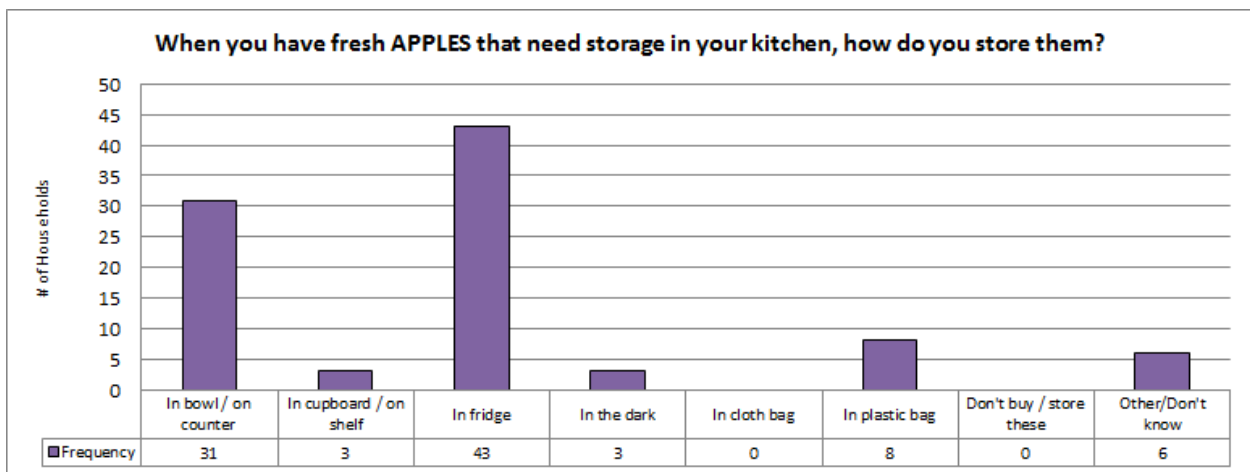
- Original packaging
- Plastic bag (zipper-type seal)
- Reuseable food container (e.g., Tupperware-type)
- Clingwrap or foil
- Without wrapping

Don't buy/eat this food
 Other / Don't know
 Prefer not to say



D4. When you have fresh APPLES that need storage in your kitchen, how do you store them?

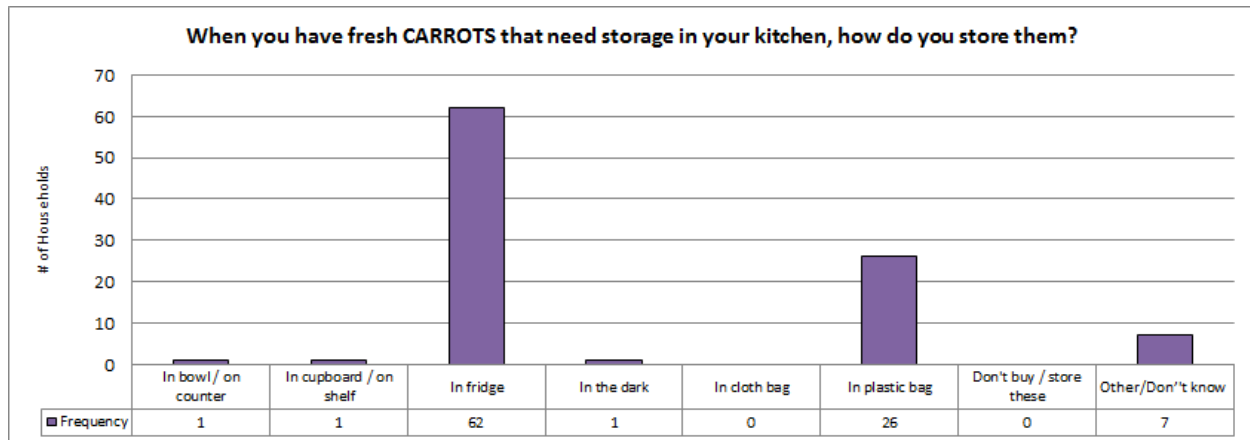
In bowl / on counter
 In cupboard / on shelf
 In fridge
 In the dark
 In cloth bag
 In plastic bag
 Don't buy / store these
 Other / Don't know
 Prefer not to say



D5. When you have fresh CARROTS that need storage in your kitchen, how do you store them?

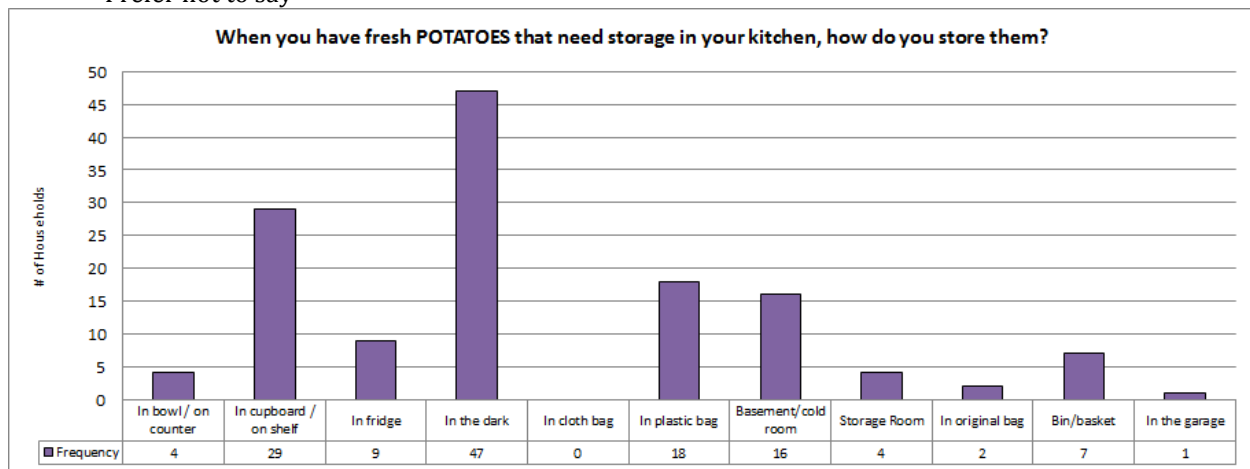
In bowl / on counter
 In cupboard / on shelf
 In fridge
 In the dark
 In cloth bag

In plastic bag
 Don't buy / store these
 Prefer not to say
 Other / Don't know



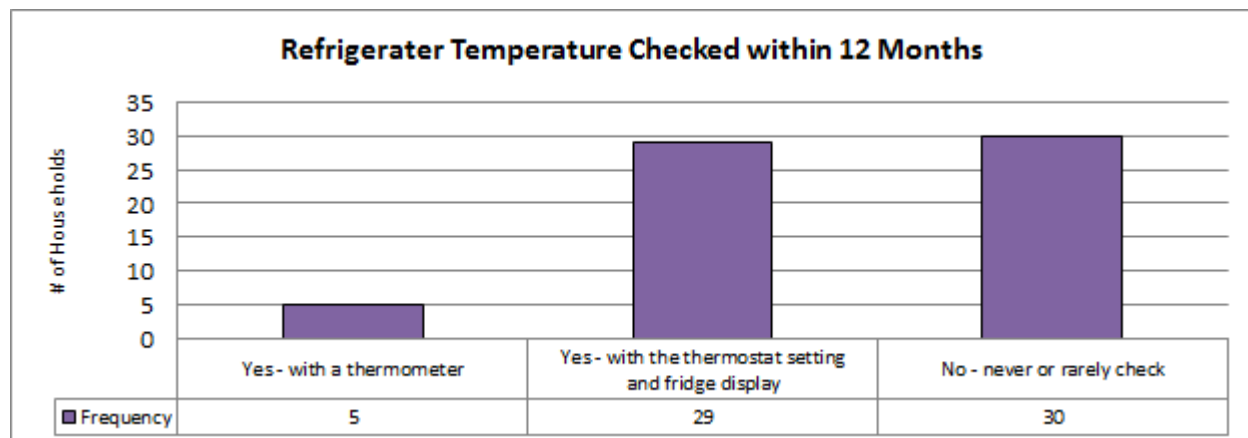
D6. When you have fresh POTATOES that need storage in your kitchen, how do you store them?

In bowl / on counter
 In cupboard / on shelf
 In fridge
 In the dark
 In cloth bag
 In plastic bag
 Other
 Don't buy / store these
 Prefer not to say



D7. Within the past 12 months, have you checked the temperature of your fridge?

Yes - with a thermometer
 Yes - with the thermostat setting and fridge display
 No - never or rarely check
 Don't know / Can't remember
 Prefer not to say



Section 5: Food Waste (E)

E1. Think about the last time potentially edible food was thrown out in your household, either leftovers or expired food. Could you describe for me the circumstances surrounding why that food was thrown out?

Types of Food		
Code	Frequency	Definition
Leftovers	36	Home-made food somehow altered since being purchased from the store.
Produce	18	The food item was a type of produce (fruit or vegetable).
Cooked meat	3	The food item was a type of cooked meat.
Pasta/rice	9	The food item was a type of grain.
Pre-made meal/processed food	2	The food item was a type of processed food or a pre-made meal.
Dairy	2	The food item was a type of dairy product.
Dry goods	1	The food item was a type of dry good.
Reason for Discarding		
Code	Frequency	Definition
Expired food	25	Food purchased from the store that has not yet been altered to make a meal.
Time	47	Too much time has lapsed and the food item is no longer fit for consumption (based on look, smell, taste). The food may or may not have been forgotten.
Forgot	7	The food was explicitly forgotten, which was a factor in the amount of time lapsed.
Disinterest	20	Members of the household were disinterested in eating the food, which was a factor in the amount of time lapsed.
Too much	9	Too much food was prepared at the time of consumption.

Unrefrigerated	3	The food was not refrigerated creating a food safety hazard and/or reduced quality.
Cleaning	1	The food was disposed of as a result of cleaning the refrigerator.

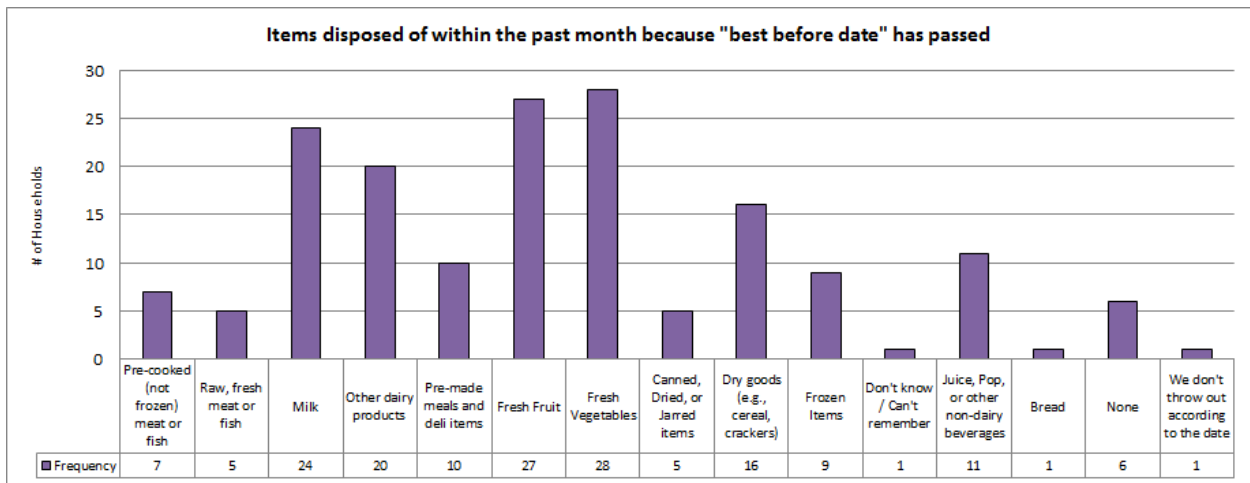
Verbatim Responses	
Sec 5 Q1. Think about the last time potentially edible food was thrown out in your household, either leftovers or expired food. Could you describe for me the circumstances surrounding why that food was thrown out?	
1	We threw away leftovers because a few days had passed after we stored them.
2	Last week we ate pork roast for a few days and then didn't want it anymore, so we threw it away.
3	We purged spoiled foods after a shopping trip.
4	We have two refrigerators. We bought cauliflower, stored it in the second refrigerator, and forgot about it. The cauliflower went bad and we threw it away.
5	We made too much pasta for the three of us to consume. It was a meal that we bought groceries for that day; we used a whole package of pasta and a whole jar of sauce. No one took any leftovers for lunch the next day. The leftovers sat in the fridge for a while and then we tossed it.
6	We bought too much fresh produce for the two of us and we didn't eat it all before it spoiled.
7	We threw away leftover cabbage rolls that nobody claimed after one week.
8	We cooked too much for one meal and the leftovers did not get eaten after sitting in the fridge for a period of time.
9	We made spaghetti and had 3/4 cup of leftovers, but no one ate it after a week so it was thrown away.
10	We made too much to eat in one meal.
11	We purchased too many veggies for a baby shower and what was left began to rot.
12	I threw away a salad I had put together because it went all wilted.
13	I/we forgot that the lettuce was in the bottom of the fridge.
14	We threw away leftovers that were in the fridge too long; it was pasta with turkey. We had intended to reuse it, but it went bad.
15	Yesterday, we took food out to cook but it was a hot day and the food was out too long.
16	We made too much rice and forgot to refrigerate it before going to bed. When we woke in the morning we threw it out, but it was a very small amount being thrown out.
17	We threw out about a half of a cucumber that was hidden under some lettuce in the fridge; it spoiled because we had it in there for too long. Cucumber something we always buy. We threw it in the garbage.
18	We had vegetables that had gone bad before they could be used.
19	I like to buy bulk containers of yogurt and sometimes they get mouldy before the expiry date.

20	We purchased food that had gone bad shortly after.
21	Our son didn't finish his school lunch and it was thrown away.
22	We made too much food, which was then stored but then shoved to the back of the fridge, forgotten, and had to be thrown away because it went bad.
23	We throw food away because members of the house refused to eat it, we were too busy to make it into something, or kids don't like it.
24	We left rice in the fridge too long.
25	The children did not finish their plates during a meal and the scraps had been left out of the fridge so we threw them away.
26	We bought milk and it went bad before it was supposed to expire.
27	Our children didn't eat all of the takeout we ordered for them.
28	No one liked the spaghetti I made and it dried out so we threw it away.
29	Our leftovers just weren't looking good after a week in the fridge, so we threw them out.
30	My daughter didn't want to eat her meal and my husband didn't want to take it for lunch so eventually I had to throw it out.
31	We made too much spaghetti and doesn't store well so we threw it out.
32	We had leftovers that sat in the fridge too long and there was no purpose for it.
33	Our son sat for an hour and refused to eat his meal before bed. Those table scraps went into the compost.
34	My leftovers that sat in the fridge too long, and there comes a time when you can't eat it anymore.
35	Once in awhile, we will throw out leftovers if they spend more than three days in the fridge.
36	When food spends more than five or six days in storage and no one eats it, it gets thrown away.
37	We usually throw away vegetables that we just don't get around to eating.
38	We usually forget an item is in the fridge and buy or make a new item.
39	I had fresh vegetables and fruit that looked bruised and discolored so I threw that away. It included carrots in the bag past the expiry date, four-day-old takeout, stuff in the freezer that was in there for over four months, and pantry food that had been there for over two years.
40	Today we threw away blueberries that had gone bad before my daughter ate them.
41	I cooked a curry dish and no one ate it in time, so it was thrown out.
42	We had a party and there was leftover table scraps that were thrown away.
43	A packaged lunch was uneaten and had to be thrown away.
44	We had a salad with dressing on it that was thrown into the composter. Mostly this happens when we go on holiday. When my son is home but he doesn't always eat all the food he takes.
45	No, I try not to cook too much and hardly throw out food; none at all, I think.
46	We had a big bag of spinach that went bad before we used all of it.
47	We purchased some cilantro for a recipe and had some left over.

48	We waited too long to finish a leftover salad, so we threw it away.
49	We don't usually throw food away. Our boys will eat it, but perhaps the turkey skin on Christmas.
50	Yesterday we were running out of milk, there was only a half a cup, so we didn't have cereal.
51	A portion of a ready-made pasta sauce was thrown out because it was too much for two people. We had not found a way to use it soon enough and had to throw it out.
52	The food was in the fridge so long it got green spots.
53	We threw away sour cream, because it was pushed to the back of the fridge and went bad.
54	Usually we throw food away if we make too much of something (ie. pasta). Some will be saved, but if there is too much some will be thrown out if I know I won't use it. When there are leftovers taken for lunch and I get tired of eating the same thing, sometimes they will spoil and be thrown out.
55	Sometimes we throw away leftovers, but there's just a little left and sometimes the dog gets it.
56	We threw out an rotten apple today and lettuce that was too old.
57	I had pasta leftovers from the meal before, there was only a little bit left so the second time I ate it I threw the rest out.
58	My husband decided not to eat the food and I ended up throwing it out.
59	We threw out food we forgot in the freezer, but usually we finish meals.
60	We threw out leftover pancake mix; we make pancakes almost every day. Then we threw out some produce trimmings and stuff.
61	If there's not enough leftovers to make it into another meal or if it's something that I won't eat again (because my husband won't eat leftovers), then we will throw away food.
62	We threw out a homemade salad that went bad.
63	Our daughter is a vegetarian and purchased a large eggplant but didn't end up using it before it spoiled.

E2. Over the past month, have you thrown away any of the following items because the "best before" date has passed?

1. Pre-cooked (not frozen) meat or fish
2. Raw, fresh meat or fish
3. Milk
4. Other dairy products
5. Pre-made meals and deli items
6. Fresh Fruit
7. Fresh Vegetables
8. Canned, Dried, or Jarred items
9. Dry goods (e.g., cereal, crackers)
10. Frozen Items
11. Don't know / Can't remember
12. Juice, Pop, or other non-dairy beverages
13. Bread
14. None
15. We don't throw out food according to the date

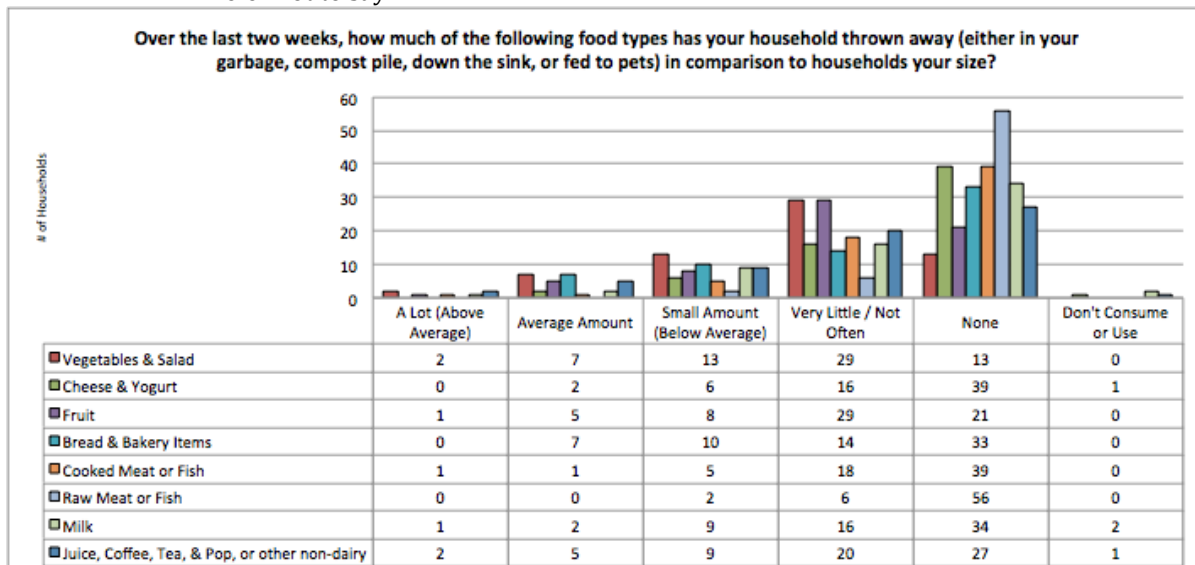


E3. Over the last two weeks, how much of the following food types has your household thrown away (either in your garbage, compost pile, down the sink, or fed to pets)?

1. Vegetables & Salad
2. Cheese & Yogurt
3. Fruit
4. Bread and Bakery Items
5. Cooked Meat or Fish
6. Raw Meat or Fish
7. Home-made Meals
8. Milk
9. Juice, Coffee, Tea & Pop, or other non-dairy beverages

Responses are:

- A Lot (Above Average)
- Average Amount
- Small Amount (Below Average)
- Very Little / Not Often
- None
- Don't Consume or Use
- Prefer not to say

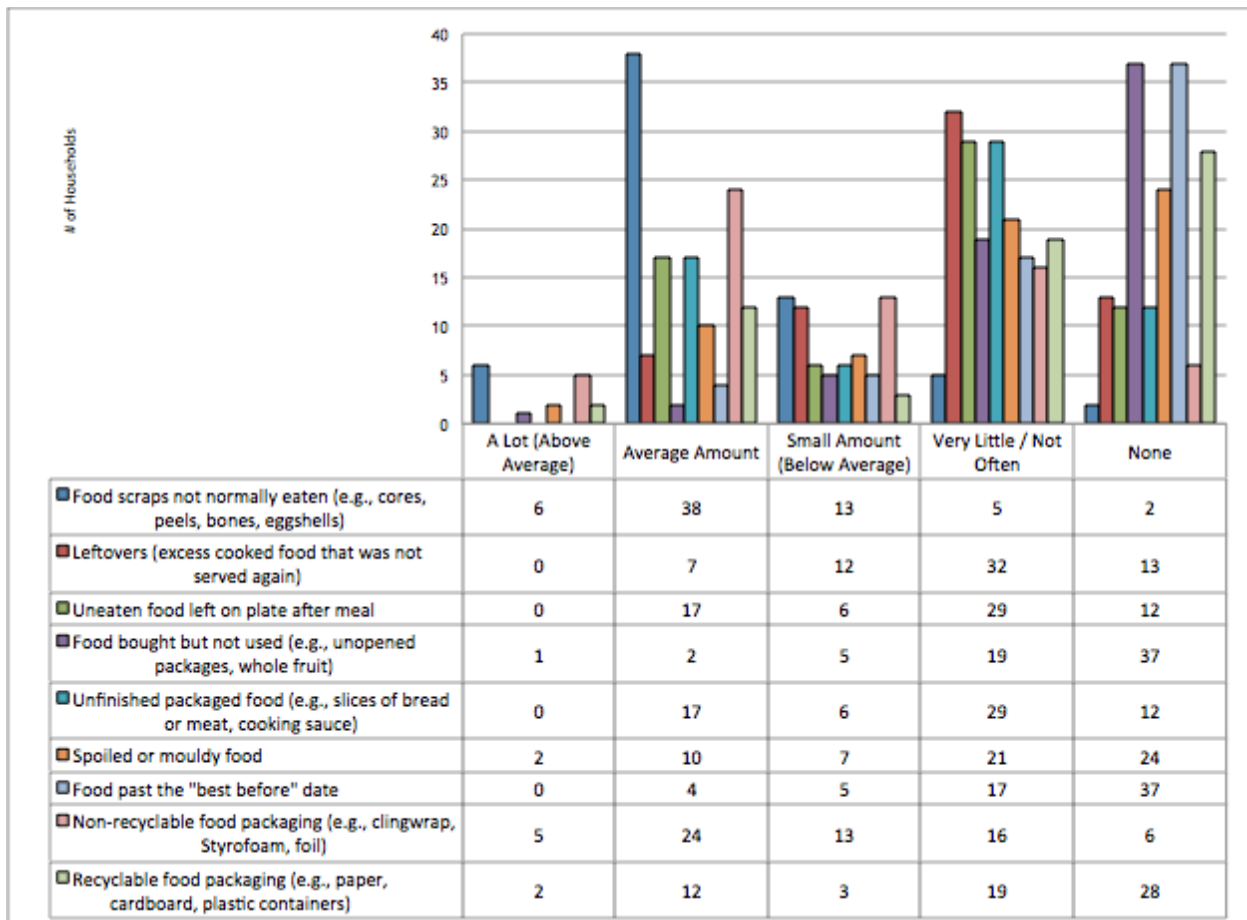


E4. Over the last two weeks, how much of the following types of food waste has your household thrown away (either in your garbage, compost pile, down the sink, or fed to pets)

1. Food scraps not normally eaten (e.g., cores, peels, bones, eggshells)
2. Leftovers (excess cooked food that was not served again)
3. Uneaten food left on plate after meal
4. Food bought but not used (e.g., unopened packages, whole fruit)
5. Unfinished packaged food (e.g., slices of bread or meat, cooking sauce)
6. Spoiled or mouldy food
7. Food past the "best before" date
8. Non-recyclable food packaging (e.g., clingwrap, Styrofoam, foil)
9. Recyclable food packaging (e.g., paper, cardboard, plastic containers)

Responses are:

- A Lot (Above Average)
- Average Amount
- Small Amount (Below Average)
- Very Little / Not Often
- None
- Don't Consume or Use
- Prefer not to say



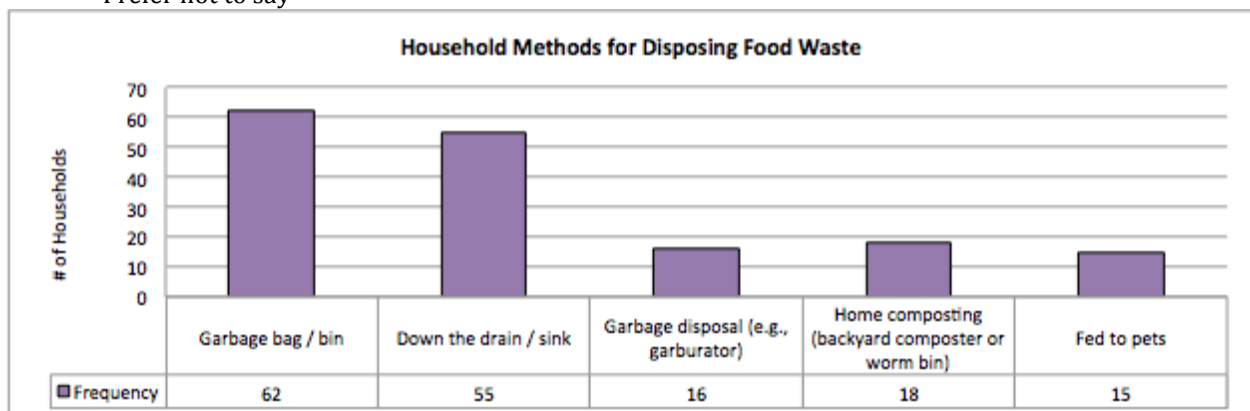
E5. Think about the types of food waste listed in the previous two questions. Overall, how much uneaten food would you say your household ends up throwing away?

- A Lot (Above Average)
- Average Amount
- Small Amount (Below Average)
- Very Little
- None
- Don't know
- Prefer not to say



E6. What method(s) does your household use to dispose of food and drink waste?

- Garbage bag / bin
- Down the drain / sink
- Garbage disposal (e.g., garburator)
- Home composting (backyard composter or worm bin)
- Fed to pets
- Prefer not to say



Section 6: Food Waste Behaviours (F)

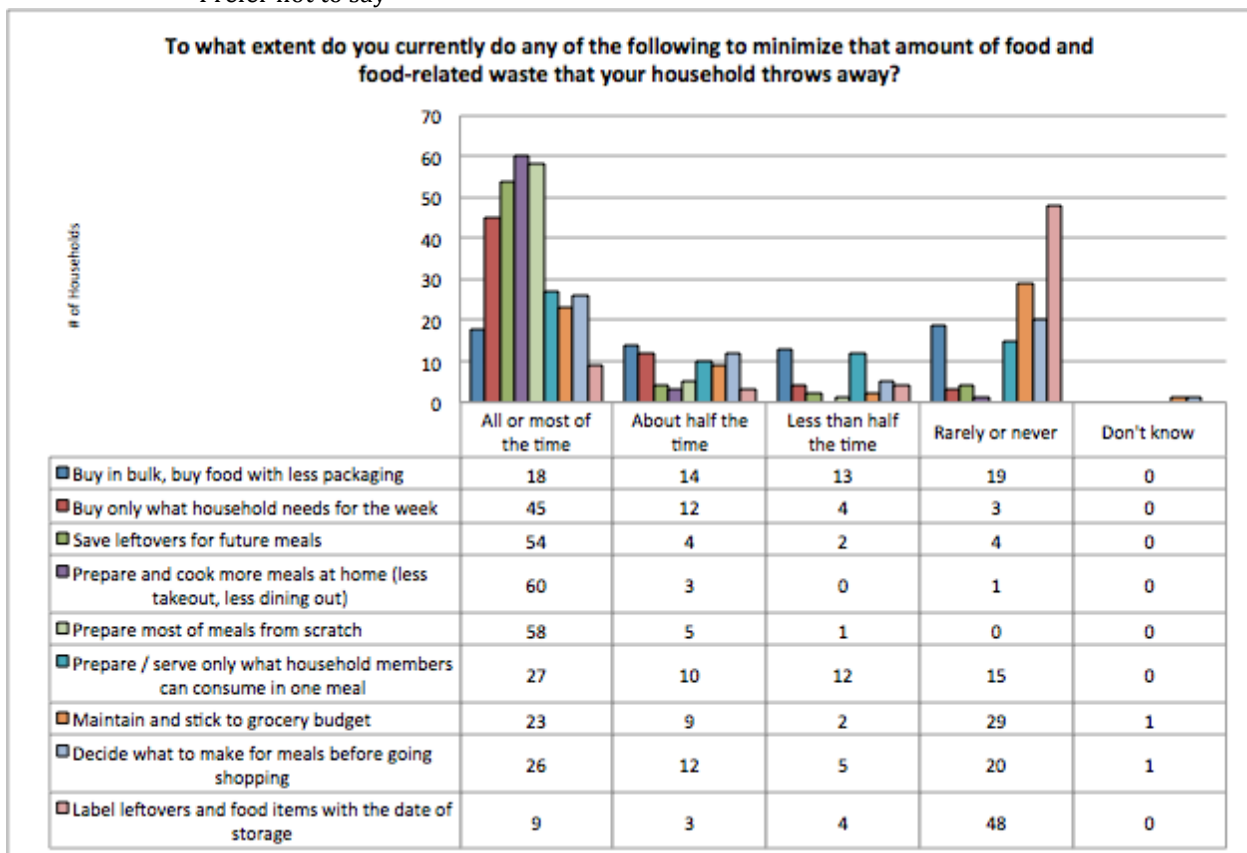
F1. To what extent do you currently do any of the following to minimize that amount of food and food-related waste that your household throws away?

1. Buy in bulk, buy food with less packaging
2. Buy only what household needs for the week
3. Save leftovers for future meals

4. Prepare and cook more meals at home (less takeout, less dining out)
5. Prepare most of meals from scratch
6. Prepare / serve only what household members can consume in one meal
7. Maintain and stick to grocery budget
8. Decide what to make for meals before going shopping
9. Label leftovers and food items with the date of storage

Responses are:

- All or most of the time
- About half the time
- Less than half the time
- Rarely or never
- Don't know
- Prefer not to say



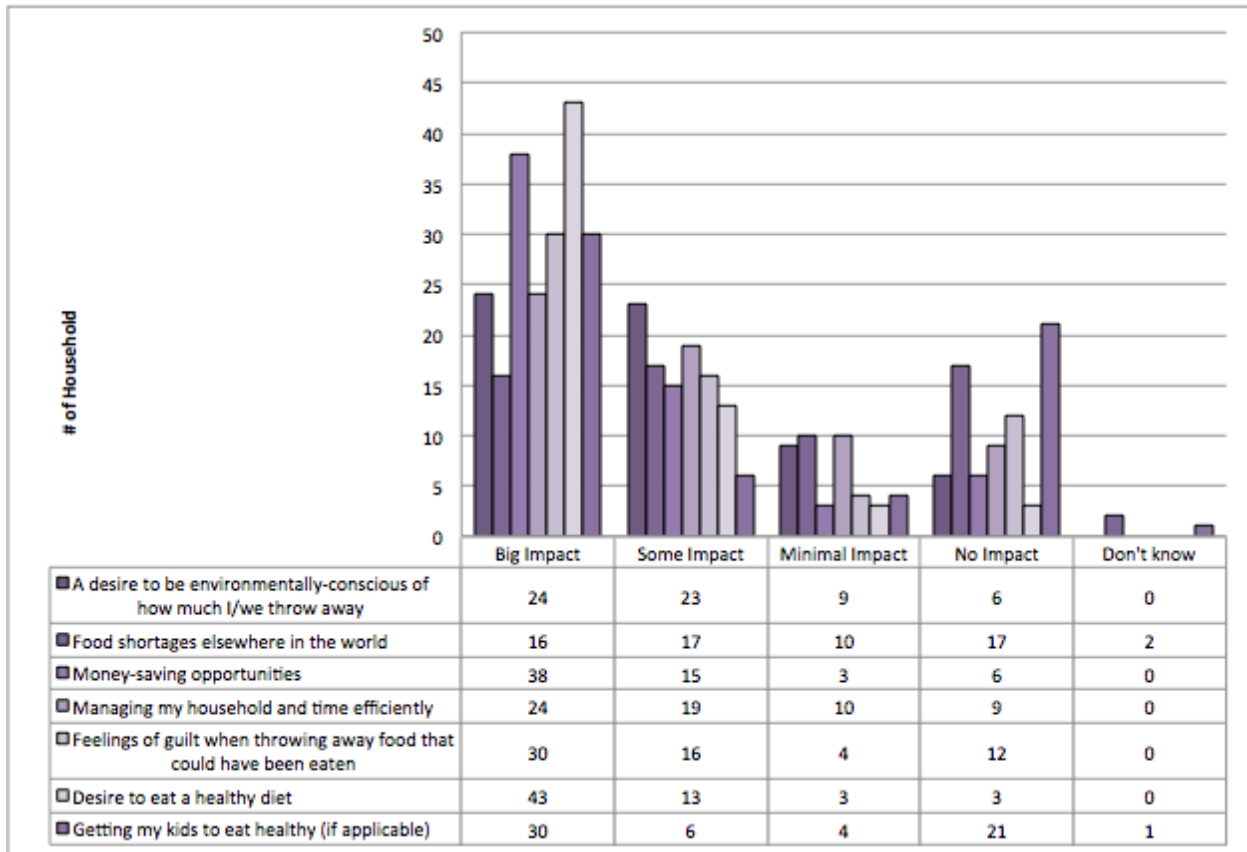
F2. Think about factors that might encourage your household to reduce food waste. To what extent do any of the following have an impact on your actions?

1. A desire to be environmentally-conscious of how much I/we throw away
2. Food shortages elsewhere in the world
3. Money-saving opportunities
4. Managing my household and time efficiently
5. Feelings of guilt when throwing away food that could have been eaten
6. Desire to eat a healthy diet
7. Getting my kids to eat healthy (if applicable)

Responses are:

- Big Impact
- Some Impact

Minimal Impact
 No Impact
 Don't know
 Prefer not to say

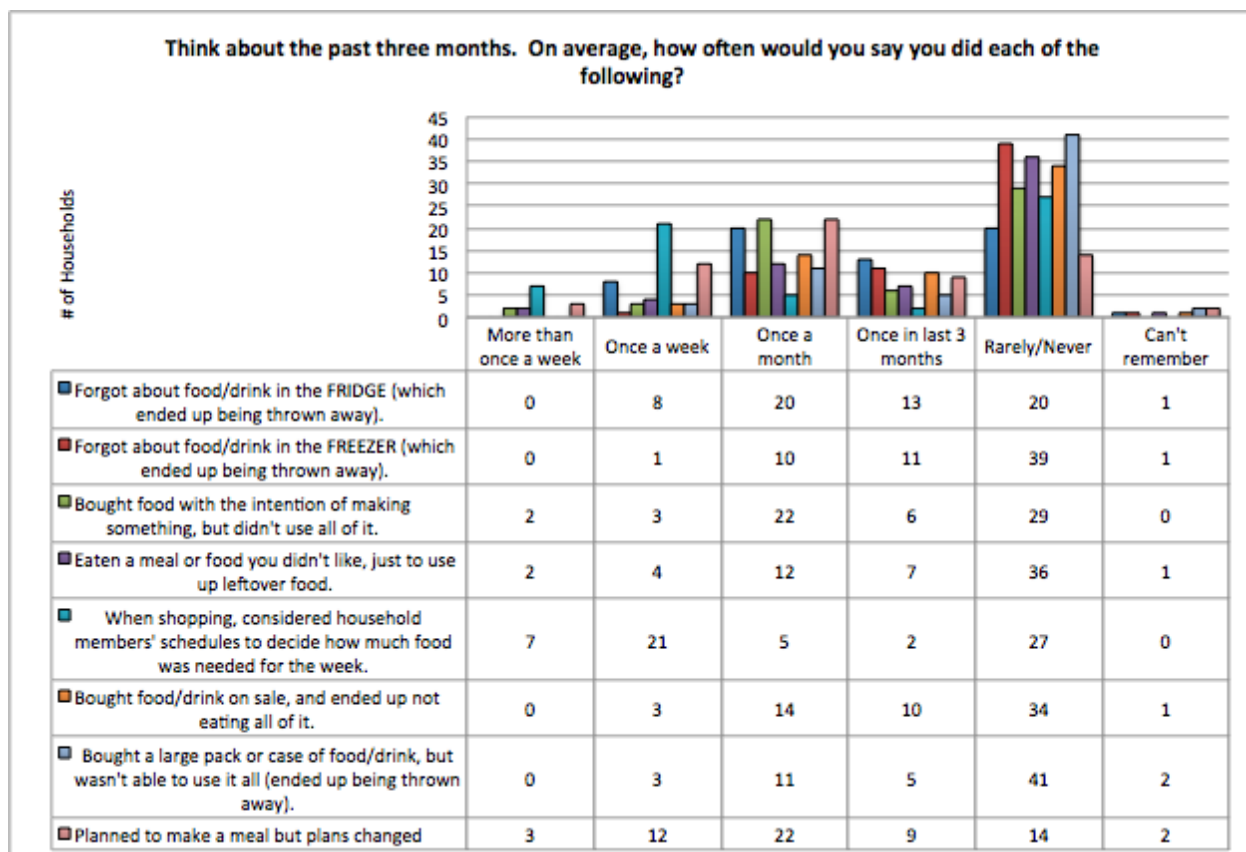


F3. Think about the past three months. On average, how often would you say you did each of the following?

1. Forgot about food/drink in the FRIDGE (which ended up being thrown away).
2. Forgot about food/drink in the FREEZER (which ended up being thrown away).
3. Bought food with the intention of making something, but didn't use all of it.
4. Eaten a meal or food you didn't like, just to use up leftover food.
5. When shopping, considered household members' schedules to decide how much food was needed for the week.
6. Bought food/drink on sale, and ended up not eating all of it.
7. Bought a large pack or case of food/drink, but wasn't able to use it all (ended up being thrown away).
8. Planned to make a meal but plans changed.

Responses are:

- More than once a week
- Once a week
- Once a month
- Once in last 3 months
- Rarely/Never
- Can't remember
- Prefer not to say



F4. Which (if any) of the following reasons prevent your household from trying to reduce the amount of food that is thrown away?

I don't know how I can reduce food waste

Kids don't always finish their meals or often won't eat what I make

I/We need to buy a wide range of foods for healthy eating options

I/We like having lots of food variety and choices on hand at home.

I don't think throwing away food has a negative impact on the environment.

I/We give away most of my leftover food (to charities, neighbours, family/friends)

The City composts all of the organic waste in our garbage.

I/We compost most of our food waste at home

I/We don't lose much money by throwing food away (the extra effort is not worth the cost savings)

I/We don't have enough time or money

There are more important things to think about

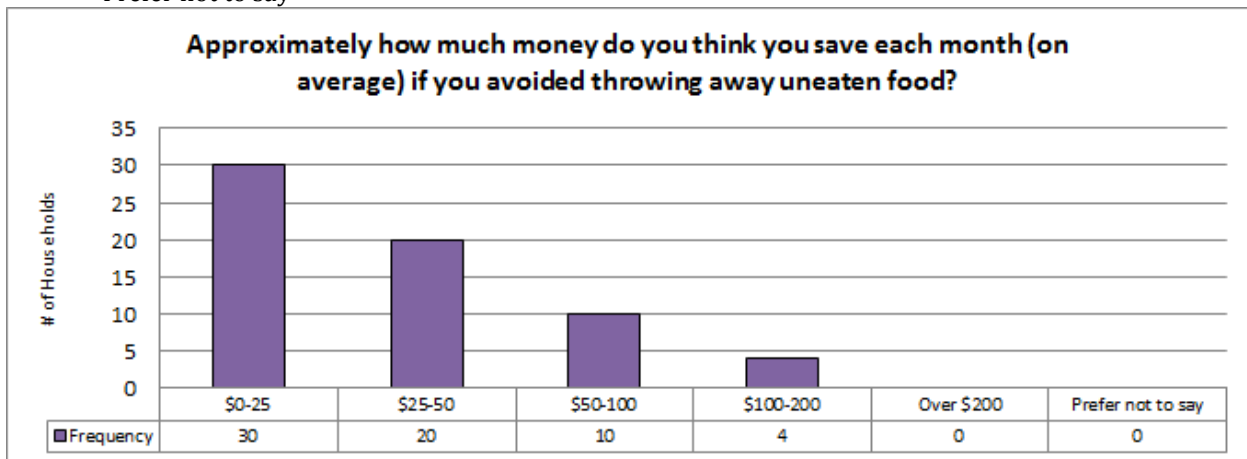
None of the above are a barrier for me

Prefer not to say



F5. Approximately how much money do you think you save each month (on average) if you avoided throwing away uneaten food?

- \$0-25
- \$25-50
- \$50-100
- \$100-200
- Over \$200
- Prefer not to say



Section 7: Food Waste Perceptions (G)

Note: graph shows question results in reverse order.

G1. The average Canadian household could save an estimated \$160 per month (or \$2,000 per year) if they avoided having to throw edible food away.

- True
- False
- Don't Know / Prefer not to say

G2. A "best before" date means that I can usually still safely consume a food item once the date has past, but the quality (texture, taste, nutrients) may be reduced.

G3. Food packaging waste is a worse environmental problem than wasting food.

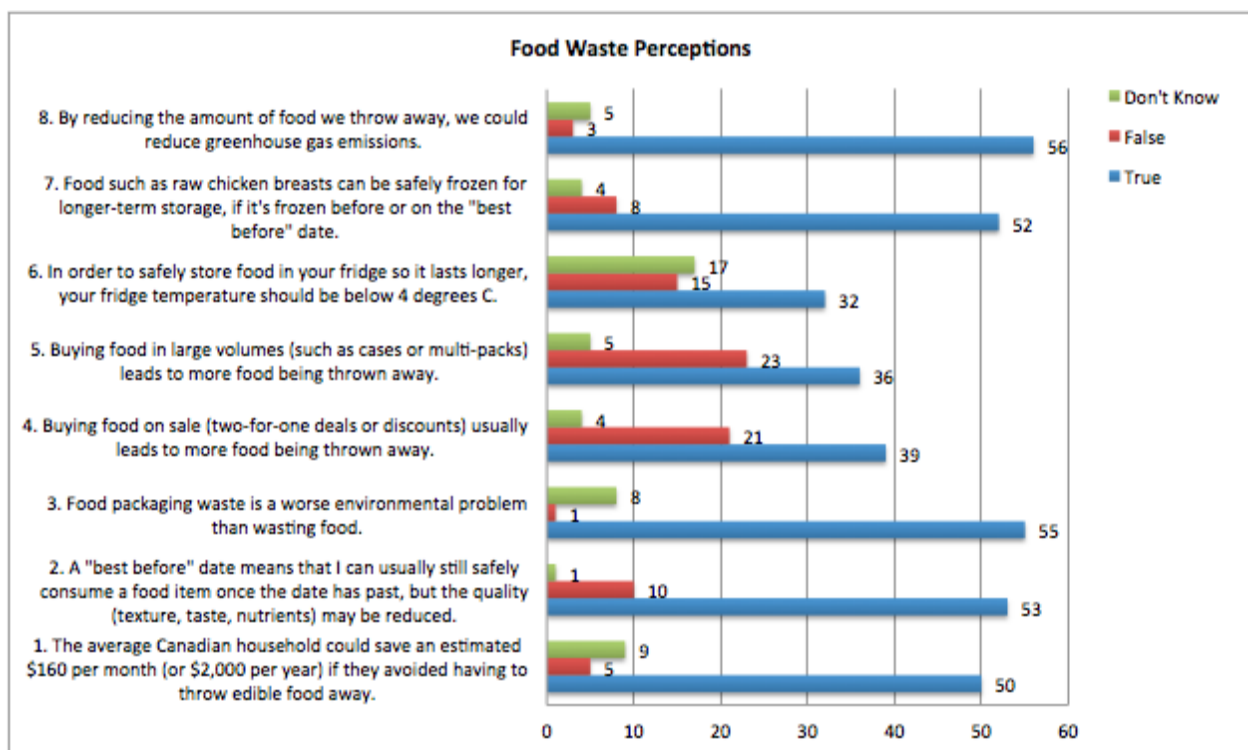
G4. Buying food on sale (two-for-one deals or discounts) usually leads to more food being thrown away.

G5. Buying food in large volumes (such as cases or multi-packs) leads to more food being thrown away.

G6. In order to safely store food in your fridge so it lasts longer, your fridge temperature should be below 4 degrees C.

G7. Food such as raw chicken breasts can be safely frozen for longer-term storage, if it's frozen before or on the "best before" date.

G8. By reducing the amount of food we throw away, we could reduce greenhouse gas emissions.



Appendix C: Food Waste Diary (excerpt)

Household Food (and Drink) Waste Diary

Welcome to Your Household Food Waste Diary

Thank you very much for agreeing to participate in this important research for the City of Edmonton's waste programs and services. This research will help us to understand what types of food and drink are thrown away and why, so that we can continue to improve our waste management system, and develop future education programming to help residents reduce and divert their household waste.

What Do We Need From You?

All we need from you is about one hour a day to keep track of your household's daily food waste. This includes all the food waste you would normally throw away (trimmings, peels, cores etc.), as well as any uneaten food/drink and leftovers. No matter how little or how much, we want to hear about it. *There is no need to change your weekly routine during the diary.*

All personal information will be kept confidential, and no one else will contact you regarding the information you provide. Data from all food diaries will be compiled and used anonymously. No one will be judging your household for throwing food away. Do not worry that you are throwing away too much. We do not expect you to change any of your habits.

We're providing you with a measuring kit to help you estimate your food or drink waste, which is yours to keep and use after the diary is complete.

Instructions

- 1) Start your diary on a typical week for you, starting Wed _____ and finish at the end of day the following Tues _____.
- 2) *This is the paper version of the diary:* Each sheet is to be used for one main meal (breakfast, lunch, or dinner). There are three sheets for each day. If members of your household tend to have several small meals or snacks throughout the day, record it on the sheet that most closely corresponds to the time of day associated with meals
 - e.g., breakfast and a 10:30 am snack can be both included on the breakfast sheet
 - e.g., dinner and an evening snack can both be included on the dinner sheet



Instructions – Pg 1

Household Food (and Drink) Waste Diary

3) Provide a full description of the waste (as much as possible), filling in all of the required boxes on each row. This will help us to calculate food waste costs accurately. If there is a food mixture, record the ingredients as fully as possible

Example: homemade beef and barley soup made with 1 kg of beef, 3 carrots, 1 cup of barley, 1 stick of celery, and 1 L of store-bought beef stock)

Example: a large cup of coffee made with 1 packet of sugar and 2 tablespoons of non-dairy creamer

4) Looking for **Examples**? Please refer to the example sheets (Example tabs in electronic document) that show how to fill out the sections.

5) There is an **'Other Weekly Waste'** sheet. Use this for recording any weekly cleaning of the fridge/freezer/cupboards, or any extra waste not captured on the daily sheets.



Some Tips & Guidelines

There is no need to change your regular shopping, cooking or eating habits during the diary. If you would normally clean out the fridge once a week before shopping, continue with your routine, and record any items thrown away.

If a member of your household does grocery shopping on any day, please record the approximate amount spent (on Other Weekly Waste sheet)

If anything out of the ordinary for your household occurs during the week, please provide details in the 'daily comments and thoughts' table. *Examples: you spent much of the week dining out, threw a party, or had an illness that affected shopping/cooking activities.*

If you bring food (homemade or store-bought) from home for eating lunch at work or school, record any food waste thrown away. Don't leave any pages blank. If there is no food waste to record, select one of the reasons at the top of the page.

It is usually best (and easiest) to record the waste as it occurs, but some household members may occasionally find it useful to set waste aside or bring it home until it can be recorded.

Another Tip: Read Instructions Carefully

Instructions – Pg 2

Household Food (and Drink) Waste Diary

Important! When tracking your food waste, this should include info from:

- ALL members of your household
- Only what is thrown away at HOME (not including food bought at school, work, and when dining out at restaurants)
- All types, no matter what it is (including food scraps not normally eaten, such as coffee grounds, vegetable peelings/cores, bones, etc.)
- ALL amounts (big and small)
- ALL reasons why food was thrown away
- ALL means of disposal (garbage, home composting, down the sink/drain, fed to animals, etc.)

Remember:

- It is really important that the amount of waste thrown away is recorded as accurately as possible
- If you are weighing any food waste, do not include the weight of any packaging or containers that the food or drink is in.
- Use the provided measuring kit items to help you, or use your own scales or other measuring containers.
- Remember to include the measuring unit that you are using.



Also remember to ... send in the cover page with your diary.

Examples of measurements:

- Litre (L)
- Ounce (oz)
- Tablespoon (Tbsp or T), Teaspoon (tsp or t)
- Cup (c)
- Gram (g) or Kilogram (kg)
- Pound (lb)
- Pint (Pt)
- Handful (flat or heaped)
- By container (e.g., cup, wine glass, bowl)
- Number of items (e.g., one potato, half a 400 g bag of salad, 2 slices of bread)

Instructions – Pg 3

Household Food (and Drink) Waste Diary

Thank You For Your Help!

At the end of the week: Please return the entire completed booklet (including this page) in the mailing envelope provided by [date] or call/email to arrange a pickup time. Once we receive the diary, we will call you to you to conduct a short post-diary survey. You will then receive a _____ by mail as a thank-you for your time.

Questions? Need Support?

If you are unsure about anything at all, please call our Diary Support Team at _____ or _____ (Monday to Friday 8:30am to 4:30pm) and we'll be pleased to help.



Instructions – Pg 3

DAY 1

Date: May 11, 2016

Meal: breakfast lunch **dinner**

Any Food Waste? **Yes** No _____
(circle one) reason? (e.g., all eaten, meal away from home, etc.)

Thoughts/Comments _____
 On Daily Food Waste? _____

Please give a full description of the food/drink waste, including brand if possible. If you run out of room, use the Other Weekly Waste Sheet.

Type of Food/Drink	Original Packaging Type	Original Packaging Size	State of Preparation	About Your Food Waste:		Reason for Disposal
				Amount	Method of Disposal	
Xtreme Cheese brand mac & cheese	dried	300 g box	Cooked	1/4 of total	garbage	Kid refused to eat more
Milk (Cow brand)	fresh	2 L	Original state	100 ml	garbage	ditto
Broccoli (VegO'Matic brand)	frozen	500 g box	Cooked	5 florets	garbage	ditto

EXAMPLE 1

Questions about your Food Waste Diary? Call _____ Mon - Fri 8:30 am - 4:30 pm

DAY 2

Date: May 12, 2016

Meal: **breakfast** lunch dinner

Any Food Waste? **Yes** No _____
(circle one) reason? (e.g., all eaten, meal away from home, etc.)

Thoughts/Comments maybe I should invest in a travel mug for
 On Daily Food Waste? work to help cut down on all the coffee I throw out.

Please give a full description of the food/drink waste, including brand if possible. If you run out of room, use the Other Weekly Waste Sheet.

Type of Food/Drink	Original Packaging Type	Original Packaging Size	State of Preparation	About Your Food Waste:		Reason for Disposal
				Amount	Method of Disposal	
Taste Oats oatmeal	dried	1 kg bag	Prepared/served	3 spoonfuls	Fed to animal	Cooked/served too much
Cow brand milk	fresh	1 L	Prepared/served	~1/6 T	Fed to animal	Same as above
Tree Time maple syrup	Bottled	1 L	Prepared/served	~1/3 sugar cube	Fed to animal	Same as above
Eggs (from farm)	Home-grown	1 dozen	cooked	2 eggshells	Home composter	Not usually eaten
Natura tea	dried	Box of 20 teabags	Prepared/served	1 teabag	Home composter	Not usually eaten

EXAMPLE 2

Questions about your Food Waste Diary? Call _____ Mon - Fri 8:30 am - 4:30 pm

Date: May 17, 2016

Other Weekly Waste
 You can include clearing out fridge/freezer/cupboards, and any extra info that didn't fit on any of the other pages

Did you do any household shopping this day/week? Yes No Approximate amount spent on groceries: \$ 325

Thoughts/Comments On Daily Food Waste? I realized that I don't know how well food will keep if we store it in the freezer. I might try this in the fall to cut down on food waste.

Any unusual circumstances that contributed to more/less waste than usual? Cleaned out the fridge before we went on vacation. Ordinarily we wouldn't be throwing out so much.

Type of Food/Drink	Original Packaging Size		State of Preparation	About Your Food Waste:		Reason for Disposal
	Type	Size		Amount	Method of Disposal	
D-lite brand veggie dogs	fresh	8 pack	original	3 dogs	garbage	Going on vacation (won't last)
Xtreme Cheese sliced cheese	fresh	4.54 g bag	original	~100 g	garbage	Going on vacation (won't last)
Cow brand berry bliss yogurt cups	fresh	4x150 ml pack	original	3 cups	garbage	ditto
Greenies' bagged salad	fresh	100 g bag	original	whole bag	garbage	ditto
Veggie soup (Chef brand)	canned	500 ml can	original	1/2 can	sink	Ditto
Cluckin' Good chicken breasts	fresh	525 g package	cooked	1/2 chicken breast	Fed to dog	Small amount not worth keeping
Cow brand milk	fresh	2 L carton	original	1/3 carton	sink	Going on vacation (won't last)

EXAMPLE 3

Questions about your Food Waste Diary? Call _____ Mon - Fri 8:30 am - 4:30 pm

Appendix D: Waste Audit Categories

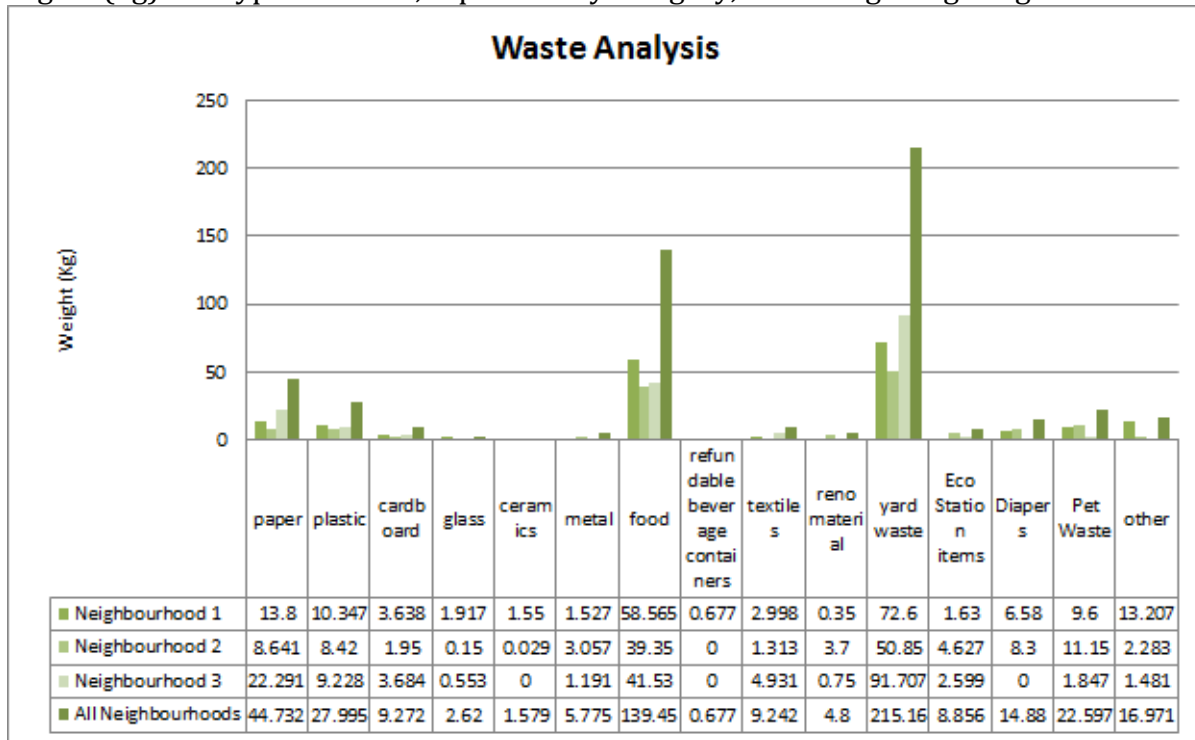
Garbage and Recycling Waste Audit Categories	
Main Category	Subcategory and Example
Paper	<p>Newspaper</p> <p>Mail waste (e.g. flyers, junk mail, regular mail, envelopes)</p> <p>Paper towel and tissue</p> <p>Food packaging – recyclable (food-related items e.g. paper bags)</p> <p>Food packaging – non-recyclable (packaging that is manufactured by a company that sells food items and that are not accepted in household recycling e.g. disposable coffee cups)</p> <p>Other paper – recyclable (e.g. writing paper, computer paper, magazines, paperback books, phone books, bagged shredded paper)</p> <p>Other paper – non-recyclable (e.g. shiny wrapping paper, unbagged shredded paper, other tiny pieces of paper including receipts, pet food bags)</p>
Plastic	<p>Recyclable containers (household bottles and containers e.g. shampoo, laundry, soap, windshield washer)</p> <p>Food packaging – recyclable (packaging that is manufactured by a company that packages food items and that we encourage residents to place in their household recycling e.g. vinegar, yogurt, margarine, clamshells)</p> <p>Food packaging – non-recyclable (packaging that is manufactured by the company that packages food items and that are not accepted in household recycling e.g. Styrofoam trays, saran wrap/cellophane, mixed materials such as microwaveable containers with metal edges)</p> <p>Packaging (plastic retail or shipping packaging for non-food items e.g. bubble wrap, strapping)</p> <p>Bags (e.g. grocery, retail, bread bags, dry cleaning bags)</p> <p>Styrofoam (non-food related e.g. packing peanuts, packaging)</p> <p>Non-recyclable items (e.g. toothbrush, toys, wading pool, garden hose, plastic utensils and appliances)</p>
Cardboard	<p>Food packaging – recyclable (egg cartons, fast food boxes, cereal boxes, soda can boxes)</p> <p>Food packaging – non-recyclable (e.g. wax coated boxboard, super greasy pizza boxes)</p> <p>Other – recyclable (e.g. household cardboard, shipping boxes)</p> <p>Other – non-recyclable (plastic-coated, mixed materials)</p>
Glass	<p>Food packaging – recyclable (e.g. food jars and bottles)</p> <p>Food packaging – non-recyclable (lids, spouts)</p> <p>Other – recyclable (glass containers not associated with food)</p> <p>Other – non-recyclable (e.g. plate glass, mirrors, cups, dishes)</p>
Ceramics	Describe the item in the spreadsheet and record overall weight, e.g. mugs, plates, etc.

Garbage and Recycling Waste Audit Categories

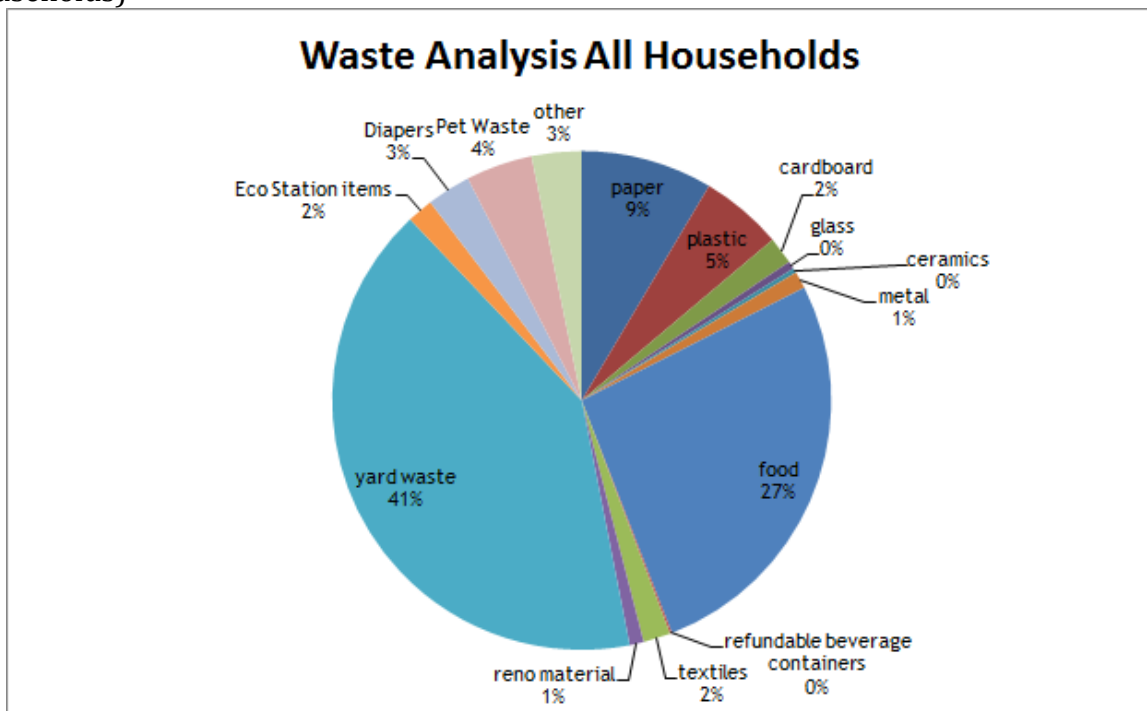
Metal	<p>Food packaging – recyclable (e.g. soup/food cans, empty non-hazardous aerosol cans, aluminum trays and pie plates)</p> <p>Food packaging – non-recyclable (e.g., foil wrap, takeout containers, mixed materials such as plastic-coated metals)</p> <p>Other – recyclable (non-food metal containers/lids)</p> <p>Other – non-recyclable (e.g. wire clothes hangers)</p> <p>Other (describe item in spreadsheet and weigh items individually)</p>
Food	<p><u>Avoidable</u></p> <p>In packaging (food bought and still contained in packaging, the food should have been consumed but was wasted. Weigh and record in packaging. e.g. yoghurt in container, chips in bag, salad dressing in bottle, bag of salad, bread in bag)</p> <p>Edible food waste (food that should have been consumed but was waste e.g. cucumber, orange, potato, leftovers, half eaten)</p> <p><u>Unavoidable</u></p> <p>Household compostable (organic items you can't eat that can be composted in a backyard compost bin, e.g. peels, pits, cores)</p> <p>Non-household compostable (organic things that you can't eat and shouldn't be put in a home composter, e.g. bones, fats, oil, grease)</p>
Refundable Beverage Containers	Describe the item and record the overall weight of all refundables together e.g. pop and beer aluminum cans, tetrapaks, glass bottles, milk/juice cardboard cartons and plastic jugs, plastic pop and water bottles
Textiles	<p>Reusable (wearable, could have been donated)</p> <p>Non-reusable (not wearable, ripped, fabric scraps, cotton balls, string)</p>
Reno material	Describe the item and record the overall weight (e.g. shingles, insulation, drywall)
Yard waste	<p>Grass Waste</p> <p>Other (e.g. leaves, brush, garden waste, saw dust)</p>
Eco Station items	Describe the item and record overall weight (e.g. electronics, small appliances, scrap metal, automotive items, lights, syringes-handle with tongs only, household hazardous waste-paint, chemicals, cleaners, batteries, etc.)
Diapers & Feminine Hygiene Products	Record overall weight
Pet Waste	Record overall weight (cat litter, doggy droppings, etc.)
Other	Describe the item and record overall weight

Appendix F: Compiled Results for Pre-Diary Waste Audit

Weights (kg) and types of items, separated by category, found in garbage bags.



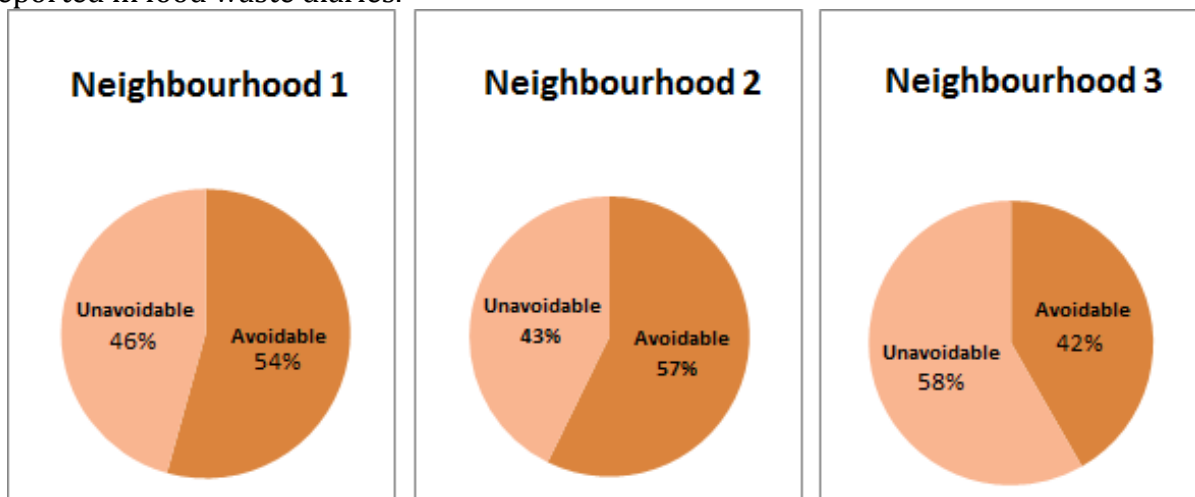
Percentages of items by weight (kg), separated by category, found in garbage bags (all households)



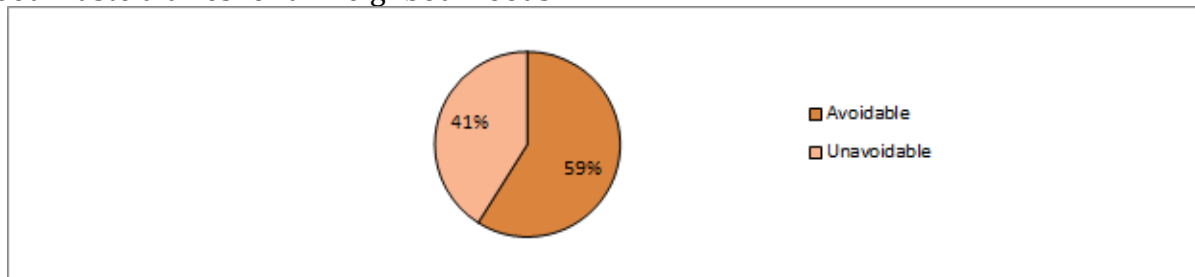
Appendix F: Compiled Results for Food Waste Diary

Types of food waste

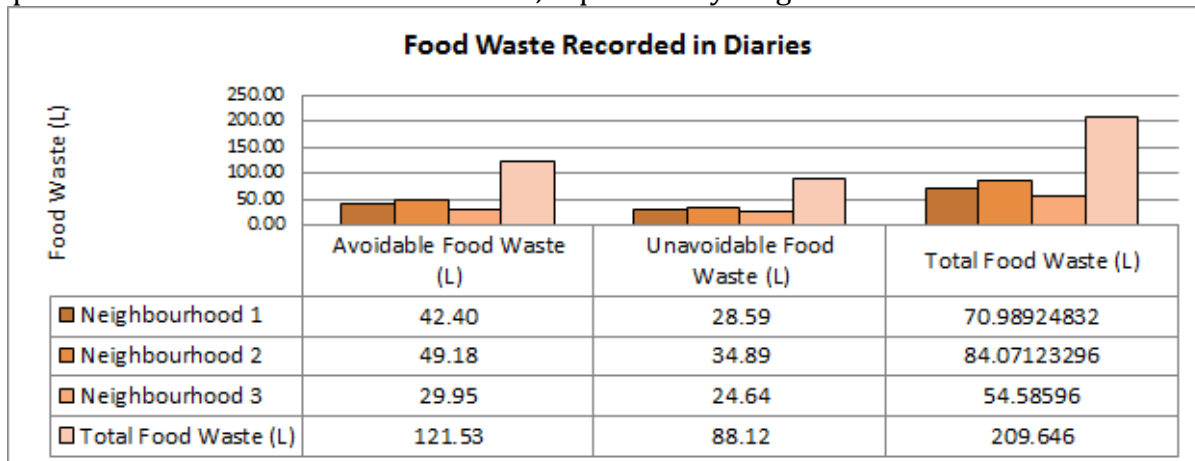
Percentages of avoidable (AFW) and unavoidable (UFW) food waste, calculated by volume, reported in food waste diaries.



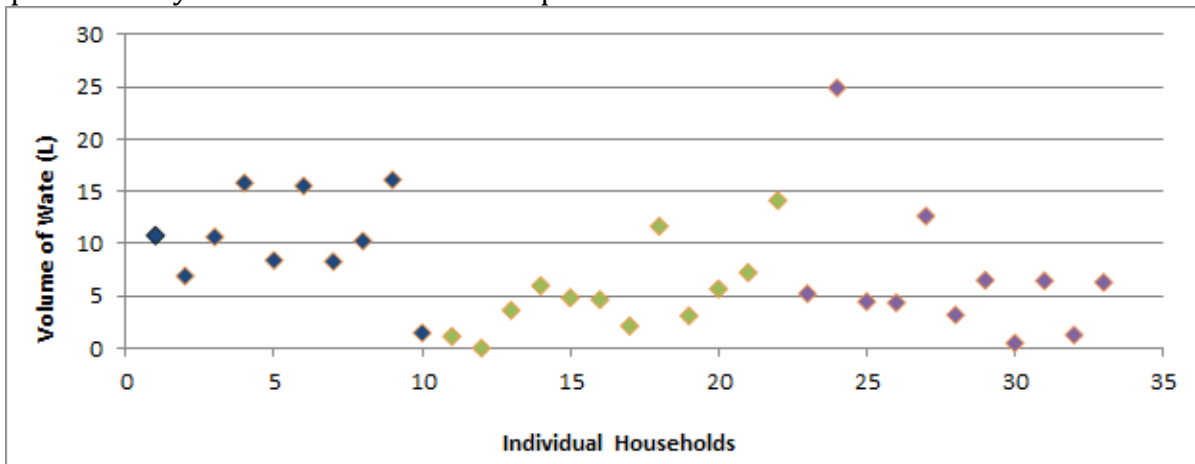
Percentages of avoidable and unavoidable food waste, calculated by volume, as reported in food waste diaries for all neighbourhoods.



Total volumes of food waste (avoidable and unavoidable) thrown away by households, as reported in one-week food waste diaries, separated by neighbourhood.

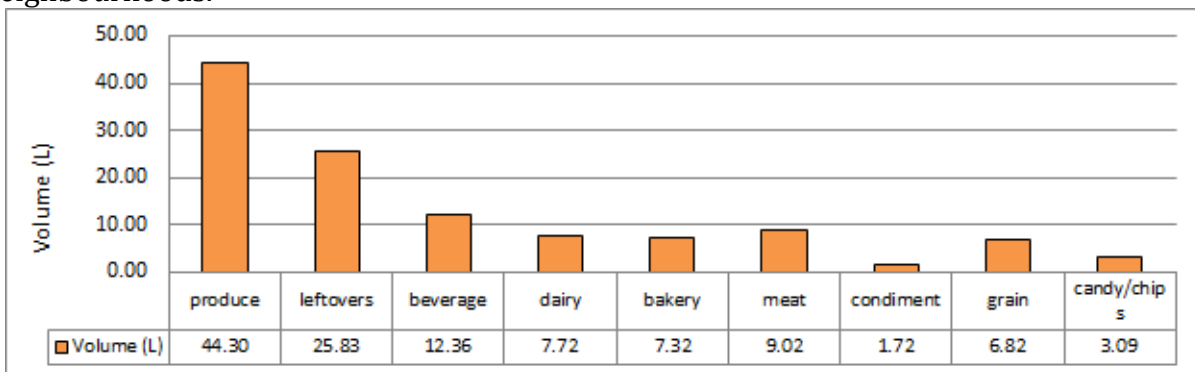


Scatterplot of volumes of waste reported in food waste diaries. Each neighbourhood is represented by a different colour of data points.

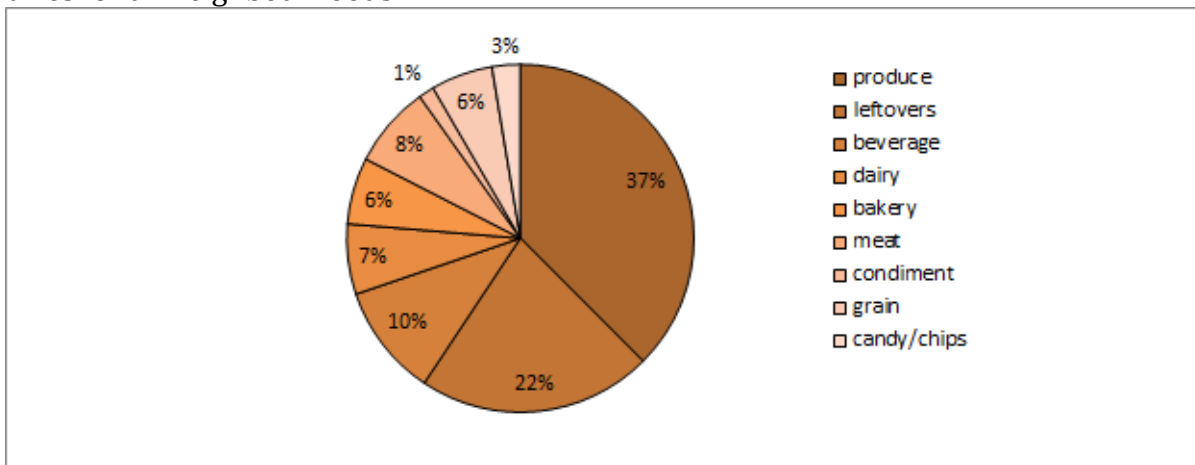


Types of avoidable food waste

Volumes of avoidable food waste types, as reported in food waste diaries for all neighbourhoods.

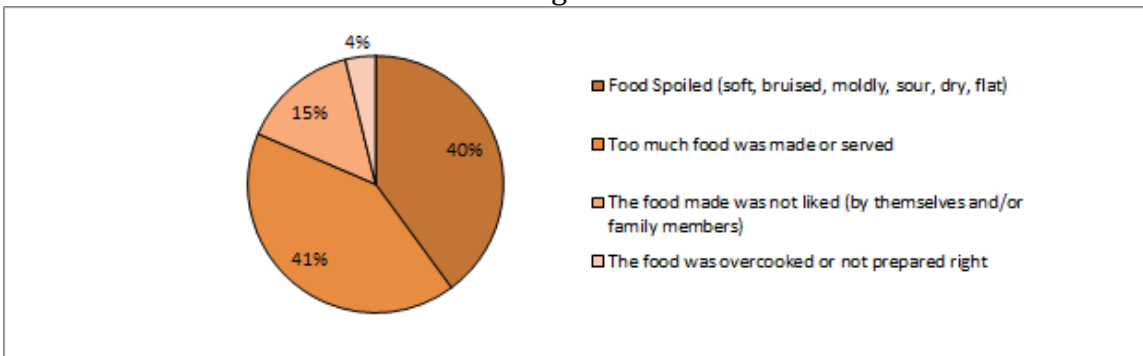


Proportion of avoidable food waste types, by total volume (L), as reported in food waste diaries for all neighbourhoods.

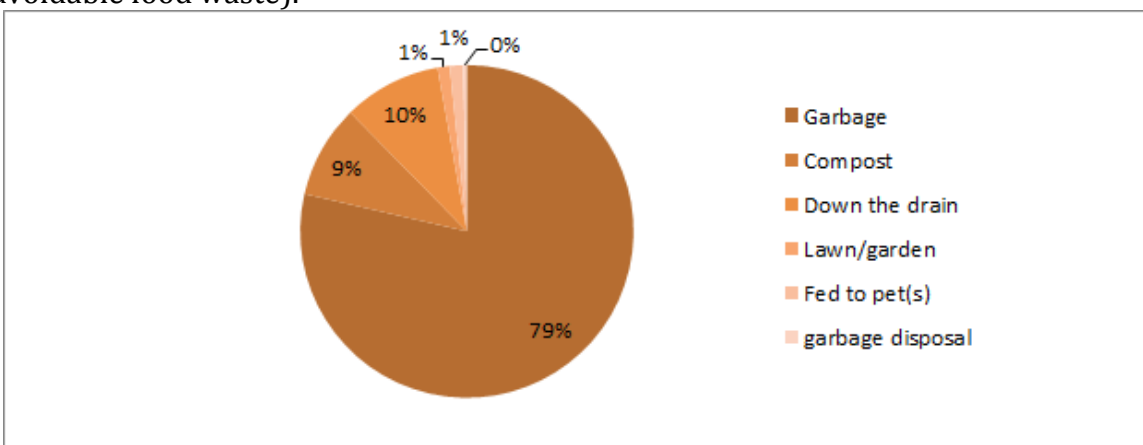


Food waste disposal

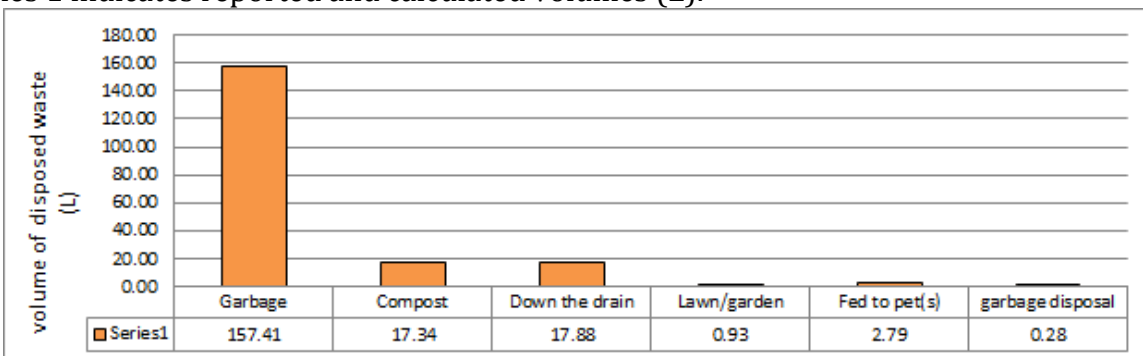
Reasons for disposing of avoidable food waste. Percentages represent number of instances reported in food waste diaries across all neighbourhoods.



Waste disposal methods, calculated as percentages out of total instances of disposal, reported in food waste diaries across all neighbourhoods (includes avoidable and unavoidable food waste).

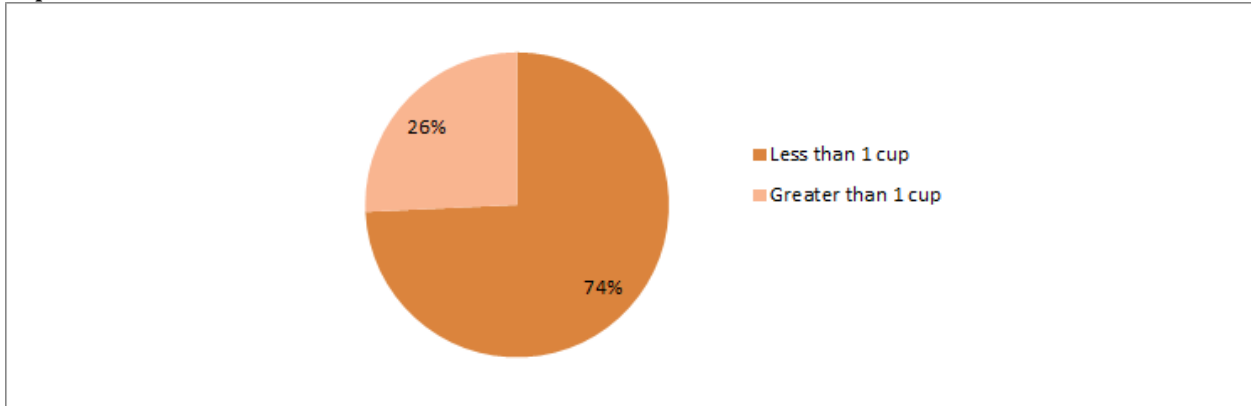


Volumes of food waste (avoidable and unavoidable), separated by disposal method.**⁷ Series 1 indicates reported and calculated volumes (L).



⁷ **This sum will be less than the total weight calculated in Figure 25 because the calculation is dependant on diary information being complete for two categories (weight of waste and method of disposal). Incomplete diary entries were not included in these calculations.

Percentages of avoidable food waste, separated by volumes thrown away at one time, as reported in food waste diaries.



Frequency of food waste volumes thrown away, as reported in food waste diaries.

