

HOW NOT TO COLLECT FIRE STATISTICS FROM FIRE BRIGADES

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KEY WORDS: Fire report form, questionnaire design, computerisation

ABSTRACT

The paper looks at what is wrong with the system for collecting detailed data on fires from fire brigades in the UK, and what is being done to improve it. Results from trials of replacement fire report forms provide further examples of what not to do. Topics covered are the questions to ask, how to ask them and how to record the answer. Emphasis is on quality and consistency. The paper discusses difficulties in meeting the needs of the data users given the practical constraints of the data providers. The first step is a new fire report form to be introduced in 1994. The paper considers the planned future developments towards full computerisation by brigades. The benefits will accrue to both data users and providers.

Introduction

The United Kingdom has been collecting national fire statistics for over 40 years. The system for doing this has changed a number of times over the period. While it is regarded as one of the best fire statistics databases in the world, the Home Office who run it are not complacent. In 1988, it was time to review the system again, consider whether there was a need for change and if so, what changes to make. This paper describes some of the lessons learnt from this review. Although the review was specific to the collection of information on certain types of fires from United Kingdom fire brigades, some of the lessons learnt are applicable to surveys of other organisations too.

The paper is divided into four sections:

1. The current method of collecting UK fire statistics;
2. Problems with the current system;
3. Solutions proposed including what not to do;
4. The future.

1. The current method

1.1 To understand the problems it helps to know a little about the way the Home Office currently collect fire statistics. In the United Kingdom there are 64 fire brigades. To report a fire to the Home Office, brigades all use the same paper fire report form introduced in 1978. For major fires, one form is completed for each fire and the brigades follow the same instructions to answer a range of detailed questions about the fire. For example it asks about the location of the fire, when it started, stopped and when the brigade were called and arrived. It continues to ask the cause of fire and source of ignition, materials involved, method of extinction, involvement of people, particularly casualties and rescues and damage done to property as well as other questions. The instructions to complete the form are not comprehensive and were last updated in 1982. Many of the answers are given as written text, with very little "pre-coding" by brigades and few opportunities for brigades to mark their answer from a range of choices listed on the form. The Home Office deals with the information on the forms in as consistent a way as is possible. However there is scope for tremendous variation in the way brigades handle the information, and interpret some aspects of the form.

1.2 As well as providing statistics, the form is used by brigades to provide a record of the fire. The fire brigades process information for their own purposes in their own specific way. They do not have details of how the Home Office define or classify fire characteristics. Therefore they have no chance of producing statistics that are comparable with the Home Office, or with each other.

1.3 Within the Home Office the coding section who process the information, work full-time coding fire report forms. Therefore the staff become experts in interpreting the wealth of information recorded on the forms and translating it to detailed codes. The method has been evolving since 1978 when the current form was introduced. It is a system intended to cope with the fact that just about anything and everything can catch fire and there is a need to know what it is, where it is, how it did, when it did and more, in order to inform policy makers and all those concerned with fire prevention. If necessary, changes can be made daily.

2. Problems with the current system

Rather than detail every minor issue, this paper concentrates on the two most important.

2.1 The first was raised by fire brigades themselves. The Home Office is not taking full advantage of modern technology, in particular the computer. It is not surprising that the "established" data collections use methods that are now out of date. What is important is that this is not only recognised but acted upon to make more efficient use of resources. Some brigades ask to:

- send data electronically.
- produce statistics for their brigade that are consistent with the Home Office.

Under the current system this is not possible. Why not? The answer is that the Home Office current system is too complicated and requires expert trained staff. The current system has its merits of being able to respond to change, for example coding changes can be introduced very rapidly. But fully comprehensive documentation has not accompanied all these changes. This would make it difficult to share the information with brigades without investing considerable resources.

2.2 The second main problem is that the current form does not fully meet users needs. Users are both government and brigades as well as other researchers. From a Home Office view point not all of the information recorded on the form is now required. Some of it is no longer coded at all and some other details are only recorded in a very abbreviated way. Sometimes information required can only be obtained by retrieving the forms and reading the text. This is a very inefficient method of information retrieval. In addition there is information that is not recorded that would be extremely useful to the Home Office (and brigades). In some cases brigades have separately developed ways of collecting additional information for themselves. But because there has been no overall coordination of this approach it would be impossible to generate national statistics.

3. Solutions proposed, including what not to do

3.1 The Home Office recognised the need to change over 5 years ago. The task has taken time because of the need to consult fully with users and then test out ideas. Pilot studies were conducted with the people who fill in the forms. These demonstrated both good and bad ways of collecting the data, including both what to ask and how to ask it. The

Home Office, while recognising the need for improvements in the system, were concerned not to lose what is one of the best fire databases in the world. They therefore wanted to build on the successes of the past in suggesting improvements. This paper focuses on some of the lessons learnt from exploring ideas that were not wholly successful. It looks at the way these were overcome. Some of the ideas for new data to collect were put forward by the Committee involving representatives from government and fire brigades that met to make and approve suggestions. Some ideas seemed eminently sensible when discussed around the table. The only way to find out if they would work was to test them with the fire brigade.

3.2 The Home Office were fortunate to have the cooperation of many brigades. Special thanks go to all those in fire brigades who tried out new forms while still completing the old ones and all others who provided such useful feedback.

The following list of **what not to do** emerged.

3.3 When deciding on the questions to ask:

3.3.1 Do not ask too many questions

If you try to be too ambitious by asking for too many things, the quality of the overall product is likely to fall. Find out how long the form takes to fill in and decide what is a realistic time to expect the form filler to spend. Try to get the balance right to get a form that is not too many pages long, but is not too crowded either.

3.3.2 Do not ask unnecessary questions

Have a reason for asking every question and know what you want to do with the answers. Do not waste time asking questions that just "might be interesting".

3.3.3 Do not expect the form filler to do a lot of work

In particular if the person who fills in the form is not a full-time "form filler", and does not see completing forms as a main task then form designers must be realistic in what they expect the form filler to do. The fire brigade is a good example because it is operational firefighters who are usually required to complete the forms. The idea that they could code or categorise some of the information using comprehensive codelists had appeal. However practical people like firefighters may not be prepared to spend time looking up

codes to get the right one for the form. This is not surprising where codelists span many pages containing tens or hundreds of different codes. The workable solution for the paper form was to have a mixture of small boxes, for ticking or entering codes where there were just a few codes, and larger boxes for free text to record the answer, where the codelists are very long. The option of shortening the long codelists could not be used because of the need for the detail. It is one of the strengths of the fire database that it contains detail of the location, causes and sources of fire and materials involved which is useful and necessary for fire prevention policy. Although one aim was to avoid written answers, the Home Office accepted that this was preferable to meaningless codes pending the introduction of coding by computer. The final answer lies in moving towards a computerised system which can translate words into codes. That work is in progress.

3.3.4 Do not ask questions that the form filler cannot answer

It sounds obvious, but let me give an example. The Committee presented good reasons for wanting to know the financial value of the damage done by the fire. While they did not expect exact figures they thought the firefighters could give estimates. The pilot studies showed that they could indeed tick boxes for estimates. But many of the form fillers felt strongly that these estimates were not worth the paper they were written on because they did not have the expertise to assess financial loss. They pointed out that the value in one room could exceed the value of a whole building, depending on the contents. Asking the owner for the information immediately after the fire caused difficulties. It is an insensitive time to ask about the value of the loss which may well not be known at that time. To return later would result in consequent delay and have cost implications for the brigade. With large fires it can take a long time to work out the loss. Where appropriate they felt insurance assessors had the best information. The end result is that there is no question on financial loss on the form, even though a good case was made for the need for it.

3.3.5 Do not ask for information you can get from another source

Do not expect the form filler to give you everything, especially if there are other ways of getting the information. If the form filler is aware that the information is recorded elsewhere, it seems unnecessary duplication of effort to record it again. For example, there will be no need to ask for information about the geographic area such as

socio-economic and housing characteristics etc, that can be derived from the Census and other surveys if the fire report form contains a map or geographic location reference. An example of such a location reference in the United Kingdom is the postcode. All buildings which receive mail have them as part of their address. Therefore "postcode" is a new question on the fire report form to enable us to link into geographic information systems containing a range of statistical information classified by postcode areas.

3.4 In designing the form:

3.4.1 Do not make the form difficult to follow

Ensure you lay out the form in a sensible way. In the trials, some of the questions, or answer boxes were missed because the form filler did not notice them. The form is A4 size (8.27" by 11.69") because it is convenient to handle, and copy. But using the whole width, as we did originally, resulted in some questions on the right hand side being missed. By dividing the pages into columns it is much easier to read and answer all the questions.

3.4.2 Do not make the form too rigid

Allow for the unexpected. This was important for a fire report form where it would be counter productive to make the fire fit the form rather than allow for the special characteristics of the fire to be recorded. The fire report form also has the purpose of providing the brigade with a record of the fire. With one-off surveys it may be both possible and desirable to decide what is required and restrict the questionnaire accordingly. But with a continuous collection like fire data, where the form has a long lifetime, because it is impractical to keep introducing new versions, there is a need to allow for asking questions that have yet to be formulated. In the absence of a "crystal ball" two solutions were found. One is to have space on the form for recording "other relevant details" which can be cross referenced to the relevant part of the form. The other is to provide initially unallocated answer boxes for questions yet to be asked. Communication with fire brigades will allow future users to say please use box number "x" to answer question "x". This can be done for all or a sample of brigades for whatever time period is necessary.

3.4.3 Do not give unclear ambiguous instructions and guidance

If someone does not understand, it is most likely to be your fault not theirs. Listen to what they say.

Try out other ways of wording the instructions. If something really is that complicated, maybe you should not try to ask for it, particularly if the answers are likely to be meaningless. Not giving any guidance is definitely not the solution either. It is equivalent or worse than "unclear" guidance because users have to make their own decisions. They are then unlikely to be consistent with anyone else. The Home Office do not claim to have produced the perfect guidance, but they have produced a document which can be amended as necessary. It will be important to check that information is understood and to act swiftly to make improvements. However thorough the initial testing, it is likely that further refinements will need to be made after the initial document is introduced.

3.4.4 Do not just change for the sake of change

The old expression "if it isn't broken then don't fix it" applies to forms too. If you have something that does work there is no need to change it all just because you have to change other parts. Firefighters clearly understand most of the questions on the current form and give consistent replies. In these cases, where the information was still needed, there is every reason to keep the question exactly the same. Keeping it the same means not changing a single word. Otherwise it is likely that someone will interpret it in a slightly different way which will remove the chance to analyse trends before and after the change properly.

4. The future

4.1 A new fire report form has been developed. It will be used by fire brigades in the United Kingdom from 1994. As a paper form it aims to solve some of the problems experienced with its predecessor. But it was designed with the intention of being fully computerised so as to reap the benefits of more recent technology.

4.2 The future involves a computerised version of the form that allows the firefighter in the fire station to input the information that only he has, but automatically extracts information already available in the brigade, such as the time of call to the fire brigade. The system must code the data, and check the answers and then send the data to the Home Office electronically.

5. Conclusion

5.1 To summarise the main points, the Home Office in the United Kingdom have a method of collecting national fire statistics using paper report forms for individual fires. It is too complicated to

be anything but a centrally managed and coded system. It does not meet all the needs of the users, who are principally central government, and the fire brigades who are also providers of the data. Therefore the Home Office decided to change the form so that fire brigades in the United Kingdom collect the most pertinent information in a way that will allow the Home Office and brigades to have a standard way of translating it to computerised data.

5.2 The Home Office consulted brigades and other users to determine their requirements from the fire report form. Consultation was followed by the equally important task of finding out what the data providers can give. The replacement form has been developed to be as easy as possible to answer, learning from the principles of good design and the result of the pilot studies. It should also prove cost effective by avoiding duplication of effort and time wasted recording information not required.

5.3 The paper gives several "what not to do" examples based on experience. Many of the issues have a wider application to those involved in establishment surveys. There is still outstanding work to fully computerise the system so that the coding and validation checks can be used by fire brigades to give consistent, reliable and good quality data, and extract the data already available from other fire brigade computer systems. It will then be possible to transmit the data electronically to the Home Office. These are the next steps to produce a fire statistics data collection for the future.