Chief Scientific Adviser's
Science Report

Issue seven: The Food Hygiene Rating Scheme

Food
Standards
Agency
food.gov.uk

"The Food Hygiene Rating Scheme (FHRS) has been a significant development for food safety and one which has delivered tangible benefits for consumers across the country. The scheme has empowered people, helping them choose to eat in places with higher ratings. This in turn has pushed restaurants and other food businesses to drive up hygiene standards to attract more customers.

In September 2017, 67% of businesses with a rating were achieving the top standard of '5 – very good'. Since the introduction of mandatory display of FHRS in Wales, businesses with a rating of 5 have gone up by 21 percentage points.

This progress has been good to see. I am particularly encouraged that our research has linked higher ratings to lower levels of microbes found in food businesses, ultimately lowering the risk to consumers from foodborne illness.

Mandatory display of hygiene ratings has been a success in Wales and Northern Ireland and I am pleased that the FSA remains committed to seeing these benefits also realised in England. This will be good for consumers and good for businesses achieving high standards. It will also be an added incentive for businesses with poorer standards to improve."

Professor Guy Poppy,
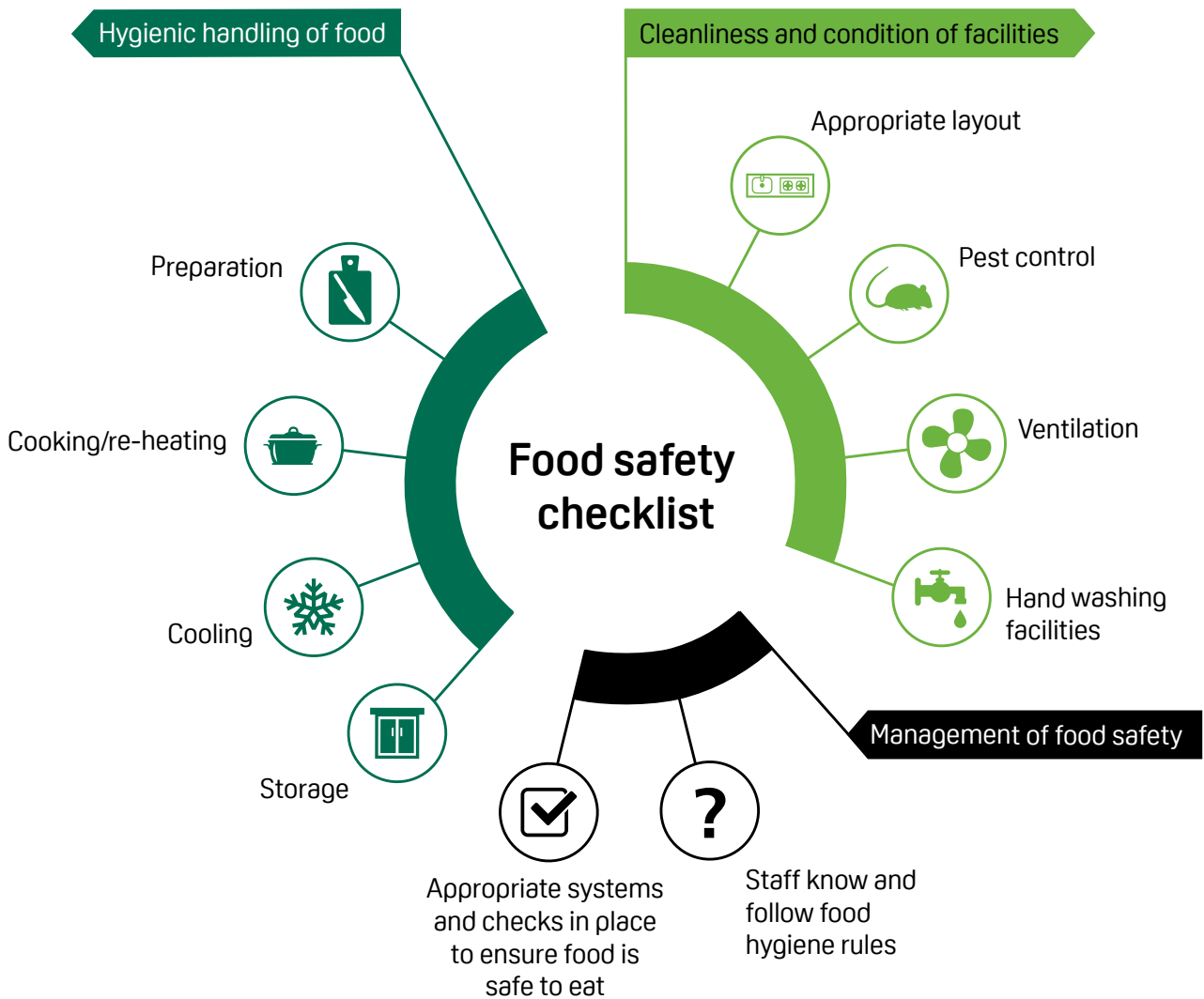FSA Chief Scientific Adviser

What is the Food Hygiene Rating Scheme?

The Food Hygiene Rating Scheme (FHRS)[1] provides information on the standards of food hygiene in food businesses providing food directly to consumers such as restaurants, pubs, café, takeaways, hotels as well as supermarkets and other food shops. It takes the results of official food hygiene inspections and puts them in the public domain in a manner that is easily accessible for consumers.

This allows people to make informed decisions when eating out in a pub, café, or takeaway or when buying food from a supermarket or other food shop. Empowering people in this way is intended to change behaviours in businesses to drive up standards of hygiene and, in turn, reduce instances of foodborne illness. It also recognises businesses with good standards and encourages them to maintain these.

How does FHRS work?

Food hygiene inspections are delivered by local authority food teams and the ratings are an added value to these official food safety inspections. The ratings are based on three areas critical to food safety assessed at inspection:

Hygienic handling of food

Cleanliness and condition of facilities

Appropriate layout

Preparation

Pest control

Cooking/re-heating

Ventilation

Cooling

Hand washing facilities

Storage

Food safety checklist

Management of food safety

Appropriate systems and checks in place to ensure food is safe to eat

Staff know and follow food hygiene rules

1   A different scheme with similar aims – the Food Hygiene Information Scheme – is operated in Scotland

The scores for each are combined to give a rating between 0 – 5. All businesses, whether a big national high street chain or a small local café, should be able to achieve a rating of '5 – very good', as this demonstrates compliance with food law. Each rating is based on consistent standards and uses the same branding so that a '5' rating is easily recognised and means the same in Cornwall as it does in Cumbria, Cardiff or Coleraine.

Each rating is based on consistent standards and uses the same branding.

Ratings are given to all establishments supplying food directly to consumers. This includes schools, hospitals, care homes and company canteens, as well as supermarkets, restaurants, takeaways, pubs and hotels. In Wales the scheme also covers 'trade to trade' businesses, such as manufacturers.

Businesses are given a sticker to display and their rating is also published on the FHRS website food.gov.uk/ratings

The display of ratings to customers by better performing businesses will create competition and drive standards higher.

The intention of the scheme is that people would use the ratings and incorporate the hygiene information into their food purchasing decisions, avoiding those establishments with lower standards and incentivising business operators to improve their hygiene standards. Alongside this, it was anticipated that better performing food premises will have a food hygiene rating on display to customers and that competition among food business operators would drive standards higher. Increased compliance with food hygiene standards would lead to a reduction in foodborne illness[2].
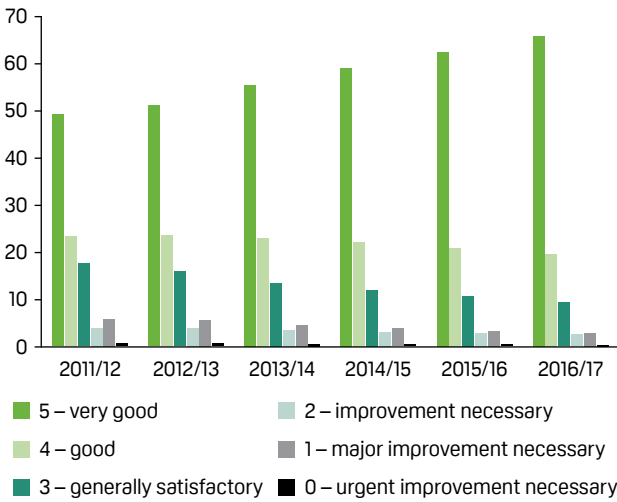
FHRS stickers

Impact of the scheme

Since the introduction of FHRS, there has been continued improvement in standards of food hygiene. In September 2017, 67% of businesses with a rating were achieving the top standard of '5 – very good' with 95% of businesses achieving a rating of '3 – generally satisfactory', or better.
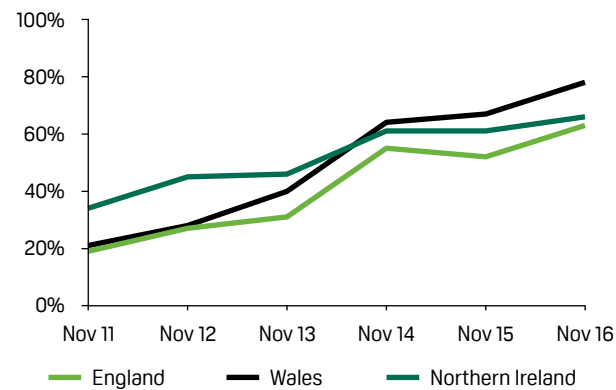

67%	95%
Top standard '5 – very good'	'3 – generally satisfactory' or better

Percentage of food business by rating

- 5 – very good
- 4 – good
- 3 – generally satisfactory
- 2 – improvement necessary
- 1 – major improvement necessary
- 0 – urgent improvement necessary

Studies show an increased awareness of the hygiene rating scheme:

Consumer awareness

- England
- Wales
- Northern Ireland

FHRS Consumer tracker
Base: All respondents, UK

In England (and NI before mandatory display) only those businesses with a higher rating were likely to display their hygiene rating sticker visibly at their premises. Since the introduction of mandatory display in Wales there has been a significant increase in display across all ratings allowing increased transparency for Welsh consumers.
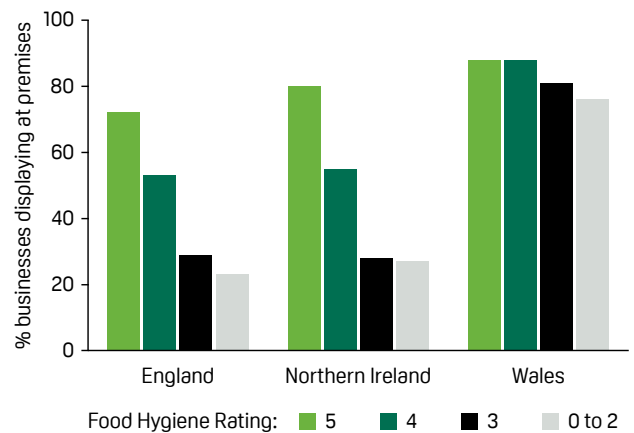
FHRS display rates (2015/16)

Food Hygiene Rating: 5   4   3   0 to 2

The proportion of people indicating that they 'often or sometimes use the ratings to make a decision' about where to eat out or buy food has increased. Latest research shows that 44% of respondents check the rating before deciding to purchase food from an establishment, and most commonly do so by checking the sticker displayed in the food business door or window (62%).

CASE STUDIES:

Research published in 2016[3] showed that the primary reason for a business displaying their rating was to assure customers of the hygiene standards of the business. Food business operators displaying their rating of '5 – very good' reported a positive impact on their business – England (45%), Wales (56%) and Northern Ireland (56%). For those businesses that did not display in England, the most common reasons cited were because the business had a low rating and because it is not mandatory to do so.

86% of Welsh businesses interviewed were positive about the legal requirement in Wales for businesses to display their food hygiene rating stickers visibly at their premises. Some of the comments made were:

> I have no problem displaying it. It has a good impact on my business.
>
> I'd say it helped small businesses like us a lot. It's a really good thing to have.
>
> I think it's brilliant. Really good idea. Customer knows they are eating in a safe environment.
>
> Brilliant idea because you know what you're buying. It brings clarity for customers, you know you are getting high standards of cleanliness and it gets rid of cowboys as people wouldn't consider going somewhere with a rating of 1.

Food Hygiene Ratings are a popular topic for the regional media. Stories often highlight businesses with lower ratings but a number of 'zero to hero' stories have also been published, showcasing businesses that have received low ratings but made efforts to increase their ratings to 4 or 5 to win back their customers and reputation. For example:

- The manager of a pub in North East England commented on receiving a rating of '0 – urgent improvement necessary': **"I was absolutely mortified when the inspectors came in and said we weren't up to scratch. Our chef at the time wasn't as qualified as we first thought but we have gone on to make significant improvements. We also have a team of new staff who are regularly trained and do not clock off until all of our kitchen checks are made."**

- The pub now has a rating of '5 – very good' and the manager said **"We're extremely pleased that we are now back on track. With the changes we have implemented, we have gone above and beyond the recommendations put to us and will continue to work to ensure the pub lives up to and exceeds the standards we and our customers expect".**

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3   Display of food hygiene ratings at food business premises

- The new owners of a takeaway were pleased to have taken on a good business. However, the takeaway received the lowest rating of '0 – urgent improvement necessary' at its first inspection. The owners decided things needed to change and following improvements were awarded a 5 rating at their next inspection. The owner said **"Our customers are our priority. I know now with 99% certainty that every one of my staff knows everything they need to know to keep the highest possible standards. It's not just theory from a textbook – it's something they're doing every day."**

Research carried out by the Policy Studies Institute included several business case studies[4]. Positive views of the scheme included: the belief that it is 'fair' and 'helpful'; it provides a clear guide on how to improve; it makes businesses 'strive harder' thereby driving up standards; it promotes awareness of hygiene issues; it represents an extra 'incentive' for businesses to maintain high standards of hygiene.

There was some correlation between the rating of the business and their opinion of the scheme ie those with a rating of 4 or 5 had a better opinion of the scheme and negative views of the scheme tended to arise when food businesses felt their rating was not justified.

- The incremental structure of FHRS ratings was seen as something to strive for, as the manager of a café (rated 1) explained, **"they instil in you more to want to do it, especially with the ratings because you do want to have a good rating"**.

- An owner of a fish and chip takeaway (rated '5') explained, the FHRS was putting pressure on poor performing businesses in the area: **"they [badly run food businesses] give food poisoning to people so people need to know where to avoid"**.

- The owner of a sandwich shop with a rating of '4 – good' commented that **"I would say we wouldn't have noticed any improvement [in trade] … People wouldn't really stop coming if it was, you know, 3 would be acceptable, 4 would be seen as being good and 5 being seen as being wonderful and if your kitchen is one star or two star you'd obviously see a drop in the numbers"**.

- Those with ratings of less than '3' were generally not happy with the outcome which was described as 'a bit harsh' in one instance.

4 Evaluation of the Food Hygiene Rating Scheme and Food Hygiene Information Scheme: Process Evaluation Stage 2 – Final Report

Consumer focus groups carried out as part of research by the Policy Study Institute found evidence that people often rely on their own sensory information for judging standards of food hygiene when eating out, including: smell, overall appearance and feel (for example sticky floors underfoot).

People's sensory information for judging standards of food

| Smell | Overall appearance | Feel |

What they see was particularly important, hence respondents reported a preference for visible kitchens to enable judgements on hygiene. In general, hygiene information was seen to be valuable to those taking care to deliberate over eating decisions, such as for special occasions and unfamiliar places (on holiday or newly opened businesses) or when the eating party includes vulnerable people such as young children or those with health issues.

Hygiene information was seen to be valuable to those taking care to deliberate over eating decisions.

Food hygiene was also given higher priority by those who had had a bad experience such as food poisoning and by people who described themselves as very strict about cleanliness in their home. There was also an expectation that food hygiene (and ratings) should be high regardless of the type of food business.

Consumers supported and welcomed the FHRS in principle, recognising that it provides a useful, objective indication of food hygiene standards instead of assessments based on their own impressions **"As a customer, you're making your own judgement on whether a place is clean or not, on quite superficial things like does the carpet look clean"**. FHRS was seen as a useful way for promoting public awareness of food hygiene outside the home. The schemes were met with enthusiasm in some instances: **"It's a very good thing, it's a brilliant idea."**

If a food business did not have a rating sticker visibly displayed when others did, consumers said they would be sceptical of its standards of food hygiene and consider an alternative option.

Impact of FHRS in driving up food hygiene standards

The FSA commissioned NatCen Social Research to explore the impact of the FHRS and the Food Hygiene Information Scheme (FHIS) on levels of business compliance with food hygiene law[5].

The impact of FHRS on hygiene standards was assessed using a statistical technique known as difference-in-difference. In essence, comparing data for two groups of similar local authorities: one group that had introduced FHRS; and an equivalent group that had not. For hygiene standards, the change in the proportion of 'poorly compliant', 'broadly compliant' and 'fully compliant' businesses were compared. Definitions of these are follows:

- The proportion of 'poorly compliant' premises – this means businesses that had compliance levels at the time of the last inspection equivalent[6] to a FHRS rating of either 0 or 1.

- The proportion of 'broadly compliant' premises – this means businesses that had compliance levels at the time of the last inspection equivalent to a FHRS rating of 3, 4 or 5.

- The proportion of 'fully compliant' premises – this means businesses that had compliance levels at the time of the last inspection equivalent to a FHRS rating of 5 (as such 'fully compliant' premises are a subset of those that are 'broadly compliant').

The evaluation found that in the first year, the increase in the proportion of businesses that were 'broadly compliant' was statistically significant increasing to 91.0%[7]. This is 2 percentage points higher than it is estimated would have happened without FHRS. Similarly, the increase in the proportion of businesses that were 'fully compliant' in the second year was statistically significant moving to 54.7%, which is 3.3 percentage points higher than would be expected without FHRS. The findings also show a greater reduction in the proportion of 'poorly compliant' businesses for the group of local authorities operating the FHRS. For both years, this was statistically significant.

Evaluation

Time after roll-out	Proportion of 'poorly compliant' businesses (%)			Proportion of 'broadly compliant' businesses (%)			Proportion of 'fully compliant' businesses (%)		
	Est. with FHRS	Est. without FHRS	Impact of FHRS	Est. with FHRS	Est. without FHRS	Impact of FHRS	Est. with FHRS	Est. without FHRS	Impact of FHRS
1 year	5.8	7.7	-1.9***	91.0	89.0	2.0***	49.6	47.8	1.8
2 years	4.7	6.4	-1.7**	92.1	90.6	1.5	54.7	51.4	3.3***

Note: ** and *** denote statistical significance at the 95% and 99% confidence level respectively.

As all local authorities in England, Northern Ireland and Wales are now operating FHRS it is not possible to repeat the evaluation, as there is no group of local authorities not operating the scheme to compare results with. Nevertheless, trends in the number of compliant premises have all continued to improve every year since FHRS was introduced.

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5 The full report is available on the FSA website

6 Equivalent ratings are used as only premises in local authorities operating FHRS will have an actual FHRS ratings. However, it is still possible to calculate the FHRS rating a premises would have had, in local authorities not operating the scheme, based on their inspection scores.

7 The likelihood that a result or relationship is caused by something other than mere random chance. This can be assessed at different levels of likelihood, in this case at 95% and 99% confidence levels. If a result is statistically significant at the 95% level then there is a 1 in 20 chance of getting such a result randomly. At 99% level this increases to a 1 in 100 chance.

Link between FHRS and food safety in food businesses

The NatCen evaluation showed a positive link between FHRS and compliance with food hygiene law. This can be regarded as beneficial in its own right. However this still leaves the question as to whether there is a link between compliance with food hygiene law and food safety. This is more difficult to demonstrate due to significant data limitations, particularly when trying to link to direct measures like food poisoning. For example, the difficulty linking foodborne disease cases to particular food establishments if reported cases are isolated or symptoms delayed and determining whether the illness was contracted through food or human contact.

Therefore, the FSA has looked at other indirect measures of food safety and the association between them and premises that are compliant with food hygiene law. The two measures are:

- The relationship between food business compliance and the results from microbiological contamination samples
- The relationship between food business compliance and identified foodborne disease outbreaks

Statistical analysis has shown that 'broadly compliant' premises (FHRS equivalent ratings 3, 4 and 5) are likely to have a smaller proportion of unsatisfactory microbiological samples taken than 'not broadly compliant premises' (FHRS equivalent ratings 0, 1, and 2). Similarly, 'fully compliant' premises (FHRS rating 5) premises are likely to have a smaller proportion of unsatisfactory samples than all other premises. These findings have been consistent over a number of years and statistically significant over the whole period considered. Except for 2009 for 'broadly compliant', all other years and 'fully compliant' findings are significant at the 99% level.

Mean proportion of unsatisfactory samples in a premises
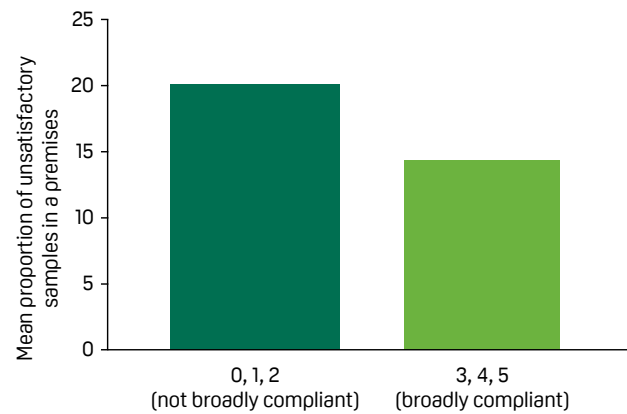
While unsatisfactory samples will normally not cause illness they are an indicator of general levels of hygiene, and one would expect, all other things being equal, would be related to the risk of illness. Assuming that the risk of foodborne illnesses is proportional to the likelihood of a premises having unsatisfactory samples, then for every 1% increase in the number of broadly compliant premises we might expect to see a decrease of between 1000 and 2000 cases of foodborne illness each year, with an associated reduction in burden to the UK economy in the region of £2.9m to £5.7m[8].

A more direct way of linking compliance with food hygiene law and risk of illnesses, was analysis looking at the relationship between foodborne disease outbreaks and compliance with food hygiene law. An outbreak of foodborne illness is defined as two or more linked cases of the same disease. Outbreaks are a measure of the actual relationship with human health. However, the data on outbreaks is limited (around 60 per year). Therefore, this analysis should be seen as indicative rather than definitive.

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8   This is based on the assumption that between 25% and 50% of foodborne illness is attributed to risk factors outside the home.

The analysis found that 'broadly compliant premises' have a smaller chance of a foodborne disease outbreak than those that are not broadly compliant. The period of analysis was over 2010 to 2014 and the findings were statistically significant at the 95% confidence interval[9,10].

Almost 2x More likely for outbreaks to occur in 'not broadly compliant' than 'broadly compliant' establishments.

Outbreaks per 10,000 restaurants per year
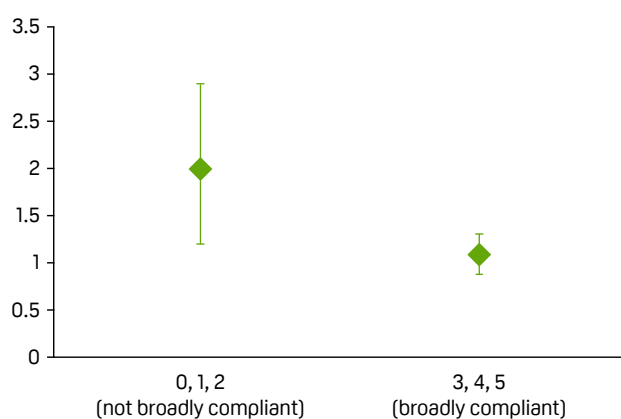
Note: The graph includes error bars. Error bar are a graphical representation of the variability of data used to show the error, or uncertainty in a reported measurement. Errors bars illustrated here show the 95% confidence interval.

Although this analysis suggests not broadly compliant premises are twice as likely to have an outbreak, it should be stressed that the actual level of risk to an individual consumer is still very low indeed. Assuming the difference in risks for sporadic cases of foodborne disease is similar to that seen in outbreaks, then for every 1% increase in the number of broadly compliant premises we might expect to see a decrease of between 2000 and 3900 cases of foodborne illness each year, with an associated reduction in burden to the UK economy in the region of £5.7m to £11.4m[11].

Other uses of the ratings

In addition to the stickers displayed in the window and the ratings published on food.gov.uk/ratings, all of the FHRS data are made available for re-use as 'open data'[12]. This has resulted in some interesting uses of the data by a wide range of organisations.

- Increasingly, events such as markets, food and music festivals are making the food hygiene rating one of the requirements to trade. For example, all traders of hot or cold food at Boston market in Lincolnshire are required to have a Food Hygiene Rating of '5 – very good' or '4 – good' to trade at the market.

- Just Eat use the food hygiene ratings data to help inform their support for their Restaurant Partners. The data provide a snapshot into how their partners are currently performing in regards to food safety, and enables Just Eat to better support them with advice and information to improve food safety standards.

- Transparency Data use the food hygiene rating open data in a number of ways. They re-publish it on their website, use it for their own smartphone apps and offer data analysis services to major food retailers. Paul Osborne (co-founder) said **"Our data analysis and reporting services based on the FHRS open data have enabled many food retailers (large & small) to become pro-active in monitoring and improving their food hygiene standards. The results speak for themselves"**.

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9   It is important to note some of the limitations of the analysis. There is not enough data to perform the analysis on a single year, so the five years of data is treated as one. Also, no account was taken of the time between inspection and outbreak.

10   It should be noted that while both analysis showed associations between compliance with food law and food safety, they do not show cause and effect.

11   This is based on the assumption that between 25% and 50% of foodborne illness is attributed to risk factors outside the home.

12   FSA open data policy

- Other government departments use food hygiene rating data eg the Home Office are using it on an assignment trying to identify any correlation between businesses ratings and successful immigration enforcement activity and the Pensions Regulator used the data to help target communications to employers about the workplace pension requirements.

A History of the Food Hygiene Rating Scheme

How was the scheme developed?

Published research[13] showed that the public display of information about hygiene standards at restaurants in Los Angeles County from 1998 – 'hygiene grade cards' – had a positive effect on standards and contributed to a reduction in hospitalisations for foodborne disease. Data from a similar scheme introduced in Denmark launched in 2001 – the 'smiley system' – showed that it had contributed to an increase in good hygiene scores, from 70% in 2002 to 86% in 2009[14].

These findings were very encouraging and, considered alongside additional reviews of literature highlighting the power of rating systems, the FSA initiated a number of pilot hygiene rating schemes with local authorities across the UK.

These pilot schemes differed from one area to another, both in terms of the criteria and the branding, but were all found to contribute to improved standards of hygiene. The independent assessment carried out in 2007[15] also indicated that a single, nationwide scheme would increase benefits, including greater consistency for consumers and businesses and increased recognition of common branding.

The FSA committed to developing a national hygiene rating scheme and a comprehensive programme of engagement was undertaken in 2009 and 2010. This informed how the scheme would work, what it would look like and how it would be run. FHRS was developed in collaboration with local authorities, consumer groups and representatives from the food industry using an open policy making approach.

Popularity grows

The scheme was formally launched in November 2010 and was rolled out on a voluntary basis in England, Wales and Northern Ireland ie it was not a legal requirement that local authorities adopted the scheme nor was it a legal requirement for food businesses to display their rating. Each local authority signed up to operating the scheme to the standards set by the FSA[16].

By the end of December 2011, 50% of local authorities were operating the scheme and this increased to 90% by the end of June 2012. The final local authority to adopt the scheme did so in October 2016, giving full coverage across England, Wales and Northern Ireland.

As of 30 September 2017 there were Food Hygiene Ratings for over 430,000 food businesses published at food.gov.uk/ratings

430,000
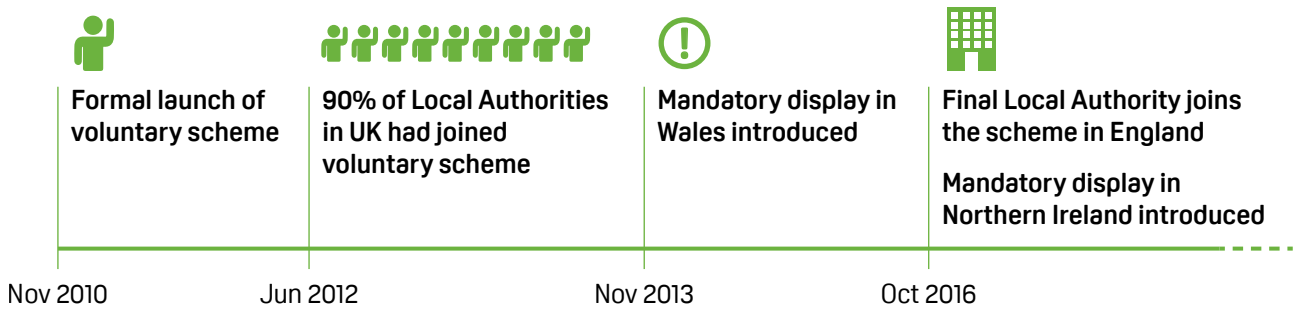
Food Hygiene Ratings published as of 30 September 2017

13 Simon PA, Leslie P, Run G et al. (2005) Impact of restaurant hygiene grade cards on foodborne-disease hospitalizations in Los Angeles County. Journal of Environmental Health
14 Investigation of award system for food businesses
15 Greenstreet Bermand: Evaluation of Scores on the Doors
16 FHRS Brand Standard

The FHRS timeline

Formal launch of voluntary scheme	90% of Local Authorities in UK had joined voluntary scheme	Mandatory display in Wales introduced	Final Local Authority joins the scheme in England Mandatory display in Northern Ireland introduced
Nov 2010	Jun 2012	Nov 2013	Oct 2016

Mandatory display

In November 2013 the Food Hygiene Rating Act (Wales) 2013 came into force, making it a legal requirement for food businesses in Wales to display their rating.

The Food Hygiene Rating Act (Northern Ireland) 2016 came into force in October 2016 imposing the same requirements on food businesses in Northern Ireland.

In 2014, the scheme in Wales was extended to also include 'trade to trade' businesses, such as food manufacturers and wholesalers, and in 2016 it was made a requirement that takeaways include a bilingual statement on leaflets or flyers, such as takeaway menus, telling consumers that they can find details of the rating on the FSA website[17].

Evidence so far has shown that mandatory display has driven improved and sustained business compliance[18].

17   Food hygiene is getting easier to spot in Wales
18   Report for the National Assembly of Wales

What next for the Food Hygiene Rating Scheme?

Mandatory display in England

The FSA is committed to introducing similar mandatory display of ratings at food outlets in England, and there is an increasing call for this; latest research indicates that 84% of consumers think that businesses should have to display their food hygiene rating at their premises. Which?, the National Consumer Federation, the Royal Society of Public Health, local authorities, the Local Government Association and the Chartered Institute of Environmental Health (the professional representative body for environmental health practitioners) all strongly support mandatory display being extended to England.

Heather Hancock, Chairman of the FSA has reaffirmed the Agency's commitment to introducing the mandatory display of food hygiene ratings in England saying **"We have sound evidence of the difference that mandatory display makes. People vote with their feet, because it's easy to choose food outlets that are taking food hygiene seriously."**

"The plans for seeking approval from Ministers are being aligned with the FSA's Regulating Our Future programme which is redesigning how food businesses are regulated. As hygiene ratings are based on inspections this will ensure that we have a robust and credible scheme that continues to deliver benefits for consumers."

> **Which? is calling for the mandatory display of hygiene ratings in eateries across the UK, so that consumers can easily make an informed decision at the point when they enter a food outlet.**
> **Which? Report: Postcode Lottery on Food Hygiene, February 2015**

> **Northern Ireland and Wales have mandatory food hygiene rating schemes and have demonstrated that rather than being a burden, they have driven standards and are good for business.**
> **CIEH – Improving Health and Wellbeing, June 2017**

> **We are calling for the mandatory display of food hygiene ratings which will enable customers to make informed choices and act as a driving force to encourage greater compliance amongst fast food providers.**
> **Royal Society of Public Health, March 2015**

> **Food hygiene standards and compliance levels have risen since the scheme was introduced in Wales. The lack of a hygiene rating sticker in a business means customers are left in the dark on official kitchen cleanliness levels when eating or buying food there.**
> **Local Government Association, September 2017**

A resilient future

For the UK to continue to be a strong, credible player in the global food economy, the regulatory regime needs to keep pace with rapid changes in that economy. The FSA is improving the way that we deliver regulatory controls in food and we aim to ensure a sustainable approach to food safety regulation, one that brings about business behaviour change to benefit consumers[19]. Strengthening the robustness and resilience of the Food Hygiene Rating Scheme is a key goal, including ensuring that it is sustainable and that there is mandatory display legislation in England.

Also of interest: The Science Council

Science Council

The Council was established on 1st April 2017 to provide independent expert strategic advice and challenge on how FSA uses science. This implemented a key recommendation of the Triennial Review of six FSA Scientific Advisory Committees published in March 2016[20]. The Science Council, which is Chaired by Professor Sandy Thomas, will help the FSA reassert and reinvigorate our science-based approach and build public confidence in the FSA. As an independent critical friend the Council will help us ensure we have the science capabilities we need to generate and make use of high quality science to achieve impact for FSA and consumers. The seven newly appointed members of the Council[21] are: Professor Laura Green, Professor John O'Brien, Professor Sarah O'Brien, Mr Mark Rolfe, Dr Paul Turner, Professor Patrick Wolfe and Professor Mark Woolhouse. Mr Rolfe's role is to bring insights on the public's perspectives.

Professor Guy Poppy on the creation of the Science Council **"Science and Evidence are critical in being a modern, accountable and excellent regulator. The expertise and extensive experience the members of the Science Council bring will play a major role in the FSA being a trusted organisation."**

At the first Council meeting on 16 June 2017[22], FSA Chairman Heather Hancock set out the FSA's top strategic priorities and asked the Science Council to answer three questions. Working Groups of the Science Council have been set up to answer the questions and each Group will take a phased approach so that the Council can deliver useful outputs as it works.

i. **Working Group 1: Science capability and assurance:** Question: How can the FSA get confident that we have access to the right science capability and capacity and that we are using it to the best of our ability? Phase one will focus on how FSA identifies and accesses the science it needs, and phase two on how we use science.

ii. **Working Group 2: Risk and uncertainty.** Question: What does the Council advise to be best practice in establishing and communicating risk and certainty? Phase one will focus on principles and how FSA establishes risk and uncertainty, and phase two will look at how this is communicated.

20 Triennial review of six FSA Scientific Advisory Committees
21 Science Council members
22 Draft minutes of the first meeting on 16 June 2017

iii. Working Group 3: Food system risks and horizon scanning. Question: What should the FSA do to improve its horizon scanning capability and its understanding of global food systems risks and opportunities? Phase one will develop and commission a study to synthesise existing evidence and insight on global food system risks; phase two will analyse the outcome to identify key issues and implications and recommendations for FSA. Phase one will also look at how FSA could strengthen its horizon scanning capability and develop recommendations in phase two for how this could be delivered.

The Working Groups held their first meetings in late September and early October 2017. The Working Groups will report to the next Science Council meeting on 13 December 2017. Working Groups 1 and 2 will make recommendations on phase 1 of their work; Working Group 3 will report on progress on phase 1 and plans for phase 2. The Science Council Chair will report to the FSA Board annually at an open Board meeting.

Acknowledgements

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