

## Group X: Food Waste Study Results and Plan

### Introduction

Food waste is a global issue that has plagued modern society. It doesn't happen because of a decision at the kitchen bin, rather throughout the stages of food provisioning - including planning, shopping, storage, food preparation, cooking, gardening, dealing with leftovers and clearing up. The goal of our research is to better understand and distinguish those factors that cause individuals to waste food. We have examined various literature regarding minimizing food waste within the space of human-computer interaction as well as utilizing a variety of research instruments to collect our data, which include field studies, questionnaires and semi-structured interviews. Data were collected from individuals who satisfied the criteria of living within urban areas and were above 18 years of age. All participants were provided consent forms, allowing us to observe or interview them.

### Background Research

Of the six papers reviewed, five focused on food waste on the consumer level while one focused at the manufacturing level. From these studies, food waste at the consumer level yields higher results in comparison to producers, manufacturers, and retail chains. Furthermore, to raise awareness, campaigns have been formed and mobile applications developed in recent years.

The paper *Reducing Food Waste in Manufacturing Companies* which focuses on companies gives insights on how businesses deal with surplus of food- which is affected based on the food condition, managers' decisions, and other aspects. The article introduces a variety of solutions that manufacturers can utilize when dealing with food surplus; this includes selling surplus food to secondary markets and partnering with local food aid agencies (Clean, 2016). On the consumer level, individual practices and habits such as grocery planning, food storage, and consumption are crucial in analyzing food waste.

Some of the solutions proposed for reducing food waste at the consumer level include a mobile food diary app that keeps track of the amount of waste an individual has created (Ganglbauer, Fitzpatrick, and Molzer, 2012), a BinCam which automatically takes and posts a picture of the waste tossed out via the BinCam application on Facebook (Comber and Thieme, 2013), and FridgeCam (Ganglbauer, Eva, Geraldine Fitzpatrick, and Rob Comber, 2013) The FridgeCam is a mobile phone attached inside of a refrigerator door that triggers the camera in the phone to take pictures. This practice would proactively help users seek out FridgeCam images while going shopping. However, due to participant's busy lifestyles and time pressures, they often experience a gap between what they want to do and what they actually do in everyday life.

### Research Findings

#### Survey and Questionnaire Findings

Many participants do not make a plan before going to the grocery store. The results from the questionnaire show that only 18.2% of participants look at grocery flyers and only 39.4% of participants create a grocery list. This may suggest that people are overbuying but the results from the survey show that 72.27% of participants are less likely to throw out food that has been bought out impulsively. This includes late night snack or something that wasn't part of a grocery list.

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The main reason that people throw out their food is that it has passed its expiration date. Taking the average of the survey and questionnaire, 87% of participants have thrown out food for that reason. Very few people wait till it's been spoiled or has grown mold.

Fruits and vegetables are neither the most nor least commonly wasted food item. Interestingly, grains and drinks have been ranked as the most commonly wasted food item by 22.2% of participants and have been ranked as the least commonly thrown away items by a different 22.2% of participants.

None of the participants have any experience using mobile applications as their food management tool.

### Field Study Findings

From both field studies conducted, only 37.5% of participants had a grocery list with them. And it has been shown by Jorissen et al. (2015) that individuals are less likely to overbuy if they had a list or a sense of what they already have. This is also echoed in the study where participants who were aware of what they had in their fridges were less likely to overbuy. A study done by Ganglbauer et al., (2013) also suggests that consumers who are busy with work and or leisure time tended to not look into the fridge prior to shopping, and therefore were more prone to purchase something that is already at home.

Interestingly, the studies conducted in No Frills and Walmart showed that participants would choose the larger quantity as it was cheaper in bulk, whereas participants in Metro and Sobeys did not exhibit this behaviour. However, items on sale are more likely to encourage participants to buy them. This is echoed by Farr-Wharton et al.(2014), Graham-Rowe et al. (2014), Mondejar-Jimenez et al. (2016), and Porpino et al. (2015), where promotional offers encourage consumers to buy more than actually needed, leading to more wasted food. In both studies, the more aisles participants walked, the more likely they end up overbuying. From both studies, it can also be seen that when buying for more than one person, the individual or group tend to overbuy, whether or not they checked-in with other members of the family. This is basically a human tendency of being a 'good provider identity', which appears to be an important reason for food waste in both qualitative and quantitative studies (Evans, 2011a; Graham-Rowe et al., 2014; Porpino et al., 2016).

In the field studies with individuals shopping solo, the longer the individuals have been buying groceries for themselves, the more likely that they are aware of what they need and what they don't, thus they are less likely to overbuy. Moreover, individuals who are more environmentally cautious are also less likely to overbuy.

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Overall, 37.5% (3 out of 8) overbought produce. This may be from going through the aisles without a list or being forced to purchase the larger amount as there are no smaller amounts available (this was particularly common for herbs). Moreover, Evans (2011a) found that people often buy fruits, vegetables, milk etc. in abundance as they wish to serve food that is perceived as 'proper' and nutritious but few studies depict that buying healthy food doesn't necessarily results in its consumption. Meanwhile, 25% of the participants said they mostly wasted more precooked or takeout food.

### Interview Findings

We were able to interview 5 individuals regarding their grocery shopping habits as well as how much food they waste and their general feelings towards wasting food. There were a few key trends - wasting food evokes some kind of negative emotion, it gets wasted because it is either forgotten about, no longer wanted or people would rather not repeat a meal, and a majority of people cited meal prep as a strategy for minimizing food waste for a week.

All participants viewed food waste as undesirable, and behavior that should be avoided and minimized. When asked what emotions they felt when throwing away food, 80% of participants cited guilt, the one participant who did not cite any emotions still recalled the less fortunate when they threw out food. And while these emotions make them hesitate, they still waste food because there is no alternative. Food waste still occurs because of reasons such as forgetting they had an item, misplacing it in the fridge or not wanting the food anymore. 3 out of 5 participants said that they would forget where they placed an item in their fridge and that is why it would go bad, but they also all said that they kept what was at home in mind when going grocery shopping. There is obviously an issue here in terms of participants' capacity to remember what they already have at home and fridge placement.

Multiple participants cited meal prepping as a strategy to reduce their food waste. 2 out of 5 participants engaged in weekly meal preps. One participant would if they had time, another participant went as far as meal prepping based on her weekly caloric needs, and the other participant meal prepped for a family of 3 including herself. The participant meal prepping for a family said that the activity helped her reduce food waste and got her into a routine of buying the same foods, as well as knowing how much her family will eat, but she also said that her adult child going out to eat leads to some waste as his meal prep was difficult to predict for the week.

### Conclusion

Our research has given us novel insights into people's attitudes and positions regarding food waste. We were able to discern some key points in food purchasing experience that aided to the accumulation of food waste as well as strategies that individuals are already using to minimize food waste. In conjunction with an extensive literature review, we have been able to create an experience map to accurately depict the process of grocery shopping which we deem to be a key part of the individual accumulation of food waste.

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### Grocery Shopping Experience Map

Legend: "+" positive experience & reactions; "-" negative negative & reactions; "-" bullet points;

Stages	Entice Before going to a grocery store	Enter Entering the grocery store	Engage Buying the groceries	Exit Checking out	Extend Storing and eating groceries
People	<ul style="list-style-type: none"> <li>• Customers</li> <li>• Family</li> <li>• Individual</li> </ul>	<ul style="list-style-type: none"> <li>• Customers</li> <li>• Grocery store staff - clerks in isles</li> </ul>	<ul style="list-style-type: none"> <li>• Customers</li> <li>• Cashier</li> </ul>	<ul style="list-style-type: none"> <li>• Cashier</li> </ul>	<ul style="list-style-type: none"> <li>• Family</li> <li>• Individual</li> </ul>
Context	Home	Grocery store	Grocery store aisles	Check out section	Home
Feeling	<ul style="list-style-type: none"> <li>- Feeling of guilt/emptiness (Fridge looks kind of empty?)</li> <li>- Apprehensive (Don't want to spend a lot.)</li> <li>- Hunger</li> <li>- Considers needs of family</li> </ul>	<ul style="list-style-type: none"> <li>- Anxious ( What if the thing I want is out of stock? )</li> <li>+ Excited ( I like shopping)</li> <li>+ Deals/ specials</li> </ul>	<ul style="list-style-type: none"> <li>- Confusion (if there are items where you don't know the difference or affordable)</li> <li>+ Happy - if there is a sale</li> <li>+ Satisfaction!</li> </ul>	<ul style="list-style-type: none"> <li>+ Relieved!</li> <li>- Disappointed! - I went over my budget or I forgot item x.</li> <li>+ Price matches</li> </ul>	<ul style="list-style-type: none"> <li>+ Security</li> <li>+ Excited! - to share my product experience.</li> <li>- Annoyed! - to be dealing with returns.</li> </ul>
Thinking	<ul style="list-style-type: none"> <li>• I need food soon</li> <li>What do I need to buy?</li> <li>• Can I trust grocery store x? - Is it reputable?</li> <li>• What are friends/google saying about item x of grocery store?</li> </ul>	<ul style="list-style-type: none"> <li>• Do I need a cart or a basket?</li> <li>• Where should I go first?</li> <li>• Should I look at the flier again?</li> </ul>	<ul style="list-style-type: none"> <li>• Where is <u>item x</u>?</li> <li>• What is the easiest way to get item x?</li> <li>• Item x is on clearance, should I buy?</li> <li>• Am I sure I want item x?</li> <li>• Can I consume item x before its expiry?</li> <li>• What else do I need?</li> <li>• Have I got everything?</li> <li>• How much of ____ do I need?</li> </ul>	<ul style="list-style-type: none"> <li>• Where is the shortest line?</li> <li>• Is there a self checkout line?</li> <li>• It's finally done</li> <li>• Can I price match here so I can save time?</li> </ul>	<ul style="list-style-type: none"> <li>• How long will this last?</li> <li>• Where can I put this</li> <li>• Where I'll find it?</li> <li>• What will I need to cook/eat this week?</li> </ul>
Action	<ul style="list-style-type: none"> <li>• Looks at fridge, pantry, shelves, freezer</li> <li>• Check what's needed</li> <li>• Prepare list</li> <li>• Take required grocery bags</li> <li>• Check flyers</li> <li>• Call grocery store x to see if item is in stock</li> </ul>	<ul style="list-style-type: none"> <li>• Grab cart</li> <li>• Grab flier</li> </ul>	<ul style="list-style-type: none"> <li>• Look at their list</li> <li>• Grab needed groceries</li> <li>• Check/scan prices when unsure.</li> <li>• Check expiry dates?</li> </ul>	<ul style="list-style-type: none"> <li>• Put all items at the cashier</li> <li>• Pay for food</li> <li>• Price match</li> <li>• Withdraw item x if it is costly.</li> <li>• View return policy</li> <li>• Tally receipt entry</li> </ul>	<ul style="list-style-type: none"> <li>• Put away food</li> <li>• Eat/cook food</li> </ul>
Touchpoints	<ul style="list-style-type: none"> <li>• Bags</li> <li>• Door</li> <li>• Vehicle</li> <li>• Laptop/Computer/Phone</li> </ul>	<ul style="list-style-type: none"> <li>• Cart</li> <li>• Flier</li> </ul>	<ul style="list-style-type: none"> <li>• Choosing quantities to buy</li> <li>• Barcode scanner</li> </ul>	<ul style="list-style-type: none"> <li>• Method of payment (cash/card)</li> <li>• Grocery bags</li> </ul>	<ul style="list-style-type: none"> <li>• Fridge (various places in the fridge, crisper, drawer, fridge door)</li> <li>• Freezer</li> <li>• Pantry</li> </ul>

Appendix I: Result Summary of Covert In-field Direct Observation

(Pratyush Kanwar)

As per my field research:

One family came with planning as they carried a shopping list. This tells us that that shopper was cautious about food wastage and checked their food inventory before coming to grocery store. On the other hand, other shoppers seemed shopping casually and going through each aisle of the grocery store therefore one can make a prediction that these consumers were busy with work and/or leisure time and never bothered to look into the fridge/pantry prior coming to shopping hence were more prone to purchase something that is already at home. 4 families selected food items in large quantities for lesser price. This practice of stockpiling food for unexpected occasions is seen to reduce stress and save time, but could lead to buying more products than one can consume in a recommended timeframe and ultimately causing food wastage. A solo shopper went through all the aisles of the store and picked plenty of packages of curd ,milk,veggies etc. and spent around an hour picking and choosing food products in a casual manner and filled his cart from top to bottom. These being perishable items are more likely to get wasted. Parents accompanying children showed 'good provider identity', which being an important reason for food waste like in the case daughter accompanying mother showed high point of engagement after seeing a new product and forced the parent to buy cookies. After conducting this In-fied direct observational research, I found that food waste that happens on household level is highly complex and multi-faceted issue caused by various reasons and different types of behaviour. My research revealed that most people don't plan their shopping or use shopping lists but intentionally nobody likes to waste food because wastage of food is indirectly related to wastage of their hard-earned money rather their concerns about environmental/social implications of food waste.

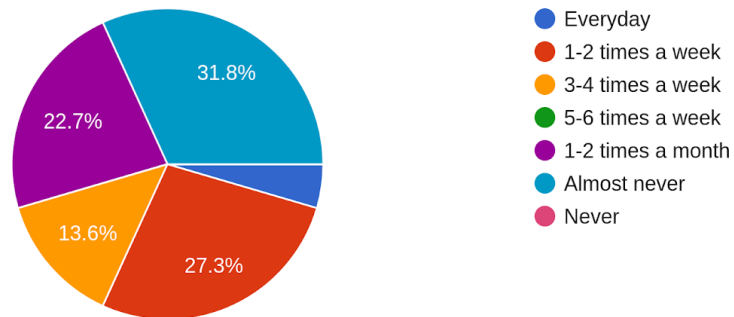
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### Appendix II: Summary of individual questionnaire

(Michael Le)

#### How often do you waste food?

22 responses



22 people were given the survey.

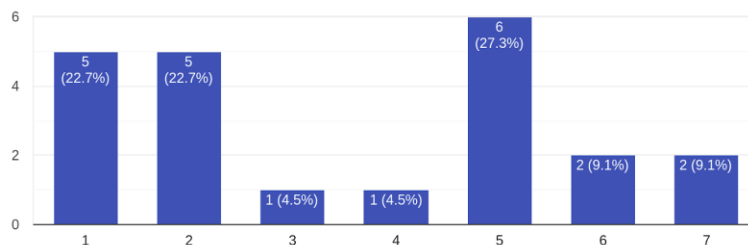
31.8% of people almost never waste food, while 27.3% of people say they waste food 1-2 times a week.

68.2% of people go grocery shopping once a week, no one goes everyday. 31.8% of people prepare food at home everyday, 31.8% of people prepare food 5-6 times a week, no one never prepares food at home.

6 different people don't throw away fish, dairy, and drinks. When it comes to food types that people throw away 5 people rank grains and drinks as the most commonly wasted food type. 5 different people rank grains and drinks as their least wasted food type. Fruits and vegetables are ranked in the middle by most people.

#### When I go grocery shopping I have a planned list in advance:

22 responses



On a scale where 1 equals never and 7 equals always about 50% of people are less inclined to have a planned list, while 45.45% are inclined to have one.

Using that same scale it seems like 72.27% of people are more likely not to throw out food that has

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been impulsively bought. Also 63.63% are more inclined to know whether their food expires. 18% of people are neutral to knowing when their food expires.

When it comes to reasons why food is wasted 86.4% of people have thrown away food because it's past its expiration date. 50% have thrown away food because they didn't feel like eating or they bought too much. Just one person has thrown out food because they didn't like the way it looked.

Ranking	1	2	3	4	5
Reason	Food Expired	Didn't feel like eating	Bought too much	Didn't like the way it looked	Other

Table 1: 1 is the most common reason and 5 is the least common reason

The other that people mention is when food starts growing mold.

When asked how people feel when wasting food there are words such as "guilty", "bad", "sad", "wasteful" or "regretful". Some reasons why people feel that way are either because they wasted money or that people out there who are less fortunate and starving. Interestingly one person said they felt "indifferent" because "everybody wastes food".

In the last section someone left a comment stating that they overestimate how long they can store a vegetable in the fridge.

It seems like everybody wastes food at varying degrees most commonly because their food has expired. Despite more people knowing when their food expires it still seems to be an issue. There are a few people who throw away their food once it starts to spoil or grow mold. Perhaps we should instill a mindset where it's okay to eat expired food unless it's spoiled or has grown mold?

What people throw out is also a complex thing. The most common thing that someone throws out could be the least common thing someone else throws out, but fruits and vegetables are neither the most or least commonly thrown out things. Interestingly, even though the amount of people who bring a list when shopping are fairly even, majority of people don't waste food that they buy on impulse. That is to say late night hunger cravings aren't so bad after all.

When asked how people feel about food waste it tends to be negative feelings. The reasons that people mention are either it's a waste of finances or that it's because there are less fortunate people out there.

### Appendix III: Interview Analysis

(John Oabel)

#### Introduction

One of the growing concerns today is minimizing food waste. Food waste is present everywhere - including supply or distribution centers, retail spaces, and consumer households. Furthermore, our research focuses on the consumer level as it has the highest proportion of food waste from the listed spaces. To carry out the research, holding interviews provided insights and allowed for qualitative data to be recorded regarding a consumer's perspective of purchasing, storing, and disposing of food.

#### Data Summary

There were two individuals that participated in my interview regarding grocery shopping and food management habits. Both participants were students taking undergraduate studies; one living with a family of four and the other renting alongside other tenants in one residence. Both individuals do not create a physical list but rather a mental list of items that needs to be purchased while looking into the grocery fliers at home. The list mainly comprises of staple ingredients such as milk, bread, eggs, meat, fruits and vegetables. Also, they both tend to add items that they saw in store due to the product looking appealing which mainly include snacks or frozen food (for convenience). The participants track their foods' expiry dates at a very minimal level in which they usually go by trying to remember when a certain food is safe to consume until. The individuals state that they dispose of food because leftover(s) that have been sitting in the fridge for a week or the food simply is not appetizing anymore. However, they do agree that food waste should be minimized, if not avoided. Furthermore, introducing a food management application on their mobile devices presented some challenges such as a problem for those who are technologically disadvantaged, compensation or reward(s) for minimizing food waste or does the application recommend action(s) for the users to follow to minimize their food disposal.



### Research Findings

Although the general population does not purposely waste food, there could be underlying circumstances on where food disposal is inevitable. In some instances, a change in diet risks food unassociated with the dietary plan to be left unconsumed and disposed of. Furthermore, both individuals prefer the convenience of dining out or “instant-cook” meals as it saves them time as opposed to cooking meals. While the participants do not constantly think of food waste, they do feel a moment of regret or a sense of being wasteful when disposing of food. Also, they prioritize food storage for prolonging the life cycle of food- this includes storing bread in the fridge or freezer to expand shelf life. In terms of having a food management application, initiative and user-friendly interface play major roles on having consumers constantly or continuously using the application. In addition, having an application that recommends possible actions to minimize waste or offers reward(s) increases the chance of attracting customers to download such application.

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### Appendix IV: Field Study at Grocery Stores

(Sharene Carleen Thio)

#### Summary

Out of the three participants, two of them are aged between 18-30, and another above 50. While all the participants shopped by themselves, only one was buying for another person as well. Two of the participants was aware of what they had at home. Those same two participants are also the participants who are aware of how much waste they create and also has minimal waste (5-10% of what was bought that week, and only leftovers). The other participant (household of two) mentioned tossing out around 8kg of food, most being remade or takeout food that did not taste good.

Two of the participants had a list, one had a list on their phone using the app “Out of Milk”, while the other just had a mental list. Two of the participants chose to use the big cart, however, only one participant ended up feeling like overbuying.

All three participants picked what to grab first based on location, that is, they went to whichever item or aisle was closest to the entrance they entered from. When two of the participants were unable to find what they were looking for, they asked an employee for assistance. When picking out produce, one participant picked out the more bruised looking ones in order to ensure that the store does not end up tossing it out, while another checked only if he was buying the item for his girlfriend. Otherwise, the participants did not check their produce. Generally, they all grabbed the smaller option despite the bigger one being cheaper since they are aware they would be unable to finish it.

None of the participants added random items after they decided they were done shopping. None of them removed any items they got.

#### Interesting Notes

*Participant 1* has shopped her own grocery for at least 8 years and is a big environmentalist, bringing her own shopping bags, produce bags, and container to buy fish. While choosing produce, she takes the ones that are in bad shape but still edible, as she did not want the grocery to toss it out and contribute to food waste. She had difficulty finding small single cucumbers and ended up skipping on buying the pack of cucumber since it was too much for her. She also mentioned frustration with buying herbs since they came in a big bulk and she never finishes them. Had to buy a fish bigger than what she wanted because they did not have a smaller size. She was also confused by two events; two rows of salmon being priced differently (reasoning given to her was that one was cultivated from Norway, and the other is not), and sausage that had unclear labels (see picture in appendix). This caused her to pick it up and almost buy it out of curiosity. She meal preps her food.

*Participant 2* has been shopping for himself for 4 years. Participant wandered around a lot due to having no grocery list and grabbed what he thought he might need for that night’s dinner. Ended up buying more food than he expected. Mentioned that this usually happens when he buys groceries by himself because he ends up wandering around the whole supermarket (which is seen during the

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field study). He was also very close to buying Hot Flaming Doritos but decided against it because he does not know whether his girlfriend would like it. He also bought grapes for his girlfriend because he knows she likes them; however, he did not call or text to confirm if she wanted some. Due to this, he also grabbed bananas for himself, even though he does not usually buy fruits, and only did so because he feels like he should since his girlfriend is getting grapes. Generally ate out 1.5 times a day and buys groceries every time he decides he wants to cook.

Participant 3 has been shopping for groceries for a long time. She shops for herself now. She knew exactly what she wanted and headed straight to the aisles that had those items, except for salt, which she had difficulty finding. She had also gone to a different grocery store beforehand and gotten a few stuff like cereals. She goes grocery shopping every day. While following her, overheard a conversation between three people who were debating whether to grab the smaller syrup or the larger. They opted for the smaller one despite one of them mentioning that it's cheaper to get the bigger one overall. She also expressed wanting to be more environmentally conscious without being prompted about it.

### Insight

It seems that people who have more experience buying groceries for themselves created less waste. So far, the same trend can be seen if they are also environmentally conscious. Having a list also seems to reduce the amount of items participants bought. This is also corroborated by Ganglbauer, Fitzpatrick, and Molzer (2012). However, this might also be due to experience of knowing what they will be able to eat or not, and what they want to eat.

People also liked to either grab the biggest cart available or they do not use anything since they have their own bag. This does not seem to have any effect on overbuying. They also picked up items based on what is nearest to the entrance they came in from, unless they know what they need, then they head directly to the aisle that has the item they needed.

The most common food type most people are aware of tossing out is premade or precooked food, such as take-outs. This was true in 2 of the participants. All the participant did not opt for a bigger amount even though it is cheaper. However, they are generally forced to take bigger amounts of the items they want, as the store does not sell them in smaller amounts. This is especially noticeable for produce (mainly certain vegetables and herbs). There was quite a few noticeable practices made by the grocery stores themselves that would reduce over-buying or food waste, however, solutions does not seem to work in their favour.

Gender did not seem to have any effect. However, this may be due to the small data pool.

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### Appendix V: Individual Formative Study Results

(Yufeng Zhou)

#### Literature Review Summary

The literature being reviewed is related to the topic of how food manufacturer deal with their generated surplus food to reduce food waste. Useful information extracted from the article is that the large food manufacturers have many options of making use of their generated surplus food, and the options chosen are based on the food condition, managers' decision and other aspects. There are many problems involved in the reduction of surplus food generated by food companies (such as reducing the cost of transportation of surplus food, maximize the gain of reducing the surplus food from a food company's perspective, etc.). The article introduces many reference solutions of dealing with surplus food by large food companies that can be considered (such as selling surplus food to secondary market, making agreement with local food aid organizations, etc.). However, our group realizes that it takes much more efforts to collect useful information from food manufacturers than from individuals. Therefore, the focus audience of the problem space becomes individuals, which is being researched by a questionnaire shown below.

#### User Research Summary

A questionnaire asking about target's grocery shopping experience and their food waste is used to collect user data related to the problem space of food waste. The questionnaire contains 21 questions with the combination of multiple choice and short answer questions. Most of the questions have included an "other" option for the participants to give their own thought if the existing options are limiting their choices. Until Jan 25, 2019, 33 participants completed the questionnaire and the majority of the participants are 20 -21 years old (87.87%, or 29 out of 33) males (60.6%, or 20 out of 33). There are several trends related to the food waste topic in the summary of the questionnaire: (visualization of the questionnaire result is in the appendix)

1. Many participants do not make a plan before going to the grocery store.

From the results of the questionnaire, only 18.2% of all participants often look at grocery flyers, and only 39.4% of all participants make a grocery list before going to a grocery store. These two results show that most participants would just go to the grocery store without planning, this would be one of the reasons of participants overbuying food as they do not know the exact amount of food they need before going to the grocery store.

2. The majority of the participants experience buying more food that is not on the list.

90.9% of the participants buy food that is not in the plan before going to a grocery store due to the groceries low price. This also may contribute to people's behavior of overbuying food.

3. Most participants have experience that they are buying their desired groceries with unreasonable sizes.

81.8% of the participants claimed that the size of the groceries they buy may be either too large or too small.

4. The majority of the participants have experience throwing food that is out of date.

87.9% of the participants claimed that they have experience disposing food that is out of date while 3 participants from the rest of 12.1% (9.1%) claimed never go to grocery stores at all. This strongly

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shows that food waste due to long storage time is a common phenomenon among the majority of the participants.

5. No participants use mobile apps to keep track of their food management.

None of the participants have any experience of using mobile applications as their food management tool. This may suggest a possible solution space to solve the food waste problem.

### Insights (in bullet points)

- Topic of solving food waste problem by reducing surplus food from a food manufacturers' perspective may be hard to research/collect data as the topic related to surplus food can be confidential.
- The behavior of the participants from the questionnaire buying groceries without planning and buying food that is not in the plan may lead to them overbuying food, therefore wasting the food. This correlation mentioned needs to be confirmed with other user research result such as interview and field notes.
- The package size of the grocery may also be a cause of people overbuying food. An example would be one of the participants in the questionnaire bought a large package of potatoes due to its cheap price ended up throwing them away months later.

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### Appendix VI: Interview Analysis

(Kyle Osborne)

#### Introduction

It is safe to assume that the average person wastes more food than they would like to, there is a global disparity in terms of the division of food, but food waste is one of the leading causes of global warming. Through my interviews I have been able to discern some key insights into why people waste food or over purchase food, people's attitudes towards wasting food as well as ways in which people go about minimizing their food waste. Important anecdotes that I've discovered have been the importance of meal prep, a grocery list and the difference between grocery shopping for just one's self versus a family.

#### Literature Review

For my literature review I looked at *Designing beyond habit: opening space for improved recycling and food waste behaviors through processes of persuasion, social influence and aversive affect* by Rob Comber and Anja Thieme. They utilized BinCam intervention that involved an automated camera installed in a garbage bin that posted pictures to a BinCam application on Facebook. The intervention implements accountability as well as a gamification aspect as users were put against other households and ranked based on how little waste they produced. The application awarded digital gold and rankings based on user ratings of other garbage bins. The application leverages participant engagement and social influence to inspire users to be more mindful of what they are putting into their garbage bin. The study is limited though as it only examined younger individuals living with their roommates, ultimately they are only responsible for their own meals and food waste, in comparison to families where parents are responsible for cooking meals for children who may or may not want to eat them. My interviews attempt to build on this idea of social accountability, but I made it an issue to interview at least one parent who was shopping and preparing meals for individuals other than themselves.

#### Summary of Data Collected

I was able to interview 3 individuals regarding their grocery shopping and food waste habits. All individuals interviewed engaged in grocery shopping for themselves. They were aged 20, 23 and 43. 2/3 participants engaged in meal prep, they all considered themselves to not be big food wasters, thought that the act should be avoided and they all felt some sort of guilt or shame about wasting food. They all kept track of what food they had at home when shopping (to varying degrees), expiry dates and how much food they were wasting at any given time. 1 participant was grocery shopping for a family of 3 (herself, her partner and an adult child). No participants used grocery flyers to create their own lists, preferring to stick to routine purchases to avoid waste. When interviewing the

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individual with a family she cited her adult child eating out as a major source of food waste in the household. All individuals cited forgetting they had something in the back of the fridge as a reason for most food going bad and that food waste contributing to global warming influenced them to waste less food.

### Research Findings

I was able to discern a few major findings - people do not intentionally waste food, meal prepping is a common way to minimize food waste and most food that goes bad goes bad because people forgot they had it. These findings tell us this, food waste is already accepted as maladaptive behavior, this makes it much easier to get people to minimize their tendency to waste food. Coupled with stigmas around food waste and the environmental impact of food waste evoking some need to reduce the act, there are many opportunities for interventions that could reduce or eliminate the behavior. The use of meal prepping, preparing one's meals ahead of time, has been cited as participants' main way of minimizing food waste, but the participant that did not regularly engage in meal prepping cited a lack of time as the main reason for not engaging in the activity. One individual went as far as planning her meal prep based around what her ideal caloric intake would be for the week. The main cause of food actually going bad was fridge placement, participants cited forgetting that they had something in a difficult to access part of the fridge as the main reason the item went bad. Individuals were able to recall where major food groups were being stored with relative ease, but they all said that they just forgot something was in the fridge and that is why it ended up going bad.

Appendix VII : Assignment Attribution

Name	Work Done
Pratyush Kanwar	. Researched, collected data, analyzed, summarized - In-field direct observations regarding food habits of grocery shoppers and how it links in the process of food wastage. . helped in editing and summarizing all our group findings as one. Participated in making experience map.
Yufeng (Bob) Zhou	Created a questionnaire with 33 participants involved. Participates in the making of experience map
Michael Le	Created a survey about the motivations and habits of people who waste food. Included 22 participants. Participated in making experience map Created a summary of the questionnaire and survey results for the user research findings
Kyle Osborne	Completed 3 semi-structured interviews Participated in making experience map Made interview script Helped edit and summarize group findings
Sharene Carleen Thio	Collected 3 field studies and analysed the results. Created summary for field studies, and structure for background research. Helped edit and cut down the group findings into three pages. Participated in making experience map.
John Oabel	Creating an interview script; conducted 2 interviews; created summary and analysis of interviews. Participated in summarizing background research and experience map. Editing and proofing group findings.



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