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Beyond the bin: demographic characteristics and attitudes associated with dumpster diving. The UK as a case study

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A B S T R A C T

Dumpster diving is the practice of sourcing discarded food from supermarket bins or 'dumpsters'. The practice of dumpster diving to source food has emerged in a number of affluent countries reflecting systemic inefficiencies in food distribution and waste management that are common across high-income countries. Addressing these issues is critical for achieving global targets such as SDG 2 (Zero Hunger) and SDG 12.3 (halving food waste). This research aims to identify 1) which demographic characteristics are associated with dumpster diving practices, and 2) which attitudes and concerns are associated with dumpster diving practices. The current research analysed data of the Food and You 2 (2023-24), an Official Statistics survey. Using the data from respondents across the UK (n = 5861), a series of binary logistic regression models identified 1) the socio-demographic, socio-economic and geography related characteristics, and the 2) attitudes and concerns associated with dumpster diving practices. We demonstrate that those who have a long-term health condition, children in the household, use food banks or live in urban areas are more likely to have started sourcing food from supermarket bins. Conversely, those who are concerned about food poisoning and being able to eat healthily are less likely to have started dumpster diving. This research provides an evidence base for policy makers to take urgent action in providing increased support and an alternative food source for vulnerable groups. Although this study focuses on the UK, the findings have broader relevance for global food security.

1. Introduction

1.1. Dumpster diving

Dumpster diving or bin diving is the practice of sourcing discarded food from the bins or 'dumpsters' of businesses such as supermarkets, shops and restaurants (Edwards and Mercer, 2007). This practice has emerged in a number of affluent countries as a way to source food, including the United States, Canada, New Zealand, Australia and parts of Europe (Barnard, 2016; Black, 2007; Carolsfeld and Erikson, 2013; Coyne, 2013; Edwards and Mercer, 2007; Eikenberry and Smith, 2005; Fernandez et al., 2011; Gross, 2009; Spring, 2018). The rise of this practice in recent years coincides with a number of global and national challenges in the food supply chain including geo-political and climate events, economic instability, increased food insecurity and concern about food waste, and declining rates of trust in the government.

Dumpster diving is not an uncommon practice, with a survey conducted with Americans in 2017 revealing that 21% of respondents had been dumpster diving on at least one occasion, and 13% would consider trying it (Bashir, 2025). Similarly, a representative survey of UK undergraduate students revealed that 37% of respondents had previously got food from bins, with 28% of students reporting that they did this about once a week or more often (Armstrong et al., 2023). A recent scoping review of literature related to dumpster diving in wealthy counties identified the motives and benefits of engaging in this practice, including political activism against consumerism, a method to combat food insecurity and enjoyment of the practice as a social activity. The stated benefits include acquiring free food, sharing food with others, and public or media attention (Watson et al., 2023).

However, this paper also highlighted that there is a lack of insight into the associated demographic characteristics. To our knowledge, the current research is the first to identify the demographic characteristics associated with the practice of dumpster diving for any country using a nationally representative official statistics dataset. The use of nationally representative data which reflects the diversity of the nation's demographics provides more accurate and generalisable insights into the practice with the data including the scale of the practice across the UK and the extent to which the practice is associated with different characteristics. In addition, we are the first to consider the role of food safety and foodborne illness concerns related to dumpster diving practices on a large scale. We offer a novel case study into the attitudes associated with dumpster diving utilising data from a nationally representative UK

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Official Statistics survey.

While this research is a case study grounded in the UK context, the implications extend to global food security debates. Dumpster diving is not an isolated phenomenon but part of a wider pattern observed in high-income countries where food waste coexists with food insecurity. These dynamics challenge progress toward the UN Sustainable Development Goals (SDGs) (United Nations, 2015), particularly SDG 2 (Zero Hunger) and SDG 12.3 (halving food waste by 2030). By examining the UK as a case study, this research provides insights into structural issues that resonate internationally and highlights the need for systemic interventions to reduce waste and improve equitable access to safe, nutritious food.

1.2. Food waste

One third of global greenhouse gas emissions are related to food production (Crippa et al., 2021). Yet a third of food is wasted and half of the global greenhouse gas emissions produced by the food system are due to food waste (Zhu et al., 2023; Crippa et al., 2021). The current food system is not sustainable and the impact of food waste is acknowledged through the UN SDGs - 12.3 to halve global food waste at the retail and consumer level by 2030 (United Nations, 2015).

In the UK, an estimated 6,400,000 tonnes of edible food is wasted annually post farm gate (WRAP, 2023). The majority is due to household waste (60%, 4,700,000 tonnes) with a smaller proportion occurring through manufacturing (700,000 tonnes), food service and hospitality sector (800,000 tonnes) and just 2% (234,000 tonnes) comes from the retail sector (WRAP, 2023). On-farm food surplus is estimated to be around 2,000,000 tonnes annually (WRAP, 2020), with only 4300 tonnes currently redistributed to people. WRAP estimated that 93,000 tonnes of food was redistributed to people in 2020 throughout the entire UK chain. It is estimated that this increased to 191,000 tonnes, just 3% of edible food waste by 2023, primarily by charitable channels (WRAP, 2024; WRAP, 2025). However, this is only a fraction of the edible surplus which could be consumed.

Some countries are taking a direct approach to addressing the issue of edible food waste. The French Senate passed a punitive law in 2016 that penalises supermarkets if they throw away or intentionally spoil food products that could be edible, useable or used as animal feed (LAW No. 2016-138). Following initial success of the policy, the remit of the law was expanded to include mass catering and food industry businesses (Order No. 2019-1069). In parallel to this there has been a move toward the commercialisation of food waste around the world with apps like Too Good To Go and Olio, which provide a platform for businesses to consumer and consumer to consumer transactions (Cane and Parra, 2020; Davies, 2020; Edwards, 2023; de Almeida Oroski & da Silva, 2022).

1.3. Food insecurity

With UK food inflation being amongst the highest amongst G7 countries in 2023 (e.g., Japan 8.0%, USA 8.3%, Germany 21.2%), peaking at 19.2% (Department for Environment, 2026; ONS, 2023), it is clear the cost of living crisis presents a significant challenge to the wider population. Despite the levels of edible food wasted in the UK, recent figures from the Food Standard Agency's Official Statistic survey Food and You 2, show that 24% of adults in England, Wales and Northern Ireland (EWNI) are food insecure (Armstrong et al., 2024a). Food insecurity is concentrated in economically disadvantaged groups including those with lower incomes, long-term health conditions, younger adults and households with children (Garratt and Armstrong, 2024).

There is an inconsistent relationship between levels of food insecurity and food bank use with some groups experiencing elevated rates of food insecurity without correspondingly elevated rates of food bank use (Garratt and Armstrong, 2024), suggesting that consumers may be adopting other approaches to put food on the table. Recent findings (Armstrong et al., 2024b) show that 80% of adults in EWNI have made changes to their food-related practices in the previous year due to financial reasons. The changes include a shift toward eating at home, trading down when shopping (e.g., buying discounted items), and changes to food preparation practices such as batch cooking more. Those who are food insecure are more likely to have traded down on both the health and safety of their diet, being significantly more likely to have reduced the amount of fresh food they buy and be more likely to eat food past the use-by date (Armstrong et al., 2024b) behaviours which could present both long and short term public health issues.

1.4. Food safety

Foodborne disease presents a significant public health issue, with a quarter of people in the UK suffering an incidence of infectious intestinal disease (IID) or “food poisoning" every year (Tam et al., 2012). It is estimated that there are 2.4 million cases of foodborne disease in the UK every year, at a cost of £9 billion to the economy (Daniel et al., 2020; Holland and Mahmoudzadeh, 2020). Many people underestimate the risk of contracting foodborne disease (Young and Waddell, 2016) with around 34% of foodborne disease outbreaks originate in the home, many of which are due to risky food safety practices such as inadequate heating, chilling, storage, and cross-contamination of food (European Food Safety Authority, 2018).

Food products are disposed of by retailers for a wide range of reasons, some of which are likely to increase the risk of foodborne diseases (e.g., cooked incorrectly, passed the use-by date, packaging damaged/open, or incorrect storage temperature) or other food safety issues (e.g., allergen contamination, incorrect labeling), (Burgos et al., 2017). Once food is put into a dumpster the risk of foodborne disease and other health risks will likely increase further, with food not being stored at the advised temperature and a the presence of potential range of contaminates (e.g., viral, bacterial, toxins) being present in the dumpster.

An emerging body of literature has touched upon the awareness of food safety and health risks of dumpster diving within the community (e.g., Eikenberry and Smith, 2005; Vinegar et al., 2014; Corneus et al., 2023; Edwards, 2005; Edwards and Mercer, 2007). A small-scale survey with dumpster divers based in Sweden found that only around half (52%) of those who had taken part in the practice perceived there to be a risk of foodborne disease (Corneus et al., 2023). Dumpster divers report a range of strategies to minimise food safety risks such as targeting packaged foods, avoiding ‘risky foods’ (e.g., meat, fish), (Corneus et al., 2023), raw foods, or diving more regularly in summer months to minimise the time food had been left in warm dumpsters (Vinegar et al., 2014). Further to this, a range of strategies are used to minimise risks when preparing and consuming food obtained through dumpster diving, such as rinsing food, avoiding and cooking potentially ‘risky foods’ (Corneus et al., 2023; Edwards & Mercer, 2007, 2012). However, the efficacy of the strategies is unclear, many people mistakenly rely on sensory assessments such as smell and taste to assess if a food is safe (Evans and Redmond, 2016), and research into the understanding of food hygiene in the Swedish dumpster diving community concluded that understanding is limited (Corneus et al., 2023).

We are not aware of any large-scale research which directly assesses the prevalence of foodborne disease and other health risks associated with the practice of dumpster diving. This presents a significant gap in knowledge as robust insight into this practice would indicate the prevalence and efficacy of strategies employed by dumpster divers to minimise foodborne disease and other health impacts. However, a number of small-scale studies provide conflicting results. A Swedish study ($n = 92$) reported that only 2% dumpster divers had fallen ill from consuming food from a dumpster (Corneus et al., 2023) and only one person reported illness in a study conducted in Australia ($n = 30$) (Edwards and Mercer, 2007). This contrasts with Vinegar et al. (2014) who found that half of dumpster divers ($n = 26$) interviewed in Montréal, had been ill, or knew someone who had been ill having eaten food from a dumpster. It

is unclear whether the contrast in the prevalence of food poisoning is due to differences in practices of dumpster divers such as the avoidance of risky foods, due to substantive differences across the studies such as the types of food available in different countries, or due to participants' confidence in being able to attribute incidences of illness to food acquired through the practice. Further, methodological differences in the way in which foodborne illness was reported (e.g., asking about the individual only vs. asking about them or anyone else they knew) and participant characteristics may have contributed to the variation in incidences of illness. However, it is clear that for many the benefits (i.e., reducing food waste, access to nutritious foods such as fruit and vegetables) outweigh the risks (i.e., food poisoning), given the amount and types of foods which can be rescued (Corneus et al., 2023; Edwards and Mercer, 2012).

1.5. The Health Belief Model

Reflecting these key concepts, the Health Belief Model (HBM) proposes that the likelihood of individuals engaging in a health-related behaviour is dependent on a number of factors including perceived susceptibility and severity of a condition, and perceived risks and barriers (Janz and Becker, 1984). The HBM has been used as a theoretical framework for food safety practices with previous research has demonstrated that perceived severity of foodborne illness is related to food safety behaviours (Hanson et al., 2015), and those who perceive themselves to be at lower risk of foodborne disease are more likely to exhibit specific risky food safety behaviours (Hanson and Benedict, 2002). Drawing from elements of the HBM we will identify the association between the potential risks (i.e., concern about food poisoning, being able to prepare food safely, and being able to eat healthy food) and benefits (i.e., increased access to food, reducing food waste, cost of food) associated dumpster diving and engagement in the practice of dumpster diving.

The research will address the following questions.

RQ1. Which demographic characteristics are associated with dumpster diving practices in the UK?

RQ2. Which attitudes and concerns are associated with dumpster diving practices?

This research makes an important contribution to the paucity of research that has identified the demographic characteristics of those who dumpster dive. In addition, this research will explore the attitudes and concerns associated with dumpster diving using a nationally representative Official Statistic dataset. This research offers a new contribution to the area of research by considering the role of food safety and foodborne illness concerns related to dumpster diving practices. Finally, we offer policy and practice recommendations.

2. Method

2.1. Data and sample

This research analyses data from Food and You 2 an Official Statistics survey commissioned by the Food Standards Agency (FSA). The biannual 'push-to-web' survey measures people's food-related knowledge, attitudes and behaviours. The self-reported survey covers a wide range of topics including food safety in the home, food security and concerns about food. We used data from Food and You 2: Wave 8 that was completed by a nationally representative sample of 7185 adults (aged 16 years and over) across the UK between October 2023 to January 2024. Food and You 2: Wave 8 is the first Food and You 2 wave of data collection to include Scotland, offering a new opportunity to compare data across all of the UK. The sequential mixed-method push to web survey uses stratified random sampling to select postcodes from a database of all private households in the UK. Respondents are sent an invitation by post to complete the survey online; those who do not complete the online version of the survey receive a postal version of the survey with a reminder letter. Due to the length and complexity of the online survey, two postal versions of the survey are produced which differ by the topics presented. Up to two adults per household are invited to complete the survey (see Food and You 2: Wave 8 for further details on the methodology and questionnaire). The Food and You 2 data were accessed via UKDS (see Food Standards Agency, 2025).

2.2. Variables and data analysis

The outcome variables, the practice of dumpster diving was measured through the question 'Which, if any, of the following changes have you made in the last 12 months? Started getting food from the waste area or bins of a supermarket or shop (i.e., freeganism)'. The question was included in the online survey and one version of the postal survey ($n = 5886$), we excluded the data from $n = 25$ respondents who selected 'don't know' as their response, leaving an unweighted analytical sample of $n = 5861$.

For this exploratory analysis, we first selected key socio-demographic, socioeconomic and geography related characteristics that we expected to be associated with the practice of dumpster diving, we then selected measures of attitudes and concerns related to this practice. We first estimated a series of logistic regression models to identify the relationship between socio-demographic, socio-economic and geography related characteristics and the practice of dumpster diving. Demographic variables were included to identify how the practice of dumpster diving varied across different characteristics, financial and household variables were included to offer insight into whether the practice varied by the material resources of the household. Geographical factors were included to identify the geographical distribution of dumpster diving practices, and indicate where the devolved nations could offer targeted policy solutions. The model was built in stages with each thematic block being added sequentially to provide a detailed insight into the association of different types of characteristics with dumpster diving practices (see Table 1). The variable categories of socio-demographic, socioeconomic and geography related characteristics, such as income brackets, were primarily defined by the data collected (see Food and You 2: Wave 8 for further methodology details and questionnaire). Food security status was classified as 'very low' (no reported indications of food-access problems or limitations.), 'low' (reports of reduced quality, variety, or desirability of diet. There is little or no indication of reduced food intake.), 'marginal' (typically of anxiety over food sufficiency or shortage of food in the house. There is little or no indication of changes in diets or food intake) and 'high' (no reported indications of food-access problems or limitations) in line with USDA guidance (see United States Department of Agriculture, 2025 for further details). Ethnic groups (i.e., White, Asian or Asian British, Black or Black British, Mixed or Multiple, Other) were converted to a binary variable due to a low number of ethnic minority respondents in the sample. We next estimated a logistic regression model to identify the relationship between concerns with dumpster diving practices. The concerns selected (i.e., food poisoning, cooking safely at home, being able to eat healthily, food prices, food waste) to be included in the model represent the risks and benefits associated with the practice (see Table 2). The concerns were added into the model as a single block. Socio-demographic, socio-economic and geography related characteristics previously demonstrated to be associated with dumpster diving practices were controlled for in the model. Due to missing data from the socio-demographic, socioeconomic and attitudinal variables the sample size varies between models, reducing statistical power.

Data were weighted in line with the Technical Report guidance to make them nationally representative (see Food and You 2: Wave 8 Technical Report for further details on the weighting) and adjusted for household level clustering using robust standard errors. Multicollinearity checks demonstrated a low correlation between variables

Table 1
Summary of predictor variables and thematic block for model building (unweighted).

Thematic block	Sociodemographic characteristic		Frequency (n)	Percentage (%)
Block 1: Demographics	Gender	Male	2763	47.6
		Female	3037	52.4
	Age group	16-24	666	11.5
		25-34	977	16.9
		35-44	945	16.3
		45-54	928	16.0
		55-64	926	16.0
		65+	1356	23.4
	Long-term health condition	Has a long term health condition	1604	29.2
		No	3895	70.8
	Ethnicity	White	4936	86.6
		Other ethnic group	761	13.4
Block 2: Household and finances	Number of adults in household	1	583	10.2
		2	3381	59.1
		3+	1756	30.7
	Children in household	No children	4288	74.5
		Children present	1468	25.5
	Working status	Working	3394	58.4
		Not working/ unemployed	1058	18.2
		Retired	1356	23.3
	Total annual household income	Less than £19,000	949	21.6
		£19,000 - £31,999	944	21.5
		£32,000 - £63,999	1376	31.3
		>£64,000	1129	25.7
	Food security status	Very low	704	12.4
		Low	599	10.6
		Marginal	855	15.1
		High	3499	61.9
	Food bank user	Yes	288	3.2
		No	6788	96.8
Block 3: Geographies	Country	England	4939	84.3
		Wales	274	4.7
		Northern Ireland	162	2.8
		Scotland	486	8.3
	Urban/rural	Urban	4591	78.3
		Rural	1270	21.7

Table 2
Percentage of participants that had started dumpster diving or indicated a concern about a food-related issue (unweighted).

Variables	Frequency (n)	Percentage (%)
Started dumpster diving	273	4.70
Type of concern		
Cooking safely at home	603	14.0
Food poisoning	2299	53.4
Food prices	3008	69.8
Food waste	2681	64.9
Being able to eat healthily	2151	49.9

(highest VIF = 1.62), below the critical threshold of 3 (James et al., 2013). The data were analysed using IBM SPSS version 29 (IBM Corp, 2022).

3. Results

3.1. Individual characteristics and dumpster diving practices (RQ1: who dumpster dives? Demographic characteristics associated with dumpster diving)

Descriptive statistics demonstrated that 4.7% of respondents had started getting food from the waste area or bins of a supermarket or shop in the previous 12 months. The initial model (Block 1) shows that those aged 16 to 24 years (OR: 3.27, 95% CI 1.34-7.97) are more likely to have started dumpster diving, however this is no longer significant once household and financial characteristics (Block 2) are included. The final model (Block 1,2,3) shows that those who were aged 45 to 54 years (OR: 0.04, 95% CI 0.04 - 0.18), or those living in a rural area (OR: 0.28, 95% CI 0.11 - 0.72), were less likely to have started dumpster diving in the previous 12 months. Conversely, those who have used a food bank in the previous 12 months (OR: 6.11, 95% CI 2.35 – 15.88), with a long-term health condition (OR: 2.51, 95% CI 1.15 – 5.47), or children in the household (OR: 2.60, 95% CI 1.38 - 4.88) were more likely to have started dumpster diving. Gender, ethnic group, number of children in the household, working status, annual household income, food security status and country of residence were not associated with the practice (see Table 3).

3.2. Risks and benefits associated with dumpster diving practices

The model shows that those who are concerned about food poisoning (OR: 0.51, 95% CI 0.27 - 0.96), or about being able to eat healthily (OR: 0.46, 95% CI 0.25 - 2.83) are less likely to have started dumpster diving. Concern about food prices, food waste and cooking safely at home were not associated with dumpster diving practices (Table 4).

4. Discussion

4.1. Demographic characteristics and dumpster diving practices

This research makes an important contribution to understanding the demographic characteristics and attitudes and concerns that are associated with dumpster diving practices. We observe three key findings; first, that 4.7% of adults in the UK have started sourcing food from bins or waste areas in the previous 12 months; second, those who had used a food bank in the previous 12 months, have a long-term health condition, children in the household, or live in an urban area are more likely to have started dumpster diving (RQ1); third, that concern about food poisoning and being able to eat healthily are associated with a reduced likelihood of dumpster diving (RQ2).

In line with previous research (Carolsfeld and Erikson, 2013) we observe that dumpster diving is a practice present in the UK despite being a relatively affluent county. However, it is not possible to directly compare the prevalence observed with previous research due to a number of key methodological differences, such as differences in the recruitment, sampling, and the reference period used (e.g., Bashir, 2025).[1]

Addressing the paucity of research that identifies the demographic characteristics associated with the practice (Watson et al., 2023), we observe that the practice of dumpster diving is more prevalent amongst those with a long term health condition, using food banks, and those with children in the household. Households with children are almost three times as likely to have started dumpster diving and those with a

[1] Bashir (2025) asked 'Have you ever been dumpster diving?' compared to Food and You 2 which asked consumers if they had started the practice in the previous 12 months: 'Which, if any, of the following changes have you made in the last 12 months? Started getting food from the waste area or bins of a supermarket or shop (i.e., freeganism)'.

Table 3
Logistic regression models predicting dumpster diving practices showing odds ratios and 95% confidence intervals (weighted).

Characteristic		Odds ratio (95% confidence intervals)		
		Block 1: Demographics	Block 1,2: Demographics, household and finances	Block 1,2,3: Demographics, household and finances, geographies
Gender	Male	1.00	1.00	1.00
	Female	0.82, (0.48 - 1.39)	0.99 (0.49 - 1.77)	0.89, (0.46 - 1.71)
Age group	16-24	3.27, (1.34 - 7.97)*	2.45, (0.57 - 10.50)	2.69, (0.56 - 12.60)
	25-34	1.58, (0.70 - 3.55)	0.81, (0.21 - 3.19)	0.79, (0.19 - 3.40)
	35-44	0.85, (0.38 - 1.90)	0.60, (0.14 - 2.58)	0.57, (0.12 - 2.69)
	45-54	0.70, (0.24 - 2.01)	0.03, (0.04 - 0.16)**	0.03, (0.04 - 0.18)*
	55-64	1.32, (0.56 - 3.14)	1.33, (0.44 - 4.05)	1.56, (0.46 - 5.30)
	65+	1.00	1.00	1.00
Long-term health condition	No	1.00	1.00	1.00
	Has a long term health condition	3.87, (2.12 - 7.07) **	2.43, (1.21 - 5.26)*	2.51, (1.15 - 5.47)*
Ethnicity	White	1.00	1.00	1.00
	Other ethnic group	1.70, (0.80 - 3.63)	0.80, (0.27 - 2.42)	0.69, (0.22 - 2.13)
Number of adults	1	1.00	1.00	1.00
	2	0.87, (0.44 - 1.72)	0.86, (0.35 - 2.13)	0.89, (0.36 - 2.23)
	3+	1.20, (0.55 - 2.60)	1.33, (0.48 - 3.65)	1.32, (0.49 - 3.55)
Children in household	No children	1.00	1.00	1.00
	Children present	2.01, (1.04 - 3.89)*	2.31, (1.17 – 4.55)*	2.60, (1.38 - 4.88)*
Working status	Working		1.00	1.00
	Not working/unemployed		0.89, (0.45 - 1.77)	0.81, (0.41 - 1.62)
	Retired		0.93, (0.30 - 2.89)	1.04, (0.32 - 3.40)
Total annual household income	Less than £19,000		1.00	1.00
	£19,000 - £31,999		2.73, (1.22 – 6.11)	0.48, (0.16 - 1.49)
	£32,000 - £63,999		1.11, (0.43 - 2.86)	1.32, (0.51 - 3.43)
	>£64,000		2.14, (0.72 – 6.35)	0.56, (0.20 - 1.62)
Food security status	High		1.00	1.00
	Marginal		1.20, (0.41 – 3.45)	1.19, (0.42 - 3.74)
	Low		1.23, (0.38 - 3.96)	1.20, (0.39 - 3.73)
	Very Low		1.14, (0.55 - 3.86)	1.34, (0.48 – 3.74)
Food bank user	No		1.00	1.00
	Yes		2.58, (2.01-13.89)**	6.11, (2.35 – 15.88)**
Country	England			1.00
	Wales			0.51, (0.20 - 1.31)
	Northern Ireland			0.76, (0.35 - 1.65)
	Scotland			0.72, (0.32 - 1.62)
Urban/rural	Urban			1.00
	Rural			0.28, (0.11 - 0.72)*

*$p < 0.05$, **$p < 0.001$, n = 4201 (unweighted).

long-term health condition are more than twice as likely to have started this practice. Building on previous research that noted that dumpster diving is used to alleviate food insecurity (Carolsfeld and Erikson, 2013; Watson et al., 2023), we observe that food bank usage, rather than food security status or other financial factors, is associated with dumpster diving. As food bank users are over six times as likely to have started dumpster diving we suggest that this group is taking part in the practice out of necessity rather than for other motives (e.g., consumer activism), and actively engaging with a range of methods to source food. The discrepancy between food insecurity and food bank use with the prevalence of dumpster diving practices may indicate that the food security measure or classifications used does not represent the diversity and complexity of food-related practices. This reflects previous research (Garratt and Armstrong, 2024) which observed an imperfect association between the presence of food insecurity and food bank use.

In line with previous food safety research (Hanson and Benedict, 2002; Hanson et al., 2015), and the principles of the HBM (Janz and Becker, 1984), concern about food poisoning appears to act as a barrier to risky food practices. Developing understanding of factors related to dumpster diving we observe that concern about being to eat healthily also appears to act as a barrier to the practice. Surprisingly, we observe that the benefits associated with dumpster diving such as saving money and reducing food waste (Watson et al., 2023) do not appear to be significantly associated with the practice. Consequently, we propose that within the UK context of dumpster diving, the barriers associated with the practice are more influential than the perceived benefits. Based on this finding we propose that the HBM provides a useful theoretical framework to further understand the motives of dumpster diving practices.

We offer a rudimentary explanation for the prevalence of dumpster diving in urban areas; that there is a greater concentration of supermarkets, restaurants and food businesses in urban areas compared to rural areas and therefore there are more opportunities to dumpster dive.

4.2. *Implications for global food security*

The UK case illustrates a paradox common to many high-income countries: simultaneous food waste and food insecurity. Similar patterns in Sweden, the United States, New Zealand, Australia, and Canada suggest that dumpster diving is a global symptom of structural inefficiencies in food systems. Our findings underscore the need for coordinated national and international strategies, including harmonised food waste legislation, cross-border redistribution networks, and policies that balance food safety with food security. These insights can inform international food redistribution policies (De Pieri et al., 2017; Nooghabi et al., 2017) by highlighting the importance of scaling surplus food recovery systems, improving logistical infrastructure, and creating incentives for retailers to donate rather than discard food. However, punitive food waste laws—such as those penalising supermarkets for discarding edible food—may have unintended consequences, including

Table 4
Logistic regression models predicting dumpster diving practices showing odds ratios and 95% confidence intervals (weighted).

			Odds ratio (95% confidence intervals)
Concern about	Food poisoning		0.51, (0.27 - 0.96)*
	Cooking safely at home		1.96, (0.87 – 4.43)
	Being able to eat healthily		0.46, (0.25 - 0.83)*
	Food prices		0.86, (0.48 - 1.55)
	Food waste		0.73, (0.43 - 1.25)
Control block	Age group	16-24	1.84, (0.76 – 4.48)
		25-34	0.98, (0.37 - 2.57)
		35-44	0.47, (0.18 - 1.24)
		45-54	0.64, (0.22 - 1.85)
		55-64	1.00, (0.38 - 2.59)
		65+	1.00
	Long-term health condition	No	1.00
		Has a long term health condition	2.93, (1.72 - 5.00)**
	Children in household	No children	1.00
		Children present	1.52, (0.78 – 2.94)
	Food bank user	No	1.00
		Yes	6.32, (2.80 – 14.29)
	Urban/rural	Urban	1.00
		Rural	0.42, (0.22 - 0.77)*

*p < 0.05, **p < 0.001, .n = 3598 (unweighted).

increased liability concerns, over-reliance on charitable redistribution, and potential diversion of low-quality or unsafe food into informal channels (Bradshaw, 2020; Simone et al., 2018; Szulecka et al., 2024). Therefore it is critical that systems and policies developed to redistribute food do so safely whilst navigating the potential unintended consequences and related concerns. Addressing these issues is essential for achieving global sustainability targets and mitigating the environmental and social costs of food waste.

4.3. Policy recommendations

Given that Food and You 2: Wave 8 is the first nationally representative survey to explore the prevalence of dumpster diving practices, we urge policy makers to continue to monitor the practice across the UK (and globally), and for the government bodies of affluent countries to begin monitoring the practice. This evidence base could be used by policy makers to develop two key areas; an increase in the access and affordability of alternative food provision, and to discourage food waste from supermarkets and food businesses.

We urge UK and devolved government organizations to take urgent action to support vulnerable groups that use dumpster diving to source food. We suggest that food banks and alternatives that do not create stigma for their users, such as food pantries/social supermarkets, should be used as a primary setting to reach those who source food through dumpster diving and this group should be provided with an increased food provision and communications regarding the increased risks of food poisoning associated with the practice.

Rather than 'blame the consumer' (Evans, 2011), we propose that UK policy makers should introduce such a punitive law to discourage food waste and adopt the EU Directive Framework (Directive 2008/98/EC, 2008). This would not only help to reduce food waste but may also reduce the risky practice of dumpster diving by minimising the food in bins and waste areas. We propose that supermarkets and food businesses could reduce food waste at source by reducing/ discounting or donating foods which cannot be safely prepared or stored before they expire (e.g., ready-made sandwiches) earlier in the day of expiration, providing additional meal occasions to consume the food. We propose this would not only prevent food waste but also reduce the risk of people purchasing discounted food and eating it after the expiration date.

4.4. Practice recommendations

We propose a series of academic, industry and public health recommendations based on the current research. We suggest that the academic community should endeavour to conduct further research to unpick the link between food poverty and food waste in the UK and globally. Rather than simply apply the latter to the former, transformative approaches need to be introduced to break the food poverty cycle and to reduce food waste generation overall. This includes research that investigates how the 'true cost' of food can be recognised whilst identifying alternative pathways where people can access meals with dignity.

We recommend that greater responsibility needs to be redirected to the structural and systemic causes of food waste that are attributable to industry. This includes removing tax breaks and subsidies that promote excessive food quantities, while holding large retailers, including supermarkets, responsible for oversourcing food products that become waste. Policies that promote circular food systems whilst acknowledging value embedded in the hierarchy of food waste should be endorsed. Furthermore, new industries that can provide local, sustainable and resilient food options should be supported.

Finally, we suggest that alternative healthy, safe and sustainable food sources need to be identified and supported by public health agencies. These examples need to be dignified and accessible. Examples include establishing diverse ways that people can access food across the food system in more reciprocal ways, such as food pantries, gleaning initiatives, and food sharing activities.

4.5. Limitations and future directions

As secondary analysis research, this study is impacted by limitations of the Food and You 2 dataset. The question about dumpster diving practices asks respondents whether they have started dumpster diving in the previous 12 months, therefore it may not represent those who have started dumpster diving before this period. In addition, the survey only recruits respondents from private households in the UK, therefore will not represent the practices of vulnerable people who are homeless or roofless. Consequently, we propose that the number of people dumpster diving across the UK could be significantly higher and therefore may present a more pressing social justice and food safety challenge than anticipated.

It would be beneficial to further explore dumpster diving practices in the UK, we propose additional research should identify the prevalence and frequency of the practice within private households, measure associated nutrition and health consequences of the practice, and identify the food types and volume of food waste that is consumed due to this practice. Further to this, we suggest that trialling policies to minimise the amount of food that is disposed of by supermarkets and other food businesses, and the impact on the prevalence of dumpster diving practices should be explored.

4.6. Conclusion

Although this study is UK-based, its implications extend to global food security efforts, emphasising the urgency of systemic interventions to reduce food waste and ensure equitable access to safe, nutritious food worldwide. Our descriptive analysis demonstrates that 5% of respondents across the UK have started sourcing food from the bins or waste area of supermarkets or shops in the previous 12 months, though

it is likely that the true prevalence is greater. Our multivariate analyses demonstrate that this practice was more prevalent among vulnerable groups including those with children in the household and those with long-term health conditions. The prevalence of dumpster diving within these groups is of particular concern with younger children having less developed immune systems are at greater risk of serious health impacts from food poisoning (CDC, 2025).

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CRediT authorship contribution statement

Beth Armstrong: Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Resources, Writing – original draft, Writing – review & editing. **Christian Reynolds:** Conceptualization, Supervision, Writing – review & editing. **Ferne Edwards:** Writing – review & editing.

Declaration of competing interest

CR serves in advisory roles with the Nutrition Society, Institute of Food Science & Technology, Faculty of Public Health, and ISO/TC 34/SC 20. He has received consulting payments via City St Georges, University of London, from WRAP, Zero Waste Scotland, DEFRA, Welcome trust, and the FSA. He has undertaken pro bono advisory, speaking, and review work with various organizations. In 2020, he received €49,858 in research funding from the Alpro Foundation.

FE has undertaken advisory, key-note speaking, and review work with various organizations across Europe.

BA has nothing to declare.

Data availability

The Food and You 2 data can be accessed via UKDS (see Food Standards Agency, 2025).

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