Consumers' perceptions of regulatory food hygiene inspections of restaurants and takeaways

Abstract

Purpose: Foodborne illnesses are often attributed to food services such as restaurants and takeaways. This study aims to investigate consumers' perceptions of regulatory food hygiene inspections of restaurants and takeaways in UK.

Design: A cross-sectional online survey was conducted between November 2024-March 2025, and 750 responses were received. Chi-square test was carried out to identify associations between demographic variables and checking of food hygiene rating or information. Ordered logistic regression was carried out to determine if demographics and eating out and/or takeaway consumption practices affect participants' level of confidence in local authorities' (LA) food hygiene inspections of restaurants and takeaways.

Findings: Females, individuals with food hypersensitivities, low-risk appetite, those who experienced food poisoning incidents and had reported food safety concerns to local authorities reported checking food hygiene rating or information more frequently. Our findings also revealed that participants who searched for food hygiene rating or information exhibited increased confidence in recent food hygiene inspections (less than a year).

Originality: This is the first study to explore the relationship between consumer perceptions of food hygiene inspection frequency and their confidence in local authorities' inspection process. Our findings suggest that both perceived inspection frequency and food hygiene rating or information seeking behaviour can influence consumer confidence in local authorities' food hygiene inspections.

Practical Implications: Local authorities should emphasise the importance of checking hygiene ratings or information before dining out or purchasing takeaways, especially for vulnerable groups. Although not mandatory, restaurants and takeaways in England and Scotland could make their hygiene ratings or information more visible and accessible to build public trust and encourage greater consumer engagement with food hygiene information. Additionally, public awareness on how food hygiene inspections are conducted and the factors influencing inspection schedules could further enhance consumer confidence in the inspection process.

Keywords: food safety; food hygiene rating scheme; food hygiene information; inspection frequency; local authorities

Introduction

In the UK, there are an estimated 2.4 million cases of foodborne illnesses per year caused by foodborne pathogens such as norovirus, *Campylobacter, Clostridium perfringens, Salmonella* and parasites such as *Cryptosporidium* and *Giardia* (FSA, 2023a). The total cost of foodborne illness is estimated at £10.4 billion per year, of which £6.9 billion were associated with unattributed cases (FSA, 2020; FSA, 2024a). A large proportion of foodborne illnesses in UK were acquired due to eating out at food premises or takeaways (Murrell *et al.*, 2024). Redmond *et al.* (2018) estimated between 44 and 85% of foodborne illnesses were attributed to food services such as restaurants and takeaways. For example, in 2019, Food Standards Agency (FSA) estimated that eating out at restaurants and takeaways were responsible for 37% and 26% of foodborne norovirus cases. Similarly, foodborne illness outbreaks were commonly attributed to dining out food premises, including restaurants, pubs, street vendors and takeaway services across Europe (EFSA and ECDC, 2018) and USA (Angelo *et al.*, 2017). Risk factors for foodborne illnesses were often linked to

improper food preparation, inadequate heat treatment, cross contamination, inappropriate storage, infected food handlers and food handlers' hygiene practices (Chen *et al.*, 2024; Jones *et al.*, 2017). Further root cause analysis revealed that the contributory factors for poor hygiene and food preparation practices were due to lack of oversight of employees, lack of training of employees in specific processes and lack of food safety culture (Griffith and Motarjemi, 2023; Holst *et al.*, 2024). Consumers should be able to make informed choices when deciding where to eat out or to purchase takeaways.

Food Hygiene Rating Scheme (FHRS) and Food Hygiene Information Scheme (FHIS)

The UK Food Standards Agency introduce the Food Hygiene Rating Scheme (FHRS) in England, Wales and Northern Ireland to provide information about hygiene standards at food outlets. Ratings are given to places where food is supplied or sold including restaurants, takeaways, cafes, pubs, food trucks and stalls. Ratings ranged from 0 to 5, where 0 indicates that urgent improvement is necessary and 5 indicates that hygiene standards are very good (FSA, 2023a). The food hygiene rating is measured based on three areas i.e., 'Food hygiene and safety', 'Structure and cleaning' (e.g., physical condition, pest control, cleanliness and other facilities) and 'Confidence in management'. Food hygiene and safety is how hygienically the food is handled. Structural requirements include the cleanliness and ease of cleaning of surfaces and adequacy of structural facilities, pest control, drainage and other facilities. Confidence in management reflect the measure of confidence in the food safety management systems and likelihood of future compliance (Fleetwood *et al.*, 2019; FSA, 2024a). Food hygiene ratings are published online at food.gov.uk/ratings and for Food Business Operators (FBOs) in England, display of the stickers is voluntary, but mandatory display was introduced in Wales in November 2013 and in Northern Ireland in October 2016 (FSA, 2023b; Fleetwood *et al.*, 2019).

The ratings used in Food Hygiene Information Scheme (FHIS) in Scotland i.e., 'Pass' or 'Improvement Required' demonstrate if food outlets meet the legal requirements for food hygiene or if they need to make improvements (FSS, n.d.). In November 2014 the FSA launched a yearly survey to track consumer awareness of the FHRS and use of FHRS in decision making. Over the years, results indicate that each year awareness has continued to increase (Fleetwood *et al.*, 2023; FSA, 2021, 2022a, 2023c). FSA (2022a) revealed that up to 89% (n=5,796) of UK consumers were aware of the FHRS scheme. Among those who have heard of FHRS, 41% and 40% would consider a rating of 4 (Good) or 3 (Generally Satisfactory) as the lowest acceptable rating to eat at the restaurant or takeaway (FSA, 2022a). Public disclosure of inspection information provides the consumers with 'at-a-glance' information about the hygiene standards which consumers have a positive attitude towards (Djekic *et al.*, 2014; Filion & Powell, 2011; Uggioni & Salay, 2014) and might influence their food purchasing decisions (FSA, 2022c; FSA, 2023b; Poppy, 2017; Salis *et al.*, 2015; Vegeris & Smeaton, 2014). This in turn incentivises FBOs to achieve higher scores and it creates competition between FBOs to improve their hygiene standards, reducing the incidence of food-borne illness and the associated costs to the economy (Barnes, 2019; FSA, 2017; Poppy, 2017; Salis *et al.*, 2015) and helps foster a culture of food safety by encouraging dialogue among, consumers, LAs and FBOs (Filion & Powell, 2009).

Consumers' views of inspections and attitudes to food safety

Consumers view food hygiene inspections as an important intervention for their protection from consuming unsafe food (Jones & Grimm, 2008; Tobin *et al.* 2012) and certain characteristics influence attitudes to food safety and influence restaurant choice. Consumers have unrealistic expectations about the consequences for violations observed during the inspection process (Jones & Grimm, 2008). Many consumers do not know who is responsible for inspecting food premises or how they assess the hygiene standards, they have unrealistic expectations about the frequency and duration of inspections and appear to think enforcement officers have more powers than they possess (Worsfold, 2006). Previous research indicated that most consumers expect inspections of small food establishments to occur more than once per year (Vegeris and Smeaton, 2014; Worsfold, 2006), while Jones and Grimm (2008) identified inspection frequency should be performed at 12 or more times per year. Although, there is no clear basis on which consumers establish this sense of importance of the intensive inspection schedule and the relationship between food hygiene inspection and their protection from consuming unsafe food is less clear (Barnes *et al.*, 2022). Consumers tend to be overly optimistic about the risk of foodborne diseases when eating out. If their experience is a positive one, risk perception is diminished and new information about risk is disregarded (De Andrade *et al.*, 2019; Isoni Auad *et al.*, 2019; Vainio *et al.*, 2020).

Consumers also expect that inspections will be performed without prior notice to the food business to ensure accuracy and many consumers are dissatisfied with the approaches, transparency and frequency of food hygiene inspections (Barnes *et al.*, 2022; Lee *et al.*, 2012). Inspections are a snapshot in time, and it is possible to visit premises on a particularly bad or unusually good day which may influence inspection scores or ratings (Fleetwood *et al.*, 2019; Vegeris & Smeaton, 2014). Consumers are generally more concerned about food safety when eating out than eating at home (Young & Waddell, 2016) and they are concerned about food served in restaurants, takeaways, shops and supermarkets and want assurance (NAO, 2019), although, they have a general expectation that the food they buy is safe to eat (de Jonge *et al.* 2004; Houghton, 2006).

The food offer plays a vital role in enhancing consumers' experience (Bai *et al.*, 2019; Alonso *et al.*, 2013) and food safety concerns are important predictors of restaurant choice (Chaturvedi *et al.*, 2022; Knight *et al.*, 2009) which can influence the frequency of dining at restaurants (Knight *et al.*, 2009). The decision involves balancing perceived benefits such as taste, hedonic value and convenience against the perceived food safety risks (Young & Waddell, 2016; Jensen & Sandoe, 2002). Many of the key elements of a restaurant's operations that influence standards of hygiene are unobservable to the consumer (Uggioni & Salay, 2014; Filion & Powell, 2011; Henson *et al.*, 2006) with little to no information on the origin of the food or handling process (Bai et al, 2019). Therefore, consumers look for observable information cues (Zanetta *et al.*, 2022), to form their perceptions of food safety (Zanetta *et al.*, 2022; Fleetwood *et al.*, 2019; Cha & Borchgrevink, 2019; Uggioni & Salay, 2014; Vegeris & Smeaton, 2014; Ungku *et al.*, 2011; Henson *et al.*, 2006). Vulnerable consumer groups such as those with food hypersensitivities, pregnant, or have underlying health conditions may also rely on observable cues such as FHRS or FHIS information when making their decisions. In the FHRS Food and You 2 survey, 40% of the respondents would only purchase from a food business with a food hygiene rating higher than what they would usually consider acceptable if they or someone else were pregnant or had health issues (Armstrong *et al.*, 2021).

The paucity of studies assessing consumers' views of the food safety standards of premises with different food hygiene ratings and the frequency of inspections remains a significant gap. Now that LAs are allowed to defer planned interventions, particularly for low-risk premises (Jennings, 2021), and reduce regulatory burdens on those that are compliant and/or low risk (FSA, 2024b), further research is recommended to critically evaluate the level of consumer confidence and trust in the FHRS and FHIS. This study aims to investigate consumers' perceptions of frequency of inspection and confidence in food safety standards of restaurants and takeaways in UK.

Methodology

Questionnaire Development

The questionnaire for this cross-sectional study was designed based on previous consumer and FHRS survey in UK (Armstrong *et al.*, 2023; FSA, 2021, 2022a, 2023c). The questionnaire was divided into three sections i.e., (i) demographics; (ii) diet, health and eating out / purchasing takeaway practices and (iii) perceptions of frequency of inspection and confidence in food safety standards. The questionnaire was pilot tested with 15 consumers and subjected to face and content validity by several food safety experts from the industry. Based on the feedback from the pilot test, the following statements and questions were revised and/or added. i) The questionnaire title was made clearer that the survey was about regulatory or local authority food hygiene inspections; (ii) Examples of food hypersensitivity (e.g., food allergy, food intolerance or coeliac disease) were given; (iii) Questions on risk appetite, reporting of food safety concern of a restaurant/takeaway and whether it was easy to raise a complaint to the local authority were added. Further clarity was provided on the statements on frequency of inspection including whether they should consider the nature of the business, level of risk, and previous food hygiene/information rating. Cronbach's alpha was 0.745 indicating good level of internal consistency. The questions were uploaded onto onlinesurvey.ac.uk. The questionnaire is available in Supplementary Material 1.

Inclusion criteria

The eligibility criteria include 18 years or older and are consumers who eat out or purchase takeaways from food establishments in UK.

Data collection

A sample size of 600 were required based on 95% significance level, 5% margin of error, 50% population proportion and average of 56% non-response rate for online survey (Wu *et al.*, 2026). The online survey was shared widely using social media. Snowball and convenience sampling approach was used to recruit participants between November 2024 – March 2025. The study initially set a targeted recruitment period of November 2024 – January 2025 but was unable to recruit the targeted sample size, thus the survey was extended until March 2025.

Statistical Analysis

Descriptive statistics were conducted to show the demographic characteristics and the self-reported dining out and/or takeaway consumption habits and perceptions of food hygiene inspections. Chi-square test was carried out to identify associations between demographic variables and checking of food hygiene rating or information. The proportional odds assumption was tested using test of parrallel lines prior to running ordered logistic regression. The test of parallel lines indicated non-

significance (p=0.057) thus the proportional odds assumption was held. Ordered logistic regression was carried out to determine if demographics and eating out and/or takeaway consumption practices affect participants' level of confidence in local authorities' (LA) food hygiene inspections of restaurants and takeaways. The regression model estimated was a multiple regression model. The level of confidence in LA food hygiene inspections was used as the dependent variable. This was measured on a 4-point Likert scale where 1=Strongly disagree to 4=Strongly agree based on the statement 'I am confident in my local authority's food hygiene inspections of restaurants and takeaways'. All demographic characteristics (including age, gender, education level, living with children under 16, pregnancy, health conditions and food hypersensitivities) were used as independent variables. Other independent variables include type of diet (i.e., unrestricted, vegetarian/vegan, others), risk appetite (i.e., low, medium or high [please refer to explanations in Supplementary material 1), frequency of eating out and/or purchasing takeaways (i.e., rarely/never to more than once a week), whether they look for hygiene rating (i.e., yes / no / sometimes), frequencies of food poisoning in the past 5 years (i.e., unsure / never to more than 5 times), previously reported food safety concern(s) (i.e., Yes / No) and perceptions of frequency of inspections (i.e., 1=Strongly disagree to 4=Strongly agree) were used as independent variables. Potential confounders including age, gender, and pregnancy were treated as factors in the regression model to ensure their potential confounding effects were adjusted for. Odds ratios (ORs) and 95% confidence intervals (CIs) were estimated for all independent variabes. P value < 0.05 was considered statistically significant. All statistical analyses were perfomed using IBM SPSS Version 29.0.

Ethics

Informed consent was obtained from all participants. The study received ethical approval from the University of Central Lancashire HEALTH Ethics Review Panel (Reference Number: HEALTH 01075).

Results

A total of 774 responses were received of which 750 were eligible for data analysis. Tables 1 and 2 show the demographic characteristics of participants, their self-reported eating out and/or takeaway consumption practices and perceptions of frequency of food hygiene inspections. Over 50% of participants reported experiencing symptoms of food poisoning at least once within the past five years. More than 78% participants would look for the food hygiene rating or information before eating out or purchasing takeaways and over 30% of the participants believed that restaurants and takeaways undergo annual inspections or inspections were based on risk assessments. Similarly, a large proportion of participants agreed that inspection frequencies should be based on type of business, level of risk and previous food hygiene rating or information.

Table 1. Demographic characteristics and participants eating out and/or purchasing of takeaway practices (n=750)

Demographics	**Variables**	**Frequency (%)**
Gender	Male	355 (47.3)
	Female	383 (51.1)
	Others	12 (1.6)
Age	18 – 29	97 (12.9)
	30 – 39	142 (18.9)
	40 – 49	182 (24.3)
	50 – 59	197 (26.3)

	60 – 69	88 (11.7)
	70 and above	44 (5.9)
Education	College or university degree	348 (46.4)
	Postgraduate degree	138 (18.4)
	A levels/AS levels/BTEC or equivalent	87 (11.6)
	O levels/GCSE or equivalent	64 (8.5)
	Others	113 (15.1)
Do you have children under 16 years in your household?	Yes	261 (34.8)
	No	489 (65.2)
Do you consider yourself to have a weak immune system due to a health condition or other reason?	Yes	87 (11.6)
	No	663 (88.4)
Do you have a food hypersensitivity?	Yes	117 (15.6)
	No	633 (84.4)
Are you pregnant?	Yes	14 (1.9)
	No	736 (98.1)
What diet do you follow?	Unrestricted	602 (80.3)
	Vegetarian / Vegan	32 (4.3)
	Others	116 (15.5)
How would you describe your risk appetite when eating food?	Low	154 (20.5)
	Medium	477 (63.6)
	High	119 (15.9)
How frequent do you eat out or purchase takeaways?	More than once a week	97 (12.9)
	Once a week	285 (38.0)
	Once a month	267 (35.6)
	Rarely / never	101 (13.5)
How many times in the past 5 years have you had symptoms of food poisoning?	Never	336 (44.8)
	1 – 2 times	296 (39.5)
	3 – 5 times	56 (7.5)
	More than 5 times	26 (3.5)
	Unsure	36 (4.8)
Have you reported a food safety concern of a restaurant or takeaway to local authorities?	Yes	108 (14.4)

	No	642 (85.6)

Table 2. Perceptions of food hygiene inspections (n=750)

Questions	**Variables**	**Frequency (%)**
Do you look for the Food Hygiene Rating or Food Hygiene Information of the restaurant / takeaway before purchasing or dining at the premise?	Yes	378 (50.4)
	No	159 (21.2)
	Sometimes	213 (28.4)
How often do you think restaurants and takeaways are inspected by the local authorities?	Every month	9 (1.2)
	Every 3 – 6 months	53 (7.1)
	Once a year	278 (37.1)
	Once every 2 years	92 (12.3)
	Once every 3 years	43 (5.7)
	Risk-based approach	240 (32.0)
	Only when a complaint is received	24 (3.2)
	Others	11 (1.5)
Frequency of inspection should be based on:		
Type of business and level of risk	Strongly disagree	37 (4.9)
	Disagree	37 (4.9)
	Agree	403 (53.7)
	Strongly agree	273 (36.4)
Previous Food Hygiene Rating / Information	Strongly disagree	45 (6.0)
	Disagree	100 (13.3)
	Agree	358 (47.7)
	Strongly agree	247 (32.9)

There was significant association between gender, food hypersensitivity, risk appetite, food poisoning and reported food safety concern with checking of food hygiene rating or information. Females, individuals with food hypersensitivities, those with low-risk appetite, those who experienced more than two food poisoning incidents in the past five years and those who had reported food safety concerns to local authorities reported checking food hygiene rating or information more frequently (Table 3).

Table 3. Chi-square association between demographic variables and checking food hygiene rating or information (n=750)

Demographics	**Variables**	**Yes Frequency (%)**	**No Frequency (%)**	**Sometimes Frequency (%)**	**Chi-square test**	**df**	**Cramer's V**

					X^2	*p*		
Gender					**12.25**	**0.016**	4	0.09
	Male	166 (46.8)	93 (26.2)	96 (27.0)				
	Female	204 (53.3)	66 (17.2)	113 (29.5)				
	Others	8 (66.7)	0	4 (33.3)				
Age					13.45	0.200	10	0.10
	18-29	51 (52.6)	16 (16.5)	30 (30.9)				
	30-39	70 (49.3)	21 (14.8)	51 (35.9)				
	40-49	85 (46.7)	45 (24.7)	52 (28.6)				
	50-59	99 (50.3)	45 (22.8)	53 (26.9)				
	60-69	50 (56.8)	20 (22.7)	18 (20.5)				
	70 and above	23 (52.3)	12 (27.3)	9 (20.5)				
Education					8.36	0.399	8	0.08
	College or university degree	169 (48.6)	68 (19.5)	111 (31.9)				
	Postgraduate degree	66 (47.8)	32 (23.2)	40 (29.0)				
	A levels / AS levels/ BTEC or equivalent	52 (59.8)	15 (17.2)	20 (23.0)				
	O levels / GCSE or equivalent	33 (51.6)	15 (23.4)	16 (25.0)				
	Others	58 (51.3)	29 (25.7)	26 (23.0)				
Household with children under 16					2.42	0.298	2	0.06
	Yes	122 (46.7)	57 (21.8)	82 (31.4)				
	No	256 (52.4)	102 (20.9)	131 (26.8)				
Health conditions					5.36	0.068	2	0.09
	Yes	54 (62.1)	14 (16.1)	19 (21.8)				
	No	324 (48.9)	145 (21.9)	194 (29.3)				
Food hypersensitivities					**7.09**	**0.029**	**2**	**0.10**
	Yes	70 (59.8)	15 (12.8)	32 (27.4)				
	No	308 (48.7)	144 (22.7)	181 (28.6)				
Pregnant					4.84	0.089	2	0.08
	Yes	11 (78.6)	2 (14.3)	1 (7.1)				
	No	367 (49.9)	157 (21.3)	212 (28.8)				
Diet					9.47	0.05	4	0.08
	Unrestricted	288 (47.8)	135 (22.4)	179 (29.7)				
	Vegetarian/ vegan	22 (68.8)	3 (9.4)	7 (21.9)				
	Others	68 (56.8)	21 (18.1)	27 (23.3)				
Risk appetite					**69.85**	**<0.001**	**4**	**0.22**
	Low	107 (69.5)	12 (7.8)	35 (22.7)				
	Medium	238 (49.9)	94 (19.7)	145 (30.4)				
	High	33 (27.7)	53 (44.5)	33 (27.7)				

Frequency of earing out / purchasing takeaways					6.90	0.330	6	0.07
	More than once a week	49 (50.2)	26 (26.8)	22 (22.7)				
	Once a week	150 (52.6)	51 (17.9)	84 (29.5)				
	Once a month	124 (46.4)	63 (23.6)	80 (30.0)				
	Rarely / never	55 (54.5)	19 (18.8)	27 (26.7)				
Food poisoning in the last 5 years					**22.27**	**0.004**	**8**	**0.12**
	Never	172 (51.2)	84 (25.0)	80 (2.8)				
	1 – 2 times	141 (47.6)	59 (19.9)	96 (32.4)				
	3 – 5 times	35 (62.5)	9 (16.1)	12 (21.4)				
	More than 5 times	17 (65.4)	0	9 (34.6)				
	Unsure	13 (36.1)	7 (19.4)	16 (44.4)				
Reported food safety concerns					**25.34**	**<0.001**	**2**	**0.18**
	Yes	78 (72.2)	9 (8.3)	21 (19.4)				
	No	300 (46.7)	150 (23.4)	192 (29.9)				

Significant difference indicated in bold.

Consumers' food safety perceptions and their self-reported confidence in food hygiene rating or information varied significantly based on whether they searched for this information before eating out or purchasing takeaways. Pairwise comparisons with adjusted p-values indicated notable differences between those who searched for the hygiene rating/information and those who did not (Table 4). For example, consumers who looked for food hygiene rating or information before eating out ($\chi^2(2) = 13.381$, $p < 0.05$) were significantly more confident if the food hygiene inspection was less than a year old. There were no significance differences for older inspection rating or information. Those who actively searched for the rating also reported feeling more well-informed and concerned about food safety. They exhibited greater confidence in the authenticity of food and accuracy of menus at food premises and paid more attention to food safety following Brexit and the pandemic (Table 4).

Table 4. Consumers' food hygiene rating / information seeking behaviour and confidence in food safety standards (n=750)

Statements	**Kruskal Wallis**	**Yes**	**Sometimes**	**No**
	χ^2		**Mean rank**	
I am well informed about the safety of food I eat in restaurants and/or takeaways	59.864**	430.76a	333.53b	300.36b
I am concerned about the safety of food I eat in a restaurant and/or takeaway	25.560**	404.63a	374.21a	307.97b
I am confident in the food safety standards when the Food Hygiene Rating / information is:				
• less than 1 year old	13.381*	389.96a	385.88a	327.21b
• 1-2 years old	0.275	371.69	379.31	379.45

• more than 2 years old	0.749	374.31	369.09	386.91
The Food Hygiene Rating / Information gives me confidence that the business has:				
• good food allergen controls in place	1.763	383.77	372.64	359.68
• good controls for food authenticity	7.821*	390.20a	377.00ab	338.54b
• good controls for labelling menu and accuracy	7.239*	382.23a	390.41a	339.53b
Since leaving the European Union, I pay greater attention to the safety of the food I eat in restaurants and takeaways	60.457**	426.61a	348.09b	290.70c
Due to the Covid-19 pandemic I pay greater attention to the safety of the food I eat in restaurants and takeaways	51.284**	422.76a	354.46b	291.32c

Values with different [abc] superscripts within a row indicate significant differences among those who reported looking for FHRS where $^{**}p < 0.001$; $^{*}p < 0.05$.

The variables shown in Table 5 were used as independent variables in the ordered logistic regression to predict consumers' confidence of local authorities' food hygiene inspections of restaurants and takeaways. Pearson Chi-square statistic [$\chi^2(2163)=2194.527$, p=0.313] and Deviance statistic [$\chi^2(2163)=1567.377$, p=1.000] were non-significant suggesting a good fit for the model. The likelihood ratio chi square test [$\chi^2(25)=90.566$, p<0.001] indicated a significant improvement in fit compared with the null (no predictors) model. The likelihood ratio chi square tests were significant for the following variables: pregnancy, looked for food hygiene rating/information, reported food safety concern and frequency of inspections. To assess multicollinearity, the Variance Inflation Factor (VIF), Collinearity Tolerance values and Variance Proportions were determined for each independent variable. The VIF values were below 5.0 and collinearity tolerance values were close to 1. Within the collinearity diagnostics results, the variance proportions for all predictors were less than 0.90. These findings indicated that multicollinearity is not a concern in the model.

Specific age effects were determined in the ordered logistic regression. Negative coefficient values were associated with reduced confidence in local authorities' food hygiene inspections of restaurants and takeaways. For example, consumers in the 50 – 59 age group (OR=0.486, p<0.05) were significantly less confident in local authorities' food hygiene inspections of restaurants and takeaways compared to those aged 70 and above (70 and above is coded as the reference value). Participants who were pregnant (OR=9.438, p<0.001), those who looked for food hygiene rating or information before eating out or getting takeaway (OR=1.629, p<0.05) and those who had reported food safety concern(s) (OR=2.158, p<0.001) were significantly more confident in local authorities' food hygiene inspections of food premises. Those who perceived that food hygiene inspections occurred every 3 – 24 months (OR=6.254-9.555, p<0.05) or were risk-based (OR=8.696, p<0.001) expressed significantly higher confidence in local authorities.

Table 5. Ordered logistic regression predicting consumers' confidence in local authorities' food hygiene inspections of restaurants and takeaways

Independent variables	B(SE)	Odds Ratio	95% CI
Gender	0.193(0.144)	1.213	[0.915-1.608]

Age			
• 18 – 29	-0.538(0.367)	0.584	[0.284-1.198]
• 30 – 39	-0.657(0.356)	0.518	[0.258-1.042]
• 40 – 49	-0.605(0.353)	0.546	[0.274-1.090]
• 50 – 59	-0.721(0.336)*	0.486	[0.252-0.940]
• 60 – 69	-0.405(0.369)	0.667	[0.324-1.374]
• 70 and above	0	1	
Education	-0.006(0.050)	0.994	[0.902-1.095]
Children under 16 living in household	-0.276(0.175)	0.759	[0.538-1.070]
Health conditions	0.242(0.242)	1.274	[0.793-2.046]
Food hypersensitivities	0.021(0.213)	1.022	[0.673-1.550]
Pregnant			
• Yes	2.245(0.656)**	9.438	[2.610-34.123]
• No	0	1	
Diet	0.150(0.107)	1.161	[0.941-1.434]
Risk appetite	0.139(0.131)	1.150	[0.889-1.487]
Frequency of eating out / purchasing takeaways	0.108(0.083)	1.114	[0.947-1.311]
Look for food hygiene rating / information			
• Yes	0.488(0.172)*	1.629	[1.162-2.283]
• No	0.093(0.210)	1.097	[0.727-1.656]
• Sometimes	0	1	
Food poisoning	-0.081(0.072)	0.923	[0.802-1.061]
Reported food safety concern			
• Yes	0.769(0.231)**	2.158	[1.374-3.391]
• No	0	1	
Perceptions of frequency of inspection			
• Every month	1.505(0.847)	4.506	[0.857-23.702]
• 3 – 6 months	2.257(0.634)**	9.555	[2.756-33.121]
• Once a year	2.018(0.585)**	7.524	[2.391-23.676]
• Once every 2 years	1.833(0.609)*	6.254	[1.894-20.649]
• Once every 3 years	1.177(0.636)	3.246	[0.933-11.289]
• Risk-based	2.163(0.585)**	8.696	[2.763-27.368]
• After receiving complaints	1.060(0.681)	2.887	[0.760-10.968]
• Others	0	1	

*p<0.05; **p<0.001

Discussion

Females tend to check food hygiene rating or information more frequently compared to males. This could be attributed to heightened concern about food safety among female participants as shown in

other similar studies (Machado Nardi *et al.*, 2020; Sameshima and Akamatsu, 2023). However, our study differs from FSA (2014a) where men were slightly more likely than women to report using a food hygiene rating scheme while women were more likely to report valuing a good rating. In the present study, participants with food hypersensitivities and those who had experienced several food poisoning incidents in the past five years also reported checking the information more frequently. This suggests that participants' food hypersensitivities and experiences with foodborne illnesses may lead individuals to become more vigilant about food safety and hygiene practices (Barnett *et al.*, 2020; FSA, 2014b). Similarly, participants with a low-risk appetite would check the food hygiene rating or information more frequently, suggesting a more risk-averse approach to ensure food safety. This is reflected in Byrd-Bredbenner *et al.* (2008) who reported that those who believed food poisoning was a personal threat or had experience food poisoning tend to eat fewer risky foods.

Our findings revealed that participants who searched for food hygiene rating or information before eating out or purchasing takeaways had significantly different food safety perceptions and confidence levels in food hygiene inspections compared to those who did not seek the information. Those who sought for food hygiene rating or information demonstrate higher levels of confidence, especially when the inspection is less than a year old. It is likely that this group exhibited higher confidence with more recent inspection as audits and food safety inspections remain a snapshot in time (Manning, 2018; Powell *et al.*, 2013). Powell *et al.* (2013) described 'snapshot in time' as a 'point-in-time assessment that represent a small fraction of food preparation handling time and volume'. Thus, a more recent inspection may reflect the current food safety management systems of the food premises although it cannot guarantee future performance (Jia and Evans, 2021; Powell *et al.*, 2013). Fleetwood *et al.* (2019) also revealed that high hygiene ratings were associated with lower microbiological contamination. Those who searched for hygiene information also reported paying more attention to food safety since Brexit and the COVID-19 pandemic. This could be due to increased media coverage of food safety concerns (BBC, 2021, 2024) and reduced food hygiene inspections (FSA, 2022b; Whitworth, 2022) caused by these events, thus prompting participants who sought food hygiene information to be more vigilant.

Our middle-aged participants (50 – 59 years old) exhibited lower confidence in the effectiveness of local authorities' food hygiene inspections. Upon scrutinising the data for this age group, 42.6% reported having experienced food poisoning at least once in the past five years. Previous experience of foodborne illnesses may have affected their level of confidence in local authorities' food hygiene inspections. Participants who reported being pregnant were significantly more confident in local authorities' food hygiene inspections. Pregnant individuals are more vigilant about food safety (Maugliani and Baldi, 2023) and may actively seek out information and rely on local authorities' inspection. Those who seek food hygiene rating or information and reported food safety concerns to the authorities were also significantly more confident in local authorities' food hygiene inspections, potentially implying a level of trust among the participants. It is also possible that participants who reported food safety concerns to the local authorities are more likely to feel that it is part of their responsibility to ensure food safety for all. In a recent report by DEFRA (2023), it was revealed that consumer trust in Food Standards Agency and Food Standards Scotland is high.

To date, there are no studies looking into the perceptions of frequencies of inspections and confidence in local authorities' food hygiene inspections. This is the first study to explore this

relationship. Those who perceived that food hygiene inspections occurred every 3-24 months or were risk-based expressed significantly higher confidence in local authorities. Participants who believe that inspections are frequent likely perceived a higher level of oversight and monitoring which may have bolstered their confidence in food hygiene inspections. However, there may be a discrepancy in what the consumers expect and what is happening, as local authorities struggled with limited staff and resources. Across England, Wales and Northern Ireland, there has been a decline in food safety officers over the last decade with 13.7% unfilled food hygiene posts in local authorities in 2022 (Our Food, 2022). Meanwhile, within Scotland, there was a 25.5% unfilled food hygiene posts as of 2021 (Our Food 2022). Local authorities are working under significant pressures due to backlog inspections that have built up since the pandemic, number of food businesses overdue an inspection, and keeping up with the number of new food business registrations (Our Food, 2023).

The are several limitations associated with the study. The study relied on self-reported practices and indications of whether they would seek food hygiene rating prior to eating out and/ purchasing takeaways. It is likely that our group of participants are more motivated to respond to the survey as they are interested in food safety topics, and this may introduce optimistic bias and self-selection bias to the study. Although the study was designed to capture a wide range of demographics, the generalisability of the results to other populations such as those who may be less interested in food safety topics, had lower food safety concerns or with different demographic characteristics are limited.

Practical Implications

The study suggests that females, individuals with food hypersensitivities, those who experienced food poisoning incidents, or had reported food safety concerns to local authorities in the past were more likely to check food hygiene ratings or information. Furthermore, the findings showed that individuals who actively sought food hygiene ratings or information tend to have more confidence in local authorities' food hygiene inspections, especially when the inspection is recent. Similarly, those who perceived frequent food hygiene inspections (e.g., 3 – 24 months) or the inspections were risk-based had higher levels of confidence in their local authorities. This suggests that local authorities could highlight the importance of checking hygiene ratings or information before dining out or purchasing takeaway, especially for individuals with specific dietary needs or previous food safety concerns. Restaurants and takeaways in England and Scotland could make their food hygiene ratings or information more visible and accessible to the public to build trust in food hygiene inspections and promote greater consumer engagement with food hygiene information. Finally, local authorities could consider educating public on how food hygiene inspections are carried out and what are the factors influencing inspection schedules to enhance consumers' confidence in the inspection process.

Conclusion

To date, there has been a lack of studies examining the perceptions of frequency of food hygiene inspections and confidence in local authorities' food hygiene inspection processes. This is the first study to explore this relationship. Participants who believed inspections occurred more frequently (every 3- 24 months) or were risk-based showed significantly higher confidence in local authorities food hygiene inspection process. The ordered logistic regression identified several significant predictors influencing consumers' confidence in local authorities' food hygiene inspections of restaurants and takeaways. This includes pregnancy status, those seeking food hygiene information,

reporting of food safety concerns and perception of frequency of inspections. Furthermore, our study found a clear link between participants who actively sought food hygiene rating or information were associated with increased awareness of food safety issues and tend to pay greater attention to food safety post-Brexit and the pandemic. The study also revealed that participants who searched for food hygiene rating or information exhibited increased confidence in recent food hygiene inspections. Both perceived inspection frequency and food hygiene rating or information seeking behaviour can influence consumer confidence in local authorities' food hygiene inspections. It is recommended that future studies explore the factors that influence consumers' information seeking behaviour and trust in local authorities' food hygiene inspections.

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References

Alonso, A.D., O'neill, M., Liu, Y. and O'shea, M. (2013), "Factors driving consumer restaurant choice: An exploratory study from the Southeastern United States", *Journal of Hospitality Marketing & Management,* Vol. 22 No. 5, pp. 547-567.

Angelo, K.M., Nisler, A.L., Hall, A.J., Brown, L.G. and Gould, L.H., (2017), "Epidemiology of restaurant-associated foodborne disease outbreaks, United States, 1998–2013", *Epidemiology and Infection*, Vol. 145, No. 3, pp.523-534.

Armstrong, B., King, L., Clifford, R., Jitlal, M., Mears, K., Parnell, C. and Mensah, D. (2023), "Food and You 2 Wave 6: Chapter 4 Eating out and takeaways", available at: https://www.food.gov.uk/research/fy2-wave-6-chapter-4-eating-out-and-takeaways (accessed 1 September 2023).

Bai, L., Wang, M., Yang, Y. and Gong, S. (2019), "Food safety in restaurants: The consumer perspective", *International Journal of Hospitality Management,* Vol. 77, pp. 139-146

Barnes, J.M. (2019), "A review of policy and procedures for the Food Hygiene Rating Scheme (FHRS) safeguards for food businesses*",* London, available at: https://data.food.gov.uk/catalog/datasets/d5178dcd-4f9f-4a20-a6a1-207be6576a0b (accessed 28 November 2024).

Barnes, J., Whiley, H., Ross, K. and Smith, J. (2022), "Defining food safety inspection", *International Journal of Environmental Research and Public Health*, Vol. 19 No. 2, p.789.

Barnett, J., Vasileiou, K. and Lucas, J.S. (2020), "Conversations about food allergy risk with restaurant staff when eating out: A customer perspective", *Food Control*, Vol. 108, 106858.

BBC (2021), "Coronavirus: How safe are takeaways and supermarket deliveries?" *BBC News*, 8 January, available at: https://www.bbc.co.uk/news/science-environment-52040138 (accessed 29 May 2024).

BBC (2024), "New Brexit food checks will test Britain's supply chains", *BBC News*, 30 January, available at: https://www.bbc.co.uk/news/business-68135059 (accessed 29 May 2024).

Byrd-Bredbenner, C., Abbot, J.M., Wheatley, V., Schaffner, D., Bruhn, C. and Blalock, L. (2008), "Risky eating behaviors of young adults—Implications for food safety education", *Journal of the American Dietetic Association*, Vol. 108 No. 3, pp.549-552.

Cha, J. and Borchgrevink, C.P. (2019), "Customers' perceptions in value and food safety on customer satisfaction and loyalty in restaurant environments: Moderating roles of gender and restaurant types", *Journal of Quality Assurance in Hospitality & Tourism,* Vol. 20 No. 2, pp. 143-161

Chaturvedi, P., Kulshreshtha, K., Tripathi, V. and Agnihotri, D. (2022), "Investigating the impact of restaurants' sustainable practices on consumers' satisfaction and revisit intentions: a study on leading green restaurants", *Asia-Pacific Journal of Business Administration,* Vol. 16 No. 1, pp. 41-62.

Chen, Y., Wan, G., Song, J., Dai, J., Shi, W. and Wang, L. (2024), "Food safety practices of food handlers in China and their correlation with self-reported foodborne illness", *Journal of Food Protection*, Vol. 87 No. 1, 100202.

de Andrade, M.L., Rodrigues, R.R., Antongiovanni, N. and da Cunha, D.T. (2019), "Knowledge and risk perceptions of foodborne disease by consumers and food handlers at restaurants with different food safety profiles", *Food Research International,* Vol. 121, pp. 845-853

DEFRA (2023), "United Kingdom Food Security Report 2021: Theme 5: Food safety and consumer confidence", available at: https://www.gov.uk/government/statistics/united-kingdom-food-security-report-2021/united-kingdom-food-security-report-2021-theme-5-food-safety-and-consumer-confidence#united-kingdom-food-security-report-2021-theme5-indicator-5-1-3 (accessed 30 May 2024).

de Jonge, J., Frewer, L., van Trijp, H., Jan Renes, R., de Wit, W. and Timmers, J. (2004), "Monitoring consumer confidence in food safety: An exploratory study", *British Food Journal,* Vol. 106 No. 10/11, pp. 837-849.

Djekic, I., Smigic, N., Kalogianni, E.P., Rocha, A., Zamioudi, L. and Pacheco, R. (2014), "Food hygiene practices in different food establishments', *Food Control,* Vol. 39, pp. 34-40.EFSA and ECDC (2018), "The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2017", *European Food Safety Authority and European Centre for Disease Prevention and Control, EFSA Journal*, Vol. 16 No. 12, e05500.

Filion, K. and Powell, D.A. (2009), "The use of restaurant inspection disclosure systems as a means of communicating food safety information", *Journal of Food Service,* Vol. 20 No. 6, pp. 287-297.

Filion, K. and Powell, D. (2011), "Designing a national restaurant inspection disclosure system for New Zealand", *Journal of Food Protection,* Vol. 74 No. 11, pp. 1869-1874.

Fleetwood, J., Holland, D., Shackleton, J. and Mahmoudzadeh, N. (2023), "Foodborne illness, hygiene scores, and the "switch effect", *Food and Humanity*, Vol. 1, pp.940-950.

Fleetwood, J., Rahman, S., Holland, D., Millson, D., Thomson, L. and Poppy, G. (2019), "As clean as they look? Food hygiene inspection scores, microbiological contamination and foodborne illness", *Food Control*, Vol. 96, pp.76-86.

FSA (2014a), "Understanding domestic food safety practices", *Food Standards Agency, FS409012*, available at: https://www.food.gov.uk/sites/default/files/media/document/fs409012.pdf (accessed 30 May 2024).

FSA (2014b), "The 2014 Food and You Survey. England Bulletin 4 Experience of food poisoning and attitudes towards food safety and food production", *Food Standards Agency, FS409014*, available at: https://www.food.gov.uk/sites/default/files/media/document/england-bulletin4-food-and-you-2014.pdf (accessed 30 May 2024).

FSA (2019), "Technical report: Review of quantitative risk assessment of foodborne norovirus transmission", Food Standards Agency, available at: https://www.food.gov.uk/research/foodborne-disease/technical-report-review-of-quantitative-risk-assessment-of-foodborne-norovirus-transmission (accessed 23 May 2024).

FSA(2020), "Foodborne disease estimates for the United Kingdom in 2018", available at: https://www.food.gov.uk/sites/default/files/media/document/foodborne-disease-estimates-for-the-united-kingdom-in-2018_0.pdf (accessed 23 May 2024).

FSA (2021), "Food hygiene rating scheme (FHRS) – Food and You 2: Wave 2", Food Standards Agency, FS430662.

FSA (2022a), "Food and You 2 – Wave 4", Food Standards Agency, available at: https://www.food.gov.uk/research/executive-summary-for-food-and-you-2-wave-4 (accessed 24 May 2024).

FSA (2022b), "Our Food 2021. An annual review of food standards across the UK", Food Standards Agency, available at: https://www.food.gov.uk/sites/default/files/media/document/11105-FSA-Annual%20Report%20on%20Food%20Standards-27.06.Accessible.pdf (accessed 9 May 2024).

FSA (2022c), “Food Hygiene Rating Scheme Audit of Display and Business Survey 2021”, Food Standards Agency, available at: https://www.food.gov.uk/our-work/food-hygiene-rating-scheme-audit-of-display-and-business-surveys (accessed 28 November 2024).

FSA (2023a), "FSA research suggests new higher estimates for the role of food in UK illness", Food Standards Agency, available at: https://www.food.gov.uk/news-alerts/ (accessed 9 May 2024).

FSA (2023b), "Food Hygiene Rating Scheme: Guidance for local authorities on implementation and operation – the Brand Standard", Food Standards Agency, available at: https://www.food.gov.uk/local-authorities/guidance-on-implementation-and-operation-of-the-food-hygiene-rating-scheme-the-brand-standard-and-statutory-guidance (accessed 28 November 2024).

FSA (2023c), "Food and You 2 – Wave 6", *Food Standards Agency, FS46756*.

FSA (2024a), "Foodborne disease policy overview", Food Standards Agency, available at: https://www.food.gov.uk/board-papers/foodborne-disease-policy-overview (accessed 23 May 2024).

FSA (2024b), “Achieving Business Compliance (ABC) programme, Food Standards Agency, available at: https://www.food.gov.uk/about-us/achieving-business-compliance-abc-programme (accessed 29 November 2024).

FSS (n.d.), "Food hygiene information scheme (FHIS)", Food Standards Scotland, available at: https://www.foodstandards.gov.scot/business-and-industry/safety-and-regulation/fhis-info-for-businesses (accessed 24 May 2024).

Griffith, C.J. and Motarjemi, Y. (2023), "Chapter 43 - Human factors in food safety management." In: V. Andersen, H. Lelieveld and Y. Motarjemi, eds. *Food Safety Management*. 2nd ed. Academic Press, pp.919-941.

Henson, S., Majowicz, S., Masakure, O., Sockett, P., Jones, A., Hart, R., Carr, D. and Knowles, L., (2006), "Consumer assessment of the safety of restaurants: the role of inspection notices and other information cues", *Journal of Food Safety,* Vol. 26 No. 4, pp. 275-301.

Holst, M.M., Salinas, S., Tellier, W.T. and Wittry, B.C. (2024), "Environmental antecedents of foodborne illness outbreaks, United States, 2017–2019", *Journal of Food Protection*, Vol. 87 No. 7, 100293.

Houghton, J.R., van Kleef, E., Rowe, G. and Frewer, L.J. (2006), "Consumer perceptions of the effectiveness of food risk management practices: A cross-cultural study", *Health, Risk & Society,* Vol. 8 No. 2, pp. 165-183.

Isoni Auad, L., Cortez Ginani, V., Dos Santos Leandro, E., Stedefeldt, E., Costa Santos Nunes, A., Yoshio Nakano, E. and Puppin Zandonadi, R. (2019), "Brazilian food truck consumers' profile, choices, preferences, and food safety importance perception", *Nutrients,* Vol. 11 No. 5, pp. 1175.

Jennings, M. (2021), "*Local authority Recovery Roadmap"*, *Food Standards Agency Board Meeting – 26 May 2021,* available at: https://www.food.gov.uk/sites/default/files/media/document/fsa-21-05-02-local-authority-recovery.pdf

Jensen, K.K. and Sandoe, P. (2002), "Food safety and ethics. The interplay between science and values", *Journal of Agricultural & Environmental Ethics,* Vol. 15 No. 3, pp. 245-253.

Jones, A.K., Cross, P., Burton, M., Millman, C., O'Brien, S.J. and Rigby, D. (2017), "Estimating the prevalence of food risk increasing behaviours in UK kitchens", *PLoS One*, Vol. 12 No. 6, e0175816.

Jones, T.F. and Grimm, K. (2008), "Public knowledge and attitudes regarding public health inspections of restaurants", *American Journal of Preventive Medicine*, Vol. 34 No. 6, pp.510-513.

Knight, A.J., Worosz, M.R. and Todd, E.C.D. (2009), "Dining for safety: Consumer perceptions of food safety and eating out", *Journal of Hospitality & Tourism Research,* Vol. 33 No. 4, pp. 471-486.

Lee, L.E., Niode, O., Simonne, A.H. and Bruhn, C.M. (2012), "Consumer perceptions on food safety in Asian and Mexican restaurants", *Food Control,* Vol. 26 No. 2, pp. 531-538.

Machado Nardi, V.A., Teixeira, R., Ladeira, W.J. and de Oliveira Santini, F. (2020), "A meta-analytic review of food safety risk perception", *Food Control*, Vol. 112, 107089.

Manning, L. (2018), "Triangulation: Effective verification of food safety and quality management systems and associated organisational culture", *Worldwide Hospitality and Tourism Themes*, Vol. 10, No. 3, pp.297-312.

Maugliani, A. and Baldi, F. (2023), "Surveys as a valid tool for assessing food safety knowledge amongst pregnant women in high-income countries: A rapid review", *Reproductive Toxicology*, Vol. 119, 108411.

Murrell, L., Clough, H., Gibb, R., Zhang, X., Green, M., Chattaway, M., Buchan, I., Barr, B. and Hungerford, D. (2024), "Understanding the impact of funding cuts on environmental and regulatory services and gastrointestinal infections: A longitudinal ecological study", *NIHR Open Research*, Vol. 3, p.41.

National Audit Office (2019, "Ensuring food safety and standards", Food Standards Agency, available at: https://www.nao.org.uk/wp-content/uploads/2019/06/Ensuring-food-safety-and-standards.pdf (accessed 28 November 2024).

Our Food (2022), "An annual review of food standards across the UK", *Food Standards Agency and Food Standards Scotland*, available at: https://www.food.gov.uk/sites/default/files/media/document/FS%20AnnualReport2022-accessible_for_web.pdf (accessed 30 May 2024).

Our Food (2023), "An annual review of food standards across the UK", *Food Standards Agency and Food Standards Scotland*.

Poppy, G. (2017), "Chief Scientific Adviser's Science Report. Issue 7: The Food Hygiene Rating Scheme", Food Standards Agency, available at: https://www.food.gov.uk/sites/default/files/media/document/Chief-Scientific-Adviser-report-on-FHRS.pdf (accessed 28 November 2024).

Powell, D.A., Erdozain, S., Dodd, C., Costa, R., Morley, K. and Chapman, B.J. (2013), "Audits and inspections are never enough: A critique to enhance food safety", *Food Control*, Vol. 30 No. 2, pp.686-691.

Redmond, E., Curnin, A., Day, C., Morris, J., Eves, A. and Raats, M. (2018), "Systematic review of the relative proportion of foodborne disease associated with food preparation or handling practices in the home", *Food Standards Agency*, available at: https://www.food.gov.uk/sites/default/files/media/document/foodborne-disease-with-food-preparation-or-handling-review-appendices.pdf (accessed 23 May 2024).

Salis, S., Jabin, N. and Morris, S. (2015), "Evaluation of the impact of the Food Hygiene Rating Scheme and the Food Hygiene Information Scheme on food hygiene standards and food-borne illnesses: Final report", Food Standards Agency, available at: https://e-space.mmu.ac.uk/618918/1/fhrs-fhis-eval2011-14foodborne.pdf (accessed 28 November 2024).

Sameshima, N. and Akamatsu, R. (2023), "A cluster analysis of Japanese consumer perceptions concerning information about the safety of food products", *Food Control*, Vol. 149, 109723.

Tobin, D., Thomson, J. and LaBorde, L. (2012), "Consumer perceptions of produce safety: A study of Pennsylvania", *Food Control,* Vol. 26 No. 2, pp. 305-312.

Uggioni, P.L. and Salay, E. (2014), "Sociodemographic and knowledge influence on attitudes towards food safety certification in restaurants", *International Journal of Consumer Studies,* Vol. 38 No. 4, pp. 318-325.

Ungku Fatimah, U.Z.A., Boo, H.C., Sambasivan, M. and Salleh, R. (2011), “Foodservice hygiene factors—The consumer perspective”, *International Journal of Hospitality Management,* Vol. 30 No. 1, pp. 38-45.

Vainio, A., Kaskela, J., Finell, E., Ollila, S. and Lundén, J. (2020), “Consumer perceptions raised by the food safety inspection report: Does the smiley communicate a food safety risk?”, *Food Control,* Vol. 110, pp. 106976.

Vegeris, S. and Smeaton, D. (2014), "Evaluation of the Food Hygiene Rating Scheme and the Food Hygiene Information Scheme: Process evaluation – final report", Food Standards Agency, available at: https://www.food.gov.uk/sites/default/files/media/document/Stage%202%20Process_evaluation%20final%20report.pdf (accessed 24 May 2024).

Whitworth, J. (2022), "UK reviews COVID and Brexit impact on food standards", Food Safety News, 30 June, available at: https://www.foodsafetynews.com/2022/06/uk-reviews-covid-and-brexit-impact-on-food-standards/ (accessed 29 May 2024).

Worsfold, D. (2006), "Eating out: Consumer perceptions of food safety", *International Journal of Environmental Health Research*, Vol. 16 No. 3, pp.219-229.

Wu, M.-J., Zhao, K., Fils-Aime, F. (2022), “Response rates of online surveys in published research: A meta-analysis”, *Computers in Human Behavior Reports*, Vol. 7, pp. 100206.

Young, I. and Waddell, L. (2016), “Barriers and facilitators to safe food handling among consumers: a systematic review and thematic synthesis of qualitative research studies”, *PloS one*, Vol. 11 No. 12, pp. e0167695.

Zanetta, L.D., Hakim, M.P., Stedefeldt, E., de Rosso, V.V., Cunha, L.M., Redmond, E.C. and da Cunha, D.T. (2022), “Consumer risk perceptions concerning different consequences of foodborne disease acquired from food consumed away from home: A case study in Brazil”, *Food control,* Vol. 133, pp. 108602.