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Food Waste: The Student Perspective

Why do students waste food,
and what can be done about it?

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Food waste is increasingly recognised as a major global problem. Almost one third of food produced for human consumption is wasted every year, contributing around 8% of the world's greenhouse gases¹. In Scotland, consumers throw out nearly 600,000 tonnes of food each year, to the value of just over £1 billion. 60% of this food could have been eaten, if food was planned and managed more effectively. Preventing food waste could save the average household £437 per year, and would have the same positive impact on reducing CO₂ equivalent emissions as taking 1 in 4 cars off the road.

Research shows that young people aged 18-34 waste proportionally more food than other age groups². Students are a key audience within this age group, and in order to help them reduce their food waste, we need to gain a better understanding of what foods they are wasting, and why. In February 2019, Zero Waste Scotland conducted a study at the University of St Andrews, in which 155 students completed a food waste diary over a 7-day period. The study aimed to establish the approximate purchase cost of food wasted by students, as well as investigating the kinds of food most commonly wasted, and why this food is wasted. This report outlines the findings, and provides a list of recommendations for actions that can be taken to help students waste less food.

Introduction

Zero Waste Scotland's aim is to create a society where resources are valued and nothing is wasted. We are working to deliver the Scottish Government's ambitious target of reducing food waste by 33% by 2025. To make this happen, it is crucial to change consumer behaviours, as households are responsible for the largest proportion of all food waste produced in Scotland, over and above the production, retail and hospitality sectors. 18-34-year-olds waste proportionally more food than other age groups, and so particular attention needs to be given to helping young people change their habits in order to waste less food. Students form a large part of this age group, but currently not enough is known about how much food they are wasting, what they are wasting, and why. To begin to address this gap in the existing research, Zero Waste Scotland carried out a study of the food waste behaviours of 155 undergraduate students at the University of St Andrews. The students completed a food waste diary over a 7-day period, recording every item of food they threw away. The study aimed to explore the following questions:

1. How much is food waste costing students?
2. What kinds of food do students waste?
3. Why does food get wasted?
4. What approaches would be effective in helping students waste less food?

The study found that the average purchase cost of avoidable food waste per student per week was £5.25, or

£273 per student per year. The most commonly wasted types of food were leftover meals, fresh vegetables, fresh fruit, and potato products such as chips and wedges. The most common reasons for food being wasted were that the person did not like it, followed by the portion being too large, and the food having expired. These findings suggest that the barriers to reducing avoidable food waste among the student population include perception of food quality and value, lack of control or knowledge of appropriate portion sizing, lack of storage space and knowledge of how to store food effectively, and lack of knowledge of how to use up leftovers, and / or unwillingness to use up leftovers. In terms of what would help students waste less food, posts and videos on social media was ranked highest by the students who took part in this study, followed by learning about the issue as part of their degree.

Based on the findings of this study, it is recommended that separate interventions are developed to reduce food waste in self-catered accommodation (student halls or privately rented shared flats), and in catered accommodation. It is also recommended that a further food waste diary study or studies are carried out in a different university, to corroborate these findings or to identify how the food waste behaviours and the purchase cost of food wasted by students vary between different institutions.

¹FAO, 2011. Food Wastage Footprint and Climate Change.

²WRAP, 2014. Household Food and Drink Waste: A People Focus.

How was the study carried out?

The Food and Drink team at Zero Waste Scotland worked in partnership with Dr Katherine Ellsworth-Krebs, a lecturer in Sustainable Development at the University of St Andrews. Students were asked to complete a food waste diary as part of an assignment for an undergraduate course in Sustainable Development. A Microsoft Excel template was provided to students for completion of the diary. They were asked to record each item thrown away, along with the quantity in grams, the brand or place of purchase of the item, the reason it went to waste, and where it was eaten. A short survey asking questions on food habits more generally was included with the diary, to identify any patterns between wider food habits and the amount and type of food waste produced. The students were also required to write a personal essay about the experience, reflecting on how it related to their wider learnings on food waste as a global issue - these essays were not shared with Zero Waste Scotland.

The completed diaries and surveys were submitted anonymously via the St Andrews online student portal and were passed on to Zero Waste Scotland by Dr Ellsworth-Krebs. Zero Waste Scotland synthesised the datasets into an Excel spreadsheet, and used this to analyse the data in relation to the research questions. An equivalent purchase cost for each item of avoidable food waste was calculated by looking up the retail price online using the place of purchase or brand recorded by the student. For meals provided by catered halls of residence, the cost was calculated as a proportion of the budget allocated per student per meal (£1.05), with the net weight of one meal assumed to be 300g approximately³.

Profile of the students who took part

Of the 155 students who took part in the study, 130 completed the survey giving us additional information about themselves, and about their food habits. Of those who completed the survey:

- 81% were female, 18% were male, and 1% did not specify their gender.
- 38% were Scottish, 20% were from the rest of the UK, 17% were from elsewhere in Europe, 16% were from North America, 5% were from Asia, 2% were from South America, 1% were from Africa, and 1% were from Australasia.
- 54% lived in catered halls of residence, 32% lived in self-catered halls of residence, and 13% lived in privately rented accommodation. 1% did not specify where they lived.
- All respondents were aged 16-25, apart from one, who was in the 26-30 age group.
- All students were in their first or second year of study, and all studied full-time.
- 12% of students described their cooking ability as

very good, 40% described it as good, 38% described it as average, 5% described it as not so good, and 5% described it as poor.

- 52% said they did not cook often because they lived in catered halls of residence, 21% said they mostly cooked their own food, 13% always cooked their own food, 10% sometimes cooked and sometimes went out for food, and 4% always or mostly went out for food or ate ready-meals.
- 48% of participants said the facilities for storing food in their kitchens (fridge, cupboards and freezer), were very good. 45% said they did not have enough space to store their own food. 7% said they did not have access to one or more of these facilities for storing food.

Findings

How much is food waste costing students?

- The average purchase cost of avoidable food waste per student per week was approximately £5.25.
- The average purchase cost of avoidable food waste per student per year was approximately £273. It should be noted, however, that this assumes that students are living in shared accommodation all year round, when in reality most spend several weeks or months of the year living at home with family, and this may change or influence the quantity of food they waste.



³ A pre-made sandwich sold in Tesco weighs approximately 250g. From this, an assumption can be made that the main portion of an average meal weighs the same, with a side portion such as vegetables or crisps adding an additional 50g. This estimate may be too conservative, as people are likely to be more generous with portions when preparing their own food.

What kind of food do they waste?

- The most commonly wasted type of food was **leftovers from cooked meals**, which accounted for 18% of recorded occurrences of avoidable food waste.
- Fresh vegetables** were the second most commonly wasted type of food (17%), followed by **fresh fruit** (9%) and **potato products** such as chips and wedges (7%). Bread (6%) and eggs / dairy (6%) were also commonly wasted food types. Table 1 shows avoidable food waste by type in full.

Leftover meals	18%
Fresh veg	17%
Fresh fruit	10%
Potato products ⁴	7%
Eggs & Dairy	6%
Bread	6%
Beverages	5%
Meat	5%
Other	5%
Store cupboard foods ⁵	4%
Baking	4%
Milk ⁶	4%
Rice & grains	3%
Pasta & noodles	2%
Cereals & oats	2%
Fish	1%

Table 1. Type of food wasted

Why does food get wasted?

- The most common reason given for food waste occurring was that the participant **did not like the food**. This accounted for 29% of occurrences of avoidable food waste (See Figure 1).
- One of the joint-second most common reasons for food being wasted was that the participant **cooked too much** (23%). This was also taken to mean that the participant served too much, if they lived in catered halls of residence where meals were provided. Both interpretations of this category relate to the wider problem of incorrect portion-sizing.
- The other joint-second most common reason was that food items were **sold in too big a quantity** (23%), and so the surplus was wasted.
- The third most common reason for avoidable food waste was items going **out of date** (18%).
- The most common location in which food was wasted was in a self-catering environment (48%), followed by in catered halls (39%), and when eating out at a café, restaurant or other hospitality environment (13%).

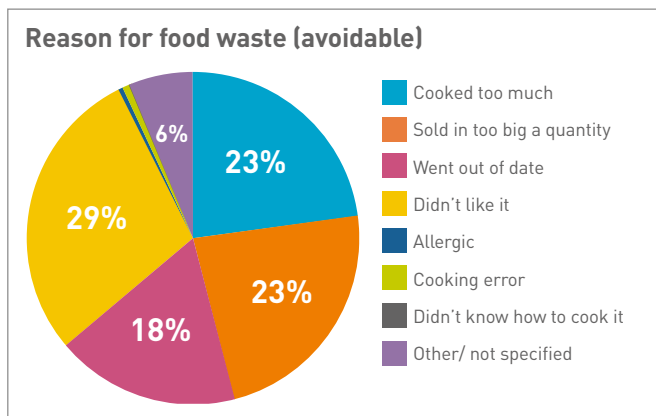


Figure 1. Reason for food being wasted

What would help students waste less food?

For the students who answered the survey, the most favoured option for helping students to reduce food waste was posts and videos on social media (29%). This was followed by learning about the issue as part of their degree (21%), and encouragement from their peers (18%). Figure 2 shows the answers to this question in full.



Figure 2. What would help students waste less food?

What do these findings tell us about students' food waste behaviours?

These findings suggest that negative perceptions of food quality and value, combined with lack of control over food choices, lead to food being thrown away because it is disliked. The transition from living at home to living independently with their peers means that students are in a phase of discovery, and often waste food due to being unsure about what and how they like to eat. In addition, students - especially those living in catered halls of residence - are largely removed from the process of sourcing, preparing and sometimes even paying for meals.

⁴Includes potato wedges, chips, sweet potato, etc

⁵A general category for food that is non-perishable while in its original packaging. This includes canned food such as beans and lentils, and items like ketchup and pesto, which need to be transferred to the fridge once opened.

⁶Includes plant-based milks (soya, almond, etc.).

Lack of control over this process may mean that students are served with food that is not to their taste, or not prepared to a standard they are satisfied with. There may also be a perception that food served in catered halls of residence is low in value, and that there will always be more of it, and so it can be wasted without consequence. Furthermore, the disconnect between the student and the meals they are served can lead to edible food being thrown away because of anxiety around unfamiliar flavour, appearance or texture. This engenders feelings of distrust and concerns over quality, inciting students to discard the food.

Incorrect portion sizing is a key behaviour which leads to food waste. In self-catered accommodation, this results from students lacking knowledge of how much to prepare when cooking for themselves, and / or being unaware of how to store and use up leftovers, or unwilling to do so. Incorrect portion sizing is also an issue in catered halls of residence, where students frequently serve themselves with more food than they are able to eat. This may result from feeling compelled to “get your money’s worth” when the cost of food is included in the cost of accommodation.

Items being sold in too big a quantity is also a significant factor which leads to food waste. Most students shop and cook only for themselves, and surplus ingredients are often leftover due to goods being sold in multipacks in most supermarkets.

Poor meal-planning, lack of knowledge of how to store and use up leftovers, and lack of access to fridge and freezer space for storing leftovers all exacerbate this problem. Related to this is food being thrown away because it has gone out of date or expired. This suggests that students often buy perishable foods without planning how they will use everything up in time. Unpredictable schedules and last-minute changes of plan exacerbate this problem. Students may also lack the skills to get the best use out of the ingredients they buy, for example by making multiple dishes from the same ingredients.

The data also shows that students frequently eat out at cafés or restaurants, sometimes multiple times per week. Food waste at the end of a meal is a common occurrence in hospitality settings. This implies that students generally do not take leftovers home to finish later. Social stigma around taking home leftovers, and embarrassment about asking to do so, are barriers which need to be addressed to tackle the issue of plate waste in restaurants.

Limitations

These findings provide a useful exploratory picture of the food waste behaviours of a group of students in Scotland. However, there are limitations to this study which should be taken into consideration.

- The high proportion of students living in catered halls of residence - over half of participants in this study - is not typical of Scottish universities. Specific behaviours and attitudes leading to food waste may arise in this setting, and these may not occur to the same extent in self-catered settings.
- 42% of this sample of students were international students. It is possible that dominant food habits and behaviours would differ in a sample with mostly Scottish students.
- The University of St Andrews has a high proportion of students who went to private school (39.6%). This suggests that many students come from higher-income families and may have more disposable wealth than is typical for students in Scotland. This may have influenced their food habits, for example frequency of eating out, and attitudes to waste.
- This study relied on self-reporting. Participants may have inaccurately recorded the amount of food they wasted. They may also have altered their behaviours out of a desire to replicate what was perceived to be the correct behaviour (wasting less food).
- The purchase cost of avoidable food waste could not be calculated accurately in many cases, for example when the brand or place of purchase was unknown, or the quantity wasted was recorded using subjective measures such as “a handful”. The average purchase cost of food waste which could have been avoided is therefore a rough estimate and should be treated as such.



RECOMMENDATIONS

In light of the findings of this study, the following steps should be considered to help students waste less food:

- Tailored intervention tools should be developed to target food waste in catered and non-catered student accommodation.
- Students require guidance on managing food effectively, from planning and making purchasing decisions, to storing and using up leftovers.
- Social media should be used to raise awareness and promote solutions to food waste, such as food storage tips.
- Universities should play an active role in face-to-face engagement on food waste, whether through incorporating it into the curriculum, or facilitating peer-to-peer interventions, such as appointing student ambassadors or hosting events.
- Food storage facilities should be improved in university accommodation. Even when students have access to fridges and freezers, having to share these with large numbers of people, and concerns over hygiene, can put them off making use of these facilities.
- Negative attitudes regarding the quality and value of food should be challenged, particularly in halls of residence. Steps should be taken to make students more aware of the resources and labour invested in producing food, with the emphasis that all of this is wasted when food is wasted.
- The issue of food waste should be personalised, for example through publicising weekly or monthly food waste data and its associated carbon impacts in halls of residence.
- Social norms against taking leftovers home from restaurants should be challenged, to make this behaviour seem more commonplace and desirable.
- Further food waste diary studies should be carried out at other universities in Scotland, to corroborate or identify discrepancies in the results. In particular, the study should be repeated in a university setting with a higher proportion of Scottish students and / or students who did not go to a private school.
- A similar study or studies should be carried out in further education colleges rather than universities. Students at colleges may have different lifestyles from their counterparts at universities, being more likely to live at home with their families rather than in student accommodation, or working part-time or full-time alongside studying. This may influence food habits, and the quantity and type of food waste produced as a result.





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