The use of food hygiene rating schemes

Paper 5
Food and You Waves 1-3 secondary analysis

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The use of food hygiene rating schemes

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Summary

- As part of the Food Standards Agency's responsibility for protecting consumers from risks which may arise in connection with the consumption of food, the FSA has identified a number of consumer rights, including 'the right to be protected from unacceptable levels of risk', and 'the right to make choices knowing the facts'. As part of providing consumers with the information they need to make informed choices about where they eat out and purchase their food, the FSA established a standardised national food hygiene rating scheme. The Food Hygiene Rating Scheme (FHRS) in England, Wales and Northern Ireland was formally launched in November 2010, while in Scotland the Food Hygiene Information Scheme (FHIS) was piloted between 2006 and 2008 before being rolled out nationally.
- Despite increasing levels of eating out and consistent levels of concern about hygiene, the evidence shows that awareness of food hygiene rating schemes does not necessarily lead to their use by consumers, and that levels of awareness and use vary between different UK countries. Using data from Waves 2 (2012) and 3 (2014) of the FSA's Food and You survey, this paper looks at consumers' use of food hygiene rating schemes between the different UK countries, investigating whether there has been any change in use over time and what factors might be associated with use of a scheme.
- In 2012, Northern Ireland had the highest levels of reported use of hygiene rating schemes (28%) compared to 13% or less for the other three UK countries. Between 2012 and 2014, there was very little change in levels of use in Northern Ireland, however, use increased significantly in the other countries, with the biggest change observed in Wales (13% in 2012 rising to 35% in 2014). This variation may reflect differences in when and how the schemes have been implemented across the UK.
- Increased awareness of food hygiene when eating out was significantly associated with an increased likelihood of using a hygiene rating scheme. After controlling for awareness and other demographic, socio-economic, health-related and attitudinal factors, both younger men and women (16-34 years) were more likely to use a scheme than older men and women (60+ years) and those living in rural areas were less likely to have used a scheme than those living in urban areas. This may be related to differences in the frequency of eating out that we were unable to control for.
- Factors such as education level, presence of a child aged under 5 in the household, and level of deprivation, were not significantly associated with use of a scheme after controlling for the other variables.
- Levels of awareness, age, gender and rural-urban classification were strongly associated with reported use of the schemes. This suggests that there could be more targeting of promotional activities to promote awareness and use. Qualitative work could examine the interplay of these factors, the interpretation of the different ratings that make up the schemes, and possible conflicting priorities when eating out such as cost and convenience.

01

Introduction

The Food Standards Agency (FSA or 'the Agency') is an independent Government department responsible for food safety and hygiene in England, Wales and Northern Ireland.[1] As part of the Agency's responsibility for protecting public health from risks which may arise in connection with the consumption of food, the Agency has identified a number of consumer rights, including 'the right to be protected from unacceptable levels of risk', and 'the right to make choices knowing the facts', and this includes eating and obtaining food outside the home.[2] Providing consumers with the information they need to make informed choices about where they eat out and purchase their food (for example, through food hygiene rating schemes) is a key part of protecting these consumer rights.

This paper, the fifth in a series based on secondary analysis of Waves 1-3 of the FSA's Food and You survey,[3] focuses on the factors that may drive the use of food hygiene rating schemes by consumers.

In the UK, local authorities are responsible for carrying out inspections of food businesses to check that they meet the requirements of food hygiene law. Prior to 2008, a number of local authorities made food hygiene inspection ratings available to the public through schemes that were generally known as 'Scores on the Doors'. However, there was variation between these schemes in terms of format and the extent to which they were adopted by local authorities. Following an evaluation of Scores on the Doors in 2008, the FSA decided to establish a standardised national Food Hygiene Rating Scheme (FHRS) in England, Wales and Northern Ireland, while in Scotland work was already underway to develop and implement a similar scheme known as the Food Hygiene Information Scheme (FHIS). FHRS, which is based on a six-point 0-5 scale, was formally launched in November 2010, and FHIS in Scotland, which is based on a 'pass'/'improvement required' system, was piloted between 2006 and 2008 before being rolled out nationally. As part of the schemes, food businesses are provided with a sticker (and until recently a certificate) showing the rating (or 'pass' for FHIS), which can be displayed inside the premises, and results are also made available to the public via the FSA

[1] The FSA was previously the body for food safety across the UK. In April 2015, its responsibilities in Scotland were transferred to the new independent Scottish food safety body, Food Standards Scotland (FSS). This research was commissioned prior to this change, and is based on data from Waves 1-3 of the FSA's Food and You survey, which was undertaken across the UK. For the purposes of this research, analysis and findings therefore relate to aggregate UK-level data.

[2] Food Standards Agency (2015) Strategic Plan 2015-20 https://www.food.gov.uk/sites/default/files/FSA%20strategy%20document%202015-2020_April%202015_interactive%20(2).pdf

[3] The topics of these papers were developed in consultation with leading academics in the fields of food and social science research, as well with reference to the FSA's own policy-, science- and consumer-engagement-related priorities.

and Food Standards Scotland (FSS) websites. While display of food hygiene rating stickers at food outlets is currently voluntary in England and Scotland, it has been mandatory in Wales since November 2013, and mandatory display is expected to be introduced in Northern Ireland in October 2016.

Both schemes are run by local authorities in partnership with the FSA and FSS, with the aims of bringing greater transparency to findings of the statutory hygiene inspections, providing consumers with information to make informed choices, working with food businesses to drive up hygiene standards, and ultimately reducing the risk of exposure to foodborne illness. Achieving maximum impact from the schemes depends on the assumption that consumers are concerned about food hygiene when eating out, are aware of the ratings schemes and will use them when deciding where to eat, and that this in turn acts as a drive for businesses to improve compliance.[4]

Encouraging the use of the ratings schemes is important, particularly given wider contextual trends. These show that, while in the UK there appears to have been a small decrease in expenditure on eating out in the short term (2011-2014),[5] eating out across a range of establishments (including restaurants, cafes, pubs and fast food outlets) appears to be increasing over the longer term.[6] Over a similar period, food hygiene when eating out has consistently been reported as the top food-safety-related concern by consumers, with around 35-40% of people reporting concern about the issues between 2010 and 2015.[7]

Despite increasing levels of eating out and consistent levels of concern about hygiene, evidence indicates that consumers still tend to rely on methods other than food hygiene rating schemes as their main source of evidence about hygiene standards. For example, Wave 10 (May 2015) of the FSA's biannual Public Attitudes Tracker showed that while 83% of respondents reported being aware of the hygiene standards in the places they ate out at or bought food from, less than half of these respondents said that that they knew about standards from the hygiene certificate (46%) and hygiene sticker (32%), with general appearance of premises (61%) and appearance of staff (46%) being more likely sources of information.[6] Evidence also suggests that awareness of the schemes does not always lead to use. Data from Wave 3 of the Food and You survey, for example, showed that while 76% of people said they recognised a hygiene sticker or certificate (when shown the image), only 20% of people reported having used such a scheme to check the hygiene standards of an establishment before eating there in the previous 12 months.[8]

[4] Vegeris S. (2014) The Food Hygiene Rating Scheme and the Food Hygiene Information Scheme: Evaluation findings 2011-2014. Report for the Food Standards Agency. https://www.food.gov.uk/sites/default/files/fhrs-fhis-eval2011-14.pdf

[5] Defra (2015) Family Food 2014. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/485982/familyfood-2014report-17dec15.pdf

[6] Cheng S-L., Olsen W., Southerton D., Warde A. (2007) The changing practice of eating: evidence from UK time diaries, 1975 and 2000. *British Journal of Sociology* 58: 39-61.

[7] Food Standards Agency (2016) Biannual Public Attitudes Tracker: Wave 10, May 2015. https://www.food.gov.uk/sites/default/files/public-attitudes-tracker-may-15.pdf (Wave 10 is the most recent wave for which a UK-wide sample was collected and reported on).

[8] Food Standards Agency (2014) The 2014 Food and You Survey: UK Bulletin 3 – eating outside the home. http://www.food.gov.uk/sites/default/files/food-and-you-2014-uk-bulletin-3_0.pdf

Nevertheless, levels of public awareness of the schemes do appear to have risen over recent years, with the Public Attitudes Tracker showing an increase from 19% to 33% in people saying they had seen or heard about any food hygiene rating scheme between November 2011 and May 2014. However, there is variation in levels of awareness between the different UK countries, with 52% of respondents in Wales reporting awareness of FHRS, compared to Northern Ireland (38%) and England (35%), and 14% of respondents in Scotland reporting awareness of FHIS. Recognition of the schemes was generally much higher when respondents were shown the sticker/certificate for each scheme, but again there was considerable variation between countries, with 84% of respondents in Northern Ireland reporting having seen FHRS, compared to Wales (73%) and England (68%), and 54% of respondents in Scotland reporting having seen FHIS.[9]

In order to investigate the use of food hygiene rating schemes further, this paper sets out to use data from the Food and You survey. As a robust random-population survey, with a wide range of contextual information, Food and You provides a number of opportunities to conduct secondary analysis. Previous secondary analysis of data from Wave 2 (2012), when questions about food hygiene schemes were first asked, found that consumers were less likely to report actually using food hygiene rating schemes than they were to report valuing a good hygiene rating (in line with the findings noted above), and also that reported use of a scheme was not related to how safe people thought eating out to be compared to eating at home.[10] Beyond these findings, however, there has been little other in-depth analysis of the FHRS-related data from the Food and You survey, and of what it can tell us about awareness and the use of the FHRS/FHIS schemes when eating out and what might influence this.

The completion of Wave 3 of the Food and You survey provides an opportunity to conduct analysis with a larger sample size, as well as to track changes over time. This analysis therefore sets out to examine any changes in the use of food hygiene rating schemes between Wave 2 (2012) and Wave 3 (2014), and to consider in more detail the factors that may be associated with consumers' use of the schemes, particularly demographic and socio-economic factors, and country of residence, before moving on to discuss how variation between countries may be related to the different ways in which schemes have been implemented in each country.

As the basis for its analysis, this paper adopts the following research questions:

1. Has usage of hygiene rating schemes changed over time, and how does this vary by country of residence?
2. What are the factors that increase the likelihood of using hygiene rating schemes?

[9] Food Standards Agency (2016) Biannual Public Attitudes Tracker: Wave 8, May 2014. https://www.food.gov.uk/sites/default/files/multimedia/pdfs/science-research/tracker-may2014.pdf (Wave 8 is the most recent Wave for which questions relating to FHRS/FHIS were asked across the UK. From Wave 9 onwards questions were asked as part of separate FHRS Tracker survey, which did not include respondents in Scotland).

[10] At Wave 3, an additional bilingual Welsh-language version of the FHRS sticker, as used in Wales, was shown to respondents.

02

About the data and analysis

This study is based on secondary analysis of data generated by the FSA's Food and You survey, a biennial, random probability, cross-sectional survey of adults living in private households. Three waves of the survey have been completed to date across the UK (in 2010, 2012 and 2014). The survey includes a range of questions about reported behaviour, attitudes and knowledge relating to food and food-safety-related issues, along with a range of demographic and socio-economic variables, and other household information.

This analysis only includes data from Waves 2 and 3 of Food and You, as fieldwork for Wave 1 took place prior to the official launch of FHRS and therefore no questions about the schemes could be included in the questionnaire. At Waves 2 and 3, participants were shown a list of factors and asked what was important to them when deciding where to eat out. Participants were also shown images of certificates and stickers for the Scottish Food Hygiene Information Scheme (FHIS), and the Food Hygiene Rating Scheme (FHRS) as used in England, Wales and Northern Ireland, and asked if they had ever seen any of these before.[11] If they replied that they had, respondents were asked if they had used any of these in the previous 12 months to check an establishment's hygiene standards before deciding to visit.

It was hypothesised that eating out would be strongly correlated with the use of a hygiene rating scheme. This was controlled for using the response option 'I never eat out at all' to the question:

> ***'Generally, when you're deciding where to eat out, which of the following are important to you?'***

A small proportion (4.2% of 6684) selected this option, and this group was compared to those who did report eating out, by wave, age, gender and whether respondents lived in urban or rural areas. As no statistically significant differences were found, and as the number of respondents who never ate out and used a hygiene rating scheme was small (n = 229), we decided to remove these cases from the analysis.

[11] At Wave 3, an additional bilingual Welsh-language version of the FHRS sticker, as used in Wales, was shown to respondents.

03

The use of food hygiene rating schemes by wave

Table 1 shows that the use of hygiene rating schemes overall has increased between 2012 and 2014.

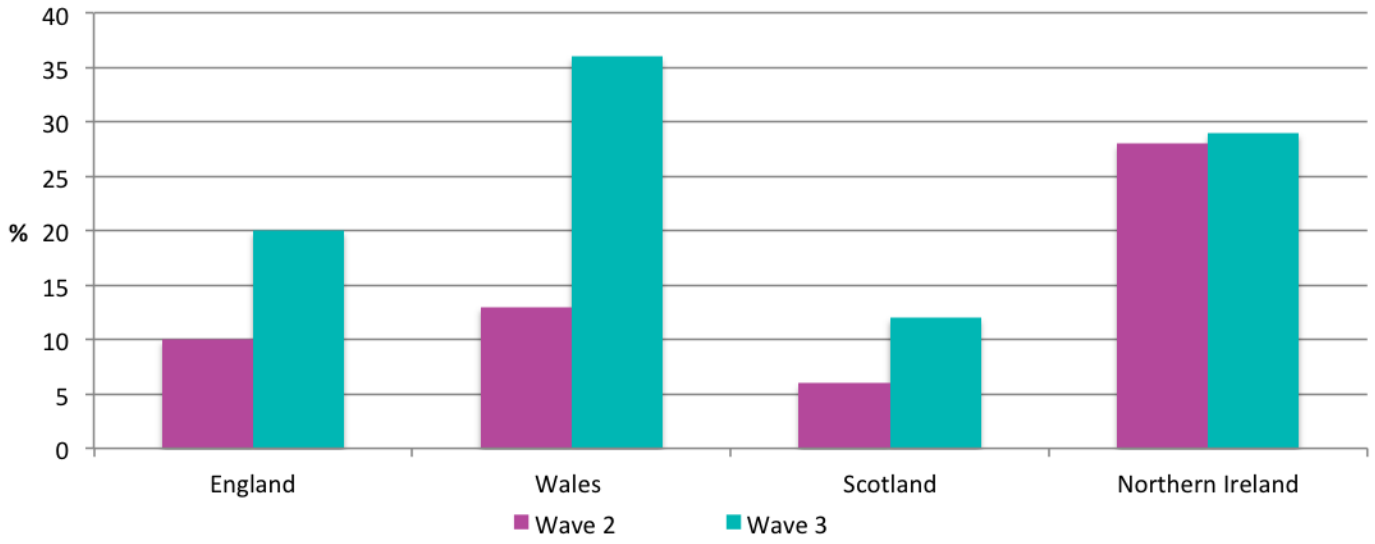
As discussed in the introduction, there have been differences in the way different UK countries have implemented their schemes. Figure 1 shows that an increase in the use of hygiene rating schemes was recorded in all countries, although the increase was very small (and not statistically significant) in Northern Ireland which already had the highest rate of use at Wave 2. The biggest change between Waves 2 and 3 was observed in Wales (13% rising to 35%). Of the four countries, Wales also saw the highest levels of reported use of a scheme at Wave 3. Scotland had the lowest levels of usage in both waves.

Table 1 Use of a food hygiene rating scheme by wave

	Survey wave	
	Wave 2 (2012)	**Wave 3 (2014)**
	%	%
Used hygiene rating scheme in the last 12 months	10	21
Bases	*3097*	*3304*

p<0.001 chi-squared

Figure 1: Use of hygiene rating scheme by country and wave



Appendix Table A1

04

Awareness of food hygiene standards and other factors in the use of food hygiene rating schemes

We hypothesised that awareness of food hygiene standards when eating out would be strongly associated with use of a scheme. Participants were asked:

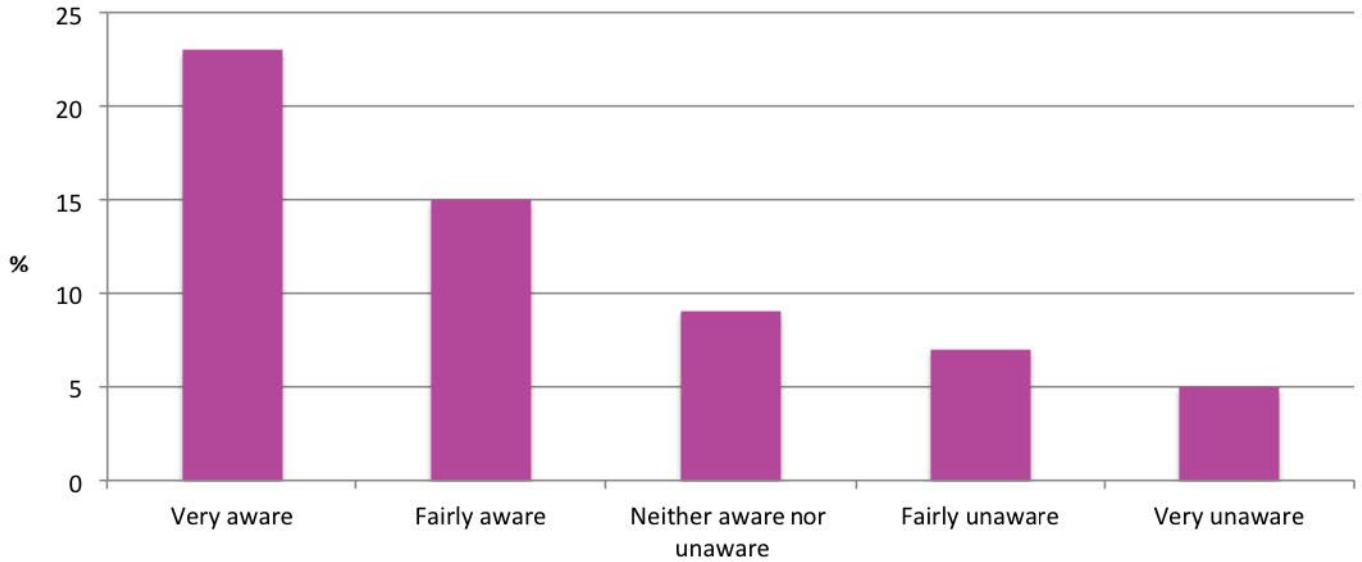
> ***'When you eat out, at places such as at restaurants, cafes, pubs and takeaways, or buy food to take home to eat from supermarkets or shops, how aware would you say you generally are about their standards of hygiene?'***

Figure 2 shows the percentage of participants who reported using a scheme in the last 12 months for each level of awareness.

As we expected, an increased awareness of food hygiene when eating out was significantly associated with an increased likelihood of using a hygiene rating scheme.

We have already seen that both country and wave were significantly associated with levels of use of a rating scheme. Bivariate analysis using logistic regression was used to measure

Figure 2 Percentage of those who reported using a food hygiene rating scheme in the previous 12 months, by level of awareness of food hygiene standards when eating out (Waves 2 and 3 combined)



Appendix Table A2

the relationship between use of a scheme and other socio-economic, demographic, health and attitudinal factors separately. The full list of variables tested for relationship can be found in Appendix Table A3. Those that were significantly associated with the use of a rating scheme were:

- age and gender (interaction),
- rural-urban classification,
- region,
- country and wave (interaction),
- household size,
- presence of a child aged under 5 in the household,
- marital status,
- housing tenure,
- work status,
- education,
- level of area deprivation, and
- attitude to whether food eaten out is safer than food eaten at home.

Appendix Table A4

We expected that different levels of awareness of hygiene standards might explain the relationship between some of the socio-economic and demographic factors, and use of a scheme.

We therefore carried out multiple regression to identify those factors that remained associated with using a scheme after controlling for awareness. Level of education was the only factor that was no longer a significant predictor of scheme usage once awareness was controlled for (Appendix Table A5), meaning that awareness of the hygiene standards seemed to explain the difference in educational level in the use of a scheme observed in the bivariate analysis.

We then carried out multiple regression that controlled for all the socio-economic, demographic, health-related and attitudinal factors. Even after controlling for these factors, the following were found to still be associated with use of a scheme:

- Age and gender: for both male and female respondents, younger people (16-34 years) were more likely to use a scheme than older people (60+ years).
- Country and wave[12]: at Wave 2, people living in England or Scotland were less likely than people living in Wales to use a scheme, and people in Northern Ireland were more likely to use a scheme than people in Wales. Between Waves 2 and 3, the only statistically significant change that was observed was for Wales, where people were 4.5 times more likely to report using a scheme at Wave 3 than at Wave 2. The increases in use of a scheme in England and Scotland were too small to be detected by a statistical test with the achieved sample size.

[12] *Region* was not including in the multiple logistic regression model due to collinearity with the *Country* variable.

- Rural-urban classification: those living in rural areas were less likely to have used a scheme than those living in urban areas (0.6 times lower odds).

The variables of household size, presence of a child aged under 5 in the household, education, work status, level of deprivation, having a disability or long-standing illness, and considering food eaten out to be safer than food eaten at home were no longer found to be significantly associated with use of a scheme after controlling for the other variables.

Appendix Table A6

05

Discussion

This analysis shows that reported levels of use of the food hygiene schemes have risen over time, but that there are marked differences between countries, as was seen in the Public Attitudes Tracker data, with higher levels of reported use in Northern Ireland and Wales. The largest increase between 2012 and 2014 was seen in Wales. This variation between countries may reflect differences in when and how the schemes have been implemented across the UK. As noted in the introduction, display of food hygiene rating stickers at food outlets has been mandatory in Wales since November 2013, unlike in Northern Ireland, England and Scotland, where display remains voluntary. The significant increase in reported use of the scheme in Wales may therefore reflect the introduction of mandatory display between Waves 2 and 3 of the survey.

While the display of hygiene ratings is still currently voluntary in Northern Ireland, mandatory display is expected to be introduced in October 2016, and future waves of Food and You may be able to determine whether the pattern of increased use that was observed in Wales is replicated in another country. Comparison, however, will be complex, due to other differences in how schemes have been implemented between countries. In Northern Ireland the initial launch of FHRS was accompanied by a high level of promotional activity, including TV advertising. Based on 2013 data, Northern Ireland has also seen a higher level of display of ratings (57% of businesses), compared to England (52%) and Wales (47%) (due to differences between FHRS and FHIS the equivalent comparison cannot be made with Scotland).[4] While the promotional campaign appears to have been successful in Northern Ireland, it is not clear whether replicating the level of promotional activity in other countries would produce the same results. This needs further examination ~~h~~as it has important implications for any future promotional activities in the different countries.

Levels of awareness of hygiene standards were strongly associated with reported use of the schemes, and associations were also found with age, gender and rural-urban classification. This suggests that there could be more targeting of promotional activities to promote awareness and use. However, doing so could be improved by undertaking further qualitative investigation to achieve a more nuanced understanding of the ways in which people make sense of such schemes (as suggested in the final evaluation report of the FHRS and FHIS schemes).[4] That evaluation included a qualitative component (focus groups) to examine the assumption in the theory of change that increased awareness would lead to increased use and the findings generally supported this. Even when participants were aware of the schemes, these were considered alongside many other factors including the type of food, cost, convenience, the time of day, the occasion, and eating companions. Further qualitative work could examine the interplay of these factors and the interpretation of the different ratings in the FHRS as some participants were uncertain as to their meaning.

One additional factor that may be related to use of food hygiene ratings, and which may explain associations such as age and rural-urban classification, is the frequency of eating out. As noted above, we were limited in our ability to control for this by the questions that had been included in the survey, and we were

only able to exclude those who reported that they never ate out at all. While Food and You has included a measure of frequency of eating out, the question is only asked about the previous seven days, and it was thought that this time period would be too susceptible to variation to provide an accurate measure of frequency of eating out at an individual level. It may be possible to revisit this issue in further detail at future waves of Food and You, as a new question has been developed for Wave 4 (2016), which asks respondents to assess more generally the frequency with which they eat out.

Appendix

Table A1 Proportion and number of respondents in each country who said they used a food hygiene rating scheme in last 12 months by wave

	Wave 2		Wave 3	
	n	%	n	%
England	263	10	549	20
Wales	20	13	55	36
Scotland	17	6	33	12
Northern Ireland	25	28	26	29

Table A2 Proportion and number of respondents who had used a food hygiene rating scheme in last 12 months by level of awareness of food hygiene standards when eating out (Waves 2 and 3 combined)

	Use of scheme in last 12 months	
	n	%
Very aware	404	23
Fairly aware	447	15
Neither aware nor unaware	67	9
Fairly unaware	62	7
Very unaware	10	5

significant difference at p<0.001 level

Table A3 Variables tested for relationship with the use of a food hygiene rating scheme

Factor	Category	N (excluding those who never eat out	%
Age*Sex	Male 16-34 (ref)	616	9.6
	Male 35-64	1390	21.7
	Male 65+	667	10.4
	Female 16-34	914	14.3
	Female 35-64	1888	29.5
	Female 65+	926	14.5
Country	Wales (ref)	572	8.9
	England	3910	61.1
	Scotland	935	14.6
	Northern Ireland	984	15.4
Wave	Wave 2: 2012 (ref)	3097	48.4
	Wave 3: 2014	3304	51.6
Household size	1 person (ref)	1869	29.2
	2 people	2334	36.5
	3 or 4 people	1786	27.9
	5 or more	412	6.4
Region	North East (ref)	264	4.1
	North West	549	8.6
	Yorkshire and The Humber	413	6.5
	East Midlands	351	5.5
	West Midlands	437	6.8
	East of England	459	7.2
	London	424	6.6
	South East	630	9.8
	South West	383	6.0
	Wales	572	8.9
	Scotland	935	14.6
	Northern Ireland	984	15.4
Rural-urban classification	Urban (ref)	5301	82.8
	Rural	1100	17.2

Table A3 Variables tested for relationship with the use of a food hygiene rating scheme (cont.)

Highest educational qualification	Degree or higher (ref)	1594	24.9
	Other	4807	75.1
Tenure	Owner occupier (ref)	4144	64.7
	The rest	2095	32.7
	Missing	162	2.5
Work status	In work (ref)	3268	51.1
	Retired	1793	28.0
	Unemployed	349	5.5
	Other	991	15.5
At least one child aged under age 5 in the household	No (ref)	5664	88.5
	Yes	737	11.5
Socio-economic status (NS-SEC)	Managerial/ Professional (ref)	2339	36.5
	Intermediate	1333	20.8
	Routine/Manual	2407	37.6
	Not classifiable/ Never worked	322	5.0
Marital status	Married/living as married (ref)	2864	44.7
	Single/widowed/ divorced/separated	3537	55.3
Ethnicity	White (ref)	5888	92.0
	Black, Asian and Other	402	6.3
	Missing	111	1.7
Religion	Christian (ref)	4273	66.8
	Non-Christian	287	4.5
	No religion	1771	27.7
	Missing	70	1.1
General health	Very good/ Good (ref)	5017	78.4
	Fair	1079	16.9
	Bad/Very bad	305	4.8

Table A3 Variables tested for relationship with the use of a food hygiene rating scheme (cont.)

Respondent has a disability/long standing illness	Yes (ref)	1321	20.6
	No	5080	79.4
Index of Multiple Deprivation (quintiles)	1 (Least deprived) (ref)	1227	19.2
	2	1239	19.4
	3	1386	21.7
	4	1304	20.4
	5 (Most deprived)	1245	19.5
Equivalised income group	1 (Lowest 20%) (ref)	1183	18.5
	2	749	11.7
	3	1154	18.0
	4	1009	15.8
	5 (Highest 20%)	1028	16.1
	Missing	1278	20.0
Awareness of hygiene standards when eating out	Very aware (ref)	2018	31.5
	Fairly aware	2848	44.5
	Neither aware nor unaware	656	10.2
	Fairly unaware	702	11.0
	Very unaware	177	2.8
Ever had food poisoning?	Yes (ref)	2378	35.6
	No	3966	59.3
	Don’t know	340	5.1
When eating out, how safe is the food compared to at home?	More safe (ref)	383	6.0
	The same	2785	43.5
	Less safe	2906	45.4
	Spontaneous	223	3.5
	Don't know	104	1.6

Table A4 Odds ratios estimated using simple logistic regression models predicting use of a food hygiene rating scheme (unadjusted estimates)

Variables tested for relationship with use of a food hygiene rating scheme		Estimates of unadjusted odds ratios (OR) and 95% confidence intervals (C.I.)[a]		
		OR	95% C.I.	
			Lower	Upper
Demographic/ socio-economic	**Country*wave**	**P<0.01[b]**		
	Wales at wave 2 (ref)	1.00		
	England at wave 2 (comp. to Wales wave 2)	0.71	0.38	1.31
	Scotland at wave 2 (comp. to Wales wave 2)	0.44	0.21	0.92
	Northern Ireland at wave 2 (comp. to Wales wave 2)	2.52	1.33	4.77
	Wales at wave 3 (comp. to Wales wave 2)	3.66	1.94	6.87
	England at wave 3 (comp. to England wave 2)	0.65	0.33	1.27
	Scotland at wave 3 (comp. to Scotland wave 2)	0.56	0.24	1.30
	Northern Ireland at wave 3 (comp. to NI wave 2)	0.29	0.14	0.58
	Region	**P<0.01**		
	North East (ref)	1.00		
	North West	0.71	0.46	1.09
	Yorkshire and The Humber	1.11	0.71	1.71
	East Midlands	0.76	0.47	1.24
	West Midlands	0.68	0.43	1.08
	East of England	0.43	0.26	0.71
	London	0.76	0.47	1.23
	South East	0.45	0.29	0.73
	South West	0.54	0.33	0.90
	Wales	0.65	0.81	1.89
	Scotland	0.39	0.25	0.60
	Northern Ireland	1.51	1.02	2.20

Table A4 Odds ratios estimated using simple logistic regression models predicting use of a food hygiene rating scheme (unadjusted estimates) (cont.)

	Age*Sex	**P<0.01**		
	Male 16-34 (ref)	1.00		
	Male 35-64	0.77	0.57	1.06
	Male 65+	0.43	0.29	0.64
	Female 16-34	1.09	0.78	1.52
	Female 35-64	0.64	0.48	0.87
	Female 65+	0.21	0.14	0.33
	Household size	**P<0.01**		
	1 person (ref)	1.00		
	2 people	1.24	0.99	1.56
	3 or 4 people	1.71	1.35	2.15
	5 or more people	1.71	1.18	2.48
	At least one child aged under 5 in the household	**P<0.01**		
	No (ref)	1.00		
	Yes	1.54	1.20	1.97
	Rural-urban classification	**P<0.01**		
	Urban (ref)	1.00		
	Rural	0.62	0.48	0.80
	Ethnicity	**P=0.05**		
	White (ref)	1.00		
	Other	1.41	1.01	1.98
	Missing	0.63	0.32	1.26
	Religion	**P=0.20**		
	Christian (ref)	1.00		
	Non-Christian	1.39	0.93	2.05
	No religion	1.11	0.91	1.36
	Missing	1.94	0.70	5.38
	Marital status	**P<0.01**		
	Married/ living as married (ref)	1.00		
	Single/widowed/divorced/ separated	1.36	1.14	1.63

Table A4 Odds ratios estimated simple logistic regression models predicting use of a food hygiene rating scheme (unadjusted estimates) (cont.)

	Tenure	**P<0.01**		
	Owner-occupier (ref)	1.00		
	The rest	1.66	1.38	2.00
	Missing	1.63	0.91	2.94
	Work status	**P<0.01**		
	In work (ref)	1.00		
	Retired	0.39	0.31	0.50
	Unemployed	1.02	0.65	1.60
	Other	0.91	0.66	1.26
	Highest educational qualification	**P<0.05**		
	Degree or higher (ref)	1.00		
	Other	1.24	1.00	1.53
	Quintiles of IMD score (Index of Multiple Deprivation)	**P<0.01**		
	1 (Least deprived) (ref)	1.00		
	2	1.27	0.94	1.71
	3	1.36	1.02	1.82
	4	1.35	0.99	1.85
	5 (Most deprived)	1.80	1.34	2.41
	Equivalised income quintile	**P=0.33**		
	1 (Lowest 20% of equivalised income) (ref)	1.00		
	2	1.03	0.74	1.43
	3	0.88	0.66	1.18
	4	0.75	0.55	1.01
	5 (Highest 20% of equivalised income)	0.83	0.62	1.11
	Missing	0.82	0.60	1.11
	Socio-economic status (NS-SEC)	**P=0.12**		
	Managerial/Professional (ref)	1.00		
	Intermediate	1.24	0.97	1.59
	Routine/Manual	1.23	1.00	1.51
	Not classifiable/Never worked	1.44	0.89	2.33

Table A4 Odds ratios estimated using multiple logistic regression model predicting use of a food hygiene rating scheme (unadjusted estimates) (cont.)

Health-related	**Disability/long-lasting illness**	**P=0.07**		
	Yes (ref)	1.00		
	No	1.24	0.98	1.58
	Ever had food poisoning?	**P=0.63**		
	Yes (ref)	1.00		
	No	0.99	0.82	1.19
	Missing	0.81	0.53	1.24
	Self-reported health	**P=0.77**		
	Very good/good (ref)	1.00		
	Fair	0.94	0.73	1.19
	Bad/very bad	0.89	0.59	1.35
Attitudinal	**Consider food eaten out safer than food eaten at home?**	**P<0.05**		
	More safe (ref)	1.00		
	The same	0.70	0.48	1.03
	Less safe	0.87	0.60	1.26
	Spontaneous	0.67	0.36	0.90
	Don't know	0.20	0.06	0.88
	Awareness of food hygiene standards when eating out	**P<0.01**		
	Very aware (ref)	1.00		
	Fairly aware	0.59	0.48	0.72
	Neither aware nor unaware	0.33	0.22	0.51
	Fairly unaware	0.26	0.18	0.39
	Very unaware	0.18	0.08	0.37

[a] The results are presented in the form of ORs, which here indicate the relative odds of using a food hygiene rating scheme for one group compared to the reference group. If the value is greater than one, the odds of the outcome occurring are greater for the given group compared to the reference group. Conversely, a value less than one indicates the odds of the outcome occurring are lower for the given group compared with the reference category. Confidence intervals (CI) at the 95% level mean that if the same population is sampled on numerous occasions and interval estimates are made on each occasion, the resulting intervals would bracket the true population rate in approximately 95% of the cases. A CI includes information about the uncertainty associated with an estimate.

[b] If the factor is significant (that is, if the overall p-value for a variable less than 0.05) we then look at the p-values for each of the categories within the factor. If the p-value for a category is less than 0.05 (underlined values) then the category is significantly different from the reference category.

Table A5 Odds ratios for education level as a predictor of use of food hygiene rating schemes adjusted for awareness of hygiene standards when eating out

	Estimates of adjusted odds ratios (OR) and 95% confidence intervals (C.I.)[a]		
	OR	95% C.I.	
		Lower	Upper
Highest educational qualification	**P<0.27[b]**		
Degree or higher (ref)	1.00		
Other	1.13	0.91	1.40

[a] The results are presented in the form of ORs, which here indicate the relative odds of using a food hygiene rating scheme for one group compared to the reference group. If the value is greater than one, the odds of the outcome occurring are greater for the given group compared to the reference group. Conversely, a value less than one indicates the odds of the outcome occurring are lower for the given group compared with the reference category. Confidence intervals (CI) at the 95% level mean that if the same population is sampled on numerous occasions and interval estimates are made on each occasion, the resulting intervals would bracket the true population rate in approximately 95% of the cases. A CI includes information about the uncertainty associated with an estimate.
[b] If the factor is significant (that is, if the overall p-value for a variable less than 0.05) we then look at the p-values for each of the categories within the factor. If the p-value for a category is less than 0.05 (underlined values) then the category is significantly different from the reference category.

Table A6 Odds ratios estimated using multiple logistic regression model predicting use of a food hygiene rating scheme (adjusted estimates)

Variables associated with scheme use bilaterally and entered in the model as predictors of FHR use		Estimates of adjusted odds ratios (OR) and 95% confidence intervals (C.I.)[a]		
		OR	95% C.I.	
			Lower	Upper
Socio-economic/ demographic	**Country*wave**	**P<0.01[b]**		
	Wales at wave 2 (ref)	1.00		
	England at wave 2 (comp. to Wales wave 2)	0.71	0.36	1.39
	Scotland at wave 2 (comp. to Wales wave 2)	0.41	0.19	0.90
	Northern Ireland at wave 2 (comp. to Wales wave 2)	2.71	1.37	5.39
	Wales at wave 3 (comp. to Wales wave 2)	4.52	2.28	8.98
	England at wave 3 (comp. to England wave 2)	2.52	0.62	10.24
	Scotland at wave 3 (comp. to Scotland wave 2)	2.23	0.46	10.71
	Northern Ireland at wave 3 (comp. to NI wave 2)	0.96	0.22	4.13

Table A6 Odds ratios estimated using multiple logistic regression model predicting use of a food hygiene rating scheme (adjusted estimates) (cont.)

	Age*Sex	**P<0.01**		
	Male 16-34 (ref)	1.00		
	Male 35-64	0.85	0.59	1.21
	Male 65+	0.56	0.32	0.99
	Female 16-34	1.04	0.73	1.49
	Female 35-64	0.61	0.44	0.86
	Female 65+	0.26	0.14	0.45
	Household size	**P=0.05**		
	1 person (ref)	1.00		
	2 people	1.48	1.11	1.98
	3 or 4 people	1.47	1.07	2.01
	5 or more people	1.5	0.96	2.33
	At least one child aged under 5 in the household	**P=0.36**		
	No (ref)	1.00		
	Yes	1.16	0.84	1.59
	Rural-urban classification	**P<0.01**		
	Urban (ref)	1.00		
	Rural	0.62	0.46	0.83
	Ethnicity	**P=0.92**		
	White (ref)	1.00		
	Other	0.99	0.66	1.49
	Missing	1.17	0.55	2.49
	Religion	**P=0.51**		
	Christian (ref)	1.00		
	Non-Christian	0.97	0.59	1.58
	No religion	0.90	0.71	1.13
	Missing	1.99	0.64	6.19
	Marital status	**P<0.05**		
	Married/ living as married (ref)	1.00		
	Single/widowed/divorced/ separated	1.27	1.01	1.61

Table A6 Odds ratios estimated using multiple logistic regression model predicting use of a food hygiene rating scheme (adjusted estimates) (cont.)

	Tenure	**P=0.06**		
	Owner-occupier (ref)	1.00		
	The rest	1.33	1.04	1.71
	Missing	1.33	0.72	2.48
	Work status	**P=0.13**		
	In work (ref)	1.00		
	Retired	0.64	0.45	0.93
	Unemployed	1.02	0.65	1.60
	Other	0.91	0.66	1.26
	Highest educational qualification	**P=0.17**		
	Degree or higher (ref)	1.00		
	Other	1.20	0.93	1.55
	Quintiles of IMD score (Index of Multiple Deprivation)	**P=0.53**		
	1 (Least deprived) (ref)	1.00		
	2	1.27	0.93	1.73
	3	1.11	0.81	1.51
	4	1.00	0.72	1.39
	5 (Most deprived)	1.12	0.81	1.55
	Equivalised income quintile	**P=0.63**		
	1 (Lowest 20% of equivalised income) (ref)	1.00		
	2	1.02	0.70	1.47
	3	1.14	0.80	1.61
	4	0.90	0.62	1.30
	5 (Highest 20% of equivalised income)	1.16	0.80	1.69
	Missing	0.94	0.67	1.33
	Socio-economic status (NS-SEC)	**P=0.74**		
	Managerial/Professional (ref)	1.00		
	Intermediate	1.10	0.84	1.44
	Routine/Manual	0.95	0.73	1.23
	Not classifiable/Never worked	0.91	0.52	1.59

Table A6 Odds ratios estimated using multiple logistic regression model predicting use of a food hygiene rating scheme (adjusted estimates) (cont.)

Health-related	**Disability/long-lasting illness**	**P=0.49**		
	Yes (ref)	1.00		
	No	1.11	0.82	1.51
	Ever had food poisoning?	**P=0.65**		
	Yes (ref)	1.00		
	No	1.00	0.82	1.22
	Missing	0.82	0.52	1.28
	Self-reported health	**P=0.57**		
	Very good/good (ref)	1.00		
	Fair	1.16	0.88	1.52
	Bad/very bad	1.06	0.63	1.78
Attitudinal	**Consider food eaten out safer than food eaten at home?**	**P=0.10**		
	More safe (ref)	1.00		
	The same	0.79	0.52	1.19
	Less safe	0.94	0.63	1.40
	Spontaneous	0.76	0.40	1.45
	Don't know	0.26	0.08	0.88
	Awareness of food hygiene standards when eating out	**P<0.01**		
	Very aware (ref)	1.00		
	Fairly aware	0.49	0.40	0.61
	Neither aware nor unaware	0.25	0.16	0.38
	Fairly unaware	0.20	0.13	0.30
	Very unaware	0.14	0.06	0.30

[a] The results are presented in the form of ORs, which here indicate the relative odds of using a food hygiene rating scheme for one group compared to the reference group. If the value is greater than one, the odds of the outcome occurring are greater for the given group compared to the reference group. Conversely, a value less than one indicates the odds of the outcome occurring are lower for the given group compared with the reference category. Confidence intervals (CI) at the 95% level mean that if the same population is sampled on numerous occasions and interval estimates are made on each occasion, the resulting intervals would bracket the true population rate in approximately 95% of the cases. A CI includes information about the uncertainty associated with an estimate.

[b] If the factor is significant (that is, if the overall p-value for a variable less than 0.05) we then look at the p-values for each of the categories within the factor. If the p-value for a category is less than 0.05 (underlined values) then the category is significantly different from the reference category.

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