



Deposited via The University of Sheffield.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/id/eprint/96960/>

Version: Accepted Version

---

**Article:**

Mallinson, L.J., Russell, J.M. and Barker, M.E. (2016) Attitudes and behaviour towards convenience food and food waste in the United Kingdom. *Appetite*. ISSN: 0195-6663

<https://doi.org/10.1016/j.appet.2016.03.017>

---

Article available under the terms of the CC-BY-NC-ND licence  
(<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

**Reuse**

This article is distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND) licence. This licence only allows you to download this work and share it with others as long as you credit the authors, but you can't change the article in any way or use it commercially. More information and the full terms of the licence here: <https://creativecommons.org/licenses/>

**Takedown**

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing [eprints@whiterose.ac.uk](mailto:eprints@whiterose.ac.uk) including the URL of the record and the reason for the withdrawal request.

# ATTITUDES AND BEHAVIOUR TOWARDS CONVENIENCE FOOD AND FOOD WASTE IN THE UNITED KINGDOM

Lucy J. Mallinson<sup>a</sup>

Jean M. Russell<sup>b</sup>

Margo E. Barker<sup>a\*</sup>

<sup>a</sup>Department of Oncology and Metabolism, Human Nutrition Unit, The University of Sheffield Medical School, Beech Hill Road, Sheffield, S10 2RX, UK

<sup>b</sup>Corporate Information and Computing Service, 10-12 Brunswick Street, The University of Sheffield, Sheffield, S10 2FN, UK

\*Corresponding author.

## 1 **Abstract**

2 Households in the UK discard much food. A reduction in such waste to mitigate  
3 environmental impact is part of UK government policy. This study investigated whether  
4 household food waste is linked to a lifestyle reliant on convenience food in younger  
5 consumers. A survey of 928 UK residents aged 18-40 years and responsible for the  
6 household food shopping (male  $n = 278$ ; female  $n = 650$ ) completed an online questionnaire  
7 designed to measure attitudes to convenience food and to quantify household food waste.  
8 Cluster analysis of 24 food-related lifestyle factors identified 5 consumer groups. General  
9 linear modelling techniques were used to test relationships between the purchase  
10 frequency of convenience food and household food waste. From the cluster analysis, five  
11 distinct convenience profiles emerged comprising: 'epicures' ( $n = 135$ ), 'traditional  
12 consumers' ( $n = 255$ ), 'casual consumers' ( $n = 246$ ), 'food detached consumers' ( $n = 151$ ) and  
13 'kitchen evaders' ( $n = 141$ ). Casual consumers and kitchen evaders were the most reliant on  
14 convenience food and notably were the most wasteful. The demographic profile of Kitchen  
15 evaders matches the population groups currently targeted by UK policy initiatives aimed at  
16 tackling food waste. Casual consumers represent a new and distinct group characterised by  
17 "buy a lot and waste a lot" behaviour. Household size, packaging format, price-awareness  
18 and marketing all appear to influence levels of food waste. However, it seems that subtle  
19 behavioural and sociocultural factors also have impact. Further research is needed to  
20 elucidate the factors that mediate the positive association between the purchase of  
21 convenience food and reported food waste in order to inform food waste policy and  
22 initiatives.

23 **Key Words: Food Waste; Convenience Food; Consumers; Lifestyle**

## 24 **Introduction**

25 Reducing household food waste has been a central tenet of UK environmental policy since  
26 2007 (DEFRA, 2007, 2008). Such a goal stems from the environmental costs of food  
27 production, processing, distribution and cooking, which drain limited land, energy and water  
28 resources, generate greenhouse gases (GHG) and reduce ecosystem diversity (Garnett,  
29 Mathewson, Angelides, & Borthwick, 2015; Macdiarmid et al., 2012). Additionally, food  
30 waste that goes to landfill has significant GHG potential; some 250kg of CO<sub>2</sub> equivalents are  
31 emitted per tonne of food-based landfill (DEFRA, 2008). In the UK 15 million tonnes are  
32 wasted in the food chain annually, of which 7 million tonnes are generated at a household  
33 level (Quested, Ingle, & Parry, 2013).

34 A government-funded charity the *Waste and Resources Action Programme* (WRAP) has been  
35 actively working across the UK to reduce household food waste. WRAP instigated a national  
36 consumer education campaign in 2008 – *Love Food Hate Waste* – in the wake of a  
37 government report showing that householders were generally amenable to changing their  
38 food waste behaviour (DEFRA, 2008). However, further to this conclusion, segmentation  
39 analysis revealed that there were several consumer groups variously resistant and  
40 ambivalent to food waste reduction messages (DEFRA, 2008).

41 WRAP have identified a number of sequential stages in a ‘domestic food cycle’ at which food  
42 waste occurs; these stages included planning, shopping, storage, preparation and  
43 consumption (Flower & Collett, 2014). The causes of avoidable household waste in the cycle  
44 are largely due to a combination of organisational and other skills-based constraints that  
45 consumers face, as well as external factors such as advertising, packaging format and  
46 importantly, confusion over ‘use by’ and ‘best before’ dates (Aschemann-Witzel, de Hooge,  
47 Amani, Bech-Larsen, & Oostindjer, 2015; Graham-Rowe, Jessop, & Sparks, 2014; Parfitt,  
48 Barthel, & Macnaughton, 2010). In a number of surveys it is evident that consumers  
49 recognise their food buying behaviour is wasteful, and further there are strong feelings of  
50 guilt associated with discarding erstwhile usable food (Brook Lyndhurst, 2007; Evans, 2012;  
51 Parizeau, von Massow, & Martin, 2015; Quested, Marsh, Stunell, & Parry, 2013).

52 The volume of food that a household wastes has been linked to demographic factors and  
53 particularly to household size; on a per household basis, total avoidable food waste

54 increases directly with each additional household member, however larger households  
55 produce less waste than smaller households on a *per capita* basis (Joerissen, Priefer, &  
56 Braeutigam, 2015; Koivupuro et al., 2012; Parizeau et al., 2015; Quested et al., 2013a).  
57 Overall, single person households waste the most food *per capita*, which suggests that  
58 economies of scale relating to retail packaging formats are important (Joerissen et al., 2015;  
59 Koivupuro et al., 2012; Parizeau et al., 2015; Quested et al., 2013a). There are also some  
60 indications that younger people have a greater propensity to waste food (Brook Lyndhurst,  
61 2007). The traditional target groups for household food waste campaigns in the UK are  
62 young single professionals, young families and the younger members of lower  
63 socioeconomic groups (Brook Lyndhurst, 2007).

64 Despite an understanding of when waste occurs within the domestic food cycle, the factors  
65 and motivations that underpin food waste behaviour are complex. A qualitative research  
66 study of English consumers reported that minimising food waste was driven by a desire to  
67 save money, however the motive to be a 'good' provider, particularly amongst mothers, led  
68 to over-purchasing and consequently greater food wastage (Graham-Rowe et al., 2014). A  
69 propensity to waste food has also been aligned to consumerism and the notion of a  
70 throwaway society, although clear evidence for this link is lacking (Evans, 2012).

71 Use of convenience food in the UK has been recognised as central to domestic food  
72 provision (Burnett, 1979; DEFRA, 2015). There is a substantial literature on the factors  
73 underpinning demand for convenience food (Brunner, van der Horst, & Siegrist, 2010;  
74 Buckley, Cowan, & McCarthy, 2007; Shove, 2003). Its popularity can be explained by  
75 changes in household demographics such as larger numbers of working women and an  
76 inter-generational shift in domestic cooking skills (Brunner et al., 2010; Hartmann, Dohle, &  
77 Siegrist, 2013). However, the concept of a convenience food culture integrates aspects of  
78 food preparation such as ease of acquisition, serving, eating and storage with management  
79 of daily life (Gofton & Ness, 1991; Warde, 1999). It has been proposed that today's complex  
80 scheduling of family life gives rise to an unstructured, fragmented approach to eating and  
81 meal times; convenience foods reduce cooking responsibility and can address the diversity  
82 of food habits within households (Warde, 1997). The use of convenience food might be  
83 expected to reduce household food waste as it circumvents the purchase of multiple meal

84 ingredients; however a Swiss survey reported that convenience food consumption was  
85 inversely associated with waste avoidance (Brunner et al., 2010).

86 This study seeks to explore levels of household food waste against a range of food  
87 management activities and attitudes to food consumption that resonate with and reflect a  
88 lifestyle dependent on convenience food. A constellation of food management behaviours  
89 and attitudes to shopping, cooking and food consumption has been formally developed into  
90 a scale, which quantitatively assesses constructs of a convenience food culture (Buckley et  
91 al., 2007). We used this scale to measure *inter alia* enjoyment of cooking, meal planning,  
92 attitudes to food preparation and clearing up, perception of time-stress, eating-out and  
93 food purchasing practices in an attempt to tease out the relationship between the espousal  
94 of a convenience food culture and food waste behaviours. The present study explores this  
95 axis in a population sample of younger UK consumers who are both known to favour  
96 convenience food and report high levels of food waste (Barker, McClean, Thompson, & Reid,  
97 2007; Brook Lyndhurst, 2007).

## 98 **Methods**

### 99 *Questionnaire Development*

100 The 250-item questionnaire comprised four sections: section 1 related to respondent  
101 demographics and section 2 evaluated food waste behaviour. Sections 3 and 4 comprised  
102 validated scales (Buckley et al., 2007); these measured attitudinal and behavioural traits  
103 associated with food-related activities, as well as items that assessed consumption  
104 frequency of convenience food. Sections 3 and 4 were incorporated with the kind  
105 permission of Dr McCarthy, University College Cork, Ireland.

106 Section 1 relating to respondent demographics contained items, which measured household  
107 income, household structure, occupational status, educational attainment and regional  
108 location along with anthropometric data sufficient to calculate body mass index (BMI; body  
109 weight (kg)/ height (m)<sup>2</sup>).

110 Section 2 comprised questions regarding food waste behaviour. The quantity of food waste  
111 was measured for 14 food categories: fresh fruit, fresh vegetables, salads, milk, cheese,  
112 cream and yogurts, eggs, bread, ready cooked meals & other convenience food (pizza, soups

113 etc.), fruit juice, meat and fish, sandwiches, fizzy drinks and cakes and biscuits. Firstly, the  
114 number of food items purchased over a weekly period was recorded, followed by a question  
115 asking what percentage of that food was discarded. This frequency scale allows the  
116 calculation of the discarded amount relative to the amount purchased and adopts the  
117 approach previously taken by Stefan *et al.* and Visschers *et al.* (Stefan, van Herpen, Tudoran,  
118 & Lähteenmäki, 2013; Visschers, Wickli, & Siegrist, 2015). Ten additional questions were  
119 posed to assess attitudes to food waste and ascertain reasons for discarding food.

120 Attitudinal and behavioural traits associated with food-related activities were measured  
121 using multiple series of convenience and food lifestyle statements, to which respondents  
122 were required to indicate their degree of agreement on a seven-point Likert scale (1 =  
123 completely disagree; 7 = completely agree). Questions were phrased both positively and  
124 negatively to corroborate answers, and questions were posed randomly to mitigate 'order'  
125 effects. These items comprised section 3.

126 To measure consumption frequency of convenience food (section 4), respondents were  
127 asked how often they bought certain categories of ready meals such as frozen or chilled, the  
128 frequency with which they went out for a meal, bought a takeaway to eat at home and  
129 cooked a meal from ingredients. The seven-point frequency scale ranged from 'every day or  
130 almost every day' to 'never'.

### 131 *Data Collection*

132 Ethical approval for the study was obtained through the School of Medicine's ethical review  
133 procedure at the University of Sheffield. Respondents were provided with online  
134 information about the study prior to their participation and their consent was affirmed  
135 before they had access to the online questionnaire. The study information emphasised that  
136 all responses would be used for academic research only and that no identifying information  
137 would be collected. Repeat participation was prevented by eliminating duplicate IP  
138 addresses; IP data were subsequently removed from the downloaded survey file.

139 The questionnaire was implemented using a proprietary online survey tool (Qualtrics; Utah,  
140 USA). The questions were encoded onto the Qualtrics platform, which supports logical,

141 sequential questioning based on prior responses; respondents, for example, who report  
142 they live alone were not asked questions relating to other members of the household.

143 Suitable participants were recruited by Qualtrics that met three pre-specified criteria:  
144 having responsibility for the majority of the household food shopping, habitually resident in  
145 the UK and aged between 18 and 40. Qualifying participants were drawn from Qualtrics'  
146 existing survey panel and were compensated with cash-equivalent rewards (e.g. points  
147 towards restaurant vouchers or cinema tickets).

148 A number of data integrity checks were built into the questionnaire in the form of 'attention  
149 filters' requiring respondents to provide a specific response to a question; those that failed  
150 to do so were assumed not to be giving each question due consideration and were excluded  
151 from the survey sample.

152 A pilot launch, which involved running the questionnaire for 48-hours with a small subset of  
153 respondents ( $n = 111$ ), was conducted in order to confirm that the questionnaire operated  
154 as intended. In total 1059 qualifying responses were collected during the period 10-17 June  
155 2015. These raw data were scrutinised for reliability and 131 responses were excluded from  
156 the data set because of inconsistencies across key demographic variables, yielding a final  
157 sample size of 928. Detailed demographic characteristics of the sample are summarised in  
158 Table 1.

### 159 *Statistical Analysis*

160 The lifestyle statements were analysed and initially grouped into 27 distinct constructs of  
161 which 19 were identified in the previously published study (Buckley et al., 2007). Content  
162 validity of the additional 8 constructs was examined, and the face validity of all 27 was  
163 assessed prior to testing the internal consistency using Cronbach's alpha coefficient which  
164 ranged from 0.64 to 0.92. The constructs and associated reliability coefficients are  
165 presented in Table 2. The statements underlying each construct are listed in Table A1 in the  
166 appendix.

167 A k-means cluster analysis used 24 of the 27 constructs as clustering variables to identify  
168 distinct consumer segments. The 3 constructs that were excluded from the cluster analysis  
169 related to family-orientated questions which were not applicable to single people. The

170 inclusion of these constructs would have eliminated an important subsample (single  
171 households). Groupings ranging between 4 and 7 segments were tested and Roy's Largest  
172 Root values were used to select the 5-segment solution. This procedure is similar to the  
173 standard method of 'best cut' where clusters are identified by levels of differentiation  
174 between groups (Everitt, Landau, Leese, & Stahl, 2011).

175 Statistical analysis using general linear modelling techniques, principally one-way ANOVA,  
176 were used to test the significance of the relationship between the food waste measures and  
177 the consumption frequency of takeaway food and ready meals for each of the cluster  
178 groups. The statistical analysis was conducted using SPSS (IBM SPSS 22.0, IBM Armonk,  
179 USA) and a P-value of less than 0.05 was the criterion for statistical significance.

180 The demographic characteristics and BMI values of the five groups were analysed using one  
181 way ANOVA and the means compared using the chi-square test. The attitudes of the five  
182 groups towards the lifestyle factors were analysed and subsequently ranked for each factor  
183 using a multivariate general linear model and either *post hoc* Tukey's Honestly Significant  
184 Difference (HSD) tests or Games-Howell (G-H) tests as appropriate (Table 3). Attitudes  
185 towards the three sets of family-orientated questions were similarly analysed (Table 4), as  
186 were the consumption frequencies for ready meals and take-away food (Table 5).

## 187 **Results**

188 The survey sample ( $n = 928$ ) was geographically diverse and representative of the regions  
189 and countries within the UK, and comprised respondents with a wide range of occupational  
190 and educational backgrounds. The mean age of the sample was 30.0 years (SD 6.0) and 70%  
191 were female (Table 1). The female bias in the sample is consistent with data published by  
192 the Food Standards Agency on the proportion of women responsible for household food  
193 and grocery shopping (68%) (Prior, Phillips, & O'Driscoll, 2014).

194 Cluster analysis based on the 24 lifestyle factors applicable to all survey respondents  
195 identified five consumer groups distinguishable by distinct lifestyle characteristics: epicures  
196 ( $n = 135$ ), traditional consumers ( $n = 255$ ), casual consumers ( $n = 246$ ), food detached  
197 consumers ( $n = 151$ ) and kitchen evaders ( $n = 141$ ).

198 There were significant differences between consumer groups for all demographic variables  
199 (Table 6&7), however BMI values were similar across all consumer groups ( $P = 0.144$ ).

200 Epicures contained the highest proportion of consumers educated to at least undergraduate  
201 degree level (56.3%), and also had the highest overall household income (£39,342 per  
202 annum). This group contained a majority of one and two-person households. Traditional  
203 consumers (TCs) were the second most educated and had the second highest household  
204 income (£33,392 per annum).

205 Casual consumers (CCs) were the least female dominated group (61.0%) and had the fewest  
206 single-person households (10.6%). A smaller proportion of CCs had attained an  
207 undergraduate degree (40.7%). They were slightly younger than both Epicures and TCs and  
208 also earned slightly less than the latter group.

209 Food detached consumers (FDs) were on average the oldest group (30.9 years). Less than  
210 40% of FDs had attained an undergraduate degree and their household income was the  
211 second lowest (£29,500 per annum), despite their household size being the second highest.

212 Kitchen evaders (KEs) represented the youngest consumer group (28.5 years). This group  
213 was the most female dominated (77.3%) and contained the largest number of single-person  
214 households (19.9%). KEs were the least well educated, with the majority not having studied  
215 beyond A-level, and reported the lowest household income of all consumer groups (£24,989  
216 per annum).

217 Food waste behaviour for each of the consumer groups was calculated using the frequency  
218 scale, allowing the discarded amount to be reported relative to the amount purchased.  
219 Fresh produce accounted for the biggest proportion of food waste overall: fresh vegetables  
220 were the most wasted (8.6%) followed by fresh fruit (8.1%). Percentage food waste by  
221 consumer group, total food items purchased and discarded are shown in Figures 1-3.

222 Figure 4 describes the waste behaviour of each consumer group with respect to leftover  
223 food, food cooked but not served, food stored from previous meals, and both partially used  
224 and unopened products that are discarded.

225 The attitudinal and behavioural characteristics of the five consumer groups with respect to  
226 the various lifestyle factors and to convenience food and food waste are summarised below:

227 *Epicures*

228 Epicures accounted for 14.5% of the sample and exhibited very distinct attitudinal and  
229 behavioural traits compared to the other consumer groups: they were disinterested in  
230 convenience food (Table 3) and displayed the most negative sentiments towards the  
231 enjoyment, value for money and time-saving aspects of convenience food. Contrastingly,  
232 they were the most interested in the provenance of their food, displayed the strongest  
233 preference for both fresh and organic produce and, whilst being the most price-conscious,  
234 they were also most likely to seek out specialist purveyors.

235 As a group, Epicures were the most organised and regarded the availability of product  
236 information as important; they positively enjoyed trying new foods, rated themselves as the  
237 most competent cooks and were the least likely to snack, rarely used the microwave and  
238 most frequently cooked from scratch (Tables 3&5).

239 Epicures reported being the least pressed for time and the lowest levels of stress among all  
240 of the consumer groups (Table 3); they enjoyed the highest level of family involvement and  
241 family members were very unlikely to be 'fussy eaters' (Table 4). This group reported  
242 buying the least ready meals and take-away food, which was consistent with their overall  
243 negative attitude towards convenience food (Table 5).

244 Epicures were the least likely to own certain convenience-related kitchen equipment such as  
245 a microwave (88.1%) or an electric potato peeler (0.7%); however they were the most likely  
246 to own other items such as a food processor (65.9%), cappuccino/espresso maker (30.4%),  
247 bread maker (27.4%) and an ice cream maker (14.1%) (Table 8).

248 Epicures were the least wasteful of the five consumer groups, reportedly discarding only  
249 2.5% of total food purchased; this low level of waste was consistent across all 14 food  
250 categories (Figure 1A&B). Low wastage also extended to plate waste and surplus cooked  
251 food (Figure 4). Epicures reported high levels of concern over discarded food (between 'a  
252 fair amount' and 'a great deal').

253 *Traditional consumers*

254 TCs made up 27.5% of the sample and collectively they were either neutral or reported a  
255 moderate tendency to adopt the various lifestyle factors (Table 3).

256 Similar to Epicures they were family-orientated (albeit to a lesser extent) (Table 5); TCs  
257 reported being somewhat pressed for time, but not particularly stressed. This group had  
258 marginally negative sentiments towards convenience food but, unlike Epicures, they  
259 appreciated its time saving aspect, albeit recognising the associated cost (Table 3).

260 TCs scored highly on planning and reported being very price-conscious and willing to try new  
261 foods. Like Epicures, they were very interested in food, were competent cooks and enjoyed  
262 high levels of satisfaction from the regular preparation of meals and the associated social  
263 interaction. TCs highly valued fresh produce; however they were only slightly interested in  
264 organic produce and were indifferent to shopping for food in specialist shops (Table 3).

265 TCs reported a low enjoyment of ready meals and take-away food (Table 3), reflected in  
266 their correspondingly low consumption rates for each (Table 5).

267 TCs reported discarding 4.5% of their total purchased food and were the middle group when  
268 ranked by waste in almost all of the food categories (Figure 1A&B). Like the Epicures they  
269 also reported high levels of concern over discarded food (between 'a fair amount' and 'a  
270 great deal').

#### 271 *Casual consumers*

272 CCs comprised 26.5% of the sample. This group reported being moderately stressed and  
273 pressed for time: they only occasionally planned meals in advance and were the most likely  
274 of all groups to snack instead of adhering to set meal times (Table 3). Of all the consumer  
275 groups, CCs were the most positive towards convenience food reflected by their reported  
276 enjoyment of take-away food and ready meals of which they were the second highest  
277 consumers (Table 5). The taste and appeal of food was least important to this group and  
278 they were the least price-conscious (Table 3).

279 CCs were not particularly interested in food shopping and were indifferent to shopping in  
280 specialist shops. However, they expressed a preference for fresh products and bought  
281 organic food. The group possessed average cooking skills and had a limited enjoyment of  
282 cooking; they were not averse to trying unfamiliar foods and were moderately willing to  
283 attempt new recipes. CCs were the most likely to be influenced by advertising (Table 3). CCs

284 were likely to have fussy eaters within the family and were the least likely to adhere to  
285 family mealtimes (Table 4).

286 CCs possessed a wide range of kitchen equipment and were the most likely to own a  
287 microwave (95.1%), dishwasher (41.2%), electric knife (13.8%), an electric potato peeler  
288 (4.5%) and almost a third owned a juicer (32.9%) (Table 8).

289 In aggregate CCs both bought and discarded the most foodstuffs overall (Figures 2A&B and  
290 3A&B), they reported discarding an average of 7.6% of food purchases. CCs threw away  
291 10.0% of fresh vegetables, 9.8% of fresh fruit and wasted the largest proportion of all other  
292 foods (Figure 1A&B). This high level of waste was mirrored in their reported plate waste,  
293 surplus cooked food or food from previous meals and both partially used and unopened  
294 products (Figure 4). CCs reported moderate concern over discarding food (between 'a little'  
295 and 'a fair amount').

#### 296 *Food detached consumers*

297 FDs accounted for 16.3% of the sample and were characterised by ambivalence to all  
298 aspects of meal planning, preparation, and to food in general: in this respect they were the  
299 opposite of epicures. Compared to other groups the taste and appeal of food was relatively  
300 unimportant, they were unwilling to try new food and were least likely to engage in the  
301 social aspects of mealtimes (Table 3).

302 These consumers had a tendency to dislike food shopping and although FDs expressed a  
303 modest preference for fresh products they did not seek out organic foods. This group placed  
304 low importance on product information and were unlikely to use speciality shops (Table 3).

305 FDs reported that they did not feel stressed and were not particularly pressed for time,  
306 however, they reported lower than average cooking skills and did not enjoy cooking (Table  
307 3). Family members were unlikely to be 'fussy eaters', they did not snack and generally  
308 adhered to set meal times, however, they were unlikely to involve the whole family in meal  
309 preparation (Tables 3&4).

310 FDs had a negative attitude towards convenience food, although they moderately  
311 acknowledged its time saving benefit (Table 3): they did not enjoy ready meals and take-

312 away food, which was reflected in their correspondingly low consumption (Table 5). This  
313 group felt that convenience food was not good value for money (Table 3).

314 FDs wasted 3.3% of total purchased food and were the second least wasteful in the majority  
315 of the 14 food categories; which was also reflected in their behaviour towards food waste  
316 (Figure 4). Similar to the CCs they reported moderate concern about discarding food.

### 317 *Kitchen evaders*

318 KEs comprised 15.2% of the sample and had the largest proportion of single person  
319 households (19.9%). Along with CCs, they were most likely to rate convenience food highly;  
320 they expressed enjoyment of both ready meals and take-away food and rated the value for  
321 money of convenience food as the highest of all the consumer groups. KEs were the most  
322 pressed for time and appreciated the time saving benefits of convenience food the most  
323 (Table 3).

324 KEs disliked food shopping the most; they were the least interested in product information  
325 and were least likely to plan ahead. They expressed only a mild preference for fresh  
326 products and were the least likely to buy organic foods or to use specialist shops (Table 3).  
327 KEs reported the lowest cookery skills and derived the least enjoyment from meal  
328 preparation; this was reflected in the frequency with which KEs scratch cooked which was  
329 the lowest of all groups (Table 5).

330 The social aspects of mealtimes were unimportant to KEs and they were most likely to avoid  
331 cooking when alone and moderately likely to snack in place of a meal. Of the five consumer  
332 groups KEs reported the highest combined consumption of ready meals and take-away food  
333 (Tables 3&5).

334 Consistent with their group name, KEs possessed the least amount of kitchen equipment,  
335 with the exception of the microwave for which they reported the second highest ownership  
336 (Table 8).

337 KEs were the second most wasteful group, they reported discarding an average of 5.2% of  
338 their total food purchases. They discarded the greatest percentage of fresh produce: 12.7%  
339 and 11.1% of purchased vegetables and fruit, respectively. KEs also reported discarding the  
340 most plate waste, surplus cooked food or food from previous meals and partially used and

341 unopened products (Figure 4). KEs reported moderate concern in relation to discarded food  
342 (between 'a little' and 'a fair amount').

## 343 **Discussion**

344 This study explored the dynamics of household food waste among younger consumers of  
345 convenience food. Profiling based solely on a food-related lifestyle identified five distinct  
346 consumer groups, with diverse behavioural characteristics in relation to both the  
347 consumption of convenience food and to food waste. Further analysis of the groups'  
348 demographic characteristics highlighted differences in income, education and household  
349 composition.

350 Three of these groups, Epicures, TCs and KEs, displayed convenience profiles similar to those  
351 identified in a large study of food consumers in Great Britain carried out in 2002 (Buckley et  
352 al., 2007). Epicures and TCs closely resembled the 'food connoisseurs' and 'home meal  
353 preparers' of the 2002 study in their motivations to cook from scratch and their  
354 appreciation of home cooking. The third comparable group, KEs, had practically identical  
355 convenience food behaviours to the KEs identified in the earlier study; this congruence has  
356 been reflected in retention of the group's name.

357 The fourth and fifth groups (CCs and FDs) had very different profiles. CCs did not spend  
358 much time preparing food or shopping and whilst they gravitated towards convenience  
359 food, gourmet and social aspects of food consumption remained important. FDs in contrast,  
360 were manifestly disinterested in all food-related activities. The convenience profile of FDs  
361 mirrored that of 'uninvolved food consumers' identified in a pan-European study (Grunert,  
362 Brunsø, Bredahl, & Bech, 2001); some behavioural traits also resonated with the British  
363 study's segment of 'convenience seeking grazers' (Buckley et al., 2007). The CCs identified  
364 here appear to represent a new and distinct group that have pronounced consumerist  
365 tendencies.

366 Compared with the other groups CCs and KEs reported demonstrably higher levels of all  
367 types of food waste: fresh produce, leftovers and both unopened and partially used  
368 foodstuffs. Notably it was these two groups that were the most positive towards  
369 convenience food. KE's predilection for ready meals and takeaway food may be related to  
370 their reports of poor culinary skills and limited time spent in the kitchen. Studies have

371 shown that the use of convenience food is inversely proportional to cooking ability (Brunner  
372 et al., 2010; Hartmann et al., 2013). Unlike KEs, CCs possessed reasonable culinary skills and  
373 moderately enjoyed cooking; suggesting that CC's reliance on convenience food was due to  
374 other factors.

375 The high proportion of food waste generated by KEs and CCs could be attributable to their  
376 apparent lack of advance planning. However, there also appears to be other reasons for  
377 their food waste. KEs comprised the group with the largest proportion of single person  
378 households. The standard size of pre-packaged food tends to be too large for single person  
379 households and yet the cost of smaller formats is disproportionately expensive (Aschemann-  
380 Witzel et al., 2015; Evans, 2012; Koivupuro et al., 2012). In contrast to KEs, CCs comprised  
381 the largest average household size, which might render them better positioned to take  
382 advantage of economies of scale, however CCs were the most wasteful consumer group. It  
383 is plausible that their high level of waste is an adjunct to this group's low frequency of  
384 consumption of family meals and their need to accommodate 'fussy eaters'. Research  
385 indicates that children can disproportionately influence household food waste through plate  
386 waste and fussy eating (Cappellini & Parsons, 2013; Evans, 2012). In addition, qualitative  
387 evidence suggests that over-provision driven by the desire to be a 'good' provider increases  
388 the amount of food going to waste (Carrigan et al., 2006; Evans, 2012; Graham-Rowe et al.,  
389 2014).

390 Furthermore, fragmentation of mealtimes encourages greater reliance on convenience  
391 food. Warde (1999) offers a sociological perspective on the use of convenience food: he  
392 suggests that it is the 'de-routinisation' of people's lives that increases the requirement for  
393 convenience food. Family members are often in the wrong place at set mealtimes, for  
394 reasons that are either planned or unintended. In this argument, the reason for reliance on  
395 convenience food is shifted from time- and labour-saving to time-scheduling (Warde, 1999);  
396 CCs might therefore make greater use of convenience food to remedy the temporal  
397 problem of meal arrangements. Ethnographic studies note that the time-scheduling issue  
398 manifests during the negotiation of daily routines and that unpredicted changes of plan are  
399 a major structural cause of food becoming waste (Evans, 2012; Watson & Meah, 2012).

400 CCs were also the most influenced by advertising and the least price-conscious, which may  
401 have a bearing on their excessive food purchases and corresponding high level of food

402 waste. Studies indicate that promotional campaigns by supermarkets, such as multi-buy  
403 and '*buy one get one free*', encourage unnecessary purchases that lead to additional food  
404 waste (Brook Lyndhurst & WRAP, 2010). There may be ways to encourage discount  
405 shopping that does not lead to wasteful behaviour, such as vouchers for later purchases or  
406 product donation schemes (Dobson & Gerstner, 2010).

407 In contrast with CCs and KEs, Epicures largely rejected convenience food and generated the  
408 least food waste overall. Notably, Epicures were the most likely to make shopping lists  
409 based on meal plans, consistent with WRAP's advice aimed at reducing food waste (Quested  
410 & Luzecka, 2014). Epicures reported wide appreciation for food-related activities, were the  
411 most interested in the provenance of their food and cooked from scratch on average five  
412 times per week. A greater frequency of cooking is likely to enhance wider skills such as  
413 more precise portion control, which in turn reduces food waste (Graham-Rowe et al., 2014;  
414 Joerissen et al., 2015).

415 The findings of this study positively reinforce the findings of the previous study carried out  
416 in Great Britain in 2002 (Buckley et al., 2007). However, it does have limitations in several  
417 areas, which must be considered in discussion. Firstly, our waste measurement was  
418 quantified as a discarded amount relative to an amount purchased and therefore can only  
419 be interpreted against similarly scored methods. Furthermore, self-reported waste is  
420 known to be subject to social pressures, perhaps resulting in under-reporting (Quested,  
421 Parry, Eastal, & Swannell, 2011). Nevertheless, the ranking of the level of waste across the  
422 various food groups reflects the empirically measured waste data collected by WRAP;  
423 namely a pattern of greater waste for fresh vegetables and salads, fresh fruit, bread, meals,  
424 dairy and eggs (Quested et al., 2013a). In addition our measure of waste did not distinguish  
425 between avoidable and unavoidable waste; some 40% of household food waste is  
426 unavoidable being the inedible fraction of food (Quested et al., 2013a). Whilst reported  
427 food waste was positively associated with the purchase of convenience food, it is unclear  
428 whether this association is causal or if the behaviour patterns that lead to reliance on  
429 convenience food also create food waste. Secondly, there are issues in relation to response  
430 and sample bias. It is plausible that there is an over-representation of Epicures and under-  
431 representation of KEs and FDs because of selection bias towards people interested in food.  
432 It is also likely that there is under-representation of both top- and bottom-earners, because

433 the former group have no financial impetus to participate, while the latter group have low  
434 levels of internet access.

435 The traditional target groups for household food waste campaigns in the UK are young  
436 single professionals, young families and the younger members of lower socioeconomic  
437 groups (Brook Lyndhurst, 2007). Food waste messages focus on knowledge and skill  
438 limitations of these specific consumers (Brook Lyndhurst, 2007; Flower & Collett, 2014). The  
439 profile of the KEs overlaps with these target groups, which support WRAP'S current strategy.

440 However, we have highlighted another distinct consumer group, CCs, whose wasteful  
441 behaviour appears to be the result of firmly established behavioural and attitudinal  
442 interactions that combine with household dynamics to give rise to increased food waste.  
443 CCs represent a large consumer group (more than a quarter of respondents); they strongly  
444 identify with a convenience food lifestyle exhibiting distinct consumerist behaviour. On a  
445 *per capita* basis CCs bought 13.4% more food compared with the other groups, however  
446 reported BMIs were similar to other groups, which suggests that the problem is over-  
447 provisioning as opposed to over-consuming. It is evident from their levels of food waste  
448 that CCs are habitually discarding their superfluous grocery purchases. These consumerist  
449 traits were also apparent in their ownership patterns of convenience-related kitchen  
450 equipment, even though they reported limited propensity to cook. Such consumerism may  
451 be underpinned by other subtle psychological and sociocultural factors, which need to be  
452 considered when developing initiatives to tackle food waste. Further research is needed to  
453 elucidate the factors that mediate the positive association between the purchase of  
454 convenience food and reported food waste

## 455 **Role of the Funding Source**

456 This study was conducted as part of a Master's Degree programme at The University of  
457 Sheffield. The study was funded by the University. The University had no role in the study  
458 design, in the collection, analysis and interpretation of data, in the writing of the report, nor  
459 in the decision to submit the article for publication.

## 460 References

- 461 Aschemann-Witzel, J., de Hooge, I., Amani, P., Bech-Larsen, T., & Oostindjer, M. (2015).  
462 Consumer-Related Food Waste: Causes and Potential for Action. *Sustainability*, 7(6),  
463 6457–6477. <http://doi.org/10.3390/su7066457>
- 464 Barker, M. E., McClean, S. I., Thompson, K. A., & Reid, N. G. (2007). Dietary behaviours and  
465 sociocultural demographics in Northern Ireland. *British Journal of Nutrition*, 64(02),  
466 319-329. <http://doi.org/10.1079/BJN19900034>
- 467 Brook Lyndhurst. (2007). *Food behaviour consumer research: Quantitative stage*. UK: WRAP.
- 468 Brook Lyndhurst & WRAP. (2010). *Helping consumers reduce food waste – a retail survey*.  
469 Banbury: WRAP.
- 470 Brunner, T. A., van der Horst, K., & Siegrist, M. (2010). Convenience food products. Drivers  
471 for consumption. *Appetite*, 55(3), 498–506.  
472 <http://doi.org/10.1016/j.appet.2010.08.017>
- 473 Buckley, M., Cowan, C., & McCarthy, M. (2007). The convenience food market in Great  
474 Britain: convenience food lifestyle (CFL) segments. *Appetite*, 49(3), 600–617.  
475 <http://doi.org/10.1016/j.appet.2007.03.226>
- 476 Burnett, J. (1979). *Plenty and Want: A social history of diet in England from 1815 to present*  
477 *day* (2nd Editio). London: Scholar Press.
- 478 Cappellini, B., & Parsons, E. (2013). Practising Thrift at Dinnertime: Mealtime Leftovers,  
479 Sacrifice and Family Membership. *The Sociological Review*, 60(S2), 121–134.  
480 <http://doi.org/10.1111/1467-954X.12041>
- 481 Carrigan, M., Szmigin, I., & Leek, S. (2006). Managing routine food choices in UK families:  
482 The role of convenience consumption. *Appetite*, 47(3), 372–383.  
483 <http://doi.org/10.1016/j.appet.2006.05.018>
- 484 DEFRA. (2007). *Waste Strategy for England 2007*. Department for Environment Food and  
485 Rural Affairs, 127. London: HMSO. Retrieved from  
486 <http://archive.defra.gov.uk/environment/waste/strategy/strategy07/documents/waste07-strategy.pdf>  
487
- 488 DEFRA. (2008). *A framework for pro-environmental behaviours*. Retrieved from  
489 [www.defra.gov.uk\nhttp://www.defra.gov.uk/evidence/social/behaviour/pdf/behaviours-jan08-report.pdf](http://www.defra.gov.uk/evidence/social/behaviour/pdf/behaviours-jan08-report.pdf)  
490
- 491 DEFRA. (2015). *Family Food 2014*. London: DEFRA.
- 492 Dobson, P. W., & Gerstner, E. (2010). Wasteful Pricing. Unpublished Presentation at:  
493 INFORMS Marketing Science Conference, June 2010, Cologne, Germany.
- 494 Evans, D. (2012). Beyond the Throwaway Society: Ordinary Domestic Practice and a  
495 Sociological Approach to Household Food Waste. *Sociology*, 46(1), 41–56.  
496 <http://doi.org/10.1177/0038038511416150>
- 497 Everitt, B. S., Landau, S., Leese, M., & Stahl, D. (2011). *Cluster Analysis* (5th Editio).  
498 Chichester: John Wiley & Sons Ltd.
- 499 Flower, T., & Collett, K. (2014). Survey of Existing Consumer Products and Services which

500 Reduce Food Waste. WRAP & Shift. Retrieved August 15, 2015, from  
501 [www.shiftdesign.org.uk/content/uploads/2014/09/shift\\_Food-Waste\\_survey.pdf](http://www.shiftdesign.org.uk/content/uploads/2014/09/shift_Food-Waste_survey.pdf)

502 Garnett, T., Mathewson, S., Angelides, P., & Borthwick, F. (2015). *Policies and actions to shift*  
503 *eating patterns: What works?* Food Climate Research Network and Chatham House:  
504 Oxford UK

505 Gofton, L., & Ness, M. (1991). Twin Trends : Health and Convenience in Food Change or Who  
506 Killed the Lazy Housewife ? *British Food Journal* 93(7), 17–23.

507 Graham-Rowe, E., Jessop, D. C., & Sparks, P. (2014). Identifying motivations and barriers to  
508 minimising household food waste. *Resources Conservation and Recycling*, 84, 15–23.  
509 <http://doi.org/10.1016/j.resconrec.2013.12.005>

510 Grunert, K. G., Brunsø, K., Bredahl, L., & Bech, A. C. (2001). Food-Related Lifestyle: A  
511 segmentation Approach to European Food Consumers. In L. J. Frewer, E. Risvik, & H.  
512 Schifferstein (Eds.), *Food, People and Society: A European Perspective of Consumers’*  
513 *Food Choices* (pp. 211–229). Berlin: Springer.

514 Hartmann, C., Dohle, S., & Siegrist, M. (2013). Importance of cooking skills for balanced food  
515 choices. *Appetite*, 65, 125–131. <http://doi.org/10.1016/j.appet.2013.01.016>

516 Joerissen, J., Priefer, C., & Braeutigam, K.-R. (2015). Food Waste Generation at Household  
517 Level: Results of a Survey among Employees of Two European Research Centers in Italy  
518 and Germany. *Sustainability*, 7(3), 2695–2715. <http://doi.org/10.3390/su7032695>

519 Koivupuro, H.-K., Hartikainen, H., Silvennoinen, K., Katajajuuri, J.-M., Heikintalo, N.,  
520 Reinikainen, A., & Jalkanen, L. (2012). Influence of socio-demographical, behavioural  
521 and attitudinal factors on the amount of avoidable food waste generated in Finnish  
522 households. *International Journal of Consumer Studies*, 36(2), 183–191.  
523 <http://doi.org/10.1111/j.1470-6431.2011.01080.x>

524 Macdiarmid, J. I., Kyle, J., Horgan, G. W., Loe, J., Fyfe, C., Johnstone, A & McNeill G. (2012).  
525 Sustainable diets for the future : can we contribute to reducing greenhouse gas  
526 emissions by eating a healthy diet? *American Journal of Clinical Nutrition*.  
527 <http://doi.org/10.3945/ajcn.112.038729>.

528 Parfitt, J., Barthel, M., & Macnaughton, S. (2010). Food waste within food supply chains:  
529 quantification and potential for change to 2050. *Philosophical Transactions of the Royal*  
530 *Society B-Biological Sciences*, 365(1554), 3065–3081.  
531 <http://doi.org/10.1098/rstb.2010.0126>

532 Parizeau, K., von Massow, M., & Martin, R. (2015). Household-level dynamics of food waste  
533 production and related beliefs, attitudes, and behaviours in Guelph, Ontario. *Waste*  
534 *Management*, 35, 207–217. <http://doi.org/10.1016/j.wasman.2014.09.019>

535 Prior, G., Phillips, R., & O’Driscoll, C. (2014). *Food and You Survey Wave 3; UK Bulletin 1:*  
536 *Eating, cooking and shopping*. London: Food Standards Agency.

537 Quested, T. E., Marsh, E., Stunell, D., & Parry, A. D. (2013b). Spaghetti soup: The complex  
538 world of food waste behaviours. *Resources Conservation and Recycling*, 79, 43–51.  
539 <http://doi.org/10.1016/j.resconrec.2013.04.011>

540 Quested, T. E., Parry, A. D., Easteal, S., & Swannell, R. (2011). Food and drink waste from  
541 households in the UK. *Nutrition Bulletin*, 36(4), 460–467.  
542 <http://doi.org/10.1111/j.1467-3010.2011.01924.x>

- 543 Quested, T., Ingle, R., & Parry, A. (2013a). *Household Food and Drink Waste in the United*  
544 *Kingdom 2012*. Banbury: WRAP.
- 545 Quested, T., & Luzecka, P. (2014). *Household food and drink waste: A people focus*. Banbury:  
546 WRAP.
- 547 Shove, E. (2003). Converging conventions of comfort, cleanliness and convenience. *Journal*  
548 *of Consumer Policy*, 26(4), 395–418. <http://doi.org/10.1023/A:1026362829781>
- 549 Stefan, V., van Herpen, E., Tudoran, A. A., & Lähteenmäki, L. (2013). Avoiding food waste by  
550 Romanian consumers: The importance of planning and shopping routines. *Food Quality*  
551 *and Preference*, 28(1), 375–381. <http://doi.org/10.1016/j.foodqual.2012.11.001>
- 552 Visschers, V. H. M., Wickli, N., & Siegrist, M. (2015). Sorting out food waste behaviour: A  
553 survey on the motivators and barriers of self-reported amounts of food waste in  
554 households. *Journal of Environmental Psychology*, 45, 66–78.  
555 <http://doi.org/10.1016/j.jenvp.2015.11.007>
- 556 Warde, A. (1997). *Consumption Food & Taste*. London: SAGE Publications Ltd.
- 557 Warde, A. (1999). Convenience food: space and timing. *British Food Journal*, 101(7), 518–  
558 527.
- 559 Watson, M., & Meah, A. (2012). Food, waste and safety: negotiating conflicting social  
560 anxieties into the practices of domestic provisioning. *The Sociological Review*, 60, 102–  
561 120. <http://doi.org/10.1111/1467-954X.12040>

562

## Tables and Figures

564 **Table 1:** Demographic characteristics of sample n = 928 (number and (%))

	Sample
Gender:	
Male	278 (30%)
Female	650 (70%)
Age Range:	
18-25	244 (26.3%)
26-30	227 (24.5%)
31-35	260 (28.0%)
36-40	197 (21.2%)
Mean	30 years
BMI mean (S.D.)	25.9 kg/m <sup>2</sup> (7.0)
Highest level of education attained	
G.C.S.E.	168 (18.1%)
AS/A Level	219 (23.6%)
Further education (diploma etc)	135 (14.5%)
Degree	315 (33.9%)
Postgraduate	91 (9.8%)
Occupational status:	
Employed full time ( $\geq$ 30 hrs/wk)	495 (53.3%)
Employed part time (15-29 hrs/wk)	157 (16.9%)
Working less than 15 hrs/wk	17 (1.8%)
Unemployed	43 (4.6%)
Student	85 (9.2%)
Homemaker	91 (9.8%)
Other	40 (4.3%)
No. of people in household:	
1	127 (13.7%)
2	275 (29.6%)
3	230 (24.8%)
4	194 (20.9%)
5	71 (7.7%)
6 or more	31 (3.3%)
Mean household income (S.D.)	£31,825 (24,101)
Regional distribution:	
North East	50 (5.4%)
North West	123 (13.3%)
Yorkshire & The Humber	75 (8.1%)
East Midlands	58 (6.3%)
West Midlands	76 (8.2%)
East of England	79 (8.5%)
London	110 (11.9%)
South East	139 (15%)
South West	93 (10.0%)
Scotland	54 (5.8%)
Wales	54 (5.8%)
Northern Ireland	17 (1.8%)

**Table 2:** Lifestyle factors and associated Cronbach's  $\alpha$  coefficient reliability scores for each factor.

Lifestyle Factor	Cronbach's $\alpha$
1. Pro convenience food	0.92
2. Cooking satisfaction	0.86
3. Trying new food	0.88
4. Preference for fresh products	0.82
5. Food shopping	0.80
6. Pressed for time	0.78
7. Price conscious	0.77
8. Meal plan	0.80
9. Propensity to waste ingredients	0.82
10. Checking labels	0.79
11. Social eating	0.79
12. Woman's work	0.75
13. Life stress	0.85
14. Regular microwave usage	0.87
15. Snacking in place of meals	0.73
16. Tendency not to cook when alone	0.71
17. Time benefits of convenience food	0.89
18. Specialist shoppers	0.64
19. Cooking ability	0.80
20. Enjoyment of ready meals and takeaways	0.86
21. Influenced by advertising	0.72
22. Organic food products	0.86
23. Value for money – convenience food	0.73
24. Taste/appeal of food	0.79
25. Fussy eaters within the family	0.78
26. Family help	0.69
27. Breakdown of family mealtimes	0.79

567 Lifestyle factors 25, 26 and 27 were not included in the cluster analysis because these factors excluded single person  
568 households.

**Table 3:** Categorisation of respondents based on mean score and Tukey Honestly Significant Differences or Games-Howell tests where appropriate.

	Epicures	Traditional consumers	Casual consumers	Food detached consumers	Kitchen evaders
Pro convenience food	Very negative	Slightly negative	Positive	Negative	Positive
Cooking satisfaction	Highest	High	Moderate	Low	Lowest
Trying new food	Most willing	Willing	Moderately willing	Not willing	Not willing
Preference for fresh products	Highest	High	Marginal	Marginal	Marginal
Food shopping	Most likely to enjoy	Likely to enjoy	Don't enjoy	Don't enjoy	Least likely to enjoy
Pressed for time	Least	Somewhat	Somewhat	Neither agree nor disagree	Most
Price conscious	Most	Very	Least	Price conscious	Price conscious
Meal plan	Most likely	Likely	Sometimes	Sometimes	Least likely
Propensity to waste ingredients	Very unlikely	Somewhat unlikely	Likely	Unlikely	Neither likely nor unlikely
Checking labels	Likely	Likely	Somewhat likely	Least likely	Least likely
Social eating	Important	Important	Important	Not important	Not important
Woman's work	Disagree	Disagree	Indifferent	Disagree	Strongly disagree
Life stress	Very low	Low	Moderate	Very low	Moderate
Regular usage of microwave	Least likely	Rather unlikely	Most likely	Unlikely	A little unlikely
Snacking in place of meals	Very unlikely	Unlikely	More likely	Very unlikely	More likely
Tendency not to cook when alone	Very unlikely	Somewhat likely	Somewhat likely	Somewhat likely	Very likely
Time benefits of convenience food	Least appreciative	Appreciate	Appreciate	Somewhat appreciate	Most appreciative
Specialist shoppers	Most likely	Indifferent	Indifferent	Unlikely	Unlikely
Cooking ability	Very competent	Competent	Average	Low	Lowest
Enjoyment of ready meals and takeaways	Very low	Somewhat low	High	Low	High
Influenced by advertising	Unlikely	Indifferent	Most likely	Least likely	Unlikely
Organic food products	May buy	May buy	May buy	Unlikely to buy	Most unlikely to buy
Value for money - convenience food	Disagree	Slightly disagree	Somewhat agree	Slightly disagree	Somewhat agree
Taste/appeal of food	Extremely important	Extremely important	Important	Very Important	Highly important

573 **Table 4:** Responses to family-orientated questions by cluster membership (multiple person households only:  $n = 763$ )

	Epicures	Traditional consumers	Casual consumers	Food detached consumers	Kitchen evaders	<i>P</i> -value
Fussy eaters in the family	Very unlikely	Unlikely	Likely	Unlikely	Likely	$P < 0.001$
Family helps with food preparation	Likely	Likely	Likely	Unlikely	Unlikely	$P < 0.001$
Breakdown of family mealtimes	Strongly disagree	Disagree	Agree	Disagree	Somewhat disagree	$P < 0.001$

574

575 **Table 5:** Average weekly frequency of various convenience food behaviours by cluster group (cluster ranking)

	Epicures	Traditional consumers	Casual consumers	Food detached consumers	Kitchen evaders	<i>P</i> -value
Cook a meal from ingredients	5.1 (1)†	4.1 (2)†	2.6 (4)†	3.3 (3)†	2.0 (5)†	$P < 0.001$
Buy a takeaway meal to eat away from home	0.1 (5)a	0.2 (4)	0.5 (1)†	0.2 (3)	0.3 (2)a	$P < 0.001$
Buy a takeaway meal to eat at home	0.3 (5)ab	0.4 (3)cd	0.7 (2)ace	0.3 (4)ef	0.7 (1)bdf	$P < 0.001$
Go out for a meal	0.4 (3)	0.4 (4)b	0.6 (1)ab	0.3 (5)a	0.4 (2)	$P = 0.001$
Do not eat a 'proper' meal just snack	0.3 (5)abc	0.8 (3)ad	1.0 (2)be	0.5 (4)ef	1.4 (1)cdf	$P < 0.001$
Eat ready meals	0.3 (5)†	0.7 (3)	1.0 (2)†	0.5 (4)	1.5 (1)†	$P < 0.001$
<b>Ready meal form:</b>						
Frozen	0.1 (5)†	0.4 (3)ab	0.8 (2)ac	0.3 (4)cd	0.8 (1)bd	$P < 0.001$
Chilled	0.2 (5)†	0.5 (3)ab	0.7 (2)ac	0.4 (4)cd	0.8 (1)bd	$P < 0.001$
Tinned	0.1 (5)abc	0.1 (4)bd	0.5 (1)ade	0.2 (3)e	0.3 (2)c	$P < 0.001$
Dried	0.1 (5)†	0.3 (3)ab	0.6 (1)ac	0.2 (4)cd	0.5 (2)bd	$P < 0.001$
<b>Ready meal type:</b>						
Ethnic	0.2 (5)abc	0.4 (3)ad	0.7 (1)bde	0.3 (4)e	0.5 (2)c	$P < 0.001$
Healthy	0.1 (5)abc	0.2 (3)ad	0.6 (1)bde	0.2 (4)e	0.4 (2)c	$P < 0.001$
Traditional	0.2 (5)a	0.5 (3)	0.9 (1)†	0.5 (4)	0.6(2)a	$P < 0.001$
Vegetarian or meat free	0.1 (5)†	0.2 (4)	0.6 (1)†	0.3 (3)	0.3 (2)	$P < 0.001$
Organic	0.0 (5)a	0.1 (2)a	0.4 (1)†	0.1 (4)	0.1 (3)	$P < 0.001$
Fish-based	0.1 (5)a	0.2 (2)a	0.5 (1)†	0.1 (4)	0.2 (3)	$P < 0.001$
Pizza	0.3 (5)†	0.5 (4)ab	0.9 (1)ac	0.5 (3)cd	0.8 (2)bd	$P < 0.001$

576 Rank order for reported behaviour in brackets ("1" = highest reported consumption frequency, "5" = lowest reported  
 577 consumption frequency). † Indicates that the mean frequency is statistically different from all other groups. Pairs with the same  
 578 letter denote significantly different means.

579 **Table 6:** Demographic characteristics by cluster membership

	Epicures (n = 135)	Traditional consumers (n = 255)	Casual consumers (n = 246)	Food detached consumers (n = 151)	Kitchen evaders (n = 141)	P-value
Male	35 (25.9%)	68 (26.7%)	96 (39.0%)	47 (31.1%)	32 (22.7%)	P = 0.004
Female	100 (74.1%)	187 (73.3%)	150 (61.0%)	104 (68.9%)	109 (77.3%)	
Average Age (yrs) (SEM)	30.3 (0.5)	30.5 (0.4)	29.5 (0.4)	30.9 (0.5)	28.5 (0.5)	P = 0.004
Highest level of education:						
G.C.S.E.	10 (7.4%)	43 (16.9%)	52 (21.1%)	34 (22.5%)	29 (20.6%)	P = 0.002
AS/A level	29 (21.5%)	48 (18.8%)	62 (25.2%)	34 (22.5%)	46 (32.6%)	
Further Education	20 (14.8%)	39 (15.3%)	32 (13.0%)	25 (16.6%)	19 (13.5%)	
Degree	56 (41.5%)	93 (36.5%)	76 (30.9%)	48 (31.8%)	42 (29.8%)	
Postgraduate	20 (14.8%)	32 (12.5%)	24 (9.8%)	10 (6.6%)	5 (3.5%)	
Annual Household Income (£) (SEM)	39,342 (3,527)	33,392 (1,188)	31,423 (1,429)	29,500 (1,458)	24,989 (1,335)	P < 0.001

580

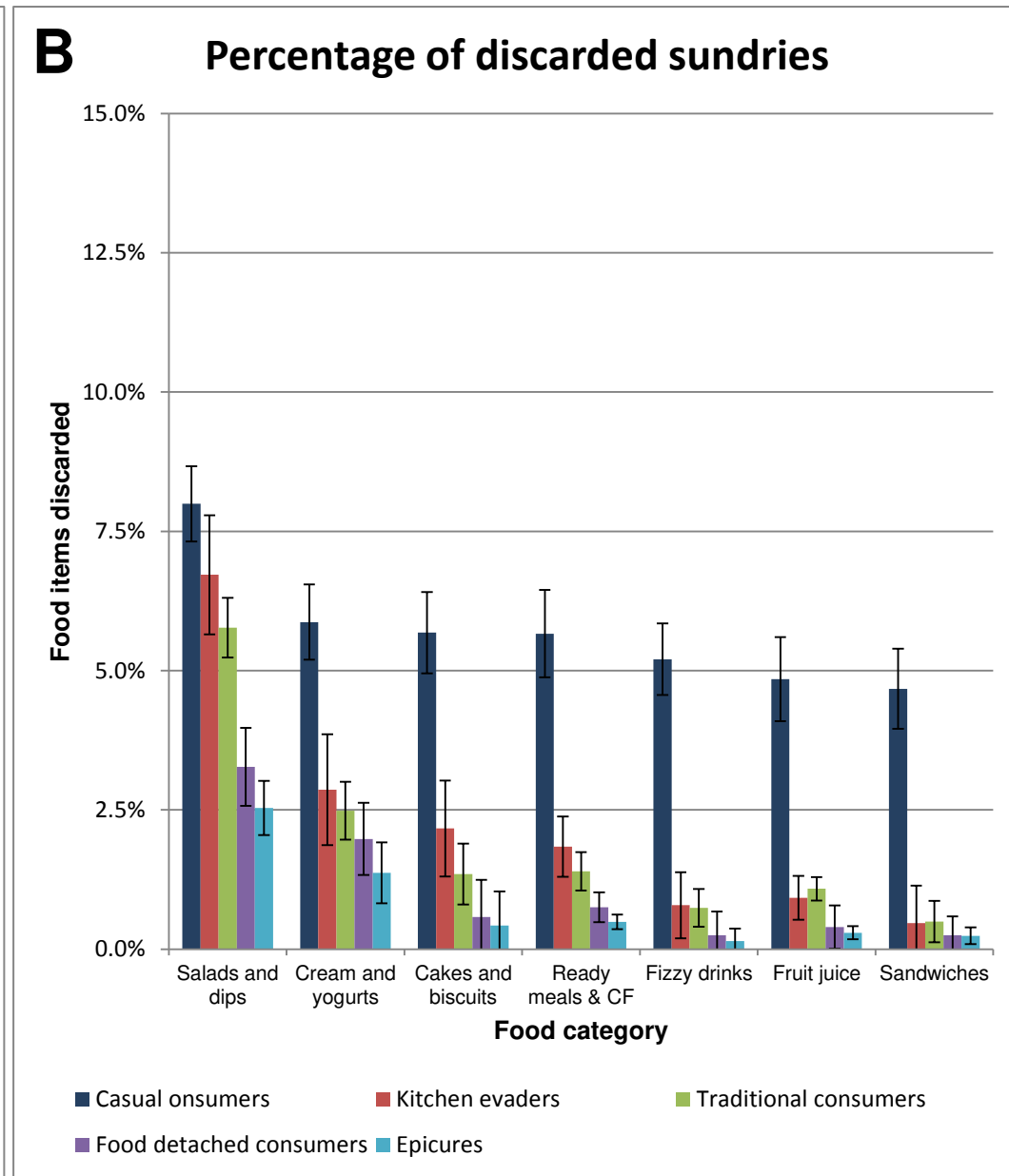
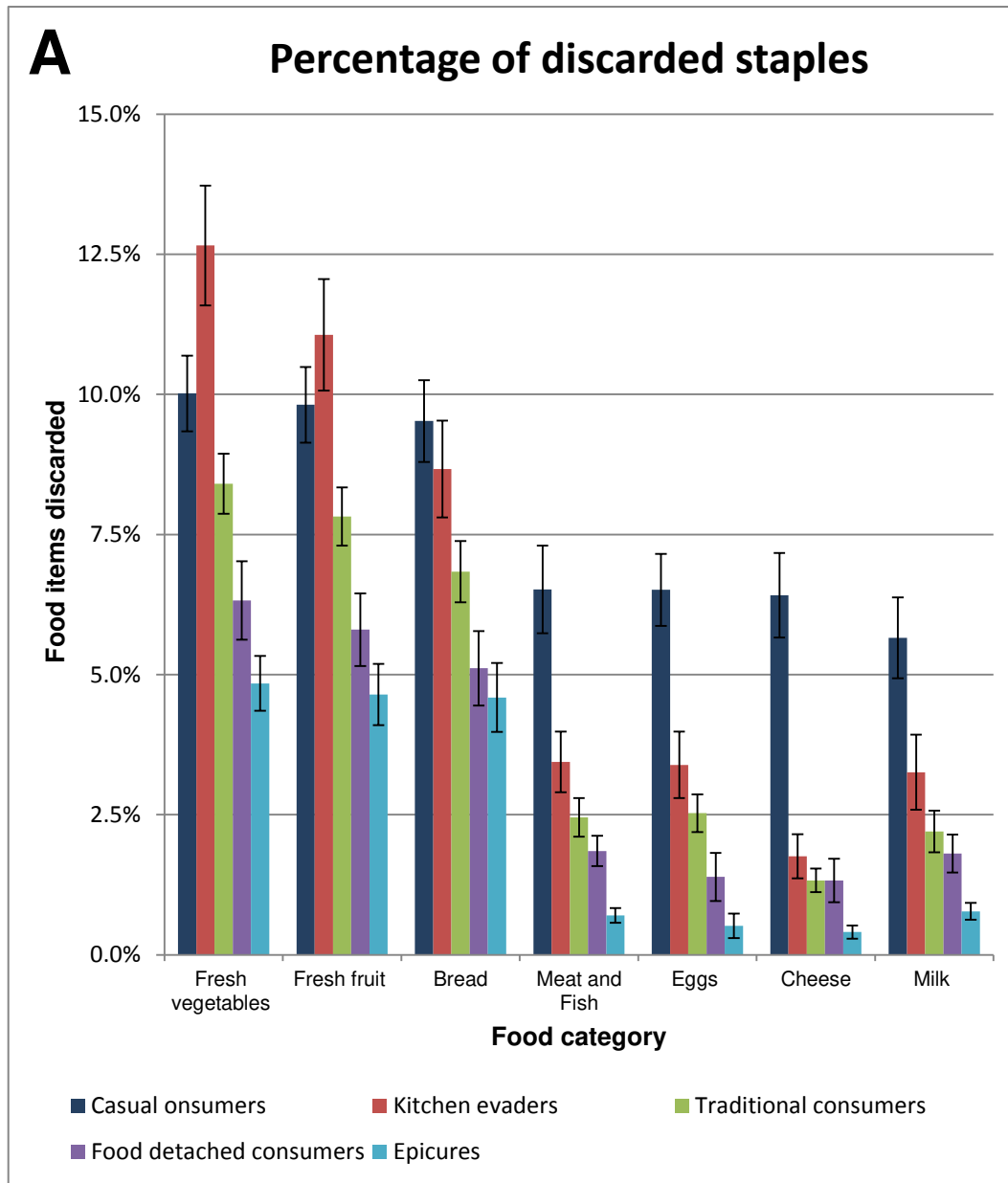
581 **Table 7:** Household structure by cluster membership

	Epicures (n = 135)	Traditional consumers (n = 255)	Casual consumers (n = 246)	Food detached consumers (n = 151)	Kitchen evaders (n = 141)	P-value
No. of people in household:						
1	17 (12.6%)	33 (12.9%)	26 (10.6%)	23 (15.2%)	28 (19.9%)	P < 0.050
2	54 (40.0%)	80 (31.4%)	58 (23.6%)	34 (22.5%)	49 (34.8%)	
3	31 (23.0%)	61 (23.9%)	72 (29.3%)	37 (24.5%)	29 (20.6%)	
4	17 (12.6%)	56 (22.0%)	57 (23.2%)	40 (26.5%)	24 (17.0%)	
5	13 (9.6%)	15 (5.9%)	25 (10.2%)	11 (7.3%)	7 (5.0%)	
6 or more	3 (2.2%)	10 (4.0%)	8 (3.2%)	6 (4.0%)	4 (2.8%)	
Mean household size (SEM)	2.7 (0.1)	2.9 (0.1)	3.1 (0.1)	3.0 (0.0)	2.6 (0.1)	P = 0.007

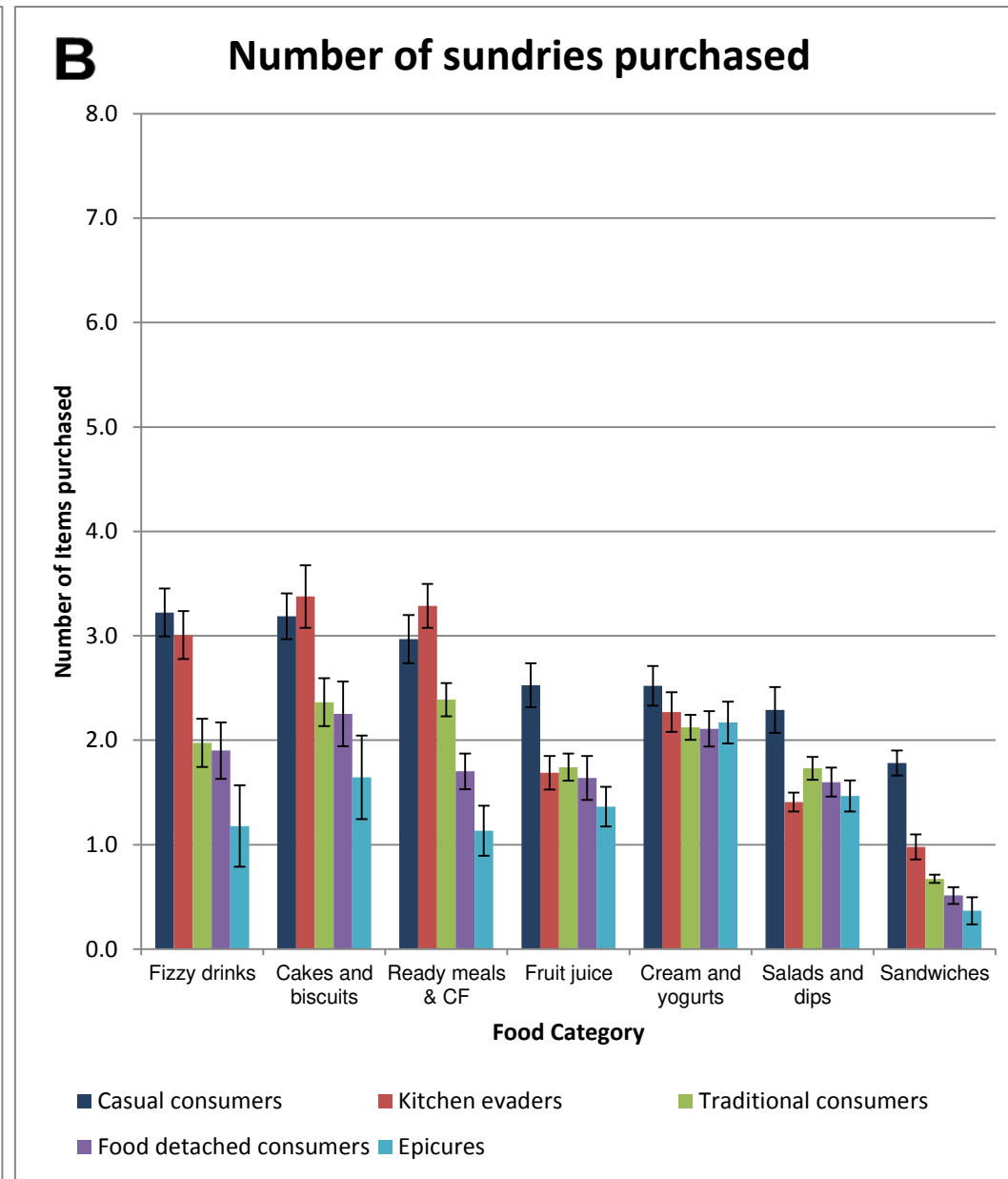
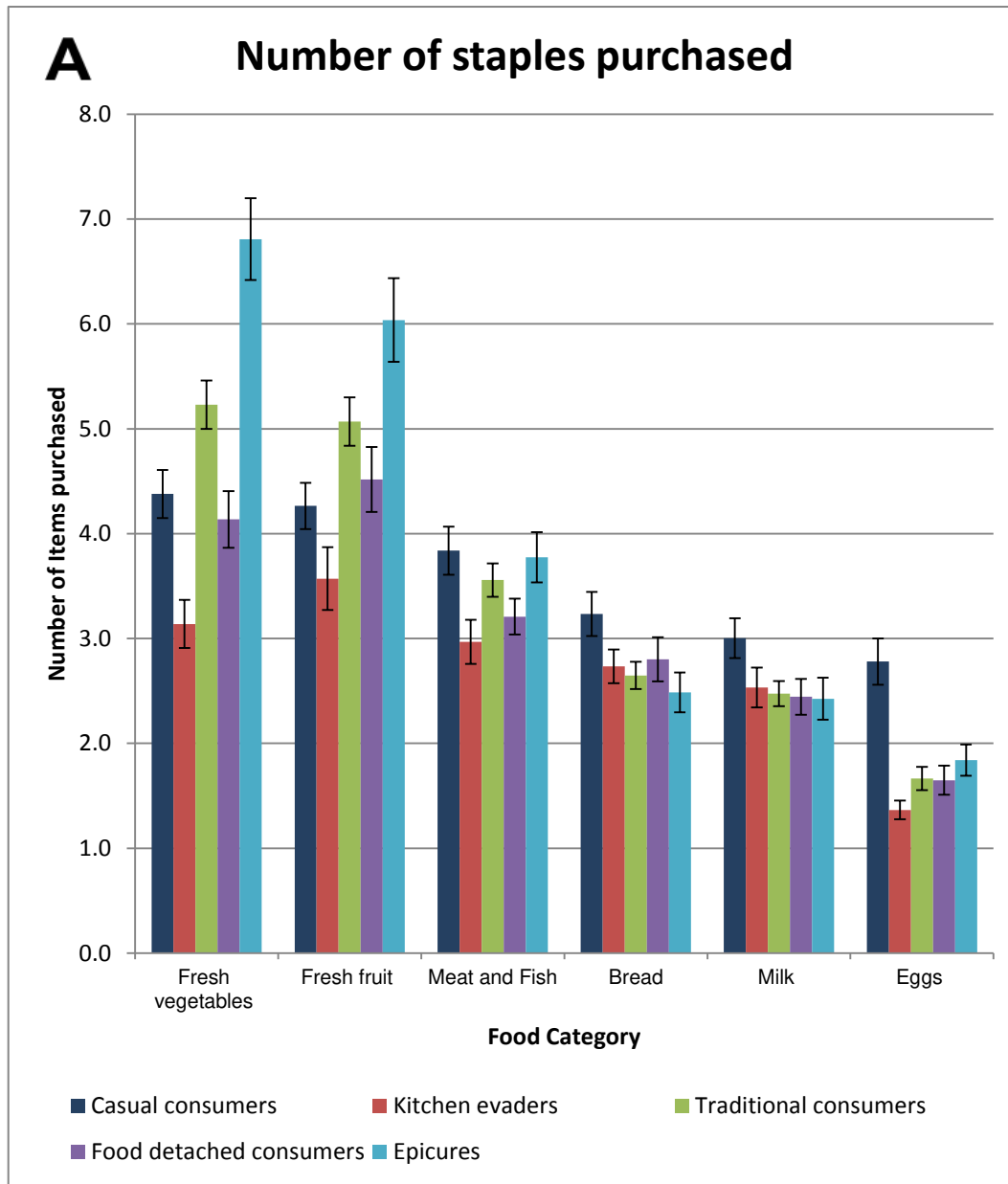
582

**Table 8:** Percentage ownership of kitchen equipment by cluster membership (rank order)

	Epicures	Traditional consumers	Casual consumers	Food detached consumers	Kitchen evaders
Microwave	88.1% (5)	92.2% (3)	95.1% (1)	90.7% (4)	92.2% (2)
Dishwasher	43.7% (2)	41.2% (3)	43.9% (1)	37.1% (4)	25.5% (5)
Food processor	65.9% (1)	49.8% (2)	39.8% (3)	33.8% (4)	20.6% (5)
Ice cream maker	14.1% (1)	9.0% (3)	10.2% (2)	4.0% (4)	0.7% (5)
Cappuccino/Espresso maker	30.4% (1)	28.2% (2)	24.4% (3)	15.9% (4)	14.9% (5)
Bread maker	27.4% (1)	22.7% (2)	22.0% (3)	18.5% (4)	8.5% (5)
Electric knife	11.9% (2)	10.6% (4)	13.8% (1)	11.3% (3)	5.7% (5)
Sandwich toaster	51.1% (3)	60.0% (1)	57.3% (2)	51.0% (4)	46.8% (5)
Electric potato peeler	0.7% (5)	3.1% (3)	4.5% (1)	3.3% (2)	1.4% (4)
Juicer	27.4% (3)	31.4% (2)	32.9% (1)	17.9% (4)	14.9% (5)



584  
 585 **Figure 1:** Percentage of food waste by cluster membership  
 586 CF = convenience food; Error bars show standard error of mean



587  
 588 **Figure 2:** Number of food items purchased by cluster membership  
 589 CF = convenience food; Error bars show standard error of mean

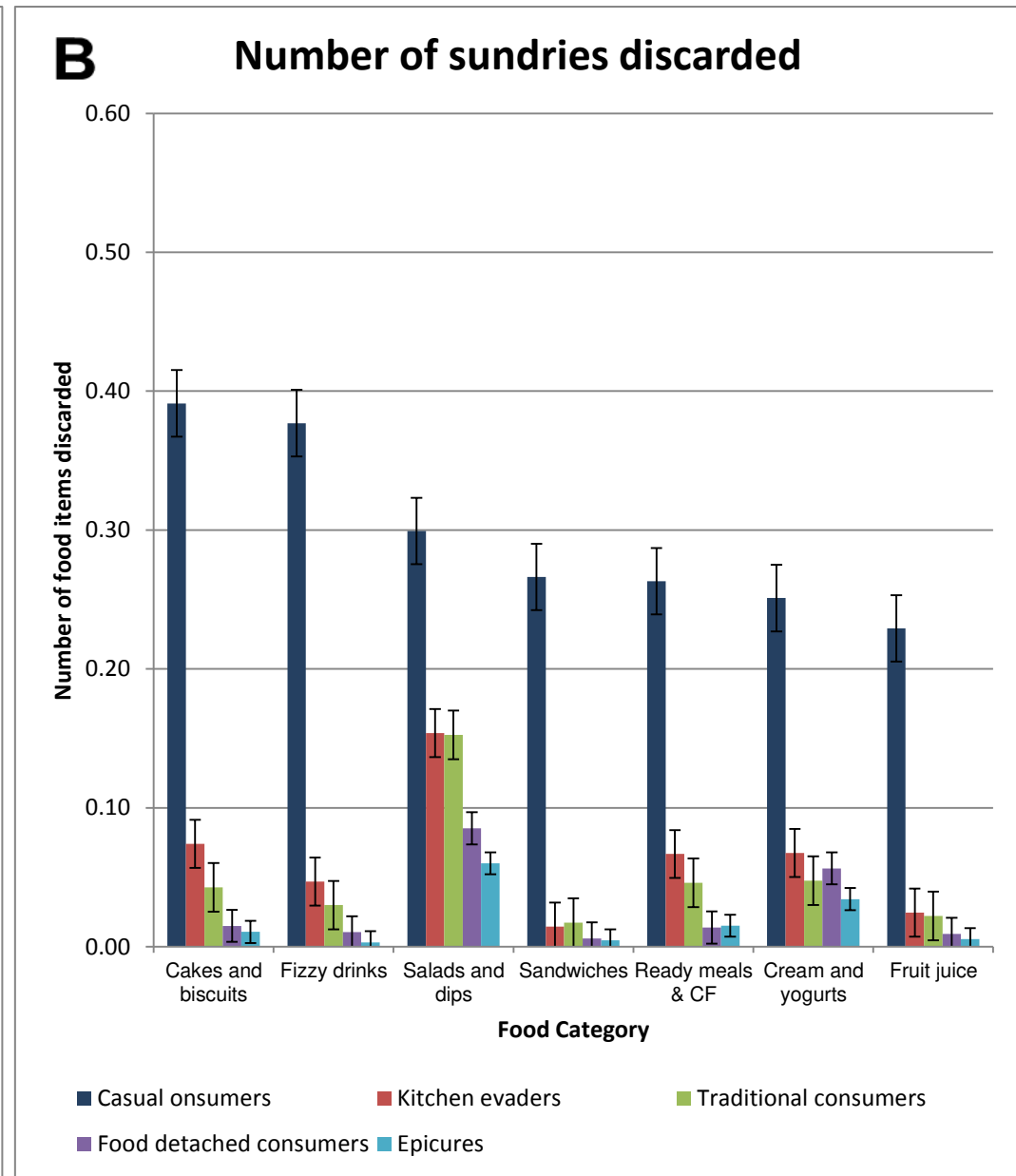
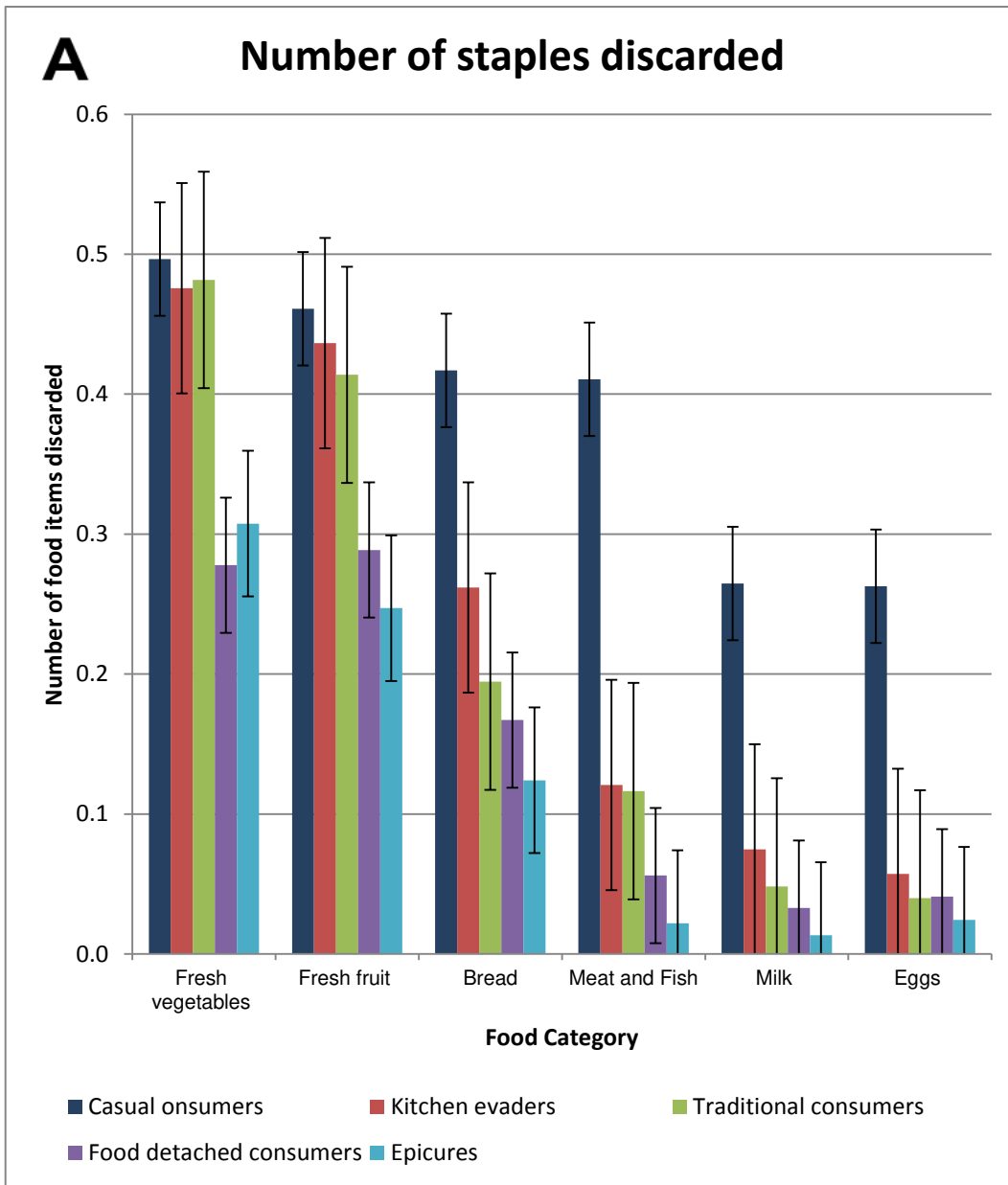


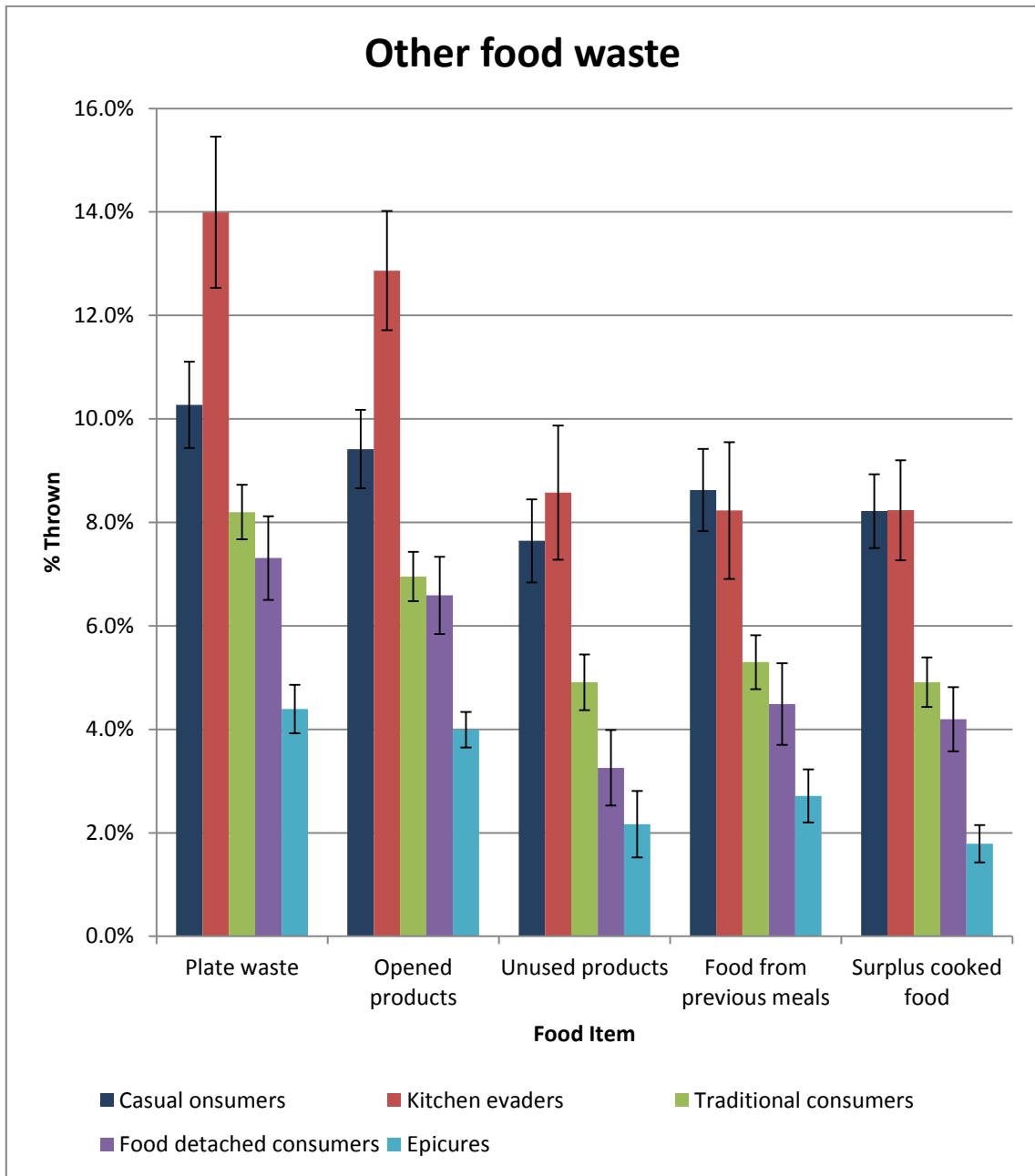
Figure 3: Number of food waste items by cluster membership

CF = convenience food; Error bars show standard error of mea

590

591

592



594

595

596

**Figure 4:** Percentage of other food waste by cluster membership  
 Error bars show standard error of mean

598 **Table A1:** Statements underlying each lifestyle factor

---

Lifestyle Factor
<p><b>1. Pro convenience food</b></p> <p>We use a lot of ready-to-eat foods in our household            Convenience food products are very important to me            One of the reasons I use convenience foods is to reduce the amount of washing up            Convenience foods are nutritious            I choose easy, quick-to-prepare foods for weekday evening meals            Convenience foods allow me to have something that I wouldn't normally know how to cook            I am interested in convenience food products            Convenience foods are safe            I choose foods that don't create much, if any, washing up            Ready meals are a good thing            I feel very involved with convenience food products</p> <p><b>2. Cooking satisfaction</b></p> <p>I don't like spending too much time cooking            Cooking is a task that is best over and done with            I love spending time in the kitchen preparing food            Preparing meals gives me a lot of satisfaction            I enjoy preparing meals from scratch</p> <p><b>3. Trying new food</b></p> <p>I look for ways to prepare unusual meals            I love to try recipes from other countries            Recipes and articles about food from other cuisines make me experiment in the kitchen            I like to try new foods that I have never tasted before            I like to try out new recipes</p> <p><b>4. Preference for fresh products</b></p> <p>I prefer fresh products to tinned or frozen products            It is important to me that food products are fresh            I prefer to buy meat and vegetables fresh rather than frozen            I prefer to buy meat and vegetables fresh rather than tinned</p> <p><b>5. Food shopping</b></p> <p>Shopping for food does not interest me at all            I just love shopping for food            I try to do my food shopping as quickly as possible            I do not like to spend too much time shopping for food            Food shopping takes up too much of my time</p> <p><b>6. Pressed for time</b></p> <p>I am always looking to save time            I am often rushing to get everything done            I am always in a rush</p> <p><b>7. Price conscious</b></p> <p>It is important to me that I get quality for money            I compare prices between various brands of the same product in order to get the best value for money            I notice price changes in products I regularly buy            I always check prices, even on small items            I always try to get the best quality for the best price</p> <p><b>8. Meal Plan</b></p> <p>Usually I do not decide what to buy until I am in the shop            I always plan what we are going to eat a couple of days in advance            Before I go shopping for food, I make a list of everything I need            I make a shopping list to guide my food purchases            What we are going to have for dinner is very often a last-minute decision            Cooking needs to be planned in advance</p>

---

---

 Lifestyle Factor
 

---

**9. Propensity to waste ingredients**

I find that I often have to throw away ingredients when cooking a meal from scratch  
 Throwing out leftover ingredients is all too common in my household  
 For me the solution to throwing out leftover ingredients is to buy convenience foods  
 I often find that I buy ingredients, use them once, then leave them in the cupboard and never use them again

**10. Checking labels**

Product information is highly important to me. I need to know what the food product contains  
 I compare product information labels to decide which brand to buy  
 I compare labels to select the most nutritious food

**11. Social eating**

Dining with friends is an important part of my social life  
 Going out for dinner is a regular part of our eating habits  
 Mealtimes are a good opportunity for conversation  
 I enjoy going to restaurants with family and friends  
 I we often get together with friends to enjoy an easy-to-cook casual dinner  
 When I serve dinner to friends, the most important thing is that we are together

**12. Woman's work**

It is the woman's responsibility to keep the family healthy by providing a nutritious diet  
 The responsibility for shopping and cooking should be equally shared between husband and wife  
 I consider the kitchen to be a woman's domain

**13. Life stress**

In the last month difficulties were piling up so high that I could not overcome them  
 Recently I have been unable to control the important things in my life

**14. Regular microwave usage**

I regularly use the microwave to cook my evening meal during the week  
 I regularly use the microwave to cook my evening meal at the weekend

**15. Snacking in place of meals**

I eat before I get hungry, which means that I am never hungry at meal times  
 In our house, snacking is more common than set mealtimes  
 I eat whenever I feel the slightest bit hungry  
 I snack a lot when I am at home on my own

**16. Tendency not to cook when alone**

I don't usually prepare a proper meal when it's just me  
 I don't enjoy cooking just for myself

**17. Time benefits of convenience food**

Takeaway meals are convenient  
 Convenience food saves time  
 Eating convenience food allows me more time to relax  
 Convenience food allows more time for other activities  
 Takeaway meals are a good last minute meal solution  
 Ready meals are a good back up to have at home  
 Ready meals are convenient

**18. Specialist shoppers**

I like buying food products in specialist shops where I can get expert advice (e.g. butcher, fishmonger, delicatessen)  
 I do not see any reason to shop in specialist food shops  
 I like to know what I am buying, so I often ask questions in shops when I buy food

---

---

 Lifestyle Factor
 

---

**19. Cooking ability**

Being praised for my cooking raises my self-esteem

I am an excellent cook

Eating is to me a matter of touching, smelling, tasting and seeing, all the senses are involved. It is a very exciting sensation

Meal preparation brings a bit of pleasure into my life

I am very creative when preparing meals

I choose meals that have been prepared by someone else because they do it much better than I can

I avoid preparing new dishes because I do not have the culinary skills to do so

**20. Enjoyment of ready meals and takeaways**

Eating ready meals is a pleasant experience

Eating takeaway meals is beneficial to me

Consuming convenience foods brings pleasure into my life

Takeaway meals are a good thing

Eating takeaway meals is a pleasant experience

Eating ready meals is beneficial to me

**21. Influenced by advertising**

I have more confidence in food products that I have seen advertised than in unadvertised products

I use the media to identify special offers on food products and plan to take advantage of them when I go shopping

I am influenced by what other people say about a food product

Information from advertising helps me to make better buying decisions

**22. Organic food products**

I make a point of using organic food products

I always buy organically grown food products when I can

I don't mind paying a premium for organic products

The naturalness of the food that I buy is an important quality to me

I try to avoid food products with additives

I prefer to buy natural products, i.e. products without preservatives

**23. Value for money – convenience food**

Convenience foods are not that expensive

Convenience foods are overpriced

Ready meals are good value for money

Takeaway meals are worth the extra cost

Convenience foods are not good value for money

**24. Taste/appeal of food**

The taste of food is important to me

When cooking taste is the most important consideration

Enjoying the taste of a food is important to me when I am eating

I enjoy a good meal

**25. Fussy eaters within the family**

There is always at least one person in my family who often needs a separately prepared meal

Certain members of the family have different tastes in food to the rest of the family

Certain members of the family are choosy about what they eat

**26. Family help**

The children or other members of the family always help in the kitchen e.g. they peel and cut up vegetables

My family helps with other mealtime chores, such as setting the table and washing up

When I do not really feel like cooking, I can get one of the other members of my family to do it

**27. Breakdown of family mealtimes**

In my house family members often have their meals at separate times

It is difficult for us to have a family meal together

---