Review of the contributory factors system

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A. J. Hickford and R. D. Hall
Transportation Research Group
University of Southampton

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Executive Summary

Background

The present system for collection of road accident information – known as STATS19 – was established in 1949, and has been periodically reviewed and modernised. The original system collected both objective factors (speed limit, time of day, weather conditions, sex and age of casualties, etc.) and 'contributory factors' – those factors which the reporting officer at the scene of the accident believed had contributed to its occurrence.

While such contributory factor information can be valuable in assessing local accident prevention, the nationally required collection of this data was terminated in 1959 after doubts were cast upon its reliability. A survey conducted by the Transport Research Laboratory (TRL) in 1994, however, indicated that over half of the 43 police forces in England and Wales were still recording these data, although comparison of the methodologies and content of the data collected showed that there was little consistency throughout the various systems being used.

It is apparent that the collection and analysis of contributory factors was seen by these police forces as a valuable exercise, given that the data were still being collected many years after the national requirement to do so had ceased. In 1995, the then Department of Transport commissioned the Transport Research Laboratory to develop and test a prototype system for the collection of contributory factors information, with the aim of eventually adopting such a system nationally and linking the data collected to the STATS19 database.

A two-tier hierarchical system was developed:

- First, the critical failure or manoeuvre which led to the accident should be ascertained – this is the *Precipitating Factor*.

- Secondly, the factor or factors which contributed to this failure or manoeuvre – the *Contributory Factors* – should be identified from the evidence available.

A list of 15 Precipitating Factors and 54 Contributory Factors was established, and since the identification of contributory factors is relatively subjective, the coding officer was asked to assign a level of confidence to each selected factor by indicating whether it was Definite, Probable or Possible.

At the end of the three-month trial, during which eight police forces agreed to take part, the system adopted was deemed to be largely a success, with little difficulty experienced by reporting officers.

A harmonised national contributory factors collection system was proposed in the 1997 Review of Road Accident Injury Statistics, but after the County Surveyors Society and some police forces and local authorities put forward strong reservations about the proposed collection form, a compromise solution was found, in that the national collection would proceed upon a voluntary basis.

In January 1997, Cleveland Constabulary adopted the new system and it has since been adopted by a further 17 police forces across Great Britain.

The Review

The aims of this research are:

a) to review the existing national contributory factors system, and

b) to provide recommendations for possible improvements to the existing National System and to recommend ways to secure nationwide implementation.

The main approach adopted to obtain the desired information about the contributory factors system was to undertake structured interviews of representative samples of three groups of police forces – those which use the National System, those which use their own system, and those which do not use any system.

A work programme was developed, the main tasks of which were: to assemble data for each police force (including main accident and highway characteristics, current system in use, if any, etc.); the selection of a sample of police forces and local highway authorities and other relevant parties; arrange and conduct interviews; and summarise and analyse subsequent information and data.

The sample of police force areas selected – 18 of the 51 available – offered a good geographical spread across Great Britain, with a mix of urban and rural environments, road types, numbers of accidents and, for those police forces using their own systems of contributory factor collection, a variety of system types.

Interviews were carried out with representatives from each of the police forces and local highway authorities selected in the final sample. Where possible, the interviewees consisted of the Police Traffic Inspector, a traffic police constable, local highway authority safety engineers and the data coder/analyst (whether in the police or the local authority).

Findings

Police training regarding the completion of road accident statistics forms is generally given during probation, but no further specific training is given on either the collection or the subsequent use of contributory factor data. However, a greater understanding of the uses made of the data provided by police officers may yield more reliable and consistent data than in the current circumstance, where the statistics gathering process is simply seen as an administrative burden.

Reasons cited for having adopted the National System included the following:

- there was no equivalent system of factors in use at the time of adoption;

- the system was perceived as potentially providing greater consistency and quality of data;

- it would enable comparisons to be made with statistics from other police forces and with national statistics;

- it was seen as an opportunity to get a 'head start' compared with other areas who would be likely to have to adopt the system at a later date; and

- early adoption would result in the earlier availability of a usable local database of contributory factor data.

The use of confidence levels, where a police officer is able to record how likely they believe the factor selected actually contributed to an accident, is unique to the National System. One reason for their inclusion was in recognition of the subjective nature of the factors recorded, and may allow subsequent analysis to target seemingly more reliable data. A common perception – mostly among those who have not tested the system – is that confidence levels add an unnecessary complexity to the system, while some of those who are experienced in the use of the system believe their presence is largely beneficial. However, there is general agreement that only two levels are required: 'very likely' and 'possible' are suggested in the revised system.

One issue that was identified during the survey of data providers and users as part of the '2002 Quality Review of STATS19', and reinforced during the course of this review was that the National System laid blame for an accident wholly on one individual. This was deemed to be inappropriate for some accidents where more than one road user contributed to the causes of an accident, and it was also believed that the continued use of this system would have a future impact on issues of disclosure in court.

Another outcome of that survey in 2002 was that it was often only possible to identify potential 'pedestrian failure' if the pedestrian was injured and reportable at the scene of an accident. In some situations it was claimed that it would be very difficult to determine blame if an uninjured pedestrian, who was considered to be largely responsible for the accident, left the accident scene and was unavailable for interview during the evidence collecting stage. Thus it would be a beneficial addition to any amended scheme of contributory factor data collection if provision were made to link contributory factors to a non-injured pedestrian involved in an accident. Such provision is made in the proposed system.

Factors

Responses given regarding the contents of the factor list indicated that three issues were of particular significance: speed, inattention and behavioural factors.

There were conflicting views about the need for two separate speed factors (e.g. 'Inappropriate speed for the conditions' and 'Speed in excess of the limit'), but there was general consensus that the current factor coded simply as 'Excessive speed' gave insufficient weight to the problems associated with speeding.

The three factors that currently relate to inattention – 'Inattention', 'Looked but did not see' and 'Failed to look' – which are largely unavailable in other systems, are among those most often selected in the National System, and their usefulness has already been displayed in a study looking at fatal accidents involving motorcycles.

Other factors which are unique to this system are those relating to the behaviour of a road user during the time just prior to an accident, that may have contributed to its occurrence. These factors are not often selected (in around 2 per cent of accidents). However, if an accident is recorded as being behaviourally related, a highway engineer may be able to acknowledge that fact when assessing which sites are most suitable for further investigation.

Other issues raised during the review specifically regarding the factors included: the need to include provision for accidents involving a driver's misuse of mobile telecommunication devices; specific problems with the factor 'Disability' which may be addressed by combining that factor with 'Illness'; and an officer's lack of training regarding the assessment of tyre pressures and other mechanical defects that may have contributed to an accident.

In combination with the results from this review, suggestions for changes to the list of factors available were also made by members of SCRAS and officers at the DfT, and the resultant rationalised list of 48 factors is suggested for the future version of a National System of contributory factors.

Around 25–30 per cent of accidents are reported after an accident has happened, by a member of the public going to a police station. The contributory factor data gathered from such accidents is likely to be extremely biased and unreliable. Although an officer or clerk at the police station may feel it is appropriate to allocate contributory factors for a particular accident, it may also be desirable to include an option of 'factors not allocated' for such reports.

Recommendations

From the findings of the review, the analysis and subsequent discussion, the following recommendations are made:

1) Education and training of the police officers in appreciating the link between accurate completion of the form and improved road safety should be regularly undertaken.

2) The link between road user and factors selected must be retained in order to enable more in-depth analysis at a national level.

3) Provision should be made to link contributory factors to a non-injured pedestrian involved in an accident.

4) The recording of confidence level for each contributory factor should be retained, but with only two levels; 'very likely (A)' and 'possible (B)' are suggested.

5) For accidents reported after the event (usually at a police station) it may not be appropriate to record contributory factors, so an option of 'factors not allocated' should be available.

6) Several changes to the list of factors are recommended.

Drawing all of the above together it is further recommended that a revised system for the national collection of contributory factor data be adopted. This is a single tier system allowing up to six contributory factors to be selected, each of which is associated with a particular road user, and a level of confidence.

The system retains many of the innovative ideas devised by the original authors, and allows a degree of continuity for those police forces who have adopted the system since its inception. Some of the logical structure of the original form has been lost, but the system overcomes many of the objections raised originally, including mitigating the problem of allocating blame to one road user. The system ought now to be widely acceptable to practitioners currently using their own systems of contributory factors, thus enabling nationwide implementation.

Abstract

Although it ceased to be a national requirement nearly 50 years earlier, in 1994 many UK Police Forces were still collecting information about the factors which may have contributed to the occurrence of a road traffic accident, the use of which, in conjunction with the more objective STATS19 data, can make a vital contribution to road safety improvement. With the aim of harmonising the quite divergent systems then in use, a new system for recording these contributory factors was devised and tested by the Transport Research Laboratory (TRL) in 1995. However, the use of this system proceeded on a voluntary basis after many objections were raised by police and road safety practitioners. Eighteen police forces have since adopted the TRL devised system. During this review, interviews were carried out to assess current working practices and problems associated with the new and other systems. This report summarises the findings from these interviews, together with a review of other systems in use, and offers possible solutions to overcome the problems identified. A revised system is recommended which retains many of the innovative ideas from the TRL designed form, thus allowing a degree of continuity for those police forces who have already adopted the system. It also overcomes many of the original objections raised, thus enabling nationwide implementation.

1 INTRODUCTION

1.1 Background

It is widely recognised that a national database of reliable, consistent and current information about those factors which contribute to the occurrence of road accidents would provide valuable insights to assist road safety improvements. When the present STATS19 system for collecting information about road accidents was established in 1949, such data were originally collected along with other more objective data. After ten years, however, doubts were cast over the reliability of these 'contributory factors', and collection of such data then ceased to be a national requirement.

A survey of all police forces in England and Wales carried out in 1994 (Maycock, 1995) revealed that more than half still recorded contributory factor data. Police forces tended to use the data for the design and targeting of enforcement activities for safety, the deployment of patrols and publicity and road safety campaigns, while local highway authorities used the data to supplement the factual STATS19 data in planning road safety remedial activities; acknowledgement was widely made that the information was necessarily subjective and judgemental, but it was nevertheless very useful as a diagnostic tool.

In 1989, a research study for the AA Foundation for Road Safety Research called 'Urban accidents: why do they happen?' was undertaken by the Institute for Transport Studies at the University of Leeds (Carsten *et al*, 1989). The aim was to provide a better understanding of urban accident causation, and the work comprised an 'in-depth' study of the contributory factors in urban road accidents, with particular emphasis on the role of human factors. Accident data was collected on 1,254 injury accidents occurring during 1989 in an urban area in North Leeds: information was first collected from police files, and then a survey of the participants of the accidents was undertaken. After a site visit to each accident location, the investigators determined the contributory factors for each participant involved in each accident. In this case a contributory factor was defined as 'a road user or traffic system failure without which the accident would not have happened'. A four-level hierarchy of factors was devised:

1) The immediate failure that precipitated the accident.

2) A failure that increased the likelihood of the accident happening.

3) The road user behaviour or lack of skill that led to those failures.

4) The explanation for the failure or behaviour.

An example of this 'chain of factors' for a driver involved in a particular accident is given thus:

'failure to yield at a junction' (level 1) caused by 'failure to look' (level 3) caused by 'alcohol impairment' (level 4) and 'fatigue' (level 4).

As Maycock points out, a hierarchy of factors is conceptually attractive, providing some sort of causal chain, but the 1989 AA study does not convincingly demonstrate its value in application. The various levels of the hierarchy are inter-related in a complex and subtle way, and the mechanisms involved in these inter-relationships are not well understood. He suggests that a simpler and more pragmatic approach is needed to monitor trends in accident factors.

The aim of Maycock's (unpublished) 1995 study, 'Contributory Factors in Accidents: Police Databases' was to undertake a survey of the systems being used by the police to record contributory factors at that time. It was designed to record and compare the systems being used, to identify the uses to which contributory factor data were put by police and highway authorities, and to make some simple assessments of the data being collected.

Having determined that over half of the 43 police forces in England and Wales were routinely collecting contributory factor data at that time, 14 of these were visited, their various coding systems examined, and an analysis made of the uses of the contributory factor data.

The contributory factor coding schemes were found to fall into three groups. One was a simple list of 'causes', generally similar in principle and content to the list used in the national recording system which was operational in the 1950s. The second group used a coding scheme in which the list of contributory factors had been formed into a 'grid'. The final group were forces using a rather different coding scheme devised by Devon and Cornwall police force. This comprises the selection of a 'causation' factor from a list of seven broad categories (i.e. driver, pedestrian or passenger error, vehicle or highway defect, weather conditions and animal involvement), then up to two 'qualifiers' from a list of 26 to supplement the causation factor.

Although there were some similarities in the coding schemes within the first two of these groups, the schemes were all different – a circumstance which is likely to have arisen due to each of the schemes being tailored gradually over time to the needs of the local users. Maycock suggests that the diversity of the coding schemes would contribute to the difficulty in identifying a consistent, coherent and compact national set of contributory factors, but points out that many of the differences are matters of detail rather than concept. He goes on to say that a national reporting system built around a consistent and coherent set of contributory factors would yield reliable information, and hence justify the effort required to collect the data.

In 1995, the Department of Transport (now DfT) commissioned the Transport Research Laboratory (TRL) to develop and test a prototype system for the collection of contributory factors information (Broughton *et al*, 1998). In keeping with the recommendations made by Maycock, the intention was that the new system should be designed to be sufficiently comprehensive to accommodate the vast majority of accidents with a relatively small set of codes; it should be self-explanatory, requiring little formal training or documentation; and it should encourage the collection of high-quality data.

The adopted approach was based on Carsten's 1989 hierarchical system, but adapting it from the four-level hierarchy to a simpler two-tier system:

- First, the critical failure or manoeuvre which led to the accident should be ascertained – this is the *Precipitating Factor*.

- Secondly, the factor or factors which contributed to this failure or manoeuvre – the *Contributory Factors* – should be identified from the evidence available.

A list of 15 Precipitating Factors and 54 Contributory Factors was established, and since the identification of contributory factors is relatively subjective, the coding officer was asked to assign a level of confidence to each selected factor by indicating whether it was Definite, Probable or Possible.

At the end of the three-month trial, during which eight police forces agreed to take part, the system adopted was deemed to be largely a success, with little difficulty experienced by reporting officers.

During the 1997 Quinquennial Review of STATS19, it was suggested that the system of contributory factors devised by TRL should form part of the national dataset. At that time, however, this idea was strongly opposed by some police and local authorities because of concerns over the effectiveness and usefulness of the proposed national system, particularly when compared with the structure and/or content of their own existing systems. Thus, a compromise solution was adopted, and the national collection proceeded on a voluntary basis.

In January 1997, Cleveland Constabulary adopted the new system (known hereafter as the National System), and it has since been adopted by a further 17 police forces: Essex Police, Greater Manchester Police, Humberside Police, Lancashire Police, Sussex Police, Thames Valley Police, West Mercia Police, West Midlands Police, Wiltshire Police, Central Scotland Police and Fife Constabulary during 1999, Gloucestershire Constabulary and South Wales Constabulary during 2000, and Avon & Somerset Constabulary, Derbyshire Constabulary, Hampshire Constabulary and Tayside Police in 2001.

A copy of the form designed by TRL is included in Appendix A.

1.2 Current Research Using Contributory Factor Data

Most of the current research is policy driven – trying to determine solutions to already recognised problems – but analysis of a national system for collecting contributory factor data could lead to more pro-active research. For example, O'Cinneide *et al*, (1996) analysed contributory factor data 'as reported in a number of countries' in conjunction with case studies on roads in Ireland and Sweden with the aim of determining those Advanced Transport Telematics solutions which would yield the greatest operational and safety benefits.

One recent study undertaken for DTLR under the auspices of 'Behavioural Research in Road Safety' is Brown's 'Review of the "looked but failed to see" accident causation factor' (2001), in which a review was carried out to assess the impacts of the 'looked but failed to see' phenomenon, and concludes that given evidence from both the accident literature and from analyses of data gathered from police forces using the National System in 1999, this causation factor is relatively important for road safety. However, Brown questions the genuine nature of the coding of this factor, given that there is certainly scope for confusion when using the 'plain language' descriptions of the error, and also suggests that the 'looked but failed to see' factor could be simply an excuse offered by errant drivers, or the default option accepted by police officers in the absence of evidence to the contrary. Nevertheless, Brown concludes that genuine 'looked but failed to see' errors are made, and that further research should be carried out to investigate the phenomenon.

Another recent study which utilises the TRL devised system is 'An analysis of police reports of fatal accidents involving motorcycles' (Lynam *et al*, 2001). In this study, details of 717 accidents which occurred in the early years of the 1990s were re-examined and contributory factor data attributed accordingly. Subsequent analyses were carried out to determine which factors were most prevalent in these fatal accidents involving motorcycles, the implication of specific factors was investigated and suggestions for further research were given based on these analyses. A comparison of these results with those obtained by using contributory factors data gathered during 1999 showed that the pattern of accident causes had not changed substantially in the 15 year scope of the project.

In their paper produced for the Parliamentary Advisory Council for Transport Safety (PACTS), Neilson and Condon (2000) acknowledge that because policymakers lack data for road safety assessments there has been a renewed interest in road accident investigation studies to find which factors contribute to the occurrence of collisions. Information on contributory factors in road collisions, they say, can also provide a basis for vehicle safety developments, but that telematic and electronic systems for road vehicles have sometimes been developed without any clear understanding of whether they can reduce collisions in sufficient numbers to justify themselves.

Rather than the 'Definite, Probable, Possible' approach adopted by Broughton, Neilson suggests that a four-point scale be used, thus: 'a contributory factor scores zero if it is one which, although present, does not contribute to the collision. A factor score of 1 could be allocated if the collision would not have occurred if that contributory factor had not been present. A score between 0 and 1 could be used for factors which, by themselves, could not lead to the collision at the level of severity being surveyed. An intermediate score could also be used when there is a degree of doubt about whether the factor was present and whether it did actually contribute. A four-point scale (0, 1/3, 2/3 and 1) is the most precise scoring system likely to be practicable.'

Whereas the National System (and other contributory factor data gathering schemes) tends to be coded either by the police officer attending the accident or later by clerical staff using the police officer's notes, Neilson puts forward the idea of using an Investigation Team. This would comprise experts in various aspects of behavioural science, highway engineering, road vehicle design, medical practice, data organisation and analysis and team leadership, and give a more detailed collision investigation than could be achieved using data from the National System. A set of questions is offered to which the investigation team must find answers in order to determine those factors contributing to the collision.

This idea is carried forward in a recent research project: 'On-the-spot research: Investigating human, highway and engineering factors in accidents' (Hill, 2001). This project enables expert investigators to attend the scene of an accident within 15 minutes of the incident occurring, which allows the collection of 'volatile' accident data that would otherwise be lost. The aim of the project is to carry out an in-depth study of 500 accidents a year, establishing a database that will permit analyses to understand better the causes of crashes and injuries, and assist in the development of solutions. This project aims to add to other similar projects that have taken place in the past which sought to assess the contributory factors in accidents: an 'on-the-spot' study (1970–1974) in which 2,130 accidents were investigated (Sabey and Staughton, 1975), and an 'at the scene' study (1978–81) which included 1,363 accidents (cited in Maycock, 1995). There are also a number of on-the-spot accident investigation studies recently active across Europe, including an in-depth database maintained by a team at Medical University of Hanover (Otte, 1997), and the work of INRETS (Girard, 1993) examining crash causation in Salon de Provence and pedestrian injuries in Lyons.

During November and December 2001 and January 2002, David Rowe (formerly DTLR Police Liaison Officer) made site visits to 12 of those police forces who had been using the National System, to determine whether any difficulties had been encountered, and to assess consistency of recording the data across different forces. He noted that there appeared to have been little formal training given in the application of the National System or STATS19, and that there is a clear lack of understanding about the purpose of the system, problems which could be overcome by utilising a training package developed jointly by the Police and the Department for Transport. However, Rowe concludes that the system developed by TRL can be used effectively, producing meaningful data that was being used for road safety and casualty reduction measures. There were no proposals for any major changes to the system from either police forces or Local Highway Authorities.

2 Methodology

2.1 Objectives and Work Programme

The aims of the research are:

a) To review the existing national contributory factors system, and

b) To provide recommendations for possible improvements to the existing National System and to recommend ways to secure nationwide implementation.

Two approaches were considered to obtain the desired information about the contributory factor system. The first was to design a self-completion questionnaire survey for distribution to all accident data providers and users. The second was to undertake interviews of representative samples of the three groups. It was considered that a structured interview approach would enable a more detailed understanding to be obtained of the issues concerning the contributory factor system, so this approach was adopted. This decision was reinforced by the fact that data providers and users had only recently (July 2001) been asked to provide their views on the National System in a survey as part of the '2002 Quality Review of STATS19', so a further survey so soon would not be welcomed.

To address the above objectives, a work programme was developed with the following main tasks:

1) Assemble data for each police force including main accident and highway characteristics, current system in use (if any), etc.

2) Select a sample of police forces and associated local highway authorities and other relevant parties for subsequent interview.

3) Arrange and conduct interviews.

4) Summarise and analyse subsequent information and data.

5) Make recommendations for revision of the National System, as appropriate.

2.2 Sample Selection

With regard to the collection of contributory factors, police forces and local highway authorities comprise three categories:

1) Those which use the National System.

2) Those which use their own system.

3) Those which do not use any system.

A local highway authority will be in the same category as the police force area within which it is located. Thus, the selection of the sample was based primarily on the police force – local highway authorities could then be selected for interview as required.

There are 51 police forces in Great Britain (39 in England, 4 in Wales and 8 in Scotland). It was decided that a sample of 18 police forces would be sufficient to provide adequate coverage. The initial consideration was that six police forces would be selected from each of the three categories above. However, it became apparent after a review of the various collision report forms used throughout the country that there were more police forces using their own system of contributory factor data collection than first envisaged. The numbers in each category are:

National System:	18 police forces
Own System:	27 police forces
No System:	6 police forces

Thus, with the agreement of the Project Manager, the selection quota was altered to:

6 police forces using the National System

9 police forces using their own system

3 police forces using no system

The police forces selected for inclusion in the review are as follows:

National System	Cleveland; Hampshire; Greater Manchester; Thames Valley; South Wales; Central Scotland
Own System	Devon & Cornwall; Durham; Metropolitan; Northamptonshire; Nottinghamshire; Staffordshire; West Yorkshire; North Wales; Strathclyde
No System	Bedfordshire; Cumbria; Kent

This sample of police force areas offers a good geographical spread across Great Britain, with a mix of urban and rural environments, road types, numbers of accidents and, for those police forces using their own systems of contributory factor collection, a variety of system types (as mentioned above: list, grid or Devon & Cornwall design).

2.3 Interviews

A structured interview questionnaire was devised and the interview procedure and content was trialled by arranging interviews with Hampshire Constabulary and Hampshire County Council early in the design process.

Interviews were carried out with representatives from each of the police forces and local highway authorities selected in the final sample. Where possible, the interviewees consisted of the Police Traffic Inspector, a traffic police constable, local highway authority safety engineers and the data coder/analyst (whether in the police or the local authority). Some police forces and highway authorities preferred a combined interview, while others deemed it appropriate to carry out separate interviews for each.

It was originally envisaged that two team members would carry out the interviews, initially in tandem, then separately once a consistent interview approach had been established. However, due to staffing changes, most of the interviews were carried out by the same team member. Although this resulted in a longer timescale to complete the interviews than was originally anticipated, it has resulted in greater consistency in interview technique throughout the review.

It was necessary to ask each of the three groups slightly differing questions, but the basic interview structure devised was similar in all cases and aimed to elicit the following information:

- police training issues – completion of statistics forms, awareness of the use of the data;

- details of any previous systems used – differences, advantages or disadvantages of current data collection method over previous;

- reasons for adopting or not adopting the National System;

- possible benefits gained from adopting the National System, or the existence thereof;

- system design – ease of use, practical problems;

- current proposed factors – ambiguities or lack of clarity; validation and use of STATS19 and other collected data.

In addition to the structured interviews held with police officers and local highway engineers, discussions were also held with nominated representatives of the SCRAS Working Group, officers at the Department for Transport, Mr Jeremy Broughton of TRL (the original system author) and Mr David Rowe (the Department's Police Liaison Officer during the original system design).

3 Results

There are essentially two main aspects to any contributory factor collection system – the design and structure of the system itself, and the factors available for selection within the system. These two aspects of the National System will be reviewed separately. Note that in the following sections, text in *italics* represent quotes made during interview.

3.1 Systems Currently in Use

As pointed out in Maycock's 1995 study, the various contributory factor coding schemes being used at that time were found to fall into three groups: a simple list of 'causes'; a coding scheme in which the list of contributory factors had been formed into a 'grid'; and a two-tier coding scheme devised by Devon & Cornwall police force. Of the 27 coding systems in use at the time of writing, 16 are lists, eight are grid layouts, and three have adopted the system devised and promulgated by Devon & Cornwall Police.

These systems vary considerably in the number of factors available (from a short list of a dozen factors up to nearly 100 factors), and the number of factors allowed to be selected (from simply the main contributory factor to a maximum of six factors).

As reported above, 18 police forces are currently collecting contributory factor data using the National System. During interview, there were various reasons cited for having adopted the National System, including the following:

- there was no equivalent system of factors in use at the time of adoption, and it was likely that the system would eventually become mandatory;

- the system was perceived as providing greater consistency and quality of data, based on the report of the initial pilot project, TRL323;

- it would enable comparisons to be made with statistics from other police forces and with national statistics;

- it was seen as an opportunity to get a 'head start' compared with other areas who would be likely to have to adopt the system at a later date – indeed in two cases, surprise was expressed that this system had not yet already been adopted across the country. Also, early adoption would result in the earlier availability of a usable local database of contributory factor data;

- while upgrading computer systems to avoid problems associated with the 'Millennium Bug' at the end of 1999, it seemed timely to include the National System of contributory factors in the upgrade.

An inspection of the statistics forms used by the various police forces who have adopted the National System revealed that in every case some modifications had been made to the form. Most of these changes were very minor – replacing 'Impairment – alcohol' with 'Under the influence of alcohol', for example, or the introduction of a typographical error when transcribing onto locally designed forms. However, two systems had replaced one of the factors entirely. In both cases, the factor 'Driver – following too close' had been replaced with 'Driver – ignored lights at crossing'.

Further investigation revealed that the decision to make these amendments had not been sanctioned by the Department for Transport and indeed, data were being received from these two police forces without knowing that the alternative factor description was in use.

For the National System of contributory factors to be effective, such local changes must not occur in the future. It may, however, be necessary to provide the opportunity for local additions to be made to the factor list – data that may be used at a local level but is not to be included in the dataset passed on to the DfT. Periodical monitoring and evaluation of such data could indicate if future changes may be required to the list of factors available for selection.

3.2 Contributory Factor Data Usage

The vast majority of interviewees who had access to contributory factor data (collected using both the National and other systems) believed that its use, often in conjunction with STATS19 data, helped them in some way to improve road safety and reduce casualties. Here are some of the more common uses of the data derived from the use of the National System:

- as a guide to accident cluster analysis where sites and areas are identified which might merit further investigation by highway engineers;

- for mass action plans and road safety campaigns, not only as a tool for identifying issues that may need to be addressed, but also as a future indicator of any effects that such campaigns might have;

- as one method of assessing which sites might benefit from speed camera enforcement;

- as an educational tool, in summary form in periodical police reports and answering media and public inquiries.

The scale of use of the data in different areas varies from extensive (where all of the above are involved) to minimal (where a highway engineer might only use the contributory factors as a method of confirming or amending the text descriptions recorded on a crash reporting form by the attending officer when converting to electronic format). There may be scope for the development of a training package to help highway engineers in the analysis of local contributory factor data in conjunction with STATS19 data. Appreciation of the subjective nature of the data was expressed by one person, who felt that "*there has to be a health warning with the analysis of this data.*"

In all cases, it was acknowledged that the contributory factor data is necessarily subjective and judgemental. Indeed, two officers attending separate but otherwise identical accidents might select different contributory factors "*because it's down to very subjective interpretation*", although this potential discrepancy is likely to decrease at less complicated accidents.

3.3 Police Training

While some training is generally given during their probation period to police officers regarding the completion of road accident statistics forms, either in organised tutorials, or as part of a tutorship, there is currently no further specific training given regarding the new system of contributory factors. Little experience is gained through attending road accidents, since many police officers may only attend two or three accidents each year. "*Officers who aren't predominantly traffic oriented are, I would suggest, giving it their best guess.*"

Quoting one police constable who was aware of the uses of the data he provided: "*I'm very conscious of trying to get as much information on to these forms as I possibly can. A lot of people aren't end-users, so the length that they would go to is maybe not as much.*" It is widely believed that if the police officers completing the statistics forms had a greater understanding of the uses that are made of the data they provide, they would be less likely to perceive the forms as simply an extra administrative burden that only increases their workload. Indeed, this is seen as one of the greatest barriers to achieving better-quality data. Campaigns to educate police officers of the link between their completion of statistics and increased road safety have been undertaken, and a simple reminder written on the statistical form to emphasise the importance of the data may help to provide higher-quality data, although given the limited space available, this may be difficult.

A training programme was devised concurrent to the inception of the National System, but this has not yet been further developed into a fully operational package. It is envisaged that future training related to STATS19 reporting and data use – including contributory factors – would be made available at a local level by the office of the national police liaison officer working in conjunction with local highway authorities. "*The critical point is when a system is introduced. The training you get at that point will reflect the quality of the data you get.*"

3.4 The Structure of the National System

The two-tier structure of the National System is perceived by many of those not currently using it as too complicated, but is also seen as providing more useful data for analysis purposes (bearing in mind its subjective nature). No difficulties were reported to have been encountered during the three month pilot of the system, and there seem to have been few problems in this regard encountered by those currently using the system. Indeed some reporting officers have indicated that such a two-tier structure provides a helpful framework for considering the reasons for the occurrence of an accident.

However, one issue that is seen by many as a real problem concerns the apportioning of blame to just one road user, both as a barrier to accurate completion of the form, and of the potential difficulties of disclosure in court. While disclosure in court was not cited as a current problem, it was widely acknowledged that such issues would inevitably become more problematic in the future.

Also, many interviewees expressed a desire whereby contributory factors could be related to the accident rather than the vehicle or casualty selected in the first section of the form. This is largely due to the perception that there may be some other factors involved in the accident that do not immediately relate to the 'blameworthy' vehicle or casualty, and that data is currently either being lost, or included incorrectly in the current coding scheme.

One option to overcome this problem is to (wholly or partially) remove the link between the road user associated to the precipitating factor and contributory factors. This may indeed result in a greater depth of detail being given by the police officer on the reporting form. At a local level, accident investigation usually entails detailed reviews of the accident reporting forms, including brief location and text descriptions, so it should be possible for the investigator to ascertain which factors relate to which participants, or which other factors not coded, relating to other participants, may also have contributed to the accident. At a national level, however, such 'backward analysis' is not possible, since text descriptions are not currently collected as part of the STATS19 national database. Thus a link between a road user and the associated factors is essential for in-depth analyses of the national dataset of contributory factors.

3.5 Confidence Levels

The use of the confidence level code, whereby an officer is able to record whether he/she perceives a particular factor to be 'definitely', 'probably' or 'possibly' contributory to an accident, is unique to the National System of contributory factors. One reason for the inclusion of the code was in recognition of the subjective nature of the factors recorded, in that the code could allow subsequent analysis to concentrate on the seemingly more reliable data. Also, an officer completing the form is likely to provide more detailed information as a result; rather than simply opting for one or two factors that they are reasonably sure were involved, the system allows greater freedom to select other factors that, while they cannot be proved evidentially to be involved, may have had a contribution to the causes of the crash.

A common perception among practitioners using their own systems is that confidence levels add an unnecessary complication to an already complicated system, and if they are to remain as part of the system, there is uncertainty about the need for three levels – the perception is that 'definite' will rarely be used; officers are likely to prefer to opt for 'possible'.

However, there is a marked difference in opinions as to the value of confidence levels for those areas currently using the National System. Officers who attend accidents and complete the forms believe there is merit in having confidence levels, which allow more flexibility of choice; police officers prefer dealing with evidential facts, but if opinion is required (as is the case in any system of contributory factors) the opportunity to record that a factor is possibly involved is welcomed.

Again, while the use of confidence levels was largely welcomed, some doubts were expressed as to the need for three levels of confidence; one view was that 'definite' should not be included as an option, since a police officer is generally unable to determine the definite causes of a crash, even if they were present to witness the event.

Thus, it is recommended that the system of confidence levels is retained, but that the number of levels available to select should be reduced from three to two. In recognition of the subjective nature of contributory factors, it is suggested that the levels that remain should be 'very likely (A)' and 'possible (B)'. Alternative wording may be preferred, for instance 'Probable' and 'Possible' or 'Definite' and 'Limited evidence' have been suggested.

3.6 Specific Factors

All respondents were asked whether any of the factors included in the National System were ambiguous or lacking in clarity, and whether any other factors or changes ought to be considered. While many individual comments were made about particular factors, it soon became apparent that three issues dominated this aspect of the review: speed, inattention and behavioural factors. These are considered separately below, together with a review of factors not currently present in the National System, but largely prevalent in other systems in use.

3.6.1 Speed

The single factor explicitly relating to speed in the TRL devised National System is 'Excessive speed'. One of the results from the survey of data providers and users as part of the '2002 Quality Review of STATS19' was that this gave insufficient weight to the problems associated with speeding, and that an additional factor should be included for 'Inappropriate speed' to supplement the existing factor. This view was largely endorsed during the interview process, although there was some doubt expressed as to the need for two such similar factors; perhaps the inclusion of 'Excessive or inappropriate speed' as a factor would be sufficient. Other views expressed the desire to determine whether or not the fact that a vehicle was travelling in excess of the posted speed limit was a factor in the accident.

3.6.2 Inattention

A common theme addressed by interviewees was that of inattention. There are currently three factors relating to inattention: 'Failed to look', 'Looked but did not see' and 'Inattention' – "*all very similar and they could be confused.*" These factors, largely unavailable in other systems of contributory factors (only one system has 'inattention' as a factor), are among those most commonly selected in the National System – 'Failed to look' is recorded as a factor in 16 per cent of accidents, 'Looked but did not see': 19 per cent, 'Inattention': 25 per cent – and while amalgamation of these factors may result in a slightly simpler form, there are nevertheless differences between these factors, which may be important in future analyses (for instance in the TRL Report 492: 'An analysis of police reports of fatal accidents involving motorcycles'), and it is thus suggested that these factors remain unchanged.

3.6.3 Behavioural Factors

Another theme well represented during interviews was that of the behavioural type of factors, i.e. 'Distraction – stress/emotional state of mind', Behaviour – panic', 'Behaviour – nervous/uncertain'. They are unique to this system of contributory factors, and are recorded in relatively few accidents (recorded in 1.8 per cent, 2.5 per cent and 1.8 per cent of accidents respectively). These factors are potentially useful, for example in a study of driver behaviour as a contribution to road accidents, but it seems unlikely that a road safety engineer can use these data to assist in designing remedial schemes. However, if a cause of an accident is recorded as being behaviourally related, an engineer would be able to acknowledge this fact when assessing which sites are most suitable for further investigation. Thus it is suggested that these factors remain, although some refinement or combination of these factors may be necessary.

3.6.4 Other Factor-Related Issues

Other issues that were also important to a number of interviewees included the following:

- There is no explicit provision for accidents involving a driver's misuse of mobile telecommunication devices.

An accident which is partly caused by a driver not paying sufficient attention or distracted through the use of a mobile telephone is not separately addressed in the current system. There was some acknowledgement during interview that, while 'inattention' and 'distraction' issues are already present, and it may often be difficult for a police officer to determine after the event, the inclusion of a factor explicitly related to the use of mobile telephones would be beneficial.

- There appears to be no explicit provision for accidents involving disobeying traffic signals.

A simple solution may be to change the wording of Precipitating Factor 1 (PF1) 'Failed to stop at mandatory sign' to 'Failed to stop (Traffic lights or STOP sign)'. Indeed, two police forces currently using the National System have already altered this factor in this way. Factors relating just to traffic signals may then be identified by use of the STATS19 information.

- 'Disability' as a separate factor could be problematic.

This issue was mentioned several times during interviews, and concern was expressed that an officer attending a crash scene where one of the road users involved was disabled might select this factor whether or not it had any bearing on the causes of the accident. Other systems in use tend to combine illness and disability in one factor, and it is suggested that the same method is adopted for the National System. Thus 'Impairment – illness' could be amended to include disability: 'Impairment – illness or disability, mental or physical'.

- An officer is unlikely to be able to determine wrong tyre pressures.

This factor was the least selected in the 2001 data (62 out of 60,979 accidents had 'Tyres – wrong pressure' as a factor) and concern was expressed during interview that a police officer would be unlikely to be able to determine an incorrect tyre pressure. It may be preferable to combine the factors relating to tyres.

3.6.5 Factors Used in Other Systems

During the review of other systems of contributory factors currently in use, there were some factors for which there was no suitable alternative within the National System, and these codes were separately collated. Table 1 lists such factors ordered by the number of systems using the code (where more than five systems include a factor).

Table 1: Additional Factors used in 'Own' Systems

Contributory Factor	Number of systems	Usage*
Driver disobeyed pedestrian crossing	18	0.76%
Railway level crossing	17	0.02%
Driver disobeyed double white line	17	0.30%
Low bridge	14	0.02%
Vision obscured by road signs/street furniture	14	0.44%
Vision obscured by pedestrians	14	0.28%
Hump back bridge	13	0.24%
Defective steering or suspension	13	0.13%
Junction overshoot	12	4.42%
Speed control hump	12	0.17%
Temporary traffic lights	11	0.17%
Vision obscured by hill crest	11	1.27%
Insecure load	11	0.21%
Junction re-start	11	5.78%
Holding on/stealing a ride	11	0.01%
Driver unfamiliar with location	10	unknown
Over-laden	10	0.05%
Obstruction – parked vehicle	9	0.21%
Overhanging load	9	0.06%
Pedestrian playing in road/in road not crossing	9	0.76%
Bus lane in operation	8	unknown
Weather conditions: ice/frost/snow	8	unknown
Vehicle defect	8	1.20%
Badly loaded	8	0.20%
Cyclist riding on/off pavement	8	2.78%
Pedestrian unfamiliar with location	7	unknown
Weather conditions: Heavy rain	6	unknown

* Usage is based on the highest percentage usage of a factor from the following areas:
  Metropolitan, Devon & Cornwall, Nottinghamshire and Staffordshire (these are the four areas for
  which figures on contributory factors were available)

It is likely, however, that some of these factors are included in these other systems for purely historical reasons – they were included in early versions of a contributory factor system and were never removed.

Based on these figures, inclusion in the National System of the following factors may be beneficial:

- driver disobeyed pedestrian crossing;

- driver disobeyed double white line;

- junction overshoot;

- junction re-start;

- vision obscured by road signs/street furniture;

- vision obscured by hill crest;

- pedestrian in road, not crossing, (or playing in road);

- cyclist riding on/off road.

As seen in Section 4.3 below and in Appendix B, all of the above are included in the revised set of factors, with the exception of 'Junction overshoot' and 'Junction re-start'. While these two terms are in common usage by experienced highway engineers, it is unclear whether a police officer attending a road accident would be confident to distinguish between them and other factors involving a failure at a Give Way line or marking. There may be scope to include the provision of these accident circumstances in a future development of the road traffic accident data collection form incorporating accident types. In the meantime, it may be possible for highway engineers to determine the occurrence of these types of accident from the plain language descriptions of the accident circumstances given by the reporting officer, or on site visits when investigating particular sites.

3.7 Data Quality

Computer packages can verify and logically cross-reference certain aspects of the STATS19 dataset, and checks are routinely made on the locations of the accidents, but generally no checks are carried out on contributory factor data.

There are other issues that have arisen during the course of the interviews with both those currently using the National System and others that relate to the quality of the data:

- The structure of the system and the presentation of the form was perceived as overly complicated, and thus would present difficulties to police officers who rarely attend road traffic accidents. Fatal and very serious crashes are usually attended by dedicated traffic police, whose understanding of the completion of statistics forms and the subsequent data use is greater than a normal duty officer; the quality of data at those crashes is likely to be higher.

- Some concern was expressed that an officer might inappropriately select a factor towards the top of the list rather than reading the whole list to determine whether there was a more suitable factor farther down – this is a potential problem of any system of contributory factors.

- There are four 'Other' factors on the TRL-designed form: Precipitating Factor; Personal Details; Vehicle Defects and Local Conditions – this was perceived to be too many, and doubt was expressed that any use was being made of data recorded for these factors. Also, it was perceived that officers may sometimes simply select 'Other' rather than assigning a more suitable factor.

- There is confusion between circumstances and causations – one perceived problem is that there is some overlap between the list of factors presented in the National System and the data collected in STATS19, for instance 'Roadworks' or 'Weather', but in fact, they are recording different data – one asking simply whether a particular condition exists at the site of a crash, the other asking whether that condition was contributory to the accident. This distinction ought to be made more evident on the reporting form.

- Doubts were expressed over an officer's ability to select factors accurately within a small time scale given that all the relevant information (including witness statements and further detailed investigation) might not be available until much later, beyond the time that the form must be submitted.

- While the form was perceived as complicated, it was also seen to be an aid to focusing the mind of the reporting officer on the reasons for an accident. The resulting data, albeit subjective, would be more useful in analysis, as it gives a clearer picture of the causes of a crash.

3.8 Over-the-Counter Reporting

Around 25–30 per cent of accidents are reported after an accident has happened, by a member of the public going to a police station. The contributory factor data gathered from such accidents is likely to be extremely biased and unreliable. Although an officer or clerk at the police station may feel it is appropriate to allocate contributory factors for a particular accident, it may also be desirable to include an option of 'factors not allocated' for such reports.

4 Discussion

During the period following the completion of the interviews described above, meetings were held both with the Department for Transport's Road Safety, Statistical and Police Liaison officers, and with the Standing Committee for Road Accident Statistics (SCRAS). This review was aimed particularly at informing the latter body regarding future decisions relating to the system of contributory factors, and their feedback was necessarily vital to the final outcome. The following sections include a brief overview of the proposals made to SCRAS, and the resultant amendments made to achieve the final proposed system of contributory factors.

4.1 Uninjured Pedestrian Involvement

One outcome of the survey carried out of data providers and users as part of the '2002 Quality Review of STATS19' was that it was often only possible to identify potential 'pedestrian failure' if the pedestrian was injured and reportable at the scene of an accident. In some situations it was claimed that it would be very difficult to determine blame if an uninjured pedestrian, who was in fact largely responsible for the accident, left the accident scene and was unavailable for interview during the evidence collecting stage. Thus it would be a beneficial addition to any amended scheme of contributory factor data collection if provision were made to link contributory factors to a non-injured pedestrian involved in an accident.

4.2 Proposed Structures for a Revised System

From the results reported in section 3.4 above, it is recommended that the requirement to link a particular vehicle or pedestrian involved in an accident to specific factors is retained, but within that there are two possible systems that could be considered.

The first system (shown on the following page) involves a relatively minor modification to the present national system. As before, one principal cause for an accident is selected and an associated road user is identified. A number of factors (possibly three or four) relating to that cause and road user are then selected. An extra factor may also be selected relating to any other road user that the reporting officer believes contributed to the accident. Although it will not be certain to which vehicle or casualty this factor relates, it should help to provide a better overall picture of the accident. A confidence level is also assigned to each factor selected.

Factors Contributing to Accident – System I

What went wrong?
(please select one only
from the list below)

A

Failure of Driver or Rider:

Perception:	**Manoeuvre:**
A01 Failed to stop (Traffic light or STOP sign)	A11 Swerved to avoid vehicle or object in carriageway
A02 Failed to Give Way (incl. junction overshoot)	A12 Sudden braking
A03 Failed to obey double white lines	A13 Poor turn/manoeuvre
A04 Failed to avoid pedestrian (ped. not to blame)	A14 Poor overtaking
A05 Failed to avoid vehicle or object in carriageway	A15 Drove wrong way (e.g. one-way street)
A06 Failure to signal/misleading signal	A16 Opened door carelessly
A07 Loss of control	
	A17 Other (give details)

Failure of Cyclist, Pedestrian or Passenger:

A08 Cyclist riding on/off road
A09 Pedestrian in carriageway/entered carriageway without due care (if the pedestrian is uninjured, select 'U' below)
A10 Passenger fell in or near PSV

Why did the failure happen?

Personal details	**Vehicle defects**
01 Impairment – alcohol (or suspected)	41 Tyres – deflation before impact
02 Impairment – drugs (or suspected)	42 Tyres – defective (e.g. wrong pressure or worn tread)
03 Impairment – fatigue	
04 Impairment – illness or disability, mental or physical	43 Defective lights or signals
	44 Defective brakes
05 Distraction – stress/emotional state of mind	**Local Conditions**
06 Distraction – physical in/on vehicle	51 At site – poor road surface
07 Distraction – physical outside vehicle	52 At site – poor/no street lighting
	53 At site – inadequate signing
08 Behaviour – panic	54 At site – steep hill
09 Behaviour – careless/thoughtless/reckless	55 At site – narrow road
10 Behaviour – nervous/uncertain	56 At site – bend/winding road
11 Behaviour – in a hurry	57 At site – roadworks
12 Failure to judge other persons path or speed	58 Slippery road
13 Failed to look	59 High winds contributory
14 Looked but did not see	60 Earlier accident
15 Inattention	
16 Person hit wore dark or inconspicuous clothing	
Pedestrian details	**Obscuration**
21 Crossed from behind parked vehicle, etc	71 Obscuration of view due to obscured windows
22 Ignored lights at crossing	72 Obscuration of view due to glare from sun
	73 Obscuration of view due to glare from headlights
Driver details	
31 Excessive or inappropriate speed for the conditions	74 Obscuration due to bend/winding road
32 Following too close	75 Obscuration due to hil crest
33 Disobeyed pedestrian crossing	76 Obscuration due to stationary/parked vehicle
	77 Obscuration due to moving vehicle
34 Inexperience of driving	78 Obscuration due to buildings, fences, walls etc
35 Inexperience of vehicle	79 Obscuration due to road signs/street furniture
36 Inexperience of location	80 Obscuration due to weather (e.g. mist or sleet)
37 Interaction or competition with other road users	81 Failed to see pedestrian in blind spot
38 Aggressive driving	**Animal involvement**
	91 Animal out of control
39 Lack of judgement of own path	**Other factor**
	99 Other (give details)

**To which vehicle (i.e. V1, V2, etc.),
casualty (C1, C2, etc.) or
uninjured pedestrian (U)
do the factors relate?**

Select **up to three** factors in order of importance,
from the list above which are reasons for the initial
failure, and indicate whether the factors are
very likely (A) or **possible (B)**.

Note: the presence of a particular condition at the scene (e.g. high winds) does not necessarily indicate that it is contributory to the accident.

**Factors relating
to road user
selected above:**

F1 [ ] [ ]   A/B

F2 [ ] [ ]

F3 [ ] [ ]

It is possible that there are other factors involved which do not
relate to the road user selected above.

Select the most important of these, and indicate whether it is
very likely (A) or **possibly (B)** a factor.

F4 [ ] [ ]   A/B

An illustration of how such a coding scheme might look is given in Figure 1 below.

A variation on the first system would tie in only two (instead of three) contributory factors to the 'blameworthy' road user and allow two further factors to be 'free'. An analysis of the 2001 national contributory factor data has shown that 12 per cent of accidents have four contributory factors and 29 per cent have three or four.

Figure 1: Illustration of Coding Scheme 1 – modified version of the National System

The second system (shown on the following page) removes the blameworthy element from being attached to just one road user. In this system the first tier comprises the selection of a principal accident type without any association to a particular road user. The list of accident types was derived following a review of several such lists used in the UK and other countries. In the second tier, up to four factors may be selected with each factor being associated with one road user (vehicle, casualty or non-injured pedestrian). A confidence level is also assigned to each factor selected.

Factors Contributing to Accident – System II

What type of accident?
First collision only, if more than
2 road users involved

A

(please select one only from the list below)

A01 Single vehicle	A06 Left turn	A10 Involving circulating vehicle on roundabout
A02 Shunt	A07 Straight ahead – crossing	A11 Vehicle from verge or footway
A03 Changing lanes or side collision	A08 Right turn	A12 Collision with parked vehicle
(incl. leaving parking space)	A09 U-turn	
A04 Overtaking		A13 Pedestrian
A05 Head-on (not overtaking)	A16 Opened door carelessly	
		A14 Other (give details)

What factors contributed to the accident?

Driver details	**Pedestrian details**
01 Failed to stop (Traffic light or STOP sign)	41 Crossed from behind parked vehicle, etc.
02 Failed to Give Way (incl. junction overshoot)	42 Pedestrian in carriageway/entered carriageway without due care
03 Failed to obey double white lines	43 Ignored lights at crossing
04 Failed to avoid vehicle or object in carriageway	**Vehicle defects**
05 Failure to signal/misleading signal	
	51 Tyres – deflation before impact
06 Loss of control	52 Tyres – defective (e.g. wrong pressure or worn tread)
07 Swerved to avoid vehicle or object in carriageway	
08 Sudden braking	53 Defective lights or signals
09 Drove wrong way (e.g. one-way street)	54 Defective brakes
	Local conditions
10 Excessive or inappropriate speed for the conditions	
11 Following too close	61 At site – poor road surface
12 Disobeyed pedestrian crossing	62 At site – poor/no street lighting
	63 At site – inadequate signing
13 Inexperience of driving	64 At site – steep hill
14 Inexperience of vehicle	65 At site – narrow road
15 Inexperience of location	66 At site – bend/winding road
	67 At site – roadworks
16 Interaction or competition with other road users	
17 Aggressive driving	68 Slippery road
	69 High winds contributory
18 Lack of judgement of own path	70 Earlier accident
Personal details	**Obscuration**
21 Impairment – alcohol (or suspected)	71 Obscuration of view due to obscured windows
22 Impairment – drugs (or suspected)	72 Obscuration of view due to glare from sun
23 Impairment – fatigue	73 Obscuration of view due to glare from headlights
24 Impairment – illness or disability, mental or physical	
	74 Obscuration due to bend/winding road
25 Distraction – stress/emotional state of mind	75 Obscuration due to hill crest
26 Distraction – physical in/on vehicle	76 Obscuration due to stationary/parked vehicle
27 Distraction – physical outside vehicle	77 Obscuration due to moving vehicle
	78 Obscuration due to buildings, fences, walls etc
28 Behaviour – panic	79 Obscuration due to road signs/street furniture
29 Behaviour – careless/thoutless/reckless	80 Obscuration due to weather (e.g. mist or sleet)
30 Behaviour – nervous/uncertain	
31 Behaviour – in a hurry	81 Failed to see pedestrian in blind spot
	Animal involvement
32 Failure to judge other persons path or speed	
33 Failed to look	91 Animal out of control
34 Looked but did not see	**Other factor**
35 Inattention	
36 Person hit wore dark or inconspicuous clothing	99 Other (give details)
37 Opened door carelessly	
38 Passenger fell in or near PSV	

Select **up to four** factors from the list above (reasons the accident occurred) in order of importance.
For each factor indicate to which vehicle (i.e. V1, V2, etc.), casualty (C1, C2, etc.) or uninjured
pedestrian (U) the factor relates – more than one factor may be related to the same road user.
Also indicate whether it is **very likely (A)** or **possibly (B)** a factor in the accident.

Note: the presence of a particular condition at the scene (e.g. high winds) does not necessarily indicate that it is contributory to the accident.

	F1	F2	F3	F4
Factor in the accident				
Which participant? (e.g. V1, V2, C1, U etc.)				
Very likely/possible (A/B)				

An illustration of how this second coding scheme might appear is given in Figure 2 below:

Figure 2: Illustration of Coding Scheme 2 – no overall blameworthy element

Select **up to four** factors from the list above (reasons the accident occurred) in order of importance.

For each factor indicate to which vehicle (i.e. V1, V2, etc.), casualty (C1, C2, etc.) or uninjured pedestrian (U) the factor relates.

N.B. More than one factor may be related to the same road user.

Also indicate whether it is **very likely (A)** or **possibly (B)** a factor in the accident.

Note: the presence of a particular condition at the scene (e.g. high winds) does not necessarily indicate that it is contributory to the accident.

	F1	F2	F3	F4
Factor in the accident				
Which participant? (e.g. V1, V2, C1, U etc.)				
Very likely/possible (A/B)				

Following the presentation of these proposals to SCRAS, the Committee decided that Coding Scheme 2 was clearly the preferred model, as it mitigated the problem of allocating blame by allowing the allocation of one or more factors to more than one vehicle and/or road users. However, it was also agreed that the coding of 'accident type' would not be incorporated at this stage and should be removed from the form. The possibilities for coding accidents according to 'accident type' in the main STATS19 requirement would be investigated by SCRAS following the 2002 review.

The resulting single-tier coding system would then provide the basis for an agreed national form subject to refinements concerning the factors to be included, as discussed below.

Further agreement was made that there ought to be provision for up to six factors to be selected. As mentioned previously, an analysis of the 2001 national contributory factor data showed that 12 per cent of accidents have four contributory factors, and since the proposed system allows for the inclusion of more than one participant, it seems likely that there will be a greater proportion of occasions where more than four factors are required. The adoption of up to six factors would also allow contributory factor data currently collected using the TRL-designed form to be imported into the proposed system with no loss of data. An example of the revised form is given in Appendix C.

4.3 Factors

Development of the list of factors for use in the National System began during a TRL research project entitled 'In-car equipment to help drivers avoid accidents' (Broughton and Markey, 1996), where a sample of accident reports was examined in order to determine the factors which commonly lead to car accidents. This, in conjunction with a review of previous studies of accident causation and consultation with police officers, led to the final list of 14 precipitating factors (plus one 'Other' factor) and 51 contributory factors (plus three 'Other' factors) in the National System.

The decision to modify the form from the two-tiered system to a single-tier coding system impacts most directly on the list of precipitating factors. Some of these factors are present simply as a guide to a police officer during the completion of the form, as the information provided can also be determined elsewhere in the STATS19 data – 'Failed to avoid pedestrian' and 'Passenger fell in or near PSV' for example. Such factors need not be incorporated into a single-tier system. However, there are precipitating factors that are not recorded elsewhere that ought to be included in a single-tier system, such as a failure to stop, give way or signal any inappropriate or poor manoeuvres which contributed to the occurrence of an accident.

Given the issues raised in sections 3.6 and 3.7 above, the need for additional rationalisation of the list of factors was agreed by SCRAS. Further to this decision, statistics officers from the Department for Transport suggested that the inclusion of factors which are seldom selected – in less than 1 per cent of accidents – adds unnecessary complication to the system, and it may be preferable to reduce the number of factors by excluding these; there should at least be good reasons to retain such factors. However, removal of little used factors is likely to increase the usage of the 'Other' factor – monitoring the text descriptions given when 'Other' is selected will be essential for future developments of this system.

Following further input from individuals within SCRAS and officers within the Department for Transport, the following list of factors was agreed for inclusion in the proposed single-tier system:

Driver/Rider details

- failed to stop at STOP sign or traffic signal at junction;

- failed to give way at GIVE WAY sign or marking;

- failed to stop or give priority at a pedestrian crossing;

- failed to signal, or gave misleading signal;

- poor turn/manoeuvre/overtake;

- swerved to avoid vehicle or object in carriageway;

- braked suddenly;

- lost control of vehicle;

- speed too high for conditions;

- speed in excess of limit (or suspected);

- following too close;

- inexperienced/learner driver;

- inexperience of vehicle;

- aggressive driving/competition with other road users;

- cyclist riding on pavement/from pavement into road;

- driver using hand-held mobile phone (or suspected);

- driver using other in-car device (or suspected);

- distracted by action/event inside vehicle;

- distracted by action/event outside vehicle;

- failed to see vehicle or pedestrian in blind spot.

Personal details

- over the limit/impaired by alcohol (or suspected);

- impaired by drugs (or suspected);

- impaired by fatigue;

- impaired by illness or disability, mental or physical (including eyesight, deafness);

- behaviour – careless/thoughtless/reckless/in a hurry;

- behaviour – nervous/uncertain/panic;

- failed to judge other person's path or speed;

- failed to look;

- looked but did not see;

- inattention;

- person wearing dark or inconspicuous clothing.

Pedestrian details

- crossed road masked by parked vehicle;

- disobeyed pedestrian lights at crossing.

Vehicle defects

- tyres – deflated or defective (e.g. wrong pressure or worn tread);

- defective or inadequate lights or indicators;

- defective or inadequate brakes, steering, suspension.

Local conditions

- road surface conditions contributed;

- street lighting conditions contributed;

- inadequate signing contributed;

- road layout contributed (e.g. bend/hill/narrow carriageway);

- roadworks contributed;

- slippery road contributed;

- animal in road contributed.

Visibility obscured

- visibility obscured – glare (sun/headlights);

- visibility obscured – road layout (e.g. bend, winding road, hill crest);

- visibility obscured – stationary/parked vehicle;

- visibility obscured – vegetation, fences, buildings, road signs, street furniture;

- visibility obscured – weather (e.g. fog, mist, sleet).

Other factor

- other (give details below).

A breakdown of the rationalisation process, including specific details for each factor is given in Appendix B.

5 Conclusions

The aims of the research were:

a) To review the existing national contributory factors system, and

b) To provide recommendations for possible improvements to the existing National System and to recommend ways to secure nationwide implementation.

The review of the existing system was carried out through interviews with police officers and local highway engineers – some who have had experience in using the TRL-devised National System, some who were experienced in using another type of system for the collection of contributory factors, and others who were currently using no system for contributory factor data collection. Further interviews were conducted with Department for Transport officers, members of the Standing Committee for Road Accident Statistics (SCRAS) and other relevant parties.

A review was conducted, not only of any changes made locally to the National System since its inception, but also of other systems currently in use. One outcome of this aspect of the review was to determine which contributory factors are currently not included in the National System but which seem to be well represented and often selected in other schemes.

Analysis of contributory factor data currently collected by the Department for Transport revealed a number of factors in the National System which were seldom selected by police officers attending road traffic accidents.

Many systems currently in use have no explicit link between a particular road user and the factors relating to an accident. At a local level, this is not necessarily problematic, as plain language descriptions are available for scrutiny to determine the circumstances of a particular accident. At a national level, however, the requirement to retain the link between a particular factor and the associated participant is paramount in order to be able to carry out practical analyses.

One issue that was identified during the survey of data providers and users as part of the '2002 Quality Review of STATS19', and reinforced during the course of this review was that the National System laid blame for an accident wholly on one individual. This was deemed to be inappropriate for some accidents where more than one road user contributed to the causes of an accident, and it was also believed that the continued use of this system would have a future impact on issues of disclosure in court. The proposed new system mitigates the problem of allocating blame by allowing the allocation of one or more factors to more than one vehicle and/or road users, but also allows for the majority of data already collected using the TRL-designed system to be imported into the new design.

In combination with the results from this review, suggestions for changes to the list of factors available were also made by members of SCRAS and officers at the DfT, and the resultant rationalised list of 48 factors is suggested for the future version of a National System of contributory factors.

The proposed system for the national collection of contributory factor data retains many of the innovative ideas devised by the original authors, and allows a degree of continuity for those police forces who have adopted the system since its inception. Some of the logical structure of the original form has been lost, but the system overcomes many of the objections raised originally and ought now to be widely acceptable to practitioners currently using their own systems of contributory factors, thus enabling nationwide implementation.

6 Recommendations

From the findings of the research and subsequent discussion, the following recommendations are made:

1) Education and training of the police officers in appreciating the link between accurate completion of the form and improved road safety should be regularly undertaken.

2) The link between road user and factors selected must be retained in order to enable more in-depth analysis at a national level.

3) Provision should be made to link contributory factors to a non-injured pedestrian involved in an accident.

4) The recording of confidence level for each contributory factor should be retained, but with only two levels; 'very likely (A)' and 'possible (B)' are suggested.

5) For accidents reported after the event (usually at a police station) it may not be appropriate to record contributory factors, so an option of 'factors not allocated' should be available.

6) Several changes to the list of factors are recommended.

Drawing all the above together, it is further recommended that

7) The proposed new system for the collection of contributory factors as illustrated in Appendix C be adopted for nationwide implementation (subject to minor amendments of factors).

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Appendix A – Example of the Form Devised by TRL

WHAT WENT WRONG (Precipitating Factors)	
FAILURES OF DRIVER or RIDER 1 Failed to stop (mandatory sign) 2 Failed to give way 3 Failed to avoid pedestrian (pedestrian not to blame) 4 Failed to avoid vehicle or object in carriageway 5 Failure to signal/misleading signal 6 Loss of control of vehicle	MANOEUVRES 9 Swerved to avoid object in carriageway 10 Sudden Braking 11 Poor turn/manoeuvre 12 Poor overtaking 13 Drove wrong way (eg one-way street) 14 Operating door carelessly
FAILURES OF PEDESTRIAN or PASSENGER 7 Pedestrian entered carriageway without due care (driver/rider not to blame) 8 Passenger fell in or near PSV	15 OTHER

WHY? (Causation Factors)	
PERSONAL DETAILS 1 Impairment alcohol 2 drugs 3 fatigue 4 illness	VEHICLE DEFECTS 28 Tyres wrong pressure 29 deflation before impact 30 worn/insufficient tread
5 Distraction stress/emotional state of mind 6 physical in/on vehicle 7 physical outside vehicle	31 Defective lights or signals 32 Defective brakes 33 OTHER
8 Behaviour panic 9 careless/thoughtless/reckless 10 nervous/uncertain 11 in a hurry	LOCAL CONDITIONS 34 Site details poor road surface 35 poor/no street lighting 36 inadequate signing 37 steep hill 38 narrow road 39 bend/winding road 40 roadworks
12 Failure to judge other person's path or speed 13 Disability 14 Failed to look 15 Looked but did not see 16 Inattention 17 Person hit wore dark or inconspicuous clothing 18 OTHER	41 Slippery road 42 High winds 43 Earlier accident 44 OTHER
PEDESTRIAN DETAILS 19 Crossed from behind parked vehicle etc 20 Ignored lights at crossing	OBSCURATION 45 View windows obscured 46 glare from sun 47 glare from headlights
DRIVER DETAILS 21 Excessive speed 22 Following too close	48 Surroundings bend/winding road 49 stationary or parked vehicle 50 moving vehicle 51 buildings, fences, vegetation etc.
23 Inexperience of driving 24 of vehicle	52 Weather (eg mist or sleet) 53 Failed to see pedestrian or vehicle in blindspot
25 Interaction or competition with other road users 26 Aggressive driving 27 Lack of judgement of own path	ANIMAL INVOLVEMENT 54 Animal out of control

Precipitating Factor			Vehicle or Casualty			Vehicle or Casualty Ref				Causation Factor 1			Confidence in CF 1	
Causation Factor 2			Confidence in CF 2			Causation Factor 3			Confidence in CF 3			Causation Factor 4			Confidence in CF 4

Notes: Only enter codes for one person who has a Precipitating Factor, with the "Stats 19" Vehicle Ref for a driver or rider, and the "Stats 19" Casualty Ref for a pedestrian or passenger.

Causation Factor 1 is the most important Causation Factor, Causation Factor 2 the next most important, etc.

Show the level of confidence in the Causation Factor codes by entering A= Definite, B= Probable, C= Possible.

Appendix B – Review of Factors

B.1 Introduction

The need for rationalisation of the list of possible factors to be included on the new contributory factors form was agreed by SCRAS. Removing factors which have previously been selected in less than about 1 per cent of accidents was considered desirable, unless there was good reason to retain such a factor.

B.2 Factors in the TRL-devised scheme

The following section lists the factors included in the original TRL-devised system, and for each one gives an indication of the percentage of accidents at which that factor was selected (based on 2001 data collected by 13 police forces. Total number of accidents: 60,979)

Precipitating Factors	Percentage
Failures of Driver or Rider	
• Failed to stop (mandatory sign)	2.8
• Failed to give way	14.6
• Failed to avoid pedestrian (pedestrian not to blame)	3.8
• Failed to avoid vehicle or object in carriageway	27.9
• Failure to signal/misleading signal	0.7
• Loss of control of vehicle	19.0
Failures of Pedestrian or Passenger	
• Pedestrian entered carriageway without due care (driver/rider not to blame)	10.9
• Passenger fell in or near PSV	0.7
Manoeuvres	
• Swerved to avoid object in carriageway	1.0
• Sudden braking	3.2
• Poor turn/manoeuvre	8.4
• Poor overtaking	2.7
• Drove wrong way (e.g. one-way street)	0.3
• Operating door carelessly	0.4
• Other	3.7

Contributory Factors	Percentage
Personal Details	
• Impairment – alcohol	6.6
• Impairment – drugs	0.8
• Impairment – fatigue	1.3
• Impairment – illness	1.3
• Distraction – stress/emotional state of mind	1.9
• Distraction – physical in/on vehicle	1.6
• Distraction – physical outside vehicle	1.6
• Behaviour – panic	2.6
• Behaviour – careless/thoughtless/reckless	18.4
• Behaviour – nervous/uncertain	1.8
• Behaviour – in a hurry	6.5

- Failure to judge other person's path or speed   22.6
- Disability   0.4
- Failed to look   16.3
- Looked but did not see   19.7
- Inattention   25.8
- Person hit wore dark or inconspicuous clothing   1.1
- Other   3.0

Pedestrian Details

- Crossed from behind parked vehicle   3.4
- Ignored lights at crossing   0.6

Driver Details

- Excessive speed   12.5
- Following too close   5.6
- Inexperience – of driving   4.8
- Inexperience – of vehicle   1.3
- Interaction or competition with other road users   1.1
- Aggressive driving   3.9
- Lack of judgement of own path   13.7

Vehicle Defects

- Tyres – wrong pressure   0.1
- Tyres – deflation before impact   0.5
- Tyres – worn/insufficient tread   0.2
- Defective lights or signals   0.2
- Defective brakes   0.6
- Other   0.9

Local Conditions

- Site details – poor road surface   0.9
- Site details – poor/no street lighting   0.7
- Site details – inadequate signing   0.5
- Site details – steep hill   0.6
- Site details – narrow road   1.0
- Site details – bend/winding road   3.0
- Site details – roadworks   0.6
- Slippery road   8.2
- High winds   0.2
- Earlier accident   0.2
- Other   1.2

Obscuration

View – windows obscured   0.3
View – glare from sun   2.2
View – glare from headlights   0.3
Surroundings – bend/winding road   1.6
Surroundings – stationary or parked vehicle   2.7
Surroundings – moving vehicle   0.7
Surroundings – buildings, fences, vegetation   0.7
Weather (e.g. mist or sleet)   1.9
Failed to see pedestrian or vehicle in blind spot   1.6

Animal Involvement

Animal out of control   0.6

From Section 3.6, it would also be beneficial to include the following factors:

- driver using mobile phone;
- driver disobeyed pedestrian crossing;
- driver disobeyed double white line;
- vision obscured by road signs/street furniture;
- vision obscured by hill crest;
- pedestrian in road, not crossing, (or playing in road);
- cyclist riding on/off road.

B.3 Suggestions for improvement of the factor list

The following section considers each of the factors individually, and offers potential improvements, deletions and combinations of factors both to reduce the number of factors in the list, and to improve the clarity and consistency of the wording.

B.3.1 Precipitating Factors

The decision to modify the form from the two-tiered system to a single-tier coding system impacts most directly on the list of precipitating factors. Some of these factors are present simply as a guide to a police officer during the completion of the form, as the information provided can also be determined elsewhere in the STATS19 data. Other precipitating factors that are not recorded elsewhere or offer useful insight into accident analysis ought to be retained.

- **Failures of Driver or Rider: Failed to stop (mandatory sign)**
  It was apparent from interviews that there was some confusion regarding this factor. It is uncertain whether this factor relates solely to STOP signs, or should include the red light at automatic traffic signals; the factor is amended to include both circumstances. It is possible to distinguish between those factors relating to STOP signs and those for ATS from STATS19 1.17 Junction Control. It is also necessary to distinguish a failure to stop at a traffic signal junction from a failure to stop at a traffic light controlled pelican crossing.
  Suggested: *Driver/Rider details: Failed to stop at STOP sign or traffic signal at junction*
  and: *Driver/Rider details: Failed to stop or give priority at a pedestrian crossing*

- **Failures of Driver or Rider: Failed to give way**
  It is necessary to be able to distinguish between accidents where a vehicle has failed to obey the Give Way sign or marking and those where the driver has failed to give way to a pedestrian on a zebra crossing.
  Suggested: *Driver/Rider details: Failed to give way at GIVE WAY sign or marking*
  and: *Driver/Rider details: Failed to stop or give priority at a pedestrian crossing*

- **Failures of Driver or Rider: Failed to avoid pedestrian (pedestrian not to blame)**
  This factor is unnecessary: the presence of a pedestrian can be determined from the casualty record in STATS19 3.6 Casualty Class.
  Suggested: Remove factor

- **Failures of Driver or Rider: Failed to avoid vehicle or object in carriageway**
  This factor is unnecessary: either more than one vehicle is involved, or for single vehicle accidents, a collision with a vehicle or other object can be determined from the vehicle record in STATS19 2.12 Hit Object in Carriageway, or from 1.25 Carriageway Hazards.
  Suggested: Remove factor

- **Failures of Driver or Rider: Failure to signal/misleading signal**
  Selected in 0.7 per cent of accidents in 2001, but cannot be determined elsewhere. Amended for clarity and consistency.
  Suggested: *Driver/Rider details: Failed to signal, or gave misleading signal*

- **Failures of Driver or Rider: Loss of control of vehicle**
  Although this might be treated as a 'catch-all' factor, especially in single vehicle accidents, it is often closely related to speed, and may offer further insight into speed reduction measures. Amended for consistency.
  Suggested: *Driver/Rider details: Lost control of vehicle*

- **Failures of Pedestrian or Passenger: Pedestrian entered carriageway without due care (driver/rider not to blame)**
  This factor is unnecessary: the presence, location and movement of a pedestrian casualty can be determined either from the casualty record in STATS19 3.6 Casualty Class, 3.10 Pedestrian Location and 3.11 Pedestrian Movement. Uninjured pedestrian involvement can be identified from STATS19 1.25 Carriageway Hazards. Other factors relating to the pedestrian can be used if necessary, e.g. 'Crossed from behind parked vehicle', 'Disobeyed pedestrian lights at crossing', 'Inattention', etc.
  Suggested: Remove factor

- **Failures of Pedestrian or Passenger: Passenger fell in or near PSV**
  This factor is unnecessary: the presence of an injured PSV passenger can be determined from the casualty record in STATS19 3.16 Bus or Coach Passenger.
  Suggested: Remove factor

- **Manoeuvres: Swerved to avoid object in carriageway**
  Cannot be determined elsewhere. Amended for clarity and consistency.
  Suggested: *Driver/Rider details: Swerved to avoid vehicle or object in carriageway*

- **Manoeuvres: Sudden braking**
  Cannot be determined elsewhere. Amended for clarity and consistency.
  Suggested: *Driver/Rider details: Braked suddenly*

- **Manoeuvres: Poor turn/manoeuvre**
  If driver error results in a manoeuvre that contributed to an accident, the manoeuvre can be determined from the vehicle record in STATS19 2.7 Manoeuvres. 'Overtaking' is included in STATS19 2.7, so could combine 'Poor turn/manoeuvre' with 'Poor overtaking'.
  Suggested: *Driver/Rider details: Poor turn /manoeuvre/overtake*

- **Manoeuvres: Poor overtaking**
  As above, manoeuvre can be determined from the vehicle record in STATS19 2.7 Manoeuvres. 'Overtaking' is included in STATS19 2.7, so could combine 'Poor turn/manoeuvre' with 'Poor overtaking'.
  Suggested: *Driver/Rider details: Poor turn/manoeuvre/overtake*

- **Manoeuvres: Drove wrong way (e.g. one-way street)**
  Seldom selected (in 0.3 per cent of accidents). Presence of one-way street can be determined from STATS19 1.14 Road Type. Difficult to determine nationally, but locally it ought to be simple to determine whether the vehicle was travelling the wrong way (local knowledge about the road system, together with vehicle movement compass point, STATS19 2.8). However, while this is likely to have contributed, it will not be certain whether this was a factor in the accident.
  Suggested: Remove factor

- **Manoeuvres: Operating door carelessly**
  Seldom selected (in 0.4 per cent of accidents). This factor may be particularly important in locations where public transport is very widely used, Greater London for instance, and could be included on their list of factors locally, but recorded as 'Other' for the national database.
  Suggested: Remove factor

B.3.2 Contributory Factors

The decision to adopt a single-tiered system has less effect on the factors in this list. However, doubts have been cast about the requirement to include some of the factors and also whether a police officer can make accurate judgements regarding others.

- **Personal Details: Impairment – alcohol**
  As well as recording this factor for those occasions where the fact that a driver is over the legal alcohol limit has contributed to the accident, it may also be important to record it for those accidents where alcohol involvement was suspected as a factor, even though the driver or pedestrian is either not over the legal limit, or was not tested. Thus, a slight amendment is made to clarify this.
  Suggested: *Personal details: Over the limit/impaired by alcohol (or suspected)*

- **Personal Details: Impairment – drugs**
  There is some question as to whether this factor ought to be able to determine between prescription and non-prescription drugs. For conciseness, only one factor is included here. Amended for clarity and consistency.
  Suggested: *Personal details: Impaired by drugs (or suspected)*

- **Personal Details: Impairment – fatigue**
  Amended for clarity and consistency.
  Suggested: *Personal details: Impaired by fatigue*

- **Personal Details: Impairment – illness**
  As recorded below, there are misgivings about the inclusion of a factor specifically relating to 'disability', and such a factor ought to be combined with illness-related factors. Amended for clarity and consistency.
  Suggested: *Personal details: Impaired by illness or disability, mental or physical (incl. eyesight, deafness, etc.)*

- **Personal Details: Distraction – stress/emotional state of mind**
  Difficult to determine that this was a factor in an accident, rather than the driver's reaction afterwards. Also uncertainty as to the usefulness of such data for remedial action.
  Suggested: Remove factor

- **Personal Details: Distraction – physical in/on vehicle**
  This factor previously could be related to any road user, but it is specific to vehicle drivers or riders. Amended for clarity and consistency.
  Suggested: *Driver/Rider details: Distracted by action/event inside vehicle*

- **Personal Details: Distraction – physical outside vehicle**
  This factor previously could be related to any road user, but it is more likely to be related to vehicle drivers or riders. Amended for clarity and consistency.
  Suggested: *Driver/Rider details: Distracted by action/event outside vehicle*

- **Personal Details: Behaviour – panic**
  It is unclear how such behavioural factors can be used in accident remedial work. The four current behavioural factors could be combined to reduce the number of factors.
  Suggested: *Personal details: Behaviour – nervous/uncertain/panic*

- **Personal Details: Behaviour – careless/thoughtless/reckless**
  It is unclear how such behavioural factors can be used in accident remedial work. The four current behavioural factors could be combined to reduce the number of factors.
  Suggested: *Personal details: Behaviour – careless/thoughtless/reckless/in a hurry*

- **Personal Details: Behaviour – nervous/uncertain**
  It is unclear how such behavioural factors can be used in accident remedial work. The four current behavioural factors could be combined to reduce the number of factors.
  Suggested: *Personal details: Behaviour – nervous/uncertain/panic*

- **Personal Details: Behaviour – in a hurry**
  It is unclear how such behavioural factors can be used in accident remedial work. The four current behavioural factors could be combined to reduce the number of factors.
  Suggested: *Personal details: Behaviour – careless/thoughtless/reckless/in a hurry*

- **Personal Details: Failure to judge other person's path or speed**
  Amended for consistency.
  Suggested: *Personal details: Failed to judge other person's path or speed*

- **Personal Details: Disability**
  There are misgivings about the inclusion of a factor specifically relating to 'disability', and such a factor ought to be combined with illness-related factors. Amended for clarity and consistency.
  Suggested: *Personal details: Impaired by illness or disability, mental or physical (incl. eyesight, deafness, etc.)*

- **Personal Details: Failed to look**
  Remain unchanged.
  Suggested: *Personal details: Failed to look*

- **Personal Details: Looked but did not see**
  Remain unchanged.
  Suggested: *Personal details: Looked but did not see*

- **Personal Details: Inattention**
  Remain unchanged.
  Suggested: *Personal details: Inattention*

- **Personal Details: Person hit wore dark or inconspicuous clothing**
  Could relate to an uninjured pedestrian, so person need not be hit. Amended for clarity and consistency.
  Suggested: *Personal details: Person wearing dark or inconspicuous clothing*

- **Pedestrian Details: Crossed from behind parked vehicle, etc.**
  The movement of a pedestrian casualty can be determined from STATS19 3.11 Pedestrian Movement. It is not possible to determine movements of an uninjured pedestrian from STATS19. Amended for clarity.
  Suggested: *Pedestrian details: Crossed road masked by parked vehicle*

- **Pedestrian Details: Ignored lights at crossing**
  This factor could relate to pedestrian accidents at a dedicated pedestrian crossing or at a junction with pedestrian signals. Amended for clarity and consistency.
  Suggested: *Pedestrian details: Disobeyed pedestrian lights at crossing*

- **Driver Details: Excessive Speed**
  There is uncertainty whether this factor should be recorded when speed is in excess of the limit, or is inappropriately high for the prevailing conditions. It was agreed to include two speed-related factors, one explicitly related to the posted speed limit, the other a more general indication that high speed was a factor. Amended for clarity.
  Suggested: *Driver details: Speed too high for conditions*
  and: *Driver/Rider details: Speed in excess of limit (or suspected)*

- **Driver Details: Following too close**
  Remain unchanged.
  Suggested: *Driver/Rider details: Following too close*

- **Driver Details: Inexperience of driving**
  Amended for clarity.
  Suggested: *Driver/Rider details: Inexperienced/learner driver*

- **Driver Details: Inexperience of vehicle**
  Remain unchanged.
  Suggested: *Driver/Rider details: Inexperience of vehicle*

- **Driver Details: Interaction or competition with other road users**
  Similar to 'Aggressive driving', and may be combined to reduce total number of factors.
  Suggested: *Driver/Rider details: Aggressive driving/competition with other road users*

- **Driver Details: Aggressive driving**
  Similar to 'Interaction or competition with other road users', and may be combined to reduce the total number of factors.
  Suggested: *Driver/Rider details: Aggressive driving/competition with other road users*

- **Driver Details: Lack of judgement of own path**
  Similar to 'Poor turn/manoeuvre/overtake'.
  Suggested: Remove factor

- **Vehicle Defects: Tyres – wrong pressure**
  Difficult for a police officer to determine whether this is a factor. Can combine tyre-related factors to reduce the total number of factors.
  Suggested: *Vehicle defects: Tyres – deflated or defective (e.g. wrong pressure or worn tread)*

- **Vehicle Defects: Tyres – deflation before impact**
  Can combine tyre-related factors to reduce the total number of factors.
  Suggested: *Vehicle defects: Tyres – deflated or defective (e.g. wrong pressure or worn tread)*

- **Vehicle Defects: Tyres – worn/insufficient tread**
  Difficult for a police officer to determine whether this is a factor. Can combine tyre-related factors to reduce the total number of factors.
  Suggested: *Vehicle defects: Tyres – deflated or defective (e.g. wrong pressure or worn tread)*

- **Vehicle Defects: Defective lights or signals**
  Possible confusion over dual use of 'signals' (meaning 'indicators' here, rather than automatic traffic signals). Amended for clarity.
  Suggested: *Vehicle defects: Defective or inadequate lights or indicators*

- **Vehicle Defects: Defective brakes**
  'Other vehicle defects' factor has been removed, so it may be beneficial to expand this factor to include some other defects, such as steering or suspension failures. Amended for clarity.
  Suggested: *Vehicle defects: Defective or inadequate brakes, steering, suspension, etc.*

- **Local Conditions: Site Details – poor road surface**
  Requirement to reinforce the fact that the presence of a particular condition at the scene does not necessarily indicate that it is contributory to the accident. Presence of a poor road surface can be determined from STATS19 1.24 Special Conditions at Site and 2.12 Hit Object in Carriageway. While this factor may have contributed, it will not be certain whether this was a factor in the accident. Usage (in 0.9 per cent of accidents) suggests it could be retained. Amended for clarity and consistency.
  Suggested: *Local conditions: Road surface conditions contributed*

- **Local Conditions: Site Details – poor/no street lighting**
  Requirement to reinforce the fact that the presence of a particular condition at the scene does not necessarily indicate that it is contributory to the accident. Amended for clarity and consistency.
  Suggested: *Local conditions: Street lighting conditions contributed*

- **Local Conditions: Site Details – inadequate signing**
  Requirement to reinforce the fact that the presence of a particular condition at the scene does not necessarily indicate that it is contributory to the accident. Amended for clarity and consistency.
  Suggested: *Local conditions: Inadequate signing contributed*

- **Local Conditions: Site Details – steep hill**
  Requirement to reinforce the fact that the presence of a particular condition at the scene does not necessarily indicate that it is contributory to the accident. Could combine with 'narrow road' and 'bend/winding road' to reduce the total number of factors. Amended for clarity and consistency.
  Suggested: *Local conditions: Road layout contributed (e.g. bend/hill/narrow carriageway)*

- **Local Conditions: Site Details – narrow road**
  Requirement to reinforce the fact that the presence of a particular condition at the scene does not necessarily indicate that it is contributory to the accident. Could combine with 'steep hill' and 'bend/winding road' to reduce the total number of factors. Amended for clarity and consistency.
  Suggested: *Local conditions: Road layout contributed (e.g. bend/hill/narrow carriageway)*

- **Local Conditions: Site Detail – bend/winding road**
  Requirement to reinforce the fact that the presence of a particular condition at the scene does not necessarily indicate that it is contributory to the accident. Could combine with 'steep hill' and 'narrow road' to reduce the total number of factors. Amended for clarity and consistency.
  Suggested: *Local conditions: Road layout contributed (e.g. bend/hill/narrow carriageway)*

- **Local Conditions: Site Details – roadworks**
  Requirement to reinforce the fact that the presence of a particular condition at the scene does not necessarily indicate that it is contributory to the accident. Presence of roadworks can be determined from STATS19 1.24 Special Conditions at Site and 2.12 Hit Object in Carriageway. While this factor may have contributed, it will not be certain whether this was a factor in the accident. Usage (in 0.6 per cent of accidents) suggests it could be retained. Amended for clarity and consistency.
  Suggested: *Local conditions: Roadworks contributed*

- **Local Conditions: Slippery road**
  Requirement to reinforce the fact that the presence of a particular condition at the scene does not necessarily indicate that it is contributory to the accident. Presence of factors associated with a slippery road can be determined from STATS19 1.23 Road Surface Conditions. While this factor may have contributed, it will not be certain whether this was a factor in the accident. Usage (in 8.2 per cent of accidents) suggests it should be retained. Amended for clarity and consistency.
  Suggested: *Local conditions: Slippery road contributed*

- **Local Conditions: High winds**
  Seldom selected (in 0.2 per cent of accidents). Presence of high winds can be determined from STATS19 1.22 Weather. While this factor may have contributed, it will not be certain whether this was a factor in the accident.
  Suggested: Remove factor

- **Local Conditions: Earlier accident**
  Seldom selected (in 0.2 per cent of accidents). Involvement with a previous accident can be determined from STATS19 1.25 Carriageway Hazards and 2.12 Hit Object in Carriageway. While this factor may have contributed, it will not be certain whether this was a factor in the accident.
  Suggested: Remove factor

- **Obscuration: View – windows obscured**
  Seldom selected (in 0.3 per cent of accidents).
  Suggested: Remove factor

- **Obscuration: View – glare from sun**
  Can combine with 'glare from headlights' to reduce the total number of factors. 'Glare from sun' will occur during daylight, and this can be determined from STATS19 1.21 Light Conditions. Amended for clarity and consistency.
  Suggested: *Visibility obscured: glare (sun/headlights)*

- **Obscuration: View – glare from headlights**
Seldom selected (in 0.3% of accidents). Can combine with 'glare from sun' to reduce the total number of factors. 'Glare from headlights' will most likely occur during darkness, and this can be determined from STATS19 1.21 Light Conditions. Amended for clarity and consistency.
Suggested: *Visibility obscured: glare (sun/headlights)*

- **Obscuration: Surroundings – bend/winding road**
Could combine with other road layout factors not currently included. Amended for clarity and consistency.
Suggested: *Visibility obscured: road layout (e.g. bend, winding road, hill crest)*

- **Obscuration: Surroundings – stationary or parked vehicle**
Amended for clarity and consistency.
Suggested: *Visibility obscured: stationary/parked vehicle*

- **Obscuration: Surroundings – moving vehicle**
Selected in 0.7% of accidents. Could be removed to reduce the total number of factors.
Suggested: Remove factor

- **Obscuration: Surroundings – buildings, fences, vegetation, etc.**
Could combine with other factors not currently included. Amended for clarity and consistency.
Suggested: *Visibility obscured: vegetation, fences, buildings, road signs, street furniture, etc.*

- **Obscuration: Weather (e.g. mist or sleet)**
Presence of factors associated with weather can be determined from STATS19 1.22 Weather. While they may have contributed, it will not be certain whether these were factors in the accident. Usage (in 1.9% of accidents) suggests it could be retained. Amended for clarity and consistency.
Suggested: *Visibility obscured: weather (e.g. fog, mist, sleet, etc.)*

- **Obscuration: Failed to see pedestrian or vehicle in blind spot**
This factor previously could be related to any road user, but it is specific to vehicle drivers or riders.
Suggested: *Driver/Rider details: Failed to see vehicle or pedestrian in blind spot*

- **Animal Involvement: Animal out of control**
Requirement to reinforce the fact that the presence of a particular condition at the scene does not necessarily indicate that it is contributory to the accident. Presence of an animal can be determined from STATS19 1.25 Carriageway Hazards. While this factor may have contributed, it will not be certain whether this was a factor in the accident. Usage (in 0.6% of accidents) suggests it could be retained. Could be included in local conditions. Amended for clarity and consistency.
Suggested: *Local conditions: Animal in road contributed*

B.3.3 New Factors

As recorded earlier, it may be beneficial to include a number of new factors. In the following section, each will be considered individually, and suggestions made how their inclusion could be accommodated.

- **Driver using mobile phone**
  An accident which is partly caused by a driver not paying sufficient attention or distracted through the use of a mobile telephone or other in-car device is not separately addressed in the current system. Although 'inattention' and 'distraction' issues are already present, and it may often be difficult for a police officer to determine after the event, the inclusion of a factor explicitly related to the use of mobile telephones would be beneficial. It seems likely that the use of other in-car devices will increase in the next few years, so a separate factor relating to accidents caused by their use may also be beneficial.
  Suggested: *Driver/Rider details: Driver using hand-held mobile phone (or suspected)*
  and: *Driver/rider details: Driver using other in-car device (or suspected)*

- **Driver disobeyed pedestrian crossing**
  This factor was deemed important enough for two police forces to alter their contributory factors reporting form, removing the factor 'Driver – following too close', and replacing it with 'Driver – ignored lights at crossing'. A review of other systems indicates that this factor might be selected in around 1 per cent of accidents.
  Suggested: *Driver/Rider details: Failed to stop or give priority at a pedestrian crossing*

- **Driver disobeyed double white line**
  There are no factors explicitly relating to different laws of overtaking. Could combine with 'Poor turn/manoeuvre/overtake' to reduce the number of factors.
  Suggested: *Driver/Rider details: Poor turn/manoeuvre/overtake*

- **Vision obscured by road signs/street furniture**
  Could include with other visibility factors relating to roadside obstacles.
  Suggested: *Visibility obscured – vegetation, fences, buildings, road signs, street furniture, etc.*

- **Vision obscured by hill crest**
  Could include with other visibility factors relating to road layout.
  Suggested: *Visibility obscured – road layout (e.g. bend, winding road, hill crest)*

- **Pedestrian in road, not crossing, (or playing in road)**
  The movement and location of a pedestrian casualty can be determined from STATS19 3.10 Pedestrian Location and 3.11 Pedestrian Movement. Such data will not be available if the pedestrian is uninjured, but their behaviour in or near the road has contributed to an accident, and in this circumstance this factor may be useful. However, it may also be possible to record the uninjured pedestrian as behaving recklessly or thoughtlessly.
  Suggested: Do not include this factor

- **Cyclist riding on/off road**
  A review of other systems indicates that this factor might be selected in around 2 per cent of accidents. This factor ought to relate to both cyclists who are riding on the pavement and those who enter the carriageway from the pavement.
  Suggested: *Driver/Rider details: Cyclist riding on pavement/from pavement into road*

Appendix C – Proposed New Form

What factors contributed to the accident? First collision only, if more than two road users are involved

Driver/Rider details
These factors must only relate to a VEHICLE

101 Failed to stop at STOP sign or traffic signal at junction
102 Failed to give way at GIVE WAY sign or marking
103 Failed to stop or give priority at a pedestrian crossing
104 Failed to signal, or gave misleading signal

105 Poor turn/manoeuvre/overtake
106 Swerved to avoid vehicle or object in carriageway
107 Braked suddenly
108 Lost control of vehicle
109 Speed too high for conditions
110 Speed in excess of limit (or suspected)
111 Following too close

112 Inexperienced/learner driver
113 Inexperience of vehicle

114 Aggressive driving/competition with other road users

115 Cyclist riding on pavement/from pavement into road
116 Driver using hand-held mobile phone (or suspected)
117 Driver using other in-car device (or suspected)
118 Distracted by action/event inside vehicle
119 Distracted by action/event outside vehicle

120 Failed to see vehicle or pedestrian in blind spot

Vehicle defects
These factors must only relate to a VEHICLE

201 Tyres – deflated or defective (e.g. wrong pressure or worn tread)
202 Defective or inadequate lights or indicators
203 Defective or inadequate brakes, steering, suspension etc.

Local conditions
These factors must only relate to a VEHICLE

301 Road surface conditions contributed
302 Street lighting conditions contributed
303 Inadequate signing contributed
304 Road layout contributed (e.g. bend/hill/narrow carriageway)
305 Roadworks contributed
306 Slippery road contributed
307 Animal in road contributed

Personal details
These factors can relate to a VEHICLE (driver), PEDESTRIAN CASUALTY or an UNINJURED PEDESTRIAN

401 Over the limit/impaired by alcohol (or suspected)
402 Impaired by drugs (or suspected)
403 Impaired by fatigue
404 Impaired by illness or disability, mental or physical (incl. eyesight, deafness, etc.)
405 Behaviour – careless/thoughtless/reckless/in a hurry
406 Behaviour – nervous/uncertain/panic
407 Failed to judge other person's path or speed
408 Failed to look
409 Looked but did not see
410 Inattention
411 Person wearing dark or inconspicuous clothing

Pedestrian details
These factors must only relate to a PEDESTRIAN CASUALTY or UNINJURED PEDESTRIAN

501 Crossed road masked by parked vehicle
502 Disobeyed pedestrian lights at crossing

Visibility obscured
These factors can relate to a VEHICLE, PEDESTRIAN CASUALTY or UNINJURED PEDESTRIAN

601 Visibility obscured – glare (sun/headlights)
602 Visibility obscured – road layout (e.g. bend, winding road, hill crest)
603 Visibility obscured – stationary/parked vehicle
604 Visibility obscured – vegetation, fences, buildings, road signs, street furniture, etc.
605 Visibility obscured – weather (e.g. fog, mist, sleet, etc.)

Other factor
This factor can relate to a VEHICLE, PEDESTRIAN CASUALTY or UNINJURED PEDESTRIAN

999 Other (give details below)
If further other factors required, use 998, 997, etc.

Select **up to six** factors from the list above (reasons the accident occurred) in order of importance.
For each factor indicate the participant: i.e. to which vehicle (V1, V2, etc.), casualty (C1, C2, etc.) or uninjured pedestrian (U) does the factor relate.

N.B. More than one factor may be related to the same road user.
Also indicate whether it is **very likely (A)** or **possibly (B)** a factor in the accident.

Note: the presence of a particular condition at the scene (e.g. roadworks) does not necessarily indicate that it is contributory to the accident.

	1st	2nd	3rd	4th	5th	6th
Factor in the accident						
Which participant? (e.g. V1, V2, C1, U, etc.)						
Very likely (A) or possible (B)						

If 999 Other: give brief details _____

_____

If 998 Other: give brief details _____

_____

POSTSCRIPT

The form subsequently adopted by SCRAS after further consultation with local authorities and the police is given on the next page.

What Factors Contributed To The Accident?

STATS19 (2005)

Select **up to six** Factors from the grid, relevant to the accident.

Factors may be shown in any order, but an indication must be given of whether each Factor is **very likely (A)** or **possible (B).**

Only include factors which have contributed to the accident. (i.e. do NOT include "Poor road surface" unless it was relevant to the accident.)

More than one factor may be related to the same road user.

The same factor may be related to more than one road user, if appropriate.

The participant should be identified by "V" if factor applies to a vehicle, driver/rider or the road environment (e.g. V002), or "C" for a pedestrian or passenger casualty (e.g. C001). Enter "U000" if an uninjured pedestrian contributed.

Factor in the accident

Which participant?
(e.g. V001, C001, U000)

Very likely (A)
or possible (B)

| | 1st | 2nd | 3rd | 4th | 5th | 6th |

Road Environment Contributed	Vehicle Defects	Driver/Rider Only (Includes Pedal Cyclists and Horse Riders)					Pedestrian Only (Casualty or Uninjured)	Special Codes
		Injudicious Action	Driver/Rider Error or Reaction	Impairment or Distraction	Behaviour or Inexperience	Vision Affected by		
Poor or defective road surface 101	Tyres illegal, defective or under inflated 201	Disobeyed automatic traffic signal 301	Junction overshoot 401	Impaired by alcohol 501	Aggressive driving 601	Stationary or parked vehicle(s) 701	Crossed road masked by stationary or parked vehicle 801	Stolen vehicle 901
Deposit on road (e.g. oil, mud, chippings) 102	Defective lights or indicators 202	Disobeyed Give Way or Stop sign or markings 302	Junction restart 402	Impaired by drugs (illicit or medicinal) 502	Careless/Reckless/In a hurry 602	Vegetation 702	Failed to look properly 802	Vehicle in course of crime 902
Slippery road (due to weather) 103	Defective brakes 203	Disobeyed double white line 303	Poor turn or manoeuvre 403	Fatigue 503	Nervous/Uncertain/Panic 603	Road layout (e.g. bend, winding road, hill crest) 703	Failed to judge vehicle's path or speed 803	Emergency vehicle on call 903
Inadequate/Masked signs or road markings 104	Defective steering or suspension 204	Disobeyed pedestrian crossing facility 304	Failed to signal/Misleading signal 404	Uncorrected, defective eyesight 504	Driving too slow for conditions or slow veh. (e.g. tractor) 604	Buildings, road signs, street furniture 704	Wrong use of pedestrian crossing facility 804	Vehicle door opened or closed negligently 904
Defective traffic signals 105	Defective or missing mirrors 205	Illegal turn or direction of travel 305	Failed to look properly 405	Illness or disability, mental or physical 505	Inexperienced or learner driver/rider 605	Dazzling headlights 705	Dangerous action in carriageway (e.g. playing) 805	
Traffic calming (e.g. speed cushions, road humps, chicanes) 106	Overloaded or poorly loaded vehicle or trailer 206	Exceeding speed limit 306	Failed to judge other person's path or speed 406	Not displaying lights at night or in poor visibility 506	Inexperience of driving on the left 606	Dazzling sun 706	Impaired by alcohol 806	
Temporary road layout (e.g. contraflow) 107		Travelling too fast for conditions 307	Passing too close to cyclist, horse rider or pedestrian 407	Cyclist wearing dark clothing at night 507	Inexperience with type of vehicle 607	Rain, sleet, snow, or fog 707	Impaired by drugs (illicit or medicinal) 807	
Road layout (e.g. bend, hill, narrow carriageway) 108		Following too close 308	Sudden braking 408	Driver using mobile phone 508		Spray from other vehicles 708	Careless/Reckless/In a hurry 808	
Animal or object in carriageway 109		Vehicle travelling along pavement 309	Swerved 409	Distraction in vehicle 509		Visor or windscreen dirty or scratched 709	Pedestrian wearing dark clothing at night 809	
		Cyclist entering road from pavement 310	Loss of control 410	Distraction outside vehicle 510		Vehicle blind spot 710	Disability or illness, mental or physical 810	Other – please specify below 999

If 999 Other: give brief details ....

Note: Only use if "Other" Factor contributed to the accident. Also include in text description of how accident happened.

Note: These factors reflect the Reporting Officer's opinion <u>at the time of the accident</u> and are not necessarily the result of extensive investigation.