Chapter 5
Economic Impact of Posting Restaurant Ratings: UK and US Experience

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Abbreviations

DHS	Department of Health Services
FHIS	Food Hygiene Inspection Scheme
FHRS	Food Hygiene Ratings Scheme
FSA	Food Standards Agency/UK
FSS	Food Safety Scotland
LAs	Local Government Authorities/UK

5.1 Introduction

Improving food hygiene standards is important. In the UK, there are more than 500,000 cases of food poisoning each year traced to known pathogens. This figure would more than double if it included food poisoning cases from unknown pathogens (Food Standards Agency 2014). In the USA, foodborne pathogens cause an estimated 48 million cases of illnesses, 128,000 hospitalizations, and 3000 deaths each year. The Centers for Disease Control estimates that nearly 50% of foodborne disease outbreaks are connected to restaurants or other commercial food outlets (Marler Clark 2017).

Restaurant rating schemes have evolved to offer a potential contribution toward making food safer. They differ in their operational details and design, but share common features and the same general intention—to display a simple hygiene score for a restaurant, based on the results of an official hygiene inspection, in order that consumers have access to the information at the point where they are making decisions about where to eat.

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T. Roberts (ed.), *Food Safety Economics*, Food Microbiology and Food Safety,
https://doi.org/10.1007/978-3-319-92138-9_5

5.2 Outline

The following section briefly outlines the economic theory related to the use of restaurant rating schemes and the potential benefits that flow from them. Subsequent sections of the chapter describe the introduction of rating schemes at a national level across the UK and how they have been evaluated. Further sections then discuss the experiences from the USA and evidence how these have been evaluated. Finally, some general lessons are set out.

5.3 Economic Theory

In terms of economic theory, ratings schemes are intended to address potential market failure (Economics Online 2017) caused by asymmetric information (World Bank 2003). Market failure does not necessarily mean a market fails to work entirely—rather that it is not working as well as it could. In this instance, asymmetric information arises where there is imperfect knowledge—in particular where one party in a potential transaction has different information to another and is able to exploit this advantage. Where the quality of what is being offered is uncertain, this can, over time, lead to only poorer-quality goods being traded, to the detriment both of buyers and to traders who are driven out of the market by less scrupulous competitors. In his much-cited paper, Akerlof (1970) uses used cars as an example of this phenomenon. However asymmetric information and quality uncertainty issues have a wide range of real-world applications and implications for how markets operate. For food businesses, food hygiene is an important attribute of the quality of their products. However, if the costs associated with ensuring high hygiene standards are difficult to signal to customers in the quality of their products, there is a risk that this may lead to pressures to lower hygiene standards—to the detriment both of customers and ultimately to businesses too, as prices will reflect the assumed lower quality of the products and drive out businesses who would otherwise be willing to produce and sell higher-quality products but are unable to do so. Traditionally this problem has been addressed by regulation and inspection regimes to ensure businesses meet legislated hygiene standards. By additionally giving consumers access to the results of such inspections, consumers are able to make informed choices about where they eat, as the hygiene standards achieved by each establishment at the time of inspection can be clearly seen and understood. The information is intended to be displayed at the restaurant but is also often readily available via the Internet. By posting restaurant ratings, the market failure resulting from quality uncertainty is reduced, and businesses are incentivized to maintain and improve hygiene standards. This should result, over time, in rising hygiene scores and, linked to this, to reductions in cases of foodborne disease acquired from food purchased at such food businesses. Changes in food hygiene scores for businesses can readily be

tracked and compared over time, while changes in the number of foodborne disease cases are by their nature more difficult to measure.

The different forms of restaurant rating schemes in the UK and the USA and the attempts to measure and evaluate their impacts are discussed in the next section.

5.4 UK Experience with Posting Restaurant Ratings

The UK's Food Standards Agency has in the last few years introduced standardized food hygiene rating schemes, having learned valuable lessons from a wide variety of alternative schemes previously developed and adopted at a local level in the UK, together with the experiences of other countries, most noticeably from Denmark (Yu 2008) and the USA.

In the UK, the Food Hygiene Rating Scheme (FHRS) operates in England, Wales, and Northern Ireland and was formally launched in November 2010. Scotland operates a different scheme, the Food Hygiene Information Scheme (FHIS), which was piloted from November 2006 and subsequently rolled out in January 2009. The FHRS and FHIS were originally both introduced on a voluntary basis, meaning that local government authorities (LAs) were not legally compelled to implement the schemes and similarly display of the stickers by businesses was not a legal requirement. (Local hygiene inspections are carried out by local authorities in the UK. In 2015/2016 there were 419 UK LAs with responsibility for food controls: 354 in England, 22 in Wales, 11 in Northern Ireland, and 32 in Scotland). However, the schemes were very quickly adopted by local authorities, and some administrations have subsequently legislated to make the FHRS compulsory. Display of FHRS information has been a legal requirement in Wales since November 2013 and in Northern Ireland since October 2016. In England, the FSA is building a case toward making the FHRS compulsory. In Scotland, the FHIS continues to be run on a voluntary basis.

The schemes are a partnership between the Food Standards Agency—the Government Department responsible for food safety—and local authorities, who carry out food business inspections. The schemes provide consumers with information about hygiene standards in food premises at the time they are inspected to check compliance with legal requirements. The FHRS rating or FHIS result given to the business reflects the inspection findings. The transparency that the schemes provide enables consumers to make informed choices about where to eat out or shop for food and aims to incentivize businesses to improve hygiene standards.

Under the FHRS, businesses are given one of six ratings on a numerical scale from "5" (very good hygiene standards) at the top to "0" (urgent improvement required) at the bottom. Under the FHIS, businesses are given either a "Pass" result or an "Improvement required" result. Further information about the FHRS and FHIS is available on the FSA and Food Safety Scotland (FSS) websites (Food Standards Agency 2015c; Food Standards Scotland 2015).

Fig. 5.1 Illustrative FHRS hygiene sticker showing a "very good" (5) rating

An example of a posted score sticker for the FHRS (operating in England, Wales, and Northern Ireland) is given above in Fig. 5.1.

5.5 UK Evaluation Evidence on Restaurant Ratings

The FSA commissioned a number of independent evaluation and research studies to assess the impact of the introduction of the schemes on hygiene scores and also to seek the views of businesses, local authorities, and consumers (Feeney and Stewart 2015; NOP and Gfk 2011; Young and Gibbens 2012; Gibbens and Spencer 2013). A major evaluation study of FHRS and FHIS was commissioned in 2011 and ran until mid-2014. This explored the impact of FHRS and FHIS on local authorities, consumers, businesses, food hygiene compliance, and the incidence of foodborne disease (Vegeris 2015; Salis et al. 2015). Another study investigated the display of ratings at premises using annual surveys to establish the proportion of businesses voluntarily displaying FHRS ratings or FHIS Pass results at their premises. Telephone interviews with businesses were also conducted to explore the reasons for display/non-display and the perceived impact of display (Food Standards Agency 2015a). Consumer attitudes studies were also undertaken to explore consumer views on extending the scope of the schemes to include those involved in business-to-business trade and looked at what they wanted in terms of food hygiene information and how this should be presented (TNS BMRB 2012). A further study of consumer and small business attitudes in 2013 gathered views from consumers and small businesses on the impact of introducing mandatory display of FHRS ratings in Northern Ireland (TNS BMRB 2013). Consumer awareness, use, and recognition of FHRS have also been tracked through the Food and You surveys and through the Biannual Public Attitudes Tracker (Food Standards Agency 2017).

One of the FSA's aims in introducing the FHRS and FHIS was to provide an incentive for businesses to improve hygiene standards so that they comply with the

requirements of food hygiene law. However, it was recognized that consumer awareness of the scheme would also potentially be an important driver to help incentivize hygiene improvements. Such improvements should also feed through to reducing the number of cases of food poisoning in the UK. Thus the major evaluation study looked at both the impact on hygiene scores and also evidence on changes in the number of officially reported cases of food poisoning. The following sections draw from the FHRS study findings and the nontechnical summary report, prepared by the FSA (Food Standards Agency 2015b).

The impact on the hygiene scores was investigated using data on levels of compliance with hygiene legislation in food businesses that is collected annually by the FSA from local authorities across the UK. Three measures were used: The proportion of "poorly compliant" premises (businesses that had compliance levels at the time of the last inspection equivalent to a FHRS rating of either 0 or 1); The proportion of "broadly compliant" premises (businesses that had compliance levels at the time of the last inspection equivalent to a FHRS rating of 3, 4, or 5); and the proportion of "fully compliant" premises (businesses that had compliance levels at the time of the last inspection equivalent to a FHRS rating of 5) (so "fully compliant" premises are a subset of those that are "broadly compliant").

The impact of the schemes on food poisoning was investigated through the number of formally notified food poisoning reports, confirmed Campylobacter laboratory Reports, and confirmed Salmonella laboratory reports. The number per million of population was calculated for each of these three reporting measures.

The impacts were assessed using a statistical technique known as difference-in-difference. This involved comparing data for two groups of local authorities: one group that had introduced the FHRS or FHIS and an equivalent group that had not. For hygiene standards, the evaluation compared changes in the proportion of "poorly compliant," "broadly complaint," and "fully complaint" businesses. For food poisoning, the change in the number of cases of food poisoning per million of population was compared. Comparisons were made using data for 2011/2012 and 2012/2013—1 year and 2 years after the schemes were introduced.

The trends in food hygiene standards and the number of food poisoning cases in each of the two groups of local authorities were first assessed for the period before 2011/2012. This was to check there were no major differences between the groups in terms of general trends, both in direction and rate of change, before the FHRS was introduced or the FHIS was rolled out. Allowance was made for additional factors, including population age and density, business density, and the numbers of local authority staff dealing with food hygiene, each of which might also have had an impact on the hygiene standards and the number of cases of food poisoning during the evaluation period. These factors were included in the statistical analysis and adjustments made to reflect their impact, in order to isolate and estimate the changes arising from the FHRS and FHIS. It was also recognized that the take-up of both the FHRS and the FHIS by local authorities occurred more quickly than originally anticipated, with 95% adopting FHRS and 75% adopting FHIS by the end of 2012/2013. This rapid take-up restricted the number of authorities that could be

Table 5.1 Impact on compliance rates in local authorities that had adopted the FHRS or the FHIS

Time after rollout	Proportion of "poorly compliant" businesses (%)			Proportion of "broadly compliant" businesses (%)			Proportion of "fully compliant" businesses (%)		
	Actual	Est. without FHRS/FHIS	Impact of FHRS/FHIS	Actual	Est. without FHRS/FHIS	Impact of FHRS/FHIS	Actual	Est. without FHRS/FHIS	Impact of FHRS/FHIS
FHRS in England, Wales, and Northern Ireland									
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***
FHRS in England only									
1 year	4.6	6.3	−1.7***	92.7	90.9	1.8***	58.3	56.3	2.0
2 years	4.0	5.5	−1.5**	93.4	92.2	1.2	65.8	62.4	3.4***
FHIS in Scotland									
1 year	7.0	8.2	−1.2	86.8	86.0	0.8	34.6	32.7	1.9
2 years	7.1	7.6	−0.5	86.4	86.2	0.2	36.0	32.6	3.4

**Statistical significance at the 95% confidence level
***Statistical significance at the 99% confidence level
Source: Amended from FSA nontechnical summary report (Food Standards Agency 2015d)

included in the analysis and meant that any impact found may be an underestimate of the full impact.

The results for the impact on hygiene standards are given in Table 5.1.

For FHRS as a whole (England, Wales, and Northern Ireland) in the first year, the increase in the proportion of businesses that were "broadly compliant" was statistically significant, increasing to 91.0%. This is 2% higher than it is estimated would have happened without FHRS. (Statistical significance is an expression of 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). 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% 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. Similar findings were also found in England on its own.

For the FHIS in Scotland, although the general pattern was the same, the differences in compliance levels in local authorities operating the scheme compared with those that were yet to launch it were not found to be statistically significant.

The overall pattern from the evaluation of hygiene scores is therefore promising, showing a statistically significant reduction in the proportion of poorly compliant businesses across England, Wales, and Northern Ireland and corresponding improvements in the proportion of broadly and fully compliant businesses. The results for

Table 5.2 Measures of Impact of the FHRS (England and Wales) on foodborne illnesses

	Estimated impact on the number of formally notified food poisoning reports (per million population)	Estimated impact on the number of confirmed *Salmonella* laboratory reports (per million population)	Estimated impact on the number of confirmed *Campylobacter* laboratory reports (per million population)
1 year after the rollout	−267**	2	−99
(Counterfactual)	(616)	(46)	(515)
2 years after the rollout	89	2	82
(Counterfactual)	(233)	(43)	(349)

**Statistical significance at the 5% level

Sample sizes: The number of local authorities for the impact 1 year after the FHRS rollout is 199, 198, and 204 for the food poisoning, Salmonella and Campylobacter outcomes, respectively

Source: Amended from Table 6.1 from evaluation of the impact of the Food Hygiene Rating Scheme and the Food Hygiene Information Scheme on food hygiene standards and foodborne illnesses final report (Salis et al. 2015)

FHIS in Scotland followed a similar general pattern as that found for FHRS, but the results are not statistically significant.

Due to significant data limitations, the efforts to evaluate impacts on food poisoning focused on FHRS. The results of the estimation of the overall impact of the FHRS on foodborne illness-related outcomes in England and Wales are summarized in Table 5.2.

The findings are not clear-cut and need to be treated with caution. The only impact found to be statistically significant relates to the food poisoning outcome 1 year after the introduction of the FHRS. In this period, the FHRS was found to have reduced the incidence of food poisoning in English and Welsh local authorities. In these areas, the number of formally notified food poisoning reports was estimated to be lower, by 267 units every million people, compared to what it is estimated it would have been, had the scheme not been rolled out. This is known as counterfactual analysis, where a comparison is made between what actually happened and what would have happened, in the absence of an intervention. In this case, the intervention in question is the impact of FHRS. The hypothetical alternative scenario (the counterfactual) against which the impact was evaluated was estimated at 616 reports for every million people. In other words, if the FHRS had not been in place, more cases of food poisoning would have been expected than were actually reported.

The finding indicating that the FHRS reduced the incidence of food poisoning in the population of England and Wales is consistent with the expectations of the theory underpinning the FHRS, which suggests that improvements in businesses' compliance with food hygiene law requirements should result in a reduction in the incidence of foodborne illnesses. However, significant data limitations undermine the validity of the estimates of the impact of the FHRS on foodborne illnesses. The number of reported food poisoning cases is known to be significantly lower than the

actual numbers that occur as many people do not visit their doctor when they become ill. There is also an absence in most reported cases of information on the location where the illness was contracted including whether it was acquired in the home or outside the home. Additionally, for *Campylobacter* and *Salmonella* it was not possible to distinguish between cases attributable to food and to those attributable to other sources. Another factor is that were illness is reported is not necessarily where infection occurred. This is particularly an issue for holiday destinations or LAs with large commuter populations. It is therefore difficult to measure current levels and any changes in levels of disease and to attribute them to specific causes.

Thus while a statistically significant result was found 1 year after FHRS rollout, which suggests the scheme reduced the incidence of food poisoning, there was no collaborating evidence from the laboratory reports to suggest that the scheme reduced the recorded incidence of either *Campylobacter* or *Salmonella*. Given the data limitations and that only one of the results was statistically significant, these findings on the impact on reported cases of food poisoning must be treated with caution. A clearer pattern may emerge over time as additional data become available.

The introduction of voluntary restaurant rating schemes in the UK has been widely welcomed, and since its introduction on a voluntary basis, legislation has been introduced in Wales and Northern Ireland to provide for mandatory display of ratings at food premises (Food Standards Agency 2013, 2015c).

The FSA is currently working to strengthen the case for mandatory display in England.

5.6 US Experience with Posting Restaurant Ratings

Unlike the UK, the USA does not operate a national restaurant rating scheme. It does however have a long history of operating restaurant rating schemes at a local level across the country, dating back to at least the 1940s (Ho 2012). Rating schemes became popular in a very short period, and by one estimate, roughly 400 US cities had grading systems in place in 1951 (Ho 2012) (p589). Several states have uniform statewide restaurant grading systems, used to calculate either numerical scores or letter grades, which must be prominently posted by restaurants. The first state to enact such a statewide system was South Carolina in 1995. Tennessee and North Carolina later enacted legislation imposing similar statewide systems. However, many states have no such requirements, and therefore the introduction of any scheme is purely a matter for local government, at city or county level. California follows this approach and has a plethora of cities with grading systems, the most well-known being the letter grading system for restaurants used in Los Angeles. Similar letter grading-based systems have been widely adopted by other cities across the USA (Roberts 2016).

In more recent times, the role of restaurant rating schemes has been widely recognized to both inform consumers and motivate business owners, as a part of the

targeted transparency (Weil et al. 2013) and "nudge" agendas (The Economist 2012), using the publication of information, positive reinforcement, and indirect suggestion, rather than direct legislation, to achieve policy goals.

While the USA has a long history of restaurant health inspection and using restaurant rating schemes, surprisingly little detailed evidence exists that has attempted to evaluate the impact of the schemes on hygiene scores or on public health through reducing cases of foodborne disease. The best evidence comes from the study of the impacts of the scheme operated in Los Angeles County (Fung et al. 2015).

The legislation enacting the scheme in Los Angeles County was introduced by the Los Angeles County Board of Supervisors (the governing body of Los Angeles County) in 1997 and came into effect in early 1998. Its introduction followed public outcry from the broadcast of a three-part TV expose on restaurant hygiene in Los Angeles, which used "hidden camera" techniques to reveal a variety of unsanitary practices in restaurant hygiene that were reported to be common in restaurants throughout Los Angeles County, despite the existence of a restaurant hygiene monitoring system by the county.

The new legislation required the public posting of restaurant hygiene grades (A, B, or C) based on Los Angeles County Department of Health Services (DHS) inspections. By making these grades public, the Board of Supervisors sought to reduce the effects of foodborne diseases by putting competitive pressure on public eating establishments with poor hygiene practices to improve their performance or risk losing customers. Although the transparency requirement was adopted at the county level, individual cities within the county were not required to adopt the ordinance (all but ten had chosen to do so by the end of 2005). The running of the scheme has subsequently been refined; in 2013 the LA county Department of Public Health Environmental Health Division implemented an electronic inspection system for restaurants, markets, and other food facilities (County of Los Angeles Department of Public Health 2014). Results for inspections that took place after 2013 can also be viewed online (Los Angeles County Environmental Health 2017).

The system builds directly on the health inspections conducted regularly by the DHS. Health inspections cover a range of very specific practices, including food temperatures, kitchen and serving area handling and preparation practices, equipment cleaning and employee sanitary practices, and surveillance of vermin. Each violation receives one or more points. Cumulative points are then deducted from a starting score of 100. A score from 90 to 100 points receives an A, 80 to 89 a B, and 70 to 79 a C. Cumulative scores below 70 require immediate remedial action by the restaurant owner, which may include suspension of the owner's public health permit and closing of the restaurant (Fig. 5.2).

The transparency system requires restaurants to post the letter grade arising from the most recent inspection on the front window. Restaurants receive two or three unannounced inspections and one reinspection, upon request, per year. Thus, although the posting of grade cards entails relatively small costs, the system relies on a large number of inspections (about 75,000 in 2003) and therefore means a sizable enforcement budget for the DHS.

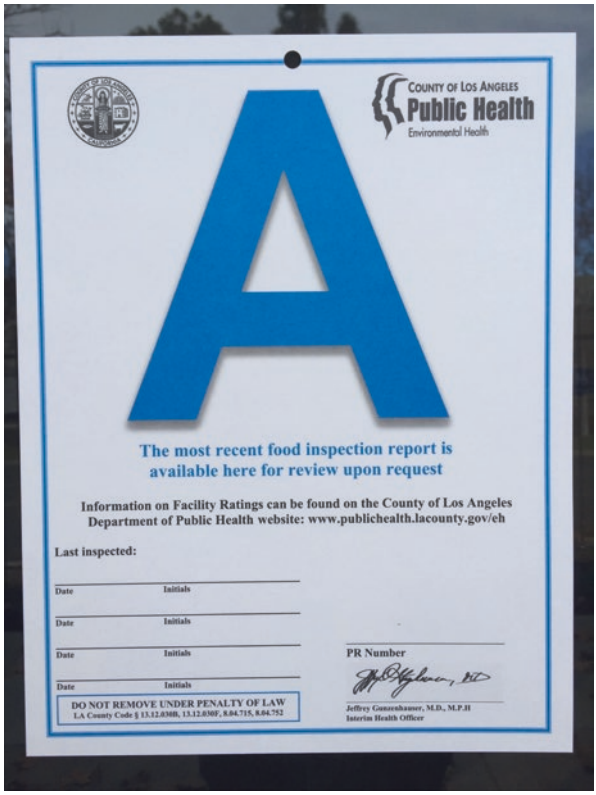

Fig. 5.2 Illustrative County of Los Angeles Public Health inspection display poster, showing an "A" rating. Used with permission from County of Los Angeles Department of Public Health

The introduction of the new transparency system led to fairly rapid and significant changes in the overall grade distribution in county restaurants. (The results of inspections had previously been available to the public, but only on request). When the program began, 58% of restaurants received an A grade, a number that grew to 83% by 2003. The incentives to improve are significant. Researchers Ginger Zhe Jin and Phillip Leslie analyzed the impact of restaurant grades and found that after grade posting, restaurants receiving an A grade experienced revenue increases of 5.7% (other factors held constant); B-grade restaurants had increases of 0.7%; and those with a C grade had declines in revenue of 1%. The introduction of grades also improved hygiene at franchised units in chain restaurants (Fung et al. 2015).

More importantly from a public health perspective, studies found significant decreases in foodborne-illness hospitalizations. Hospital discharge data on foodborne-disease hospitalizations were analyzed for Los Angeles County and, as a control, compared with the rest of California during the period 1993–2000. Ordinary least-squares regression analysis was carried out to measure the effect of the grading program on these hospitalizations. After adjusting for underlying time and geographic trends (in order to isolate and remove other effects), the impact of the

restaurant hygiene grading program was associated with a 13.1% decrease in the number of foodborne-disease hospitalizations in Los Angeles County in the year following implementation of the program (1998). The result was statistically significant at ($p < 0.01$). (A p-value of "0.01" means that there is a 99% (1–0.01 = 0.99) chance of it being true). This decrease was sustained over the next 2 years (1999–2000) (Simon et al. 2005). In another study, the authors estimated the reduction to be 20% (Jin and Leslie 2003).

The results from Los Angeles County therefore strongly suggest that restaurant hygiene grading with public posting of results can be an effective intervention for reducing the burden of foodborne disease. That does not mean rating schemes are without fault however. By their nature, rating schemes are attempting to compress and convey a whole range of data into a single figure. As with any intervention, there is always the need to consider the risk of unintended consequences and how to deal with them. For example, there is a potential trade-off in the use of resources between the effort required to maintain inspection and reinspection rates of all restaurants and the desire to focus efforts on dealing with the worst cases. In an article making the case for restaurant hygiene grade cards, Jin and Leslie note that the focus and importance given to grade boundaries could encourage more lenient marking at the boundaries. There is some evidence from the Los Angeles County data to suggest that while the overall marks have risen over time, the shape of the distribution of hygiene marks has also shifted. Before the introduction of grade cards, hygiene scores followed a smooth bell-shaped distribution. After the introduction of grade cards, there was a dramatic upward spike in the distribution at the score of 90, the cutoff score for obtaining an A grade. There was also a downward spike at 89. A similar pattern also occurred around the cutoff for a B grade. Jin and Leslie note one interpretation of this pattern, which was also consistent with the anecdotal evidence from inspectors, was that inspectors chose to "bump up" a score of 89 to 90 so that the restaurant was not punished because of one point. As long as inspectors do not bump up restaurants which deserve even lower scores, this would be a mild form of grade inflation (Jin and Leslie 2005). This finding suggests ongoing monitoring is needed, to ensure that any grade inflation does not become worse over time.

Other limitations or flaws in the way different hygiene scoring systems operate in the USA have also been identified. Ho (2012) (op cit) carried out detailed investigation and identified a series of potential problems, including grade inflation in San Diego (virtually all restaurants obtained an A rating) and significant inconsistencies among inspectors' scores in New York (due in part to the changes and complexity of the scheme).

As an aside, it is interesting to note that New York is currently also working on using algorithms to study online restaurant reviews, to help identify foodborne disease outbreaks that might otherwise not be officially reported—in other words, using other sources of data, in addition to official inspections, to assist targeting of interventions (Harrison et al. 2013).

5.7 General Lessons and Conclusions

In terms of economic theory, hygiene rating schemes are intended to address potential market failure caused by asymmetric information about the quality of hygiene in food businesses. The schemes are intended to convey a summary of a range of hygiene information in a straightforward and readily understood manner, to assist consumers and motivate businesses to improve. Designing a scheme is by no means straightforward, and there is no perfect system. A number of approaches are currently in operation. In the UK, the FHRS used in England, Wales, and Northern Ireland use a 0–5 scale, while the Scottish FHIS uses a simpler pass/fail system. The USA does not have a national scheme, and US cities and counties have adopted a range of approaches, often displayed either as a simple score or an overall grading letter. Voluntary schemes, such as the FHRS (as originally introduced), are generally considered easier to get up and running, but voluntary approaches run the risk of being ignored by poorer performing businesses. An alternative of having a plethora of local schemes can lead to confusion about consistency between areas. Yet it does also provide the opportunity to attempt to assess the effectiveness and impact of different approaches.

Evaluation studies in the UK and the USA both suggest restaurant ratings schemes can have a real and positive impact on raising hygiene scores over time. Additionally, there is good evidence from the detailed study of data from Los Angeles County supporting the case it has had a statistically significant impact in reducing cases of food poisoning, as measured through hospital admissions. In the UK, the evaluation evidence on reported public health impacts to date has been less clear. Given their nature, measuring the impact of hygiene scoring systems of foodborne disease cases is always going to be difficult to detect reliably and robustly.

Finally, no scheme is perfect. In attempting to address informational asymmetry and quality uncertainty, it is important to consider potential unintended consequences, in terms of issues such as grade drift or not focusing actions on poorest-performing businesses. However, such issues can be addressed through careful monitoring and adjusting how schemes are run. It is clear that food businesses have an increasing role in feeding the population, and food hygiene rating systems can play an important part in ensuring consumers are quickly and simply informed about hygiene standards and similarly that businesses are incentivized to maintain and improve their performance.

Acknowledgments I am grateful for the helpful comments I received when drafting this chapter from colleagues at the Food Standards Agency. I am also grateful to the FSA and to the County of Los Angeles Department of Public Health for their respective permission to include illustrations of the Food Hygiene Ratings Scheme sticker and inspection display poster.

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