Evaluation options for Fire and Rescue Service fire safety activities

Fire Research Report: 5/2010

Communities
and Local Government

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Disclaimer

This research was commissioned by the previous Government. The findings are those of the authors and do not necessarily represent the views or recommendations of the Department for Communities and Local Government.

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Executive summary

Introduction

Fire and Rescue Authorities (FRAs) devote a significant level of resource to the audit of buildings covered by the *Regulatory Reform (Fire Safety) Order 2005* and associated enforcement work. They also devote resources to non-regulatory interventions such as provision of advice on fire safety and arson prevention in regulated buildings. As with all FRA activities it is important to be able to demonstrate that resources are being used effectively, are targeted onto areas of higher risk and that the level of resource is proportionate to the risk. FRAs themselves agree that they need to demonstrate that their fire safety work is effective and contributes to the reduction in fires, deaths and casualties. Some FRAs stated that, ideally, they would demonstrate the level of risk reduction achieved by fire safety so that it impact can be assessed using similar measures as those used for prevention and response activities.

In addition, the Chief Fire Officers Association (CFOA) fire safety audit was introduced in parallel to the fire safety order to support risk based inspection programmes. This revised guidance is intended to help fire and rescue authorities to apply a risk based approach to the fire safety inspection process and ensure that fire safety inspection programmes contribute to Integrated Risk Management Planning.

Most FRAs have applied the CFOA fire safety audit. Therefore, evaluation would demonstrate the extent to which FRAs have been successful in applying risk based inspection and whether the advice and enforcement actions indicated by the CFOA fire safety audit have been effective.

The purpose of this project was to have a discussion of the evaluation of fire safety activities with FRAs, and to consider options for how FRAs may be able to evaluate their fire safety audit and inspection work.

Method

The work was divided into two stages:

- Stage 1 explored FRAs feedback on the aims and needs for evaluation as well as discussing current evaluation practice.
- Stage 2 illustrated forms of evaluation that would meet FRAs needs and then considered the "next steps" that FRAs could take to develop such evaluation.

Stage 1 workshop and survey findings

In total 35 English FRAs from a total of 45 (78%) responded to either the workshops or the survey. The discussions with FRAs indicated a clear and strong need to evaluate fire safety activities. During the workshop sessions, FRAs said that they could use evaluation as follows:

- to demonstrate the benefit of FRAs fire safety activities, in order to:
  - demonstrate the role of fire safety in reducing risk, and thereby providing evidence on which to allocate FRA resources to fire safety
  - assess the benefit of different types of fire safety activities, to support decisions on where to allocate resources to achieve maximum value for money.
- to ensure that fire safety activities are targeted onto higher risk premises
- to demonstrate that FRAs are fulfilling statutory duties under the FSO and principles of enforcement, namely that it is consistent, proportionate, transparent and accountable
- to identify and share good practice, thereby helping to improve effectiveness
- to identify emerging fire safety issues
- to assess resource productivity.

A survey of FRAs found that with the exception of reliable counts of premises, most already record the data needed to complete evaluations, and judge that they have the competence to do this evaluation. As most FRAs use the CFOA fire safety audit, the use of audit scores should be commonly feasible.

Stage 2: Illustration of potential evaluation by FRAs

The main report illustrates the forms of evaluation that could be completed to meet the expressed needs of FRAs. In each case the report states:

- the reasons for completing each form of evaluation
- an illustration of what the evaluation could look like, including variations on the example; and
- (Where available) examples of where each form of evaluation have been used by other regulators.

Where appropriate some of the current data limitations and issues have been discussed.

Conclusions and recommendations

There was common support from FRAs for the evaluation of their fire safety activities in order to support decisions on resourcing, audit and enforcement practices and improvement of advisory work. Most FRAs already hold the majority of the data needed for evaluation, notwithstanding significant concerns about the quality of counts of premises.

Whilst most FRAs track productivity and audit outcomes, only a minority evaluate fire safety activities in the way outlined in this report. This report illustrates how data can be used for the sake of evaluation and thus for supporting the improvement of fire safety activities.

Most of the forms of evaluation cited in this report can probably be completed using data held locally by FRAs. As there are concerns about the validity of data on the count of premises, evaluations of the rate of audits per 1000 premises may be hampered until the counts of premises can be assured. However, most of the other forms of evaluation are not dependent on the count of premises and so should not require further development of building counts.

Recommendation 1

Piloting and further elaborating evaluation methods
As few FRAs have attempted the forms of evaluation described here, there may be a need to pilot the various forms of evaluation. This would help test their feasibility, elaborate the evaluation method and check the usefulness of the results.

Recommendation 2

Improve the quality of premise data
The doubt about the completeness of premise data was the main data issue. This limits the ability to compare between FRAs, such as comparing rates of audits, and to compare between types of premises within FRAs. FRA feedback indicated that no one approach can resolve this issue. A combination of gazetteers, data sharing and searching for unknown premises is needed. FRAs that wish to complete evaluation need to assure the quality of their fire safety activity and premise data as far as is practicable. It was recommended that FRAs progress verification of their premise data.

Recommendation 3

Develop and trial evaluation tools
Few, if any, FRAs currently have analytical tools to support evaluation of fire safety activities. FRAs at workshops indicated that they would welcome support with respect to evaluation. As some FRAs indicated that they have the resources to develop their own evaluations, any tool developed by the sector could be offered for use by FRAs on a voluntary basis, i.e. FRAs can choose whether to use a generic tool supplied by the sector or whether to develop their own tool(s).

1   Introduction

1.1   Background

The Department for Communities and local Government (DCLG) commissioned a research project in 2010 to consider how to evaluate fire safety audit and enforcement activities under the *Regulatory Reform (Fire Safety) Order 2005*[1], investigating data and information technology resources.

Fire and Rescue Authorities (FRAs) devote a significant level of resource to the audit of buildings covered by the FSO and associated enforcement work. They also devote resources to non-regulatory interventions such as provision of advice on fire safety and arson prevention in regulated buildings. As with all FRA activities it is important to be able to demonstrate that resources are being used effectively, are targeted onto areas of higher risk and the level of resource is proportionate to the risk. As per the feedback from FRAs summarised in Section 3 of this report, FRAs need to demonstrate that their fire safety work is effective. Some FRAs stated that, ideally, they would demonstrate the level of risk reduction achieved by fire safety so that it's impact can be assessed using similar measures for prevention and response activities.

In addition, the Chief Fire Officers Association (CFOA) fire safety audit[2] was introduced in parallel to the *Regulatory Reform (Fire Safety) Order 2005* to support risk based inspection. This revised guidance[3] is intended to help FRAs to:

- determine a fire safety inspection[4] programme for non-domestic premises that is based on an assessment of the risk posed by generic types of premises and individual buildings

- apply a risk based approach to the fire safety inspection process and

- ensure that fire safety inspection programmes contribute to Integrated Risk Management Planning and the associated preventative, protective and response arrangements.

The audit provides guidance on how to determine the frequency of inspection, what to inspect in buildings, how to rate the level of compliance and what action to take in the event of non-compliance. The guidance on what to inspect matches the articles in the *Regulatory Reform (Fire Safety) Order 2005*.

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[1]   http://www.opsi.gov.uk/si/si2005/20051541.htm

[2]   www.communities.gov.uk/documents/fire/doc/IRMPguidancenote4

[3]   See http://www.cfoa.org.uk/download/12188 for a copy of the CFOA fire safety audit form

[4]   The term 'inspection' has been used here for continuity with previous guidance notes. However, the term 'audit' may also be used and can be considered interchangeable within this document. CFOA use the term 'audit'.

Most FRAs have applied the CFOA fire safety audit. Therefore, evaluation would demonstrate the extent to which FRAs have been successful in applying risk based inspection and whether the advice and enforcement actions indicated by the CFOA fire safety audit have been effective.

The Fire and Rescue Operational Assessment Toolkit[5] reflects the expectation of a risk based approach in its Key Line of Enquiry, including a targeted and risk based approach. Moreover, the toolkit asks:

> *"Does the FRA have a robust process for measuring and evaluating the effectiveness and improving performance of its protection activities?"* (p28)

The Key Line of Enquiry focus says:

"The organisation:

- *measures and evaluates the effectiveness of its protection work, and addresses areas of under performance*

- *has a sound understanding of performance*

- *has arrangements in place for auditing and reviewing its protection work on a planned basis*

- *shares the results of any audit and evaluation with relevant stakeholders."*

Thus, there is a clear expectation that FRAs will conduct evaluation to support the improvement of service delivery. FRAs, as per Section 3 of this report, also highlighted the role of evaluation in helping to further develop fire safety activities.

1.2   Scope of fire safety activities

The range of activities cited by FRAs within workshops (see section 6) included:

- audits and inspections:

  These were the main fire safety activities cited by FRAs:

  – "Full" audits are carried out by Fire Safety Officers, with most FRAs using the CFOA fire safety audit (some use their own audit)

  – some FRAs also engage operational crews in carrying out "brief audits" using an abbreviated version of the CFOA fire safety audit. These are not counted as "audits" but remain important elements of fire safety work

  – some FRAs carry out joint audits with other agencies.

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[5]   http://www.communities.gov.uk/documents/fire/pdf/opatoolkit.pdf The toolkit was developed by CFOA, CLG and the Audit Commission, Local Government Association, Health and Safety Executive and the Improvement and Development Agency and is intended to support self assessment by FRAs.

- consultations (building regulations):

  this was considered to be the next largest activity and is the assessment of the fire safety aspects of building regulation applications when requested by local authority or approved inspectors.

- unwanted fire signal management:

  working to reduce unwanted fire signals is a significant part of the work of some fire safety departments, where they advise and educate businesses on how to reduce unwanted fire signals

- reactive (intelligence led) audits and inspections:

  FRAs also carry out a range of reactive (intelligence led) work including:

  – post fire investigations

  – complaints (about fire safety in a building)

  – operations intelligence based (utilizing mapping systems to review targeting)

  – referrals (to complete an audit) from other agencies.

- specific business or specific advice, such as:

  – target hardening (arson prevention)

  – fire safety seminars

  – campaigns (e.g. arson pre Christmas campaign)

  – liaison with black and minority ethnic group businesses.

- hot strikes (some FRAs carry out advisory visits to business in an area where a fire has occurred, using the fire as an opportunity to engage businesses.)

Although the project aimed to consider how to evaluate the full range of fire safety activities, particular attention was focused on audits and advice, as these comprised the main areas of activity.

1.3   Aims of this study

The purpose of this work was to consider options on how FRAs may be able to evaluate their fire safety audit and inspection work, sometimes referred to as 'protection' activities. It was intended to build on any existing data analysis and/or performance management arrangements that are currently used within FRSs for internal management purposes; and on existing data collection arrangements with the Department for Communities and Local Government (DCLG).

The report first provides an overview of FRAs feedback on the aims of and needs for evaluation. It then proceeds to illustrate forms of evaluation that would meet these needs.

The aims of the study were to:

- explore the aims, benefits and drivers for the evaluation of fire safety activities, including business (fire safety) support activities, audits and inspections, and enforcement action

- solicit FRS feedback on initial evaluation ideas from Greenstreet Berman and the Department for Communities and Local Government

- explore existing FRS data and IT systems and how FRSs could further develop their data and IT systems to better support evaluation and performance management of the fire safety function

- discuss different forms of evaluation.

As part of this, this review explored the role that can be played by the following types of data:

- the number, type and outcome of fire safety audits and associated advisory and enforcement actions

- the number, type and outcome of other forms of action by FRAs, such as arson prevention, in building covered by the fire safety order

- data on the number, size, outcome and occupancy of fires in building covered by the fire safety order (as recorded on the Incident Reporting System)

- counts produced by FRAs of each type of building

- the results of "customer questionnaires" completed by persons responsible for fire safety in buildings audited by FRAs.

The work was divided into two stages:

- Stage 1: This stage of work explored FRAs feedback on the aims and needs for evaluation as well as discussing current evaluation practice

- Stage 2 illustrated forms of evaluation that would meet FRAs needs and then considered the "next steps" that FRAs could take to develop such evaluation.

This report did not aim to be a "toolkit" for evaluation. It was concluded that if an evaluation toolkit is needed, then this could be produced collaboratively by the sector for common use.

2   Method

2.1   Stage 1: FRA discussions

The first stage of the project aimed to identify the aims, benefits and drivers for evaluation of fire safety activities. This comprised:

- running three workshops with FRAs to explore the study questions (as shown in Section 7 of this report)

- disseminating a mini survey of FRAs to explore current data collection and evaluation practices, and requesting copies of any evaluations they have completed.

The workshops were attended by 55 delegates from 30 FRAs, consisting of a mix of fire safety officers and management information staff.

Table 1: FRAs attending workshops		
Workshop 1 (Fire Service College, Moreton In Marsh, 24 June 2010)	**Workshop 2 (London Fire Brigade, 28 June 2010)**	**Workshop 3 (South Yorkshire, 30 June 2010)**
Avon FRA Buckinghamshire FRA Cleveland FRA Derby FRA Dorset FRA Durham and Darlington FRA Hereford and Worcester FRA Isle of Wight FRA Northants FRA Oxfordshire FRA Shropshire FRA South Wales FRA Staffordshire FRA Tyne and Wear FRA	London Fire Brigade Essex County FRA Hertfordshire FRA Cornwall Fire Brigade Devon & Somerset FRA Hampshire FRA Surrey FRA Kent FRA	Northumberland FRA West Yorkshire FRA Lincolnshire FRA Nottinghamshire FRA Leicestershire FRA Greater Manchester FRA North Yorkshire FRA South Yorkshire FRA

The survey of FRAs had 29 responses from the following FRAs:

Table 2: FRAs responding to mini survey of fire safety evaluation		
Avon FRA	Hereford & Worcester FRA	North Yorkshire FRA
Buckinghamshire FRA	Hertfordshire FRA	Northamptonshire FRA
Cambridgeshire FRA	Humberside FRS	Northumberland FRA
Cheshire FRA	Isle of Wight FRA	Nottinghamshire FRA
Durham & Darlington FRA	Kent FRA	Shropshire FRA
Derbyshire FRA	Lancashire FRA	South Wales FRA
Devon and Somerset FRA	Leicestershire FRA	Surrey FRA
East Sussex FRA	Lincolnshire FRA	Tyne and Wear Metropolitan FRA
Essex County FRA	London Fire Brigade	West Yorkshire FRA
Hampshire FRA	Merseyside FRA	

In total 35 English FRAs from a total of 45 (78%) responded to either the workshops or the survey, along with South Wales FRA. 23 FRAs responded to both the survey and the workshop, eight only completed the questionnaire and five only attended the workshops.

2.2   Stage 2: Exemplifying forms of evaluation

A second stage of work developed ideas on how to complete evaluation. This included:

- drafting examples of evaluation and presenting them to FRAs at the three workshops

- seeking examples of evaluation completed by other authorities, such as the Health and Safety Executive, that match the needs of FRAs (to help exemplify what this form of evaluation comprises)

- further developing examples of evaluation for reporting.

In all cases, the examples evaluation used either hypothetical data or samples of real data to illustrate fire safety evaluation aims and methods. However, it was made clear to FRAs that in no case should the examples be used to review current practice.

Some examples of evaluations completed by other organisations have also been cited, to illustrate the process of evaluation and the type of result that have been produced.

3 Stage 1: Workshop and survey results

3.1 Overview

3.1.1 Aims of evaluation

The discussions with FRAs indicated a clear and strong need to evaluate fire safety activities. During the workshop sessions, FRAs said that they could use evaluation for the following purposes:

- to demonstrate the benefit of FRAs fire safety activities, in order to serve two ultimate purposes:
  - demonstrating the role of fire safety in reducing risk, and thereby providing evidence on which to allocate FRA resources to fire safety;
  - assessing the benefit of different types of fire safety activities, to support decisions on where to allocate resources to achieve maximum value for money.

- to ensure that fire safety activities are targeted onto higher risk premises – to ensure maximum effectiveness

- to demonstrate that FRAs are fulfilling their statutory duties under the Regulatory Reform (Fire Safety) Order and principles of enforcement, namely that it is consistent, proportionate, transparent and accountable

- to identify and share good practice, thereby helping to improve effectiveness

- to identify emerging fire safety issues

- to assess resource productivity.

A common point made by FRAs during workshops was that it is necessary for the analyst to have an understanding of the context of fire safety activity in order to be able to interpret results. It was noted that quantitative evaluation often raises "more questions than answers". Therefore, it needs to be complimented by qualitative assessment of processes and factors that might "explain" the quantitative results.

It was also noted that intelligence led audits may have a higher rate of enforcement than programmed audits. Our mini survey found that FRAs complete a variable mixture of assessments, including audits following complaints or incidents or as part of wider risk management plans. Whilst 71 per cent of FRAs responding to the survey said they prioritised audits using Integrated Risk Management Planning Guidance note 4 (which provides a risk ranking of premises to guide the frequency of inspections), eight (29%) of the responding FRAs were unsure about this. Therefore, any comparison of enforcement rates needs to take account of the approach to targeting audits.

3.1.2   FRA data issues

FRAs already record the vast majority of the data needed to support evaluation, including:

- audits, inspections, advice, enforcement activities, audit scores (typically Chief Fire Officer Association (CFOA) fire safety audit scores)

- type of premises and premise features (as per the CFOA fire safety audit form).

The majority of FRAs (16 out of 29) taking part in the survey stated they used CFRMIS[6] as a tool to record and collate data which could be used to support evaluation. Other FRSs used an assortment of bespoke or purchased databases.

DATA HELD ON PREMISES

Figure 1 illustrates the categorisations that FRAs have applied to premises. Nearly all the surveyed authorities record the type of occupancy using the Fire Safety Emergency Cover (FSEC) classification, with a few also using other categories. Some FRAs at the workshops stated that the FSEC categories were too coarse to support audit work, whilst recognising that sub-dividing data further can lead to smaller sub-sample sizes. The second most common form of categorisation was use of the Supplementary Line Number, which is an item in Community Fire Risk Management Information System (CFRMIS) systems, that indicates the type of premise. (The supplementary line number categories are however not common between FRAs.)

Figure 1: Categorisation used for premise occupancy by FRAs (N = 29)

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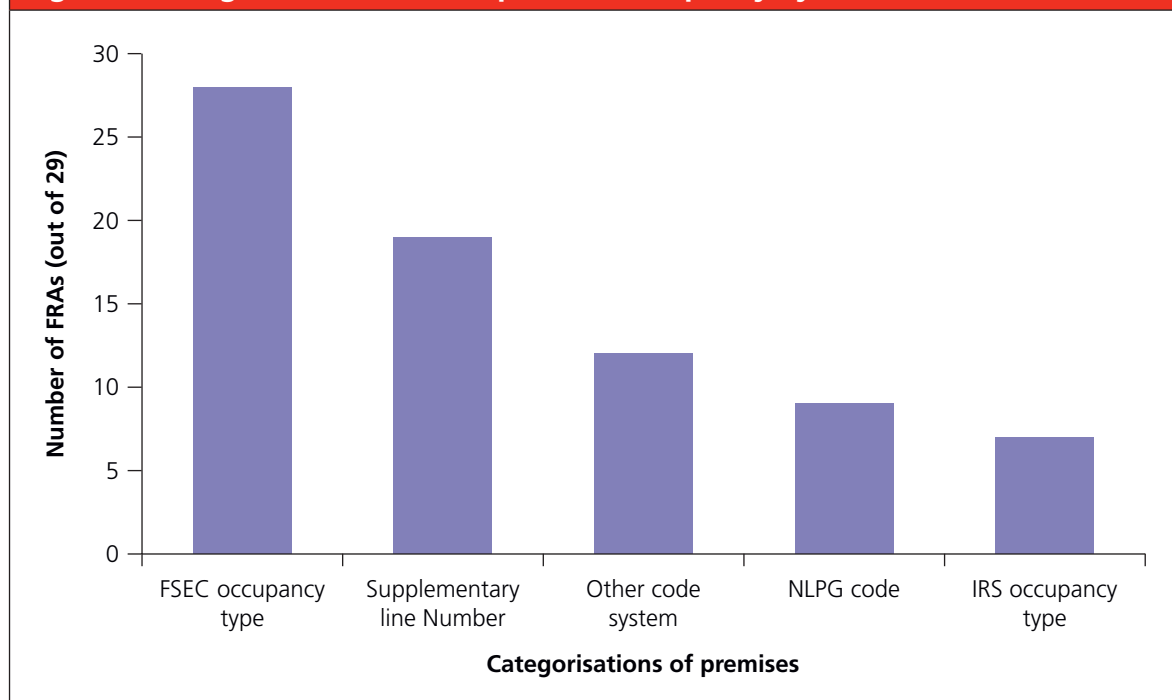
[6]   Community Fire Risk Management Information System is a commercially available software tool (see http://www.innogistic.co.uk/safety.php) which records premise related data and provides management information on, for example, number of audits, outcomes etc.

Other code systems included purpose group and valuation office codes. Two FRAs stated they were planning to adopt National Land and Property Gazetteer codes.

The survey of FRAs also indicated that the vast majority (all but one) record all of the Part A information from the CFOA fire safety audit, namely:

- premise, use and person details

- occupants information, such as occupancy type, description of occupants, maximum potential loss;

- potential loss/risk

- premise features such as smoke control, AFD and sprinklers, and;

- height of premise.

Thus, nearly all FRAs organise their information based on the premise features in a database.

COUNT OF PREMISES

The main area of concern is the identification of premises. Although the Valuation Office Agency publishes a database of premises, FRAs felt that this information was incomplete and unreliable. All FRAs stated that they use a combination of sources to identify premises, as per **Figure 2**.

Despite using several data sources, most workshop participants stated that their count of premises was incomplete and inconsistent from one FRA to another. Only 28 per cent of the responding FRAs had reconciled their counts of premises from their different data sources.

Figure 2: Source of data for count of premises (N = 29 FRAs)
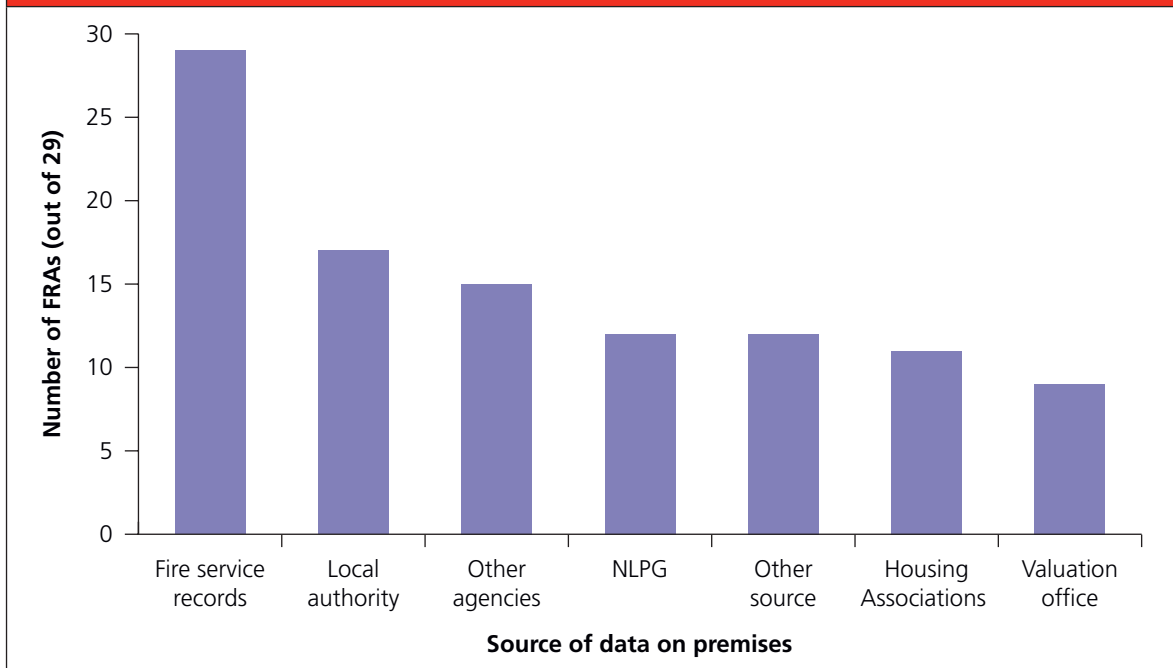
A number of suggestions were made for improving the count of premises, for example using gazetteers such as the Ordnance Survey Address Layer 2 or National Land and Property Gazetteer and sharing information with other agencies such as housing associations. It was generally recognised that the constant turnover in premises will result in incomplete datasets which will need updating regularly.

CHIEF FIRE OFFICERS ASSOCIATION FIRE SAFETY AUDIT OUTCOMES
Figure 3 (overleaf) shows the number of FRAs that record on paper or a database each of the outcomes from the CFOA fire safety audit. It shows that:

- the vast majority record the outcomes on a database
- some only record outcomes on paper
- two do not record the CFOA outcomes.

Figure 3: Recording of CFOA fire safety audit outcomes (N = 29)

Recording of CFOA fire safety audit outcomes
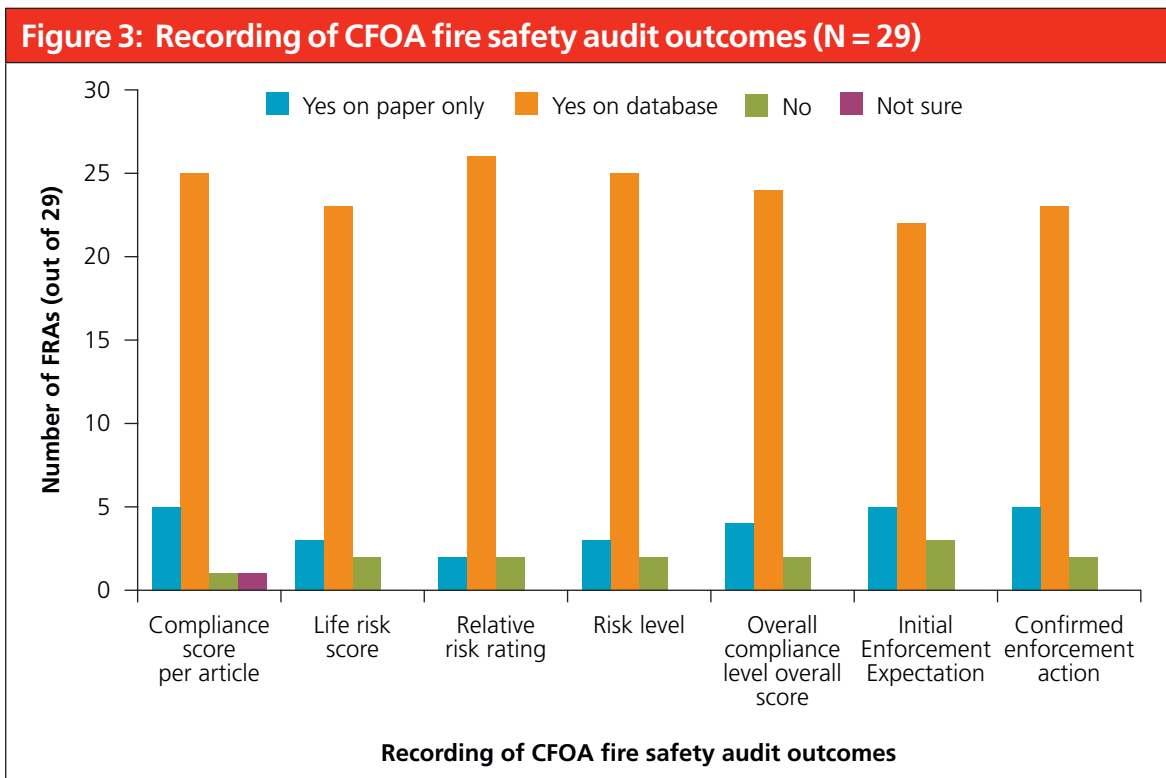
FRAs described that they already have existing quality assurance processes for checking the conduct of audits and enforcement work, and did not regard the quality of audits to be an issue. The quality assurance tended to take the form of shadowing fire safety officers when they carry out audits and completing questionnaire surveys of "customers" (people who have been audited).

3.1.3 Current practice

Seven examples of evaluation of fire safety activities by were cited FRAs in the workshops. These included:

- comparing the relative risk life risk scores awarded using the CFOA fire safety audit at the start and end of a year

- comparing the number of fires before and after providing advice to a (large) business with multiple premises

- reviewing customer feedback secured by surveying owners after audits;

- checking response times on, for example, consulting building control on fire safety aspects of building applications

- comparing CFOA fire safety audit compliance scores awarded on auditing a premises and those that would be achieved if the premises complied with advice given during the audit

- comparing the rate of audits per officer across FRAs.

It is also pertinent to note that fire safety (protection) is one of the areas covered by operational Assurance[7] self-reviews. FRAs did not offer this as an example of evaluation in the workshops.

Figure 4 (overleaf) illustrates various types of evaluation carried out by FRAs:

- most FRAs assess the number of audits per officer, time per audit and do follow up visits to check on implementation of advice or enforcement
- sixty per cent survey "customer's" views of audits
- just over half evaluate the targeting of audits and look at before and after compliance scores (although only one FRA stated this in the workshops)
- a large minority (in the region of 40%) report completing impact assessments, when they are auditing non-compliant premises
- very few complete trend analysis or benchmarking.

Most FRAs stated that they had the competence to complete evaluation exercises. Nearly half (46%) of the responses to the survey stated they had an analytical tool to support evaluation of fire safety activities. These included tools such as Community Fire Risk Management Information System and extracts from Management Information Systems. The tools that were cited by FRAs enabled them to provide data for information purposes (an example would be the total number of audits completed), however, none of the FRAs at the workshops stated that they currently had any specific tools to enable evaluation or provided any examples of tools, (such as a tailored spreadsheet, or customised analytical package.) We were unable to identify in the workshops or responses to the survey any FRAs currently completing the forms of evaluation described in the next section of this report.

[7] http://www.communities.gov.uk/documents/fire/pdf/opatoolkit.pdf

Figure 4: Forms of evaluation reported by surveyed FRAs (N = 28)
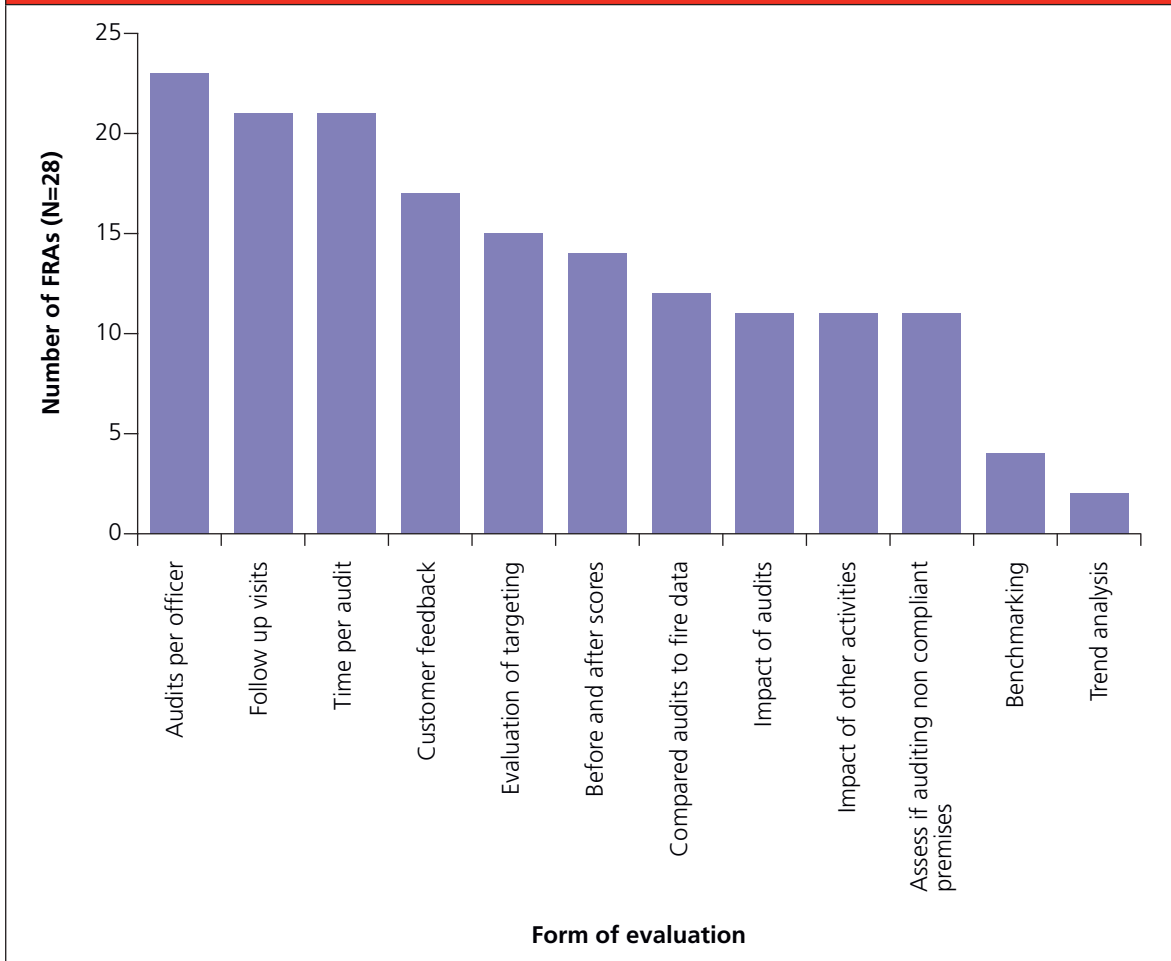
4 Stage 2: Illustration of potential evaluation by Fire Rescue Authorities

4.1 Introduction

This section of the report illustrates the forms of evaluation that could be completed to meet the expressed needs of FRAs. In each case the report states:

- the reasons for completing each form of evaluation

- an illustration of what the evaluation could look like, including variations on the example; and

- (Where available) examples of each form of evaluation completed by other regulators.

Where appropriate some of the current data limitations and issues have been discussed.

We have not attempted to develop worked examples or an analysis toolkit in this report.

4.2 Evaluation of effectiveness

4.2.1 Rationale for this form of evaluation

FRAs attending the workshops indicated that a key aim of evaluation is to provide an input to decisions on the level of resourcing of fire safety activities as a whole and of each type of fire safety activity. This requires an assessment of the benefit achieved by fire safety. Some FRAs stated that ideally, they would like to measure the reduction in loss of life and other outcomes (financial loss and loss of community assets), but recognised that this was difficult. Most FRAs at the workshops focused on assessing impact on fire safety standards, measured using a consistent measure such as the Chief Fire Officers Association (CFOA) fire safety compliance score.

In addition to assessing overall benefit of fire safety activities, FRA representatives also considered it important to compare between types of fire safety activities to assess their relative benefit. Some key activities included:

- audits and inspections

- different forms of enforcement – advice (informal action), notices and prosecutions;

- advice (outside of audits)

- arson prevention advice and support for businesses.

Audits, advice and enforcement were said to account for the majority of FRA fire safety time and were their principal form of protection activity.

Whilst consultations with Building Control were also cited as important activities, these were not highlighted by FRAs as being so important in the context of assessing their effectiveness.

4.2.2 Discussion of outcome measures

Two types of outcome measures were discussed at workshops, namely audit scores and fire incident data. The form and potential role of each type of measure is discussed below.

MEASURING OUTCOMES USING AUDIT SCORES

Three measures of levels of fire safety were discussed, namely:

- whether audit outcome was "satisfactory" or "unsatisfactory"
- CFOA fire safety relative life risk score
- CFOA fire safety compliance scores.

In each case it was presumed that these measures were indicators of the standard of fire safety in premises. Therefore, if the scores improve this would indicate an improvement in standards of fire safety and hence a reduction in fire risk.

Many FRAs expressed concern about whether officers used consistent definitions of "satisfactory" or "unsatisfactory", stating there was little guidance on what constituted "satisfactory"[8]. In addition, the authors of this report noted that a binary satisfactory/ unsatisfactory measure does not provide a scale of performance (such as a scale of 1, 2, 3, 4, and 5) and so cannot discriminate between levels of fire safety.

The relative risk score was judged by many FRAs to be a reasonable measure, providing the ability to discriminate between premises, such as by rating them as very low, low, medium, high or very high risk. 23 out of 28 (82%) responding FRAs stated they recorded the relative risk score on a database with another three recording it in paper. Only two did not record the life risk score.

However, some FRAs said that the relative risk score is not very sensitive to changes in the standards of fire safety management. The score is based on factors such as building size, occupancy, type of occupant and fire suppression systems, as well as fire safety management. Many of these factors are not amenable to change, such as building size and occupancy. Therefore, changes in fire safety management do not, in their opinion, have a major impact on the overall life risk score.

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[8]   Feedback from CFOA member of the project Steering Committee indicated that the guidance on satisfactory – unsatisfactory was clear but that adherence to the guidance may not be consistently assured.

It was noted that the relative life risk score was designed to support the FSEC toolkit and scheduling of inspections and reflects the role of factors such as building size to give a measure of risk. Therefore, it was not necessarily sensitive enough to change substantially due to any single factor.

The CFOA fire safety audit compliance score was commonly regarded as providing a valid and discriminating measure of changes in fire safety management. The audit provides an overall compliance score and scores per FSO article. Many FRAs focused on the compliance score when discussing evaluation. The overall score scale is shown in Table 3, with lower scores representing a better level of fire safety. This is made up from scores for each article, such as training staff, maintenance of provisions and risk assessment. Feedback from the workshop sessions was that nearly all FRAs use the CFOA fire safety audit form.

Table 3: CFOA fire safety audit outcome (initial enforcement expectation)				
Most compliant				Least
Compliance level 1	Compliance level 2	Compliance level 3	Compliance level 4	Compliance level 5
0 to 25	26 to 35	36 to 45	46 to 55	56 plus
Broadly compliant inform and educate	Notification of minor deficiencies	Notification of deficiencies	Enforcement notice	Enforcement notice fast track

In addition, 90 per cent of FRAs responding to our survey indicated that they record the CFOA fire safety scores on a database. Twenty out of 28 FRAs (71%) said they use the CFOA scores to prioritise inspections, with the remainder using a local version of the CFOA fire safety audit. We did not ask how they had amended the CFOA fire safety audit. Twenty-four said they record the CFOA fire safety audit compliance score per article as well as the overall compliance score in an electronic database while four still used paper records. This indicated that the CFOA fire safety audit is a commonly used form and so could provide a common impact measure across most FRAs.

MEASURING OUTCOMES USING FIRE INCIDENT DATA
Another option discussed was to use fire data. Some candidate measures include:

- fire deaths
- fire non fatal casualties
- number of persons escaping without FRA assistance
- number of fires

- average size of fire (m²);

- proportion of fires exceeding room of origin.

As most premises do not experience a fire in any one year (or decade), outcome measures such as these can only be used when evaluating aggregate data, such as assessing trends in all hotel fires over a period of years. Notwithstanding this, it was noted that:

- As fire deaths are relatively infrequent, this measure may not provide a practical measure of impact when evaluating any one FRA or a short period of time (such as a three year period). Some FRAs suggested this measure may better suit national level evaluations due to the larger count of deaths.

- Fire non fatal casualties and number of persons escaping unassisted are more likely to provide a practical measure as they are relatively more common, but are still infrequent in any one FRA and so again may not provide an ideal outcome measure.

- Whilst fires are relatively frequent and so a count of the number of fires could provide a measure, some FRAs noted that protection activities aim to protect life rather than prevent fires. Therefore, the rate of fire was not considered by some FRAs to be a valid indicator of the true impact of fire safety activities[9].

- The size of fires was considered to reflect protection activities, which aim to contain fire, and so could be a practical and valid measure.

A firm conclusion was not reached by FRAs regarding the role of fire incident data in assessing the impact of fire safety work. It is suggested by the authors of this report that the role of fire incident data in evaluation could be tested by piloting before being used in evaluation.

4.2.3   Before and after fire safety audit scores

The option of tracking the change in audit scores across inspections is outlined below. This can serve the purpose of exploring whether and how audits and associated enforcement work impact the inspected premise. It is advised that this form of analysis should be completed in parallel to reviewing the rate of audit (as per section 4.3.2) and, data permitting, changes in fire outcomes (as per section 4.2.5 to 4.2.7). In particular, whilst tracking audit scores may indicate the impact of audits on inspected premises, it will not, by itself, assess how the amount of audits being carried out influences outcomes across an area such as the entire FRS or region.

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[9]   It should be noted that feedback from DCLG and CFOA indicated that the FSO does require that suitable steps are taken by responsible persons to prevent fires and so the number of fires is a valid outcome measure for the FSO.

TRACKING OVERALL COMPLIANCE SCORES ACROSS VISITS

One option that was considered in the workshops and has been applied by other regulatory bodies in evaluations of enforcement is illustrated in Table 4. The example uses hypothetical CFOA audit scores. The premises are split by type of action taken, namely enforcement, advice or no action. In this example, seven scores are shown for the first visit to premises that have formal enforcement action (4, 5, 5, 4, 4, 5, and 5). The average score for each set of premises is calculated for the first visit (when action may be taken) and then the second and third visit. For the latter data the average is 4.6.

It is advised that the outcome of a fire safety intervention is assessed after enforcement activity or advice is meant to have been enacted, this will assess whether the impact is sustained. For example, enforcement is applied after the first visit. The second visit checks that it has been complied with and the third visit checks whether improvements have been sustained. Whilst a third visit may not be needed as part of standard audit and enforcement work, it may be helpful as part of an evaluation exercise to test whether action has a sustained impact.

In this example:

- the scores improve (from 4.6. to 4) after taking formal enforcement action but regress to 4.4 after the second visit
- the scores for advice improve across the three visits, whilst staying unchanged for the no advice option.

The average scores are shown in **Figure 5**.

Table 4: Before and after CFOA fire safety compliance scores (hypothetical data)						
Type of action		**Visit 1**		**Visit 2**		**Visit 3**
	Scores per premise	**Average**	**Scores per premise**	**Average**	**Scores per premise**	**Average**
Formal enforcement taken	4, 5, 5, 4, 4, 5, 5 etc	4.6	3, 4,4, 3, 4, 5, 5 etc	4	4, 4, 5, 4, 4, 5, 5 etc	4.4
Advice only	1, 2, 3, 1, 2, 2, etc	1.8	1, 2, 1, 1,1, 2, etc	1.2	1, 1, 1, 1,1, 1, etc	1
No advice or enforcement	1, 2, 1, 1, 1, 1 etc	1.2	1, 2, 1, 1, 1, 1 etc	1.2	1, 2, 1, 1, 1, 1 etc	1.2

Figure 5: Before and after CFOA fire safety compliance scores (hypothetical data)
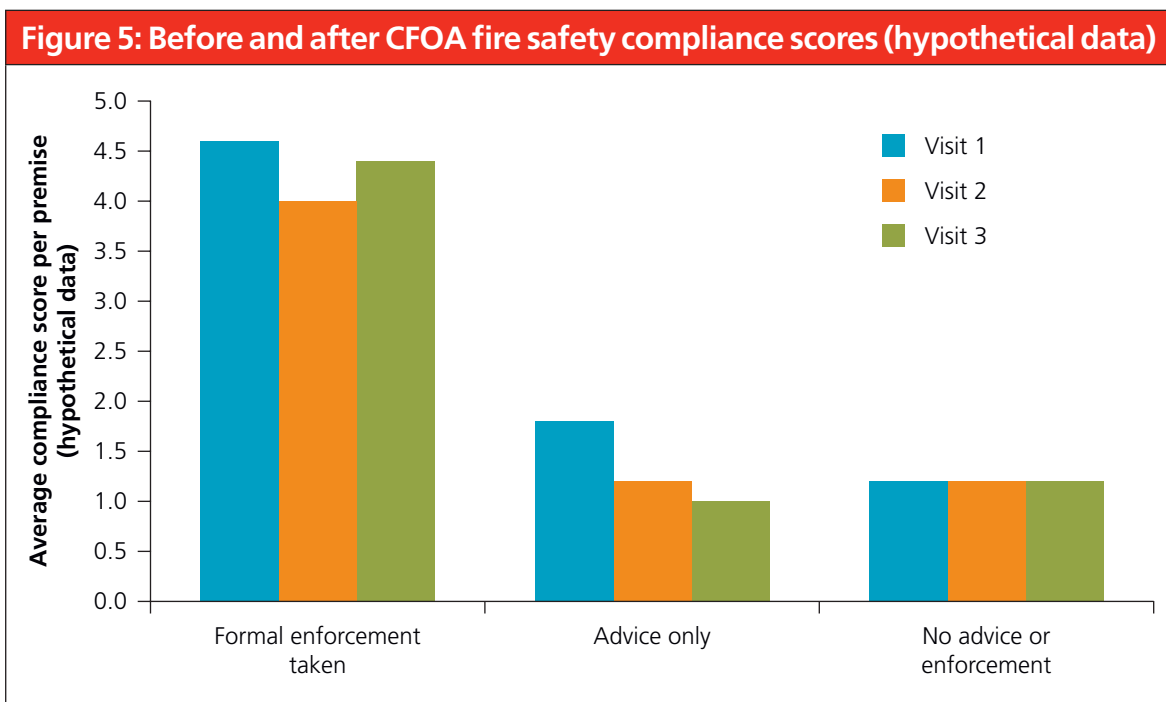
TRACKING OVERALL COMPLIANCE SCORES BY FSO ARTICLE ENFORCED ACROSS VISITS

A further option is to compare overall CFOA fire safety audit compliance scores according to the article that were acted on. This is illustrated in Table 5. The overall compliance score is shown for premises where advice was given on 'Fire safety arrangements' (scores of 4, 3 and 2). The example indicates that scores improve when advice is given on fire safety arrangements, but improvement is not sustained when action is taken on maintenance of provisions.

Table 5: Comparing impact according to article acted on (hypothetical data)			
Advice given on element….	Visit 1 (average score)	Visit 2 (average score)	Visit 3 (average score)
Fire safety arrangements	4	3	2
Maintenance of provisions	4	3	4
No advice or enforcement	1	1	1

Finally, the same approach can be applied to comparing between, for example, audits and advice provided outside of audits such as at business seminars. This would require scores to be given to premises for both audited premises and premises of people who attend the seminar.

In all these examples, it is important to ensure the same set of premises are included in the sample of first, second and third visits. If premises are excluded from the final visit, they must be excluded from the datasets of all visits, to control for variation across the premises.

EXAMPLES OF BEFORE AND AFTER ANALYSIS OF AUDITS SCORES FROM OTHER REGULATORS

An example of this form of evaluation was completed for the Health and Safety Executive by Thomas et al (2004[10]). They completed an evaluation of a three-year single issue inspection exercise of over 200 factory sites in 2000/2001. The study was designed to test the impact of two alternative Health and Safety Executive interventions on organisational performance. The two interventions were:

- **Advice only**. One group of organisations were visited twice. On the first visit the HSE inspectors provided advice and rated the standard of risk control using the three Risk Control Indicators (RCIs) used on Inspection Report Form 1 (IRF1). On the second visit the Health and Safety Execitve inspectors re-rated the organisations.

- **Enforcement**. The second group of organisations were visited three times. This group were subject to an initial enforcement intervention, such as an Improvement Notice or Instant Visit Report, (and rated) and a further intervention, in some cases as enforcement or advice, at the second visit. They were also re-rated on the third visit.

The final visits were completed in 2002-2003. Thus, it was possible to measure the effect of giving advice versus the serving of notices, using inspector completed Risk Control rating scales. The actual results are shown in Table 6. Thus, advised firms improved from a reasonable score to a slightly better one, whilst enforced firms rose from a very poor score to a far better score.

Table 6: Actual results from evaluation of HSE inspections (1 = limited or no compliance, 4 is full compliance)			
Action taken	**Initial visit**	**Second visit**	**Final visit**
Enforcement	1.26	3.57	3.26
Advice	2.35	-	2.93

The Food Standards Agency also completed a before and after analysis of inspection scores[11]. Their example exemplifies evaluation of a novel method of encouraging compliance, namely the display of hygiene inspections scores on "shop windows" and websites. The evaluation tracked inspection scores for individual food business before the scheme was launched and then for the 1st, 2nd and 3rd inspection afterwards. The change in scores was assessed in the affected business. As the scheme was being trialled in a few areas, the change in scores for affected business could be compared with trends in scores for the UK as a whole. The evaluation found that hygiene scores improved after the scheme

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10   Thomas, T, Hickling E, Gaskel E, and Burton, M. February 2004. Noise Single Issue Inspection: Analysis Summary – Part II. Report for the Health and Safety Executive. Cited in http://www.hse.gov.uk/research/rrpdf/rr519appabc.pdf

11   http://www.food.gov.uk/safereating/hyg/scoresonthedoors/sotdbackground/sotdevaluation

was launched. Interestingly, businesses that received the poorest scores showed the greatest improvement. This was interpreted as showing that the scheme did impact those businesses that needed to improve.

The latter example highlights the point that it is important to understand the baseline standard of performance. Interventions may have little impact where performance is already high. Therefore, analysis may need to split premises according to their baseline score, and then track change in scores.

4.2.4   Before and after attitudes and behaviours

A variation to the preceding comparison is to use attitudinal measures. This could be achieved by asking owners to complete questionnaires before and after the fire safety activity, such as before and after an audit or before and after a series of business seminars.

Many FRAs already complete post audit interviews of people as part of quality control and tracking "customer satisfaction". A variation to this would be to interview a sample of responsible persons before an audit and again afterwards. The interview could explore, for example:

- knowledge of fire safety

- examples of fire safety management, such as time since last tested fire alarms

- judged impact of the audit on their standard of fire safety management.

In order for before and after surveys to provide a reliable measure of change it is necessary to achieve an adequate number of responses. A sample of about 350 before and 350 after would be large enough to detect relatively large changes in attitudes (such as where 10% or more people change). However, samples in the order of 500 to 600 before and 500 to 600 after are needed to reliably detect small changes (less than 10% of respondents). Therefore, this type of evaluation can be resource intensive.

EXAMPLES OF BEFORE AND AFTER ATTITUDINAL SURVEYS

There are many examples of this form of evaluation. In the case of fire, before and after surveys are typically carried out for fire safety media campaigns. The 2008-09 tracking surveys[12] for fire kills reported (p10) that the percentage of people who had checked their battery smoke alarm in the last month rise from 56 per cent to 67 per cent.

These surveys do provide a measure of attitudinal change. However, as they rely on self reported attitudes and behaviours; they may not provide an absolute measure of true change in behaviour.

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[12] http://www.communities.gov.uk/publications/corporate/statistics/monitorq1q420091

4.2.5   Before and after trends in rates of fire, death and injury

As any one premise is unlikely to have experienced a fire, it is not practical to track fire outcomes for a small sample of premises. In addition, audits may not have been completed for premises that experience a fire. Therefore, fire outcome data is most likely to support trend analysis. Trend analysis is where data is plotted for a period of time to see if there is a pattern in the data or a change in data.

TRENDS IN RATES OF FIRES, DEATH AND INJURY

An option is to plot trends in the rates of outcomes, such as the rates of fire, in the period before and after implementation of an intervention or regulation. It is possible that the incident rate was improving (falling) prior to the intervention. Therefore, it can be necessary to compare the *rate of improvement* in the before period with the *rate of improvement* in the after period. This can be partly achieved by plotting trends graphically for the before and after period and marking the time the intervention stated. However, the change in trend may not be large enough to be detected by viewing the chart. Therefore, it is useful to have a numerical measure of the rate of change, such as:

- the per cent reduction in the number of fires between two years;
- the per cent reduction in the rate of fires per 1000 premises between two years.

An example is shown using actual data (from the DCLG fire monitor[13]) for England, in **Figure 6**. The FSO was introduced in October 2006. The figure shows the number of fires in Other Buildings for the 14 quarters leading up to the enactment of the Fire Safety Order (Before 14 quarters) and in the 14 months after enactment of the Fire Safety Order (After 14 quarters). Linear best fit lines have also been placed (using MS Excel auto fit function) on these to show the trends. A visual inspection of the trends indicates there is little difference in the rate of decline before and after enactment of the Fire Safety Order, i.e. the number of fires appears to be declining at the same rate before and after. However, we have also calculated some measures of change, including:

- a gradient (a measure of steepness)- the after gradient is -30.1 compared to -26.8 for the before period, which suggests that the rate of fire declined more after than before enactment of the Fire Safety Order
- the average change between each quarter – which was -2 per cent after compared to 0 per cent before;
- the change since the first quarter of each period – with a -8 per cent decline between the second quarter of 2003 and third quarter of 2006, compared to a 11 per cent decline between the fourth quarter of 2006 and the first quarter of 2010, i.e. there was greater decline afterwards.

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[13]   http://www.communities.gov.uk/publications/corporate/statistics/monitorq2q32009

These measures suggest the rate of decline was greater after enactment of the Fire Safety Order compared to before. However, the trends are volatile. The after rate of change between each quarter has a confidence interval of 4 per cent, which means that the after rate of change was in the range of -6 per cent to +2 per cent. Therefore, it is unclear whether the after rate of change is truly different to the before rate of change (of 0%).

Figure 6: Before and after trend in Other Building fires (England)
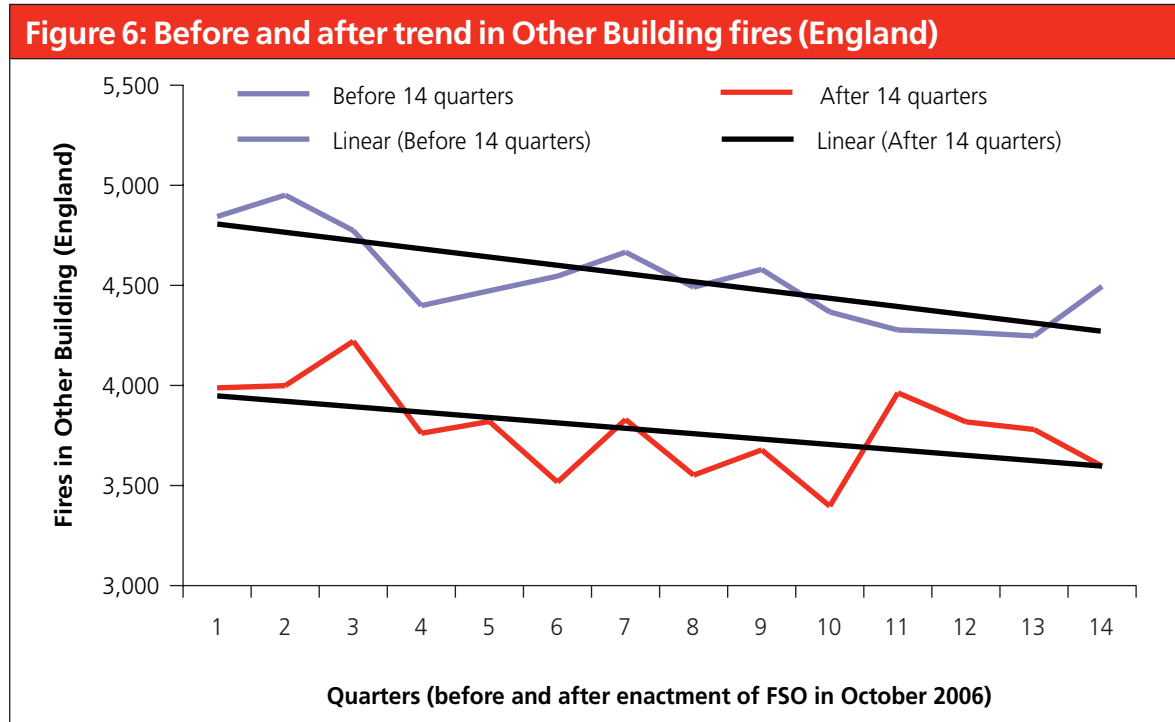
Note: The Incident Reporting System (FRS report fires via an online system) was launched in 2009 (quarter 11 after introduction of the Fire Safety Order) and so may have influenced the reported number of fires, although this possibility has not been demonstrated.

Table 7 provides the data used to calculate the rates of change				
Period before/ after FSO enacted	Before 14 quarters		After 14 quarters	
	2003 Q1	4,517		
1	2003 Q2	4,844	2006 Q4	3,988
2	Q3	4,951	2007 Q1	3,999
3	Q4	4,774	Q2	4,221
4	2004 Q1	4,399	Q3	3,761
5	Q2	4,473	Q4	3,820
6	Q3	4,546	2008 Q1	3,517
7	Q4	4,666	Q2	3,830
8	2005 Q1	4,491	Q3	3,552
9	Q2	4,580	Q4	3,678
10	Q3	4,367	2009 Q1	3,397
11	Q4	4,277	Q2	3,963
12	2006 Q1	4,266	Q3	3,818
13	Q2	4,247	Q4	3,780
14	Q3	4,495	2010 Q1	3,597
Average change per quarter		-0.12%	Average change per quarter	-1.9%
95% confidence interval in quarterly rate of change		2%	95% confidence interval in quarterly rate of change	4%
Change since first quarter of period		-8%	Change since first quarter of period	-11%
Gradient of slope		-26.8	Gradient of slope	-30.1

TABLE 7: DATA FOR CALCULATION OF BEFORE AND AFTER RATES OF CHANGE IN FIGURE 6

It should be recognised that this form of before and after analysis indicates a change, but does not prove that the change was due to the new regulation. It is possible that other events coincided with the intervention or regulation. These can be accounted for in the analysis qualitatively by determining that there were no coincidental events or quantitatively by plotting other factors that might also influence outcomes, such as economic factors.

It should also be noted that this form of before and after analysis requires a reasonably statistically robust level of data. The number of incidents can fluctuate from one year to another, obscuring actual trends or presenting false trends.

Indeed, even the national level of data can be volatile. The 95 per cent confidence interval (a confidence interval is a measure of the range of results) for the "before" period was 10 per cent, reflecting the point that the rate of fires was increasing in some years and falling in others. The "after" confidence interval was 2 per cent reflecting a more consistent trend. This means that the before rate of change was between +8 per cent and -12 per cent, whilst the after rate of change was between -6 per cent and -10 per cent. Thus, a strict statistical interpretation would be that the after trend comes within the range of the before trend.

A fuller trend analysis might:

1) cover more years

2) standardise the rate of fire as a rate per 1000 premises

3) include other factors (such as measures of economic change)

4) assess trends for each occupancy type

5) use a battery of fire outcome measures (e.g. fire size, casualties etc).

It could also compare trends in fire data per occupancy type against trends in CFOA fire safety audit scores per occupancy. This type of evaluation is normally completed at a national level.

EXAMPLE FROM OTHER REGULATORS
The Health and Safety Executive have completed before and after analysis of injury rates, after introduction of new regulations, such as the evaluation of the Provision and Use of Work Equipment Regulations[14]. The study plotted injury rates for the period before and after the regulations was introduced. The review checked whether the rate of injuries declined at a faster rate after the regulations were introduced. As the rate of injury was declining before the regulations were introduced, it was important to compare the rate of change rather than just whether the rate was declining after the regulations came into effect.

4.2.6   Life risk ratings (FSEC updates)
The life risk ratings from the CFOA fire safety audit can also be used in before and after comparisons, in the same way as the CFOA compliance scores.

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[14]   http://www.hse.gov.uk/research/rrpdf/rr125.pdf

Life risk ratings offer an additional option compared to compliance scores. If the FRA uses Fire Service Emergency Cover, the life risk ratings can be updated in FSEC when audits have been completed. Fire Service Emergency Cover provides measures of predicted deaths and loss of property in Other Buildings. Therefore, if the life risk ratings improve, the predicted loss will decline. This has the potential to provide quantified values of the life saving and property saving from fire safety improvements.

It is important to note that Fire Service Emergency Cover comes with default site specific risk assessments (Other Building site assessments). These will have been modified by the FRA when "cleansing" the data, such as by correcting the building size and entering the number of storeys. They will also be amended following the first visit to a premise, which may identify sprinklers and the occupancy type. Therefore, Fire Service Emergency Cover will only provide an indication of the impact of fire safety once the Other Building dataset has been cleansed, thereby providing a valid baseline against which to compare future updated Other Building datasets.

4.2.7 Comparing trends in rates of fire, fire size and casualty with rates of audit and enforcement

Trend analyses describe data and do not necessarily explain the cause of trends. In order to suggest an association between a trend and fire safety activities, it is useful to compare trends between (for example) two areas that have different approaches to fire safety or different levels of fire safety activity. This is illustrated in Figure 7. In this example, the trends in the average size of fire differ between two FRAs. FRA 'A' is, carrying out a campaign of business seminars and education as well as audits, whilst FRA B is only carrying out audits. The chart suggests that FRA 'A' has a superior trend, possibly due to its campaign of business seminars.

Ideally the two FRAs would not have changed in any other respects, such as demolition of old premises in FRA A, that might account for the trends. This needs to be established qualitatively by exploring potential coincidental events or quantitatively if data on other trends is available.

Figure 7: Comparing fire outcome trends between areas with different fire safety activities (hypothetical data)
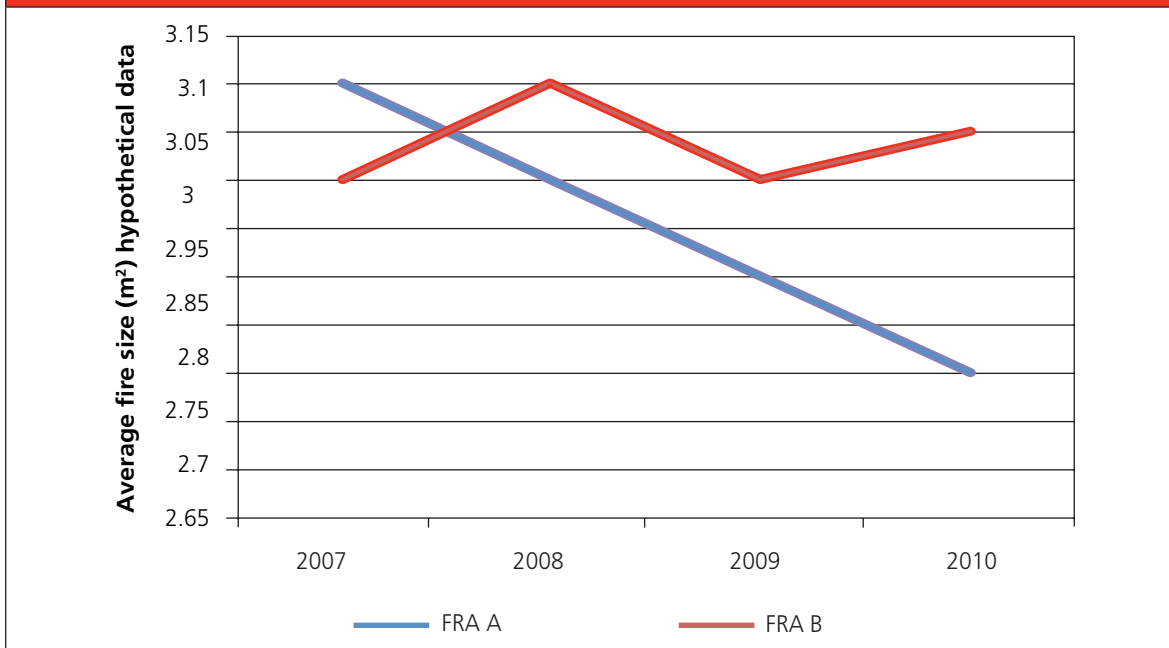
The same approach could be used to compare trends in unwanted fire signals or other outcomes.

ASSESSING IMPACT OF DIFFERENT RATES OF AUDIT

It may be the case that all FRAs or parts of an FRA are carrying out the same fire safety activity but to different levels. This prevents a simple comparison of FRAs that do and do not carry out an activity. An option here is to compare changes in scores/outcomes over time against the rate of fire safety activity. Some example data is shown in Table 8 for seven areas.

The table shows that the rate of audits varies between the seven areas. In this example the rate of audits is calculated for the period 2007 to 2010. This could be a count for all buildings or for one category such as hotels. The rate is calculated by dividing the number of audits by the number of premises and multiplying the result by 1000, e.g. 15 audits divided by 50 buildings = 0.3, multiplied by 1000 is 300 audits per 1000 buildings.

The table shows the average number of fires for these buildings in 2007 and then in 2010. The improvement is calculated by dividing the 2010 number by the 2007 number, subtracting this from 1 and multiplying by 100, e.g. 1-3/4 x 100 = 0.25 x 100 = 25%.

Table 8: Example data for comparing changes in number of fires to rate of audits (hypothetical data)				
Area	Rate of audits per 1000 buildings over 2007 to 2010	Average number of fires in 2007	Average number of fires in 2010	Change in number of fires between 2007 and 2010
1	300	4	2	-50%
2	50	5	4	-20%
3	75	4	3	-25%
4	250	3	2	-33%
5	10	2	2	0%
6	35	3	4	33%
7	45	2	2	0%

The hypothetical data from Table 8 is plotted in Figure 8. Areas with higher rates of audit show greater levels of improvement in average compliance scores.

Figure 8: Plot of rate of audits against change in number of fires per area (hypothetical data)
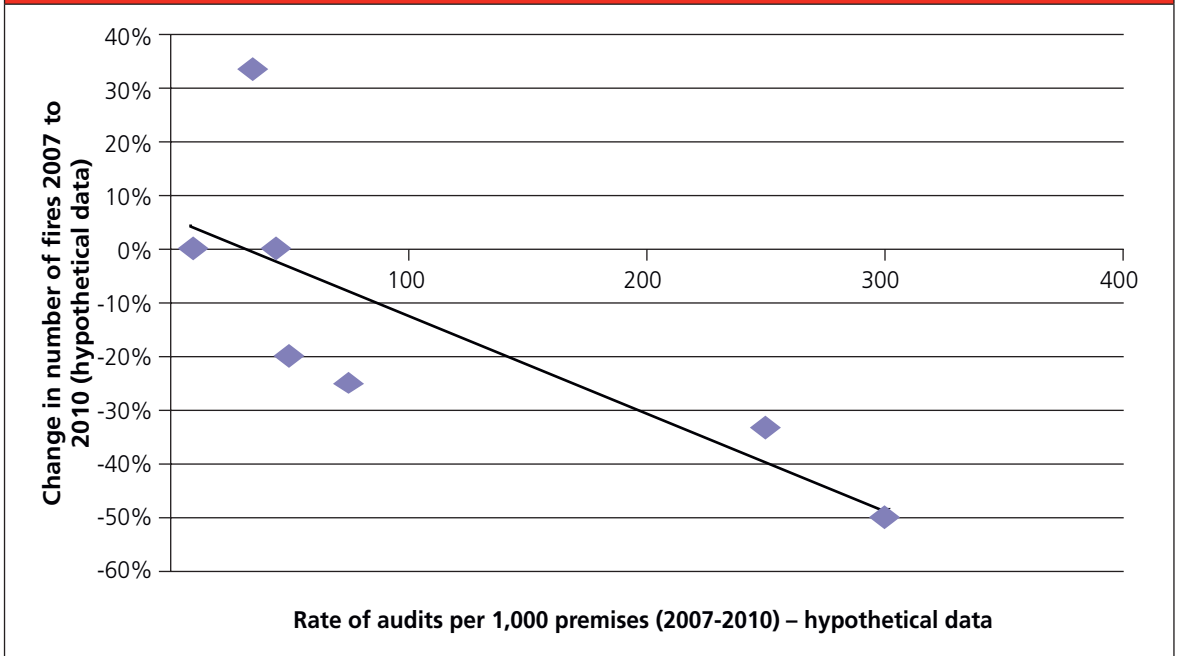
EXAMPLES OF ACTUAL IMPACT EVALUATIONS

This form of evaluation was applied in research for DCLG to evaluate the impact of Home Fire Safety Checks[15]. One result of this research is shown in Figure 9. In this example, the rate of casualties declined more in those FRAs that had installed more alarms per million population (pmp). It is important to note that both the rate of alarms installed and the change (between 2000-02 and 2005-07) in rate of casualties were presented as a rate per million population. This ensured that differences in population levels were controlled for in the evaluation. Each dot on the chart is a FRA.
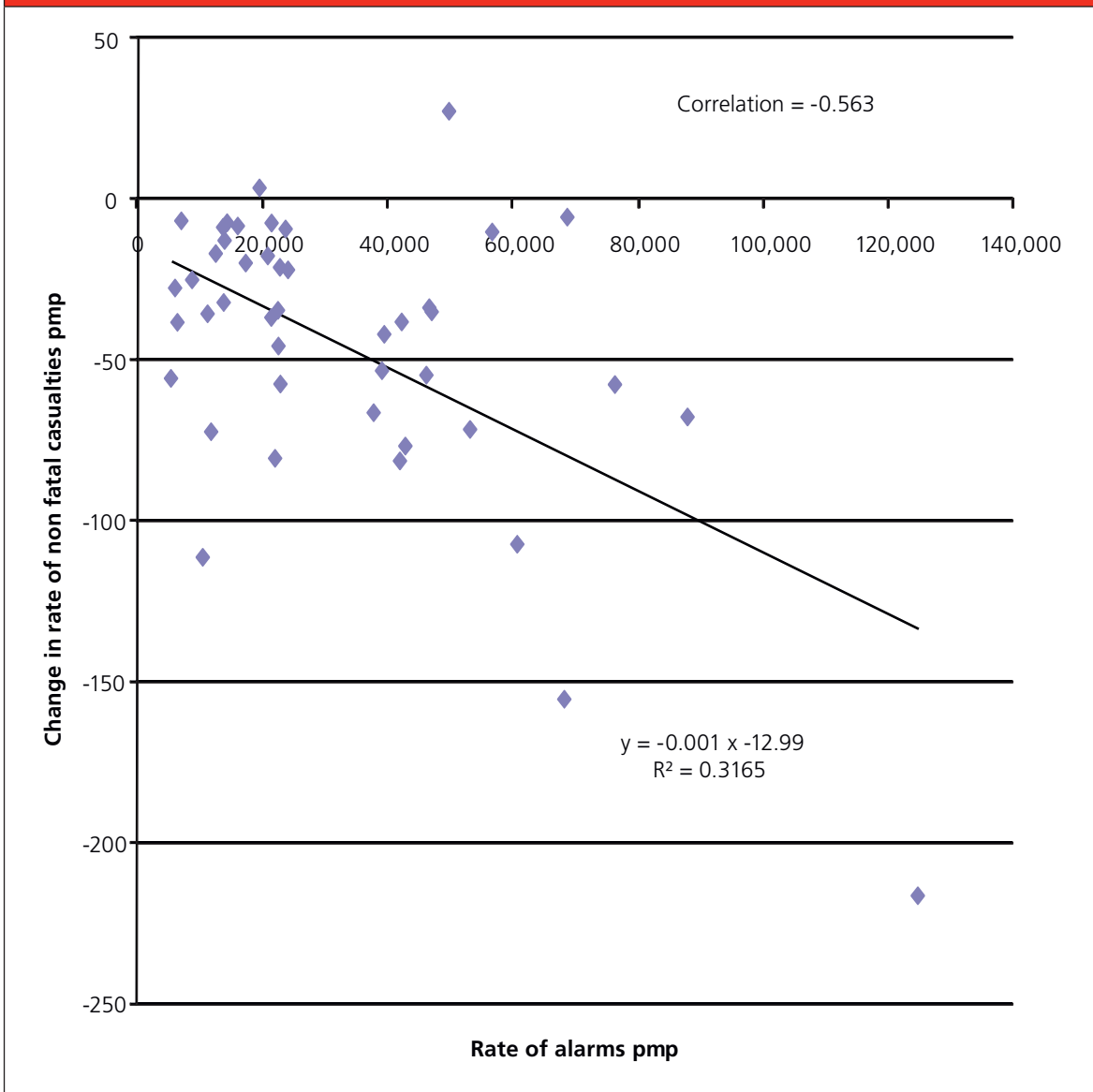
In this example a correlation was calculated (of -0.563). This is a measure of the strength of the association between the rate of alarms installed and change in casualties. Correlations range from -1 through 0 to +1. A correlation of 0 to 0.2 is very low, 0.21 to 0.4 is low, 0.41 to 0.6 is moderate, 0.61 to 0.8 is high and over 0.8 is very high. If the correlation is positive (+) this means that as one factor increases so does the other. If the correlation is negative (-ve) this means that as one factor rises, the other one declines. So in this example there was a moderate negative correlation between alarms installed and change in casualties. As the rate of alarm installation rose, the rate of non fatal casualty fell.

Finally, when plotting data such as this, the reliability of the result is associated to the number of data points and the amount of volatility in the data. In this example, a best fit line has been fitted (using auto functions in excel) to the plot. If all data points were on the best fit line, then there would be a strong relationship with little volatility. In this case, the data points follow the line to a reasonable level. The chart shows a R^2 value. This is a statistical measure of extent to which the best fit line "explains" the scatter of data. A value of 0.31 (in this example) is, given the relatively small number of data points, reasonable but not high.

Larger samples may achieve more reliable results. There is a risk that with (say) 10 to 20 data points that results will be "noisy" and that a clear result will only emerge with (say) over 30 data points.

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[15]   http://www.communities.gov.uk/publications/fire/homefireriskcheckgrant

Figure 9: Change in non-fatal casualties pmp versus rate of alarm installations pmp (2 outliers removed)

Correlation = -0.563

$y = -0.001 x - 12.99$
$R^2 = 0.3165$

X-axis: Rate of alarms pmp
Y-axis: Change in rate of non fatal casualties pmp

EXAMPLES OF EVALUATION FROM OTHER REGULATORS

The Health and Safety Executive also compared trends in occupational injury rates with trends in the level of enforcement[16] using data from the UK and Australia. They found mixed results. In the UK, the number of injuries declined when enforcement rates were higher in the construction and agriculture sectors. However, there was no association between the rate of enforcement in the UK service sector and their injury rate. They also reviewed Australian injury and enforcement rates in each Australian state. There was no association between enforcement rates and injury rates across the Australian states.

The plot of improvement notices against injury rate in the UK service sector is shown in Figure 10 as an example of this form of evaluation. The number of notices peaked and

16   http://www.hse.gov.uk/research/rrpdf/rr519.pdf

then fell greatly with no apparent change in injury rates. The graph plots the rate of injuries involving over three days absence that were reported under the Reporting of Injuries Disease and Dangerous Occurrence Regulations (RIDDOR).

Figure 10: Improvement Notices served by local authorities against rate of 3+ day RIDDORs per 1000,000 employees (1991-2000)
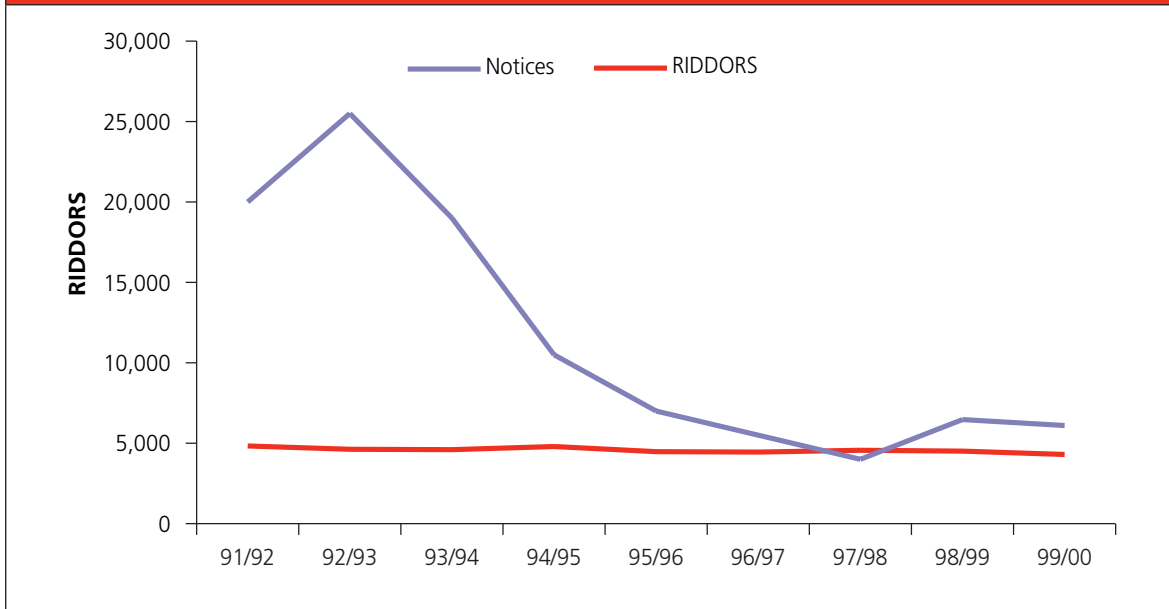
It is also pertinent to note that the Health and Safety Executive evaluation included a survey of firms that had been subject to enforcement action. The survey explored the perception of the enforcement action, such as whether it was fair and proportionate, and its impact on the managers' attitudes and behaviours and safety management. For example, it explored whether improvements were limited to the specific requirements within the Improvement Notice or whether the notice prompted them to make wider improvements. This provided evidence of the impact of the enforcement on the managers' commitment to health and safety and their general approach to health and safety management.

4.3   Evaluation of targeting of fire safety activities

4.3.1   Rationale for this form of evaluation

It is common practice to target fire safety audits onto higher risk premises. This helps to evaluate:

- whether inspection is proportionate – are more audits completed of higher risk than lower risk premises?
- whether inspection is cost effective in respect of devoting more resources onto higher risk premises.

Obviously the rationale is that finite fire safety resources can have more impact by focusing on higher risk premises.

4.3.2   Rates of audits per 1000 premises

One approach to assessing targeting is illustrated in Figure 11. This uses actual national data taken from Integrated Risk Management Plan data returns for 2007 from English FRAs. The number of audits was divided by the number of premises and then multiplied by 1000 to get a rate per 1000 premises. This means that, for example, of every 1000 hospitals, 191.82 were inspected in 2007.

In this example, rates are presented for four types of premises. Care homes have the highest rates of audits and offices the lowest. The actual rate of audit can be compared with the expected or planned rate of audit. In this example, the higher rate of care home audits might reflect a policy to target care homes as they are regarded as higher risk.

Figure 11: Rate of audits per 1000 premises (2007 IRMP data returns)
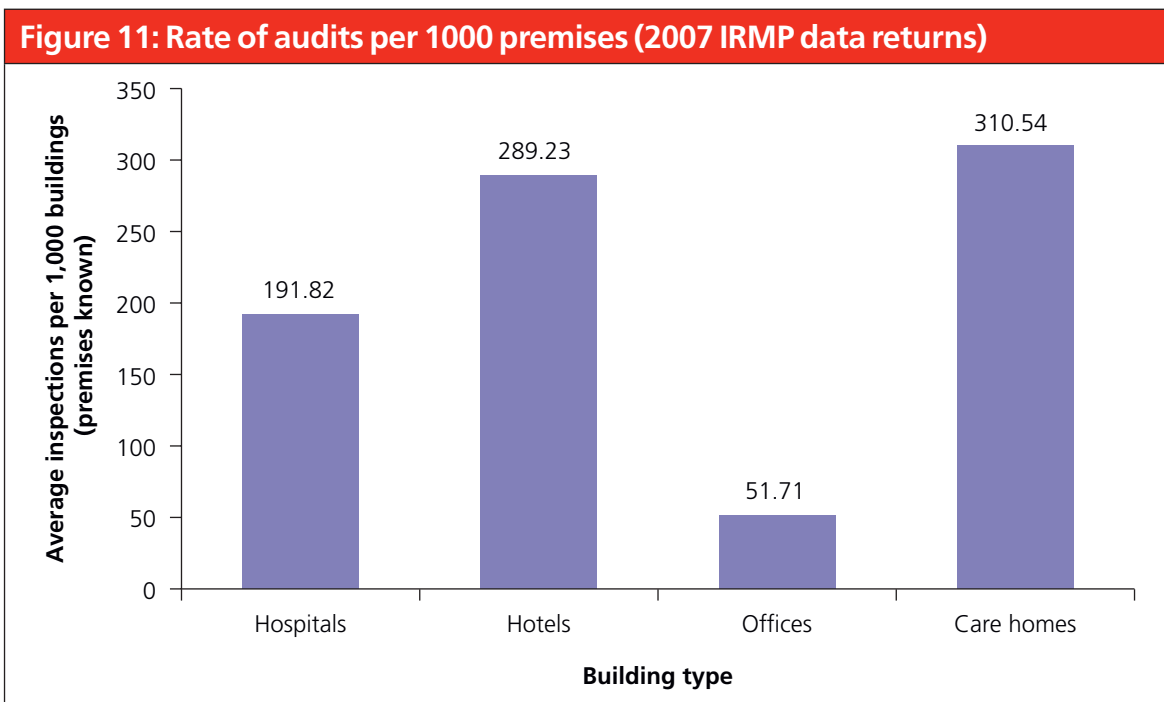
Note: The rate of audit for hotels may have been high in 2007 due to the extension of fire safety regulation in the FSO, which included a larger range of hotel premises.

One option is to compare the rates of audit against a measure of relative risk. There are a number of options.

CHIEF FIRE OFFICERS ASSOCIATION FIRE SAFETY AUDIT RELATIVE RISK RATINGS
The audit contains a table of relative risk, shown in Table 9. This would, generically, class hospitals as highest risk and offices as lowest risk. The actual rate of audits can be compared against the relative risk scores in Table 9.

However, it should be noted that the actual risk score for a specific premise will depend on the size, fire safety management, occupancy etc of the premises in each FRA. The hospitals in one FRA may be smaller than another, whilst the care homes could be relatively larger and poorly managed. Therefore, the relative risk rankings of premises may switch (to some extent) between FRAs. Ideally, the relative risk scores would be scrutinised per type of occupancy in an FRA to determine the relative risk per occupancy, and then the audit rates compared.

Referring back to Figure 11, hospitals may have a lower rate of audit than care homes and hotels because the hospitals have a higher rate of compliance. Hotels whilst generically lower risk than hospitals may have higher rates of audit due to poorer standards of fire safety giving them elevated risk scores.

In addition, a low rate of audit may also reflect local FRA policy. For example, a FRA may focus on intelligence led audits, carrying out audits in response to reports of non-compliance. Or it may focus on advisory activities. Therefore, a low rate of audits may be balanced by a high rate of provision of advice. As ever, it is important to understand the policies and practices that underline numerical results. Thus, it is important to understand the audit policy and local risk profile when assessing the data on the targeting of audits.

Table 9: FSEC relative risk scores						
	Average FSEC Societal life risk fire rate per 1,000,000 Buildings per year	Relative risk bands				
		Very High	High	Medium	Low	Very low
		FSEC life risk scores				
Occupancy Type		10+	9 to 3	+2 to -2	-3 to -9	-10+
		Relative risk score				
Hospitals and Prisons (A)	676	>6.83	6.78-6.31	6.13-5.53	5.35-4.88	<4.83
Hostels (E)	167	>6.22	6.18-5.70	5.52-4.92	4.74-4.27	<4.22
Care homes (B)	128	>6.11	6.06-5.59	5.41-4.81	4.63-4.15	<4.11
HMO's (C)	106	>6.03	5.98-5.50	5.33-4.73	4.55-4.07	<4.03
Houses converted to flats (G)	106	>6.03	5.98-5.50	5.33-4.73	4.55-4.07	<4.03
Purpose built Flats (D)	106	>6.03	5.98-5.50	5.33-4.73	4.55-4.07	<4.03
Hotels (F)	77	>5.89	5.84-5.36	5.19-4.59	4.41-3.93	<3.89
Shops (N)	63	>5.80	5.75-5.27	5.10-4.49	4.32-3.84	<3.80
Other sleeping accommodation (H)	21	>5.31	5.27-4.79	4.62-4.01	3.84-3.36	<3.31
Schools (M)	11	>5.05	5.00-4.52	4.35-3.74	3.57-3.09	<3.05
Further Education (J)	11	>5.05	5.00-4.52	4.35-3.74	3.57-3.09	<3.05
Public Buildings (K)	11	>5.05	5.00-4.52	4.35-3.74	3.57-3.09	<3.05
Other buildings open to the public (P)	11	>5.05	5.00-4.52	4.35-3.74	3.57-3.09	<3.05
Licensed Premises (L)	10	>5.02	4.97-4.49	4.32-3.72	3.54-3.06	<3.02
Factories/Warehouses (R)	4	>4.62	4.57-4.10	3.92-3.32	3.14-2.67	<2.62
Other Workplaces (T)	4	>4.62	4.57-4.10	3.92-3.32	3.14-2.67	<2.62
Offices (S)	3	>4.47	4.42-3.95	3.77-3.17	2.99-2.51	<2.47

RATES OF FIRE CASUALTY

Another option is to calculate the rate of fire (or casualty) per type of premise and compare the rate of audits against this. Care must be taken in this approach, as the rate of fire or casualty may be low in some categories. When the rate of casualty is low it can be volatile, spiking up and down from one year to the next. To reduce the "noise" in the data, data can be taken from more years and from a larger area. An example comparison is shown in Figure 12 using 2007 Integrated Risk Management Plan data and UK National Fire Statistics[17]. The count of premises was taken from a Mott MacDonald report on updating Fire Service Emergency Cover values[18]. The data is shown in Table 10. The results indicate that:

- whilst hospitals have the highest rate of non fatal fire casualties, care homes and hotels are inspected more often

- offices have the lowest rate of non fatal casualty and the lowest rate of audit.

This example uses data for the UK. If local FRA data is used it is possible that the number of casualties will be too low to given a reliable measure. FRAs may need to pool data to develop a more reliable rate of casualty.

[17]   http://www.communities.gov.uk/documents/statistics/pdf/1320522.pdf

[18]   FSEC toolkit. Calculation of Other Building Fire Frequencies. Mott MacDonald report for Communities and Local Government, July 2006.

Figure 12: Comparison of rate of audit against rate of nonfatal fire casualty
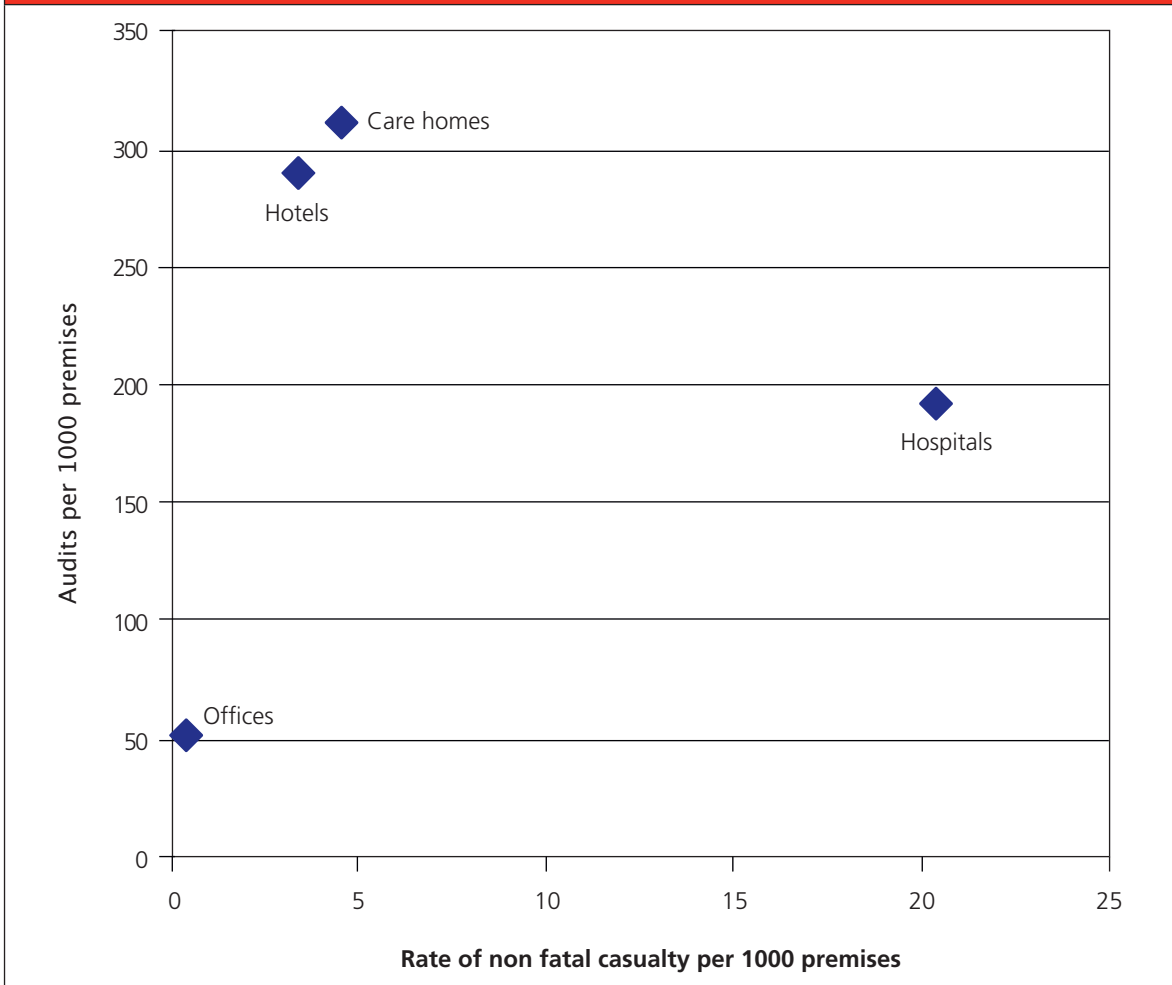

Table 10: Data used for Figure 12

	Non fatal casualties (2007, UK) A	Number of premises B	Rate of non fatal casualty per 1000 buildings (A/B x 1000)	Rate of audits per 1000 premises
Hospitals	48	2,355	20.38	192
Care homes	110	24,151	4.55	310
Hotels	67	19,674	3.41	289
Offices	152	362,750	0.42	52

The rate of casualty is given by the number of casualties divided by the number of premises and then multiplied by 1000.

EXAMPLES OF EVALUATING TARGETING OF FIRE SAFETY ACTIVITIES

The targeting of Home Fire Risk Checks was evaluated as part of the Final Evaluation of the Home Fire Risk Check capital fund[19]. An example result is shown below. It shows the rate of alarms installed during HFRCs per million population against a predicted rate of non fatal dwelling fire casualties. The rates were expressed as rate per million population to ensure they can be compared between areas. There was a reasonable trend, with more alarms installed in those FRAs with higher rates of non fatal dwelling fire casualties.

The predicted the rate of non fatal dwelling casualty was taken from another DCLG study[20] where it was calculated using a regression of socio-demographic factors against historical rates of non-fatal casualties in England. In this case the comparison was between FRAs. An alternative option would be to use reported rates of non-fatal dwelling fire casualty such as those reported in UK National Fire statistics.

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[19] http://www.communities.gov.uk/publications/fire/homefireriskcheckgrant

[20] Analysis of fire and rescue service performance and outcomes with reference to population socio-demographics - Fire Research Series 9/2008 http://www.communities.gov.uk/publications/fire/frsperformanceanalysis

Figure 13: Copy of figure showing rate of alarms installed in HFRC versus rate of non fatal casualties
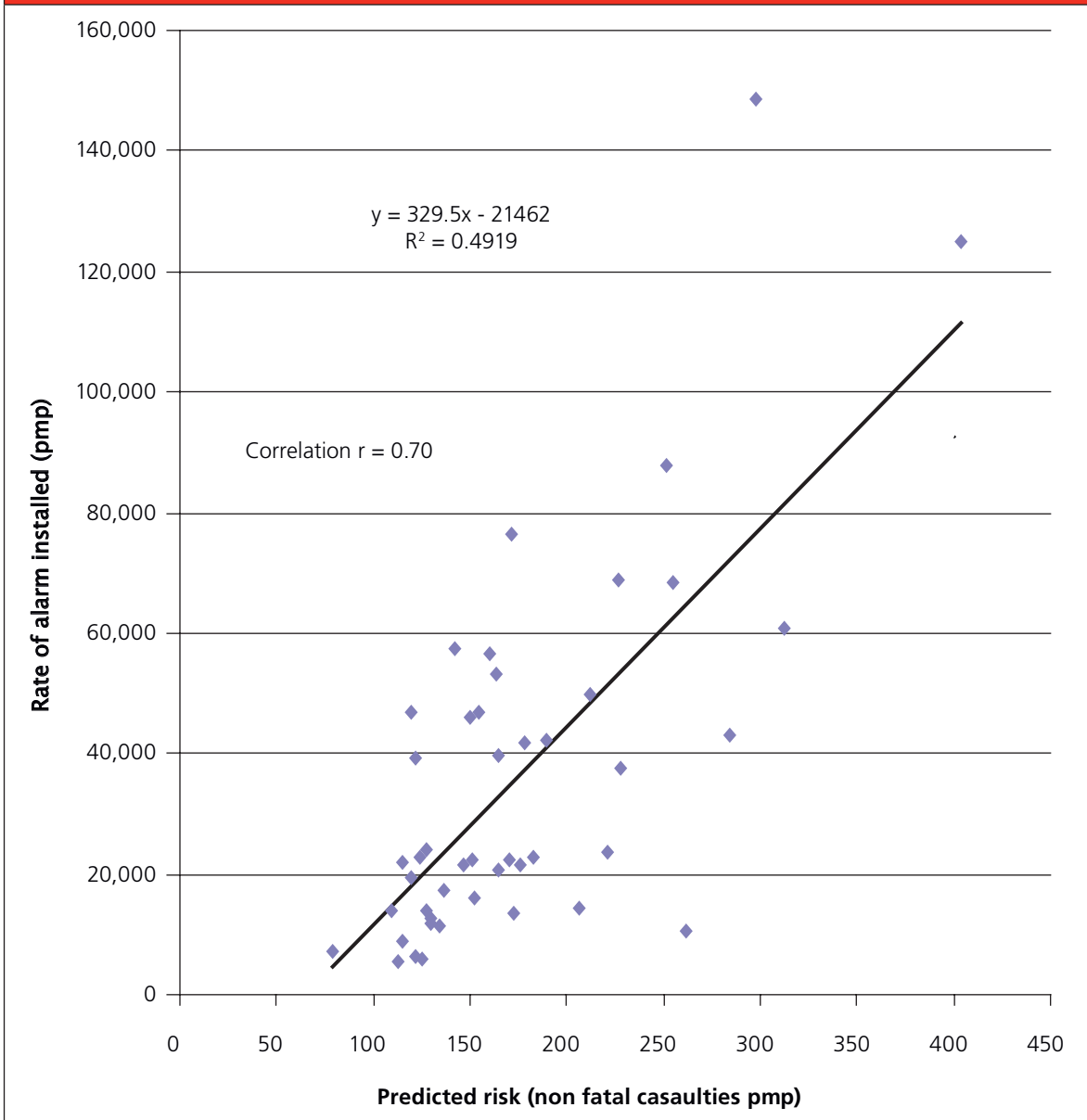
Another example is reported in the *Interim Evaluation of Home Fire Risk Checks*[21], where Derbyshire FRS compared the proportion of risk checks completed per type of resident against the proportion of fires occurring amongst each type of resident. They reported that the Hard Pressed (those on low incomes in poorer housing) had 39 per cent of fires but received only 31 per cent of the checks. 'Comfortably Off' received (32%) the largest amount of checks, however they account for 23 per cent of fires.

[21]   http://www.communities.gov.uk/publications/fire/homefireriskcheck see pages 197 to 199

The latter examples relate to community fire safety work. By analogy FRAs could compare the rate of audits per type of premise to the rate of fire per type of premise. They could also compare the rates of audit between FRAs according to the rate of fires in other buildings in each FRA.

4.3.3   Rates of enforcement per 1000 audits

Another method of assessing targeting is by examining the rate of enforcement per 1000 audits.

It could be argued that if audits rarely lead to enforcement that they are targeting compliant premises rather than non-compliant ones. Of course, it is equally possible that enforcement rates are low due to the deterrence effect of audits, the advice given at audits or a policy to minimise formal enforcement. Thus, it is essential to understand the policy and practices that underlie the data.

Nonetheless some example data is shown below in Figure 14. Using this example data, hotels obviously have a higher rate of enforcement than other types of premises. This result could lead to a review of whether or not to reinforce targeting of hotels or to maintain audits of other types of premises to ensure standards are maintained. Clearly the meaning of the chart is subject to differing interpretations.

Figure 14: Rate of enforcement notices per 1000 audits (2007 IRMP FSO data)
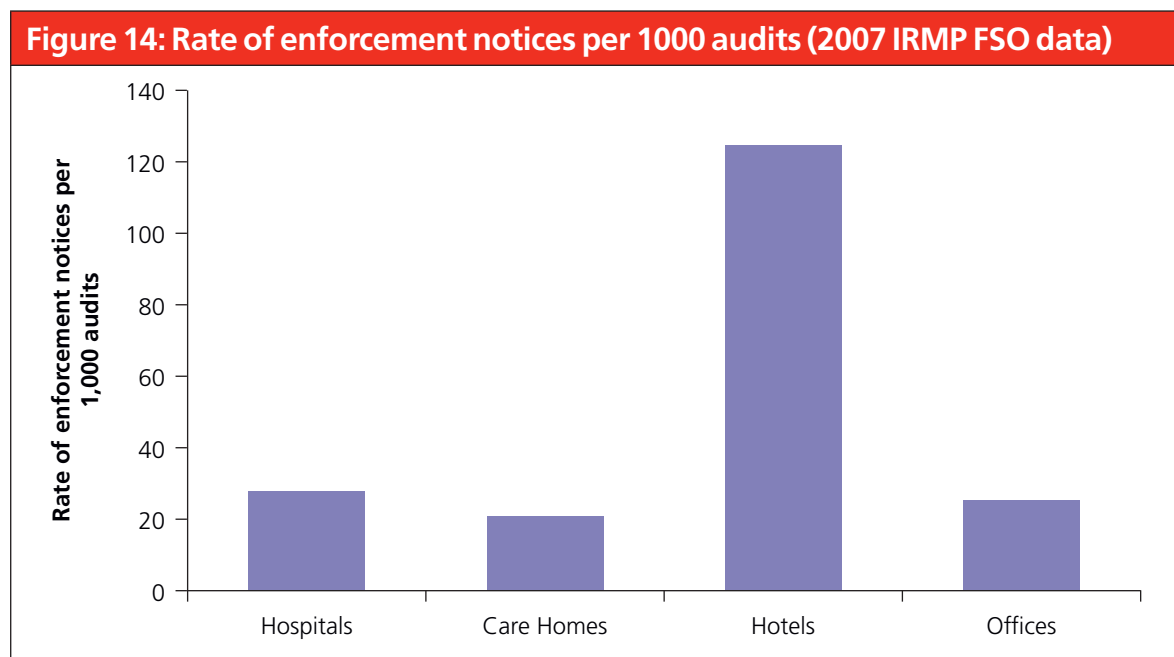
It is also possible to compare rates of enforcement between areas. Figure 15 shows the rate of enforcement notices per 1000 hotel audits for 45 FRAs using 2007 IRMP data returns. Clearly the rate of enforcement varies greatly. This could reflect differences in how audits are targeted and differences in enforcement policy, as well as inconsistencies in data recording. Nonetheless, it indicates a wide variation in the rate of enforcement which could be interpreted as related to how audits are targeted.

Figure 15: Rate of enforcement notices per 1000 hotel audits (45 FRAs)
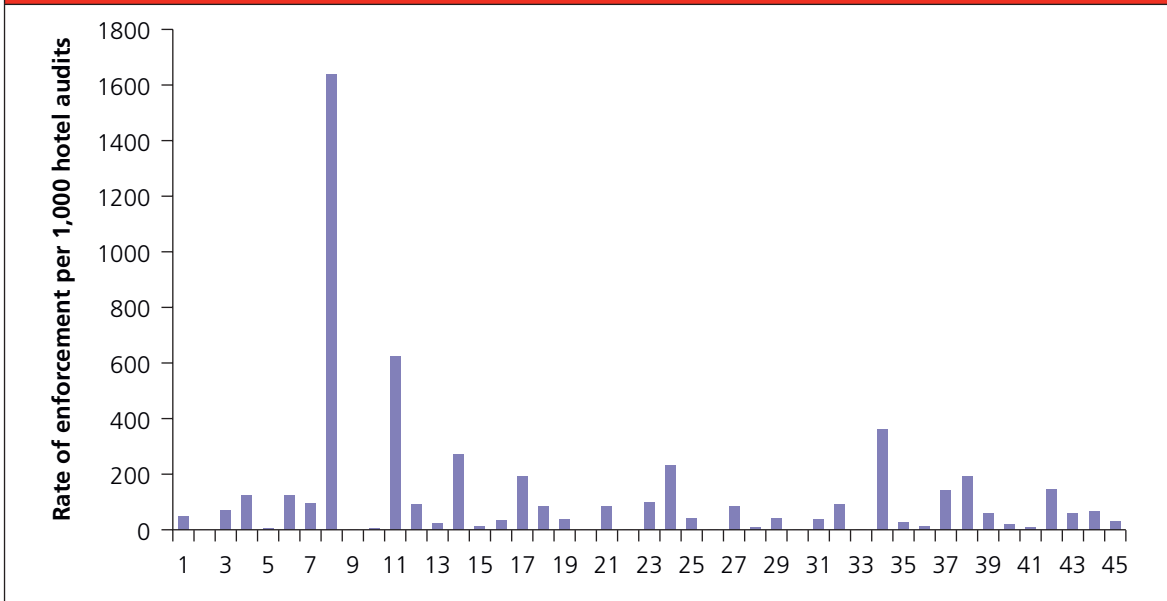
4.3.4   Average scores per 1000 audits

A variation on the latter approach would be to assess the audit scores.

It could be argued that if audits award good scores and have satisfactory outcomes that they are targeting compliant premises rather than non-compliant ones. Of course, it is equally possible that scores are good due to the deterrence effect of audits or the advice given at audits. Thus, it is again essential to understand the policy and practices that underline the data.

Nonetheless an example assessment is shown below, in Figure 16, using actual Integrated Risk Management Plan data returns for 2007, using the per cent of audits with satisfactory outcomes. We have used "satisfactory" classifications in this example as CFOA fire safety audit scores (our preferred measure) are not recorded in the Integrated Risk Management Plan data returns.

Figure 16: Proportion of audits recorded as satisfactory (2007 IRMP data returns, English FRAs)
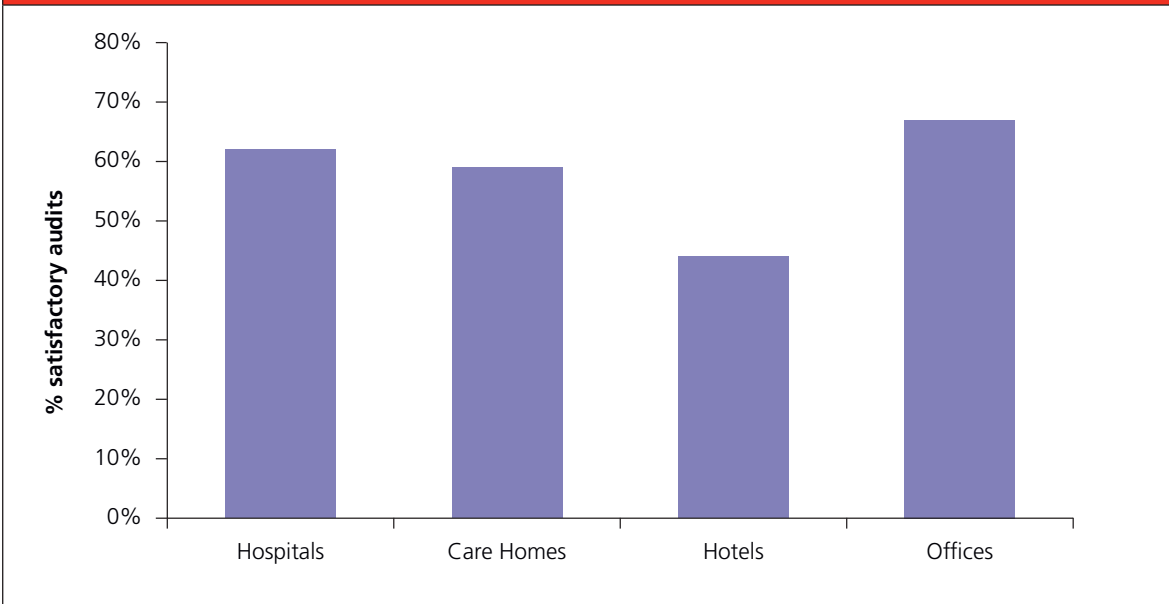
FiAgain a comparison can be made between areas, as per the comparison between FRAs using 2007 data for hotels in Figure 17. The proportion of hotel audits recorded as satisfactory ranges from 100 to 0 per cent. Notwithstanding the possibility of inconsistent recording practices, this may reflect differences in targeting of audits with some FRAs focusing on less compliant premises than other FRAs.

Figure 17: Proportion of hotel audits recorded as satisfactory (2007 IRMP data returns)
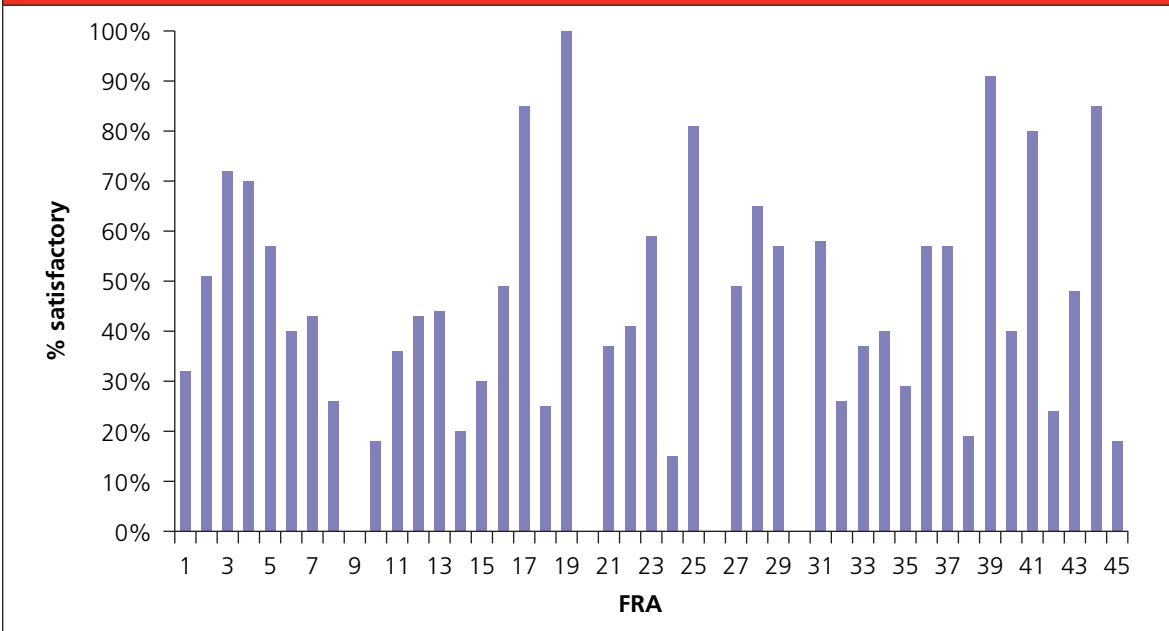
4.4   Fulfilling statutory duty to enforce

4.4.1   Rationale for this form of evaluation

FRAs indicated that evaluation may help them to demonstrate that they are fulfilling their statutory duty to enforce. As part of this there may be a need to show that enforcement is proportionate, consistent and transparent. Whilst FRAs did not articulate the drivers for this form of evaluation, the authors of this report judged that it would be important in the event of an inquiry into the adequacy of FRAs fire safety work, such as in the event of a major fire.

4.4.2   Customer feedback

Some FRAs get feedback from representatives of audited premises. This is often in the form of a paper or telephone questionnaire and constitutes a form of customer feedback. If the questionnaire explores perceptions of the audit and any enforcement this can be used as a measure of whether enforcement is perceived as proportionate and consistent.

This approach was applied by the Health and Safety Executive (HSE) in its review of its enforcement policy[22]. A postal survey was completed of people who had received improvement notices, prohibition notices or had been prosecuted by the HSE. It was found that 25 per cent of prosecutions were considered unfair (p33) with 17 per cent feeling that notices were unfair.

4.4.3   Consultations

FRAs provide advice to building control on fire safety precautions in new applications. The workshops suggested one form of evaluation, namely to review events during fires to see if suitable fire precautions had been advised and implemented. This could feed back into future advice.

Another option is to complete customer feedback from building control, exploring issues such as:

- whether advice was accepted by building control
- was the response timely
- could the advice be understood?

4.4.4   Enforcement assessment

RATE OF ENFORCEMENT

The rate of enforcement could be taken as evidence that the duty to enforce is being fulfilled.

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[22]   http://www.hse.gov.uk/research/rrhtm/rr519.htm

Whilst, there are no absolute criteria for judging whether the rate of enforcement is consistent with a legal duty to enforce, it can be noted that the CFOA fire safety audit gives an initial enforcement expectation. Therefore, one measure could be:

- proportion of audits classed as compliance level 3 where deficiencies were notified

- proportion of audits classed as compliance level 4 where enforcement notice was served

- proportion of audits classed as compliance level 4 where enforcement notice was fast tracked.

Premises classed as having category 3 to 5 compliance are expected to have proportionate enforcement, subject to consideration of duty holder factors, i.e. the initial enforcement expectation may not always be enacted. The proportion of premises with the expected enforcement could be used as a measure of whether enforcement is being enacted and is proportionate to the level of non-compliance.

Clearly the type of enforcement should not normally exceed the initial expectation. Therefore, a measure of (for example) enforcement notices for compliance levels 1 to 3 could indicate whether proportionate action is being taken in these audits.

RATE OF APPEALS

The rate of appeals could be used as a measure of responsible persons' perception of the fairness of enforcement, e.g. appeals per 100 enforcement notices. A high rate of appeals might indicate a perception amongst owners that enforcement is unfair. A low rate of appeals might indicate the enforcement is considered fair, or that enforcement is limited to clear cut cases that are unlikely to be disputed.

However, as some companies may have a policy of appealing against all enforcement, another option is to use the rate of successful appeals as a measure, such as the proportion of enforcement notices that are successfully appealed.

4.4.5   Major incident inquiries

It is common that the adequacy of the regulatory regime is examined in the event of a major incident. There are many examples of this, such as in the aftermath of the 1988 Piper Alpha oil platform explosion[23] and the Ladbroke Grove train crash[24]. The latter inquiry led to the responsibility for the regulation of railway health and safety being transferred from the Health and Safety Executive to the Office of Rail Regulation. The Piper Alpha inquiry led to the regulation of offshore safety being transferred from the Department of Energy to the Health and Safety Executive and the introduction of a safety case regime.

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[23]   Cullen. W D, The Public Inquiry into the Piper Alpha Disaster, HMSO, London, 1990.

[24]   http://www.rail-reg.gov.uk/upload/pdf/incident-ladbrokegrove-lgri1-optim.pdf

Whilst often leading to substantive improvements or reforms of regulation, such inquiries are obviously reactive and infrequent. They can nonetheless be replicated on a smaller scale basis in the event of local fires causing, for example, deaths or where many fire safety systems failed. Such inquiries can explore whether the regulator was aware of the activity, had inspected it, had identified safety issues, had provided appropriate advice or enforcement and checked implementation of enforcement. They provide qualitative evidence of the effectiveness of inspection and enforcement and areas for improvement in regulatory processes.

4.5   Identifying emerging problems

4.5.1   Rationale

FRAs at the workshops expressed an interest in information on trends in non-compliance. This would inform future audit practice and review of whether current audits and advice are focusing on priority areas. If there is a high level of non-compliance with a particular article of the FSO this might lead to a targeted advisory intervention, for example.

This could include:

- calculating average CFOA audit compliance score per type of premise

- calculating rate of enforcement notices per 1000 premises, taking each type of premise one at a time

- calculating the per cent of non-compliance per article, either for all premises or for a category of premises.

The latter two examples can be completed using the current Integrated Risk Management Plan data returns. The first example can currently only be completed by FRAs using their own data.

4.5.2   Areas of non compliance

FRAs indicated that evaluation could map out the areas of non-compliance being reported at audits. This would help identify areas for advice, audit and enforcement. As most FRAs use the CFOA fire safety audit and record results per article, which assesses compliance per article, this could be used to track areas of non-compliance for premises.

Figure 18 shows the proportion of non-compliances by FSO article for 35 FRAs that provided data to the 2007-08 Integrated Risk Management Plan data returns. It presents data for all types of premises. The chart is limited to those articles that accounted for 2 per cent or more of all non-compliances. There were 89,601 non-compliances reported by the 35 FRAs. Ten of the 24 articles account for 90 per cent of all non-compliances. The articles are ranked in Figure 18. Thus, FRAs may want to check their advice in these top ten articles and ensure their audits are focusing on these areas. This could be repeated for each type of premise.

> **Figure 18: Areas of non-compliance resulting in any enforcement action (excluding prosecutions) – 2007-08 IRMP data returns, N = 35 FRAs**
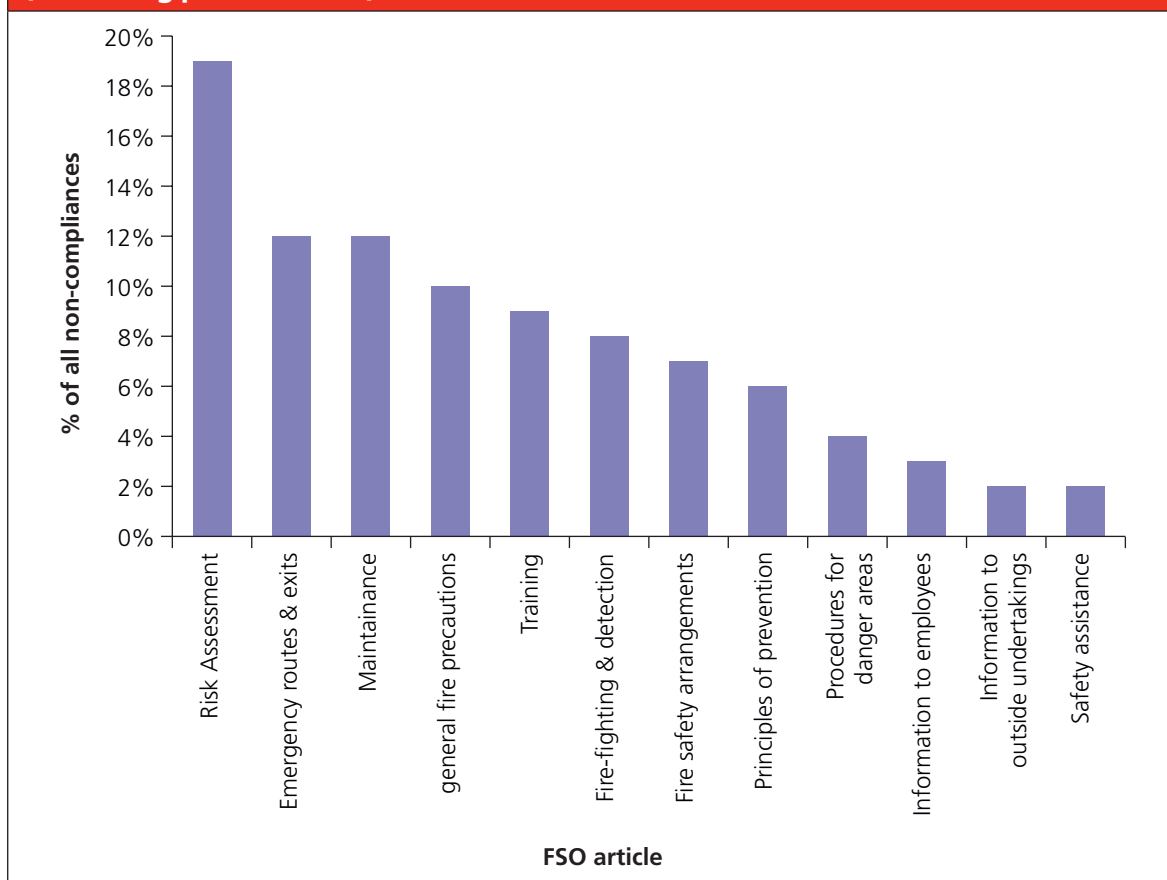
4.6 Peer review and benchmarking

4.6.1 Rationale for this form of evaluation

FRAs indicate support for benchmarking in respect of identifying examples of good practice and to understand how FRAs practices differ. They expressed reservations about any form of performance benchmarking due to concerns about the consistency of data and due to the potential for perverse impacts on fire safety activities, such as boosting the rate of audits to meet some sort of implied target.

4.6.2 Process reviews

Peer reviews are an established part of FRA activities. The Chief Fire and Rescue Adviser's Unit Operational Assessment toolkit[25] can be used in self assessment or peer assessment of the process of fire safety work. In addition, there is a series of Audit Commission reports[26] that can be used to compare against.

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[25] http://www.communities.gov.uk/documents/fire/pdf/opatoolkit.pdf

[26] http://www.audit-commission.gov.uk/firerescue/audit/corpassess/Pages/list.aspx?ctype=ACCorporateAssessment

4.6.3   Productivity

Some FRAs already compare productivity measures between each other. This tends to be:

- the number of audits completed per fire safety officer each year;

- the hours taken per audit.

FRAs indicated during workshops that care must be taken in comparing productivity because audit practice may vary in respect of the:

- depth of audits

- targeting of audits –with some FRAs using intelligence to target non-compliant premises

- size of premises – such as one FRA having larger hospitals than another.

It was suggested that any comparison of productivity measures need to take account of the profile of premises and targeting policy.

4.6.4   Rates of audits

The rate of audits per 1000 premises can be compared between FRAs, notwithstanding current concerns about the consistency of data. If a consistent set of data became available, the rate of audits could be compared across areas.

Figure 19 shows some example data using 2007-08 Integrated Risk Management Plan data returns. It indicates that across FRAs the reported rate of audits per 1000 hotels varies from 25 per 1000 (i.e. one audit per 40 hotels) to 4000 per 1000 hotels (i.e. four audits per hotel). This is an enormous variation. Obviously it may reflect inconsistent recording of audits and estimates of the count of hotels.

Figure 19: Rate of audits per 1000 hotels (2007 IRMP data returns)
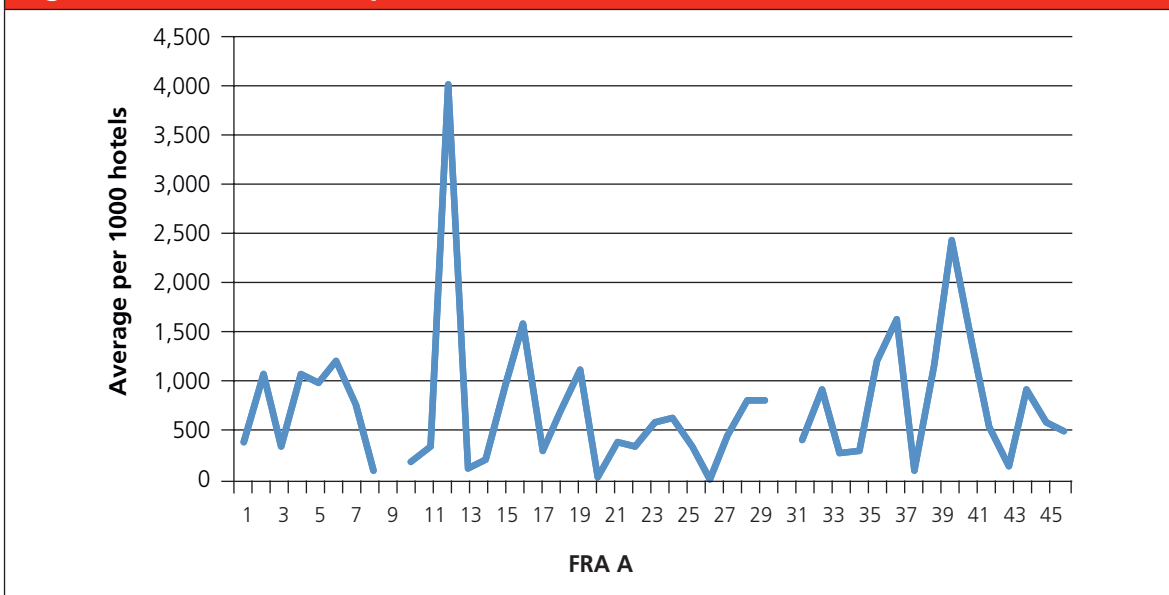
5   Conclusions

5.1   Main findings

There was common support from FRAs for the evaluation of their fire safety activities in order to support decisions on resourcing, audit and enforcement practices and improvement of advisory work. Most FRAs already hold the majority of the data needed for evaluation, notwithstanding significant concerns about the quality of counts of premises.

Whilst most FRAs track productivity and audit outcomes, only a minority evaluate the effectiveness of fire safety activities in the way outlined in this report. This report illustrates how data can be used for the sake of evaluation and thus for supporting the improvement of fire safety activities. It was concluded that the following measures could be important aspects of evaluation:

- change in Chief Fire Officers Association (CFOA) fire safety audit compliance and relative risk scores – trends over time and changes in scores before and after action

- comparisons of trends in CFOA fire safety audit compliance and relative risk scores between FRAs that have adopted different fire safety policies or practices

- rates of audits, enforcement and other activity per type of premise – compared against a measure of the relative risk associated with premises

- rates of appeals against enforcement and perceptions of activities from responsible persons

- comparisons between FRAs in respect of rates of audit, rates of enforcement and other activity measures.

As most FRAs use the CFOA fire safety audit, the use of audit scores should be commonly feasible.

The latter forms of evaluation can probably be completed using data held locally by FRAs. As there are concerns about the validity of data on the count of premises, evaluations of the rate of audits per 1000 premises may be hampered until the count of premises can be assured. However, most of the other forms of evaluation are not dependent on the count of premises and so should not require further development of building counts.

In addition, the reliability of counts of buildings may vary between categories. For example, data should be more readily available on higher risk premises such as hospitals, care homes, hotels and hostels, thereby enabling comparisons between these. Data may be less readily available for categories such as Houses In Multiple Occupation, offices, shops and

factories due to, for example, the relatively high rate of turnover and change in occupancy amongst these.

Outcome measures, such as rates of casualty and average size of fires, may also be used but may need data to be pooled from some or all FRAs to ensure reliability. Indeed, most examples of evaluations using fire outcome data tend to be completed using national level data for a period of years.

Few examples were cited of evaluation of FRA consultation with building control about fire safety. The examples did include reviewing events during fires to explore whether suitable fire precautions were advised and implemented, as well as checking FRA response times to requests from building control.

5.2   Enabling evaluation

Most FRAs, but not all, at the workshops indicated that they possessed the competence to evaluate their fire safety activities even though FRAs cited few examples of evaluating the effect of their fire safety work.

Piloting and further elaborating evaluation methods
As few FRAs have attempted the forms of evaluation described here, there may be a need to pilot the various forms of evaluation. This would help test their feasibility, elaborate the evaluation method and check the usefulness of the results. A pilot might help determine which of the forms of evaluation can be completed locally as opposed to requiring pooling of data to achieve statistically valid results. A pilot would also assess how many years of data are needed for a reliable result to be developed.

Premise data
The inconsistency and doubt about the completeness of premise data was the main data issue. This limits the ability to compare between FRAs, such as comparing rates of audits, and to compare between types of premises within FRAs. FRA feedback indicated that no single approach can resolve this issue. Respondents suggested that a combination of gazetteers, data sharing and searching for unknown premises is needed. One option would be for a further review of data sources to be completed, to ascertain whether there is a preferred data source(s) and to provide guidance on this. Any such review could include the National Address Gazetteer, if this is further progressed by Ordnance Survey.

Any comparison using counts of premises needs to recognise differences in data collection within the evaluation.

Clearly any FRA that wishes to complete evaluation needs to assure the quality of their fire safety activity and premise data as far as is practicable.

Evaluation tools

Few if any FRAs currently have any analytical tools to support evaluation of fire safety activities. FRAs at workshops indicated that they would welcome further support with respect to evaluation. They also expressed a concern that if FRAs develop their own tools, this may lead to repetition of work and inconsistencies in evaluation. There was mixed opinion about amending the Community Fire Risk Management Information System (CFRMIS). Whilst some FRAs suggested that an evaluation module could be developed for CFRMIS and shared amongst FRAs, other queried the potential cost and were uncertain that they needed anything more than a bespoke spreadsheet. Also many FRAs do not use CFRMIS. Therefore, some FRAs at the workshops expressed a need for an evaluation tool such as a spreadsheet. One option that was mentioned was that Chief Fire Officers Association (CFOA) provides support in developing and sharing a fire safety evaluation tool(s). This could take the form of the CFOA enforcement working group leading the development of such a tool, perhaps integrated into the "purple guide" on fire safety.

As some FRAs indicated that they have the resources to develop their own evaluations, any tool developed by (say) CFOA could be offered for use by FRAs on a voluntary basis, i.e. FRAs can choose whether or not to use a tool supplied by CFOA or to use a tool developed by their FRA.

Quality assurance

Finally, it can be suggested that if fire safety activity data is used to a greater extent for the sake of evaluation, this will increase the importance of quality assurance by FRSs. Quality assurance could usefully focus on checking that audits are scored consistently by fire safety officers, counts of premises are verified (as far as possible) and enforcement actions are accurately recorded. An option is for an organisation, such as CFOA, to provide Quality Assurance guidance for FRAs recording of fire safety activities.

6   Appendix A: Workshop summary

6.1   Introduction

This appendix provides a summary of the three workshops run with FRAs regarding:

- explore the aims, benefits and drivers for the evaluation of fire safety activities, including business (fire safety) support activities, audits and inspections, and enforcement action
- discuss different forms of evaluation
- solicit FRA feedback on initial evaluation ideas from Greenstreet Berman/DCLG
- explore existing FRA data and IT systems and how FRAs could further develop their data and IT systems to better support evaluation and performance management of the fire safety function.

6.2   Overview of fire safety activities

FRAs carry out a wide range of fire safety activities. These are summarised below.

It is emphasised that some FRAs make a distinction between programmed audits and intelligence led audits. Programmed audits tend to be based on the relative risk ranking assessment within the Chief Fire Officers Association (CFOA) fire safety audit, where audits are carried out based on the risk assessment. Intelligence led audits can be in response to reports of non-compliance, reviewing rates of non-compliance noted in audits, reviewing rates of fire in premises etc. FRAs may carry out a mixture of programmed and intelligence led audits.

Audits and inspections
Whilst audits and inspections focus on assessing compliance, they can also include specific assessment of arson risks and provision of advice.

"Full" audits are carried out by Fire Safety Officers, with most FRAs using the CFOA fire safety audit (some use their own audit). Some FRAs also engage operational crews in carrying out "brief audits" using abbreviated version of the CFOA fire safety audit. These are not counted as "audits" but remain important elements of fire safety work, and are currently recorded as Other Fire Safety Activity.

Audits and inspections are regarded to be one and the same.

In some FRAs, in addition to audits of "everyday" types of buildings such as hotels, they may also audit fire safety in places such as stadiums and of explosives, as well as temporary events such as festivals and events.

It is judged that audits and inspection constitute the largest fire safety activity.

Some FRAs carry out joint audits with other agencies. Also FRA may also carry out partial out of hours audits, such as of fire escapes in care homes, as a spot check these key fire safety measures.

Obviously the application of enforcement and prosecutions can follow on from audits and inspections and also form a key part of fire safety activity.

In addition to this, some FRAs also undertake 'out of hours' audits, where visits to premises (care homes in particular) are undertaken out of hours in order to assess fire safety.

Some FRAs also carry out themed audits, where audits are carried out based on specific issues (or themes) e.g. fire deaths, equality and diversity.

Also some inspection work is for special types of premises, such as:

- petroleum and explosives sites
- Houses in Multiple Occupation
- boarded up premises.

Consultations (building regulations)
The next largest activity is assessing the fire safety aspects of building regulation applications when requested by local authority or approved inspectors.

Unwanted fire signal (UWFS) management
Working to reduce unwarranted fire signals is a significant part of the work of some fire safety departments, where they advise and educate businesses on how to reduce UWFSs.

Reactive (intelligence led) audits and inspections
FRAs also carry out a range of reactive (intelligence led) work including:

- post fire investigations
- complaints (about fire safety in a building)
- operations intelligence based (utilizing mapping systems to review targeting)
- referrals (to complete an audit) from other agencies.

Each of these activities may also lead to advisory or enforcement actions.

Specific business or specific advice

FRAs also carry out a range of business advice activities, such as:

- target hardening (arson prevention)
- fire safety seminars
- campaigns (e.g. arson pre Christmas campaign)
- liaison with black minority ethnic group businesses.

Arson prevention maybe completed by the community fire safety part of a FRA but can cover the same range of properties as specific fire safety activities.

Arson prevention may often entail multi agency working with, for example the police.

Hot strikes

Some FRAs carry out advisory visits to business in an area where a fire has occurred, using the fire as an opportunity to engage businesses.

6.3 Aims and role of evaluation

Traditionally fire safety activities have been carried out as part of the fire services' statutory duties and in recognition of the important role of fire safety regulation in preventing the repetition of past catastrophic fires.

In addition, some FRAs also stated that the main aim of evaluation is to ensure that buildings are compliant and are at a reduced risk of fire, as well as increasing knowledge on fire safety.

Demonstrating role in risk reduction and value for money

In the context of Integrated Risk Management Plans and the need to demonstrate value for money it was stated that evaluation should help demonstrate the role of fire safety in reducing risk, such as by estimating the reduction in fires, deaths, casualties and consequential impacts such as loss of employment, loss of community assets and environmental damage.

It was suggested that this might involve attempting to show the impact of fire safety on the latter outcomes measures. This was considered to be most feasible when assessing national level data over a period of years.

As the number of large fires in an individual FRA may not provide a statistically robust measure, especially in small FRAs, an option was to amend relative risk ratings in Fire Service Emergency Cover (FSEC)and then obtain revised predicted rates of death and value of property loss.

It was also considered feasible for FRAs to assess impact on outcomes such as compliance scores or life risk ratings, which might then be used to assess impact on outcomes.

In addition, it was considered equally important to assess the impact of activities such as business seminars or advisory initiatives. This was suggested to comprise, for example, assessing before and after compliance scores for properties after the conduct of a set of local fire safety seminars or targeted "advisory" visits to responsible persons. Such an evaluation would help indicate if such interventions are effective in improving fire safety standards and thereby reducing risk.

Given that FRAs have a statutory duty to enforce but not to inspect or advise, evaluation needs to demonstrate the value and effect of the non-statutory audit an advisory work.

Assess targeting of fire safety activities

It was generally agreed that fire safety activities should be targeted onto higher risk properties and/or properties with lower levels of compliance. Evaluation should assess the extent to which fire safety activities have actually targeted higher risk and/or lower compliance properties.

This would also support assessment of whether the level of audits is proportionate to the risk, i.e. are higher risk premises audited more than lower risk premises?

Supporting service improvement – protecting the community

Evaluation should also aim to support the improvement of services so as to maximise the protection of the community. This could entail:

- Assessing the effectiveness of each type of fire safety activity – for example, does the provision of advice during an audit have more or less impact than informal notifications?

- Assessing the effectiveness of action on different aspects of fire safety – for example, does enforcement on fire safety management have a more sustained impact on compliance than enforcement on maintenance provisions?

In addition, it was suggested that evaluation should support the sharing of good practice between FRAs. Comparisons of performance, such as changes in compliance scores, might help identify that an FRA is a leader in (for example) targeted business advice. This practice could then be shared with other FRAs.

Good practice could also be identified by comparing trends (such as in compliance scores) across FRAs. For example, audit scores might be improving in FRA A (who has enacted a new initiative) more than other FRA. The new initiative could then be shared with other FRAs.

Assessing who should audit and enforce fire safety

There are occasions where it is queried whether fire safety should be enforced by the fire service instead of another organisation. The examples of moving enforcement to building control and/or Approved Inspectors were cited. In this context evaluation needs to assess the case for retaining enforcement by the fire service rather than other organisations, for example what value is added by the fire service?

Fulfilling statutory duties

FRAs have a statutory duty to enforce fire safety. Evaluation should assess whether enforcement is consistent with the Hampton principles of being targeted, proportionate and consistent, and that the regulatory is accountable.

Customer satisfaction – improving quality of fire safety

It was also suggested that service quality can be improved by evaluating customer feedback, in the form of customer feedback questionnaires/surveys. A number of FRAs reported this as a useful measure of feedback.

The option of using the rate of appeals as a measure of "satisfaction" with the enforcement process was also mentioned, i.e. a lack of appeals might indicate that enforcement was accepted as fair and proportionate.

Identifying emerging problems with fire safety

It was stated that evaluation of trends in fires and audit outcomes can also help to identify emerging problems and prompt introduction o new tactics or targeted interventions. For example, an increase in the rate of enforcement notices amongst a particular type of property might indicate the need for an advisory initiative to raise awareness and knowledge of fire safety.

Some FRAs suggested that there is value in sharing audit results with other FRAs for national chains. For example, if major non-compliances are found with a particular retail business in one city, this could be communicated to other FRAs to help guide heir audits.

Learning lessons for fire safety audits and enforcement from major fires

Evaluation should explore whether deficiencies in fire safety audits and enforcement contributed to a major fire and whether fire safety methods need to be further developed to help prevent repetition of major fires.

Quality assurance/performance management

Evaluation should also support quality assurance of fire safety. This could take form of, for example:

- assessing if the designated form of enforcement (initial enforcement expectation) is being carried out

- whether the desired rate of audits are being achieved

- whether services such as post fire audits and consultations (on building regulations) are being delivered within the agreed periods.

Objectives of collecting data

Prescriptive details need to be provided on the objectives and use of the data, for example are they to be used to form league tables in order to make comparisons different FRAs as they stated that the number of caveats which would need to be considered would be extensive. It was also stated that the time frame within which to use statistics for evaluative purposes need to be consistent across all FRAs, e.g. over one year, three years or five years.

Benchmarking between FRAs

Some FRAs said there was value in benchmarking between FRAs. The examples focused on comparing between alike FRAs in order to identify good practice to be shared. Some examples included benchmarking the time spent per audit, ratio of fire safety staff to premises, audits per type of premise and the number of audits per officer (i.e. productivity measures). Another reason for benchmarking was to enable FRAs' senior management to assess their level of resourcing, relative to other FRAs.

Some FRAs also argued that benchmarking is important to assure a consistent service is provided across the country.

There was concern that benchmarking between FRAs, such as benchmarking rates of audits, would lead to a "target" driven working to the detriment of fire safety performance. This concern was heightened by the judgement that there are significant inconsistencies between FRA data, rendering comparisons invalid. A particular concern was that the count of buildings is inconsistent across FRAs. In addition, it was stated that:

- the Family Groups do not provide a valid basis for benchmarking as the FRAs in some of the groups are diverse

- the content of audits may vary between FRAs

- some FRAs may target non-compliant premises or larger premises and so each audit may take longer compared to other FRAs that perhaps focus on programmed audits.

One suggestion was to produce FRA profiles and to be able to compare your FRA against others without FRA names being given in any public report. This would enable benchmarking whilst avoiding the misuse of data for performance benchmarking.

It was also suggested that benchmarking would not be consistent across all FRAs due to perceived differences in data collection methods and techniques between FRAs across the country. Further to this, it was also stated that as different demographics are seen across regions – and thus they are not comparable.

6.4   Forms and methods of evaluation

FRAs cited a range of potential forms of evaluation and a few examples of evaluations of their fire safety work.

A common point was that it is necessary for the assessor to have an understanding of the context of fire safety activity in order to be able to interpret results. It was also noted that quantitative evaluation often raises "more questions than answers". Therefore, it needs to be complimented by qualitative assessment of processes and factors that might "explain" the quantitative results. For example, a trend in the rate of audits might change due to a change in policy, compliance scores might decline because of a focus on intelligence led audits or scores might decline due to a trend towards more (say) low standard houses in multiple occupation.

It was also noted that intelligence led audits may have a higher rate of enforcement than programmed audits. Therefore, any comparison of enforcement rates needs to take account of the approach to targeting audits.

Review of processes

A few FRAs suggested evaluation of fire safety processes rather than outcome evaluation. As part of this the review could assess how fire safety is treated in IRMPs. This could take the form of peer review.

Rates of audits per type of property (targeting)

Delegates generally agreed that calculating the rate of audits per type of property can be used as a measure of targeting. The metric would need to take account of the number of buildings, such as being a rate per 1000 buildings. They also reported the importance of promoting quality versus quantity and reinforced the importance of recording the hours taken for inspection as well as the number of inspections.

The assessment of whether the achieved rate was appropriate would depend on the FRAs objectives, policies and priorities. Whilst there might be a general expectation that higher risk occupancies, such as care homes, have a higher rate of audit, the level of compliance is also a consideration. For example, occupancies such as hospitals may be high risk but may also have a high compliance level, leading an FRA to moderate the rate of audit for hospitals.

Also, some FRAs place more emphasis on intelligence led audits. This may mean that they have lower rates of programmed audits for premises generically defined as high risk, and relatively higher rates of audits for premises from other categories. Therefore, any assessment of the rates of audits needs to take account of the FRA's targeting strategy, especially if the evaluation involves a comparison across FRAs.

Notwithstanding this, calculating the rate of audit per 1000 premises and comparing these rates between occupancies was considered to be a useful form of evaluation of targeting of audits.

A few FRAs cited the example of estimating how long it would take to audit all premises with their current resources, by dividing the number of premises by the feasible number of audits per year. This feeds into a review of strategy for targeting audits.

Rates of audits per 1000 fires

A variation on the latter evaluation, cited by a few FRAs, was to compare the rate of audits to the rate of fires, such as number of audits per 1000 fires. It was suggested that this may be a superior measure of targeting to the rate per 1000 premises. However, this was debated, as it was uncertain which measure of fire provided a valid measure. The number of deaths was said to be too low whilst fire safety might focus on assuring life safety rather than prevention of fires. Therefore, in addition to suggesting using fire non-fatal casualties as a measure, it was uncertain which fire measure could be a valid metric.

Before and after compliance/life risk scores

Delegates commonly cited comparison of fire safety scores before and after an intervention as a key form of evaluation. Some examples included:

- Comparing relative risk scores per type of property between the start and end of a year;

- Comparing compliance scores in the period before and after the conduct of targeted fire safety seminars;

- Tracking compliance scores for Houses in Multiple Occupation before and after an audit campaign;

- Comparing the rate of enforcement notices before and after advising businesses on fire safety;

- Comparing in/out scores – where a score is awarded after an initial appraisal and then "as if" fire safety advice was implemented.

Some FRAs cited current examples of this form of before and after evaluation, as noted above. It can be noted that in many cases the intervention were specific to a type of property, thereby allowing the change in scores to be related to the intervention.

The discussion led onto the idea of updating the relative risk ratings in Fire Safety Emergency Cover (FSEC), to give a measure of risk reduction achieved, i.e. by comparing FSEC predicted loss of life and property loss for Other Buildings between a base case (e.g. 2009 results) and an update (such as in 2011 after completing audits). It was noted that the base case should use relative risk ratings from audits as far as possible rather than the FSEC defaults. The FSEC defaults maybe increased or reduced after the first audit. Therefore, the

amended (from the first recorded audit) relative risk ratings provide a more valid baseline against which to assess the impact of fire safety activities. This option was thought to offer the potential to quantify the impact of fire safety activities on risk and provide quantitative estimates of reduction in life loss and property.

It was noted that a before and after comparison can only assess the impact of marginal changes in fire safety activities, i.e. the impact of increasing or reducing fire safety activities. It is difficult to test the impact of not carrying out fire safety activities, as all FRAs have carried out audits for the past decades.

Finally, it was noted that, to test the ongoing impact of fire safety activities, follow up audits are needed after any advised or enforcement action has been satisfied. For example, after fulfilling an enforcement notice, are standards maintained at the next audit?

Before and after rates of fire

One FRA cited an example of being able to compare rates of fire before and after an intervention, where they advised the owner on fire safety. However, this was judged to be a special case where the owner had many premises which provided a sufficient count of fires to enable a before and after comparison. In most cases the rate of fire in premises does not support evaluation.

A few FRAs suggested that trends in the number of fires for a category of premises could be used to assess the impact of fire safety activities. For example, if audits are targeted on a certain category of premise, does their rate of fire decline more than other categories of premises?

Finally, some FRAs did suggest that a before and after comparison could be made using rates of fire or other fire measures at a national level. This would plot rates of fire etc for the period before and after the introduction of the Fire Service Order.

Comparing trends within and between FRAs

A variation of before and after comparison of scores was to plot trends in scores over time, as a measure of whether trends are improving or not. The trend would be appraised in the context of FRA fire safety practices, for example, are scores improving at a time that more advice is being offered? It was noted that it is important to check that audit practices have not changed, such as changing the targeting of premises, which might lead to scores improving/declining due to a change in the population of premises audited. It was also noted that policy might switch from enforcement to "educate and inform", thereby rendering any trend analysis invalid.

One option was to compare trends between FRAs that carry out different rates of fire safety activities. Is it that FRAs with higher rates of audits (for example) show a greater improvement in compliance scores than other FRAs? This option would require sharing of data and a common reporting method to ensure data was consistent.

It was noted that at least one English FRA had adopted a policy, relatively recently, of increasing the rate of formal enforcement. The compliance trends and rates of fire could be compared between this and other FRAs to see if they differ.

Sampling low risk premises

It was suggested that there is a need to sample low risk premises in order to secure a measure of fire safety performance, such as by using CFOA compliance scores. Low risk premises may be audited once every five years or less. This may fail to reveal trends in a timely manner. Therefore, an option is to visit a sample of low risk premises more often and to then track their scores.

Customer survey

This entails the conduct of standard "market research, such as a telephone survey of a sample of responsible persons regarding their perceptions of the (for example) audits. Some FRAs completed customer surveys for all audits or inspections whereas others only completed these where enforcement action had been taken. FRAs reported good response rates to customer surveys (~50%).

Management information

With regard to activities such as consultations and post fire investigation, FRAs typically track the time taken to complete these from the date requested and compare the time against agreed targets.

6.5 Fire safety data

The main findings were:

- all of the points of data on fire safety activities specific to a building are reliably recorded, such as an audit, enforcement notice or advice – mostly by FRAs using the Community Fire Risk Management Information System.

- activities that are not specific to a building, such as business seminars, are not so well recorded. FRA were keen to capture this information as they felt it was a valuable from of fire service data however they were unsure as to the most appropriate method to do this

- fire safety activity data is comprehensive and reliable

- data on the count and category of premises is problematic

- few, if any FRAs, refer to or make use of Integrated Risk Management Plan data returns.

A few FRAs said there were some gaps in the data they collect, including:

- construction type, such as timber framed

- owner ethnicity.

However, most FRAs did not cite gaps in fire safety data.

Fire safety data collected by FRAs

FRAs stated that they collect the following data; this was the case for the majority of FRAs attending the workshop.

- Integrated Risk Management Plan returns

- incident data – including information on what the incident was, who was involved and location

- time taken on inspections/audit visits

- number of inspections/audits

- information on industrial and commercial properties that are known to the FRA

- information from letters, consultations and historical data

- fire investigation information

- Fire Safety Emergency Cover data

- ward information; and

- data on occupancy types.

With regards to barriers, FRAs noted that the Data Protection Act stopped FRAs obtaining data, e.g. local authorities being unwilling to provide information on property owners etc. Further to this, they also note that there is often a risk of duplication of data within FRAs as consistency in what is reported and the method through which reporting occurs and requests for data are not seen.

Generally, any fire safety activity that is specific to a premise is recorded, especially in FRAs that use the Community Fire Risk Management Information System. Activities that are not related to specific premise are poorly recorded, such as business seminars, except that the time devoted to these activities is usually recorded as part of the general time recording system.

Validity of measures of fire safety performance

Discussion also explored the validity and reliability of fire safety performance measures, i.e. what measures can be used to gauge the standard of fire safety in buildings. The feedback was:

- the CFOA compliance score and level (part B of the CFOA fire safety audit) is both valid and reliable, supported by guidance and applied by professional officers

- the life risk rating (relative risk score, part C of the CFOA fire safety audit) is also a valid and reliable measure, with defined criteria

- the consistency and reliability of rating of audits as 'satisfactory' or 'unsatisfactory' was queried as the level of guidance may allow inconsistency between fire safety officers

- the alignment of "satisfactory" scores to CFOA compliance scores has not been tested.

It was stated that tracking changes in CFOA fire safety compliance scores and life risk rating would provide a valid measure of trends. Whilst the vast majority of delegates stated that they use the CFOA fire safety audit, it was noted that a small number of FRAs do not. A few FRAs have developed their own audits which provide alternative compliance or risk scores, which could equally be used in evaluation of their fire safety activities but obviously cannot support comparisons of interventions between FRAs.

Some delegates did express the concern that the range of scores that some of the types of properties can achieve in the relative risk rating is too limited, and hence this scale may not provide a discriminating measure[27]. Some stated that the relative risk score is not sensitive enough to changes in the standard of fire safety management for it to be a good indicator. In addition, some FRAs said that the categories of buildings were too coarse and that, for example, types of schools need to be sub-divided (primary, secondary etc).

As the number of fire deaths and casualties in non-domestic buildings is low in most FRA, it was considered difficult for individual FRAs to use fire deaths and casualties as a measure. It was suggested that comparing trends in fires, deaths and casualties and relating these to trends in fire safety activities would probably require national level data for a long time period, such as many years or even decades.

Also FRAs debated which fire measure would provide a valid indicator of the impact of fire safety. As fire deaths are infrequent and fire safety does not necessarily focus on prevention, some FRAs suggested:

- using the size of fires as a measure (whether this was the m² or the proportion of fires exceeding the room of origin)

- using the number of persons who escape unaffected, as a measure.

Whilst some delegates also suggested assessing impact on employment, community assets and the environment, no metrics were cited.

Buildings data

The main area of concern is the completeness and accuracy of counts of premises. Many FRAs gave examples of their count of buildings increasing by, for example, four fold,

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[27] It should be noted that the range of scores possible is intended to be limited as research has indicated that risk in some types of occupancies is generically higher or lower due to, for example, the vulnerability of occupants irrespective of the standard of fire safety management.

when a new data source was used, and major differences in counts of premises between different data sources. It was noted that:

- the valuation office data is not used as a count of premises by FRAs due to concerns about completeness, missing categories and issues such as hoardings being recorded

- premises "known to FRAs" are an amalgamation of sources, such as previous fire safety records (of certificated buildings), data from other agencies, addresses of business who call for advice, buildings spotted by operational crews and purchased databases

- whilst some local authorities are able and willing to share data on Houses In Multiple Occupation, other are not.

Whilst "premises known to FRAs" was considered superior to valuation office data, the counts were still considered incomplete. In addition, whilst some FRAs may have imported data from gazetteers en mass (giving them a large count of premises) other FRAs may only add premises they have audited or had some contact with (giving them a far lower count of premises). Also, some FRAs may have had a campaign to identify premises whilst others may not have.

The inconsistency in counting of buildings reduces the feasibility of comparing rates of audits between FRAs.

FRAs cited a range of databases used, meaning that their counts come from different and incomparable sources. FRAs also varied greatly in the confidence they have in their counts of premises with some judging that their data is (say) 50% accurate and other judging it to be (say) 90 per cent accurate and complete.

The main suggestions were:

- to identify a superior source of data, such as the National Land and Property Gazetteer[28] or the Ordnance Survey Address Line 2, and to use this as one source

- to develop agreement amongst FRAs and with DCLG regarding which source to use and then to use this commonly across functions such as fire safety, FSEC, IRS and FireControl

- entering data sharing agreements with partners such as housing associations, Health and Safety Executive, trading standards, licensing bodies and the local valuation office

- to involve operational crews in spotting premises unknown to the FRA.

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[28] Some FRAs challenged the reliability of National Land and Property Gazetteer. In particular, whilst it might provide most domestic properties there was concern about its coverage of commercial properties.

It was recognised that FRAs would need to continue updating building records from an amalgamation of sources and that this would be an ongoing task.

No FRAs identified any one or more source of data that could provide, with a degree of certainty, a comprehensive and reliable count of premises.

The discussion also queried the business case for developing a comprehensive count of premises if only a minority will be audited. It was stated by FRAs that they do need to develop as comprehensive a database as possible to:

- enable informed decisions to be taken on targeting audits

- to enable evaluation of the rate of audits per type of premise

- use the data for others uses in the FRAs, such as to guide familiarisation visits by operational crews

- to ensure FRAs can demonstrate, in the event of a (for example) fatal fire, they have an informed approach to auditing.

It was suggested that it can take a person year to "cleanse" and reconcile a building database.

Counts of audits

Delegates said that the counts of audits should be comparable in so far that only full audits are counted as audits, with partial audits counted as Other Fire Safety activities.

However, whilst some FRAs only use the CFOA fire safety audit form in full audits, others might also carry out more specific arson assessments. This did raise the possibility that the nature of audits might vary between FRAs.

It was also noted that if a building has multiple occupants, such as a hospital with a catering service and florists, a visit to the hospital may have (say) three audits of the hospital, the caterers and the shop. Other FRAs may treat this as a single audit.

Quality assurance

There were a range of forms of quality assurance used to review practice, data collection and input of fire safety data. Some FRAs felt that they were "up to speed" in the forms of quality assurance they adopted whereas others felt that they needed further development in this area.

Most FRAs reported team managers conducting a quarterly or six monthly shadowing of Fire Safety Orders and subsequently performing a feedback session with the Fire Safety Order on their performance. This was reported to be an effective form of quality assuring practice of the officers although many FRAs were unsure as to whether this was regularly achieved. As well as peer or line manager review of decision making and through annual appraisals.

In some FRAs the FSO manager performed a desk top quality assurance exercise to look for consistency. Where any issues were picked up, these were fed back into training needs. Third party auditors such as the Institution of Fire Engineers were utilised to cross check input.

Within IT systems internal validation has been put in place by some FRAs to control against nonsensical input. One FRA reported sense checking the data collected to ensure that Fire Safety Order were recording data against the correct categories. They reported that in one case they had observed a steep rise in the number of other fire safety activities. On further investigation they discovered that some Fire Safety Orders had been reporting audits and inspections as "other Fire Service activity", explaining the discrepancy in the data.

Finally some FRAs review their feedback sheets from inspections/audits to review customer feedback on Fire Safety Order performance.

Most FRAs felt that any changes to their QA systems would be heavily dependent on how evolved their FRAs Quality Assurance processes were and so it was difficult to assign a resource implication to this. They did suggest that most Fire Safety Order did not understand the drivers for ensuring the quality of the data inputted in particular as they had a limited understanding of the uses and value of the data.

IT issues

Most FRAs were said to use Community Fire Risk Management Information System (CFRMIS) or a similar system which held all required data, enabling audit scores to be tracked per premise over a series of visits. It was also noted that it is relatively easy to add questions to CFRMIS.

However:

- A significant minority of FRAs do not use CFRMIS

- FRAs do not currently have a function to export the required data in a form suitable for evaluation

- No FRA stated that they possessed or had used an evaluation tool for fire safety nor do they have any statistical or computer tools to manipulate or analysis the data. Some cited the use of a bespoke excel spreadsheet, created by themselves

- Whilst some FRAs may have in house capability to improvise data extraction and analysis tools, others do not.

Some FRAs suggested way forward included provision of export functions for FRAs management information systems and a standard evaluation tool. At this moment each FRA would need to specify and pay for such functions and tool separately unless this was co-ordinated by an organisation such as CFOA or DCLG.

Some FRAs said that it would be sufficient to export data from CRMIS into MS excel spreadsheets where they would complete a bespoke analysis, and that modification of CFRMIS was unnecessary.

The way forward for FRAs that do not use CFRMIS was less clear. Some FRAs stated that their systems did not support the extraction of fire safety data in a way that would match data needs, such as extracting the sequence of scores awarded to a premise over a series of audits.

Integrated Risk Management Plan data returns
It was noted that the Community Fire Risk Management Information System does not align to the IRMP data returns. FRAs need to export and then manipulate data to fulfil the IRMP data returns. They also noted that they are not aware of how the IRMP data returns are used and that the provision of data is resource intensive. Suggestions included reducing or eliminating the IRMP data returns.

6.6   Concluding points

The FRAs generally supported the case to evaluate fire safety activities for the sake of demonstrating their value for money and to help improve effectiveness. Whilst they collect the vast majority of necessary data and most FRAs have competence to complete evaluations, they lack tools to do so.

This led to a discussion about how FRAs may further develop their evaluation capabilities. Some FRAs mentioned there was a risk of FRAs developing and using 45 different evaluation tools, incurring the cost of doing so and producing incomparable results. Some FRAs suggested that there might be a case of a sector led initiative to develop and share fire safety evaluation tools. It was noted that CFOA is developing indicators in this area and that any further work in this area should be co-ordinated with the CFOA initiative.

Delegates also provided feedback regarding the IRMP data returns. Some key points were that:

- if a valid and important use of IRMP data returns can be demonstrated, they can accept providing the data

- further clarification and information on why the data is to be collected by FRAs and in what way this is used by DCLG

- in the absence of a clear and valued use of IRMP data returns, they should be discontinued; and

- the process of submitting data should be improved, specifically by enabling uploading of data in the form of spreadsheets rather than typing it in.

7   Appendix B: Workshops topic guide

Introduction

Thank you for attending the Integrated Risk Management Plan Fire Safety Order Statistics workshop.

The Department for Communities and Local Government (DCLG) has commissioned a research project to consider how to evaluate fire safety audit and enforcement activities under the Regulatory Reform (Fire Safety) Order 2005, considering the data and IT requirements. This workshop today forms part of that project.

The purpose of the work is to consider options for how Fire and Rescue Services may be able to evaluate their audit and inspection work. It is intended to build on any existing data analysis and/or performance management arrangements that are used within FRSs for internal management purposes; and on existing data collection arrangements.

Aims of the workshop

The aims of the workshop today are to:

- explore the aims, benefits and drivers for the evaluation of fire safety activities, including business (fire safety) support activities, audits and inspections, and enforcement action

- discuss different forms of evaluation

- solicit FRS feedback on initial evaluation ideas from Greenstreet Berman/DCLG

- explore existing FRS data and IT systems and how FRSs could further develop their data and IT systems to better support evaluation and performance management of the fire safety function.

We have an extensive programme for the day which will include small group work, presentations and discussion of ideas. Prior to the workshop, please read through the topic guide so you are familiar with the format of the day and come ready to discuss any ideas, suggestions or experience that you may have.

Housekeeping for the day

- fire/evacuation procedures

- location of toilet facilities

- mobile phone use

- refreshments/breaks.

Detailed programme of the day

09:30 Registration and coffee

09:45 Opening remarks, aims of the day

10:00 Session 1 – Forms of evaluation (small group work – knowledge café facilitation method)

Split into three smaller groups.

1. List all current types of fire protection activities your FRS is involved in? (ie, not community fire safety)

2. Outline the potential aims, drivers for and benefits to FRSs of evaluating these activities?

3. How does your FRS currently evaluate the benefit of your fire safety activities?

4. Outline what type of evaluation or benchmarking is needed? What data would you need to do this? Do you already collect this data?

11:00 Tea/coffee break

11:15 Feedback from small groups

Each group feeds back their findings from their small group to the plenary group.

Discussion points after each groups feedback.

12:00 Forms of evaluation and benchmarking (local and national)

GSB present GSB/CLG ideas.

Discussion point – Feedback from FRSs on proposals

Large group discussion of GSB ideas:

- How do these ideas fit with the FRS data and evaluation needs discussed in session 1?

- FRS ideas and suggestions on proposals.

- Discussion of value, practicality and implementation of proposals

13:00 Lunch

13:45 Session 2 – Current data collection and reporting (small group work – 45 minutes, reporting back to group 15 minutes)

Reminder to fill in mini-questionnaire.

Split into three groups. Small groups work to:

1. Outline the fire safety data currently collected and held by your FRS.
2. Discuss the validity and reliability of:

   - Business fire safety support activities;

   - Arson prevention in non-domestic buildings;

   - Fire safety audit compliance ratings and life risk scores (Relative risk rating and level);

   - Enforcement data (including education and advice);

   - Data on "premises known to FRSs", valuation office data and National Land and Property Gazetteer data.

3. How are fire safety business support activities, audits, inspections and enforcement and the recording of these currently quality assured in your FRS?
4. How could the coverage, validity and reliability of buildings data be further developed?
5. How could you further develop the quality of fire safety audit and inspection data and recording keeping without this being resource intensive?=

14:45 Tea/coffee break

15:00 Session 3 – IT systems (small group work – 45 minutes, feedback session – 15 minutes)

1. What systems are used to collect, collate and evaluate fire safety information/data?
2. What changes would need to be made to support collection of data discussed in session 1 and 2?
3. How could these changes be best implemented?
4. What would the resource implications be for FRSs to further develop their data systems?
5. What approaches could be used to support the development of FRS data systems?

16:00 Next steps

GSB rounding up.

16:30 Close and evaluation form

Please complete the evaluation form of the workshop.

Thank you very much for your participation in the workshop today.

8   Appendix C: Questionnaire

Fire safety evaluation questionnaire

This questionnaire is designed to enable CLG and the contractors (GSB) to clarify what data each FRS currently collects and to capture details on the data quality and evaluation processes that are in place. This information will be used to supplement /support the work which was completed at the recent fire safety data evaluation workshops. Please email it to **alexandra.rogers@greenstreet.co.uk** or post it to Fulcrum House, 5 Southern Court, South Street, Reading, RG1 4QS. Please call Alex on 0118-938-7712 if you have any questions. We would be grateful if you could complete this questionnaire by the 23rd July.

What is the name of your FRS?		What is your job title/role?	
What is your name?		What is your email address?	

1. **What activities do you record under Other Fire Safety Activity on the IRMP returns?**

2. **A) What type of database is used to record fire inspection and enforcement information, e.g. CFRMIS or an access database?**
    (please cross the box to indicate your selection)

CFRMIS	Other database

    B) If other please specify below.

3. A) What is the source of the premises data you have recorded
*(please cross the box to indicate your selection, select **all** that apply)*

Valuation office	Fire service records	National land and property gazetteer	Other agencies	Local authority	Housing Associations	Other source

B) What data do you hold on the occupancy/use type of premises?
(please select all that apply)

NLPG code	IRS occupancy type	FSEC occupancy type	Supplementary Line Number	Other code system

4. Do you prioritise audits using IRMP guidance note 4?
(please cross the box to indicate your selection)

Yes	No	A local version	Unsure

5. A) Does your FRS record the reason for an audit being carried out?
(please cross the box to indicate your selection)

Yes	No	Unsure

B) If so, is it possible to identify how many are related to the following
(please cross the box to indicate your selection)

A planned programme	Following a complaint/ concern	Following an incident	Support a wider risk management plan (e.g. operational risk	Other code system

C) If you use an alternative code system please specify below:

6. Do you record the following under part A of the form?
(please cross the box to indicate your selection)

Part A	Yes – on paper only	Yes on database	No	Not sure
Premises, use and responsible persons details FS Premises File Information				
Occupants (IRMP/ FSEC information)				
Potential Loss/ Risk (see Service guidance for detail)				
Premises features				
Height of building/premises (number of storeys)				

7. Do you record the compliance score per "article" from part B of the form?
(please cross the box to indicate your selection)

Yes – on paper only	Yes on database	No	Not sure

8. Is the following data recorded for every visit?
(please cross the box to indicate your selection)

	Yes – on paper only	Yes on a database	No	Not sure
Life risk score				
Relative risk rating				
Risk level				

9. Do you record the overall compliance scores (IEE scores)?
(please cross the box to indicate your selection)

	Yes – on paper only	Yes on database	No	Not sure
Overall compliance level overall score				
Initial Enforcement Expectation				
Confirmed enforcement action				

10. A) Has your FRS reconciled data sources (valuation office, NLPG and premises known to the FRS) for the count of premises in your FRS?
(please cross the box to indicate your selection)

Yes	No	Not sure

B) If yes please describe the processes that were used to reconcile the data?

C) What approaches to quality assurance do you perform on your work and data? *(please describe below)*

(please cross the box to indicate your selection)

Evaluation Activities	Yes	No	Not sure
11. Evaluation of impact of fire safety activities Has your FRS evaluated the impact of your fire safety audit activities (e.g. explored whether compliance scores improve following audits)?			
12. Evaluation of impact of fire safety activities. Has your FRS evaluated the impact of your fire safety activities other than audit? (e.g. local initiatives such as business open days, telephone advice lines)			
13. Evaluation of targeting of fire safety Has your FRS evaluated the extent to which your fire safety work is targeted?			
14. Trend analysis Has your FRS plotted trends in scores (e.g. compliance scores) over time?			
15. A. Follow up Do you revisit premises following compliance with enforcement action requirement(s) or informal advice, to assess compliance?			

Evaluation Activities	Yes	No	Not sure
15. B. Comparisons Do you compare scores before and after enforcement?			
16. Targeting of non-compliant premises Do you assess if your audits are targeting non-compliant premises? (e.g. reviewing the % satisfactory/unsatisfactory scores)			
17. Data comparisons Have you utilised fire data to assess the impact of your fire safety work? (e.g. have you evaluated rates of fire in premises targeted by fire safety work)			
18. Benchmarking Has your FRS benchmarked? (e.g. compared the rate of inspection of enforcement notices per 1000 unsatisfactory audits against other FRSs)			
19. Feedback from responsible persons Do you seek customer feedback on premises that you have audited/inspected? (e.g. via a paper based or telephone survey)			
20. A. Time per audit Do you assess the time taken per audit?			
20. B. Number of audits per fire safety officer Do you assess the number of audits completed per officer?			
21. Evaluation tools Do you have the analytical tools (e.g. methods or systems to analyse and evaluate data, for example a bespoke analytical excel spreadsheet) to support evaluation of your fire safety activities?			

22. **If you answered yes to any of questions 11-21 please provide the hyperlink to the published evaluation or a copy of the evaluation**
    (please return with this questionnaire).