Road Traffic Accidents and their implications for Management

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Thesis

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Road Traffic Accident Records and their Implications for Management : R.A. Saunders.

Abstract

It has been known for some time that police records collected by the Department of Transport could be unreliable. Local Authorities use these data as an aid to the decision making process and to assist with objective setting. Studies warning of deficiencies in the accuracy of Stats 19 police data show confusing and often differing levels of inaccuracy. Due to the atypical nature of Road Traffic Accident typology the thesis sets out to examine a methodology for use by professional safety practitioners in order to test the reliability and accuracy of existing data and to test how in an operational environment these data might be expanded to meet the needs of the practitioner responsible for education, training and publicity measures rather than the pure highway engineering function which exists at the present time.

Saunders, in 'Road Safety Management in a shire county' showed how tactical objectives were set by safety practitioners but concluded that operational resource planning was a vital stepping stone between the tactical and operational objective setting phase. The thesis examines this aspect in depth from a theoretical backcloth but illustrates throughout how this is necessary to improve management efficiency and effectiveness within a public sector organisation.

The thesis examines the levels of under-reporting in the local area from a management standpoint and considers the effects this information will have on the organisation. At the same time, aids to accident analysis such as statements made to the police and methods for improving the quality and reliability of data collection in an operational setting are considered. From this, the thesis examines the current and a proposed revision of the resource base and considers how these findings affect the operational resource plan for the organisation. This, and the methodology discussed, is a necessary management consideration if it is to enable an organisation to meet its aims and objectives.

To Mary for her loyalty and support

'The Whole Discourse was written with great Acuteness, containing many Observations both curious and useful for Politicians, but as I conceived not altogether compleat..'

Gulliver's Travels by Johnathan Swift.

CONTENTS

Appendices

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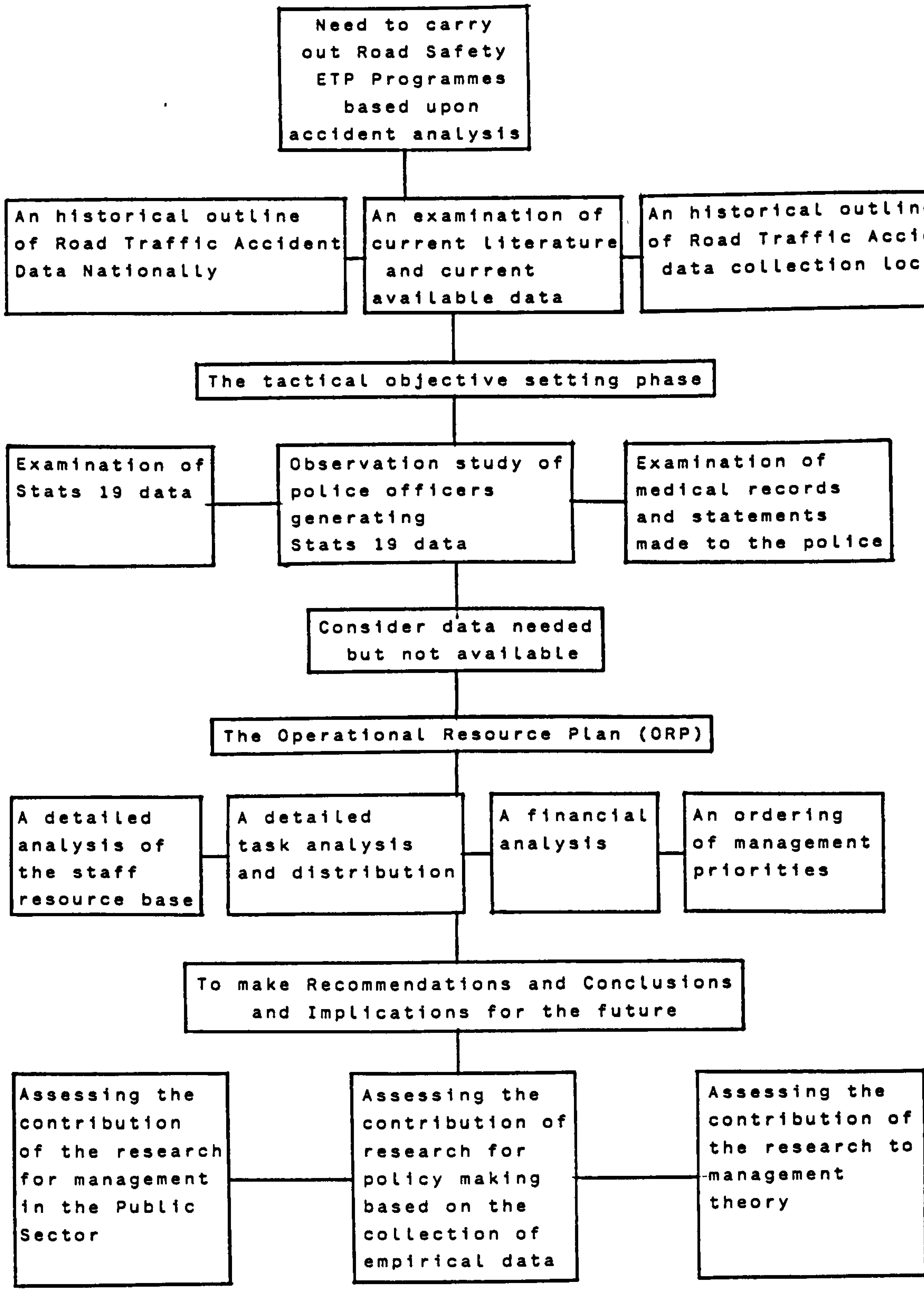
A Schematic Diagram of the Research Program.



Preface

A road safety officer has a statutory responsibility to provide a road safety education, training and publicity service under Section 8 of the Road Traffic Act 1974. Saunders, 'Road Safety Management in a shire county', 1985, showed that there is a need to plan and implement remedial measures based upon some accident analysis if an efficient and effective service is to be obtained. This process is also a recommendation of the Department of Transport and features, although very briefly, in Circular Roads 12/75. This poses an interesting situation, in that on one hand a road safety officer who is responsible for an area, district or county in total (in England & Wales) would wish to use road traffic accident data which pertains to his area of responsibility as his data base whilst on the other hand, it could be argued that this data base is then unsuitable for empirical evaluation. From information given in Circular Roads 12/75, op.cit., the theoretical argument presented shows how road traffic accident data can be used in theory whilst in practical terms the process is not so well defined.

Saunders, 1985, op.cit., also showed that local authorities in England and Wales employ road safety officers on an area, district or county basis and their terms of reference ensure that their areas of responsibility fall within these clearly defined boundaries. Because these geographical demarcation lines are made up of differing rural and/or urban conurbations it is argued that the road traffic accident trend and patterns also differ. This argument is further supported by the assumption that road user populations for the varying type of road user classes would not be evenly distributed throughout the country, county, district or area.

Clearly, a road safety officer has a duty to provide a road safety Education, Training and Publicity service and Saunders, 1985, op.cit., showed how tactical objectives should be set. From accident analysis, it should be possible to identify the various causal factors, identify trends and contributory features in order to plan and implement the various Education, Training and Publicity programmes which are currently available. This would form the basis for considering the operational resource plan (ORP).

Following the Department of Transport 'Road Safety - A Fresh Approach' in 1968, the need for a standardised approach to road accident data recording systems was discussed. From the introduction of the Local Government Reorganisation and Road Traffic Acts of 1974, local authorities, in co-operation with county police forces, agreed, in line with Circular Roads 12/75, op.cit., to use the road traffic accident data in a form now referred to as Stats 19. Although these forms (see Appendix 1) vary in format in some authorities, they do contain standardised information relating to a road traffic accident and are usually completed by the police officer attending the scene of such an incident. In cases where a civilian clerk actually fills in the Stats 19 forms the data necessary for its completion is obtained by the police officer at the Road Traffic Accident scene. It is mainly this data and any supporting evidence contained in statements made to the police which form the data base which is readily available to a road safety officer.

In 1979, following some four years of monitoring, the Department of Transport revised the Stats 19 form from that given in Appendix 1 to that given in Appendix 21. The reasons for this are outlined in the 'Second Report of the Steering Group on the Reporting of Road Traffic Accidents', which was published by the Department of Transport in 1976. Basically, the revised Stats 19 form provided for more comprehensive data to be incorporated at the collection stage to aid Road Traffic Accident analysis, but the report concluded that:

'the police should adopt a standardised form of notification in order to allow for national aggregation'.

National aggregation of 'contributory factors' was not recommended by the steering group but their report went on to say that there were advantages in having a standard set of factors to be used by all police forces which at present use or would likely to use such factors. The

1. The new style Stats 19 was introduced in 1979, but Cheshire, Suffolk and the West Midlands County Council changed at the beginning of 1980. Cumbria and the City of

London changed on 1st April 1979 but the Met. Police did not adopt the revised format until 1982.
report does not list what these 'advantages' are, but goes on to say that it was:

'concerned to design a system to collect the minimum amount of essential information for both local and national use whilst minimising processing costs and the burden of reporting of the police officer'.

The Stats 19 contain three elements or factors in the composition of a Road Traffic Accident and the Road Safety Officers Handbook, published by the Royal Society for the Prevention of Accidents (RoSPA) in 1981 but revised in 1982 states that these are:

(i) the vehicle
(ii) the user
(iii) the attendant circumstances (ie. the environment in which the vehicle moves).

From this data base, a road safety officer is expected to plan and implement effective road safety Education, Training and Publicity programmes in an efficient and managerially effective way. It is an essential feature of this thesis that the present data base may not be sufficiently reliable enough to allow for rigorous empirical statistical analysis and the road safety practitioner, who is bound by his terms of reference to operate within his county boundary, must consider the management implications of this situation and would need to consider enlarging and improving on his present data base. To illustrate this point, the thesis uses from time to time examples to stress this point and uses powered two wheeled vehicles although other classes of road user is also discussed. The reasons for choosing Powered Two-Wheeled Vehicle's as a particular example are as follows:

Despite the introduction of the Transport Act 1981 requiring riders of Powered Two-Wheeled Vehicle's whose engine capacity exceeds 50 cc (but not greater than 125 cc) to pass a Part 1 test of manoeuvrability before being permitted to take the normal driving test which for motor-cyclists is now referred to as the Part 2 test; accidents involving this particular class of road user are on the increase. Dorset County Council is committed to trying to follow some strategy to stem the number of Road Traffic Accident's to this vulnerable class of road user, but does not want to commit itself to long term financial planning if there is no likelihood of those resources being used efficiently and effectively.

At the present time, Dorset County Council conduct motor-cycle training courses in the belief that training might have a direct influence on casualties. The point that training might not be an effective strategy is borne in mind throughout the thesis but does not form part of the main study. On the contrary, if training is to be undertaken, then those essential features which might be identifiable as contributory factors in Road Traffic

Accident's must be considered within those training programmes. Until this is done, then training cannot be effectively evaluated. The thesis develops to consider the under-reporting and reliability of Road Traffic Accident's to all classes of road user for which the road safety officer is responsible in order that existing strategies might be effectively evaluated. The thesis concentrates upon the data which is currently ready to hand via the Stats 19 whilst at the same time looks at data generation and possible ways of supplementing this base data for operational use. For this stage of the research, the Dorset Police have given their full co-operation and have allowed the author unlimited access to their records, statements and have given permission for road traffic police officers to be observed whilst on duty. Without this co-operation the thesis could not develop to the second stage which is to examine those records currently held by the Accident and Emergency (A&E) Departments at Poole, Weymouth, Salisbury and Yeovil Hospitals.

In the early stages of the research programme, the thesis will examine those fields currently forming the basis for Stats 19 in an experimental manner in order to show weaknesses in the present system, for example, between age, sex, manoeuvre, overtaking pattern and the like. The reasons for considering these particular factors in the phenomenology of Road Traffic Accident's is that these are the type of fields identified on the Stats 19 form. Whilst, of course, it is of interest to be aware of this, it is necessary to set this into context within the County framework and it is not the intention of this thesis to accept this reporting procedure as defining what counts as data. Indeed, it is hypothesised that the methods used to construct these data and the categories available to police officers completing the form, along with exingencies of the moment during completion, give a misleading and restricted general view of the causes and/or contributory factors involved in a Road Traffic Accident. For example, we would wish to consider such factors as a riders' training record, riding experience, previous accident involvement, machine size and usage and exposure to risk since passing their test to the time of the Road Traffic Accident, physical and mental states at the time of (or immediately before) the accident, socio-economic grouping of riders, eyesight, conspicuity and attitudes particularly to training. However, we would not wish to restrict our understanding even to these predetermined categories, as we expect our direct observational study of the completion of the Stats 19 to produce an indication of factors involved in Road Traffic Accident's that we are unable to hypothesise in the initial stages. Close examination of stats 19 data can be regarded as 'accurate' in terms of fatal injury accidents in that emergency services are involved right from the outset. However, it is a contention of this thesis that whilst this particular form of data can be regarded as 'accurate' in numerical term it is far from accurate when specific fields and sub-fields on the Stats 19 are concerned. An immediate example of this can be quoted in relation to accident location. Considerable staff time is spent, as will be seen later, dealing with grid reference problems on the Stats 19 form only to discover that a particular police officer is not proficient at map reading and a Road Traffic Accident is said to have occurred 2 miles south of Poole harbour! (taken from the minutes of the TARA & Computer Group meeting, January 1979). The thesis will examine these incidents in some depth whilst at the same time concentrate on the methodology of obtaining such information as an aid to Operational Resource Planning.

Serious and slight injury accidents recorded on Stats 19 are those which are reported to the police at the time. In 1981, the Dorset Police issued a statement announcing that non-injury Road Traffic Accident's need not be reported provided that:

(i) provisions of the Road Traffic Act 1972 were carried out; and
(ii) no allegation of negligent driving was made.

These, although whilst dubious statements in themselves, must conform to Department of Transport criteria. Appendix 3 outlines the criteria regarding fatal, serious, slight and non-injury Road Traffic Accident's. No arrangements can be found for those non-injury Road Traffic Accident's described in (i) and (ii) above which later become within the injury scale. The thesis will spend some time looking at these processes and, as will be seen later, any statistical analysis of Stats 19 data might not succeed until these fundamental issues have been examined. This is also essential to the Operational Resource Planning.

Hospitals covering the county of Dorset from an A&E point of view exist, as has already been said, at Poole, Weymouth, Salisbury and Yeovil. Each of these hospitals employ a road traffic accident clerk whose job it is to follow up those Road Traffic Accident's where casualties have sought treatment with the police. It is a suspicion of the author that whilst the police, hospitals and authorities communicate in this regard Stats 19 data is not systematically updated in the light of this. The thesis, therefore, will also examine this procedure in some detail. Accident and Emergency departments are only a part of the Road Traffic Accident injury treatment centres in Dorset. Being largely a rural area, Community Hospitals are known to treat many Road Traffic Accident victims as are General Practitioners. The thesis must include, therefore, such contributions to the data base from these sources.

Close examination of the sub-fields contained on the Stats 19 allow for opinion based responses from the police officer involved. It is the intention of the thesis to observe closely, the police officer whilst on duty in order to see how Stats 19 data is collected and to assess what order of priority it receives. It will also be of interest to the study to see how long after the event the document is completed and how long it takes to complete.

From this, the thesis will turn to those statements made to the police by persons involved in Road Traffic Accident's and by witnesses. From a literature search, it is possible to show how a prosecution for dangerous driving has been successfully brought on the evidence of an independent witness to a Road Traffic Accident whilst similar evidence can be given to show that statements made by witnesses contain many inaccuracies and is discussed at some length. A number of academic works, papers, reports and other literature sources are quoted in the text and are used to support, where appropriate, those issues raised in the thesis. To summarise the programme of work, a schematic diagram of the research proposal is included at the beginning of this thesis showing the tactical objectives to be considered within the work. The thesis develops objective setting theory in order to illustrate the Operational Resource Planning methodology a safety practitioner must consider in order to form a bridge between tactical and operational objective setting. Saunders, 1985, op.cit., showed that the safety practitioner experiences some difficulty in this regard and tends to follow established tactical objectives rather than set priorities for operational purposes.

As discussed earlier, Department of Transport Circular Roads 12/75, op.cit., outlined in general terms some strategic objectives for a road safety officer to consider. The Circular failed to provide a tactical or operational phase objectives within the decision making process and it is because of this that Local Authorities reacted with varying forms of enthusiasm to Section 8 of the Road Traffic Act 1974. It is of importance therefore that tactical objectives are considered and the thesis develops this aspect in some detail. Crucial to the success of the tactical phase is the Operational Resource Plan and this must be a tactical consideration early on within the decision making process. The thesis, therefore discusses this aspect at length and illustrates how Operational Resource Planning might be considered. Crucial to this aspect are the tools required to meet the organisational mission and the resource base required to operate them. It is argued that each organisation having a responsibility for accident reduction, not necessarily road safety, should examine its Operational Resource Planning requirements at the tactical phase and that operational decisions will not succeed unless organisations consider those management tools and resource commitments outlined briefly above. This aspect will be developed in some detail throughout the thesis.

To do this, it is necessary to place the thesis into context and to trace the historical background on which the present strategy is based. From this, the thesis will examine ways in which the data is assembled and will concentrate on the Stats 19 Road Traffic Accident forms completed by the police. It will also be of interest to see what other local authorities do in this regard and to see how they use their data in relation to their tactical objective setting generally.

To summarise, the aims of the thesis are (1) to test the reliability and (2) the accuracy of data used within an operational setting by safety practitioners and to consider the operational resource plan; whilst objectives are to:

1. Trace the historical aspects of safety management both locally and nationally in order to place the research into context.

2. Observe Stats 19 being generated by direct observation of the police.

3. Conduct a survey of existing medical records in order to quantify any under reporting locally.

4. Consider statements made to the police as an aid to accident analysis.

5. Consider supplementing Stats 19 data to enhance the operational resource plan.

6. To make recommendations and conclusions.

Part 1

"The Historical Context"

Part 1

Chapter 1

1.0 Introduction to the Research Programme

1.1 In dealing with Road Traffic Accident records for analysis purposes, road safety officers attend courses organised by the Department of Transport at Cardington in Bedfordshire, whilst the RoSPA organise similar programmes on their courses held at Horncastle in Lincolnshire. The Institute of Road Safety Officers, via their Certificates in Road Safety Studies, teach statistics for the purposes of evaluation. Considerable amounts of staff time are spent, as will be seen later, dealing with this matter. From attendance at these courses and from course notes, road safety officers are taught to plan Education, Training and Publicity remedial programmes based upon Road Traffic Accident data through the medium of Stats 19. These may be regarded as tactical objectives.

1.2 The course organised at Cardington is basically for civil engineers who are required to use accident data occurring at junctions and the like in order to identify 'accident blackspots'. Having identified such a site via use of the Stats 19 data, then further studies are undertaken to 'engineer' the problem out of the environment. In this regard, as will be seen later, accident statistics can be shown to be used successfully. However, it is not the intention of this thesis to discuss engineering solutions to environmental problems, as the use of statistics is, in this regard, quite different from that used by a road safety practitioner responsible for Education, Training and Publicity matters. For example, an engineer might be concerned that (say) five Road Traffic Accident's have occurred at a well known cross-roads in one year. From his analysis, traffic lights might be installed and after a three year period can show a significant reduction in the number of Road Traffic Accident's at this site. Such an investigation pays little or no heed to near misses or Road Traffic Accident's which go unreported. The fact that sufficient Road Traffic Accident's occur which are reported to the police is sufficient for a local authority to act. This, for the road safety practitioner is not such a straight forward matter. If Road Traffic Accident's are happening at one particular set of crossroads then, the question must be asked:

'are crossroads a particular problem?'

It is this particular approach to accident analysis where the Institute of Road Safety Officers and the RoSPA say that the use of statistics should be used. The Road Safety Officers Handbook, published by RoSPA, op.cit., states:

'research plays a crucial role in the road safety service. Its application ranges from local investigation into accident causes to the in-depth study of accidents on a national scale'.

In the Road Safety Programme Manual, by A. Rivlin and published by RoSPA in 1984, it states that:

'it is essential for road safety officers to have a working knowledge of the accident problems in their area if a planned programme of operation is to be implemented. Figures from one year to the next should be available for comparison. In addition, it may be useful to compare local accident and casualty figures with national ones. This will enable more informed decisions to be made on the need for action in a particular case'.

The manual goes on to conclude that:

'one way to find out what the problems are is to study the accident statistics provided by the local authority. If the statistics are not provided in a form that assists knowledge of the problems, then tables must be produced which would be more helpful'.

This manual then goes on to describe Stats 19 data and a small footnote states:

'it should not be forgotten that some accidents are never reported to the police and therefore never appear in official statistics',

No further advice is given on this warning. Paragraph 2.3 of this manual explains how a road safety officer should determine his priorities, and lists the following in order of importance when considering remedial measures:

- Look at accident figures for each road user group.
- Note trends and the percentage change from previous years.
- Compare the percentage change of accidents to each road user group with the total change of accidents.
- Compare accidents with those of local authorities which have similar characteristics such as population, traffic flow and nature of roads.
- Relate accidents to traffic flow.
- Relate accidents to changes in weather and time of day.
- Note sales of vehicles in local authority area, especially important for motor-cycles and bicycles.
- Note the number of people in the various age groups which predominate in certain road user groups.
- Note the social conditions and areas of need in the group of accidents.

This manual, is regarded by the profession as the model for carrying out tasks as a road safety practitioner responsible for Education, Training and Publicity programmes.

1.3 RoSPA has held regional conferences to discuss how the manual should be used but in discussion with other road safety practitioners no published evidence could be obtained to support that the manual had been used along the lines it purported or that road safety officers had used accident data to highlight contributory factors in Road Traffic Accident's. This was particularly important because in Dorset accidents involving Powered Two-Wheeled Vehicle's had fallen by some 16.0% in 1986 since 1985. Although this might appear encouraging, it would seem that 1987 figures will show an increase. This information was obtained in Road Accident Information, by R. Saunders, published by Dorset County Council. In fact, casualties from this class of road user account for some 20% of all casualties although current registrations have fallen by some 2.5% over the same period locally and fallen some 17% nationally (press notice No.34, Department of Transport, published on 300185). From this problem, some remedial course of action was still required.

1.4 Taking the nine points from the manual 'Road Safety Programme Manual', 1984, op.cit., a table taken from locally held Stats 19 data was obtained and is reproduced below. For criteria concerning road accidents referred to as fatal, serious and slight the further details are given in Appendix 3.

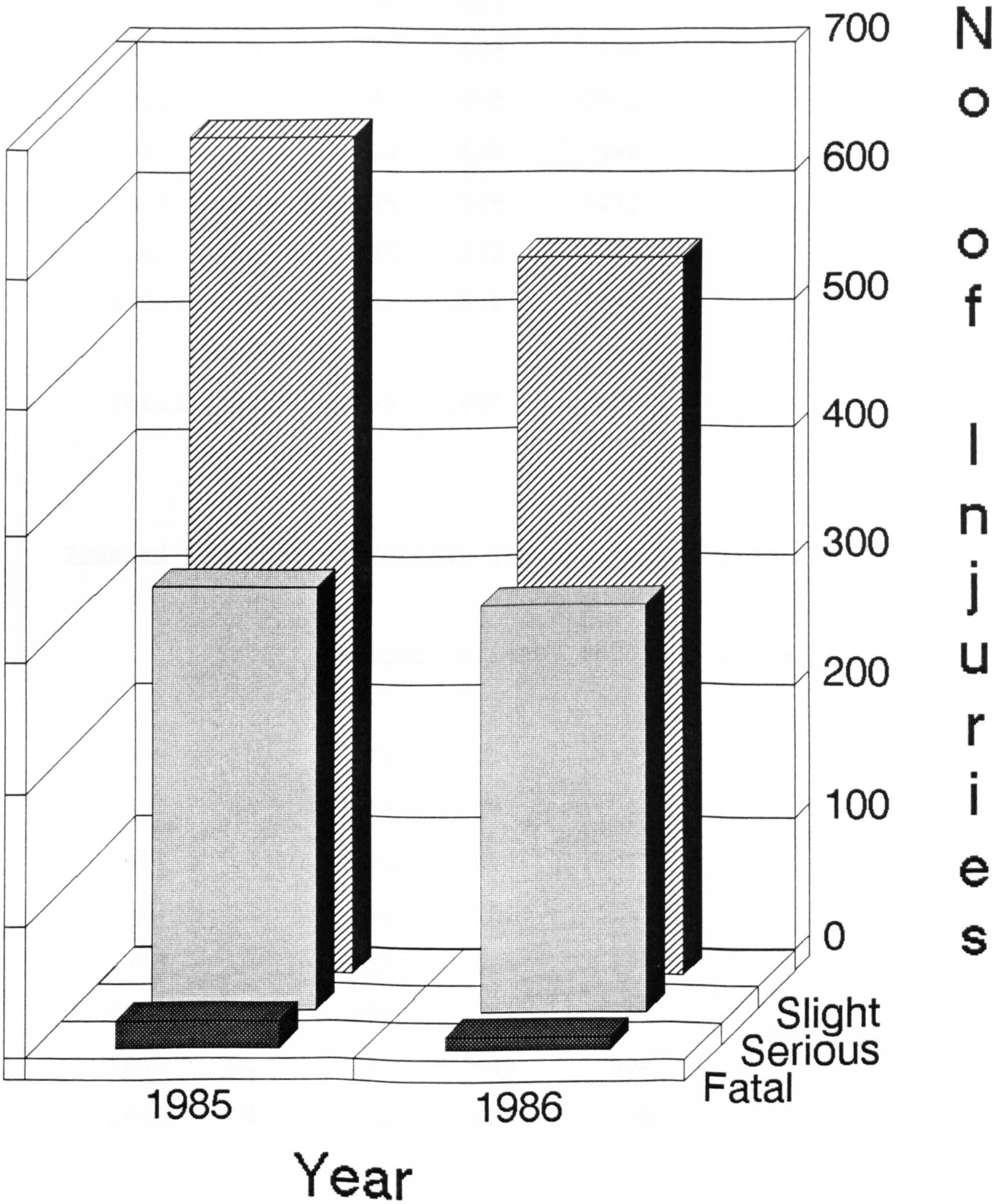
Powered Two Wheeled Casualties

	Fatal	Serious	Slight	Total	Table 1
1985	21	325	648	994	
1986	10	310	555	875	

From this, one would need to go back further than two years but exactly how long to establish a trend is debatable. In Dorset, our compatible records (this is dealt with later in Part 2) go back to 1979 and Table 2 below shows the number of Road Traffic Accident's by severity where a Powered Two-Wheeled Vehicle was involved. In Table 3, casualties are shown. It should be remembered that the difference between accidents and casualty figures is that one Road Traffic Accident can produce more than one casualty.

Table 1

Powered Two Wheeled Casualties



Powered Two-Wheeled Vehicle Accidents by Severity

Table 2

	Fatal	Serious	Slight	Total
1979	12	372	674	1058
1980	14	368	626	1008
1981	19	338	599	956
1982	11	345	695	1051
1983	24	312	612	948
1984	15	298	698	1011
1985	20	285	632	937
1986	8	281	551	840
Total	123	2599	5087	7809

Powered Two-Wheeled Vehicle Casualties by Severity

Table 3

	Fatal	Serious	Slight	Total
1979	13	379	739	1131
1980	14	364	682	1060
1981	18	352	645	1015
1982	11	343	761	1115
1983	21	315	656	992
1984	14	290	758	1062
1985	21	325	648	994
1986	10	310	555	875
Total	122	2678	5444	8244

Table 2

PTWV Accidents by Severity

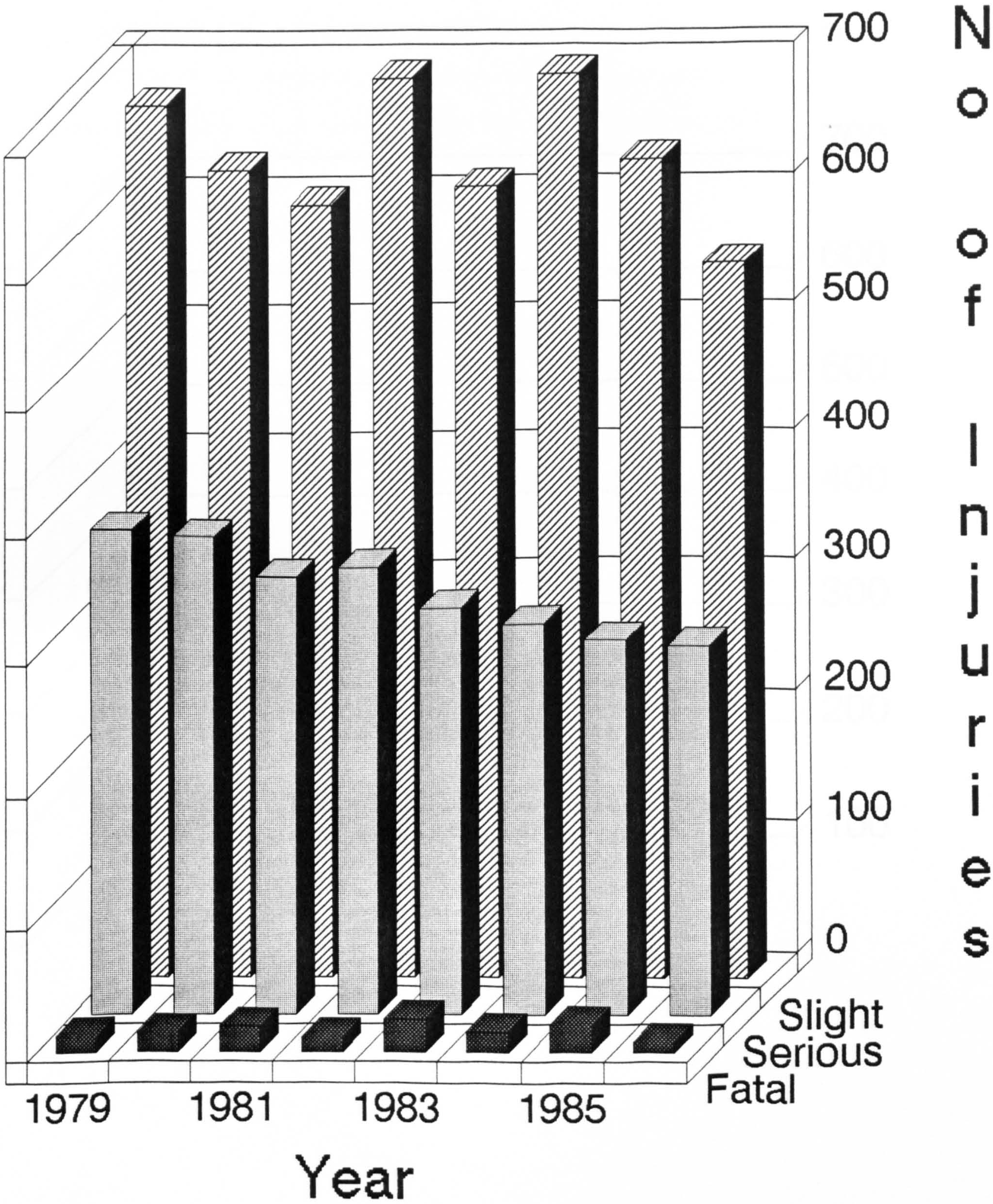
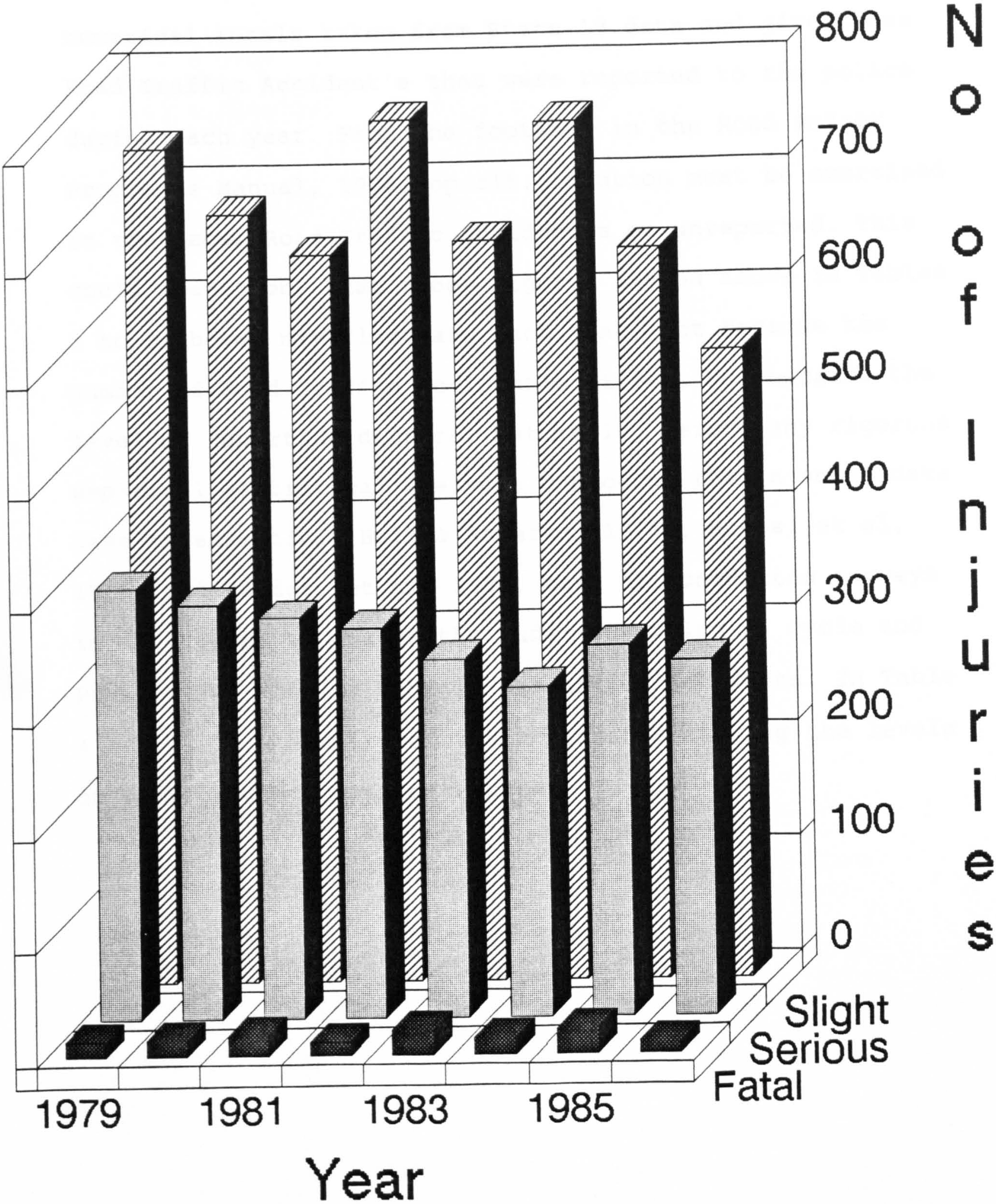


Table 3

PTWV Casualties by Severity



NB. Where, in 1985, there were 20 fatal Powered Two-Wheeled Vehicle accidents but only 21 fatal casualties. This accounts for Road Traffic Accident's where a Powered Two-Wheeled Vehicle was involved whilst the casualties relate only to the Powered Two-Wheeled Vehicle rider and/or pillion passenger.

1.5 The figures given above in Tables 1 to 3 above are numerical totals taken from Stats 19 data and give those Road Traffic Accident's that were reported to the police during each year. From the footnote in the Road Safety Programme Manual, 1984, op.cit., caution must be exercised in that some Road Traffic Accident's go unreported. This could mean then, that those figures listed above in Tables 1 to 3 above, may fluctuate each year, not because the number of Road Traffic Accident's differ, but because the level of reporting differs. Naturally, before any rigorous empirical statistical analysis can occur then a sound data base is essential. Bull & Roberts, 1975., Hobbs, et al, 1979, and Pedder, et al, 1981, have all conducted surveys in an attempt to assess the under-reporting of cycle and Powered Two-Wheeled Vehicle casualties/accidents. In Table 4 below, is a summary of their findings showing the levels of under-reporting in each case.

Proportion of Powered Two-Wheeled Vehicle Casualties treated by Hospital with no Stats 19 records.

Table 4

% Casualties in non reported Road Traffic Accident's

Data Source	Serious	Slight	Sample Size
Bull & Roberts	27.7	36.7	145
Hobbs et al	26.8	45.4	745
Pedder et al	28.6	57.9	540

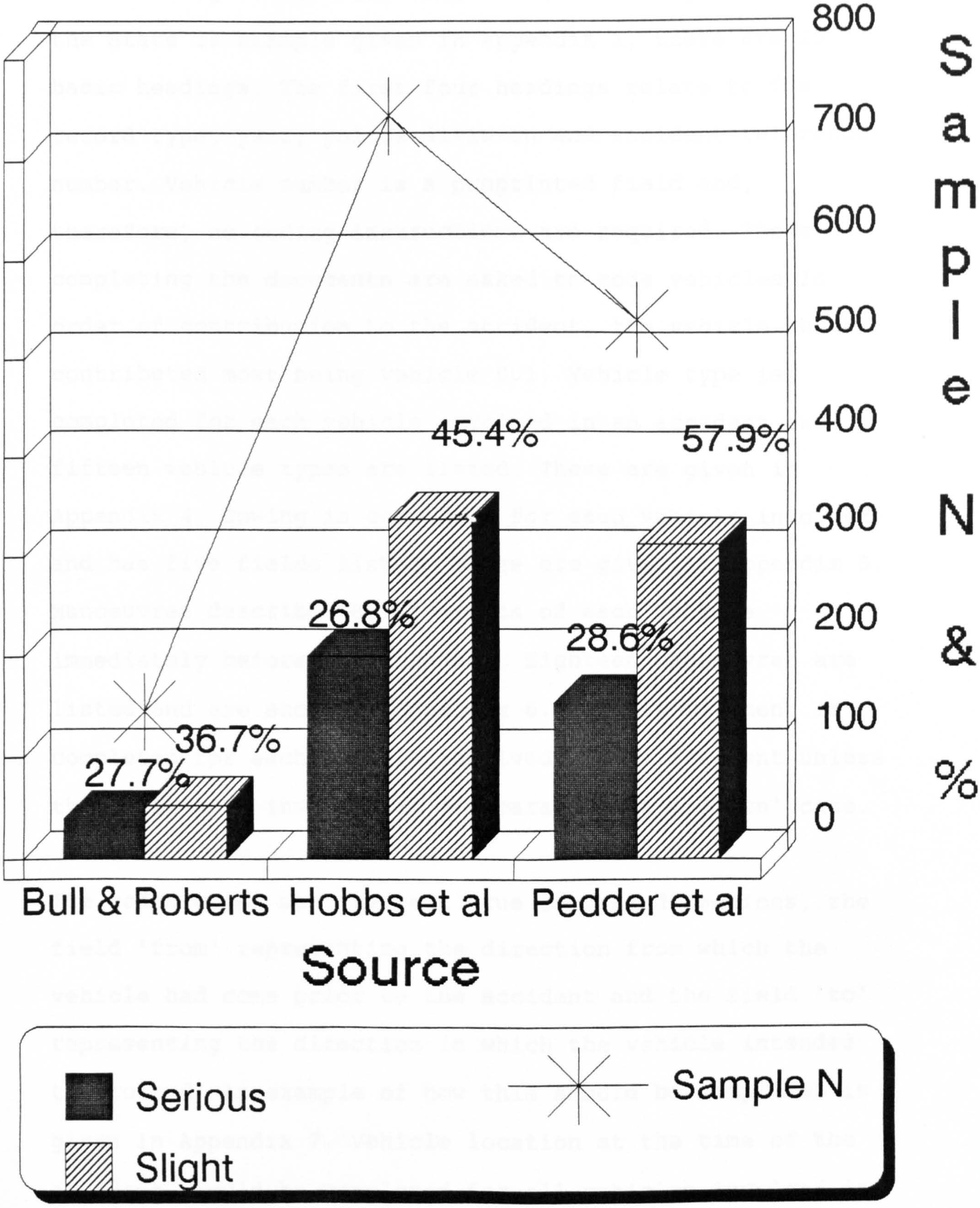
Whether or not these findings are applicable to Dorset and whether the inconsistency shown in slight injury accidents is compatible to a local area or too unreliable to use is discussed at some length later in the text. It is also argued that these figures are atypical to Dorset and in Chapter 4 this argument is discussed further. If slight injury Road Traffic Accident's are ignored for empirical statistical evaluation purposes, then this would significantly reduce the sample size and if a road safety practitioner broaden, or enlarge his data base by going outside his area of responsibility then it is highly likely that spurious results would be obtained. This aspect is covered further in the text.

1.6 Using Stats 19 as a management tool it is necessary to look at those groupings contained on the form. These are:

- Vehicle record
- Casualty record

Table 4

Hospital casualties with no Stats19



- Attendant circumstance record

The vehicle record contains information relating to each vehicle involved in, or contributing to the accident, including parked vehicles not suffering impact but contributing to the Road Traffic Accident. By looking at the Stats 19 example given in Appendix 1, there are 29 basic headings. The first four headings relate to the record type, year, police division and accident reference number. Vehicle number is a preprinted field and, therefore, no coding instructions are required. Those completing the documents are asked to code vehicles in order of contribution to the accident, the vehicle which contributed most being vehicle 001. Vehicle type is completed for each vehicle involved in an accident and fifteen vehicle types are listed. These are given in Appendix 4. Towing is completed for each vehicle involved and has five fields listed. These are given in Appendix 5. Manoeuvres describe the movements of each vehicle immediately before the accident. Eighteen manoeuvres are listed and are shown in Appendix 6. Vehicle movement is completed for each vehicle involved in the accident unless the vehicle is involved as a separate 'hit and run' case.

The codes given must reflect true compass directions, the field 'from' representing the direction from which the vehicle had come prior to the accident and the field 'to' representing the direction in which the vehicle intended to proceed. An example of how this should be completed is given in Appendix 7. Vehicle location at the time of the accident should be completed for all vehicles involved in an accident and has ten fields listed. These are given in Appendix 8. Junction location at the time of the accident is self explanatory and must be completed for each vehicle involved in or contributing to the accident. There are five headings listed and these are given in Appendix 9. Skidding should be completed for all vehicles involved in an accident and has six fields listed in Appendix 10. Hit objects in carriageway should be completed for all vehicles and involves the first object hit in the carriageway by the vehicle. The valid range for this field is eleven and these are listed in Appendix 11. Vehicles leaving the carriageway must be completed for all vehicles and nine field are listed in Appendix 12. Vehicle suffix should be completed for all vehicles including those without a registration number. Six fields are listed and are given in Appendix 13. First point of impact is completed showing the first point of the vehicle to come into contact with another vehicle, object or pedestrian. This field should be completed for each vehicle involved in the accident and has five sub-headings which are described in Appendix 14. Vehicle number of other vehicle hit should show the number of the first vehicle (if any) with which the vehicle coded collided. The field should always be completed within the range shown on the Stats 19 form, ie., 000 to 008, 000 representing no other vehicle was hit by the vehicle coded. Vehicle parts damaged allows for up to three parts being damaged to be coded. They are only coded when the vehicle concerned has collided with another vehicle, pedestrian or solid object. The valid range is nine and these are listed in Appendix 15. Vehicle defects allow for up to three vehicle defects to be recorded. Ten fields are listed. These are locally agreed defects and are given in Appendix 16. Number of axles should be completed for all vehicles. Zero should be entered for all vehicles other than Goods Vehicles and maximum permissible gross weight should be left blank. Five fields are listed and these are given in Appendix 17. Maximum weight refers to the maximum permissible weight of the goods vehicle in metric tonnes (rounded up or down to the nearest tonne). There are three fields listed and are given in Appendix 18. Sex of driver should be completed for all vehicles and three fields are provided for. Male and female are the standard fields the third being referred to as 'not contacted'. This should only be used when the police officer is unable to trace the driver of the vehicle. Age of driver must be completed for each vehicle and has a valid range from 0 to 99. Age 'not known' is not permissible unless the vehicle is classified under the 'hit and run' field or is a non-injury accident. Breath test contains six fields and these are given in Appendix 19. Hit and run is to be completed for each vehicle and has two valid ranges. 'Other' entered as zero and 'hit and run' entered as 1. Learner driver should only be completed for learner drivers by inserting the letter 'L'. Drivers actions should be completed only if drivers actions preceding impact comply with one of the nine codes listed in Appendix 20. The final vehicle record is referred to as 'Driver Code' and should be completed by members of the accident team based at County Hall. An 'L' is inserted here if the driver lives within a ten mile radius of the accident site or 'S' if the driver lives outside the ten mile radius. A 'not known' entry is only permitted for 'hit and run' cases and non-injury accidents.

1.7 The casualty record refers to each casualty resulting from an accident. For non-injury accidents no casualty records should be present. Eighteen field headings are given in this section of the Stats 19 form and are described below. Record type will contain the number 31 if it is a new casualty record or 35 if an amended record is being submitted. Casualty records are only accepted when they form part of a complete accident. The reference for casualty records need not be coded as provision is made to assign the reference coded for the attendant circumstances records which are described later in the text. If a reference is coded, care must be taken to ensure that the same value is coded for each casualty record and that the value should coincide with the reference given in those attendant circumstance records. Vehicle occupied or hit by (number) should be the vehicle number given to the vehicle record containing details of the vehicle occupied by or causing injury to the casualty. There are eight valid ranges within this field. Casualty number is a preprinted field and no coding instructions are required. It is, however, desirable that casualties are coded in order of severity within the vehicle order implied by the vehicle records. Casualty class should be completed for each casualty by inserting '1' for driver or rider, '2' for vehicle or pillion passenger and '3' for pedestrian. Sex should be completed for each casualty by inserting '1' for male and '2' for female. Age has a valid range from 00 to 99 and should be estimated if necessary. Children who are less than one year old shall have an age of 00. Severity of injury should be completed as '1' for a fatal casualty, '2' for a serious injury and '3' for a slight injury. Pedestrian location should be completed for all casualties and has eleven fields. These are given in Appendix 21. Pedestrian movement should be completed for each casualty and has ten sub-fields as described in Appendix 22. Pedestrian direction should only be completed for pedestrian casualties. There are eight sub-fields and these are given in Appendix 23. Seat belt records should be completed for all casualties and has eight sub-fields described in Appendix 24. Car passenger records should be completed by inserting zero for 'not a car passenger', one for 'in front seat' and two for 'in rear seat'. A 'car' includes vehicles described as cars, taxis and three-wheeled motor vehicles but excludes motor-cycle combinations. 'Passenger' includes all casualties within a casualty class of two (ie. vehicle or pillion passenger). PSV (public service vehicle) passengers should be completed for all casualties and has five sub-fields which are described in Appendix 25. School pupil and school number records are given in detail in Appendix 26. On the reverse side of Stats 19 are spaces for further description. Appendix 27 outlines how these should be used.

1.8 Attendant circumstances contains thirty six main fields. Those boxes shown in green on the local Stats 19 form (see Appendix 1) should not now be completed by the police officer. These fields are completed at County Hall and details of these are given in Appendix 28. Record type will contain '11' if it is a new accident record, or '15' if it an amended accident record which is being submitted. As attendant circumstance records appear first on the Dorset version of Stats 19, the reference number given uniquely identifies each accident and comprises three parts as described above. Map is a single character police reporting area in the range B-D, F-L. Map reference is a two character subdivision of the police reporting area. Fields contain values according to that table given in Appendix 29. Severity should be completed as previously described. A fatal accident is one in which at least one person is fatally injured. A serious accident is an accident in which no person is fatally injured but at least one person is seriously injured as described in Appendix 3. A slight injury accident is one in which no person is fatally or seriously injured but at least one person is slightly injured as described in Appendix 3. Number of vehicles should be completed in order to reflect the number of vehicles involved or contributing to the accident. Number of casualties should include the number of persons injured directly as a result of their involvement in a Road Traffic Accident. Up to twelve casualties can be included. Day of week commences with 'Sunday' being recorded as '1' through to 'Saturday' being recorded as '7'. Date is a straight forward entry and 'time' should show the time that the accident occurred.

Local authority is a national coding to show the local authority area in which the Road Traffic Accident occurred. Further details of this are given in Appendix 30. Road should show the first road upon which the accident occurred. The field comprises of road class and road number as described in Appendix 31. Carriageway type provides a description of the carriageway on which the accident occurred. The valid range is between 1 and 9 and a detailed breakdown of these is given in Appendix 32. Speedlimit should be the general speedlimit applicable to the roadway. Temporary speedlimits in force should not be entered and the speedlimit recorded should be in miles per hour. Pedestrian crossing should be completed where pedestrian crossing facilities are at or within 50 metres of the accident site. This field must always be completed within the range described in Appendix 33. Light conditions at the time of the accident should always be completed within those field outlined in Appendix 34. Weather conditions at the time of the accident should be completed within the range 0 to 9 as described in Appendix 35. Road surface refers to the road surface condition relating to the weather conditions at the time of the accident and has five sub-fields. These are described in Appendix 36. Special conditions should always be completed whether or not the conditions prevailing at the time were considered contributing to the accident. There are five fields listed and these are given in Appendix 37. Carriageway hazards should only be used to indicate an object not expected to be found in the carriageway. Dead animals should be coded as 'other object in the carriageway'. This field has seven sub-fields described in Appendix 38. Overtaking should be completed to indicate overtaking manoeuvre patterns and may indicate non-parked vehicles not suffering impact. The field must be completed within those ranges described in Appendix 39. Junction type should be a description of the junction at or within 20 metres of an accident location. Ten types of junction are presented in Appendix 40. Control is to be completed only when 'junction detail' is not coded zero and should describe how the junction was controlled. Five sub-fields are listed in Appendix 41. Second road should only be used for junction accidents. The class and number of the most major road at the junction (other than the road on which the accident occurred or to which the accident has been coded) should be placed in accordance with those codes described in Appendix 42. Road safety area, grid reference and TARA reference are referred to in Appendix 28.

1.9 From a research methodological standpoint, the completion of such a questionnaire is vitally important if rigorous statistical evaluation is to be considered. From a number of trial evaluations conducted along those lines suggested in the Road Safety Programme Manual, 1984, op.cit., the thesis strongly suspects that the police officers who collect the majority of the Stats 19 data do so with a certain amount of indifference. To illustrate this point, Table 5 below shows a six year situation taken from Stats 19 vehicle records relating to the eighteen different manoeuvre sub-fields described in Appendix 6.

Powered Two-Wheeled Vehicle Accidents by Manoeuvre

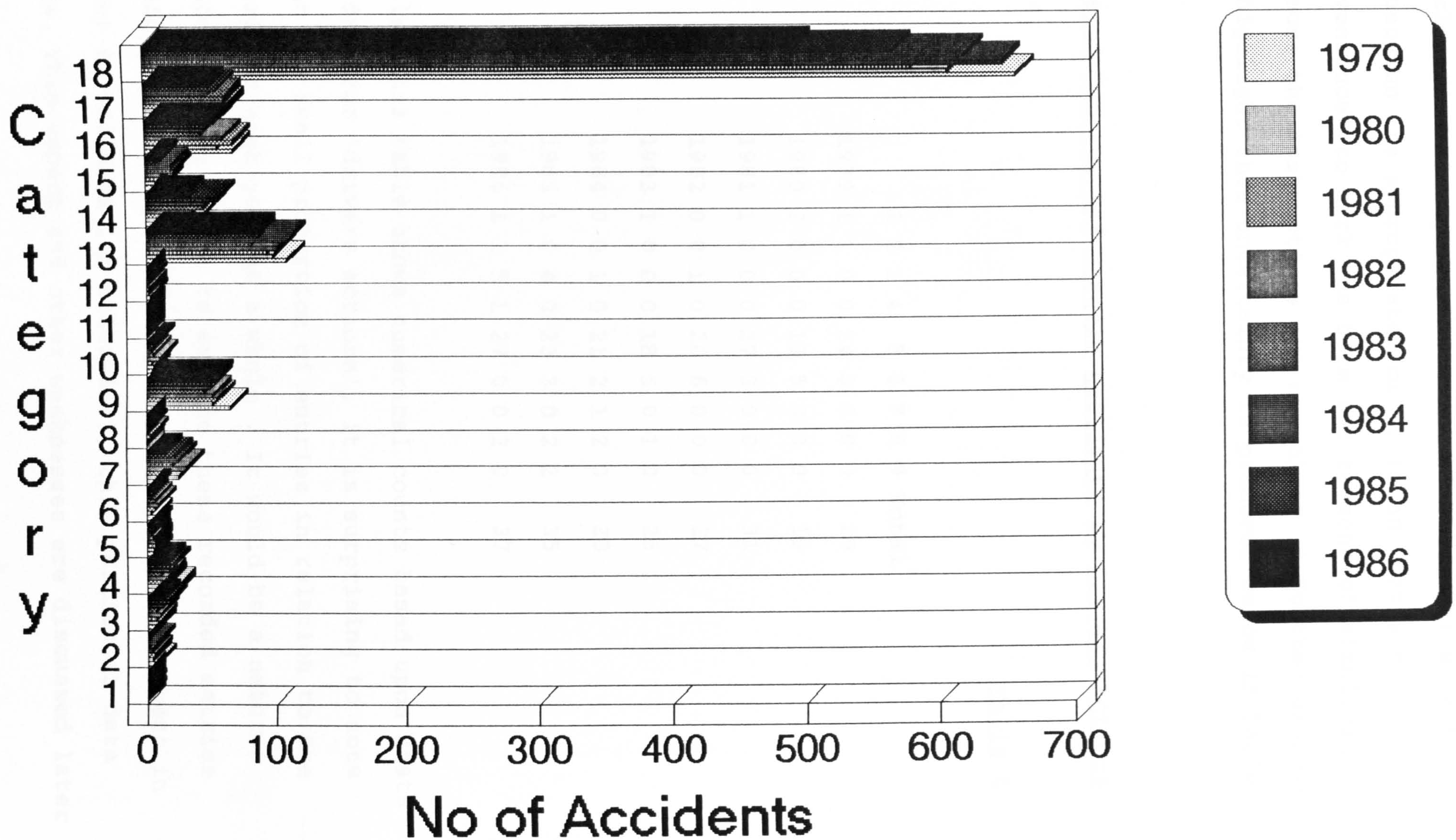
Table 5

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
1979	0	8	8	24	6	6	10	0	64	4	1	3	107	30	12	67	49	659	1058
1980	1	4	9	24	5	3	25	1	51	5	1	2	96	40	16	55	63	607	1008
1981	0	5	7	17	6	6	16	3	54	4	1	2	92	20	13	67	63	580	956
1982	1	3	10	16	6	9	31	0	51	10	1	0	100	36	12	60	61	649	1051
1983	0	0	7	11	5	6	20	2	44	5	1	2	80	44	22	43	61	595	948
1984	0	7	12	17	4	3	25	1	49	3	1	1	108	45	20	45	49	621	1011
1985	0	1	17	20	4	1	22	1	52	1	1	1	85	55	8	45	56	567	937
1986	0	1	12	16	6	5	14	1	53	8	1	1	85	32	12	54	49	490	840

Whilst it is considered straight forward in completing Stats 19 by the Department of Transport, they have issued a manual entitled 'Instructions for the completion of Road Accident Reports', amended in November 1983, and published by the Government Statistical Office of the Department of Transport. The purpose of the manual (referred to as Stats 20) is to assist the police officer in completing the Stats 19 report forms. This part of the manual is reproduced in Appendix 43 to show the complicated and unclear presentation of this information. It is not surprising, therefore, to note from Table 5 above, that 'going ahead other' (column 18) accounts for over 50% of manoeuvres in Powered Two-Wheeled Vehicle Road Traffic Accident's. No details are provided to explain what 'going

Table 5

PTWV Accidents by Maneouvre



ahead other' means. It is presumed that it is a manoeuvre or classification given when none of the other seventeen manoeuvres are appropriate, or it is an 'entry of convenience' to mark the form for reasons of simplicity because the instructions are not clear. A further example to highlight this uncertainty is produced below in Table 6.

Powered Two-Wheeled Vehicle Accidents by Drivers Actions

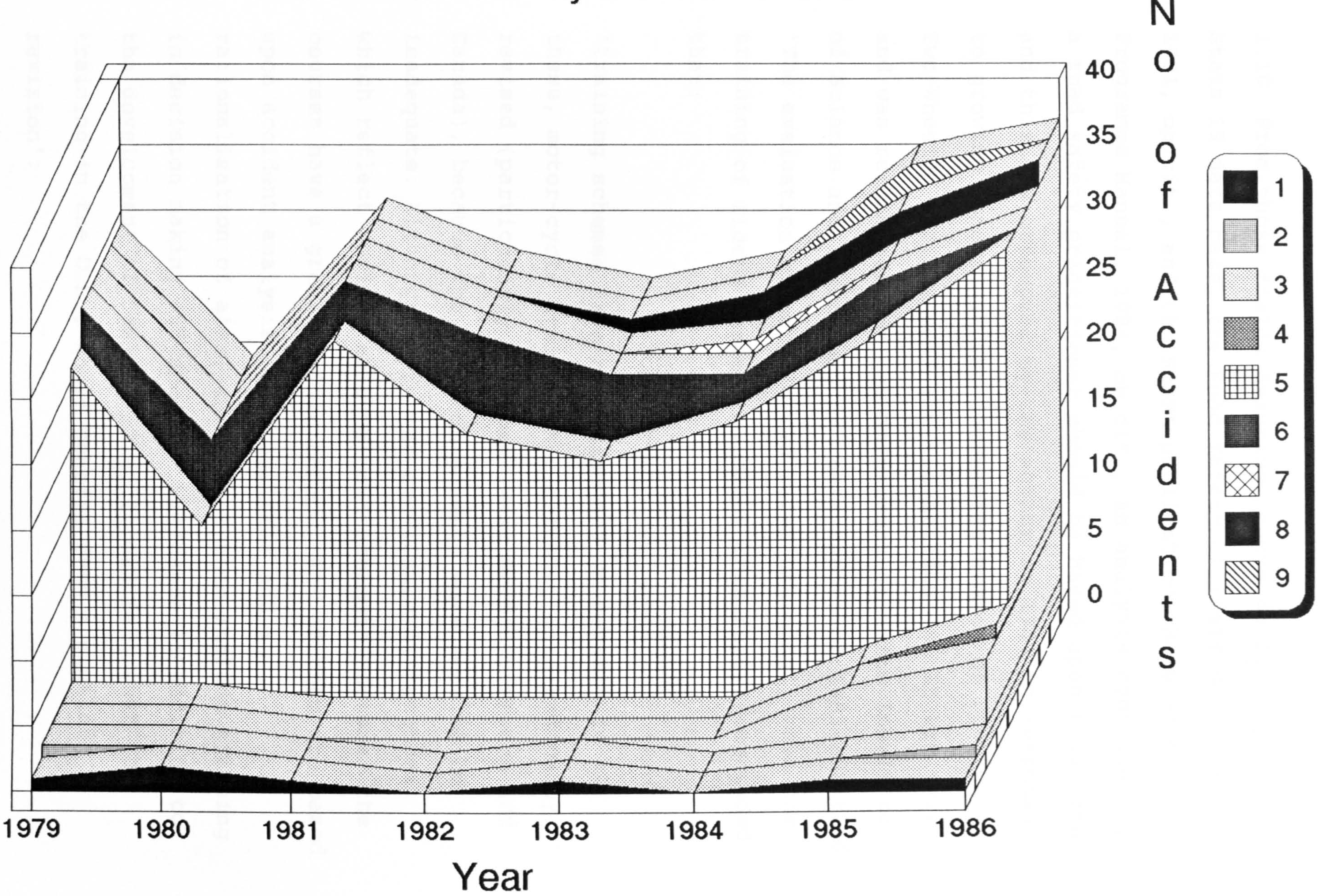
Table 6

	1	2	3	4	5	6	7	8	9	Total
1979	1	1	0	0	24	3	0	0	0	29
1980	2	0	0	0	12	5	0	0	0	19
1981	1	0	0	0	27	3	0	0	0	31
1982	0	0	1	0	20	6	0	0	0	27
1983	1	0	0	0	18	5	0	1	0	25
1984	0	0	1	0	21	2	1	2	0	28
1985	1	0	4	0	23	3	0	2	2	35
1986	1	1	5	1	27	0	0	2	0	37

Whilst this table shows numerical counts based upon Stats 19 data for 'drivers actions', it is surprising to note that the small proportion of entries in relation to the total for each year as a whole . It would be a natural feature of the thesis to examine these recorded entries against statements made to the police in this respect in order to validate (or otherwise), this particular data base. This aspect and other weaknesses are discussed later

Table 6

PTWV Accidents by Drivers Actions



in Chapters 3 and 8.

1.10 From those fields described above as forming the Stats 19 data base, the Road Safety Officers Handbook, 1981, op.cit., and the RoSPA publication, Road Safety Programme Manual, 1984, op.cit., an analysis conducted by a road safety practitioner should be based upon this data and this was attempted by the author in 1984 in response to growing concern at the increasing number of Powered Two-Wheeled Vehicle Road Traffic Accident's. It was felt, and was recommended by the University of Wales Institute of Science and Technology in their report of 1983 entitled 'The evaluation of motor-cycle rider training', that the training of riders needed revision. This report concluded that:

'training schemes have been examined in detail; in all these, motor-cycle training has recently been radically revised (particularly in Japan, West Germany, France and Canada), because the previous schemes were seen to be inadequate. Although there are inevitable differences, which reflect social, cultural and economic factors, the courses have a great deal in common. All of them are based upon accident analysis, task analysis and a rationalisation of aims; and all of them include training in decision making and accident avoidance in addition to the development of basic skills. It was felt that the training in the U.K., would benefit from a similar revision'.

Stats 19 records only were used by the research team responsible for this report and the accuracy of this will be discussed in Part 2, but it was from these conclusions and from 'Danger on the Road:The Needless Scourge', by Plowden & Hillman, 1984, published by the Policy Studies Institute that Stats 19 data can be seen to be used as it currently stands. This report also uses Stats 19 data and opens its 'discussion' as follows:

'the danger from two wheeled motor vehicles, both to their users and to others, is summarised by the fact that in 1981, 25% of all road casualties and 24% of fatalities occurred in accidents which involved them, although they accounted for less than 3% of the mileage travelled by motor vehicles'

Although Stats 19 data is used extensively in the report, it goes on to discuss motor-cycle training as a possible remedial measure. More of this later.

1.11 From a researchers point of view, the road safety practitioner, armed with Stats 19 data, should be in a good position to conduct an in-depth analysis of those records in order to answer those nine points raised earlier as recommended by A. Rivlin in 'Road Safety Programme Manual', 1984, op.cit. It should be possible to compare fatal, serious and slight injury accidents for each year and even possible to relate these to the national situation in order to highlight significant differences. At the same time, a statistical analysis of

Stats 19 fields, such as those described above, should be analysed in order to identify trends and causal factors. It is from these studies that training courses might be planned and implemented or dispensed with altogether.

This thesis does not support the consensus view that accident analysis should be based upon Stats 19 data in its current form. Some information on the form is based upon subjective issues whilst others seem to be highly inaccurate at the completion stage. The aim of the project is to review the reporting system in Dorset with the following specific objectives:

1.11.1 Stats 19 Reporting Form. It is intended to examine how this document is completed and to determine its priority by the police at the scene of a Road Traffic Accident and to observe and comment upon the the systems and processes involved. It is a main issue of the thesis to consider the implications such matters might have for management particularly in terms of resources and is crucial to the Operational Resource Planning.

The format of Stats 19 documents do vary from authority to authority and a number of examples are given in Appendix 44. However, it will be noted from these, that whilst they might look different, the information asked for is similar. There are facilities for local variations and special projects and the thesis comments upon this. Compatibility of this data is considered in order to assess Road Traffic Accident information relating to county boundaries and its value in enhancing the data base. Regional differences are also examined in order to confirm or reject whether Dorset's Stats 19 data can be regarded as atypical.

1.11.2 Observation of Police Officers. As discussed above, the Department of Transport manual 'Stats 20', op.cit., attempts to quantify those areas capable of subjective interpretation. For example , 'weather conditions' at the time of the accident could be subject to discussion if this fact is not recorded immediately the Road Traffic Accident occurs. What constitutes 'rain/drizzle', 'fog/mist', 'high wind', etc., is considered. In respect of breath tests, it is interesting to quote 'A six month review of motor-cycle accidents' by T.A. Andrews, in 1979, published in the British Journal of Accident Surgery, Volume 10/No.4., which concludes that:

'improved investigations and detection of motor-cycle offences by the police would be of value. Substantial numbers of motor-cyclists were intoxicated in this survey and to our knowledge, none was tested for this!'

In Dorset, during 1986, of the 840 reported Powered Two-Wheeled Vehicle Road Traffic Accident's, 749 were not even requested to take a breath test by the police. The thesis examines this policy in more depth later in Chapters 4 and 8.

It is a view of this thesis that police officers at the scene of a Road Traffic Accident have many priorities to consider and at this stage of the thesis, it will be necessary to observe police officers whilst on duty dealing with these events and to note the extent that memory is relied upon to recall various events.

1.11.3 Medical Records. It has been shown earlier from work conducted by Bull & Roberts, 1975, op.cit., Hobbs et al, 1979, op.cit., and Pedder et al, 1981, op.cit., that serious under-reporting of accidents takes place, therefore, serious and slight injury accidents records need to be examined. The thesis considers this aspect in some detail and is discussed later in the text.

It is essential to the thesis to have sight of such hospital records and to trace the systems and procedures involved in dealing with Road Traffic Accident data and to see if records are systematically updated. Accident record clerks are employed by all the main Accident and Emergency Departments in hospitals covering the county of Dorset. It is also of interest to include in such a study the records held by Community Hospitals and General Practitioners. This is particularly important in rural area and it is known that they treat a number of serious accident injuries. The thesis, therefore, spends some time examining this matter in some detail.

1.11.4 Statements made to the police by Witnesses. It was a recommendation by RoSPA in their 'Road Safety Programme Manual', 1984, op.cit., that statements made to the police are valuable aids to accident analysis. This recommendation is is made in other notable works such as the 'Road Safety Officers Handbook', 1981, op.cit., and the 'Accident Investigation and Prevention Manual', amended in 1983, op.cit., but there is a wealth of evidence which suggests that witness statements are unreliable. This aspect is also considered in the thesis as forming an essential part of the Operational Resource Plan.

1.12 Summary.

The road safety practitioner should use Stats 19 data and statements made to the police as an aid to providing an effective service. It is highly probable that that these two basic tools are not reliable. Faced with this, then there are usually two management options to consider. These are:

(i) the do nothing option; and
(ii) the do something option.

Clearly, option one is not relevant here as the thesis considers the current effects on the organisation from the outset. It will be necessary to concentrate on the second option the 'do something' option, and seek ways of improving the data base, if at all possible, in an efficient and effective way. It is possible that the implications this will have on the organisation and road safety practitioners will mean a revision of their role, present management methodology and resource commitment, in order to meet any change in circumstances. However, the thesis does examine a number of practical ways that this might be achieved and examines ways the organisation might consider these aspects and include them in their management strategies in a cost effective way. This we shall call the Operational Resource Plan.

In order to satisfy the aim of this project and to meet the objectives set out above, it is essential to secure the goodwill and co-operation of both the Dorset Police and the relevant Health Authorities covering the county of Dorset. This has been sought and granted. The County Surveyor of Dorset has also authorised this work to be conducted and permission has been granted for the management study to proceed. From this, it is hoped to make recommendations and conclusions which will improve the efficiency and effectiveness of the road safety unit locally as well as having some implications for the road safety scene nationally.

Chapter 2

2.0 Historical Outline of Road Accidents and some costs: The National Situation.

2.1 The advent of the motorcar as a popular means of transport was the signal for some of the road traffic problems of today. The first record of a pedestrian being knocked down and killed by a motor vehicle are to be found in the court records at Croydon.

'On the 17th August, 1896, a 44 year old housewife travelled from Old Town, Croydon to the grounds of Crystal Palace to watch a folk dancing display where she was hit by a motorcar which witnesses said was travelling at tremendous speed. Mr. Arthur Edsell, the driver, insisted that he had only driven at 4 mph, half the maximum speed of the car. The jury took six hours to decide that Bridget Driscoll had died an accidental death'.

This extract is taken from '66 years of road safety', 50th National Road Safety Congress, 1983, by G.W. Wisher and published by the RoSPA.

Three years later, on 23rd February, 1899, a 31 year old engineer named Edwin Sewell was demonstrating a wagonette motorcar to some friends. As he was travelling down Grove Hill Road, Harrow, at 14 mph, a wheel shed its rim. Sewell and his front seat passenger, a Major Richer, died in hospital three days later. This was the first recorded fatal accident involving a driver of a motorcar and his passenger.

Saunders, 1985, op.cit., in his 'Road Safety Management in a Shire County', outlined the development and growth of the road safety movement nationally and it was not until 1926, that the first attempt to produce road accident statistics was made by the Metropolitan Police. It was not until after the war years that a serious attempt was made to compile detailed accident statistics and in 1951, the Department of Transport published 'Road Accidents Great Britain', which included details of road accidents, casualties and vehicle involvement. 'Road Accidents Great Britain 1983', tells us that figures for road accidents were published annually from 1926 to 1937 and were presented to the House of Commons by the Home Secretary. Prior to 1926, road accidents were recorded from 1909 and bicycle accidents were included in 1914. 'Road Accidents Great Britain 1983', op.cit., includes accident statistical tables from 1926 to date.

After the war, it was becoming increasingly felt by government that road safety needed to be organised locally and each local authority should appoint a full-time road safety officer to carry out the work in its own locality. Most road safety officers at this time were part-time or volunteers who were hampered from carrying out their difficult task by a pitiful lack of resources. The National Association of Road Safety Officers was formed in 1957, which did much to raise the importance of the road safety officer. From the time of Circular Roads 588 in 1946 up until the end of October 1964 (a period of some eighteen years), only 122 full-time road safety officers had been appointed. It was not until the introduction of Section 8 of the Road Traffic Act 1974 that a statutory obligation was placed upon local authorities to carry out a road safety service. Saunders, 1984, op.cit., discovered that in 1982, following a survey in England and Wales, local authorities now employed an average of nine full-time road safety officers or 1:93,000 per head of population. This is a vast improvement from the original Circular Roads 588 of 1946. From the end of the last war in 1945, accident data collection has grown considerably in the type of information held, and since 1974, many reports have been published emphasising the need for road safety officers to use these data in order to plan and implement effective remedial Education, Training and Publicity measures. Up to this point, such data were used in the main by civil engineers as a means of just improvement of environmental conditions at accident problem sites. An example of how an engineer might use accident statistics is given in Appendix 45. Very little evidence can be obtained to show how a road safety officer has used Stats 19 to implement effective programmes of activity.

Of the evidence which is available, it would seem that local use of Stats 19 data is produced in table form for a period of three years and this is interpreted in ways to indicate such things as trends, totals, locations and the like. One particular road safety officer could show how Stats 19 enabled him to justify a decision not to hold a publicity campaign on a conspicuity subject to coincide with the clocks reverting to GMT from BST. He could show from Stats 19 data that accidents involving cyclists at this particular time was not a cause for such specific concern. From this information, he made a decision not to pursue a publicity programme. Some road safety officers state that they cannot obtain accident information because it is kept by the engineers and is for their sole use. The thesis cannot comment on this conflicting set of circumstances as this seems to be evident in a few isolated cases. The thesis does comment, however, on the schedule of needs within the management organisation, particularly in Dorset, and discusses the priority management issues of data control. This is dealt with below:

Annex 3 of Circular Roads 12/75, op.cit., tells us that some 90% of all road accidents exhibit a predominance of human factors. While many of these human factors may be greatly influenced by, as we have already discussed, engineering remedies, the report tells us also of evaluation methods a road safety officer should use and tells us that:

'the evaluation of selected publicity and training schemes can be carried out in two stages. In the first stage, it is necessary to discover whether or not road user behaviour has been changed in the manner intended, the established principles of survey being utilised. In the second stage, which will normally be about three years later, it is necessary to discover whether or not any change in road user behaviour has led to a reduction in the appropriate type of accidents. At this stage, some statistical interpretation of the results is required'.

The report also outlines the work of the steering group set up to study the revision of the Stats 19 which will be necessary to enable the road safety officer to carry out his duties in accordance with this philosophy.

The revised Stats 19 forms came into effect in 1979, except those discussed earlier. Variables to be deleted from the old Stats 19 were given in Appendix A of the Second Report of the Steering Group, 1976, op.cit., and are reproduced in Appendix 46. It can be seen from this, that some ten areas were considered and the reasons for deletion is, in most cases, due to the data being unreliable. Appendix B of this same report, however, provides details of the data on the new Stats 19 form. This is given in full in Appendix 47. From these, it can be seen that nineteen new variables have been added to the Stats 19 form. Local additions permitted on the new form but not required by the Department of Transport are as follows:

- Parish/Town Council area
- Police/Local Authority Special Projects

- Clear language descriptions of accidents and schools attended

Validity checks are now built into the accident reporting system and the Department of Transport recommend those checks to be carried out as shown in Appendix 48. This did not present a problem in Dorset as the Stats 19 revision meant building in cross check procedures on the new variables. How these developments affected Dorset is outlined below and the management implications are discussed.

2.2 Local Development

From locally held internal records, Road Traffic Accident reports were kept as early as 1909. These were not detailed records for statistical interpretation but rather to see if an offence had been committed which resulted in the accident happening. Analysis was, therefore, limited to those variables allowed for on the form in use at the time but these are rather incomplete. Up to 1914, and the years immediately after the Great War, communication was very slow, particularly in the more rural parts of the county. To cycle for nearly an hour on a stormy night to the scene of a reported Road Traffic Accident was not treated with enthusiasm when on arrival, there was nobody to be seen, and it is later discovered that the parties to the accident, including the injured had made their way to a local inn almost one mile away! This was taken from 'A short history of the Dorset Constabulary', 1972. This was an interesting look at traffic on Dorset roads in 1913. Even with increased use of roads and the advent of the personal radio and telephone system it is still as likely to happen today. This short history goes on to tell us that the bicycle was used for reasons of mobility in 1894. It is interesting to note from 'police standing orders' of 1895 which states:

'the Chief Constable orders that whenever a Superintendent has occasion to send a constable on duty on a bicycle he must satisfy himself that the man is sufficiently a good rider to avoid the machine getting beyond his control'.

By 1896, police officers were receiving an allowance of three pounds per annum for using their own machines and bicycles were generally were held to be carriages within the meaning of the Highway Act. They had, therefore, to carry a lamp one hour after sunset to one hour before sunrise and also:

'upon overtaking any cart or carriage, horse, mule or other beast of burden or any foot passenger every such person, shall, within reasonable distance from and before passing, sound a whistle or bell or give other audible and sufficient warning of their approach', (extract from Dorset Police Standing Orders, 1897).

It seems the Chief Constable continued to view the mode of transport with a critical eye for he observed that he:

'is aware that on account of the many accidents that are constantly occurring, the police cannot be too strict in enforcing the above regulations, especially as to warning foot passengers. Officers in charge of divisions will, therefore, pay particular attention to this matter and if necessary, Constables will patrol the roads in plain clothes to put a stop to the dangerous practice of cyclists coming upon persons without warning'.

Whether it was the bicycle which prompted him to issue the police with whistles and chains is not stated, but the fact remains that their appearance in the police force was coincidental. The menace of the bicycle may also have been responsible for his order in 1896 that all policemen must undergo the St. John Ambulance Brigade course, an order which is still in force today for all traffic division officers. The shortage of horses, and the development of mechanical transport during the Great War had hastened the closing of the County Constabulary stables. The horse had served as the principal means of transport since the force was established but in 1914, the Chief Constable reported to the Standing Joint Committee that the necessity for prompt and rapid communication had created the need for a motor-cycle and side-car to be available at Headquarters for use by the Superintendent. A machine was hired for two pounds per week and 100 gallons of petrol was bought at 1/6d per gallon (approx. 7.5p). The year in 1915, owing to the disposal of worn out horses, and the difficulty of securing replacements, three 2.75 hp., Douglas motor-cycles were purchased for use by the Superintendents at Portland, Sturminster Newton and Wareham. By 1919, there were few horses remaining and, with the exception of one at Sherbourne, they were all disposed of and motorcars were purchased in their place. In July, 1922, the Standing Joint Committee accepted the offer of the Superintendent at Sherbourne to use his own car on duty with an allowance of sixty five pounds per annum, and the last horse was thereupon returned to the military authorities. In 1924, the Police Authority gave permission for the carts and harness to be sold by auction and this transaction closed an era and the faithful horse had gone. This was taken from the minutes of the Standing Joint Committee which is now known as the Police Committee.

The motorcar was now beginning to be a serious problem for the police, just as the bicycle had been 30 years earlier. On the occasion of one of the visits of H.R.H. The Prince Of Wales to the County, whilst praising those on duty for the way in which they comported themselves notice that:

'a few of the Constables posted at dangerous corners or bends and crossroads failed to signal or warn an on-coming vehicle, the very reason for which they were posted at these places. A handbook of traffic signals is now in the possession of each Constable and the instructions contained therein must always be adhered to' (A History of the Dorset Constabulary, 1972, op.cit.).

Meanwhile, the Home Secretary was urging police authorities and Chief Constables to provide mobile police for the purpose of enforcing the Road Traffic Act, 1930. Major Peel-Yates, the Chief Constable of the time, secured approval to purchase eight Norton motor-cycles and with this small fleet of machines, the motorised patrols made their first appearance on the roads of Dorset. Motorcars were not bought until 1935, when three motorcars were purchased to replace worn out motor-cycles at Blandford, Dorchester and Poole. By 1938, the authorised fleet of police motor vehicles had increased to nineteen, comprising the following:

Table 7a

1938

6 Patrol Cars
6 Crime Cars
7 Motor-cycles

It was decided in 1938 to set up a Department whose sole responsibility was traffic matters. This department would be under the supervision of an Inspector, with garage and workshop facilities at Headquarters. In the post war years this department expanded more rapidly than any other, owing to the correspondingly heavy increase in road traffic and the swiftly changing pattern of police duty on the highways of the County. Within the next 18 years (by 1953), the fleet had increased to:

Table 7b

1953

12 Patrol Cars

12 Section and Crime Cars

1 Van

1 Truck

7 Utilities

19 Motor-cycles

a total of 52 vehicles, many of which were now equipped with wireless sets. The size of the traffic department continued to grow in size throughout the next 20 years and on local government reorganisation in 1974 the Dorset Constabulary became the Dorset Police. Its traffic department became known as the Traffic Division and its fleet comprise the following vehicles.2

Table 7c

1974

26 Patrol Cars

19 Motor-cycles

All other vehicles come under the control of a civilian Transport Manager and are used for a variety of operational reasons.

2.3 Police and County Commitments since 1974.

On local government reorganisation, in 1974, the Chief Constable split the county of Dorset into two halves for reasons of operational efficiency and Fig 1 below shows the hierarchical tree committed to road traffic duties.

Fig 1

Chief Constable
Deputy Chief Constable
Assistant Chief Constable

Traffic (West)		Traffic Management	Control	Traffic (East)
Supt.		Chief Insp.	Chief Insp.	Supt.
Chief Insp.			Insp.(5)	Chief Insp
Insp(4)	Control		Sgts.(5)	Insp.(4)
Sgts(5)	Insp.(5)		Const.(18)	Sgts.(5)
Const.(65)				Const.(50)
Accident Prevention				Accident Prevention
Sgts.(1)				Sgts.(1)
Const.(1)				Const.(1)

2. It should be remembered that until local government reorganisation in 1974, Christchurch and Bournemouth formed part of Hampshire and not Dorset as today.

Vehicular strength was distributed as 13 cars and 9 motor-cycles to cover the Western half of the County[3] and 13 cars and 10 motor-cycles to cover the Eastern half. The total strength of the traffic division at this time was some 180 officers. To deal with the Stats 19 data now generated by this new division, Dorset County Council, in 1974, set up an accident investigation and analysis unit whose task it was (and still is) to use this data in order to provide the County Surveyor with information that would assist him plan and implement effective and efficient remedial measures. It was also to assist the County Road Safety Officer identify particular problem areas and thus enable him to effective Education, Training and Publicity programmes. Fig 2 below shows the hierarchical tree in use in 1974.

County Surveyor **Fig 2**

Deputy

Assistant County Surveyor

Planning Officer	Development Control Off.	Chief Traffic Engineer	Group Leader Struct. Plans

Accident Inv. Records Traffic.Man St.Light. Road Safety

Team Leader(1)

Clerical Officer(1) Full-Time

Clerical Officer(1) Part-Time

3. The western half of the county comprises North Dorset, West Dorset, Purbeck, Weymouth and Portland, whilst the eastern half comprise Wimborne, Bournemouth, Poole and Christchurch.

The team leader had the responsibility at this time for traffic management, particularly orders and signs and consequently was to split his time equally between these two responsibilities. In practice, it was discovered that very little time was spent on accident investigation activities (around 20%) and the various activities within the traffic management area were given priority. This was largely due to political pressure and a lack of staff time. Reading old correspondence and committee minutes of the time, it can be seen the rivalry which existed between the various areas in the county particularly Bournemouth and Poole. If one had more pelican crossing points approved4 than the other, then considerable discussion both written and verbal would ensue! In an attempt to rectify the situation, the County Surveyor reorganised the Transportation Group in 1979 and the structure outlined in Fig 3 below is still relevant in 1985. (see Transportation and Engineering Establishment proposals, 1979, Dorset County Council).

Assist.County Surveyor **Fig 3**

Group Engineer	Chief RSO
Team Leader	Team Leader(Street Lighting)
Traffic Management	Accident Investigation and Records
	Technician (1)
	Clerical Officer (1) Full-time
	Clerical Officer (1) Part-time

4. At this time, county policy was to gradually replace zebra crossings with pelican crossings in order of priority.

From this reorganisation, it can be seen that the Accident Investigation Unit increased by one full-time technician. This is discussed in more detail in the next chapter. Similarly, the Chief Constable reorganised his activities in this respect effectively reducing strength to around 160 officers but showing a marginal increase in vehicular strength. It is not the intention of this thesis to examine the police commitments to policing policy and strength levels as unlike the County Council's Accident Investigation Unit, can be redirected as operational commitments dictate. Subject to this, the thesis recognises this and Stats 19 generation is considered from this standpoint. Likewise, it must be appreciated that non-traffic division officers might be required from time to time to become involved in a Road Traffic Accident and, therefore, the thesis must consider the role of all uniformed police officers in this activity. This aspect is dealt with later in Chapters 3 and 8. In Fig 4 below, an outline of the current (1985) police hierarchical structure is given showing the Traffic Division as it now stands.

In terms of vehicular strength, the traffic division has the following for operational police duties. (Police Establishment figures and structures, provided by the Traffic Divisional Commanders Office, Police HQ, Winfrith, Dorchester).

- 26 Patrol Cars
- 24 Motor-cycles

The manning levels shown in Fig 4 below show an approx, 10% reduction with a similar increase in vehicle strength.

Fig 4

Chief Constable

Deputy

Assistant

Operation Div. C.I.D Traffic Div. Management Serv.

Chief Superintendent

Superintendent

Traffic(West) Traffic Man. Control Traffic(East)

Chief Insp(1) Chief Insp(1) Chief Insp(1) Chief Insp(1)

Insp.(3) Control Insp.(5) Insp.(3)

Sgts.(6) Sgts.(5) Sgts.(5) Sgts.(6)

Patrol(49) Const.(5) Const.(20) Patrol(46) APO(2)

APO(1)

2.4 Financial Commitments since 1974

The Chief Road Safety Officer of Dorset County Council has no control or any say in the number of police officers employed or the duties which are performed by them, and no influence can be exercised in this respect. For the purposes of this thesis, therefore, only those costs relating to the County Council's commitment to accident investigation can be considered here, and for this purpose, Figs 5 & 6 below show the 1974 and 1985 financial commitments in this regard illustrates the comparison between accident investigation, traffic management, street lighting and road safety at this time (see Fig 2).

It should be remembered that in terms of financial estimating, traffic management and accident investigation are budgeted for together, therefore, both Figs 5 & 6 above show the amount spent on accident investigation in relation to other traffic management activities (see Fig 3). Despite road safety and the school crossing patrol service operating separately from the traffic management section, street lighting has increased its spending provision in real terms, since 1974/5, by some 4% whilst the aids to movement (traffic management) unit by some 5% over the same period. The accident investigation unit can show no such increase. Table 8 below gives a breakdown of the finance involved.

Figure 5

Financial Distribution in 1974/5

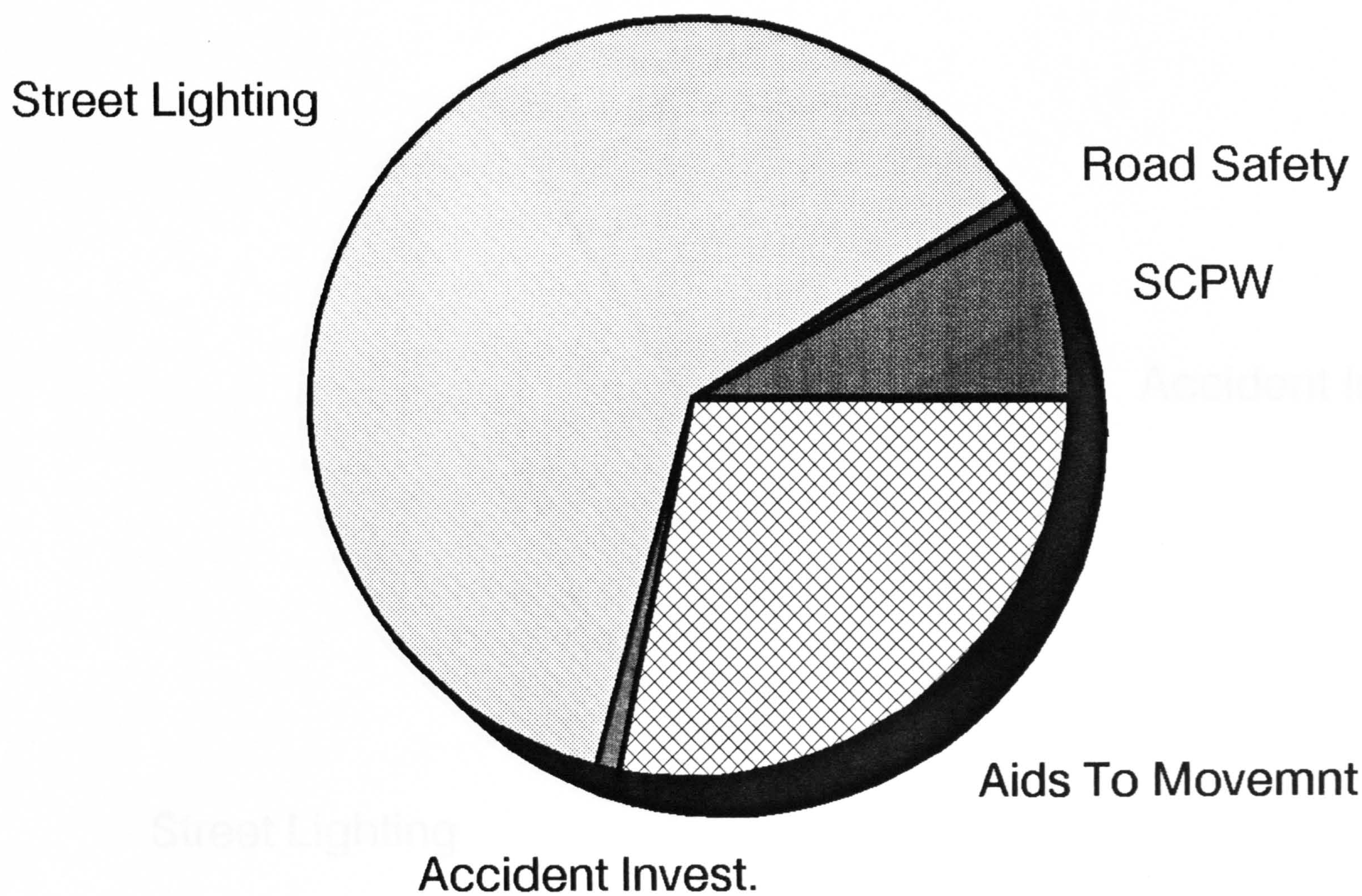


Figure 6

Financial Distribution in 1985/6

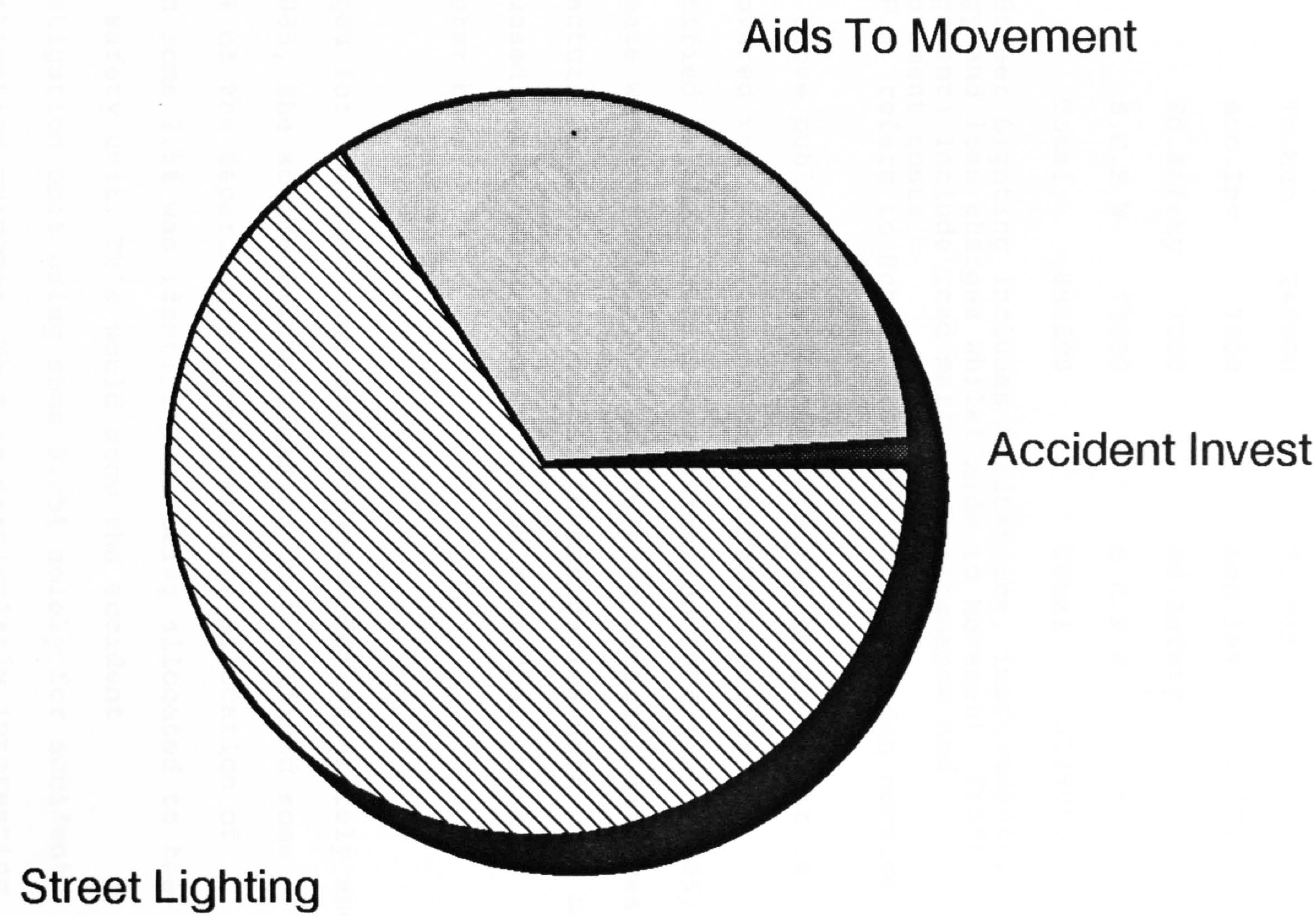


Table 8

Year	Heading	Amount	Year	Heading	Amount
1975/5	St.Light	554000	1985/6	St.light	2085000
	Tr.Man	246000		Tr.Man	1034000
	Acc.Inv	7000		Acc.Inv	20000
	Rd.Safety	7000		Rd.Safety	-
	S.C.P.W.	73000		S.C.P.W.	-
	Total	889000		Total	3139000

NB. Street Lighting includes maintenance, improvements, energy and loan charges whilst Aids to Movement (Traffic Management) include road marking, maintenance and improvement costs.
S.C.P.W. refers to School Crossing Patrol Warden service.

From those published estimates referred to above, it is discovered that the 7000 pounds and 20000 pounds identified as the accident investigation 1974/5 and 1985/6 estimate was actually spent on low cost remedial measures. The actual work of the accident investigation unit will be discussed later but generally the bulk of their work is computer based.

Charges for computer time are accounted for separately and in 1985, the accident investigation unit utilised some 5.75% of the departmental computer time allocation of which some 2.5% was identified as being allocated to the road safety unit. This would show the accident investigation unit using some 3.25% solely for accident investigation purposes. This is particularly interesting as no financial limit is placed upon departments in respect of their computer usage. However, time is measured and a charge is made via the internal credit transfer system. This means that if the accident investigation unit required more time and that facility was available, then no restriction is placed upon the unit in the number and times of each enquiry made. It can be shown, however, that in 1974/5 computer time utilised by the accident investigation unit was some 3%. Since this time, a slight increase in real terms of some 0.25% is shown. This, together with a constant financial commitment over the same period might indicate a low priority and little or no no increase in output. These two issues are discussed later in the text. This is particularly important, particularly as Circular Roads 12/75, op.cit., recommended that all remedial measures should be based upon some form of accident analysis.

2.5 Traffic Accident and Route Analysis (T.A.R.A.)

This system was introduced in Dorset in 1982, and is still in its experimental stage. Dorset County Council are members of a consortium which include members of the following shire counties; Wiltshire, Buckinghamshire, Gloucestershire, East Sussex, Norfolk, Mid-Glamorgan, Oxfordshire, Somerset, West Glamorgan and Derbyshire. Also involved are the civil engineering consultants 'Transportation Planning Associates', who will be responsible also for the marketing of this computerised system to other local authorities and organisations both commercial and private.

Since the early 1960's, engineers have used computer programmes to carry out a wide range of analytical and data storage tasks. Initially, free standing systems were developed, but later the advantage of drawing together and cross referencing the output from different sources was recognised. In 1972, work commenced on the TARA system which then stood for 'Traffic and Accidents on Roads Analysis'. The principle was to relate all data to a fully digitised network, incorporating a node and link framework and to specify the network by means of Ordnance Survey Grid References. The ability to relate data other than traffic and accidents to a TARA network was recognised and during recent years, the need to assess the priority and economic justification for all highway work, including maintenance, has increased in importance as can be seen above. The TARA consortium has now identified more than eighty potential items of input or output data of which eighteen have so far been cross-referenced using the TARA system. In recognising this increased range of functions, TARA is now regarded as an acronym for 'Technical Appraisal - Route Analysis and Stats 19 data forms a major part of the economic and priority setting process. A list of possible inputs and outputs is given in Appendix 49.

2.6 TARA Accident Rating System.

The TARA system is designed to develop a method by which all Road Traffic Accident rates can be directly compared, whatever the type of road or volume of traffic using it. The TARA accident rating system, therefore, uses a moving cursor method to determine the number of Road Traffic Accident's per million vehicle kilometres at points throughout the length of the road, and merge these individual results into reporting lengths. By reference to a user's existing accident system, based upon Stats 19, the TARA network and traffic files calculate the length of road over which accidents have happened during the passage of one million vehicle kilometres, having regard to any changes in the road network that may have taken place during the study period. This is known as the cursor length and the process involves placing the cursor successively on each accident location and recording the number of accidents 'captured' within its length.

From this, the results provide a quantitative analysis of the accident rates throughout a route, and the information is assembled and presented to the user in such a way that direct comparisons can be made between roads of any type when assessing priorities for remedial action. The TARA system, is now in its 'trials' stage of development within the local authorities making up the consortium. However, the purpose of this thesis is not to comment upon the TARA system itself but to question the quality of the data the system and engineers are relying on within this type of system. Such a system can only produce results as good as its data base input. If the multi-million pound development programme is to succeed, then it is essential that the primary accident data is as reliable as possible from the outset and the thesis examines this in more detail later in Chapter 7.

There are several other systems under consideration or in current use and all rely upon the accuracy the primary data input. It is not necessary to describe these other systems here except to acknowledge their existence.

Chapter 3

3.0 The Present Situation : Some weaknesses in official statistics

3.1 Inaccuracies in 'official statistics' have been suspected for a number of years, and several studies have been undertaken by various individuals, groups and institutions. Although the evidence presented here refers to other subject areas, its relevance to this particular study is highlighted in the text and comparisons are drawn between this research and accident statistics.

For rigorous empirical statistical evaluation to succeed in Road Traffic Accident analysis terms, two basic requirements are to be met. First of all, the data base needs to be correct, but more importantly needs to be complete. In those three studies conducted by Bull & Roberts, 1975, op.cit., Pedder, et al, 1981, op.cit., and Hobbs, et al, 1979, op.cit., all indicate differing levels of under-reporting and generally only two classes of road user were chosen for the study. All these reports concern the examination of hospital records at one city hospital within their study areas, ie., Birmingham, Reading and Birmingham respectively and question only the casualty rating given on the Stats 19 form as being incorrect in around 30% of cases but incomplete in cases ranging from 36 to 60% depending whether the casualty was a cyclist or a motor-cyclist. Hepworth, McDonald and Hall in their study entitled 'Accidents to cyclists - a pilot study of levels of reporting and severity', published by the University of Southampton in 1984, found similar levels of under-reporting. However, only 34% of cycle records were found to be incomplete within the study area of Southampton. Hepworth does question that whilst casualty classifications might be inaccurate he suspected that 'age' might also be unreliable. As Stats 20 suggests that police officers can guess 'age' in certain cases, this assumption is not surprising. However, this aspect and other variables on the Stats 19 are discussed later in Chapters 6, 7 and 8.

At the same time, Bull & Roberts, 1975, op.cit., Pedder et al, 1981, op.cit., Hobbs et al, 1979, op.cit., and Hepworth, et al, 1984, op.cit., only examine hospital records for, in most cases, the two classes of road user (ie. motor-cycles and bicycles). It would seem necessary in such studies as these to consider the question of under-reporting in a wider context and consider General Practitioners and Community Hospitals. This is particularly important in rural areas as the nearest Accident & Emergency Department might be several miles away and difficult to get to. Such studies should also consider other groups of road user and road safety practitioners should assess the levels of under-reporting of all categories of road user, both urban and rural in their own localities.

It is of particular importance that conclusions to such studies examine the management implications of their findings. All too often, as is the case with the four studies mentioned above a probable unreliable situation has been identified and no practical advice is given as to what the road safety practitioner should do about it. This problem is exacerbated in this case, by the fact that all the 'slight' injury levels of under-reporting showed significantly different results and only two (the same two in each case) classes of road user were chosen, one can only presume, as examples. At the same time, by omitting other 'treatment centres' in their studies raises further management problems for the practitioner which is discussed later in Chapter 7.

3.2 The Stats 19 Form

It has long been recognised that police data for accident analysis purposes is desirable and Maas and Harris in their paper 'Police recording of road accidents', published in Accident Analysis & Prevention 16(3): pp. 167 - 184, 1984, discusses this need at some length. Like similar reports of this kind police records were compared with hospital records except this particular study was carried out in the Netherlands. However, Maas & Harris overlook the fact that as do the studies discussed above that the data actually recorded by the police (or hospital for that matter) might not be reliable. It is recognised that when the police arrive at the scene of a Road Traffic Accident, they have a list of priorities, one, of which, is the completion of accident data forms. It must be remembered too, that any policeman, whether a traffic trained constable or not, can be the first to arrive at the scene of an accident and in normal circumstances would see the administrative process through to its conclusion. However, in Dorset, the Chief Constable has issued a policy statement that says:

'where a particularly serious accident occurs or one which seriously interrupts the flow of traffic, then, if available, such an incident will be dealt with by the traffic division'.

This would mean that the local beat of other non-traffic officer would then revert to providing assistance only. Most slight injury accidents reported to the police in rural areas are dealt with by non-traffic division officers. This information was obtained by noting the PC number assigned to Road Traffic Accident records during 1984. In Fig.7 below is a flow chart showing, in brief, the duties of a police officer at the scene of a Road Traffic Accident. This figure also indicates the Stats 19 completion task in relation to these other priorities.

In Chapter 6, it is intended to examine the police attitude to Stats 19 and to observe its completion in some detail and at the same time describe an observational study which has been carried out to see first hand, how and when, Stats 19 data is generated and to obtain some idea how long its completion takes. This is particularly important, as will be seen later, and memory must be considered at this stage and is an important factor if detailed notes are not kept at various stages of the data collection exercise.

__Police Priorities At The Scene of a Road Traffic Accident.__

__Fig.7__

	1.	R.T.A.	
	2.	Arrival of Police	Call Emergency
	3.	Protect site to	Services if
		Prevent further	required.
		Accidents	
	4.	Deal with injured	Liaise with
			emerg.services.
	5.	Obtain information	
see if an		from parties involved	
offence has		and details of any	
been committed		witnesses who saw the	
		R.T.A.	
	6.	Normalise traffic	
		flow as soon as	
		possible	
	7.	Take statements	
	8.	Process documents	
		and complete	
		Stats 19	

__Notes__
On arrival at the scene, it is usual for the two traffic officers to split their functions. It is common for one to deal with site protection, whilst the other will deal with

the injured and enquire as far as possible, what happened. Once the site has been protected and warning signs erected, one officer would then take details from those parties involved and any witness details. As expected, emergency services, if required are summoned at the outset. Fatal accidents and extremely serious injury accidents are normally photographed, therefore, early on in the process, the police will summon their accident investigation unit. On most occasions, in these circumstances, vehicles are taken away after a detailed site investigation for mechanical examination.

In many fatal and serious Road Traffic Accident's, a police officer may be unable to deal with all of item 5 above (see Fig.7), as depending on the nature of injury sustained basic information such as name, address, age, etc., cannot be obtained for, in some cases, several hours or even days. Item 8 above can sometimes take place days or even weeks later.

To complete the Stats 19 document in its present form and somewhat traumatic environment does rely upon memory and subjective judgement. It is necessary, therefore, to attempt to quantify those areas on the Stats 19 which can be regarded as 'accurate' and those regarded as 'unreliable' in more detail.

Cicourel, in 'The Social Organisation of Juvenile Justice', 1976, looked at the question of official statistics from a different but relevant standpoint. In this particular case, Cicourel looks at delinquency levels in two American cities emphasising the transformations police, probation and schools have on the original event. Cicourel argues that these bodies actually generate delinquency by their routine encounters with juveniles. He states that:

'the police, like all members of society, operate with background expectancies and norms or a sense of social structure that enables them to transform an environment of objects into recognisable and intelligent displays making up everyday social organisation'.

He goes on to say that the police acquire specialist skills which enable them to decide 'normal' against 'abnormal' circumstances, decide crucial elements of their sense of social structure. Cicourel argues that:

'when the police officer discover, or are called to the scene of a supposed violation of the legal order, their sense of social structure and memory of past events in the neighbourhood provide initial interpretations as to what happened'

This argument is particularly relevant in the case of a police officer arriving at the scene of a Road Traffic Accident. Cicourels' point that expectations and norms based upon passed experience is particularly interesting in that a large part of the Stats 19 form requests items of information that can be regarded as 'subjective' but this argument can also bring into question other area on the Stats 19 form which have previously been regarded as 'factual' or reasonably accurate. In questioning a number of police officers it was found that generally, they found the Stats 19 document a chore and were not really aware why it was filled in. This affected their attitude towards it with the result that its accuracy and importance suffered. The thesis develops this issue further in Chapter5, and Cicourels' arguments are considered in greater detail.

Saunders, in 'Demands for Motor-cycle Training in a Shire County', published by the Journal of the Institute of Road Safety Officers 73(3) pp. 5 - 13, 1985, discovered a statistical difference between answers given to police questioners and civilian questioners in relation to a market research exercise conducted in Dorset to ascertain some reasons as to why or why not learner motor-cyclists undertook training. This confirms Cicourels' argument that police and probation officers obtain differing responses in his study but also confirms other findings in relation to eyewitness testimony which is discussed later in para. 3.6 below. Anderson, in his Ph.D. thesis entitled 'The Availability and Achievement of Cultural Categorisations : A case for the Therapeutic Actor', 1980, warned that:

'the environment in which a case is dealt is a crucial issue and can alter a reaction or response from the 'actor''. This argument is considered below in further detail and its importance and relevance is discussed.

3.3 Observation of Traffic Police Officers on Duty

From July, 1985, to August, 1986, the author spent some 120 man/hours on duty with police traffic patrol officers travelling as an observer. The purpose of this exercise was to gain first hand experience and to obtain a greater understanding of the role of a police road traffic officer. This was particularly important at the scene of an actual Road Traffic Accident to see the processes involved but also it provided an opportunity to place the Stats 19 into context and assess more accurately its order of priority, whilst at the same time seeing the form actually being completed.

It was of some concern to the author that police traffic officers considered the completion of the Stats 19 a chore and its importance very low in their working situation. It was also discovered, that these officers had not recently been shown what the Stats 19 forms are used for and were uncertain as to the decisions that are taken on them. These preliminary observations prompted a questionnaire to all police officers in order to confirm this view. This is discussed later in the text. However, Shinar, 1983, in his report entitled 'The validity of police reported accident data', showed that in Indiana, in America, that the local police, from a sample of 124 Road Traffic Accident's studied, wrongly reported some factors but were found to be accurate in terms of reporting location, day of week, date, number of drivers involved, passengers and vehicles involved. Shinar found that the least reliable was accident severity and road condition. Regrettably, this study was conducted in America where traffic policing policies are not compatible with those in Dorset and some variables considered in the report do not form part of the Stats 19 form. In the U.K., the police, on arrival at the scene of a Road Traffic Accident have a duty, first and foremost, to see if an offence has been committed and to take any appropriate action. To this end he will record certain information. If Shinar faced a similar situation in Indiana, then clearly a difference in priority exists and it must be accepted that a difference in data collected for different purposes will have varying levels of importance depending on who collected it and for what reason. However, Shinar's report was basically an exercise in testing the reliability of data collected between three types of police force responsible for policing the state of Indiana therefore its relevance to the local U.K. situation is limited. This is discussed later in Part 2 of this thesis.

3.4 Medical Records

This aspect of the thesis relies upon research methodology rather than direct literature research. Despite an in-depth on line data search, it was disappointing to discover that little exists in this area, other than those discussed earlier in the text. A few similar studies to those conducted by Bull & Roberts, 1979, op.cit., Pedder, et al, 1981, op.cit., Hobbs, et al, 1979, op.cit., and Hepworth, 1984, op.cit. have been conducted abroad but the relevance of these are discussed in other sections of this thesis. The importance of localising the study in order to assess the implications for the road safety practitioner became clear following interest by the Wessex Regional Health Authority, British Medical Association and the Transport and Road Research Laboratory of the Department of Transport. Correspondence supporting this is given in Appendix 50. This aspect of the study was the most crucial and required delicate handling. Examining hospital and

General Practitioners records is a sensitive issue and medical confidentiality is essential. Those committees and organisations whose approval for the study was required is listed below in order of priority:

- Community Medical Committee (CMC)
- Local Medical Committee (LMC)
- District Research & Ethical Committee
- Appropriate Health Authorities for administrative purposes.

In the case of G.P. records, the same procedure is required as described above, except approval from the Family Practitioner Committee is also a necessity. Due to committee timings, it took from August 1985 to the end of March 1986 to obtain the necessary authorities to conduct the survey. Having obtained these agreements, see Appendix 51, the study could proceed.

A small co - ordinating committee was formed with the author as chairman comprising the following members:

- Consultants in charge of the various Accident and Emergency Departments concerned.
- Directors of Community Medicine from both East & West Dorset Health Authorities.
- Specialist in Community Medicine from Wessex Regional Health Authority.

It was necessary to form this small committee for the following reasons:

- To standardise the type of information recorded by all hospitals.
- To standardise the type of information extracted from hospital records.
- To agree the methodology5
- to allow selected patients to be interviewed

5. The medical members of the committee agreed to provide additional manpower support if the extraction phase could include all accident data rather than just Road Traffic Accident data. The committee felt that this additional information would be of great value to the RHA and local health authorities for planning purposes.

This approach was necessary if the project was to be of practical use to road safety officers in the long term. The thesis develops this area in greater detail later. Logistically, a trial survey was required and this was undertaken at the following hospitals whose Accident & Emergency departments cover the County of Dorset:

- Poole General Hospital
- Salisbury Royal Infirmary
- Weymouth District Hospital
- Yeovil District Hospital

It was necessary to include Salisbury and Yeovil hospitals in order to assess their involvement in the treatment of Dorset casualties. The pilot study, therefore, was held and ran from 1st January 1986 to 31st December 1986, and involved an ongoing study of Road Traffic Accident's involving riders of Powered Two-Wheeled Vehicle who were given medical treatment at these centres.

The project co-ordinating committee agreed to participate in a general one year study which ran from 1st July 1986 to last day of June 1987. However, no samples existed to show the level of involvement Community hospitals made to the treatment of Road Traffic Accident casualties, or, indeed, General Practitioners. A two month study of G.P's., was granted and the Community Medical Committee agreed that the following Community hospitals should take part. These are:

- Swanage Hospital
- Victoria Hospital (Wimborne)
- Blandford Hospital
- Bridport Hospital
- Lyme Regis Hospital
- Yeatman Memorial Hospital (Sherborne)
- Westminster Memorial Hospital (Shaftsbury)

These establishments were contacted individually and records examined. Further details are given later in Chapter 7.

3.5 Allied Accident Research

Whilst very little research has been conducted in relation to road traffic accidents using data from a different source other than Stats 19, it would appear that other accident research is similarly undersubscribed. The Office of Population Censuses and Surveys, publish an annual summary of 'Mortality statistics, cause. Review of the Registrar General on Deaths in England & Wales', published via HMSO in 1984. In this review, a series of statistical tables based upon returns from a number of organisations. The Home Office publish 'Fire Statistics United Kingdom' which show those incidents where the fire services have been called upon. Whilst it is not the intention of this thesis to comment upon the accuracy of such statistics, it serves to show the type and availability of such information available to researchers in the field. The Department of Trade and Industry publish similar information and in 1983, the Department of Health and Social Security published 'Hospital Inpatient Enquiry', (H.I.P.E.), main tables, 1981', series MB4, No.18, which was based upon hospital information relating to patient/casualty treatment. Although the report was based upon a 10% sample the figures presented do not discriminate between repeat visits made by the same patient. Further problems exist in using national data is that no one agency or government department seems to operate the same areas. For example, the Department of Transport define the 'South West' differently than the Home Office, Regional Health Authorities and even professional organisations such as the Institute of Road Safety Officers will interpret the region differently. For a road safety practitioner responsible for operating within his terms of reference will not find much solace in these National statistical reviews. This is discussed later in Chapter 4.

3.6 Statements made to the Police

It has long been recommended that road safety practitioners should make use of statements made to the police as an aid to accident analysis. Chapter 4 of the Department of Transport 'Accident Investigation and Prevention Manual', 1974 states:

'In those cases where the preliminary study fails to reveal dominant accident types in which the common factors clearly indicate the remedial action required, it will, if the problem is sufficiently serious, be necessary to undertake a study in greater depth. Whereas the preliminary study relies on the more general accident detail selected for routine processing plus a systematic but relatively brief site survey, depth study involves the analysis of the entire data contained in the original police reports for each accident plus the statements of witnesses and those involved.......'.

If police reports and/or statements made by witnesses are to be used by road safety practitioners, it is essential that the accuracy or reliability of such documents is considered. Considerable research has been conducted in evaluating eyewitness testimony and those works discussed here are by no means exhaustive. Two important factors need to be considered when dealing with statements made to the police. Firstly, 'time' has been identified as an important factor in being able to recall relevant factors but, secondly, 'memory' is of prime importance. These factors need some discussion here in order to give the reader an insight into this intriguing aspect of accident analysis. However, Loftus in 'Eyewitness Testimony', published by Harvard University Press in 1979, showed that before a witness can recall a complex incident, that incident must be bright enough, loud enough and close enough to be perceived but even when attention has been paid to an incident, significant errors have been discovered in a witnesses recollection of the event. Laughery, et al, in 'Recognition of Human Faces', 1971, confirmed this view. Briefly, Laughery and his associates showed four slides one at a time. Some subjects viewed the slides for 10 seconds (2.5 seconds each) whilst others viewed them for eight seconds each. Two different target faces were used in the experiment. Both faces were white but one had fair hair whilst the other dark hair. One wore glasses. Some 8 minutes later, the subjects viewed a test series of 150 slides of human faces. The subjects were to indicate whether each slide was or was not the target. Naturally enough, Laughery and his team found that subjects were much more accurate at remembering a face they had seen for eight seconds rather than 2.5 seconds.

58% who had viewed an 8 second slide correctly identified the target face against 47% for those viewing the 2.5 second slide.

Loftus, op.cit., points out that stress or fear that a witness is experiencing will influence perception as will prior knowledge or expectations that a witness brings to bear upon the event. For example, some witnesses try very hard to remember all the details that they can whilst others are preoccupied with ways in which they can avoid being a witness. Jones, in 'Applied Problems in Memory', edited by Grunberg and Morris and published by Academic Press in 1979, concluded that noise produces effects at acquisition and recall, temperature effects retention and recall, time of day was found to be crucial on memory loading (he found memory performance at its best in the morning) and sleep loss acts proactively and retroactively. He found that the retroactive mode sleep is beneficial. The proactive effects depends upon the length of sleep deprivation. Long periods of sleep loss produces lapses of attention. Baddeley, in 'Selective attention and performance in dangerous environments', published by British Journal of Psychology in 1972 writes that one way to obtain evidence of stress is to watch the performance of soldiers in combat. In the heat of battle, the probability that a soldier will use his rifle effectively is much lower than in training. For example, during the battle of Gettysburg in the American Civil War, over 200 of the muzzleloading rifles used were found to have been loaded 5 or more times without being fired. One was found to have been loaded 21 times without being fired once. Several other military studies have been undertaken to show the effects of stress and anxiety, thus confirming Baddeley's view. Burken, et al, observed recruit soldiers on a military exercise dealing with a situation in which they had not been trained and Johnson and Scott in 1976, describe a similar test involving weapons. Road Traffic Accident's are described as stressful events and the relevance of this research is discussed further on pages 83 and 84.

Loftus, op.cit., states that when a witness sees a serious event such as a Road Traffic Accident and is required to recall what had been seen later, then three major issues or stages are identified. These are:

- the acquisition stage
- the retention stage
- the recall stage

In relation to the acquisition stage, there are numerous factors which will affect the accuracy of the initial perception. Some of the factors, such as the amount of time the witness had to look at whatever is going to be remembered are inherent in the situation itself. Other factors, such as the amount of stress a witness is experiencing are inherent in the witness. Both event factors can dramatically affect a witness's ability to perceive accurately. Once information enters the memory it may reside there for some time before the witness attempts to retrieve it. At this point, another set of factors come into play. Loftus, op.cit., in a series of experiments, shows the effects of post event information and information enhancement, how memories can be compromised and how non existent objects can be included in memory.

Loftus in 'Leading Questions and the Eyewitness Report', 1975, subjects were shown a film of a multiple car accident in which one car, after failing to stop at a stop sign, makes a right - hand turn into the main stream traffic. In an attempt to avoid a collision, the cars in the oncoming traffic stop suddenly and a five vehicle bumper to bumper Road Traffic Accident results. The film lasted less than one minute and the accident itself occupied a four second period. At the end of the film, the subjects were given a diagram of the accident, in which the letter 'A' represented the car that turned right and ran at the stop sign, whilst 'B' to 'F' represented the cars involved in the Road Traffic Accident. All subjects were asked a series of 10 questions. The first question in the series asked about the speed of the car that caused the Road Traffic Accident in one of two ways:

(i) How fast was car 'A' going when it ran at the stop sign?

(ii) How fast was car 'A' going when it turned right?

75 subjects were asked the first question and 75 different subjects were asked the second question. The last question in the series,question 10 was identical for all subjects and it asked whether the subject had actually seen a stop sign for car 'A'. If the earlier question had mentioned a stop sign, 53% of the subjects reported later on that they had seen a stop sign. However, if the earlier question had not mentioned a stop sign, then only 35% of the subjects claimed to have seen the stop sign. Thus, it was concluded, that by simply mentioning an existing object, it is possible to increase the likelihood that it will be recalled later on.

In 1977, Loftus in a paper entitled 'Shifting Human Colour Memory', the aim was to demonstrate the compromise response. A series of 30 colour slides depicting a car-pedestrian accident was shown for 3 seconds each to 100 subjects. In this series, a red Datsun is seen travelling along a side street towards a junction. The car turns right and knocks down a pedestrian who is crossing at an authorised crossing point. A green car drives past the Road Traffic Accident, but does not stop. A police car arrives and the officer attempts to help the victim, whilst a passenger who had been in the red Datsun goes for help. Immediately after viewing the slides, the subjects were asked to answer a series of 12 questions. For half of the subjects, question 10 falsely informed them that the car that drove passed the Road Traffic Accident was blue and not green. The other half of the subjects, the control group, received no colour information. After 20 minutes, a colour recognition test was administered. All subjects were shown a colour wheel of 30 colour strips and were given a list of 10 objects. For each object, their task was to choose the colour that best represented their recollection of the object. The results showed that the subjects who had been given the blue information tended to pick a blue or bluish-green as the colour they remembered for the car that passed the Road Traffic Accident. Those not given any colour information tended to choose a colour near the true green. Thus, the introduction of the false colour, it was concluded, significantly affected the ability of subjects to correctly identify a colour that they had seen before.

Introducing non-existent objects is also an important factor which can be shown to influence witness statements. When estimating numbers of people, or when recalling colours, witnesses can readily compromise between what they actually saw and what they were told. This compromise could be deliberate or unconscious. With other sorts of objects, such a compromise is more difficult. For example, a witness observes a car speed through a stop sign and later discovers it is a 'give way' sign. It would be an unusual witness who would come up with a compromise sign; most would stick to the stop sign that they actually saw, or decide upon the 'give way' sign, that they learned of later on. In fact, this is what people tend to do. In an experiment by Loftus, et al, 1978, almost 200 subjects viewed a series of 30 colour slides depicting various stages of a car-pedestrian accident. The car was a red

Datsun shown travelling along a side road towards a junction with a stop sign for half of the subjects and a 'give way' sign for the other half. The red Datsun is then involved in a Road Traffic Accident with a pedestrian as outlined above.

Immediately after viewing the slides, the subjects were asked some questions, one of which was critical. For about half of the subjects the question was:

'Did another car pass the red Datsun whilst it was stopped at the 'stop sign'?'

The remainder of the subjects in the experiment were asked:

'Did another car pass the red Datsun whilst it was stopped at the 'give way sign'?

For some of the subjects, the sign mentioned in the question was the sign that had actually been seen; in other words, the question gave consistent information. For the remainder, the question contained wrong information. Following a detailed questionnaire to the subjects, Loftus, et al, concluded that 75% of the subjects accurately responded. When the question contained wrong information only 41% accurately responded. If the subjects had been simply guessing, they would have been correct half of the time so it was deduced that the misleading question reduced their accuracy below that which would have been reasonably expected from a person who was merely guessing.

Interestingly, Loftus and Palmer in 1974, showed in an experiment how post event information can effect a witness statement. Subjects viewed a film of a Road Traffic Accident and then answered some questions about it. Some were asked 'about how fast were the cars going when they <u>smashed</u> into each other?', whereas others were asked 'about how fast were the cars going when they <u>hit</u> each other?'. The former elicited a much higher estimate of speed. One week later, the subjects were asked further questions without reviewing the film. The critical question here was 'Did you see any broken glass?' There was no broken glass in the Road Traffic Accident that they had viewed but because 'broken glass' is synonymous with Road Traffic Accident's at high speed, it seemed likely that the subjects who had been asked the question with the word <u>smashed</u> might more often say yes to this critical question. The results of this were found to be proven.

Emerging from this research are a number of important points, for both researcher, practitioner and police officer. If statements are to be given greater credibility then it is important to consider the interview methodology and structure. Persuasion, intended or not can feature in such statements if steps are not taken at the outset to minimise this risk. Clifford, 1979, argued that:

'a high status questioner would produce an inhibiting effect on testimony recall....'

This must also be a consideration. The police are grouped as high status questioners as described by Clifford. They are seen as experts on these matters and have the power to prosecute on a variety of matters. This meets Cliffords criteria for 'high status'. Backout, in 1974, suggested that subjects will be more responsive with increased status. Cross et al, 1971, Ellis, et al, 1973 and Goldstein & Chance, 1971, found that females are better than males in non-stressful incidents. This is important because a Road Traffic Accident has been described by Loftus, 1979, op.cit., as a stressful occurrence. Little evidence can be found to suggest that sex and stress is an important consideration and must clearly be the subject of further research, particularly in terms of questioner status.

Clifford & Scott, 1978, strongly suggest that one must expect different qualities of recall depending on the type of incident witnessed. The more violent and therefore more emotionally charged the incident, the poorer the recall will be. However, Clifford B, 1979, op.cit., summarised ten factors to be considered when using witness statements. These are:

> Accuracy: These have been found to be only 30 to 35% accurate.
>
> Range & Accuracy: One can predict with a high

degree of certainty that the more a person reports, the more errors will be found in it. (see Lipton, 1977.).

Relationship between certainty and objective correctness: There is no positive relationship.

Age of Witness: Cross, et al, 1971, op.cit., and Ellis, et al, 1973, op.cit., suggest that children are poorer witnesses than adults.

Sex of Witness: It seems that females are more accurate in non - stressful incidents but Kuehn, 1974, intimates that they might be less accurate than males in a stressful incident.

Lapsed Time: This has been shown above to be a significant factor.

Content of Reports: Witnesses being asked to estimate speed, distance and colours are proven to be inaccurate.

Type of Questions: We have seen above how the simple choice of words can influence a witness statement.

Type of Report: There are two types. Firstly, the interrogative and, secondly, the narrative. Early research tended to suggest that the interrogative report increased the range of testimony but reduced the accuracy (see Gardner, 1933) but Lipton, 1977, op.cit., and Marquis, et al, 1972, dispute that there is a difference.

Individual personality and Cognitive Differences: Several attempts have been made by researchers to classify observers into certain types but without much success. Clifford & Bull, 1978, have reviewed the major areas of individual differences as they apply to eyewitness behaviour, but little predictive power resides in known individual difference parameters. Very little research exists in this field other than that conducted by Geiselman & Fisher, 1986, below.

3.6.1 Summary of Witness Evidence

It was of some concern to the author that such a wealth of evidence exists in relation to the reliability of witness statements. This is largely due to the fact that this subject is not dealt with in any of the current training programmes for road safety officers or indeed upon the Department of Transport or RoSPA accident investigation courses. This area, therefore, was a new experience for the author and by definition must not be regarded as a definitive work. On the contrary, it is intended to show that caution must be exercised when in-depth accident investigation studies use such evidence. The thesis develops this research area later in the text and witness statements are examined in relation to statements made to the police in Dorset of riders of mopeds who have been involved in Road Traffic Accident's are used as an example.

Geiselman & Fisher, 1986, stressed the lack of training given to police officers in recording witness statements was a problem and suggested practical guidelines for police officers in how to:

- reconstruct the circumstances
- report everything
- recall the events in a different order
- change perspectives

Geiselman & Fisher conclude that they have conducted five experiments where cognitive interviews was found to increase the amount of correctness without increasing the proportion of incorrect information generated, but goes on to say:

'the skills of the interviewer may be a major variable in the success of the technique'.

This has management implications and will be considered later in Chapter 9.

3.7 Experimental Phase Literature.

As discussed earlier, it is necessary to examine medical records as part of this thesis and it is necessary to consider the types of accidents and also the scale of injury. The former can be dealt with easily, as the 'Classification of Diseases', Vol. 1, 1975 (revised in 1977), by the World Health Organisation is a standard work and is used widely by medical researchers. Accident types are standardised, for example, by code numbers ranging from 'E' codes (external causes of death/injury) from E890 to E899. In this particular case, Road Traffic Accident's are coded from E810 to E829. Injury scales are a means of making statistical comparisons of injuries and are used by a number of accident researchers. Several such scales have been developed to represent injuries received in accidents. The Department of Transport, has devised a three category scale referred to earlier in the thesis and these are:

- Slight injury Road Traffic Accident's
- Serious injury Road Traffic Accident's
- Fatal injury Road Traffic Accident's

It should be noted that in this categorisation, all in-patients are regarded as 'serious' injuries. Guissane, et al, 1970, found in a study that 831 pedal cycle accidents, 79% were out-patients, 20% inpatients and 1% were fatalities. Of the 79% of out-patients in the study, 11% were described by the police as 'serious'. This fact only goes to highlight the difficulties of standardising all injury scaling. The Comprehensive Research Injury Scale (CRIS) was developed to separate the criteria of injury scales (see 'The abbreviated and comprehensive research injury scales', by J.D. States, 1969). This scale allows a distinction between the needs of design engineers who might be interested in energy dissipation to medical professionals who might be more interested in the various levels of injury. CRIS is composed of five levels of separate codes. These are:

- Energy Dissipation (ED)
- Threat to life (TL)
- Incidence (IN)
- Treatment Period (TP)
- Permanent Impairment (PI)

These categories are measured from 1 to 5 with fatalities not being identified separately. In this way, each injury sustained by a casualty in each part of their body would be given a rating on each of the above categories and scaled 1 to 5. This method was developed as a more complete way of looking at injuries than the 'Abbreviated Injury Scale',(AIS), which was first introduced in 1968. It is this particular scale which is favoured by most Road Traffic Accident researchers. The scale was extended and adopted by NATO in 1970 but has since been revised four times, the latest edition being 1985. One deliberate omission from the AIS is the condition of 'shock'. This was done because no energy dissipation is involved and threat to life was a rarity of the condition.

States, 1969, op.cit., conducted validation tests on these various scales and compared his own assessment against those made by Federal Authorities. He was correct using the AIS on 82% of occasions and although very few validation tests have been conducted, it continues to be 'sharpened' by use and is used by the majority of research workers. The AIS has been similarly chosen on this occasion as it will then be compatible with other similar studies.

3.8 Management Aspects.

In management studies such as this, it is essential that all relevant system weaknesses are identified. From the study so far, evidence suggests that basic tools available to the road safety practitioner are unreliable. We have a reporting system based upon Stats 19 which may not reflect the local situation accurately and a wealth of witness and other statements, vital tools for the accident analysist, which can be shown to be unreliable. Having identified system weaknesses it is essential to consider options and strategies for probable implementation and to consider the effects of these on the organisation. To do this effectively, it is necessary to be up to date with the state of the art in terms of management training and as an integral part of this course the author undertook a specialist management course organised by Dorset County Council, in conjunction with the Local Government Training Board and Bristol Polytechnic. This course had a twofold objective:

- to update the course participants in the latest management principles and methods; and,
- to serve as a refresher or revision course in general management subjects.

Standard texts and management references which formed part of this course are listed at the end of the Bibliography. The authors main criticism of such management courses is that a gap exists between the theoretical and practical applications of objective setting and it is a prime objective of this thesis to show that this will remain a problem until Operational Resource Planning is fully understood by management students.

3.9 Summary.

The implications for the road safety practitioner in respect of those published reports discussed so far implies that the organisation must take steps to:

- improve the reliability of its current data base.
- consider the organisational resource base committed to its road safety strategy.
- consider the role of its current road safety officers.
- consider the implications and feasibility of a revised strategy and training needs.

In order to achieve these goals, the thesis develops these tactical objective issues in greater depth in subsequent chapters and concentrates on the need for localised approaches to the road safety problem. It is from this background that the Operational Resource Plan should be considered as as will be seen later as an aid to considering operational objectives.

Chapter 4

4.0 Parochial Significance : The Need for Local Studies.

4.1 For the past fifty or so years, the Government of the day, via its civil service, have amassed data for reasons of analysis. From this, national policy can be considered and a more recent relevant example of this was in relation to seat-belt legislation. From an analysis of nationally held Stats 19 data, research institutions were able to justify this decision. Where national data can be used to argue for a change in legislation is not considered here. One cannot legislate for every conceivable problem and a road safety practitioner must consider other strategies within his brief and in this case Education, Training and Publicity strategies need some discussion here. In fact, it was legislation which was responsible for placing the responsibility for the provision of a road safety service on local authorities. Dorsets' reaction to this legislation was comprehensively described by Saunders, 1985, op.cit., and a map showing the principal towns is given in Appendix 53. It is from a local authority standpoint that Education, Training and Publicity strategies are now discussed.

The need to pursue local Education, Training and Publicity strategies based upon local data is discussed above. Reasons for this is centred on the thesis that effective local Education, Training and Publicity programmes should reflect local needs. Dorset will differ from other local authorities in several ways, therefore it would not be desirable to believe that national or even regional Education, Training and Publicity programmes meet this basic criteria. For example, Dorset has 16% more Road Traffic Accident's involving the elderly than the national average but this is probably due to the fact that the proportion of the population aged over 60 years in Dorset is 18% higher than the national average. Counties do differ in size and in population spread, in road usage and in miles of metalled roadways, in socio-economic groupings and in road type (Dorset has no motorways for example). All this can have an effect on the local road accident problem. However, problems for the road safety practitioner exist in making direct comparisons. Various government and professional organisations, for example, use different criteria for collecting data. The Department of Transport., keep vehicle registration data by county but driver licensing data are recorded on a regional basis. Department of Transport regions vary from DHSS and Health Authority ones, therefore, regional comparisons of Road Traffic Accident data is made more difficult. Geographical differences can have an effect on local accident situations. For example, seaside resorts attract large population figures during certain months of the year whilst other ports might attract 'Rollon-Rolloff' HGV traffic constantly. Some local authorities have different approaches to public transport, road maintenance and other highway matters and Transportation Programme Policies (TPP) vary according to local needs and priorities. All these issues can have an effect on the local accident situation requiring local action. To summarise some basic differences in local authorities, Table 9 below summarises some 'south west' population, road mileages and fatal Road Traffic Accident information. From this it can be seen that significant differences exist.

Regional Fatal Road Traffic Accident's by Population

Table 9

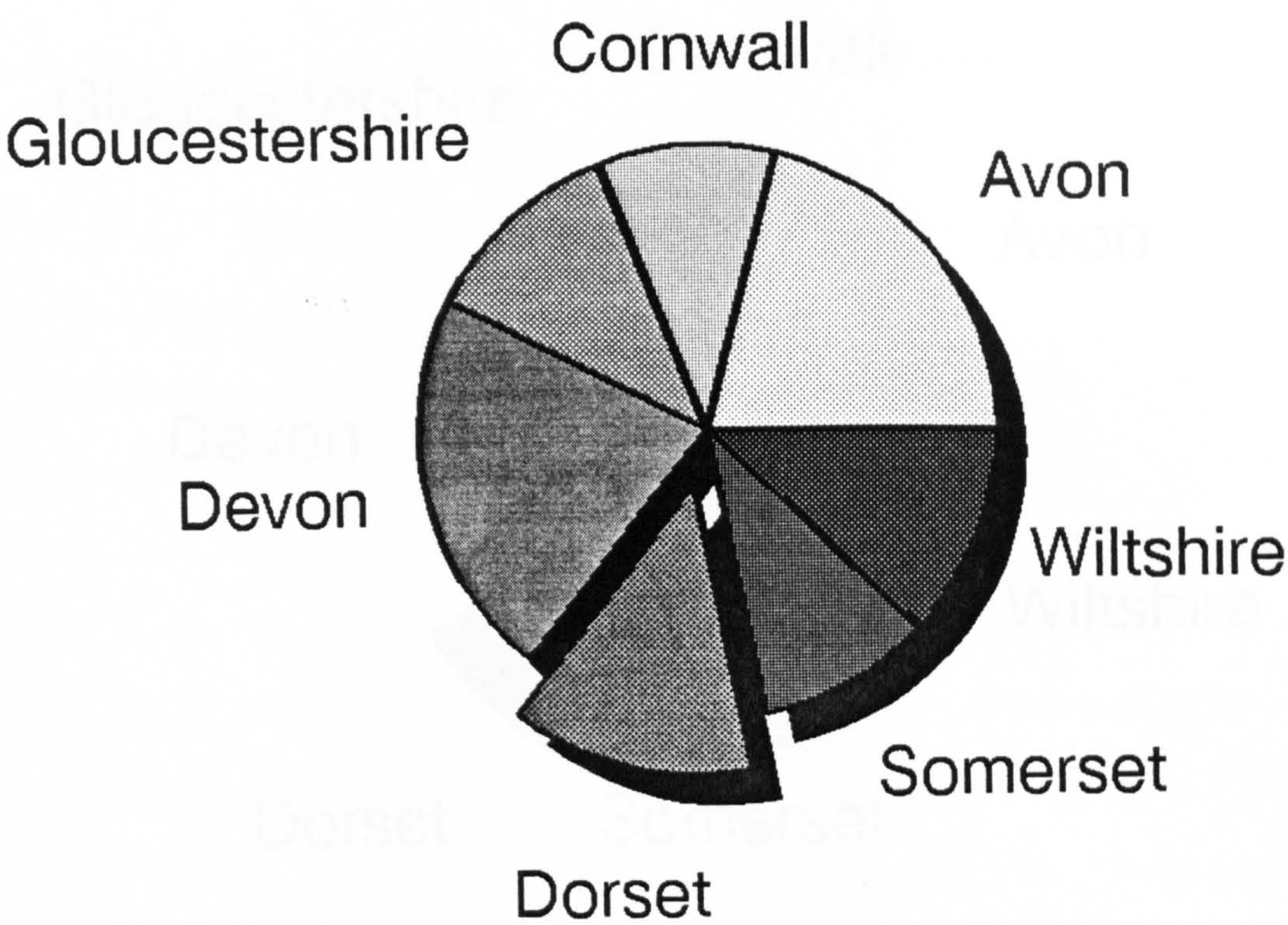
County	Population	Fatal
Avon	909,408	82
Cornwall	427,868	34
Gloucestershire	499,351	68
Devon	952,000	78
Dorset	591,990	50
Somerset	424,968	54
Wiltshire	518,167	77

NB. These figures refer to 1983.

Each of these local authority areas have county police forces except Avon and Somerset and Devon and Cornwall whose forces are combined. It would be an advantage if it could be assumed that our population by age, vehicle type and usage, exposure to risk and the like were all evenly distributed throughout each county but regrettably we know this not to be so. For example in Table 10 below a summary of regional road lengths is given in kilometres.

Table 9

Fatal RTA's by Region



Population

Regional Road Lengths Table 10

County	Motorway	Principal	'B'Class	Other	Total
Avon	86	435	296	2921	3738
Cornwall	0	487	3072	8471	12030
Devon	38	1206	810	11018	13072
Dorset	0	550	1576	2496	4622
Gloucestershire	52	2135	384	3901	6472
Somerset	53	3168	5577	5289	13087
Wiltshire	53	768	359	3499	4679

In Table 10 above, 'principal roads' do include 'A' class and trunk roads whilst 'other' includes all other metalled roadways maintained by the highway authority. From these figures it can be seen that significant differences are evident. From the 'Abstract of Dorset Statistics', published by the planning department of Dorset County Council, 1986, the age structure also shows significant differences. Table 11 below summarises the situation in 1981 (this information is taken originally from 1981 Census of Population).

Table 10

Categories of Road

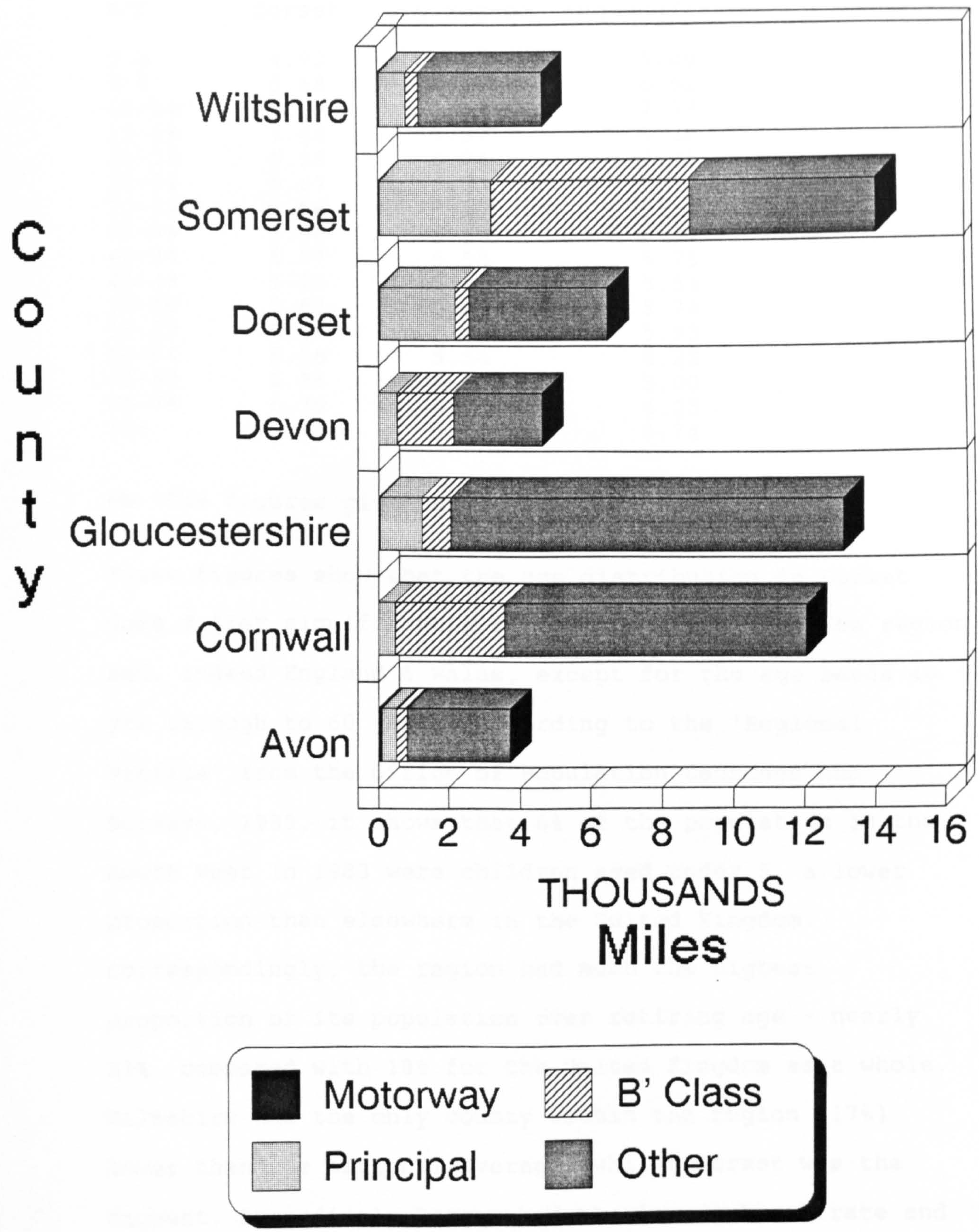


Table 11

Age Structure of 1981 Resident Population

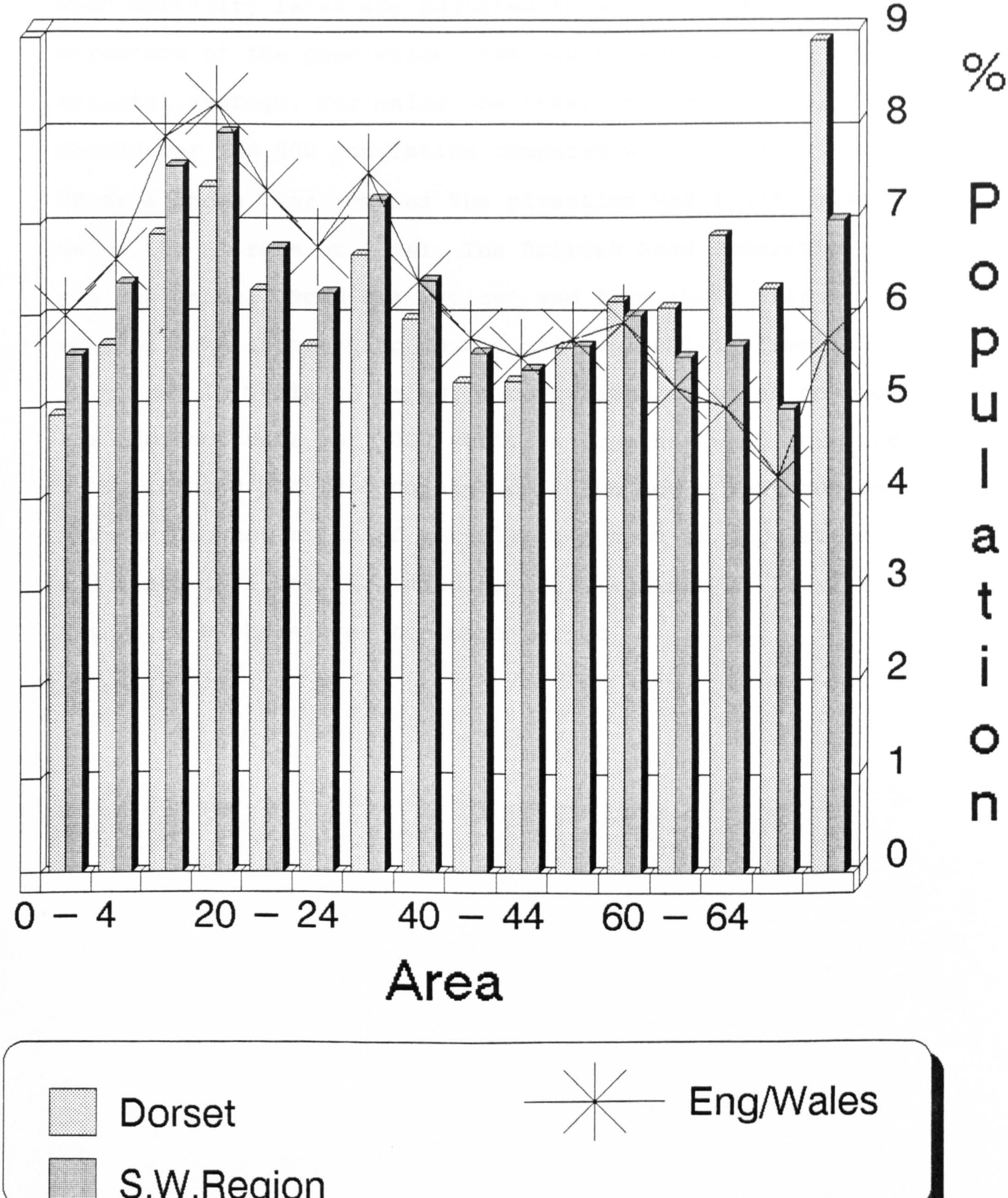
AGE	Dorset	S.W.Region	England/Wales
0-4	4.92	5.57	6.00
5-9	5.68	6.35	6.61
10-14	6.89	7.62	7.93
15-19	7.40	7.97	8.28
20-24	6.28	6.74	7.35
25-29	5.67	6.25	6.75
30-34	6.66	7.25	7.54
35-39	5.96	6.38	6.37
40-44	5.27	5.58	5.75
45-49	5.28	5.41	5.54
50-54	5.65	5.66	5.74
55-59	6.16	6.00	5.93
60-64	6.08	5.54	5.22
65-69	6.86	5.67	5.00
70-74	6.29	4.99	4.25
75+	8.96	7.02	5.74

NB. The figures given above are percentages.

These figures show that the age distribution in Dorset does differ significantly in most respects from the region and, indeed England & Wales, except for the age bands 40 yrs through to 60 years. According to the 'Regional Profile' from the Office of Population Censuses and Surveys, 1985, it shows that 6% of the population in the South West in 1983 were children aged under 5, a lower proportion than elsewhere in the United Kingdom. Correspondingly, the region had much the highest proportion of its population over retiring age - nearly 21% compared with 18% for the United Kingdom as a whole. Wiltshire was the only county within the region (17%) lower than the national average, whilst Dorset was the highest. Accordingly Dorset had the lowest birth rate and

Table 11

Age demography



one of the highest death rates in 1983 of all the UK sub regions at 9.8 live-births and 14.2 deaths respectively per 1,000 population. The death rate for the whole region was 12.5 compared with 11.7 for the UK overall. However, when mortality rates are adjusted to account for age structure of the population, the South West is below the national average. For males the rate, in 1983, was 1,127 deaths per 100,000 population compared with 1,199 in the UK as a whole. For females the situation was 1,128, just below the UK rate of 1,141. The British Road Federation publish annual 'Road Statistics' and from their 1986 edition some interesting county and regional information is given. In Table 12 below, a comparison is given to show the accident rate per 1000 vehicles together with cars and vans licensed per 1000 population. The South West region has the highest ratio of vehicles per head of population and since 1971 has increased to 41.2% against 32.2% for the UK as a whole over the same period.

Regional Accident Rates v Vehicle Population Table 12

County	RTA Rate	Car/Van Pop.	Other Veh.
Avon	8	342	92
Cornwall	10	335	54
Devon	10	326	105
Dorset	10	374	64
Gloucestershire	11	365	58
Somerset	9	352	56
Wiltshire	12	367	62
Region	10	351	70
All Counties	12	307	83

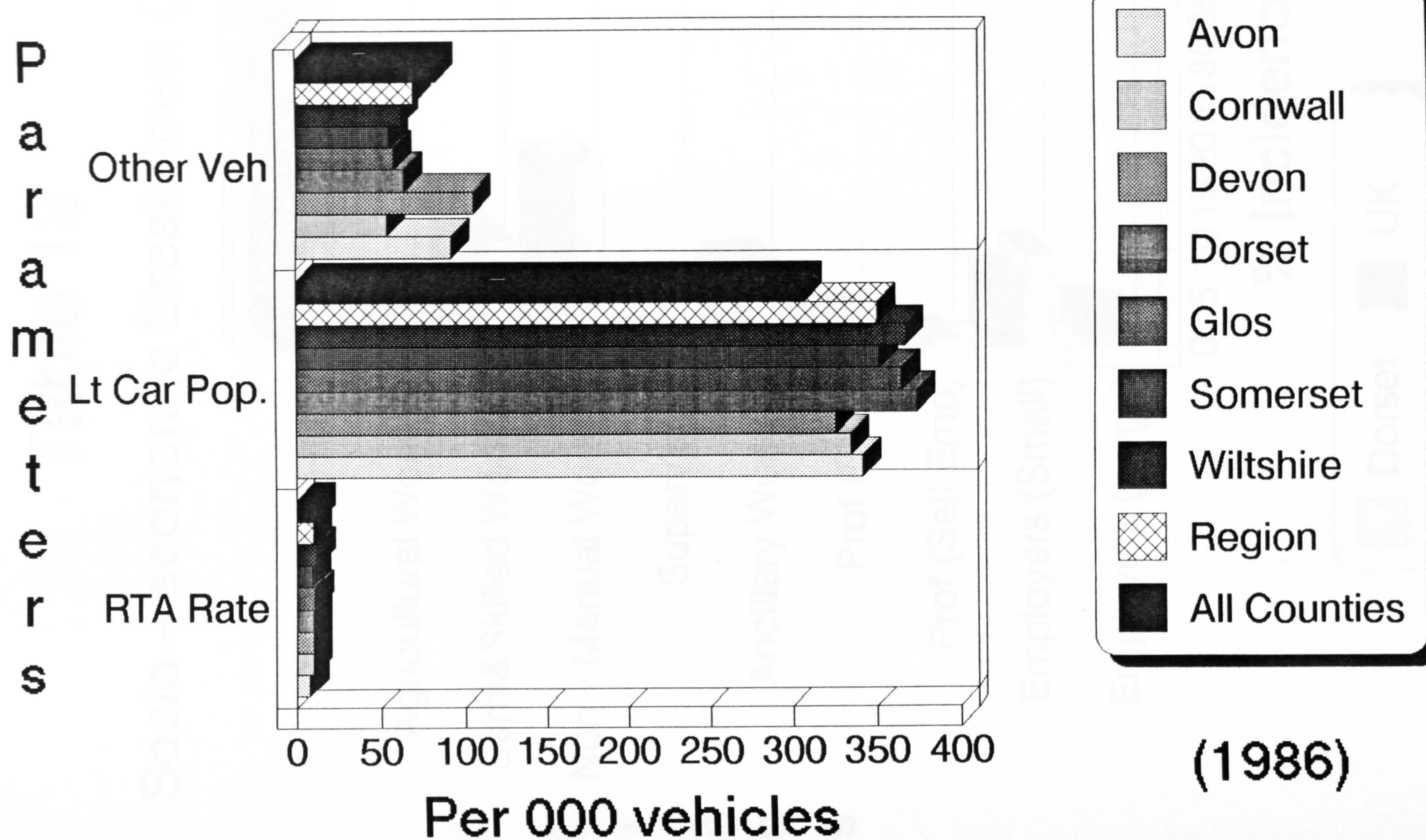
NB. These figures are given above per 1000 population.

Socio - Economic Groups (1981) Table 13

Group	Dorset		UK	
	No.	%	No.(000's)	%
1.Employers & Managers(Large)	1086	3.3	104.1	3.8
2.Employers & Managers(Small)	3083	9.5	196.7	7.2
3.Professionals(self employ.)	244	0.8	16.0	0.6
4.Professionals(employees)	1052	3.2	78.6	2.9
5.Ancillary workers&Artists	2864	8.8	229.5	8.4
6.Foremen & Supervisors	271	0.8	25.4	0.9
7.Junior non-manual workers	6192	19.1	515.7	18.9
8.Skilled & semiskilled workers	3625	11.2	398.5	14.6
9.Agricultural	901	2.7	50.0	1.9
10.Others (inc.HM Forces)	13112	40.6	1169.9	40.8
All persons	32430	100.0	2731.4	100.0

Table 12

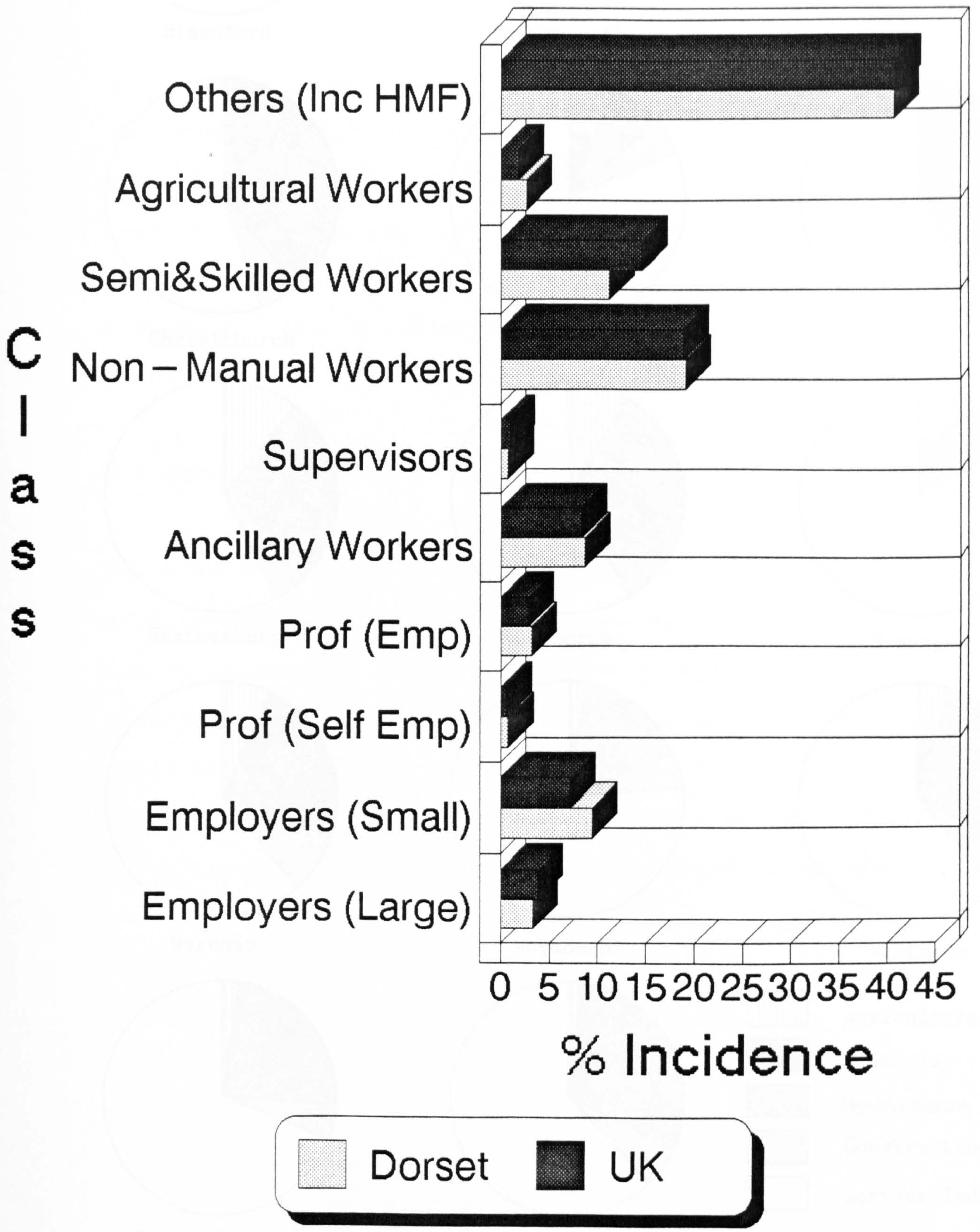
Regional Accident Rates by Vehicle Popn.



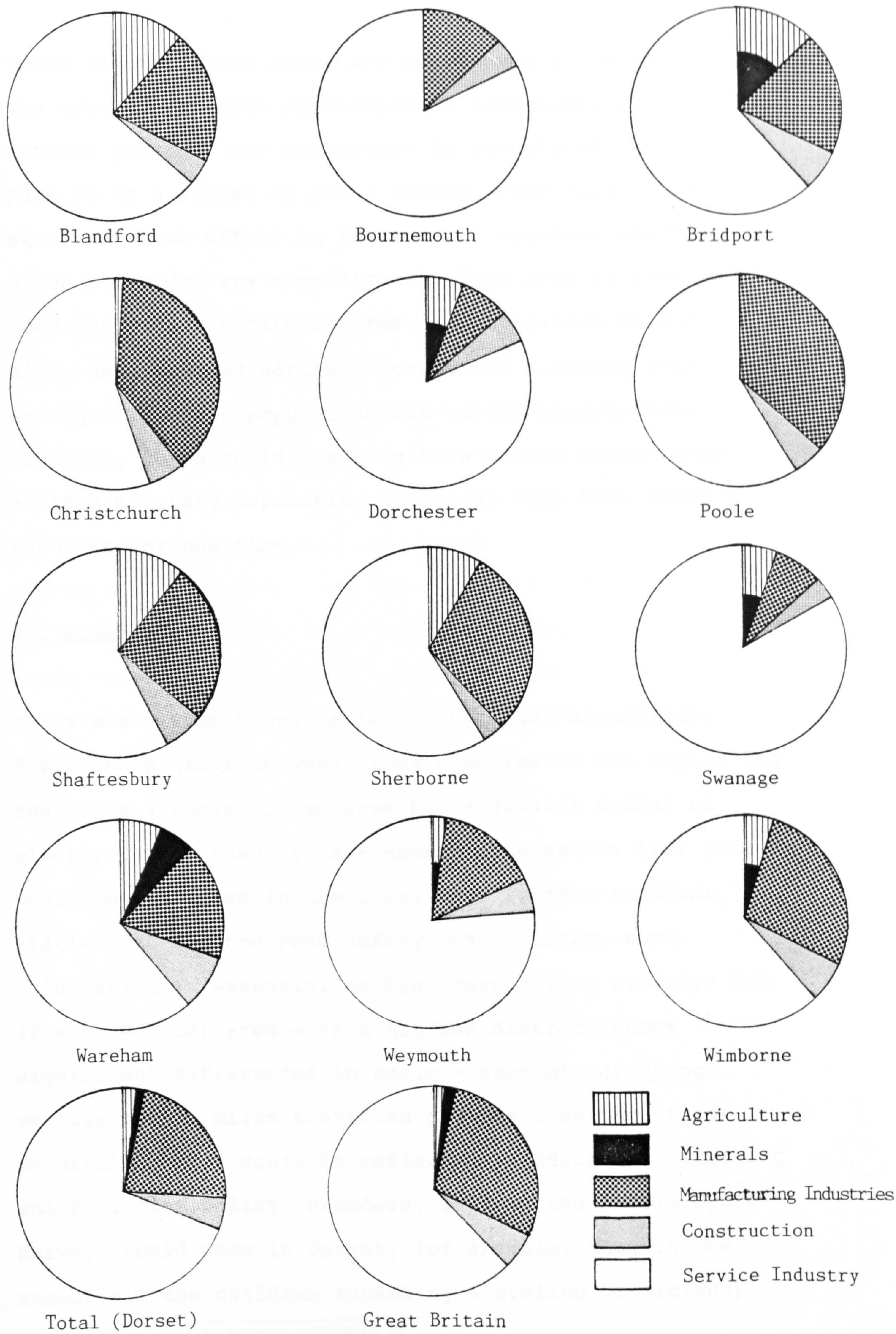
(1986)

Table 13

Socio – economic Breakdown (1981)



Structure by Main Sector 1981



These figures given above are based upon a 10% sample of the usually resident population of economically active or retired persons. How employment is structured is given on page 98 in a series of pie - charts. From this it can be seen that some effect on the socio - economic groupings given above do vary significantly from area to area as does the accident rate by area and population spread. Also, as discussed earlier, Dorset has a higher than average transient population due to its geographical location, but also influencing this is the higher than average military population which can vary from 20000 to 40000 at any one time.

4.2 Summary.

It is clear from those tables above, that significant differences exist between those counties in the region and the UK as a whole. If an area has a greater number of elderly people then it is reasonable to assume that this would be reflected in the local Road Traffic Accident statistics. For the road safety practitioner, such information is essential to his preventative strategy but if a particular area within his/her district shows significant differences in socio - economic groupings, vehicle usage, miles travelled and the like then this information must again be reflected in Education, Training and Publicity policy. Saunders, 1984 in the 'Poole Cycle Survey' could show in Dorset, for example, that in one school all the children attending a cycling proficiency training course did so on cycles less than 3 years old and who did not have paper rounds where a neighbouring school had children whose cycles were generally greater than five years old and generally in a state of neglect. 65% of this group had paper rounds. The exposure to risk in this case is significant from both a road usage point of view and from a maintenance situation. Similarly, Saunders, 1984 in 'Demands for Motor-cycle Training in a Shire County', could show that demand for training in Dorset was not seasonal as suggested by Raymond & Tatum, 1977, but fairly constant throughout the year but a significantly higher number required training in the eastern half of the county whereas in the more rural areas were less likely to come forward for training. This was despite the fact that a higher proportion of of 'L' riders were observed in the Western half of the county. There could be many reasons for this and should be a matter of importance to the local road safety practitioner if motor-cycle training is a strategy employed by his local authority.

Local Education, Training and Publicity strategies must reflect local needs and this can only be catered for by close analysis of local Road Traffic Accident data. If a local strategy is to conduct National Cycling Proficiency training then this must be altered to meet different requirements. For example, if a child lives in an area where there are little or no roundabouts but detailed accident analysis show that 'T' junctions show a high incidence of child cycle accidents turning right then this will mean the National Cycling Proficiency scheme being tailored to meet these circumstances. Like wise single - vehicle cycle accidents (eg. falling off your bicycle) are not technically a Road Traffic Accident but a road safety practitioner responsible for the provision of effective Education, Training and Publicity strategies must be aware to what extent this might or might not occur in his area.

We have seen above, the differing levels of socio-economic grouping and levels and type of employment. This knowledge is vital for effective publicity programmes and knowledge of target audience is an important marketing consideration and is used extensively in market research - see Kotler, 1976, 'Marketing Management - Analysis, Planning and Control. Saunders, 1984 'Demands for Motor-cycle Training in a Shire County', op.cit., confirms this in practice. On the other hand Saunders, 1985, op.cit., showed the importance of population spread and a road safety practitioner must know, for example his school population if he is to plan and implement effective and efficient school based education programmes. Saunders, 1985, op.cit. showed that only 18% of road safety officers knew how many children they had in their areas aged between 9 and 11 years who were cycle owners. All undertook National Cycling Proficiency training (9 to 11 years is the age range covered by the National Cycling Proficiency scheme) and could quote numbers trained, passed and failed. Whether this pass rate or enrolment rate is satisfactory cannot be assessed if it cannot be compared with the appropriate population as a whole.

In 1985, the County Surveyors Society authorised its Standing Committee to seek the approaches made by other local authorities to Stats 19 data collection and from the findings it is quite clear how the 'free market' approach to data collection procedures can cause problems for the road safety practitioner. Whilst the full findings of the report is given in Appendix 57 it came as no surprise to find that no standard interpretations are applied to specific variables. For example, the study found that when people are taken to hospital for an overnight stay for observation (but with no injury being revealed), 2 regarded this as 'non-injury', 40 as 'slight injury' and 58 as 'serious'. On the other hand, it was found that police forces do not check that seriously injured casualties are still alive after 30 days. On this question, the survey found that 47 police forces always checked, 16 usually did, 20 did sometimes and 18 never did. Some authorities actually record engine size as a special project but Dorset has no 'special project' facility on its Stats 19 form. This survey further supports the argument that the road safety practitioner must not assume that local strategies are directly comparable with other local authorities or indeed nationally.

The point of this Chapter was not to rigorously evaluate regional statistics but more importantly to illustrate that significant differences do exist between counties which may effect number and type of Road Traffic Accident locally and that these must be borne in mind by the road safety practitioner when planning his programmes and policies. The effects of this is discussed later in Part 3 of this thesis.

Chapter 5

5.0 Operational Context : Stats 19 Weaknesses and Management Issues.

5.1 Once a Stats 19 form has been generated, the form is dealt with by the appropriate traffic sub - division and submitted to police headquarters. From this stage, they are received at County Hall some six weeks later. Approximately 6% arrive later than that, having been delayed at police HQ for a variety of operational and administrative reasons. A Flow - Chart showing this process is the best means of illustrating the procedure involved and this is given in Fig. 8 and extends that process shown in Fig. 7.

Fig. 8

Road Traffic Accident

Administered To
Traffic
Superintendent

Legal Process — Notice of Intended Prosecution Issued — No Action Taken

Police Stats
Office

Stats 19 to
County Hall

Accident Clerk
Check for accuracy

Punch Room

Computer Record
Using 'DEKE'
System

From direct observation of the records when they arrive at County Hall made from 1st January 1986 to 31st March 1986, a number of errors were noted. Most were minor errors but involved the traffic accident clerk some 0.14 man/hours per form. In 98% of such instances, Stats 19 forms contained more than one error. A summary of these errors are given below in Table 14.

Table 14

ERROR TYPE	%
Reference is written for all columns6	45
Division - alpha numeric notations7	45
Breath Test 'not required' should be coded '3'8	38
Compass directions should be filled in numerically9	20
Vehicle defects/vehicle parts damaged10	20
Vehicle number column/Vehicle occupied - hit by11	15
Road class/road number12	25
Overtaking/manoeuvres column13	50
Drivers actions14	50

6. By reference to the Stats 19 (see Appendix 1) this is being completed by the police correctly for three columns, ie., Casualty, Vehicle and Attendant Circumstances. In 1980, the computer programme was modified to overcome the necessity to write the reference number other than in the first record only.

7. The police use 'E' for eastern division and 'W' for the western division. The computer recognises only '1' for east and '2' for west.

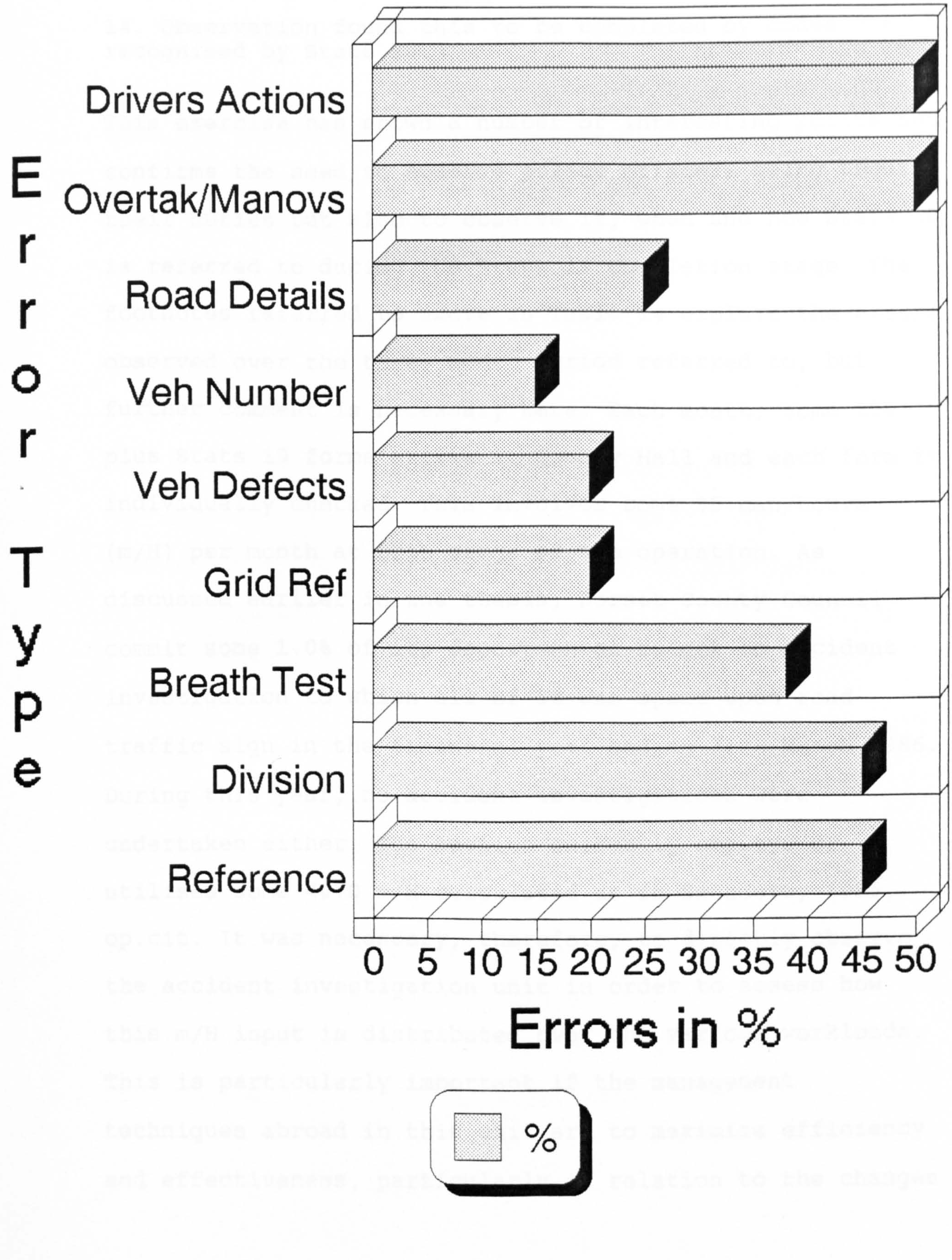
8. The police use either '0' or '5'.

9. Stats 20 outlines the numerical values rather than the normal N, S, E & W notations.

10. These columns are being completed right to left instead of left to right.

Table 14

Stats 19 Errors



11. This is being completed by using the numerical section of the vehicle registration number.

12. This is being written as (for example) A35 instead of 300035.

13. This column is not being related to the manoeuvres column.

14. Observation found this to be completed by codes not recognised by Stats 20.

This exercise has shown a number of interesting points and confirms the need to observe police officers going about their duties but also to observe if, when and how Stats 20 is referred to during the Stats 19 completion stage. The footnotes referred to above in Table 14 explain the errors observed over the three month period referred to, but further comment is necessary here. Each month, some 250 plus Stats 19 forms arrive at County Hall and each form is individually checked. This involves some 35 man/hours (m/H) per month at this stage of the operation. As discussed earlier in the thesis, Dorset County Council commit some 1.0% of its departmental budget to accident investigation to which all of it was spent upon road traffic sign in the financial year ending 31st March 1986. During this year, no accident investigations were undertaken either. The section currently employs or utilises some 4070 m/H calculated as in Saunders, 1985, op.cit. It was necessary, therefore, to directly observe the accident investigation unit in order to assess how this m/H input is distributed over the various workloads. This is particularly important if the management techniques abroad in this unit are to maximise efficiency and effectiveness, particularly in relation to the changes that would be necessary based upon the findings of this report. This aspect is dealt with later in Chapter 10.

Most errors found on the actual Stats 19 forms, as they arrive at County Hall, could be rectified by reference to Stats 20, op.cit. However, it was surprising that a decision taken in 1980 to amend the computer programme to ease the completion time has been ignored so often as suggested in Table 14. Clearly, it would have been advisable to change the form so that it was obvious to those completing it. Raising this point with the officer responsible for the Accident Investigation Unit on a day to day basis, he responded:

'We did not know this was a problem but as you have said how much time is being spent dealing with this at the completion and checking stage, it is a simple matter to delete this from the original. Next time a print run is requested it will be deleted from the form'.

This is a classic example of reactive management as described by Plunket, L.C., in 'The Proactive Manager', 1982. In this particular work, Plunket put forward the need to plan ahead and consider the changes a decision will have on the organisation and not to sit back and see what happens and then make changes in the light of problems as they arise. In this particular case, the problem would continued until someone raised the matter.

Once the Stats 19 forms have been manually checked, they are sent to the 'punch room' to be put on the computer. The computer will run a validation test on the data being punched in but this is merely a check that an entry or code is recognisable to the system.

5.2 It has been shown above, how a reference to Stats 20, op.cit., could overcome some practical problems in relation to the completion of Stats 19 forms but the Stats 20 falls short of being helpful to those subjective areas on the form. These include the following codes:

- Weather
- Road surface

It is largely a matter of opinion as to the interpretation of the requirements of these two particular variables, and Stats 20, op.cit., does not provide any qualitative or quantitative assistance in this respect. 'High wind' for example can mean many things to many people but probably the introduction of the Beaufort Scale (or other appropriate scale) could eliminate this doubt. A further example is that there is no definition given as to the difference between 'rain' and 'drizzle', 'mist' or 'fog' etc. Other variables on the Stats 19 causing concern are discussed below.

<u>Light Conditions</u>

This particular variable asks for a decision whether street lighting columns are over 7 metres or less than 7 metres in height. Whilst the inaccuracies of this is discussed later in the next chapter, it is necessary to say at this stage that difficulties do exist when a person is asked to estimate height or distance. Boy Scouts are taught techniques to help them estimate the height of objects more accurately but without any other scientific aids or specialist training it would seem a matter of conjecture as to whether a street lighting column was or was not over 7 metres in height.

Manoeuvre

These are usually difficult to assess on arrival at the scene of a Road Traffic Accident and after initial impact, vehicles and debris come to rest in locations not readily associated with the manoeuvres being carried out at that time. This is made particularly worse in cases where there is no corroborating evidence from an independent witness (see Appendix 54). For these reasons, the accuracy of such variables will be questioned. It is, however, possible for an experienced police officer to reconstruct the events that lead up to the Road Traffic Accident provided that statements, dimensions of site and photographic evidence are analysed. However, statements must be taken fairly soon after an incident and in a particular manner as described by Loftus, et al, 1978, op.cit., and then it is not always possible to accept such statements as an accurate assessment of what really happened. This is made worse in that the status of the questioner can also affect accuracy as described by Clifford, 1979, op.cit. Having observed police officers at first hand at the scene of accidents attempting to establish manoeuvres amid the trauma abroad at the time, it is necessary to discuss these later in the text. This becomes more difficult the more serious the accident as will be seen later in Chapter 6.

<u>Drivers</u> <u>Actions</u>

This code is to be completed only if drivers actions preceding impact comply with one of those codes given in Appendix 20. Because the important words here are 'preceding impact', it then becomes a matter for witness reliability to determine accuracy; or an attempt to reconstruct what might have happened in the absence of such corroboration is necessary. An experienced police officer might be tempted to assume what happened as outlined by Cicourel, 1976, op.cit. It should also be pointed out that Cicourel, said that:

'a police officers past experiences and norms enable him, like anyone else, to make a decision as to what <u>may</u> have happened......'

Therefore, it is quite likely that a young driver clad in leather, green mohawk style hair and surrounded in chains, would not be believed if he was involved in an Road Traffic Accident with, say, an established member of society dressed more conservatively, even though he might be in the right!

Overtaking Pattern

Having spent a considerable number of m/H on patrol with police officers, details of which are discussed later in the text, it became apparent that a number of Road Traffic Accident's which occur in the rush hour periods go unwitnessed. Some reasons for this are discussed later in the text but again this variable relies upon the reliability of eyewitness testimony or the statements of those participating in the event. This can invalidate the accuracy of this data and is discussed later in Chapters 6 and 8.

Location of Accident

A grid reference is used to identify this but accuracy must be questioned if the Road Traffic Accident occurred not at a junction or other easily identifiable environmental feature. Once time has passed, the damaged environment and debris fades away and the exact location is difficult to locate. The map reading qualities of some police officers observed is also a question of concern and is discussed later in the text. On featureless stretches of road the author has taken several Powered Two-Wheeled Vehicle riders who have been involved in Road Traffic Accident's and of the 20 riders taken only 3 were convincing enough to identify the actual Road Traffic Accident site.

Pedestrian Accidents

From a survey of 100 pedestrian accidents in Dorset, made up of 50 from 1984 and 50 from 1985 (every tenth pedestrian record was used) it was found that pedestrian accidents are witnessed significantly more than vehicle accidents (see Chapter 8). However, for the same reasons as outlined above;

- pedestrian location
- pedestrian movement
- pedestrian direction

should be regarded with a certain amount of caution.

Severity

Hepworth, et al (1984), op.cit., emphasised that out of 1200 pedal cycle accidents, 7 were reported by the police as 'serious' where the hospital rated them 'slight', whilst 42 were reported as 'slight' by the police but 'serious' by the hospital. Whether this applies to Dorset will be seen in Chapter 7.

Age

The Department of Transport., advice is that where the age cannot be discerned within a reasonable period then an estimate should be used. The inaccuracy of this is quite obvious to the reader and can easily be proven. At the

Dorset Institute in June 1986, 20 subjects were asked to guess the age of the caretaker and 1 was correct. The number of cases where a police officer has had to estimate the age of a casualty is discussed in Chapters 6 and 7.

Dorset Police Form T1

At the scene of a Road Traffic Accident, the Dorset Police complete their own Form T1 (see Appendix 55). Other police forces will use a similar system and the format of these forms will vary from force to force. This document, as will be seen later, is completed, usually at the scene and as a result the information contained on it can be regarded as more accurate. This is because circumstances are recorded fairly soon after the event and an officer need not rely on his memory. However, the detail on this particular form falls short of the detail on the Stats 19 and also includes information relating to police operational matters. From this document it will be seen that 'location' requires a written location statement on the T1 but this is later transposed by a clerk in some cases to a grid reference for Stats 19 purposes. It is at this stage that errors have been observed to occur and is discussed later in the text. Light conditions on the T1 seems a more realistic attempt to get at a subjective issue but 'weather', 'road surface condition' and 'traffic' are no better than an opinion. Compass direction seems at first an odd request particularly when policemen do not carry compasses as part of their official equipment. Aids to help the police officer are discussed later in Chapter 6.

5.3 Completion of T1 forms has been observed to take some 1.2 m/H to complete for police purposes which includes those elements which are not completed at the Road Traffic Accident site. This time does not, however, include time spent obtaining statements and Stats 19 completion time. Even the completion of the T1 form can take 36 to 48 hours to complete for processing where names of the persons involved are unable to provide this information due to injury. This does not affect the accuracy of the detail completed at the scene. However, this aspect is discussed at some length later. What is surprising is the amount of duplication observed in the data generation stage. Clearly, if the police are to continue to provide data for accident analysis purposes, then it will be necessary to discuss ways in which the T1 form and Stats 19 form could be combined. Furthermore, it is also clear that inherent inaccuracies highlighted in the above practice is in need of a management investigation.

5.4 <u>Management Issues</u>

During 1985, a number of 'Deke' or Road Traffic Accident investigation and analysis computer enquiries were made by the Accident Investigation Unit. These are summarised below in Table 15. From this it is possible to calculate the unit m/H spent on this particular activity.

Table 15

Operator	No of Enquiries
A1	1260
A2	1123
A3	333
Total	2716
RS1(HQ)	235
RS2	82
RS3	114
RS4	91
RS5	77
RS6	54
RS7	62
Total	715
Grand Total	3431

NB. Those operators numbered A1 to A3 are those within the Accident Investigation Unit. RS numbers are Dorset Road Safety Officers. HQ consists of 3 full-time officers.

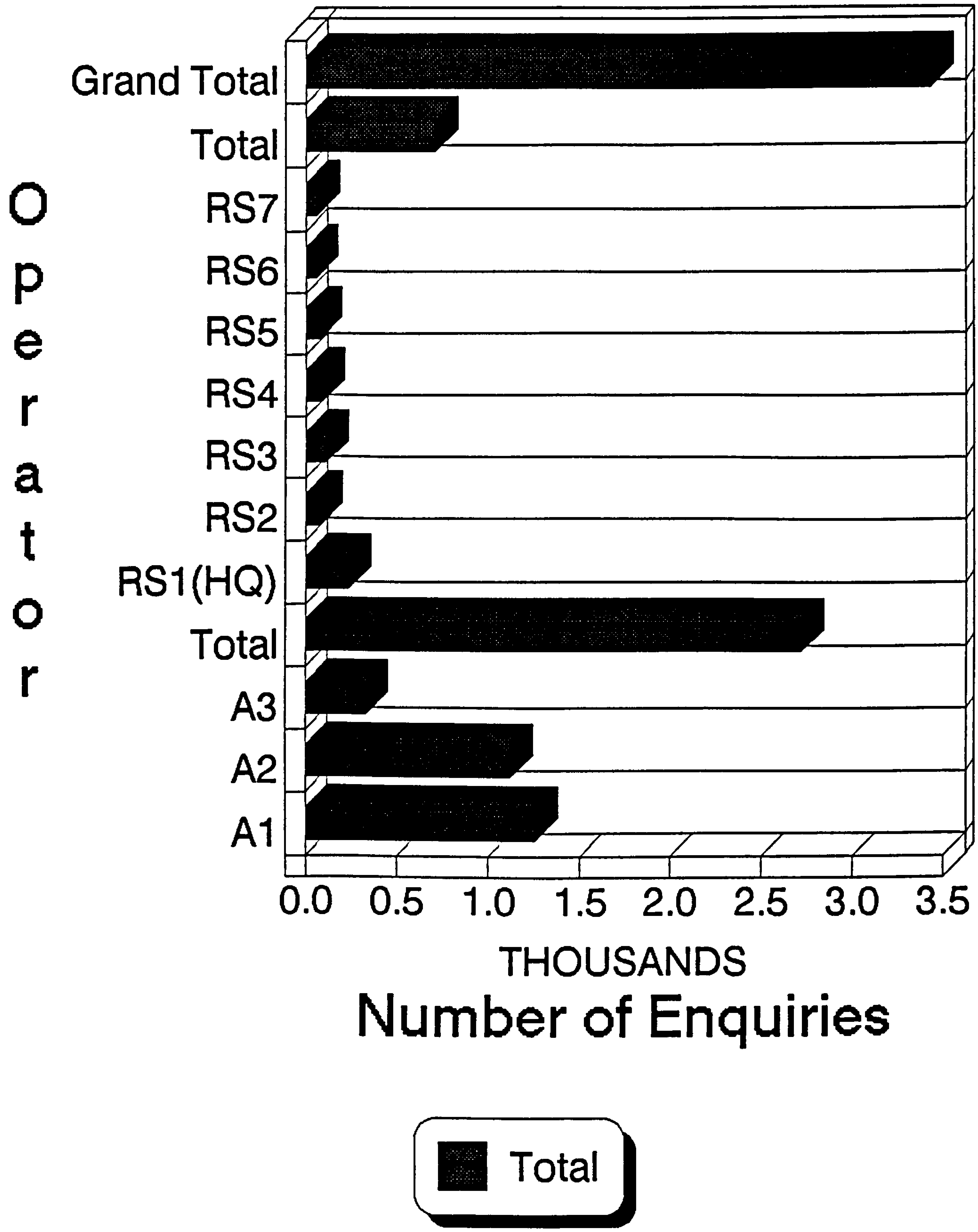
From observations of staff carried out during October to December 1984, it was calculated that the average computer enquiry took some 0.32 m/H per enquiry. This excludes waiting time and computer running time. From these data, it was possible to calculate the total unit m/H spent upon accident enquiries. It must be remembered that this time is the total time spent dealing with traffic management issues and not accident analysis.

2716 enquiries @ 0.32 m/H = 869 m/H

Earlier, it was discovered that some 35 m/H per month were utilised dealing with Stats 19 errors, so this figure will be some 420 m/H over the year giving a total of 1289 m/H for these activities within the unit. The total unit m/H of staff is some 4070 m/H, but 1628 m/H is committed to site visits in relation to signing commitments. This, then, leaves 2442 m/H (less the 1289 m/h for dealing with errors) shows 1153 m/H to deal with the following activities as described in the Dorset transportation

Table 15

Computer Enquiries by Staff Use



policies and programmes (TPP) submission for 1986/87. Generally, this states:

'sites with high accident risk are identified through the computerised record system and the appropriate solutions to accident problems are selected.......'

This has been identified through observation to consist of dealing with requests for improvements to sites by either senior officer, county council member or member of the public. The m/H involved in this activity has been similarly identified as follows and is summarised in Table 16 below.

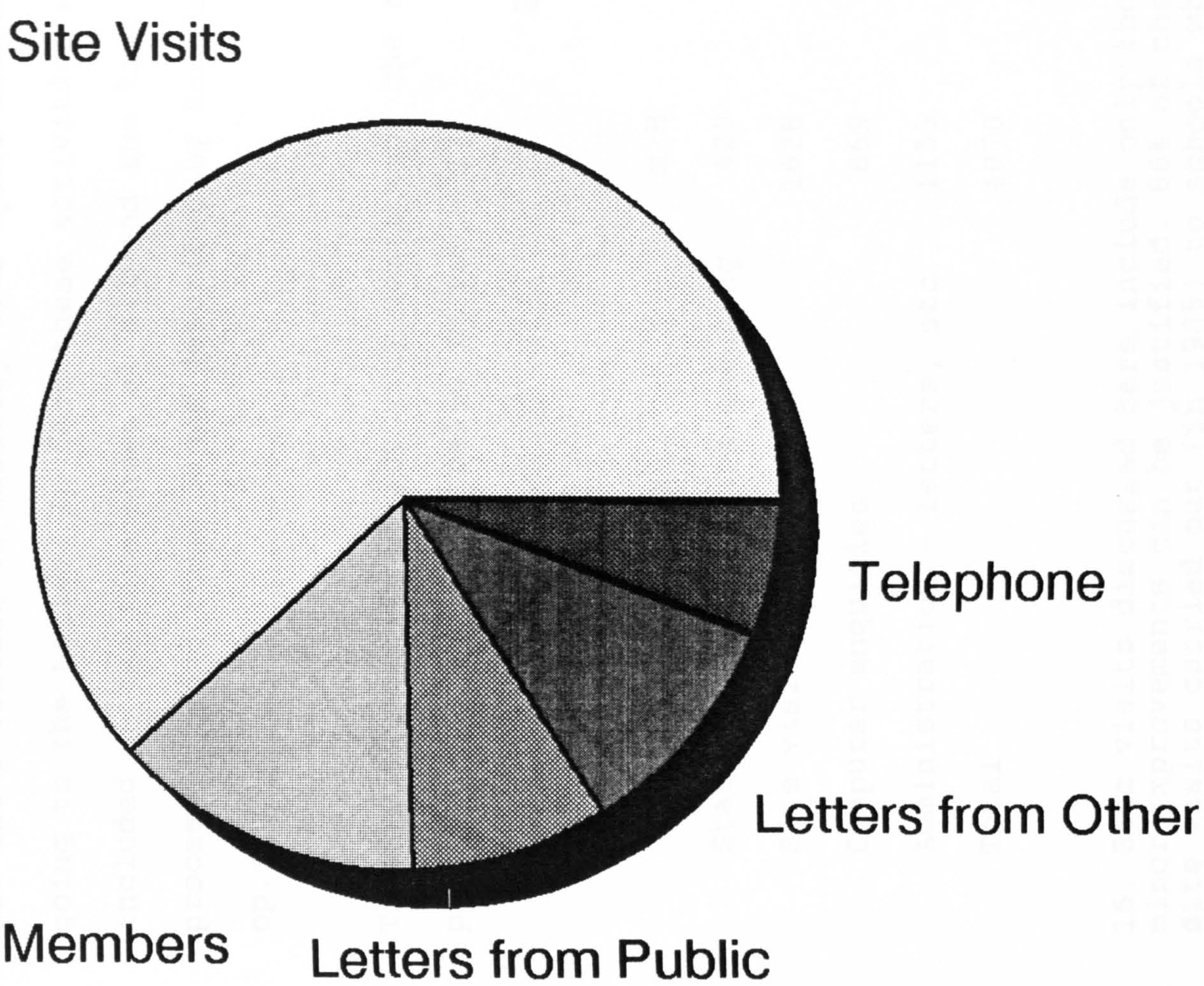
Table 16

Activity	m/H
Site visits (incl. travel time)	1628
Letters from members of Council	360
Letters from members of Public	228
Letters from other organisations	265
Telephone enquiries	150
Total	2631

These man hours have been calculated based upon information gathered from time sheets completed by appropriate members of staff (see Appendix 56) and includes computer enquiry time and written response time. This time does not include repeat correspondence which some of the more controversial matters are known to generate. The survey lasted for three months from 1st January 1986 to 31st March 1986. To ask staff to record their activities for any longer, bearing in mind the level of detail required, could have resulted in a lowering of morale and spurious information being given.It must be

Table 16

Staff Resource Allocation by Activity



pointed out at this stage, that when staff were asked to complete a time sheet, the reaction at first was one of suspicion. This was expected as a similar reaction was experienced from Road Safety Officers as outlined by Saunders, 1985, op.cit., (Chapter 6 pp 54 - 56). It was necessary, therefore, to explain the reasons for the study and the necessity to ascertain how time was distributed across their activity base. It was stressed that it was not the intention to identify time spent drinking tea or going to the toilet. In fact these activities were not included on the time sheet at all and the time study proceeded along those lines described by Saunders, 1985, op.cit.

To show the extent of activity commitment the time study produced is summarised below in Table 17.

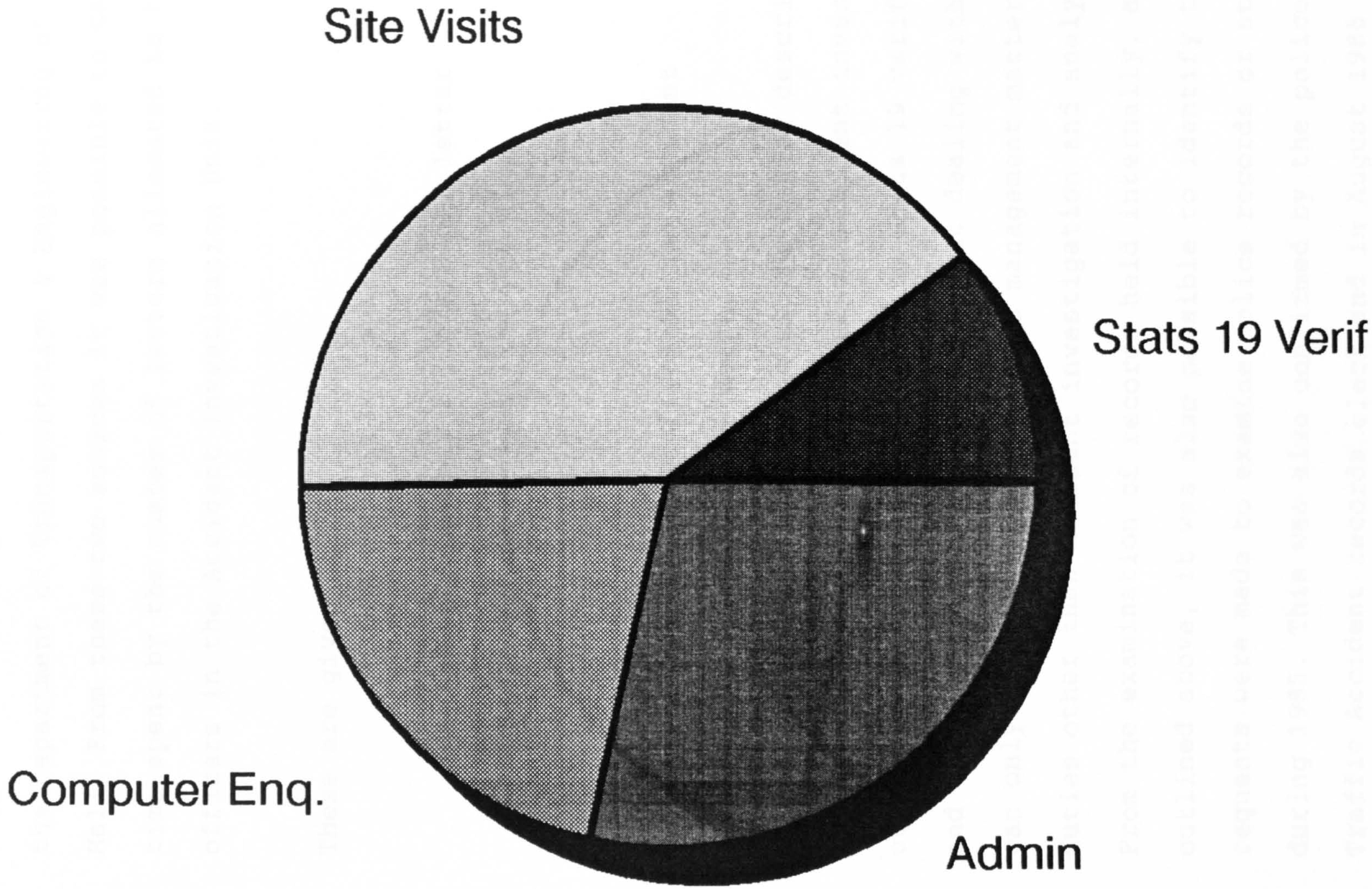
Table 17

Activity	m/H
Stats 19 verification/checking	420
Site visits16	1628
Computer enquiries	869
Administration - letters, etc.	1153
Total	4070

16. Site visits discussed here include only those where minor improvements can be justified. 86% of these were site visits carried out (in 1985) to schools where problems encountered included signing and erection of safety barriers and the like.

Table 17

Staff Activity Commitment



Administration and letters given above is extracted from the weekly time sheets as described above and from the register of correspondence held in the General Office of the Department of Transportation & Engineering at County Hall. From these two sources it was possible to calculate time spent by the number of letters allocated to those officers in the Accident Investigation Unit.

These are given below:

627 letters X 1.6 m/H per letter

= 1003 m/H 17

Having examined the activities of the Accident Investigation Unit in some depth,
it must be stressed that none of the duties described above in Table 17 were allocated to accident investigation other than the 420 m/H allocated to Stats 19 verification and checking. The remainder was spent dealing with what can only be described as traffic management matters, ie., duties other than accident investigation and analysis. From the examination of records held internally, as outlined above, it was also possible to identify that no requests were made to examine police records or statements during 1985. This was also confirmed by the police Road Traffic Accident records clerk and in August 1986 a further enquiry was made and no requests were forthcoming from the Accident Investigation Unit.

17. This excludes 150m/h involved in other administrative activities.

5.5 Road Safety Officers Use of Computer Time

From Table 15, it will be seen that road safety officers spent some 715 m/H dealing with computer enquiries. During 1985 these enquiries were necessary to provide schools with:

- those accident details regarding school pupils; and
- data for publication in the annual road accident information booklet (op.cit.).

Saunders, 1985, op.cit., could find no evidence to show that Road Safety Officers used accident intelligence regularly or that RSO's used computers. He was also able to show that insufficient m/H existed in the Dorset Education, Training and Publicity unit to carry out an Accident Investigation role on the existing resource base.

If Education, Training and Publicity strategies are to be efficiently and effectively planned and organised, then it must be remembered that a road safety officer requires different information, than, say, a traffic engineer. For example, a traffic engineer might, via his use of Stats 19 records discover a particular 'blackspot' to be a specific roundabout in Bournemouth. A road safety officer responsible for Education, Training and Publicity matters might very well then ask 'are roundabouts a problem?' This is particularly an important behavioural standpoint and sub - features need identification in order to analyse those common in all cases. In an analytical role, a road safety practitioner would require data as detailed as possible and this may very well mean obtaining information not currently available on Stats 19 forms. Although this matter is discussed in greater detail later in the text, it was shown in Chapter 4 that local knowledge is an important consideration and that data used for Road Traffic Accident analysis can be regarded as atypical. For example, a study of Powered Two-Wheeled Vehicle accidents might consider the following items of additional non Stats 19 data:

Occupation - has been identified by insurance companies to calculate risk. Insurance companies can show that some geographical areas for instance have higher Road Traffic Accident rates than
others. However, in calculating such risks, these organisations require to know:

- estimated business use; and
- estimated pleasure/leisure use.

This is usually based upon an 'exposure to risk' factor calculated on annual miles travelled and geographical area. Some occupations have been shown historically to be bad risks for a variety of reasons and it is for these reasons that 'occupation' is an important variable to consider in accident analysis.

Eyesight - evidence exists to show that one party involved in Powered Two-Wheeled Vehicle Road Traffic Accident's claims not to have seen the other party and the thesis examines this aspect in greater detail later. The fact that one party did not see the other can be regarded as 'obvious' as two people do not usually with full knowledge of each other willingly collide. However, along with 'eyesight', it would be necessary to consider perception, conspicuity, the environment or combinations of these factors in any investigation.

Machine Type & Size - The government announced in the Transport Act of 1981 that restrictions were to be placed on riders of Powered Two-Wheeled Vehicle's and restricted engine sizes as discussed earlier. As we have already seen engine size is not a variable on every Stats 19 form and is not officially part of the documentation process. It is, therefore, surprising that 50 cc and 125 cc machines were specifically chosen for legislative purposes. Insurance companies argue that their evidence suggests that machine size is an important issue when calculating 'risk' as described above but could not corroborate a 50 cc and 125 cc restriction. As the engine size or machine type is not featured on the Stats 19 document, insurance companies feel that the two figures mentioned above (ie., 50 cc & 125 cc) was an arbitrary size based upon professional opinion. Within machine type an important consideration for the road safety practitioner is purchasing patterns and the efficiency and effectiveness of any Education, Training and Publicity strategy will rely on this basic marketing principle particularly whether machines are purchased new or second - hand. This is discussed later.

Attitude to Training - certainly training details would be an important variable particularly as it is based on the thesis that training reduces accidents. No evidence exists at the moment that training does do this and the whole subject in this area needs close examination. It is not the intention of this thesis to delve into this area in specific detail but in proactive management terms it is necessary to consider data requirements at this stage. Training riders of Powered Two-Wheeled Vehicle's, for example, have been in existence for some 30 years and a road safety practitioner should examine these issues in his area from this management point of view. This is discussed in Chapter 9.

Clothing/Conspicuity Aids - safety aids such as clothing worn whilst riding a Powered Two-Wheeled Vehicle and conspicuity equipment is not identified on the Stats 19 form. As considerable stress is put upon the road safety practitioner to publicise the valuable contribution to safety these aids have and spend considerable m/H on this (see Saunders 1985, op.cit.), then again in proactive management terms, the data needs consideration and is discussed in Chapter 9.

Health Condition - this is a factor also ignored by the current Stats 19 form but of importance to the proactive management strategy of the road safety practitioner. We have seen earlier that stress has been identified as possibly being a factor in Road Traffic Accident's as the use of drugs (both prescribed or not) might be. This is also discussed in Chapter 9.

There are many factors that a road safety practitioner might need to consider that are not currently included on Stats 19 such as speed, purpose of journey, gear selected to name but a few. However, having examined the m/H involved in the present procedure, it is necessary, therefore, to improve efficiency and effectiveness before calculating resource base requirements. To this we must:

- quantify the level of under - reporting more accurately,
- examine the benefits of witness statements in context bearing in mind their accuracy in certain circumstances.
- examine the interviewing of casualties as a means of improving the data base.
- examine the role and attitude of the police regarding current data collection.
- examine the implications upon management the above has upon the efficiency and effectiveness of a road safety unit.

These issues form part of the tactical objective phase and must be fully examined as they are crucial to the

Operational Resource Plan. In Part 2 of this thesis, these particular objectives are examined in some detail with emphasis on the methodology employed to obtain the necessary data and to consider the sensitive issue of medical confidentiality when examining medical records. From this the thesis will develop some theoretical objective setting principles on which to base the Operational Resource Plan as a management tool.

PAGE

NUMBERING

AS ORIGINAL

PART 2

"The Empirical Data"

PART 2

Chapter 6

6.0 Observed Study of Police Officers*

6.1 From 19th July, 1985 to 8th August,1986 some 120 m/H was spent with the Traffic Division of Dorset Police in the company of traffic patrol officers on duty. Shifts were chosen at random over the twelve month period and the whole shift was undertaken. During this time, 2 Fatal Road Traffic Accident'S were observed, 5 serious Road Traffic Accident's, 11 slight injuries (of which 1 was a Powered Two-Wheeled Vehicle Road Traffic Accident) and 4 non-injury accidents. The purpose of observing police traffic officers whilst on duty was as follows:

(i) to see first - hand the processes and priorities a police officer has to consider on the arrival at the scene of a Road Traffic Accident.

(ii) to observe those processes and priorities being implemented.

(iii) to note those processes and priorities which cannot be implemented immediately.

(iv) to observe post - Road Traffic Accident delays which occur during the process stage.

* Part of this Chapter has been published in the Journal of the Royal Society of Health 107(3), pp 107 - 109, 1987.

(v) to witness the completion of Stats 19 data form and to place it in order of task priority.

(vi) to seek the collective views of police officers regarding data collection.

This was a particularly interesting exercise and it was of interest to view how both traffic division officers saw their role as data collection officers for Stats 19 purposes and those at County Hall in the Accident Investigation Unit who used this data for a variety of decision making roles. It was also of interest to see whether police officers had been shown how either traffic engineers or road safety officers used the Stats 19 data and is discussed later in the text. It is important that the above six objectives outlined above are discussed and these are considered below.

6.2 <u>At the scene of a Road Traffic Accident</u>

Road accident details are passed from 'control' to an appropriate mobile patrol to investigate as soon as details are received. The patrol attending is usually decided by distance from location and, of course, duties being carried out at the time. The nearest usually responds but this does not eliminate the possibility of more than one patrol arriving at the scene of the accident site. The first at the scene, however, is normally the officers who become responsible for the incident and are consequently relied upon to process all administrative matters relating to the matter. A traffic patrol consists, in normal circumstances, of two officers and they work as a team on arrival at the scene of a Road Traffic Accident. One will immediately take responsibility for site protection and will sort out signing and traffic problems whilst the other will assist with the injured and ascertain relevant details relating to the incident. Police officers are given the choice of who they team up with for patrol duty and after a while a good rapport exists between the two officers; each trusting the other to carry out their previously agreed duties. In the more minor situations, the system was observed to work extremely well but in the more serious instances, then the system demanded a greater human resource input and suffered because of this. To give the reader an insight in to the procedures described above the following case study is an actual example of a typical observed serious Road Traffic Accident.

A Case Study

The following is a description of what was observed to happen, witnessed by the author, when the patrol in which he was travelling was dispatched to the scene of a Road Traffic Accident. The process described here is a transcription from tape-recordings made throughout.

A message was received by the patrol at 1504 hours and the control centre reported that the Road Traffic Accident was a '41'. When asked what was meant by '41' the officers said that this was a code generally used by them to indicate a 'paticularly nasty Road Traffic Accident which could probably have fatally injured casualties'.

<u>1516</u> <u>hrs</u> - the patrol arrived at the scene of the Road Traffic Accident. All other traffic had stopped and the police vehicle had to weave its way forward to the actual Road Traffic Accident site. From an immediate assessment of the scene, it appeared that two vehicles had collided head - on. The ambulance had just arrived from the opposite direction.

<u>1520</u> <u>hrs</u> - Police 'accident' signs were placed in appropriate positions and the section of the road was closed. All traffic was turned away except one driver who claimed to have witnessed the incident. A local police patrol arrived to divert traffic at either end of the road. From an examination of the site four youths in one vehicle appeared only slightly injured and were sat on the grass verge. Both vehicles were severely damaged. The ambulance team had removed one 'elderly-ish' passenger from the other vehicle involved and was quickly dispatched to Poole General Hospital.

<u>1521</u> <u>hrs</u> - Another ambulance arrived. One traffic officer began interviewing the four youths on the grass verge whilst the other officer assisted the ambulance team to extract the 'elderly-ish' driver from his vehicle. At this point difficulties were experienced and the author was asked to help. The tape recorder was kept running.

<u>1540</u> <u>hrs</u> - The injured driver, who had stopped breathing by this time was eventually removed from the vehicle. He was dispatched to hospital.

<u>1542</u> <u>hrs</u> - The police officers then began the task of collecting any witness details and details of those involved who did not require hospital treatment. At 1550 hrs the four youths were finally taken to Poole General Hospital for a medical examination.

<u>1605</u> <u>hrs</u> - As the Road Traffic Accident was classified as 'fatal', the scene had to be photographed in accordance with Dorset Police standing orders and the area had to be measured accurately. The latter was commenced at this time and the site could not be cleared until photographs and measurements were completed.

<u>1645</u> <u>hrs</u> - The police photographer completed his duties at the scene.

<u>1710</u> <u>hrs</u> - The breakdown vehicle arrived and the vehicles were removed from the accident site. A fire tender was brought in to remove petrol from the road surface area.

<u>1735</u> <u>hrs</u> - Both patrol officers began to sweep away the debris from the road surface before the road could be re-opened to the public.

<u>1810</u> <u>hrs</u> - The road was opened and the 'accident signs' were collected in. The patrol departed the scene for Poole

General Hospital arriving at 1845 hrs.

It must be noted from this scenario that some 3 hours had passed since the patrol had arrived at the scene of the Road Traffic Accident and at this stage they had no details whatsoever, of the fatalities or seriously injured. Also, it was noted at this stage that only half of the relevant sections of the T1 had been completed. The problems observed during this incident is discussed later in the text but the problems the patrol encountered, particularly in casualty detail delays appeared to be common in all serious Road Traffic Accident's observed. It was also noted that patrol officers had not noted any 'timings' and had made no notes in their notebooks as there had not been time to do so. However, one officer had a piece of paper fastened to a clipboard containing a rough sketch of the accident site containing dimensions. The 'conditions of' section on the form T1 was not completed at this stage and the patrol was also prevented from carrying out breath tests, in accordance with Dorset Police standing orders, due to the type of injuries sustained by casualties. The patrol obtained all casualty details necessary from the hospital by 1940 hrs.

6.3 Post Road Traffic Accident Delays

Taking the incident described above one stage further, the two patrol officers dealing with this incident were now some two hours into overtime and returned to their base at Gravel Hill, Poole. The way in which their shift rota's worked, they were now technically entitled to two days off duty. Arriving back at their base at 2015 hrs the form T1 and police notebooks were updated before going off duty. The author, because he had been recording details was asked for the 'timings' of the various stages for notebook and record purposes and to confirm the 'exact location' of this particular Road Traffic Accident. Asking what they would do normally for this information they replied that they would 'estimate'. A file was opened containing the following:

- statements from the youths in the other vehicle.
- Form T1.
- Sketch of the scene.
- Name and address of one independent witness who lived in Swinton, Rotherham in South Yorkshire. This witness was on holiday at the time and therefore his temporary holiday address was taken. In less serious Road Traffic Accident's it has been noted that temporary addresses of witnesses are not normally taken unless a 'Notice of Intended Prosecution'(NIP) to one of the parties involved is likely.(see Chapter 8).

The two officers then were stood down at 2040 hrs. Before leaving this matter here it must be mentioned that the police officers in this particular case were pushed for time as indeed they were in all serious Road Traffic Accident's observed. If time is not available to write notes to aid memory recall then use of tape recorders and cameras is a useful tool. On this matter, the Chief Constable has made available pocket type tape recorders for patrol use but they choose not to use them as they say they are unreliable! This is particularly important in this case as the independent witness described above was not contacted until 25 hours after the event. This is a cause for concern as Bartlett, 1932, Heart, 1974, and more lately Bull et al, 1983 show that in certain circumstances, a person can only remember half of what he originally took in. This is discussed later in Chapter 8.

The Stats 19 connected with the above incident took some 12 minutes to complete but more importantly, it was completed some 50 hours after the event and notes or Stats 20 were not referred to. For the same reasons as outlined by Bartlett, 1932, op.cit., Herriot, 1974, op.cit., and Bull et al, 1983, op.cit., 50 hours can be considered far too long to solely rely on memory alone. Was it raining 50 hours ago? Had it been raining? Was the road surface dry? Without systematically recording such data at the time then the information must be regarded as suspect. Having observed police officers on duty and completing their Stats 19 it was not unusual for the document to be completed some 48 hours after the event or was it seen to take longer the 15 minutes to fill in. Stats 20 was not seen to be referred to in all cases observed and notebooks were only referred to when information needed to be corroborated for legal purposes. This is understandable because, as discussed earlier, a police officer's prime role is to see whether the law has been broken and to take the appropriate action. This must be his first consideration and was observed to be so.

The author accompanied some 12 different crews on duty and some considered the completion of stats 19 a chore. Asked what their reaction would be if a clerk was made responsible for completing the form they all responded that they would still have to provide him with the information to fill it in with. Clearly, the traffic officers were not fully happy with the present situation and reaction to the present system has been very well described by Maslow, 1954, and Herzberg, 1966, and these works are now considered basic management theory. For example, Maslow's theory concerning a hierarchy of needs features on most management courses and sets out to describe five factors which motivate people to work and stressed that man was not a product of his past experience and learning, but forward looking and self directed, capable of shaping his own life and behaviour. His five factors in hierarchical order are as follows:

<u>The need for Self Actualisation, Realisation</u> - The need to become everything that one is capable of becoming - self fulfilment, self expression and creativity.

The esteem needs - The need for self respect and the respect of others; for competence, independence and self confidence and for prestige.

Social Needs - The need to relate to other people, the need for friendship and affection, for belonging to a group.

Safety Needs - Needs for physical and psychological safety and security, for shelter and freedom from attack both physically and mentally.

Psychological Needs - These are more basic and describe the needs for food, water, air, etc,.

According to Maslow, when (and only when) a lower need is satisfied will the next become dominant and the individuals attention is turned to satisfying this higher need. At the higher level, the needs for self actualisation is destined to remain unsatisfied as new meanings and challenges arise. Frederick Herzberg discussed preventative and growth needs and are usually referred to as motivation and hygiene theory. Basically, Herzberg considers that man has two sets of needs which he refers to 'maintenance needs' and 'motivational needs'. The first are concerned with avoiding pain and dissatisfaction, the second with actively seeking and achieving satisfactions and fulfilment. He calls factors relating to maintenance needs as hygiene factors because attention to them can only prevent or eliminate dissatisfaction, without promoting satisfaction or happiness. Furthermore, maintenance needs are continuous and progressive and can never be permanently satisfied. Herzberg stressed that:

'no amount of environmental improvement can compensate for task impoverishment. If we are concerned to motivate people, we must look again at the task we ask them to do'.

Before these issues can be effectively discussed it is necessary to seek some opinions from the police officers regarding their attitude to Stats 19 and data collection for research purposes and in this respect a questionnaire (see Appendix 54) was sent to relevant police officers and the results of this exercise is now discussed below.

6.4 Questionnaire to Police Officers

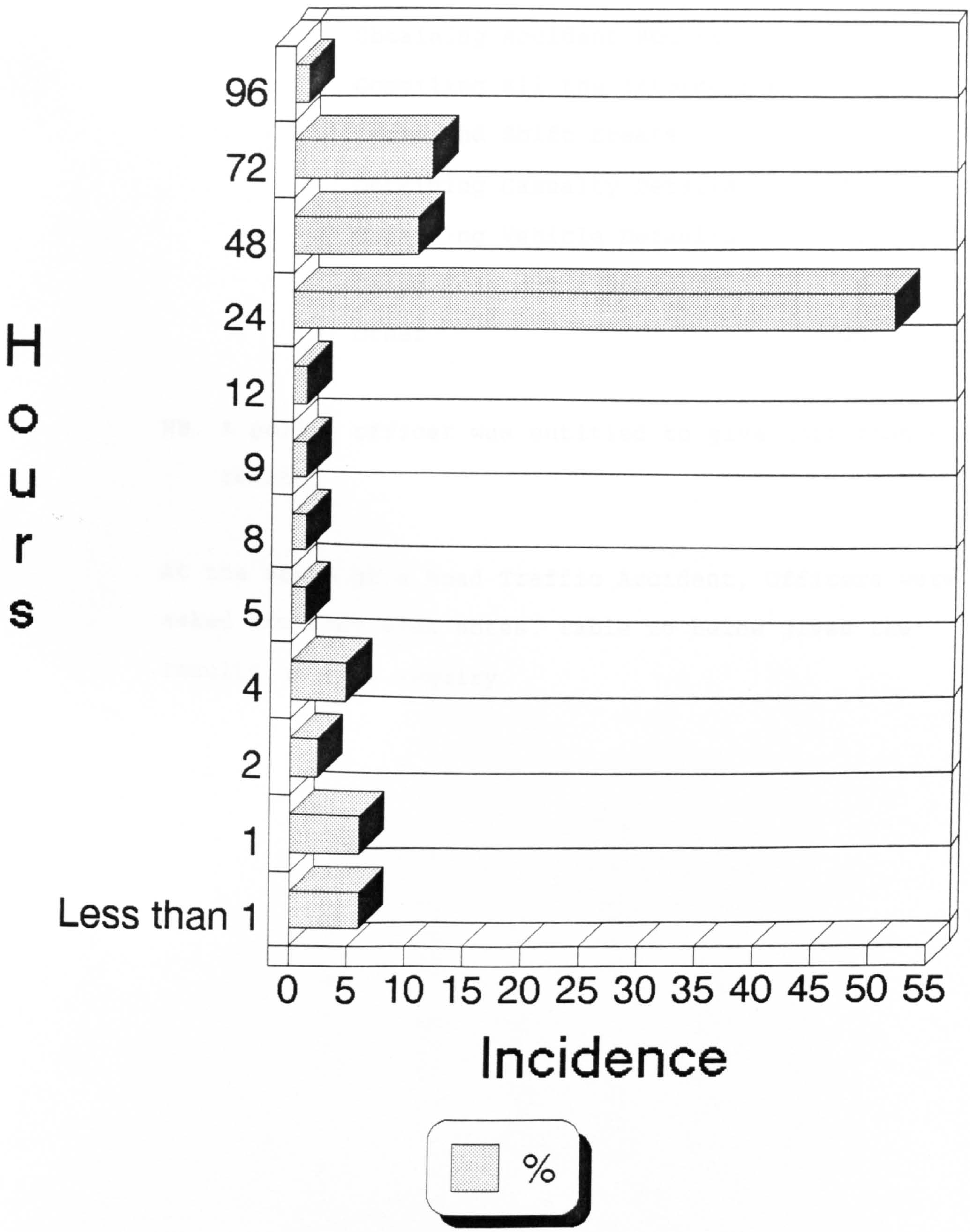
A total of 83 traffic divisional officers returned their completed questionnaires which represents a 69% response rate. Those not returned were due to illness, leave and secondment. Of those returned, 8.4% were female. The average age of respondents was 36 years with 15 years experience as a police officer, 9 years of which had been spent upon traffic duties. Only 6 (7.2%) had been shown what the Stats 19 form was used for and how the local authority uses it. This is an extremely important issue and will be commented upon later in the text. 23% (19 officers) were of the opinion that the collection of stats 19 information was not very useful (or a waste of time) whilst 77% felt the collection could be useful. 52% stated that delays in completing their stats 19 took longer than 24 hours but less than 48 hours whilst 12% said that they experienced delays of over 72 hours on average. A pie - chart showing the delay period is given below in Table 18 Reasons given for these delays are given in Table 19.

<u>Delay Periods Given in Hours.</u> <u>Table 18</u>

Hrs.	Freq.	%
<1	5	6.0
1	5	6.0
2	2	2.4
4	4	4.8
5	1	1.2
8	1	1.2
9	1	1.2
12	1	1.2
24	43	51.8
48	9	10.8
72	10	12.0
96	1	1.2
Total	83	100.0

Table 18

Police Enquiry Delay Periods in Hours



Reasons Given for Delay Table 19

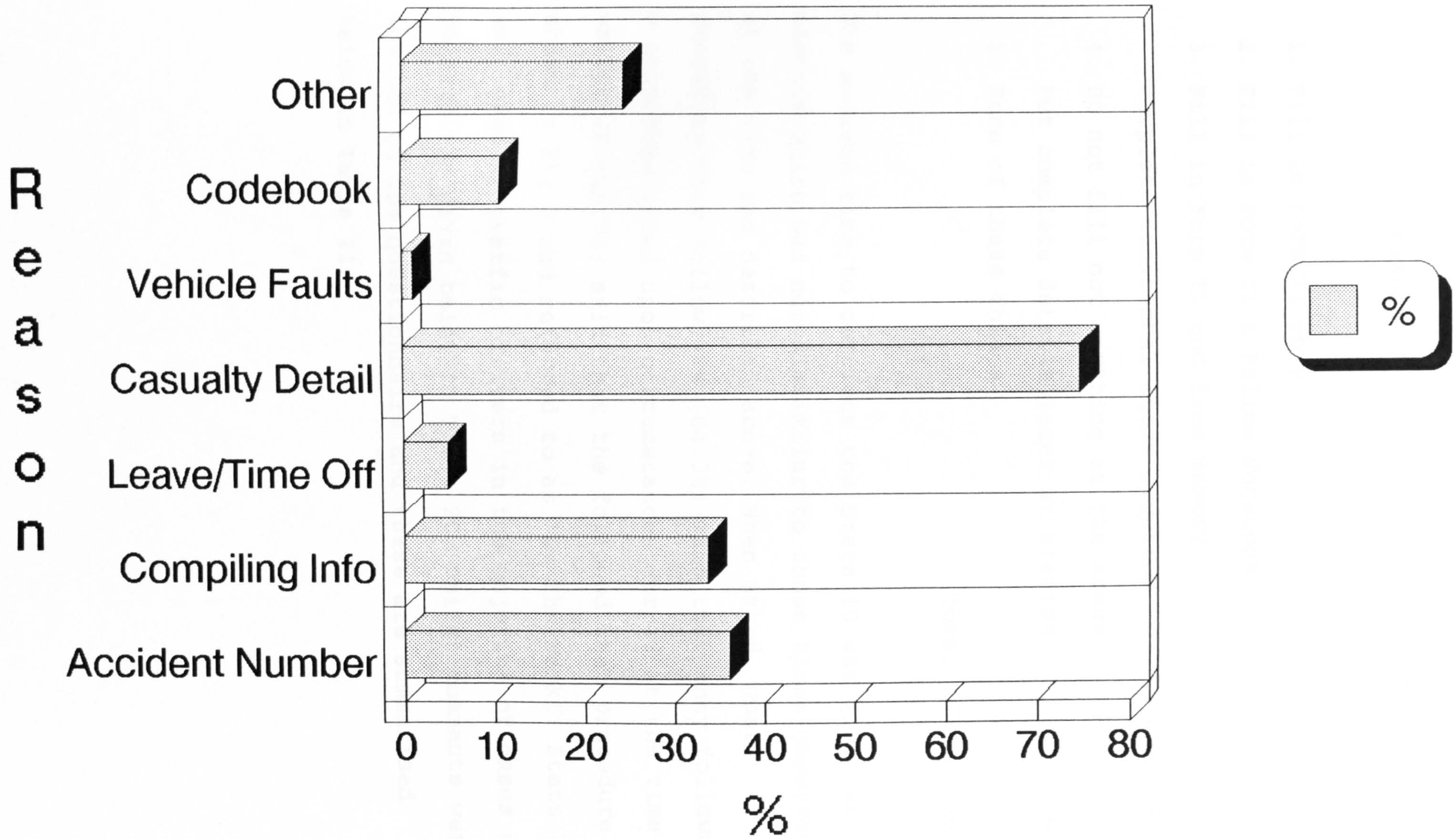
Reason	Freq.	%
Obtaining Accident Number	30	36.1
Compiling all the information	28	33.7
Leave and Shift Breaks	4	4.8
Obtaining Casualty Details	62	74.7
Obtaining Vehicle Defaults	1	1.2
Using Codebook (Stats 20)	9	10.8
Other	20	24.1

NB. A police officer was entitled to give more than one reason.

At the scene of a Road Traffic Accident, Officers were asked how they took notes. Table 20 below gives the results of this enquiry.

Table 19

Police Enquiry Reasons for Delay



Data Collection at the Scene. Table 20

Method	Freq.	%
1. Fill in form T1 only	16	19.3
2. Fill in Form T1 & Police Notebook	21	25.3
3. Fill in Form T1 and from memory complete additional items required	39	47.0
4. Do not fill out anything at the scene but complete details later at station	4	4.8
5. None of these things	3	3.6
Total	83	100.0

The average time to complete the Stats 19 was given as 15 minutes which was not dissimilar to those times observed at the time and described above. When asked what procedure they follow, 74 (84.3%) said that they followed a procedure based upon circumstances abroad at the time whilst 26 (15.7%) said that the followed that procedure shown in Fig 7 and referred to as 'By The Book'. Stats 20 was used by traffic officers in the majority of cases and details are given below in Table 20, whilst comments were invited on the questionnaire and these are summarised below in Table 21.

Police Enquiry

Method Of Recording Data at Scene

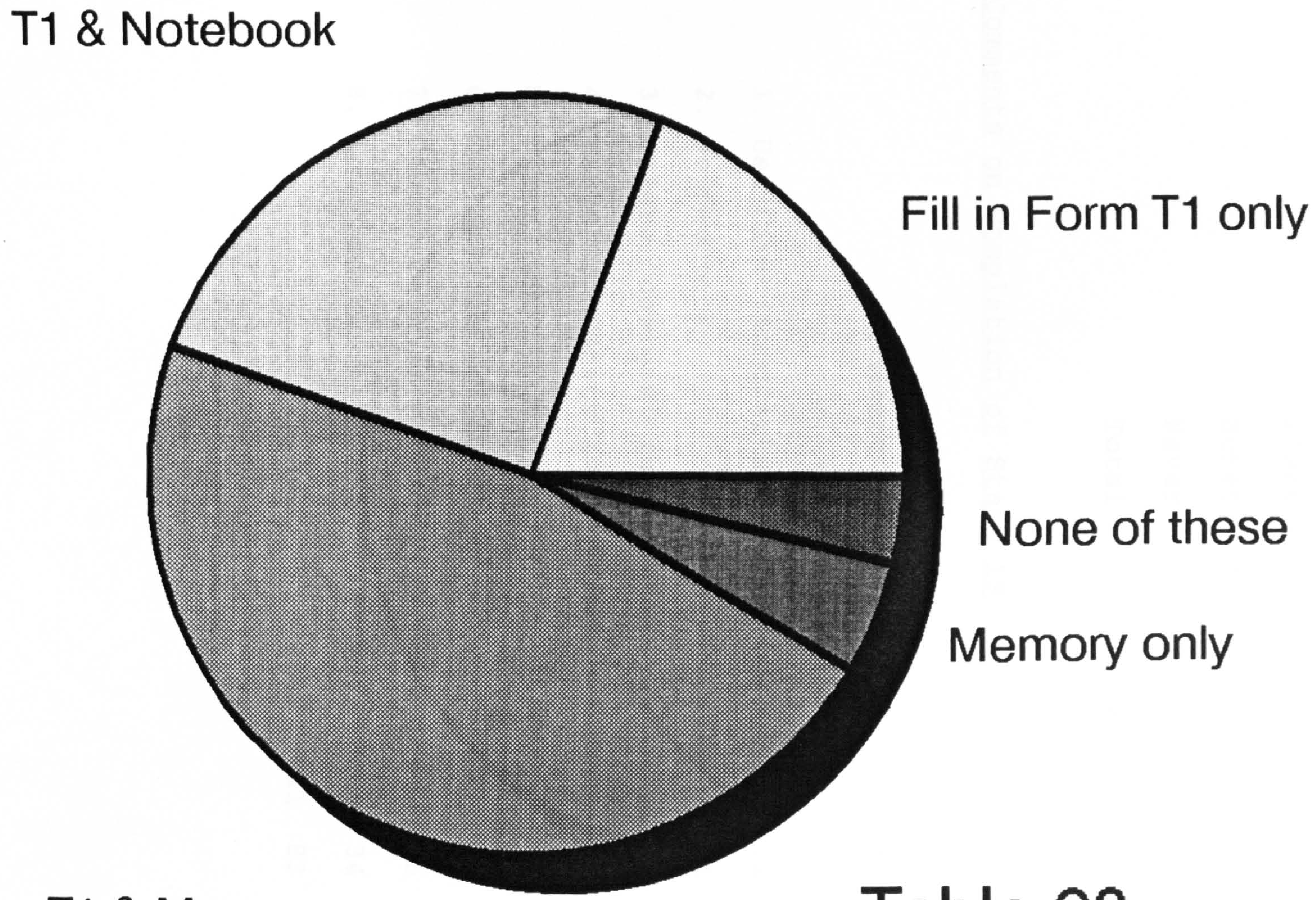


Table 20

Use of Stats 20 — Table 21

Use	Freq.	%
Always	48	57.8
Sometimes	8	9.6
Never	27	32.5
Total	83	100.0

Comments on Completion of Stats 19 — Table 22

Comment	Freq.	%
1. Use Civilian Clerks to complete	12	14.5
2. No feedback	1	1.2
3. Delete 'useless' information	7	8.4
4. Merge T1 & Stats 19 together	9	10.8
5. Scrap it!	8	9.6
6. Improve processing speed	6	7.2
7. Other comments	6	7.2
8. No comments	34	41.0
Total	83	100.0

Police Enquiry

Use of Stats 20

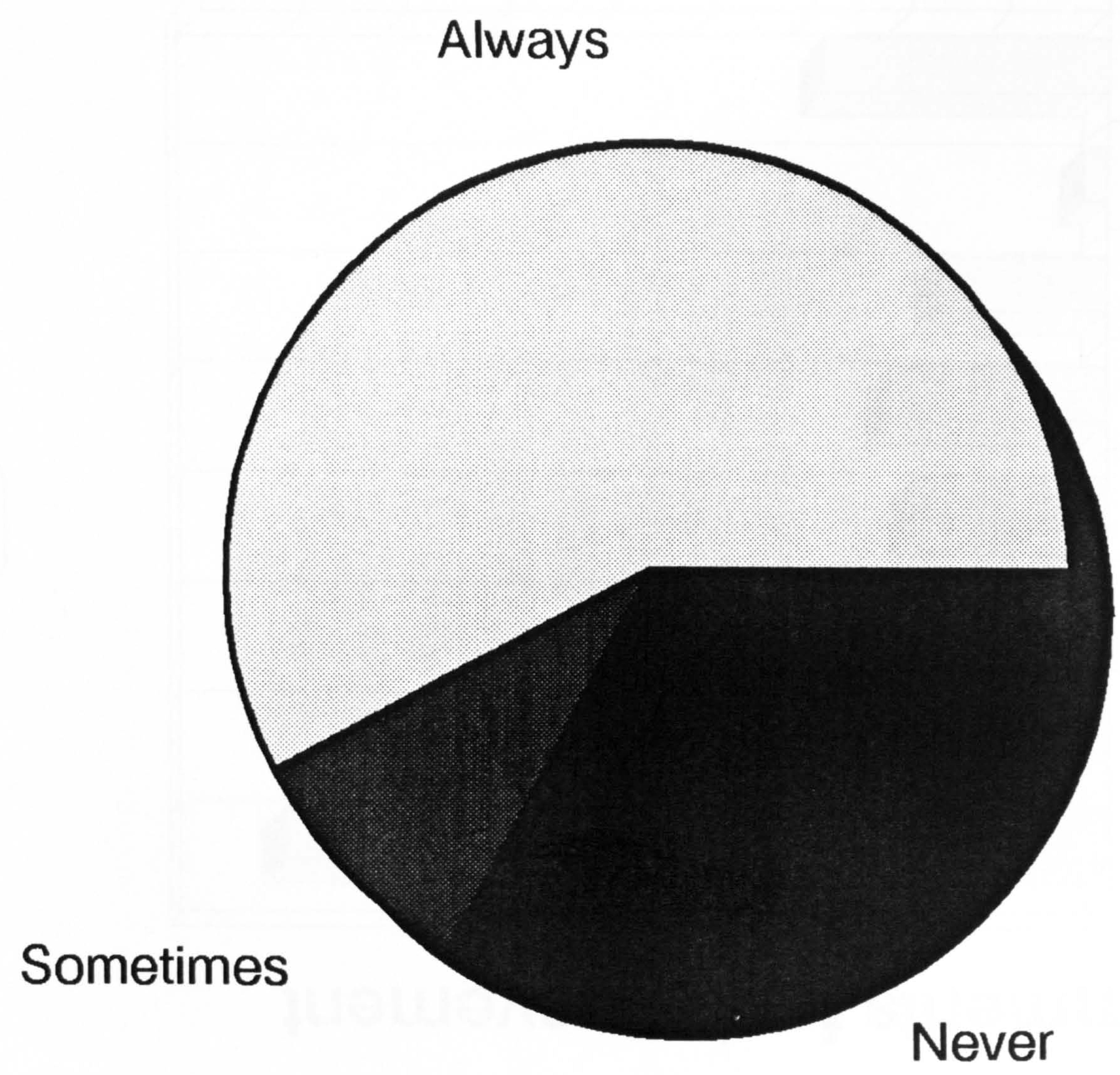
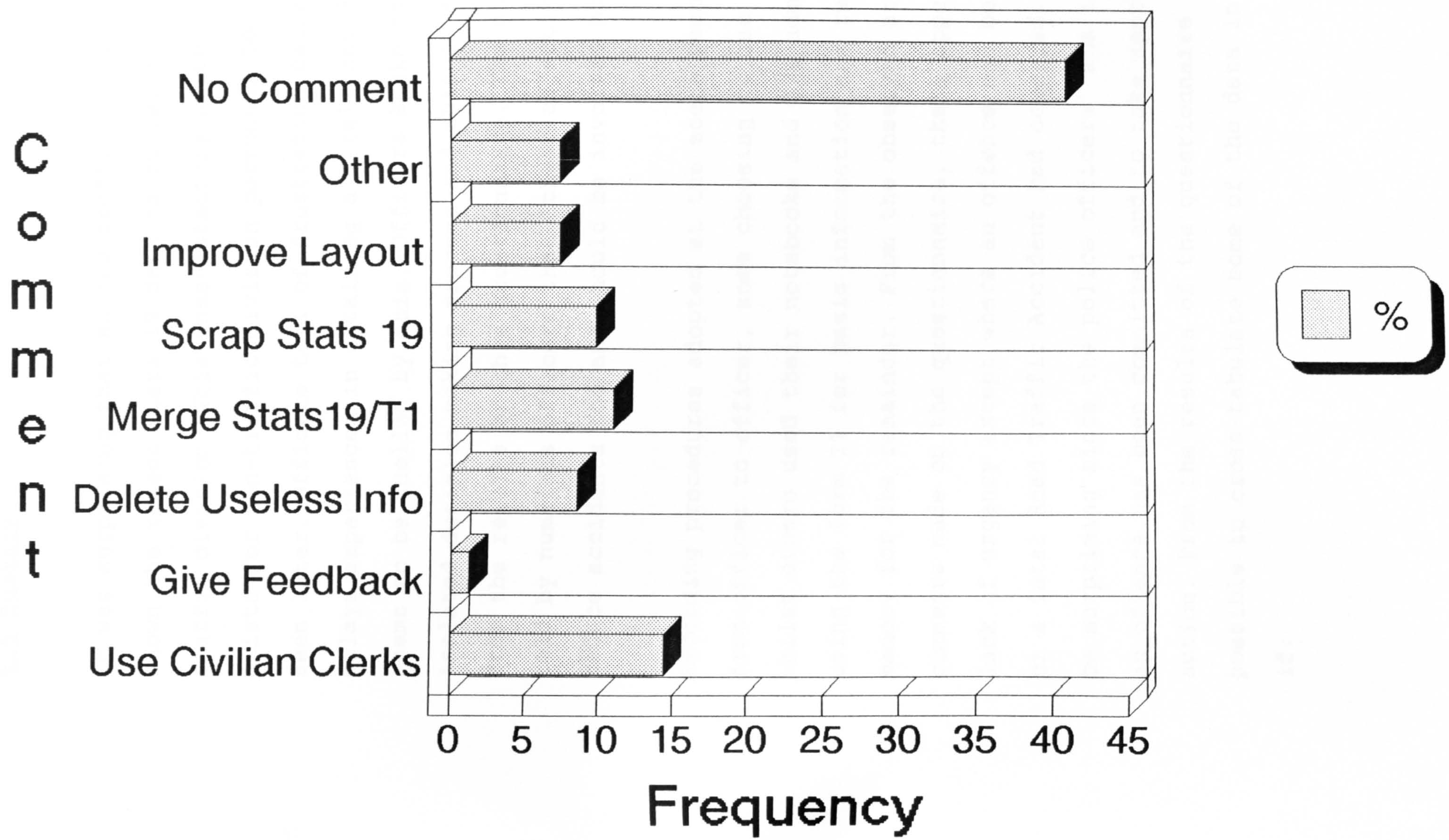


Table 21

Table 22

Police Comments for Improvement



6.5 Summary.

It was surprising that so few traffic officers have been shown the reason Stats 19 data is collected within the traffic division. This unsatisfactory state of affairs exists for non-traffic division personnel too as will be seen later. Officers tell of frustration caused by the delays experienced in obtaining all relevant details which seems to be fuelled by this. Officers spoke of feeling isolated decision making process and this is borne out from the results of this questionnaire. The author was told by numerous officers that 'their objectives were to reduce accidents too and should be involved more'.

Recording procedures adopted at the scene seemed to differ from officer to officer, some choosing to use only the T1, whilst others used their notebooks and 47% admitted to using the form T1 for basic information and relying upon memory for the remainder. From the observed study and some comments made on the questionnaire, there appeared to be a lack of urgency except where an offence had been committed or a fatal Road Traffic Accident had occurred. This cannot be surprising since the police officers' aim is to see if an offence has been committed and to take appropriate action. From the results of the questionnaire it was possible to cross-tabulate some of the data in order see if:

- Experience affected Delay
- Experience affected Stats 19 completion time
- Experience affected Stats 19 data delays
- Experience affected procedure at the scene

To carry out this exercise, ages were grouped as follows:

- under 30 years old
- between 30 and 40 years
- between 40 and 50 years
- 50 years and over

From this, it was possible to see if experience which is dependent upon age effected how groups viewed Stats 19 documentation. There was no significant differences discovered except in one case. It was found that the higher the age group the higher the estimate of time was given on the questionnaire to complete Stats 19 at the $p<0.5$ level. The implications for management is discussed in Chapter 9.

Chapter 7

7.0 Medical Records: A Study of General Practitioners and and a Comparison of Hospital Records.*

7.1 From the 1st January 1986 to the 31st December 1986 a hospital study was conducted using medical rather than police records. The purpose of this exercise is listed below:

(i) It was necessary to quantify any levels of under-reporting in Dorset and compare this with those other studies described earlier.

(ii) It was necessary to quantify the involvement of the General Practitioner in the treatment of Road Traffic Accident casualties.

(iii) It was necessary to any investigation such as those described in (i) and (ii) above that the Operational Resource Plan was monitored in order to quantify the resource base more accurately.

* Part of this Chapter have been published in the Journal of the Institution of Highways and Transportation and the Journal of the Royal Society of Health (in press 1987).

7.2 Dealing with medical records is a sensitive matter and it is necessary to describe the processes involved in obtaining authority to gain access to confidential medical information. As early as March 1986, approaches were made to the Community Medical Committees (CMC) of the East and West Health Authorities and to the Wessex Regional Health Authority. These Committees were convinced that the investigation was both necessary and important and supported a direct approach to the Local Medical Committee (Local Medical Committee). Without Community Medical Committee support it would be unlikely that the Local Medical Committee would approve such a study being undertaken. The Local Medical Committee at their 25th March 1986 approved that the Family Practitioners Committee (FPC) approve a two month study of GP's and that the project receive approval from both area Research and Ethics Committees (see Appendix 59). At the same time authority was given to interview casualties and this is discussed in greater depth in Chapter 9.

The Local Medical Committee were reluctant to approve a study greater than two months for two reasons. Firstly, GP's are very busy and I was also warned that to get GP's to participate for any longer would be unlikely and secondly, they too would wish to see levels of GP involvement quantified before further studies were authorised.

7.3. Having sought and obtained appropriate Committee approval, discussions were held with all Hospital A&E

consultants and hospital managers. Items dealing with the interviewing of casualties are discussed later in Chapter 9 but in order to obtain hospital detail concerning treatments to riders of Powered Two-Wheeled Vehicle's was obtained and backdated to 1st January 1986. This involved studies at the following A&E facility hospitals covering the county of Dorset.

- Poole General Hospital (treated 694 casualties)
- Salisbury Royal Infirmary (treated 15 casualties)
- Weymouth District Hospital (treated 174 casualties)
- Yeovil District Hospital (treated 30 casualties)

It was agreed with locality managers that only limited information was required as the aim of the exercise was to assess levels of under-reporting. Forms were produced and an example is given in Appendix 60.

7.4 The Secretary of the Family Practitioner Committee agreed to circulate his members with any literature regarding the study as direct contact with GP's was not recommended. It was agreed by the Local Medical Committee that July and August form the two month study as these were considered to be their busiest months. A notice was circulated to all GP's via the Family Practitioner Committee in May advising that the study was to take place and a copy of this is given in Appendix 61. In June, prepaid reply envelopes and instructions were sent to all GP's and these are given in Appendix 62. The study commenced on time and is discussed in more detail below.

In terms of Operational Resource Planning the study involved some 142 m/H to set up. This was due largely to the fact that this exercise had not been considered by local authorities before. Now that the methodology has been tested it is probable that this startup time could be halved in future.

7.5 The Hospital Study.

This was carried out by the 'traffic clerk' based at each A&E hospital. Such a person exists to follow up claims against insurance companies for treatment given under the Highways Act 1972. It was of some concern to the author that on numerous occasions, the hospital would approach Police HQ for insurance details of a particular person who had reported to the hospital for treatment only to be told that they had no record of the Road Traffic Accident so could not help. The police took no further action nor could any evidence be found that they had adjusted their records as a result of this enquiry. Each month, the traffic clerk would submit that months data as an ongoing exercise from June 1986. A clerical officer within the A&E Department conducted a retrospective study of existing data from 1st January. Sufficient data is recorded to complete the enquiry form shown in Appendix 60. From observations conducted at the hospital for Operational Resource Planning purposes, as will be seen later, the completion took some 0.25 m/H per record for the retrospective study and some 0.13 m/H per record for the ongoing study. Clearly, therefore it is more efficient to conduct ongoing studies if this is to be a regular data collection feature. The implication of these findings is discussed in Chapter 10.

From this enquiry Table 23 below summarises the findings.

<u>Powered Two-Wheeled Vehicle Casualties 1986</u>

<u>Table 23</u>

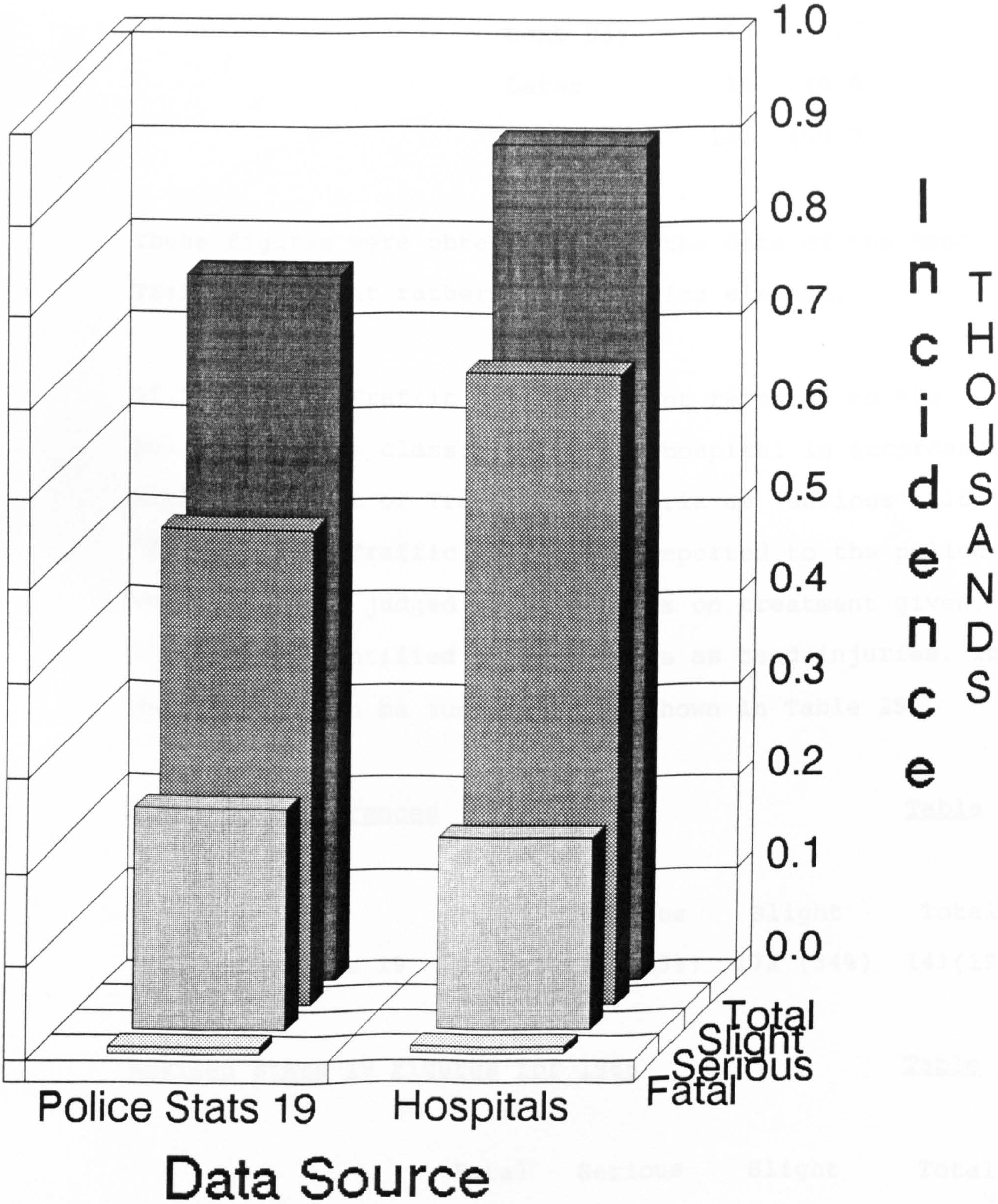
	Fatal	Serious	Slight	Total
From Police Stats 19's	8	240	514	762
From Hospitals*	8	209	686	903

* These figures were obtained from the scrutiny of records by two State Registered Nurses who classified the Road Traffic Accident's in accordance with Department of Transport criteria shown in Appendix 3.

It should be remembered that the police classify the Road Traffic Accident by severity (for Stats 19 purposes) at the scene. If the casualty is dispatched to hospital they tend to record the Road Traffic Accident as serious, which probably accounts for the gross over estimation by severity. When comparing hospital and Stats 19 returns by 'age' a 10% discrepancy was observed. Time of accident could not be compared as the hospital records only the time on arrival at the hospital, less travelling time! Because of this fact, delays in seeking treatment involving those not reported to the police are summarised

Table 23

PTWV Casulaties (1986)



below in table 24.

Delay in seeking treatment (un-reported) Table 24

Delay	No	%
Same Day	54	38.3
Next Day	73	51.7
Later	14	10.0
Total	141	100.0

These figures were obtained using the date of the Road Traffic Accident rather than the time element.

Of those Road Traffic Accident's not reported to the police, 17 were classified by the hospital in accordance with Department of Transport criteria as 'Serious'. 16 'Slight' Road Traffic Accident's reported to the police were similarly judged to be serious on treatment given. These were identified in most cases as head injuries. The differences can be summarised as shown in Table 25.

Observed Differences Table 25

	Fatal	Serious	Slight	Total
Stats 19	0 (0%)	31 (15%)	172 (34%)	141(19%)

Revised Stats 19 Figures for 1986 Table 26

Fatal	Serious	Slight	Total
8	209	545	762

Delay In Seeking Treatment

Un – Reported

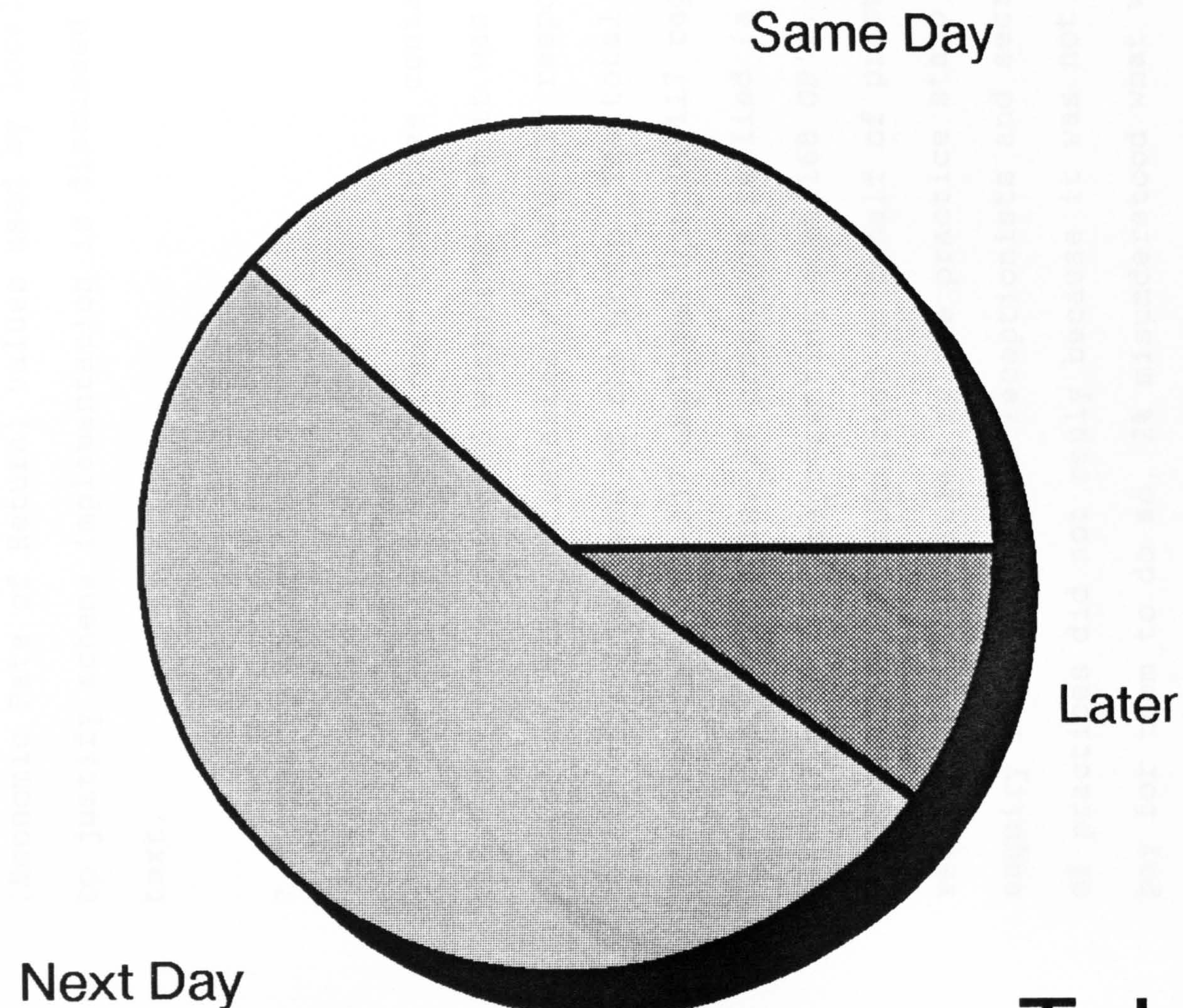


Table 24

These figures suggest a lower level of Powered Two-Wheeled Vehicle under reporting than described earlier in Table 4 but higher discrepancies have been observed with the classifications of severity particularly within the 'serious' category. The importance of these findings and the effects this would have on the Economic Rate of Return (Economic Rate of Return) values used by local authorities to justify scheme implementation is discussed later in the text.

7.6. The GP Study

Whilst the Family Practitioner Committee contacted each individual GP registered within Dorset it was the practice manager or group secretaries who usually responded on behalf of all members of the group. The total number of GP's therefore, is 337 employed within 117 registered practices. From this, 57 practices replied (a response rate of some 48%) representing some 168 GP's. Table 27 shows the returns submitted on behalf of practices. Such returns were identified by the practice stamp or by enquiry from individual receptionists and secretaries. 4% of practices did not reply because it was not possible to pay for them to do so, 2% misunderstood what was required and produced data which could not be used whilst 6% failed to provide data for the second month. Respondents appeared to be representative of the total target population with regard to geographical distribution of the population density, catchment location, size of practice, numbers of patients on role and all other demographic variables tested.

7.7 Results

The data given in Tables 27 and 28 show that the total number of practices reporting incidents during the survey to be 14. This produced 21 casualties of which only 5 were reported to the police via the Stats 19 data bank. Comparing data from GP's against police records, 4 out of the 5 records showed discrepancies in the facts recorded. This finding is comparable to those findings by Andrews (1979) op.cit. In 2 incidents, the classification of severity made by the police was different from the clinical judgement produced by the GP. A total of 7 patients sought treatment within 12 hours of their Road Traffic Accident, a further 12 within 36 hours (half of these suffering from 'whiplash' type injuries) and the remaining 2 after longer delays. One car driver suffering a serious injury had been involved in a Road Traffic Accident which had not been reported to the police. By comparison with those studies shown in Table 4, the data obtained in this study shows similarly a smaller level of discrepancy and mis-classification but a comparable scale of under-reporting. (24%). The GP data forms less than 5% of the total number of injury Road Traffic Accident's notified to centres of treatment.

TABLE 27

No. of GP's practice	Size of Roll	Date of Treatment	Time and Date of Accident	Vehicle Type	Sex	Age	Patient Class	Injuries Sustained	Dept of Transp Notification
6	13000	15/08/86	14/08/86	Car	F	30	Driver	Seatbelt Bruising Fractured Spine	None: Serious
6	11200	14/08/86	18.45 07/08/86	Cycle	F	34	Rider	Superficial Cuts	None: Slight
3	7000	07/08/86	10.00 07/08/86	Car	F	32	Driver	Whiplash	None: Slight
		29/08/86	12.30 29/08/86	M/Cycle	M	24	Rider	Abrasions	None: Slight
1	2000	30/07/86	19.00 29/07/86	Car	M	36	Driver	Whiplash	None: Slight
					F	35	Pasngr	Whiplash	None: Slight
				Car	F	37	Driver	Whiplash	None: Slight
3	5000	28/07/86	18.30 27/07/86	Car	M	43	Driver	Whiplash/Shock	None: Slight
6	13400	07/07/86	20.00 05/07/86	M/Cycle	M	17	Rider	Ankle Sprain	None: Slight
		23/07/86	22/07/86	Car	M	18	Driver	Whiplash	None: Slight
2	3650	02/07/86	26/06/86	M/Cycle	M	20	Rider	Knee Grazes	None: Slight
		09/07/86	08/07/86	Cycle	M	15	Rider	Grazes	None: Slight
6	11500	14/07/86	12.00 14/07/86	Car	M	75	Driver	Bruised Shoulder	None: Slight
		03/07/86	08.45 03/07/86	Cycle	F	15	Rider	Bruising and Leg Grazes	None: Slight
4	8850	15/08/86	09.15 14/08/86	Cycle	M	16	Rider	Grazes	None: Slight
3	5300	26/07/86	15.00 26/07/86	Car	F	72	Pasngr	Bruising to Foot	None: Slight
		26/07/86	09.00 26/07/86	Car	F	52	Driver	Crushed	Yes : Fatal
5	12000	11/08/86	12.15 09/08/86	Car	F	22	Driver	Whiplash, Bruising, Rt Shoulder/Chest	Yes : Slight**
1	2400	16/08/86	09.05 15/08/86	Car	M	26*	Driver	Seat Belt Bruising, and Abrasions, Fractured Sternum	Yes : Serious
3	4350	05/08/86	08.30 04/08/86	Moped	F	17*	Rider	Bruised Sternum	Yes : Slight
1	1450	08/08/86	08/08/86	Car	F	21*	Driver	Cuts, Bruises and Shock*	Yes : Serious**

* Factual discrepancy   ** Discrepancy in classification of injury

Table of Patients, their Sustained Injuries, Vehicle and Accident Details by General Practitioner and Practice

Extrapolated Total of Number of Injuries notified or reported.

Table 28

	Hospitals*	GP's	% GP/Hospital
Total Reported	832	43	5
Total No. Police Stats 19 notifications:		557	
Total Under-reporting.		33%	

* From a trial study of data collection of all accidents (see Appendix 63), 832 injury producing Road Traffic Accident's occurred during the same two months of the GP study.

7.8 Several studies such as those summarised in Table 4 above have been conducted in large A&E departments and have provided evidence that Stats 19 data is unreliable. The above work is the first to provide comparable evidence of the levels of unreliability in rural areas or detached treatment centres. The data obtained from the GP study suggests that they see only a small proportion of un-reported Road Traffic Accident injuries compared to hospitals, although the ratio of under-reporting. from those sources is reasonably consistent with these earlier hospital studies. Despite the small incidence of notified injuries (N = 21, Extrapolated = 43), the data are based on a large number of GP's.

Although the GP study is only based on a two month sample, it confirms the significant distortions and unreliability of official Road Traffic Accident statistics. This is compounded by the findings of the one year hospital study described above. In management terms, however, the GP study shows only a relatively small proportion of the distortion of Stats 19 data. It cannot be assumed that these findings apply to to other areas in the country. It would seem better management practice to obtain data from centres of treatment rather than from the police although Stats 19 can be useful for establishing trends.

From the management data obtained during this study particularly in terms of resource commitment we have from the hospital study:

398 records obtained in retrospect
505 records obtained ongoing

The resource commitment for Operational Resource Planning purposes can be calculated thus:

398 x 0.25m/H = 99.5 m/H
505 x 0.13m/H = 65.7 m/H

What this will mean to the overall Operational Resource Plan is discussed at some length in subsequent Chapters of this thesis.

Chapter 8

8.0 Statements made to the police as an aid to accident analysis.

8.1 It has been outlined earlier that it is a recommendation of the Department of Transport Accident Investigation Manual, 1987, op. cit that road safety practitioners and highway engineers should use accident data generated by police form Stats 19 procedure in order to identify factors for remedial action. Current advice given on Department of Transport courses and manuals states that the practitioner should, if necessary, refer to police records and statements where more detail of an incident is required. Accident investigation engineers currently use this procedure but no strong evidence can be found that road safety officers follow these guidelines.

It is also believed that incidents dealt with by properly trained police traffic officers are reported more accurately: but as will be seen later, no evidence is found to support this conclusion. This chapter investigates the validity and reliability of statements made to both traffic and non-traffic police officers as an accident investigation tool and will highlight some of the ways in which the data is deficient. The thesis will develop this in later chapters and discuss ways in which reliability might be improved.

8.2 The reliability of eyewitness statements has been a concern of psychologists for some time and has been discussed at some length in Chapter 3. The mission at this stage is to examine sufficient numbers of statements made to the police in order to assess the reliability of these as accident investigation tools. The views of the Chief Constable were sought and he agreed to allow his confidential records to be examined for this purpose.

Due to the large amount of data available and for reasons of management efficiency, the target sample concentrated on accidents involving riders of powered two wheel vehicles that occurred in a rural county. These account for some 20% of casualties and Saunders,1987 has shown these to have fewer corroborative witnesses when compared to other classes of road user.

8.3 <u>Procedure</u>

From statements made to the police in 1986, every third record was used. The total number of valid records obtained was 291. Proceeding from this data, each road traffic accident was reconstructed and compared to stats 19 information. It was possible to see how many were independently witnessed, the length of time taken to obtain statements and to consider offences committed and sentences received. It was also possible to identify those statements taken by qualified traffic officers and whether notices of intended prosecution were issued.

The following analyses were obtained from every third statement extracted from police records in order to:

1. Quantify delays taken in obtaining witness statements.
2. Assess those events witnessed independently.
3. Be aware of prosecution and sentencing action.
4. Test if any differences exist between Road Traffic Accident's dealt with by traffic/non-traffic police officers.
5. Test the reliability between information given in the statement and that provided separately on the Stats 19 document.

Results

The following cross - tabulations were obtained and those tables given below describe the nature of the accidents reported.

Road Traffic Accident's by Severity

Table 29

	No.	%
Fatal	4	1.4
Serious	72	24.7
Slight	215	73.9
Total	291	100.0

Statements Made to the Police

RTA's by Severity

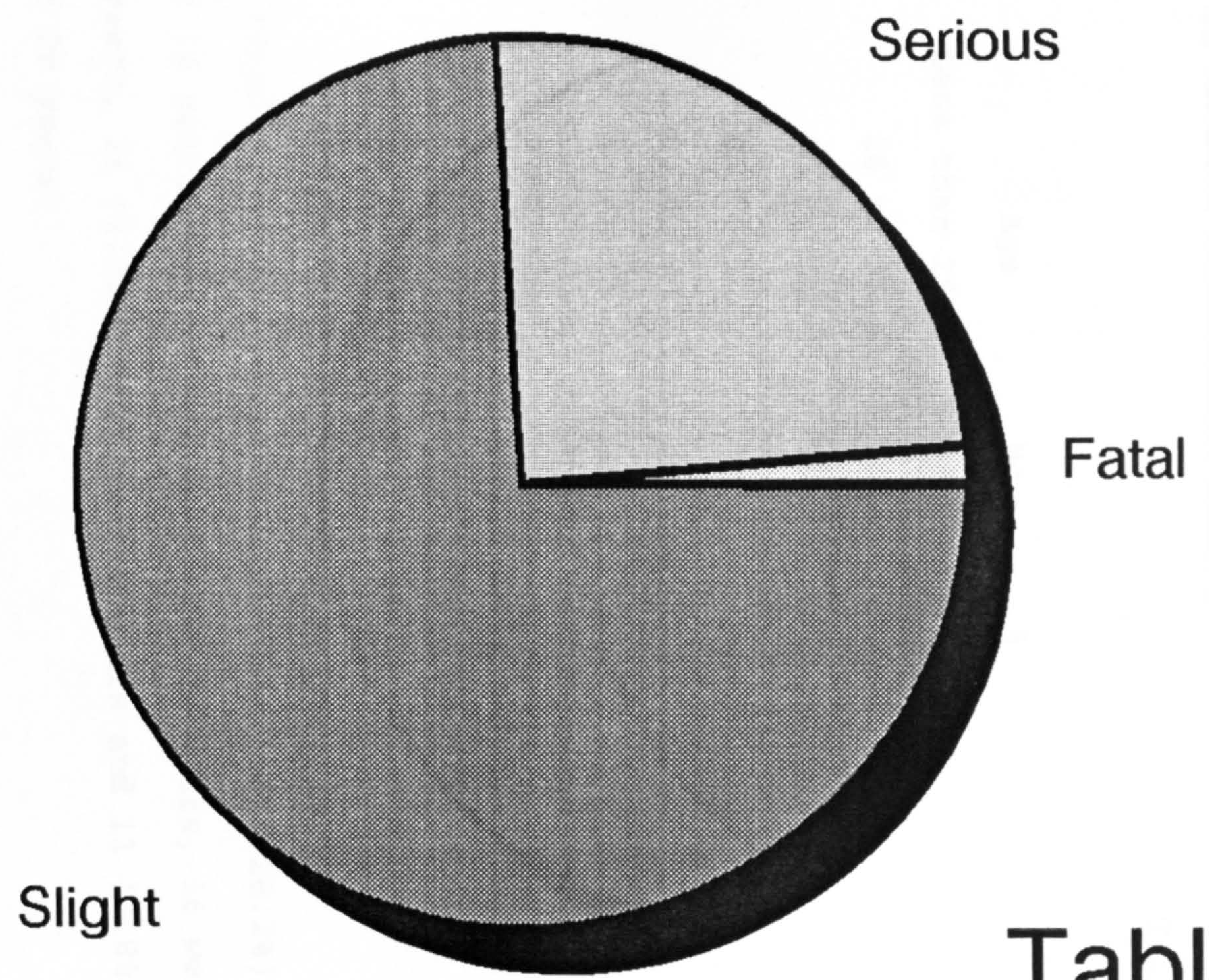


Table 29

This data is typical of the relative breakdowns of injury grade categories sustained by riders of powered two wheeled vehicles. Disparities in the categorisation of injury and reporting of this data are covered in Saunders and Wheeler,1987.

Age by Powered Two-Wheeled Vehicle Rider Involved

Table 30

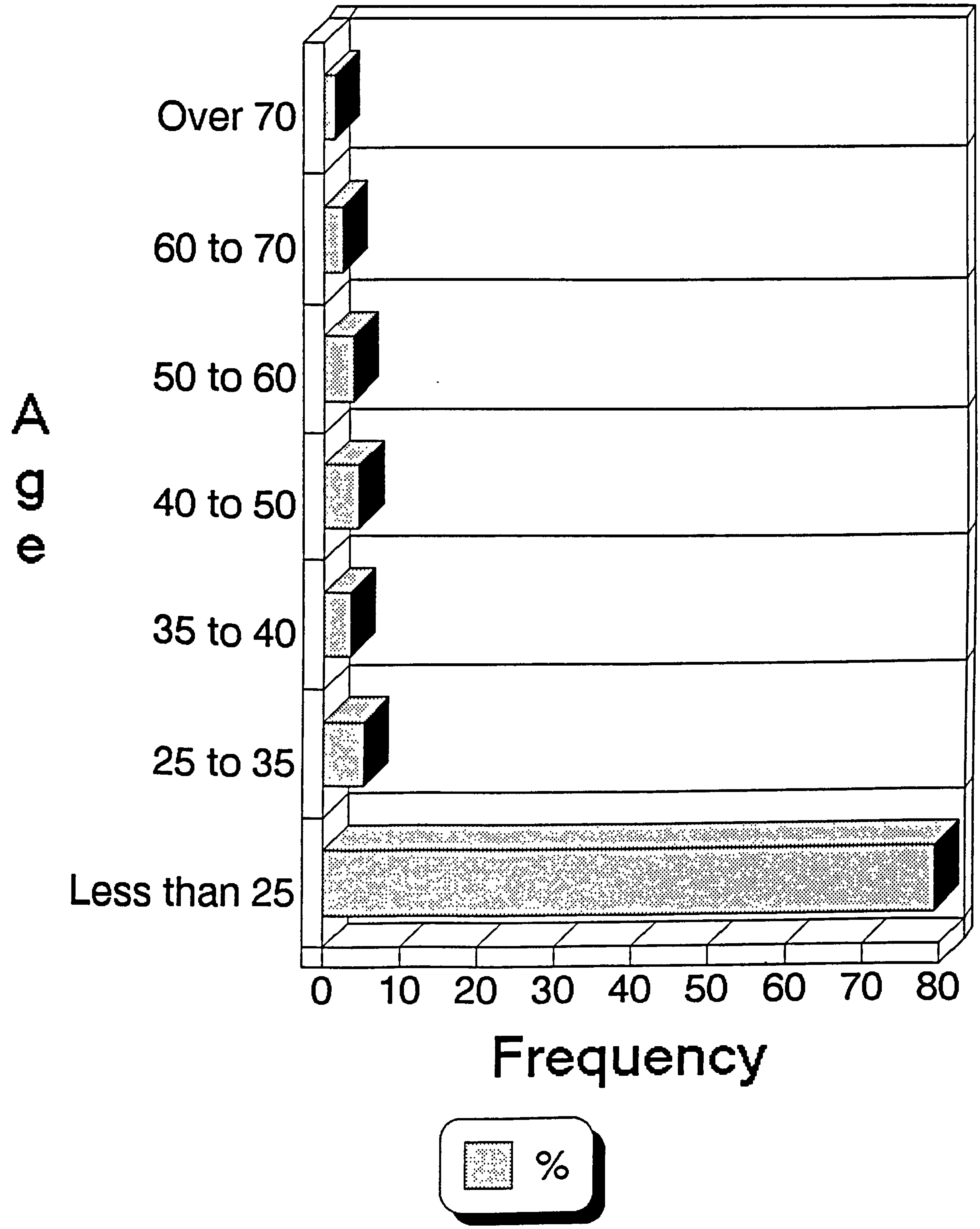
Age	No.	%
Less than 25	231	79.3
26 to 35	15	5.2
36 to 40	10	3.4
41 to 50	13	4.5
51 to 60	11	3.8
61 to 70	7	2.4
Over 70	4	1.4
Total	291	100.0

(Of those aged less than 25 years above, 82 (28.2%) were aged 16 years, 89 (30.6%) were aged 17 years, 16 were aged 18 years, 14 (4.8%) were aged 19 years and 11 (3.8%) were aged 20 years.)

(1) Statements are only taken from parties involved when it is the opinion of the police officer in attendance that an offence has been committed.

Table 30

Age by Rider Involved



Age by 'Other Driver' Involved (1) Table 31

Age	No.	%
Less than 25	48	26.1
26 to 35	45	24.5
36 to 40	14	7.6
41 to 50	33	17.9
51 to 60	14	7.6
61 to 70	13	7.1
Over 70	17	9.2
Total	184	100.0

(1) 107 accidents did not involve an 'other' driver. 103 (56%) claimed not to have seen the rider before impact.

Tables reported hereafter concern any police action relating to the accident.

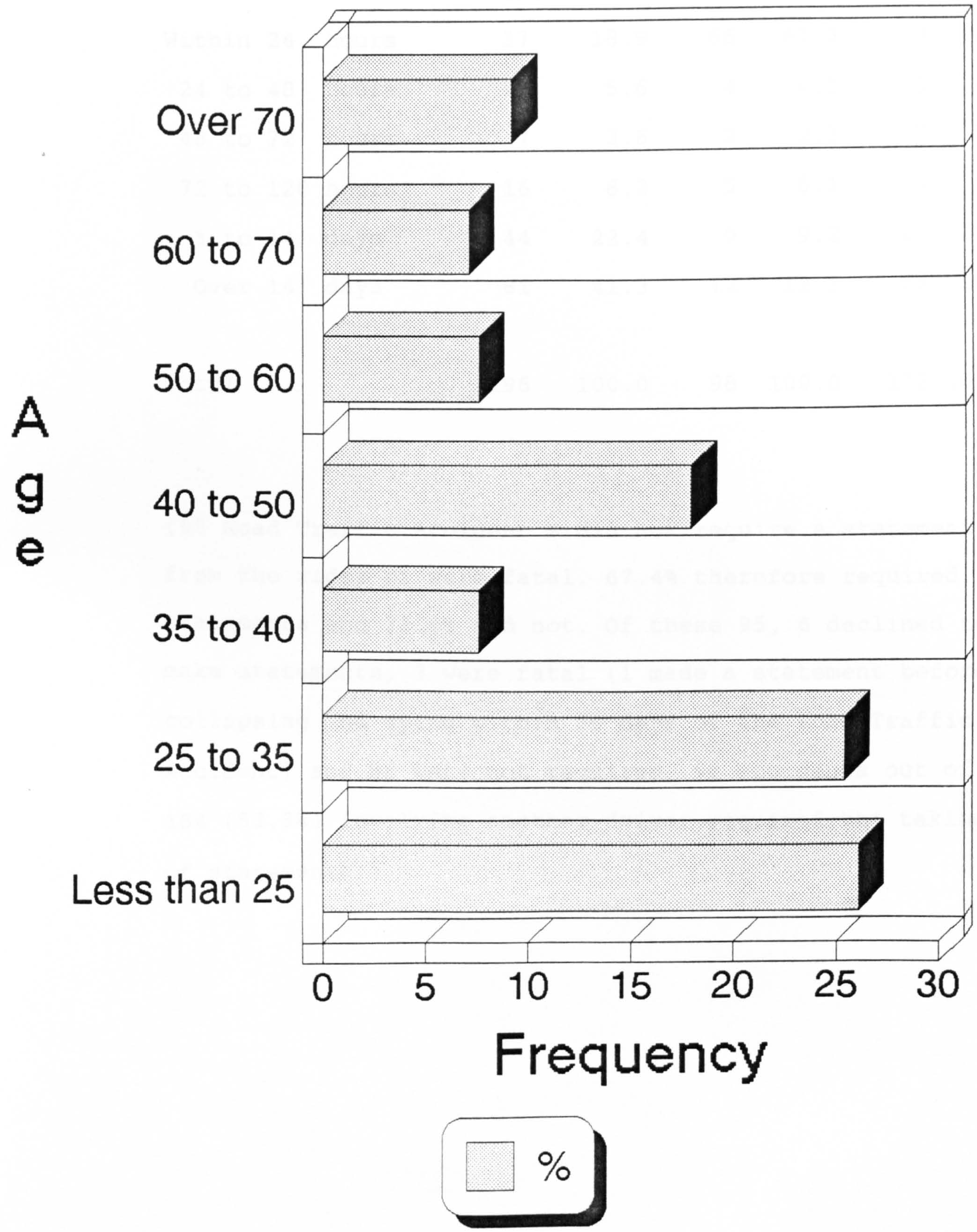
Statements by Independent Witnesses Table 32

	No.	%
Accidents without Independent Witness	159	54.6
Accidents with Independent Witness (1)	132	46.4
Total	291	100.0

((1) 73 had one independent witness, 42 two witnesses,17 more than two witnesses)

Table 31

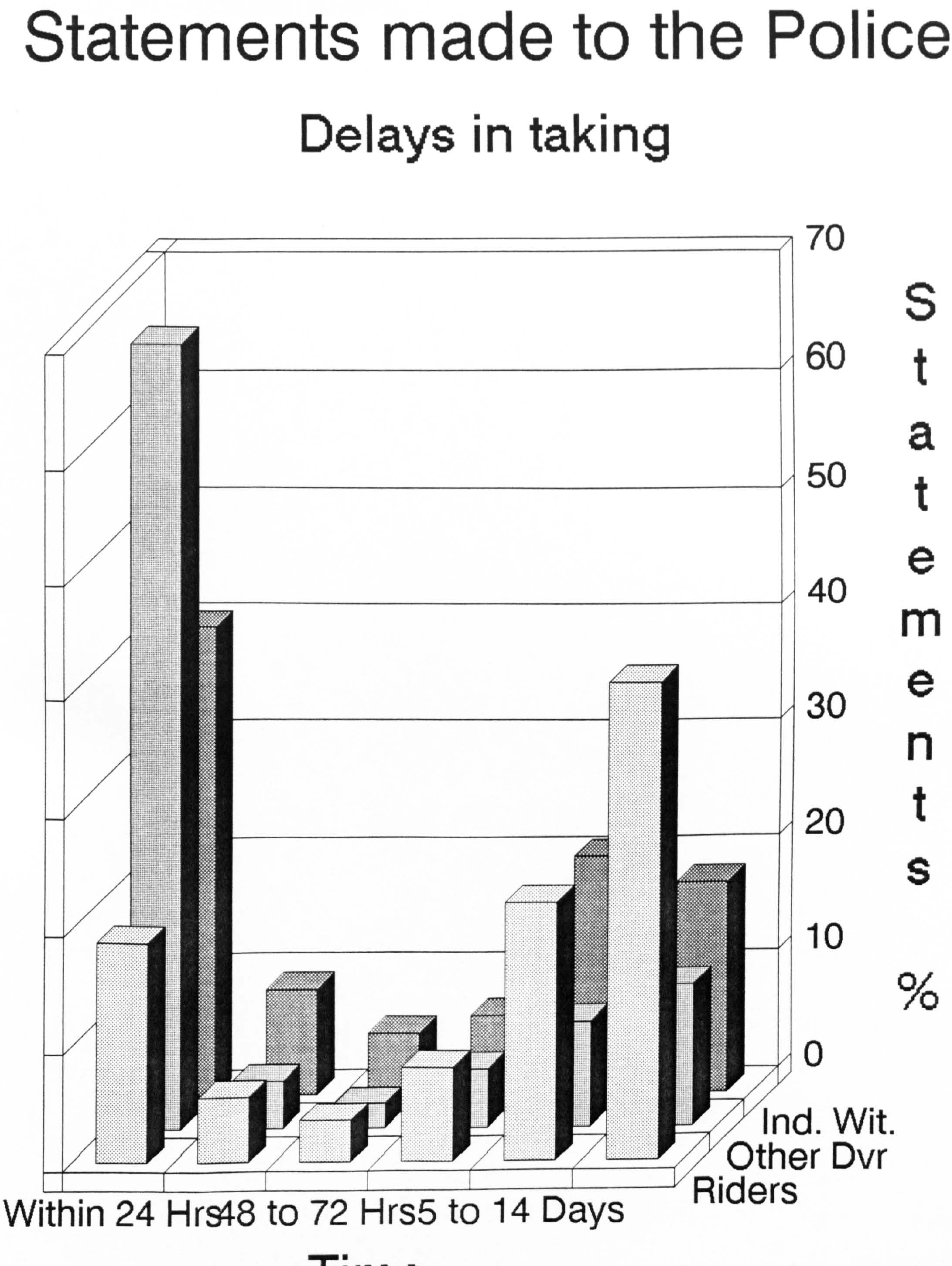
Age by 'Other' Driver Involved



Delays in Taking Statements by the Police — Table 33

	Riders		Oth Driver		Ind Witness	
	No.	%	No.	%	No.	%
Within 24 hours	37	18.9	66	67.3	53	40.1
24 to 48 hours	11	5.6	4	4.1	12	9.1
48 to 72 hours	7	3.6	2	2.1	7	5.3
72 to 120 hours	16	8.2	5	5.1	9	6.8
5 to 14 days	44	22.4	9	9.2	27	20.5
Over 14 days	81	41.3	12	12.2	24	18.2
Total	196	100.0	98	100.0	132	100.0

(95 Road Traffic Accident's did not require a statement from the rider or were fatal. 67.4% therefore required statements and 32.6% did not. Of these 95, 6 declined to make statements, 3 were fatal (1 made a statement before collapsing and dying within 30 days of the Road Traffic Accident) and 86 were not required. 98 accidents out of 184 (53.3%) involving another driver required the taking of statements.)



Statements made to the Police
Delays in taking
70
60
50
40
30
20
10
0
Statements %
Ind. Wit.
Other Dvr
Riders
Within 24 Hrs
48 to 72 Hrs
5 to 14 Days
Time

Table 33

Offences committed — Table 34

Offence	No.	%
Driving without due care and attention	107	79.6
No insurance	7	5.2
Riding whilst disqualified	6	4.4
Ignored a warning	4	2.9
Unqualified driver as pillion	3	2.2
Licence Offence	3	2.2
No 'L' Plates	1	.7
No Red Light	1	.7
No M.O.T. Test Certificate	1	.7
Failed to report accident	1	.7
Failed to produce documents	1	.7
Total	135	100.0

Statements made to Police

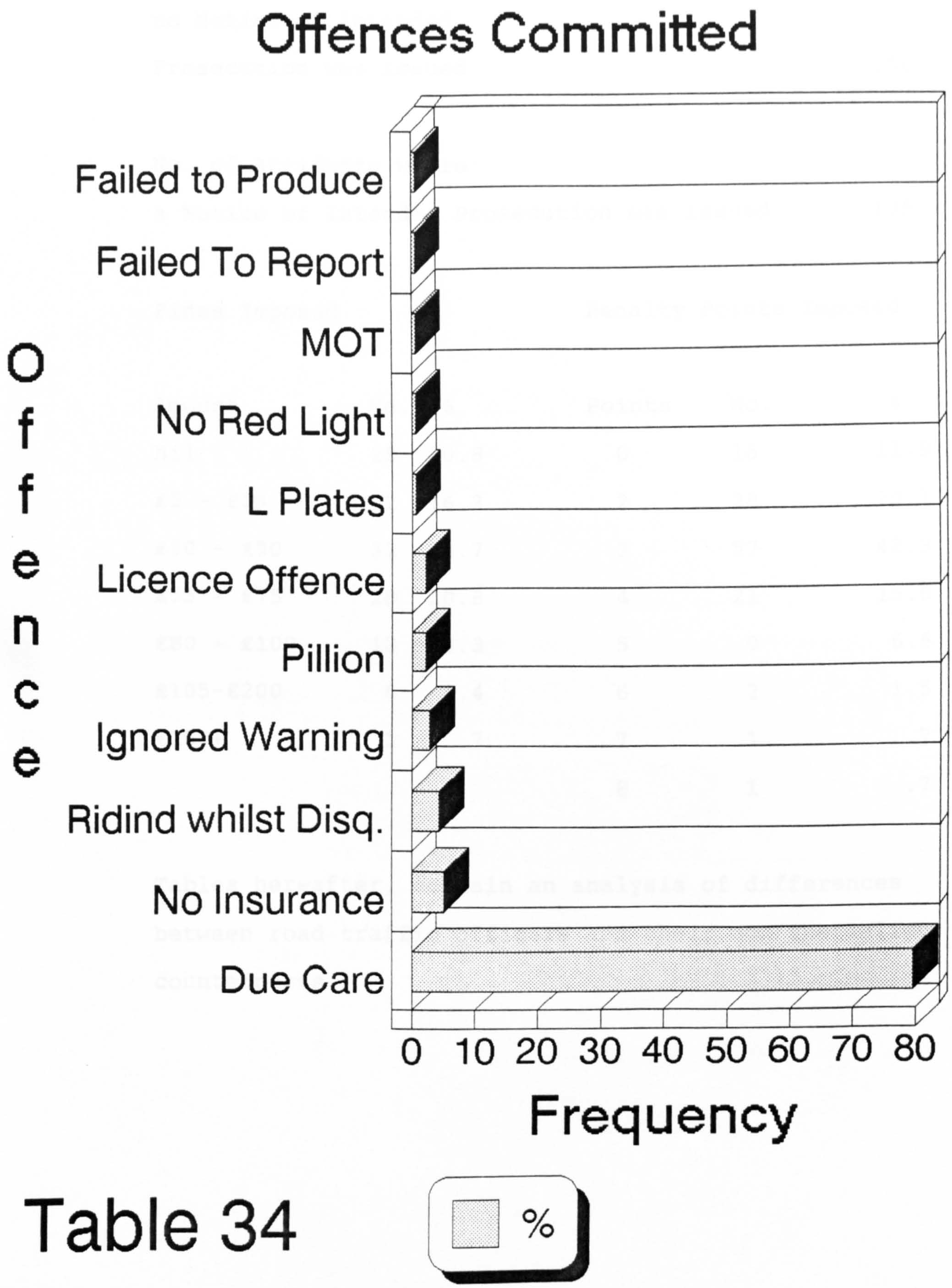


Table 34

Prosecutions, Penalties and Fines Imposed — Table 35

No. of Accidents where no Notice of Intended Prosecution was issued	156
No. of Accidents where a Notice of Intended Prosecution was issued	135

Fines Imposed

Amount	No.	%
Nil	28	20.8
£5 - £25	22	16.3
£30 - £50	32	23.7
£55 - £75	28	20.8
£80 - £100	18	13.3
£105-£200	6	4.4
£200+	1	.7

Penalty Points Imposed

Points	No.	%
0	16	11.9
2	28	20.7
3	57	42.3
4	21	15.6
5	9	6.6
6	2	1.5
7	1	.7
8	1	.7

Tables hereafter, contain an analysis of differences between road traffic officers and their non specialist counterparts.

Table 35

Prosecutions & Penalties

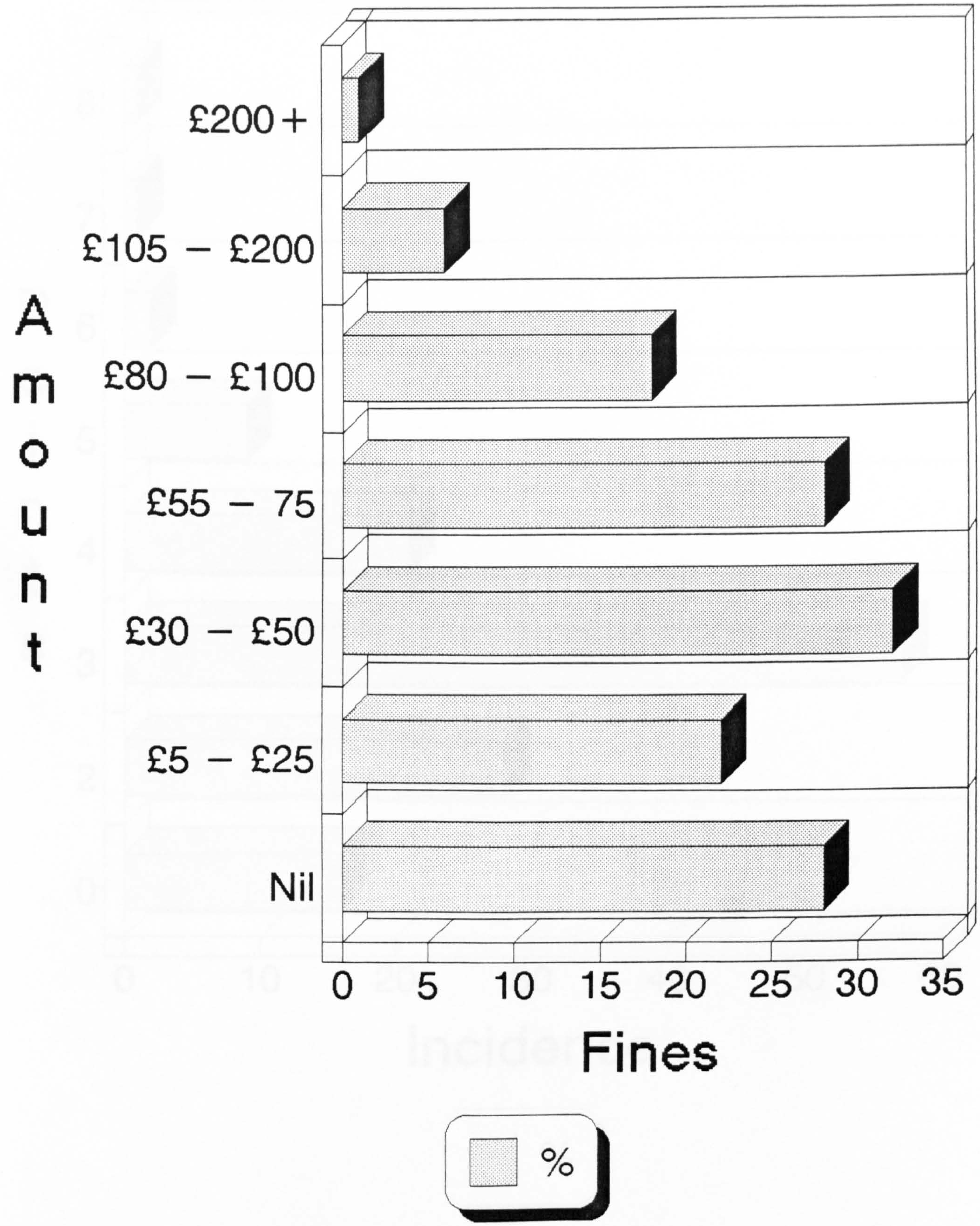
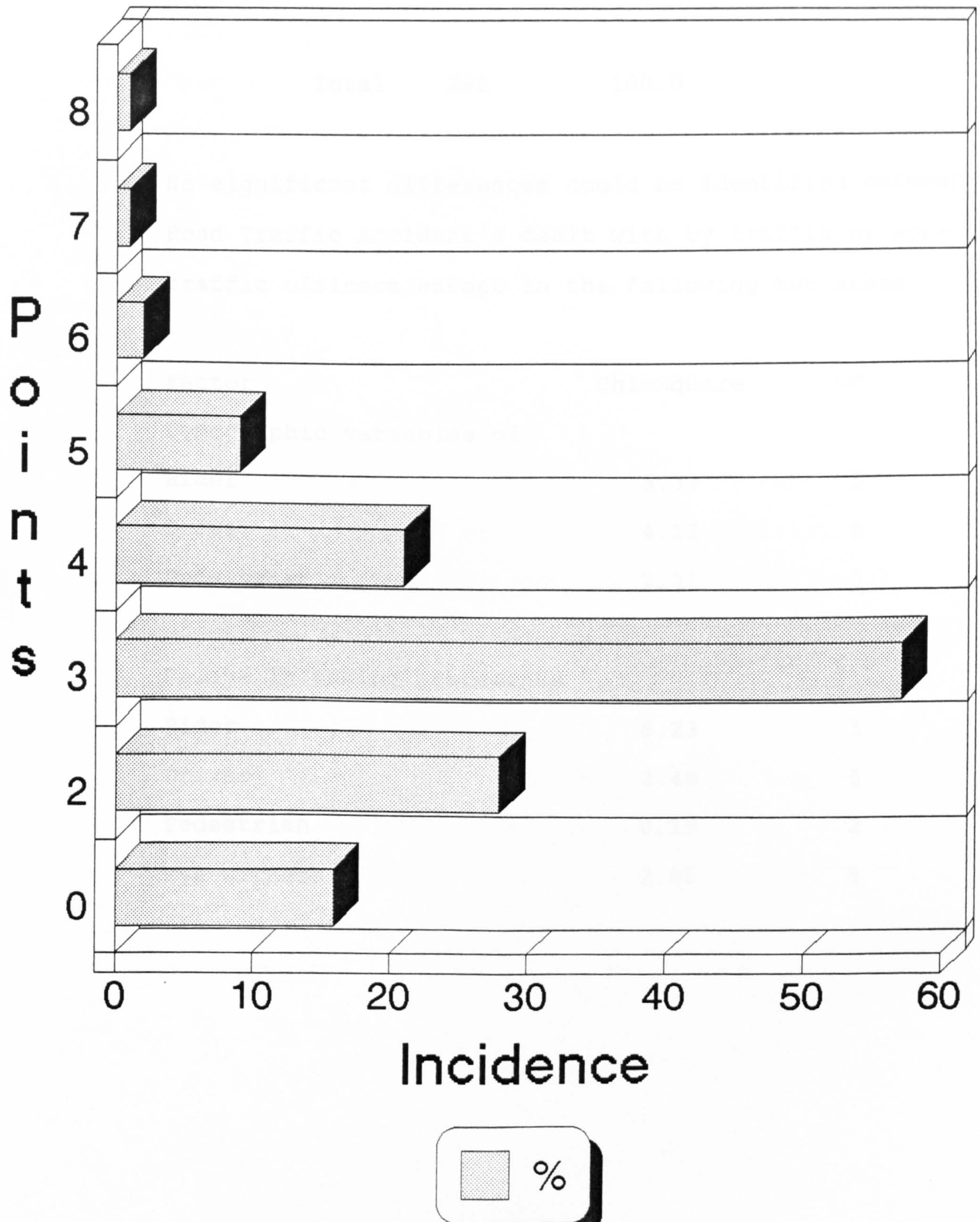


Table 35

Prosecutions & Penalties



<u>Accidents by Traffic/Non Traffic Police Officers</u>

<u>Table 36</u>

	No.	%
Traffic	102	35.1
Non-Traffic	189	64.9
Total	291	100.0

No significant differences could be identified between Road Traffic Accident's dealt with by traffic or non-traffic officers except in the following two areas.

Factor	Chi-Square	DF	Sig
Demographic variables of			
Rider	6.33	5	NS
Driver	4.12	5	NS
Pedestrian	2.31	5	NS
Delays in taking statements			
Rider	6.23	5	NS
Driver	2.48	5	NS
Pedestrian	0.19	2	NS
Eye witness	2.05	5	NS

Factor	Chi-Square	DF	Sig
Stats 19 Manoeuvre	11.88	13	NS
Issue of NIP	0.27	1	NS
Actual Prosecutions	0.03	1	NS
Type of Offence (1)	17.02	7	p <.05
Fines Imposed	5.11	5	NS
Penalty Points imposed	2.55	7	NS
Presence of Independent Witness	3.49	5	NS
Severity (2)	5.98	2	p <.05

(1) Traffic Officers are more likely to report riders for the following types of offence: riding whilst disqualified and ignoring a warning; and less likely to report offenders for riding a Powered Two-Wheeled Vehicle without insurance, MOT or Document Offences.

(2) Traffic Officers are more likely to deal with accidents involving more serious injuries.

The Tables hereafter contain an analysis of differences between police statements and Stats 19 forms.

Distribution by Month

Table 37

Month	No.	%
January	27	9.3
February	21	7.2
March	22	7.6
April	17	5.8
May	27	9.3
June	23	7.9
July	25	8.6
August	18	6.2
September	28	9.6
October	27	9.3
November	35	12.0
December	21	7.2
Total	291	100.0

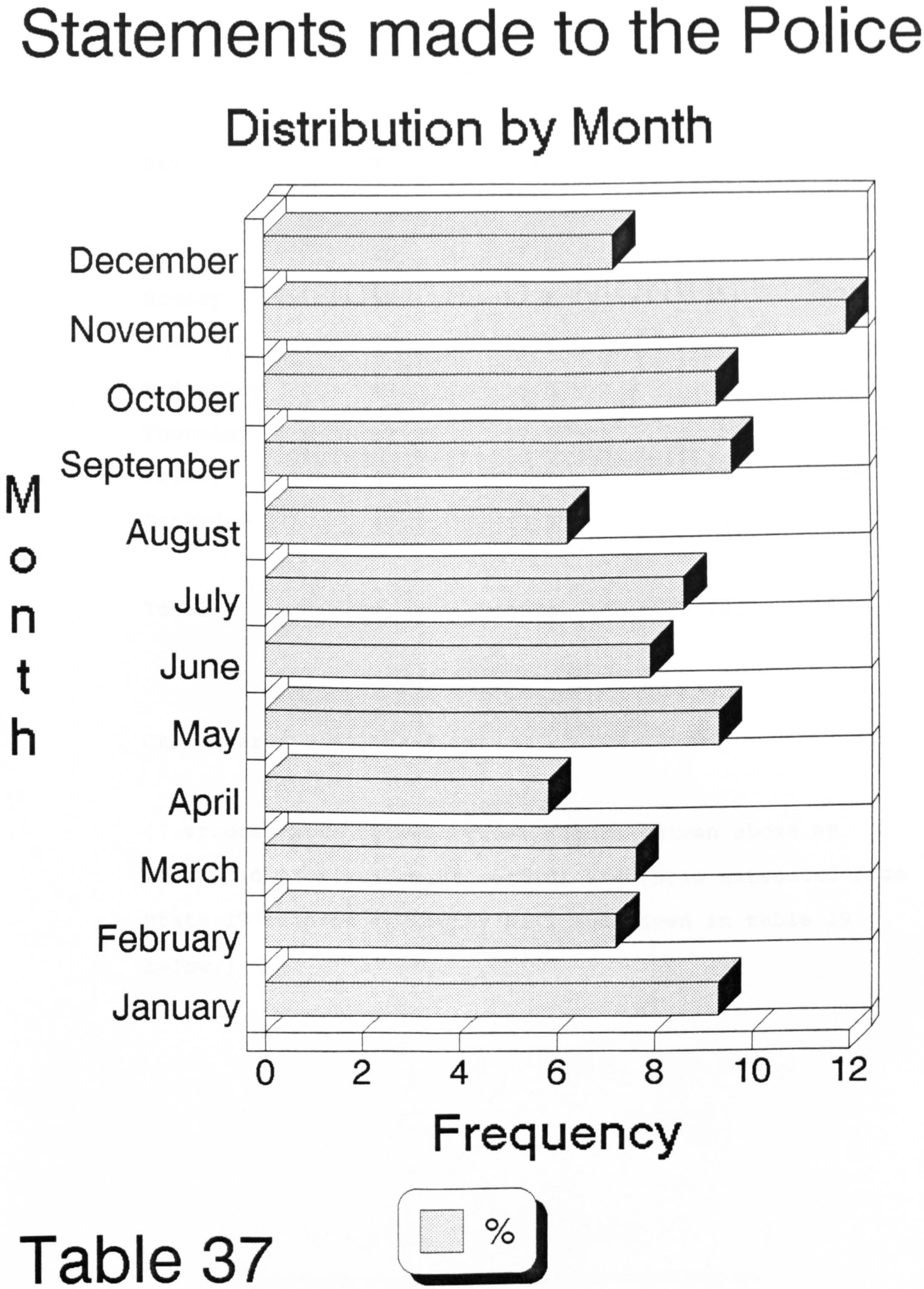

Statements made to the Police
Distribution by Month
December
November
October
September
August
July
June
May
April
March
February
January
Month
0
2
4
6
8
10
12
Frequency
%

Table 37

Distribution by Day

Table 38

Day	Statements No.	Statements %	Stats 19's No.	Stats 19's %
Sunday	21	7.2	22	7.6
Monday	50	17.2	51	17.5
Tuesday	36	12.4	38	13.1
Wednesday	49	16.8	49	16.8
Thursday	52	17.9	52	17.9
Friday	43	14.8	42	14.4
Saturday	40	13.7	37	12.7
Total	291	100.0	291	100.0

Chi-square= 0.22, DF=6, NS

(7 errors exist between those figures given above as extracted from statement records and those extracted from Stats 19 records at County Hall and given in table 39 below.)

Statements made to the Police

Distribution by Day

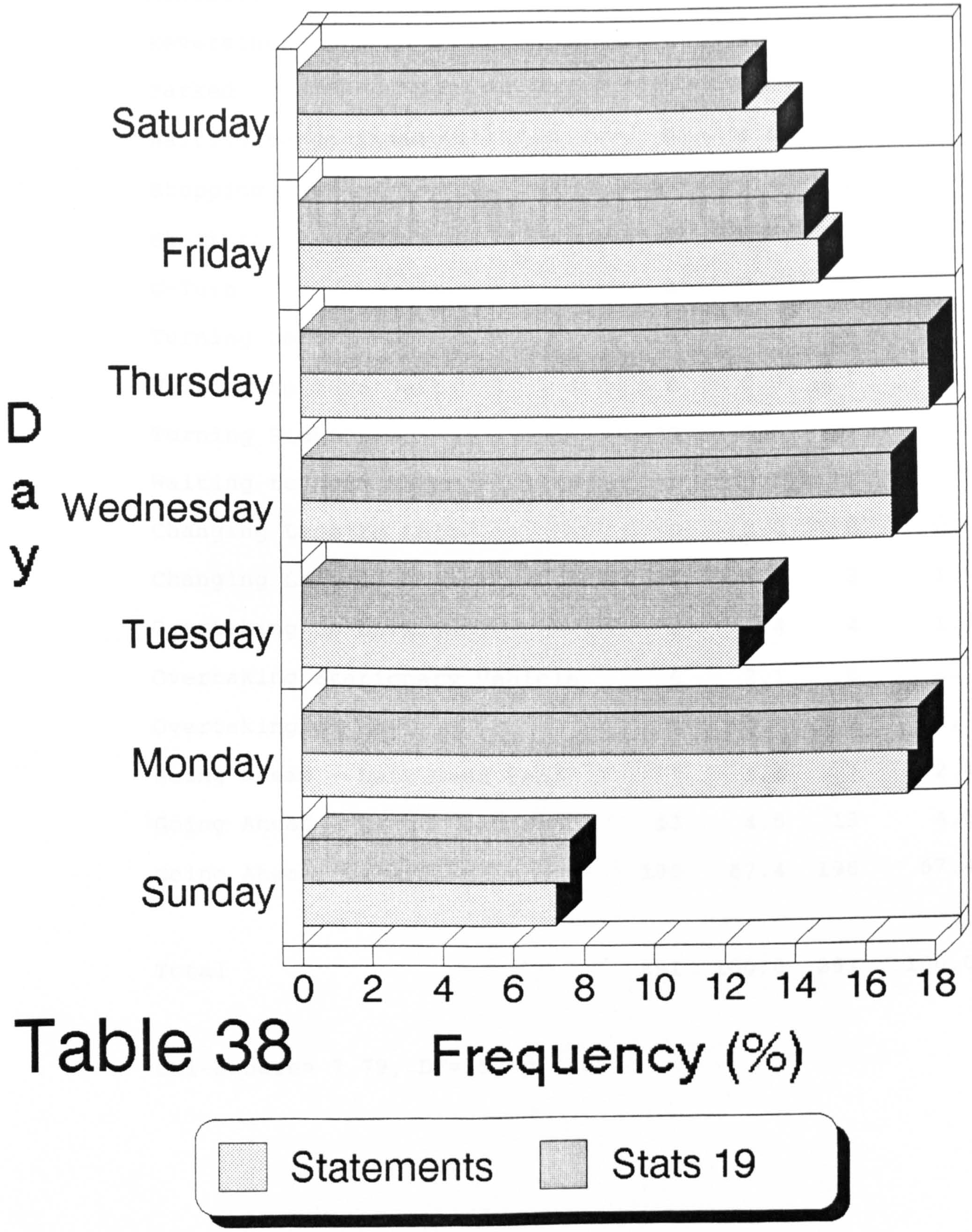


Table 38

'Manoeuvre' Variable taken from Stats 19 records at County Hall for these Statements. Table 39

	Stats 19		Statement	
Manoeuvre	No.	%	No.	%
Reversing	4	1.4	0	0.0
Parked	0	0.0	0	0.0
Waiting to go ahead	0	0.0	2	0.7
Stopping	10	3.4	9	3.1
Starting	2	0.7	2	0.7
U-Turn	1	0.3	1	0.3
Turning Left	14	4.8	15	5.2
Waiting to turn Left	0	0.0	1	0.3
Turning Right	28	9.6	27	9.3
Waiting to turn Right	1	0.3	1	0.3
Changing Lane to Left	0	0.0	0	0.0
Changing Lane to Right	3	1.0	3	1.0
Overtaking on offside	4	1.4	4	1.4
Overtaking Stationary Vehicle	6	2.1	6	2.1
Overtaking on nearside	2	0.7	2	0.7
Going ahead - Left Hand Bend	7	2.4	7	2.4
Going Ahead - Right Hand Bend	13	4.5	13	4.5
Going Ahead 'Other'	196	67.4	196	67.4
Total	291	100.0	291	100.0

Chi-square= 7.79, DF=15, $p < .05$

Statements made to the Police

Differences between Manoeuvre Variable

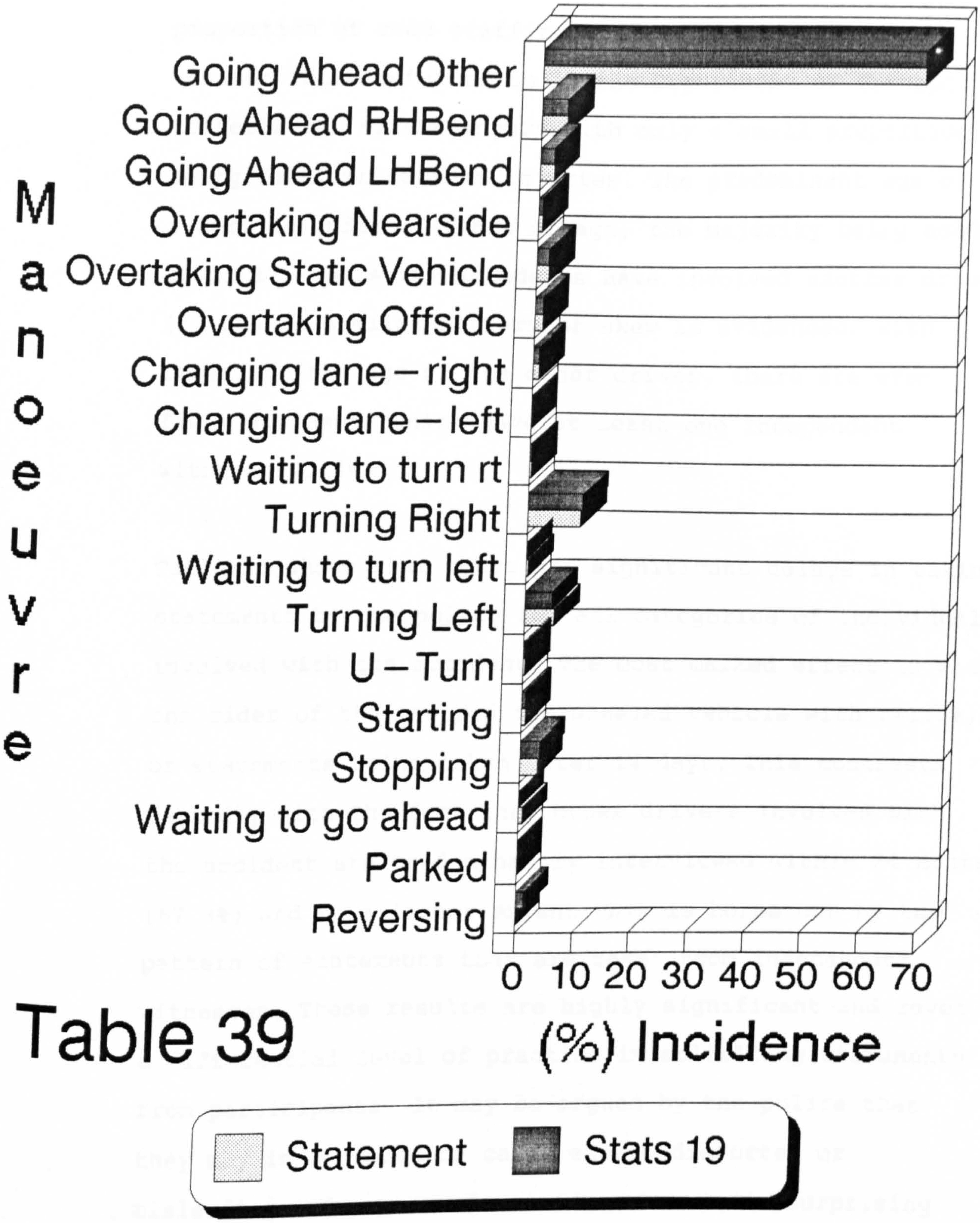


Table 39

8.4 Summary

Tables 29 to 32 above, describe the phenomenon of powered two wheeled vehicle accidents and act as base data for the inferential analyses undertaken subsequently. The proportion of road traffic accident injuries is skewed towards those referred to in the Department of Transport criteria as 'slight'injury with only a small proportion being fatal or serious injuries. The predominant age of riders is under 25 years of age, the majority being aged 16 or 17. Where the accidents have involved another driver (63.2%) no similar pattern of skew is evidenced. With regard to the age of the other driver, there are even fewer accidents which have at least one independent witness (46.4%).

Table 33 shows that there are significant delays in taking statements by the police for all categories of individuals involved with the accident. The most marked effect is with the rider of the powered two wheeled vehicle with (41.3%) of statements being taken after 14 days. This contrasts markedly with the fact that other drivers involved with the accident are predominantly interviewed within 24 hours (67.3%) and to a lesser extent this is borne out by the pattern of statements that are taken from independent witnesses. These results are highly significant and reveal a differential level of practice in soliciting statements from participants. It may be argued by the police that they may in a number of cases expect distorted or misleading information from riders but it is surprising then that such a relatively small percentage of independent witnesses are contacted within the first 24 hours, particularly when compared to other drivers who have been involved.

In relation to the initial studies on record cited earlier, it calls into serious question the validity of the majority of statements taken from riders, nearly three quarters of which, are taken after 48 hours and over 50% being taken from independent witnesses. Drivers of powered two wheeled vehicles that are involved in an accident have a 46.4% chance of being reported or convicted of an offence. The majority of these individuals are prosecuted for driving without due care and attention (79.6%), the remainder being prosecuted for offences that are not directly related to the accident.

Table 35 shows that of the 135 notices of intended prosecution issued, 135 convictions were obtained. The median fine imposed was £35 and the median number of points imposed was 3.

In considering table 36, of the 291 accidents reported, 102 (35.1%) were dealt with by specialised traffic police officers compared to 189 (64.9%) by non specialist officers. No significant differences could be identified between road traffic accidents dealt with by traffic and non traffic officers with the exception of two categories. Firstly, the type of offence considered; the traffic officer was more likely to report riders for riding whilst disqualified and ignoring a warning, whereas his non specialist counterpart was more likely to report offenders for riding a powered two wheeled vehicle without insurance, a valid vehicle test certificate or other document offences. The second factor, is that a traffic officer is more likely to deal with accidents involving more serious injuries. This reflects current policy and practice in that specialist officers who have had experience in dealing with serious accidents are dispatched wherever possible to serious incidents.

Despite the serious problems that can occur in maintaining the accuracy of statements from those involved in a road accident, particularly with regard to undue delay, it is surprising to note that other serious errors occur in relation to the accuracy of data after the interviewing of participants is completed. Even with regard to a simple factual matter such as the day of the accident, 7 out of the 291 records were found to be at variance when comparing statements made to the police and the subsequent statistical returns (Stats 19) used by road safety practitioners and highway engineers in planning remedial measures. Although this discrepancy is not in itself statistically significant, it is perhaps symptomatic of the general range of errors that can creep into allegedly valid and reliable statistics. This is particularly evident when dealing with road safety matters and road accidents when often, one or more members of the police force, is involved in the same incident sometimes separated from their colleagues by time (as they may work on different shifts), or by physical distance (in that a driver may need to be interviewed in a different county) with information having to be forwarded to the originator at a later date.

Perhaps the most serious of discrepancies that was observed was in the description of the manoeuvres that the riders were involved in immediately prior to the accident happening . These differences were significantly different at the 0.5 level and although a number of categories showed remarkable unanimity there was a significant number of discrepancies in those categories of manoeuvre that are most likely to result in costly remedial action being taken. Arguably the category system of 18 manoeuvres is too sophisticated and detailed for effective operational implementation and use and by inspection, it would appear the only four major categories account for over 86 % of the manoeuvres reported.

The management implications for these findings and their contribution to the operational resource plan are discussed in the subsequent chapters of this thesis.

Chapter 9

9.0 Interviewing Casualties As A Method Of Supplementing The Database.*

9.1 It will be seen from evidence provided earlier that the present database is unreliable and does not contain sufficient data to enable rigorous empirical statistical evaluation. Whilst the present Stats 19 on its own serves as a guide to national trends it is not sufficiently accurate enough help the local practitioner plan efficient and effective remedial measures. Whilst a highway engineer would wish to be in receipt of all accidents particularly at single site locations, the road safety practitioner responsible for Education, Training and Publicity measures would prefer to have all details but more importantly would prefer more depth of information. Supplementation of this information is, therefore required. It will be seen later in the text the implications for this necessity upon the organisation but it was desirable to conduct a feasibility study in order to measure the Operational Resource Planning commitment.

* Part of this Chapter is to be published in the Journal of the Institution of Highways and Transportation.

9.2 In conducting this feasibility study, it is important to define the aims and objectives of this and these are listed below:

- it is important to develop a system which provides for its users locally.
- that it is practical and simple to operate.
- that it falls within the bound of economic sensibility.
- that the methodology incorporates other agencies interested in accident reduction.
- that staff are convinced that there is a need to undertake such a project.

When considering this study it was necessary to discuss the findings so far with present staff and to seek their comments and suggestions. A series of in-service training sessions were held throughout 1986 and the implications of these for other safety practitioners locally and nationally is discussed later in the text. The success of any new idea must have the support of implementors if it is to either work or fail (but for the right reasons).

Convincing road safety officers who have been such for many years (20 years in most cases) was not an easy task. As will be seen later, present training courses fail to provide for much of what is discussed here and it was necessary first of all to ask a series of questions fundamental to our existence. This is discussed in Chapter 10 at some length and considers basic objective setting as an aid to the decision making process. At this stage it is only necessary that staff agreed, as a result of the in - service training to undertake the feasibility study described below.

9.3 Having convinced road safety staff that the exercise was a good idea, formal approval from both the County Council and other interested organisations were sought. Having already approached the Health Authorities regarding those Hospital studies described above in Chapter 7, contacts were already made and the setting up of this phase in the study was eased because of this. Whilst the Local Medical Committee had already given outline support it felt that in this particular case only the Ethics and Research Committee could authorise interviewing of casualties. This involved submitting details of the aims and objectives of the exercise similar to those described here together with a discussion with the Chairmen of both East and West Area Health Authorities. At the same time both A&E Unit Consultants - in - charge were contacted and after a series of meetings support for the study was obtained. Both Consultants supported the Local Medical Committee suggestion that only the Ethics and Research Committees could sanction this exercise because it meant divulging confidential medical detail to an outside agency. This was a sensitive issue which was overcome without too much difficulty. It was agreed that the following hospitals would take part as each saw Road Traffic Accident casualties in emergencies:

- Blandford Community Hospital
- Bridport General Hospital
- Lyme Regis Hospital
- Poole General Hospital
- Royal Victoria Hospital at Boscombe
- Swanage Cottage Hospital
- Victoria Hospital at Wimborne
- Westbourne Eye Hospital
- Westminster Memorial Hospital at Shaftesbury
- Weymouth District Hospital
- Yeatman Hospital at Sherborne

Although for record purposes all these hospitals submit their casualty details to the A&E traffic clerks at either Poole or Weymouth Hospitals for reclaims for treatment given under the Highways Act, it was felt that for interviewing purposes each hospital above would have to participate individually. This was easily arranged via the two locality managers at Poole General and Weymouth District Hospitals who were nominated by their respective Health Authorities to act as Co-ordinators.

Having agreed that the above hospitals would participate approval was obtained from the Ethics and Research Committees (see Appendix 64) and approval was given to use the 'consent' form shown in Appendix 65. Because this was a feasibility study it was decided for reasons already given above in this thesis to interview one type of casualty group. Riders of Powered Two-Wheeled Vehicle's were therefore chosen but the same procedure is applicable to elderly pedestrians, car drivers, child cyclists or even at defined locations and operates as follows:

On Monday, Wednesday and Friday of each week a Clerical officer from the Eastern and Western Area Road Safety Office telephones the A&E Unit Reception Clerk at Poole General and Weymouth District Hospital. Those in the rural areas telephone the road safety unit clerical officer when they have a casualty to interview. This was agreed due to the uneven spread of casualty reporting at these locations. No limitation has been put on the exercise and it has been agreed to run the project as long as is necessary. This facility will provide for obtaining greater detail with a faster turn round time for interviewing casualties whilst at the same time providing a confidential environment to aid the accuracy of reporting.

As will be seen later, staff had to be specially trained by clinical psychologists along those lines suggested by Geiselman & Fisher, 1986, op.cit.,in order that detail could be more reliably recorded.

9.4 The Interview Sheet

This was probably the most difficult to agree for two main reasons. Firstly, it had to contain enough detail for it to be of scientific value and secondly, it had to be short enough to obtain quickly and reliably. This in turn effects cost as will be seen later.

Several questionnaires were developed and tried. The final edition (see Appendix 66) takes the form of an interview sheet and is not completed by the casualty. All interviews are conducted by Road Safety Officers either at the casualty's home or in the hospital ward and takes on average 40 minutes (0.66 m/H) to complete. Sheehy, 1981 stresses that:

'As a research method, the interview possesses considerable advantages, not the least of which is the familiarity of both interviewer and interviewee with this form of enquiry.'

Sheehy warns that dangers exist between procedural standardisation which can be eased by listing a framework in which the conduct of the interview must be confined. He concludes that of all the options available to the accident investigator, the structured interview can produce more reliable information than is currently available via police reports.

9.5. It will be seen from the interview sheet shown in Appendix 66 that details are recorded so that eventual cross referencing with Stats 19 data might be possible. This is important when considering the under-reporting levels by class of road user. From an operational point of view interview start and finish times are recorded and from the address given upon the 'consent' form, travelling time can also be assessed.

The interview is structured into 7 groups and these are:

A. Accident Details

B. Previous Accident History

C. Training Details

D. Conspicuity and Clothing Details

E. Machine Details

F. Licence and Documentation Details

G. Personal Details

The areas to be covered are not dealt with rigidly in any particular order except that trials suggested that casualties preferred to talk about their accident first and personal details last. The following summarise these headings in more detail.

A. <u>Accident Details</u>

This section covers those activities which led up to the actual Road Traffic Accident happening and commences with a question regarding the purpose of the journey followed by details of the riders activities 24 hours prior to the accident. This is necessary in order to establish whether 'stress' or other factor might be a contributory element within the Road Traffic Accident. Injuries received and any medications prescribed (or otherwise) taken within 24 hours of the Road Traffic Accident is also recorded. Casualties are asked to describe the Road Traffic Accident and on a separate sheet of paper are asked to sketch the details. Details of manoeuvres being undertaken at the time is recorded 'unprompted' by the interviewer. It is from this that missing elements within the manoeuvre can be identified. Estimated speed at the time can be confirmed in some circumstances by the question concerning gear at the time. It is also known that incorrect use of gears can be a contributory factor in a Road Traffic Accident. Some questions follow concerning attendant circumstances and elements of blameworthiness and hindsight.

B. Previous Accident History

It is important to establish a riders experience and this section sets out to identify previous accident involvement and some details about them including severity. Dates, time and location is also requested.

C. Training Details

For an organisation to committed to Powered Two-Wheeled Vehicle training (see Saunders 1985 op.cit.), it is important to be aware of Road Traffic Accident involvement. Questions referring to any form of training and organisation details are crucial to this exercise. From a marketing point of view it is also necessary to ascertain any valid reasons why training has not been taken and what attitudes to training exist.

D. Conspicuity and Clothing Details

The type of clothing worn by the rider at the time can have an effect upon the rider in two important areas. These are:

(i) incorrect clothing can contribute to the level and type of injuries sustained; and

(ii) lack of conspicuity aids can contribute to an accident in that other road users are less likely to 'see'. The fact that a road user stated that he did not see the rider of a Powered Two-Wheeled Vehicle involved in the Road Traffic Accident was evident in 28% of cases involving two or more vehicles as investigated in the study described in Chapter 8 of this thesis.

E. <u>Machine</u> <u>Details</u>

The fact that a machine is the property of the rider or not is an important factor when determining experience and machine familiarity. Whether a machine is purchased new or second-hand has implications for training in two areas:

i) New machines are purchased from dealers and these organisations usually support local training schemes, on occasions provide it free; and

(ii) The level of new to second hand ratio's would have an effect an organisations marketing strategy in terms of advertising training.

The size of the machine and length of time owned are all experience/familiarity factors. Trials have shown that insurance and current valid MOT certificate to be important as it is surprising the number of 'no insurance/MOT certificate' riders being interviewed.

F. <u>Licence Details</u>

There is a lot of confusion concerning those licence restrictions forming part of the Transport Act 1984 particularly in respect of the Group D classification. This question enables this area to be quantified more accurately so that any publicity initiatives might be planned more efficiently.

G. <u>Personal Details</u>

Insurance companies have identified occupation as a factor involving Road Traffic Accident's and what they do for a living will effect their premium. Chapter 4 describes the atypical nature of Dorset and in order to learn more of this aspect such interviews will seek this information. Other questions in this area concern 'exposure to risk' and whether the rider wears spectacles or not.

9.6 Summary

It is not the intention of this thesis to reproduce any data obtained via this activity here but rather to outline the procedures and to describe the management implications to be considered later in the text. Since this programme commenced on the 1st March 1987 some 70 interviews have been held up to 31t May 1987.(ie. A 3 month period) and data is being put onto computer for evaluation at a later date. Of these 70 interviews, there were 21 who refused to sign the 'consent' form and were therefore not interviewed. However, those particulars described in Chapter 7 can still be obtained even though permission to interview was not granted. From those who did 'consent' it was possible to calculate the 'average' interview time as 0.66 m/H as described above. At the same time it was possible to calculate in a similar manner the travelling time element and consent form collection element. This is shown below and it is surprising to note that of these only 17 (24.3%) were conducted in the hospital. However, this does not affect the average travelling time element given here as this is included in the calculation.

Average Journey Distance = 23 miles X 2 (ie. return)
Average Travelling time* = 13 mph

* The average travelling time is based upon information provided in Table 5.13 of the National Travel Survey, Department of Transport, 1978 for a journey at any time of day over a 7 day period.(see Appendix 67)

Regrettably this publication is produced every 10 years and at the time of writing the latest figures, if they are indeed different, were not available. The Department of Transport state that the next edition should be available early in 1988.

From these figures it is possible to estimate some unit m/H as follows:

70 journeys x 4 x 46 miles = 12,880 miles

Divide by Average Travelling Time = 991 m/H

This figure would need to be added to the following:

70* interviews x 4 x 0.66m/H = 185 m/H

Total estimated m/H unit commitment is 1176 m/H for the total interview activity. In order to put this into context the following summarises the total unit staff m/H resource base.

* It has been assumed that 70 'consent' forms per quarter agreeing to be interviewed. This would indicate around 280 per year. By comparison with that data obtained in Chapter 7 (ie. 903 casualties less 8 fatal = 895) 280 represents around 31.3% take up rate on potential.

Average productive working time allowing for annual leave, statutory days off and public holidays = 44 weeks per year per man working a 37 hour week. In the Road Safety Unit there are currently 7 full time officers. This expressed in unit m/H is as follows:

44 x 37 = 1628 m/h per man.

Multiply this by 7 staff = 11,396 unit m/H

It is suggested that the interview programme commitment base be rounded up to 1200 m/H to allow for unseen circumstances that may develop. By rounding down the unit m/H to 11,300 m/H gives sufficient leeway to consider acceptable levels of overtime later in the text. In this case the interview study would require, on present levels, some 10% of the unit resource base. This is a necessary contribution to the Operational Resource Plan as will be seen in the next chapter.

Part 3

"The Implications for Management"

Part 3

Chapter 10

10.0 Management Implications

10.1 The findings outlined in Part 2 of this thesis are now discussed together with the implications this would have upon the organisation in management terms. In order to do this it is necessary to place the role of the Road Safety Officer into context and discuss some reasons as to why he is employed. From this the thesis will develop some management considerations necessary for Operational Resource Planning in order to show the link between tactical and operational objective setting. This Chapter in the thesis will take the following order:

1. The Role of the Road Safety Practitioner
2. Objective Setting
3. Reliability of Stats 19 for Operational Use
4. Medical Records
5. Statements made to the Police
6. The Operational Resource Plan

These are dealt with in more detail below and are discussed in that order.

10.2.1 The Role of the Road Safety Practitioner.

It has been discussed earlier that Section 8 of the Road Traffic Act 1974 placed a legal requirement upon Local Authorities to take measures to effectively reduce Road Traffic Accident's. The Act did not take steps to describe in any further detail how this should be achieved. All that the Act said was that steps should be taken but the underlying object of the legislation was to reduce accidents on the road. In objective setting term, as will be seen later, this Act gave us our 'Mission'. How important this is is discussed later. In 1975, Department of Transport Circular Roads op.cit., attempted to describe in more detail what local authorities should consider. These points have been discussed earlier in the thesis and Department of Transport Circular Roads is reproduced as Appendix 68.

As will be seen later in this Chapter, Department of Transport Circular Roads 12/75 op.cit., failed to outline any Tactical or Operational Objectives. This is important for two reasons. Firstly, local authorities have differing levels of commitment to its community and therefore without any additional detail, reacts with differing levels of enthusiasm to the legislation and secondly, without any guidelines staff were left to follow any strategy that was thought to be worthwhile. This led to local authorities introducing programmes that demonstrated to the public that they were doing something to reduce accidents, without taking identifiable steps to justify courses of action.

Civil engineers attempt to justify their courses of action based upon Economic Rates of Return (Economic Rate of Return), (see Appendix 69) so why should the Education, Training and Publicity practitioner not follow a similar system. However, Economic Rate of Return's in their present form using Stats 19 information only are unreliable. It is not surprising therefore that after a road improvement scheme has been completed that the 'after' situation is worse than the 'before, ie. there are more accidents. It could be argued that those accidents were happening before but the police did not know of them of the police. Problems such as this need to be considered and this will be discussed later in the text.

The Department of Transport have produced several 'Circulars' advising local authorities on strategic plans and then withdrew them afterwards as incomplete. Such an example was Department of Transport Circular 14/69 which advised local authorities to employ one road safety officer per 70,000 population. No detail was given as to where this figure was arrived at and after some pressure for more information the Department of Transport withdrew it. This led to further discrepancies in staff recruitment throughout the country. Following the work carried out by Saunders, 1985, op.cit., it was clear that there was no standard approach to accident reduction by local authorities because all Department of Transport

Circulars up to this point had failed to describe objectives beyond the strategic level. It was left largely for individuals to interpret what should be done but this varied according to those differing levels of commitment described above. RoSPA have attempted to assist in clarifying matters and their contributions have been discussed earlier whilst the Institute of Road Safety Officers attempted to put Circular Roads 14/69 into effect and as a result the Certificate in Road Safety Studies was introduced in an attempt to bring RSO's together via the training medium. Saunders, 1985, op.cit., showed that this had failed and that less than 4% of RSO's nationally had undergone this form of training and that no common recruiting policy by local authorities could be identified.

Due to the problems encountered with the road safety movement described above it was necessary to put this into context with other forms of safety management so that some modifications to existing policies might be identified. It was with some sadness that from an enquiry of all colleges of advanced education only six were offering some sort of safety education. These tended to specialise in certain areas such as 'Occupational Safety' and the 'Health and Safety at Work' legislation. There are also a number of locally held 'Certficates in Health Education' but all suffer from a lack of appreciation of the role of a 'Safety Practitioner'. This is confirmed following discussions with safety personnel at a recent RoSPA Industrial Safety Conference held in London in February

1987. It was clear that some safety managers have been appointed because the organisation they work for had been told by their insurance company that under current legislation and recent case law, cover could not be provided unless such an appointment was made. It was also apparent that, like the road safety officer, no clear guide lines regarding a role within the organisation was evident. This was found to be a common theme running through these discussions and it would be necessary at some time in the future to quantify this matter in more detail. It was clear, however, that the problems outlined above concerning reliable data also applied to all safety practitioners. From hereon, the information detailed for the road safety practitioner may be of interest to the general safety manager.

10.2.2 Some Theoretical Issues Regarding Role Identity

There have been several works published in the human sciences and and it is important to appreciate at the outset why people work but more importantly consider some reasons as to why they might choose safety as an occupation. Argyle,1974 accepts that everyone has to work to obtain money in order to live but rates job satisfaction highly in his order of priorities and quotes both Maslow, 1954, op.cit., and Hertzberg, 1966, op.cit., theories of motivation as relevant factors in job selection. Cooke & Slack, 1984 argue that job satisfaction is a high motivant and with job fluidity (moving to another job) is recognised as common practice today than it was 50 years ago people are more likely to move for two main reasons:

- Job satisfaction
- Better prospects (including wages)

They also state that job satisfaction rates higher with younger people when selecting their first job and stress the importance of recognising this during the decision making process. From the author's experience, some trade unionists, however, feel that job satisfaction is less important than financial gain and this is one of their main arguments concerning the present governments' youth employment programme operated under the MSC. It is accepted that job satisfaction is a high motivant with employees and a safety practitioner will probably choose the job for its job satisfaction content rather than the financial and other rewards. This is certainly true for the author and it would be of interest to pursue this area with safety practitioners in the future.

Motivation and job satisfaction are important factors when considering the shortfall in advice presented in Department of Transport Circular Roads 12/75 op.cit. in that the decision making process ceases at the strategic level. If job satisfaction is to be accepted as a high priority then the decision making process beyond this stage is vital. There can be job satisfaction in the safety field in two important areas. These we shall call the perceived and prime motivant. These can be explained as follows:

Perceived Motivant

This can be regarded as job satisfaction obtained from doing 'a good job' and being congratulated on being seen to be doing a good job. This phenomenon applies only to the public sector where survival does not depend upon profit and is not necessarily 'mission' orientated; whilst:

Prime Motivant

Can be described as the satisfaction of knowing that systematically planned and implemented objectives have been achieved. This may not necessarily imply being seen to be doing a good job in the market place.

Both of these factors may be organisational or personal but the system described above tends to favour the perceived motivant rather than the prime. Without describing the next phases within the decision making process omitted by Department of Transport Circular Roads 12/75 then confusion will exist between these two motivants. This can be simply stated by asking the following question:

'Have you reduced accidents?' (This is the Organisational Mission as described in Section 8 of the Road Traffic Accident, 1974.)

The perceived motivant would respond in general terms but would not be able to specifically identify areas where reductions were directly attributable to those direct actions. However, the prime motivant would be able to respond to the question specifically.

In order to redress the balance, it is necessary for the safety practitioner to systematically plan within the confines of accepted decision making processes which is discussed later.

Status

This is a factor identified earlier in Chapter 6 as a motivational factor and a number of safety practitioners who leave the job tend to list 'status' or rather the lack of it as one of the factors for leaving rather than job satisfaction. This was a factor mentioned in a study undertaken by R.Legg of Hereford and Worcester County Council in 1986. Although this particular study concentrated upon training for road safety practitioners 'status' was an issue raised in this connection. At he same time, the author has been involved in discussions with Road Safety Officers at meetings which have been held throughout the country and Leggs views have been confirmed and 'status is an important issue. From personal knowledge, several RSO's have left to become 'Health Education Officers' and this might suggests that status within their present role rather than job satisfaction was the prime motivant for leaving. It would seem that there is a widely held view that Health Education, whilst providing similar job satisfaction provides for a higher status within and outside the organisation. No evidence could be found why this is so.

Organisations tend to consider 'status' in relation to the importance of the task or role within the organisation, see Schein, 1970 who states that:

'Organisations consider positions within it in order of priority, based fundamentally upon importance and performance potential to it....'

Schein implies that status is dependent upon the importance organisations view the role in terms of profitability. Profitability in this sense does not necessarily imply financial returns. A profit on trading can mean meeting defined aims and objectives. In safety terms this would mean 'reducing accidents'. From this, status would be deemed to grow from being able to meet agreed aims and objectives sometimes referred to as targets. If the safety practitioner feels that 'status' is important then the evidence points towards objective setting and being able to meet clearly defined targets. The problem experienced with the safety practitioner in this regard is that the Organisation is unable to provide guidance in terms of meeting defined targets because the Department of Transport has been unable to take the descriptions in 12/75 to any other level beyond the strategic phase. Other forms of safety management are deemed to suffer from the same deficiencies.

10.2.3 Summary

Meeting organisational aims and objectives are clearly a vital issue, particularly in respect to those motivational issues outlined above. The role of the safety practitioner is to prevent accidents happening and to know where and how they are occurring. From this he must implement strategies designed to reduce them by efficient and effective means. To do this, there must be a corporate awareness of all accident reduction initiatives within the organisation in addition to those external contributions being made by other agencies.

Management theorists have been discussing the importance of objective setting since the early 1960's and management consultants have been promoting the use of such schemes for industry since that time. Military commanders have set objectives for centuries and can demonstrate the effectiveness of a logically thought out plan of action with clearly defined objectives. However, to take the military plan of action literally is not a recommendation of this thesis as will be seen in subsequent paragraphs. The philosophy of the two systems fundamental to success is developing an understanding of resource planning. In a safety orientated environment, objective setting has failed to contribute to efficiency and effectiveness. This is largely due to the fact that until operational resource planning forms an integral part of the objective setting sequence then this must be expected.

The thesis develops objective setting theory in order to provide a backcloth for the safety practitioner to consider the practical application of this decision making tool.

10.3 Objective Setting Theory

Objective setting aids a proactive management approach to decision making which in turn provides for the efficient and effective implementation of programmes which will meet a clearly defined organisational mission. It is essential that the 'mission' is understood and must be a simple statement of the business that the organisation is in. Many companies have come to grief because their mission was not correctly defined. A hypothetical case illustrating this might concern a Railway Company whose organisational mission is described as:

'being in the railroad business'

An enquiry into the viability of this organisation might ask why they were only in the railroad business:

'surely being in the transport business would be a better description?'

This is an extremely important issue and failing to get the 'mission' right is a factor prevalent in the failure of many businesses today, particularly new ones. Crucial to such issues are unprofitability, and if the organisational mission in the example given above, was transport, then profitability might be possible. This example was given on a recent management course attended by the author as part of this project and concerned a debate upon the viability of British Rail. It serves to illustrate that an organisational mission can be restrictive, limiting or even imply activities other than those intended. This only serves to confuse those responsible for meeting such objectives. For these reasons, the organisational mission must be a clear and precise statement of the purpose of business the organisation is in. This same principle applies for all organisations including those satellites within it. Whilst a local authority might have a mission to 'provide public services', more specifically a satellite mission within it might be 'to reduce accidents at work, on the road or maybe even in the home'.

In this particular case a road safety unit (or other safety unit) would have an organisational mission to reduce accidents. For the road safety practitioner this was made clear for him under the statutory obligation placed upon the local authority in Section 8 of the Road Traffic Act 1974 and has been described above. From a strategic point of view, there has already been mention of the contribution to this phase of the objective setting sequence by Department of Transport Circular Roads 12/75 op.cit., and has been cited earlier in the Preface to this thesis. In practical terms these can be described as plans that will enable the mission to be achieved. From a safety management standpoint this implies two factors. The first strategic factor must provide for being able to quantify such an achievement and the second factor must allow for the actual achievement itself. This would indicate the following strategic objectives for the safety practitioner.

(i) To collect and interpret accident information both locally and nationally.

(ii) To consider appropriate remedial measures.

(iii) To monitor and evaluate all programmes.

Although these basic areas were covered in Department of Transport Circular Roads 12/75 it was 'engineer' orientated and safety practitioners responsible for Education, Training and Publicity matters failed to realise the relevance and importance of this phase within the objective setting sequence.

These points are now discussed in more detail.

10.3.1 The Collection and Interpretation of Accident Information.

Apart from the systematic collection of accident data via the Stats 19 process a safety practitioner must also be aware of other relevant information described in earlier chapters of this thesis. He must also be fully aware of any shortfalls in his present data base and implement programmes to remedy this if necessary. This might include the systematic interviewing of different classes of road user. At the same time he must be fully conversant with evaluative methodology and be able to understand quantitative analyses. Via the use of a corporate management style, the safety practitioner may have access to this expertise and must ensure that it is used efficiently and effectively. It would be desirable, therefore, for him to have some understanding of these issues. This is an important consideration particularly as counties are atypical in nature and accidents are by nature random events. The importance of establishing a detailed and reliable data base is a prime consideration at this stage of the objective setting sequence.

Remedial Measures.

The engineer is responsible for physical changes to the road users environment and the safety officer is responsible for Education, Training and Publicity matters. This part of the objective setting phase and those discussed subsequently will only be considered from the

Education, Training and Publicity practitioners point of view only. This factor must be considered at this level and must include all local initiatives. The fact that physical environmental changes are planned, the Education, Training and Publicity practitioner must still plan any Education, Training and Publicity contributions at this stage. To plan separate initiatives has happens in some local authorities is an inefficient and ineffective management strategy. Stewart, 1971 and later Baines, 1974 stated that the management style of new local authorities (as a result of local government reorganisation in 1974) must be more open and above all, co-operation between departments, sections, etc., must exist and structured accordingly to achieve this. Whilst road safety falls within the 'County Surveyors' department, it is usually divided in objective setting terms (see Saunders, 1985 op.cit.) with engineers and road safety officers managing in ignorance of each others plans. This is further evidence for all remedial measures being considered at this level within the decision making process.

Monitoring and Evaluation.

This must feature as an integral part of the strategic and subsequent phases of the decision making process and overall plans methods and styles must be considered here. Any organisational limitations must also be taken into account as this would effect any remedial strategy from being effectively implemented. Such a phase would consider 'before', 'during' and 'after' studies for evaluation purposes and plans for monitoring must also be considered here. Failure to include this aspect of the objective setting sequence would mean failure to identify whether the organisational 'mission' had been achieved and this is fundamental to any form of efficient and effective management.

10.3.2 Having outlined the strategic plan the next logical phase within the objective setting sequence concerns tactical objectives. This must describe those tactics to be used in being able to satisfy that criteria described above. For the road safety practitioner this would include the following:

(i) Use of detailed and reliable accident data or details of how this was to be achieved.

(ii) List remedial measures in order of priority.

(iii) Outline evaluation and monitoring detail.

The tactical objective setting phase requires more detail than at the strategic level and Department of Transport Circular Roads 12/75 and subsequent circulars, op.cit., failed to provide enough detail to allow progress from this phase to the operational phase described below. Whilst resources might be generalised at the strategic level it is necessary at the tactical stage to consider resource distribution. Without an operational resource plan to assist with this it is unlikely that the operational phase will be efficiently and effectively managed. This could also mean that aims and objectives might not be met at various stages. The Operational Resource Planning will involve a detailed analysis of long and short term projects and will enable the existing resource base to be placed into context. This will facilitate organisational commitment and to identify shortfalls. To understand Operational Resource Planning it is necessary to illustrate contributions it makes in detail and this is undertaken later in this chapter.

10.3.3 Having detailed those tactics to be employed in the overall plan, it is necessary to consider the operational phase of the process. How any plan operates is crucial to its success. If a plan is to be successful it has to be thought out proactively and will need to operate within clearly defined bounds. Limitations to the operational phase can be resource based and it is essential that this is considered before hand under the Operational Resource Planning. For example, it is vital that road safety Education, Training and Publicity is available to all classes of road user without favour or bias. Is it right, therefore, that one school receives more input than another with similar problems? Should one group of road user receive more input than one with a worse accident situation? The Operational Resource Planning allows for these issues to be considered and incorporates the required resource commitment for each activity. From this, operational objectives can be outlined in great detail and can include the implementation of monitoring and evaluation phases. After operational objectives have been set, then personal objectives can be considered. This phase gives the practitioner an opportunity to consider his personal contribution and would include some mention of time management. This provides for job satisfaction as described above.

Safety practitioners must set objectives if they are to be managerially efficient and effective. It is important that a proactive approach to decision making is adopted and essential that steps are taken to achieve organisational missions and that prime motives are attainable. Crucial to this strategy are the tools available to apply to the task and it is necessary to spend some time discussing those issues outlined previously in Chapters 6 to 9 above as they have a direct bearing on the objective setting phase. From this it will be possible to consider the Operational Resource Planning.

10.4 Reliability of Stats 19 for Operational Use.

There is now sufficient evidence to suggest that the sole use of Stats 19 data for detailed empirical statistical evaluation should not be recommended. From all those studies considered within this thesis it would seem that only fatal accidents are accurately recorded. This would provide for national analysis but renders the sample too small for local use. Due to the random and atypical nature of Road Traffic Accident's it would not be possible to use national data and then attempt to apply it to the local situation. Whilst the total number of fatal accidents are recorded those variables within each file can also be regarded as suspect for those reasons given above in earlier chapters. We know that weather conditions and the like are not accurate enough for detailed analysis and it is also now accepted that they are not detailed enough for Education, Training and Publicity use. It would seem that at best Stats 19 data serves as a snapshot of incidents within the local environment and may be used for establishing trends of a general nature. The fact that engineers use stats 19 data regularly to justify modifications to the environment can now be called into question. Their use of economic rates of return as justification is now questionable because of the significant levels of under - reporting evidence now available. The present system in operation requires a police officer to investigate breeches of the law on arrival at the scene of a Road Traffic Accident. The evidence obtained, therefore, is with this aspect in mind, rather than for analytical purposes. It cannot be disputed that from a management point of view, that the use of the police force to collect this data is attractive. If the police were required to attend the scenes of Road Traffic Accident's then it seemed an efficient proposal to request them to add to their list some additional items for analysis purposes. In reality, however, we have police officers dealing with highly charged traumatic instances for one purpose and without any formal training ask that they 'add on' other pieces of information for another. Having spent considerable time observing police officers on duty it would seem unreasonable to expect them, with present levels of training and manning to provide the detail and accuracy demanded. As was noted in Chapter 9, it is not only the traffic division which deal with Road Traffic Accident's. On the contrary,the problem of accuracy is much less controllable because any police officer can deal with a injury producing Road Traffic Accident. An opportunity to update total numbers of Road Traffic Accident's was provided by the hospital Road Traffic Accident clerk who regularly request insurance details from the police. The police merely respond negatively if they have no details. No attempt is made to modify records on this basis and nor should one be expected unless an offence has been committed or a complaint is made to them. From the safety practitioners point of view, total reliability upon these records cannot be made. It might be possible to influence accuracy of recorded data by involving the police officer more closely with the analysis process and as will be seen later via training. It is unlikely that the under - reporting aspect of this can be catered for in this way unless there are significant changes in policy and practice which in turn effects manning levels. It is extremely unlikely that the safety practitioner can influence such matters locally, therefore, it is necessary to consider alternative measures which need to form part of the objective setting process and are crucial to Operational Resource Planning. It would seem logical that anyone injured in a Road Traffic Accident would seek medical treatment thus presenting an opportunity to rectify those shortfalls in Stats 19 data described above. It should be established that any safety practitioner would use reliable accident data as part of the decision making process, therefore obtaining it must be an objective to consider. This must form part of the Operational Resource Planning in order that the implications for management can be properly assessed. This will be discussed later in this Chapter.

10.5 Medical Records.

The use of hospital and other centres for treatment for the collection of Road Traffic Accident data presents an attractive proposition particularly now that use of their confidential records has been established during the period of this research. This also provided an opportunity to observe difficulties and to assess the m/H commitment to what is largely a labour intensive activity. If a decision is to be made for the permanent use of medical records rather than police records for analysis purposes then clearly Operational Resource Planning is an essential feature of the objective setting phase. Using medical records presents organisational harmony in that both 'missions' are not in conflict. This is absolutely essential if two differing organisations are to work together for the same ends.

From the information presented in Chapter 7 of this thesis it would seem that the role of the GP in the treatment of Road Traffic Accident casualties is not sufficiently large enough to consider as part of the objective setting phase and in terms of practicality it would seem unlikely that the GP could be asked to commit himself to regularly providing this information. Clearly the hospitals see the majority of cases and in every case the more serious injuries. It would be prudent therefore to give hospitals priority in terms of data collection gathering and to consider the GP only in limited circumstances. In statistical terms, the business conducted by the GP can be considered in the calculations where Education, Training and Publicity remedial measures are concerned. Whilst this would provide the engineer with a more reliable and detailed data base from which to work it is recognised that by omitting the GP, then not all Road Traffic Accident injuries will be available. However, this problem could be overcome on an individual site basis by requesting GP involvement in particular studies. This is practical and general approval in principle has already been obtained via the Local Medical Committee and Family Practitioner Committee as part of this study. The necessity to include this possibility at the tactical level is only important if such a facility is deemed appropriate . This will be omitted from the Education, Training and Publicity calculations presented later for two reasons. Firstly, the exercise is not labour intensive on the part of the safety organisation and, secondly, the examples given exclude objective setting from the engineering standpoint because of cost incompatibility.

10.6. Statements made to the police.

Using statements made to the police as an aid to accident analysis is not a recommendation to be made in every case. It should be remembered from the evidence presented in Chapters 3 and 8 that the reliability of statements can only be accepted with reasonable accuracy in certain circumstances. First of all it is necessary to consider Road Traffic Accident's with independent witnesses otherwise there is risk of obtaining biased information from those involved and it is also important to check the delay period in taking the statement. The majority of statements were observed to take longer than 24 hours, some 40% taking longer than 14 days. Statements taking this long to obtain should be treated with caution. It should also be remembered that statements are usually taken to corroborate some breech of the law and are not taken systematically for analysis purposes. At the same time inaccuracies were discovered between statement and Stats 19 data rendering one or the other (or even both) inaccurate. For Operational Resource Planning purposes the use of statements as a useful analytical tool is excluded for these reasons and it is a recommendation of this thesis that statements made to the police should not be recommended for analytical purposes and is discussed later in the text.

However, obtaining reliable detail from casualties can be more readily controlled if the shortcomings described above can be considered and incorporated into the experimental design. In Chapter 9 of this thesis the suggestion that this information was useful and worthy of consideration as a viable management option was assessed. From this exercise it was possible to test the reliability of contributory factors within the incident by providing the casualty with a confidential environment in which to discuss his Road Traffic Accident without the threat of prosecution featuring anywhere in the exercise. At the same time it was possible to provide the interview for analysis purposes only and include some detail which would otherwise be missing from statements taken by the police.

This exercise was eased through the approval procedure by 'mission' compatibility and experience has shown that hospitals are prepared to systematically assist with preventative initiatives such as that now discussed. The interviewing of casualties must form part of the Operational Resource Planning and is discussed later in this Chapter.

10.7 The Operational Resource Plan (ORP)

The Operational Resource Plan will enable the tactical objective setting phase to become operational and considers those resources necessary to carry out those tasks outlined as objectives above. It has already been said that Section 8 of the Road Traffic Accident 1974, op.cit., provided the organisational mission, whilst Department of Transport Circular Roads 12/75, op.cit., provided some Strategic and some Tactical objective setting advice. From the Operational Resource Planning the following has been summarised above in para 10.3.2 as tactical objectives:

(i) Use of detailed and reliable accident data;
(ii) Listed remedial measures; and,
(iii) Evaluation and monitoring detail.

From these three tactical areas of interest it is necessary to take each in turn for Operational Resource Planning purposes.

10.7.1 Detailed and Reliable Accident data.

This has been discussed at some length above and at the Operational Resource Planning stage it is necessary only to consider these areas from a management resource standpoint. Table 40, therefore summarises the present road safety unit m/H resource base details of which are calculated as follows:

7 full time officers at 1628 m/H each = 11,300 unit m/H. This is rounded down to account for overtime.

To obtain medical records at all hospitals throughout the county is based upon 1985 Wessex RHA returns as

> 4,025 casualties at 0.25 m/H (assuming a retrospective study (0.13 m/H for ongoing) = 1006.25 m/H.
>
> Travelling time based upon 1 visit per hospital per week at 200 miles per week = 10400 miles per year divided by average journey speed of 13 mph = 800 m/H per year.

To interview one class of road user per year based upon Powered Two-Wheeled Vehicle exercise conducted above in Chapter 9 gives the commitment to this activity as 1200 m/H based upon 280 consent forms per year. Miscellaneous data collection discussed in Chapter 4 above is estimated at 100 m/H. This is based upon the time taken to carry out this work.

Road Safety Unit Resource Base Table 40

Activity	Debit m/H	Credit m/H
7 Staff @ 1628 m/H each	11300	nil
Obtain Hospital Data (rounded up)		1010
Travelling		800
Interviewing Casualties inc.		
Travelling time		1200
Miscellaneous		100
Total	11300	3110

Compute time spent dealing with this work is conducted by a different department and therefore time will not fall directly upon the road safety unit. It is understood from discussions with the computer section that this data would not require more time in m/H than that already committed to Stats 19 work. From table 40 then some 8190 m/H remains for Education, Training and Publicity programmes and evaluation and monitoring to complete the tactical phase. Table 41 summarises the Education, Training and Publicity phase and is extracted from Saunders, 1985, op.cit..

Table 41

Activity	Debit m/H	Credit m/H
Unit time c/f	8190	
Infant Education		633
Junior Education		446
Cycling Proficiency - Basic & Silver		200
Secondary Education		165
Dorset Motorcycle Training Scheme		210*
Driving/Horse courses		805**
Quizzes		127***
Publicity/talks		150
Admin/staff training		4264
Total	8190	7000

* Since Saunders, 1985, op.cit., a decision by Dorset County Council in September 1987 reduced officer time to this activity by 150 m/H by handing over the organisation and running of the scheme to the British Motorcycle Federation (BMF).

** This has similarly been reduced by devolving the organisation and running of these schemes to the Institute of Advanced Motorists and British Horse Society respectively to 40 m/H a reduction of 765 m/H.

*** The road safety unit is no longer engaged in quizzes and thus saves 127 m/H.

The 7000 m/H given in Saunders, 1985, op.cit., has now been revised to 5858 m/H. Taking the Education, Training and Publicity commitment from the unit m/H we now have 2232 m/H for evaluation and monitoring. However, it should be noted at this point that Dorset County Council is the only local authority in England and Wales that does not employ additional staff to manage the school crossing patrol service. This takes, according to Saunders' calculations in Saunders, 1985, op.cit., 3118 m/H to implement. As a result of this particular study the County Surveyor has agreed to hold a review of the road safety section and it is likely that these m/H will be obtained via the appointment of two full time members of staff.

The 2232 m/H remaining for monitoring and evaluation should be sufficient to deal with the road safety service in Dorset but this is based upon experiences gained with this project and other similar research exercises carried out locally. 2232 m/H is 318 m/H per member of staff, 1.4 members of staff or 51 m/H per week. However, the prime motive here is that these m/H exist to be considered not at this stage of the objective setting phase but under the operational phase. This illustrates how Operational Resource Planning is used to consider the efficient and effective allocation of the unit resource base and provides for the identification of any spare capacity available. This allocation, however, is subject to the appointment of two additional members of staff.

10.7.2 When considering tactical objectives, it is usually the unit managers task to formulate these in relation to the Operational Resource Planning. Operational objectives can then be set by individual RSO's within these bounds. Before this can take place the Operational Resource Planning should consider the financial situation and this requires feedback from the previous years activities under the operational objective setting process. Without such feedback, then only estimated forecasts are possible. This could mean being under or over spent at the most inconvenient time within the financial year. Correct financial planning within Operational Resource Planning is essential and this can be eased by breaking down tactical objectives into their unit parts for allocation purposes. The more detailed the breakdown the more accurate will be the estimate and this is confirmed in Marshall, 1974. More importantly is the allocation of finance which should reflect the priority given at the various objective setting phases. For example in 1982, Dorset spent 62% of its Education, Training and Publicity estimate on child cycle training and 31% of it m/H running it, yet this class of road user accounted for less than 10% of the casualty rate. The proposal put forward above in Table 41 shows the cycle training situation as two schemes run at basic and silver levels. despite this the m/H is shown below in Table 42 for comparison purposes.

National Cycle Proficiency Scheme Operational Resource Plan

Table 42

RTA (%)*		Budget (£)		m/H	
1982	1986	1982	1986	1982	1986
8	8	62	10	31	2

* The Road Traffic Accident figures used for the calculations are based upon Stats 19 figures adjusted by the under - reporting factor given in Chapter 7.

From this table, it can be seen that the financial commitment to the activity is similar to the casualty rate for only a 2% m/H input. This demonstrates the contribution that Operational Resource Planning makes towards the tactical plan. Without Operational Resource Planning then objectives may fail for operational reasons. Several examples can be quoted whereby budget controllers have overspent half way through the fiscal year and Operational Resource Planning would assist them in budgetary control. A recent case involved the 20 million pound overspend by the West Dorset Health Authority in 1987. This resulted in objectives not being met and included the delay in opening the new Dorchester Hospital.

10.8 Operational Resource Plan Summary.

Although the examples given above refer to the road safety practitioner it is important to stress the importance that Operational Resource Planning has for practitioners in other fields of safety management. Whatever the safety field, the same 'mission' applies and strategic level objectives are similarly relevant. Arrival at the tactical level applies with equal importance to the general safety practitioner and no differences except possibly, in organisation orientation can be identified.

In respect of organisational orientation, the emphasis, say in the private sector, may mean different styles of budgetary control or different levels of Education, Training and Publicity emphasis depending on the industry involved and could involve some differences at the operational level, for example in working practice. It is for this reason that Operational Resource Planning must be considered at the tactical stage so that any differences are given due consideration in order of priority.

It is of importance to safety practitioners that official statistics may not be reliable enough or detailed enough for their purpose and it is vital that this factor in included within the objective setting sequence for Operational Resource Planning purposes. Without a good data base from which to work then it is certain that the 'mission' will remain as a perceived motive. Safety practitioners will need to consider the interview as a means of improving data and an employee injured whilst at work would expect one to take place. It should be stressed that any interview conducted by the safety practitioner must be orientated towards prevention and not become perceived as 'high status questioners'. It is vitally important that a casualty can discuss his accident in complete confidence without fear of prosecution or having any industrial injury entitlement being the motive for such an interview. Figure 9 below summarises the objective setting sequence summarised above.

<u>Objective Setting Sequence</u> <u>Fig 9</u>

Mission

Strategic Objective Phase

1. Use Accident Data
2. Plan Remedial Action
3. Monitor & Evaluate

Tactical Objective Phase

1. Detail how Reliable data is to be obtained and used
2. Detail Areas for remedial action
3. Detail Evaluation & Monitoring programmes
4. Consider the Operational Resource Plan

Operational Objective Phase

Personal Objective Phase

Objective setting must be understood if it is to be used effectively used and how this might be achieved is discussed later in the text. This is currently under trial in Dorset but it has required a new training input before it could be operated efficiently at the operational level. This is now discussed in Chapter 11.

Chapter 11

11.0 Recommendations

11.1 The thesis has considered the reliability of basic strategic tools for the efficient and effective management of safety related remedial measures in a public sector environment. It is, therefore, prudent at this stage to consider these findings in a general sense and to consider any issues that would have an effect on the organisation. To do this it is intended to discuss the following in the order given.

Stats 19 Data
Hospital Records
Statements made to the police
Interviewing Casualties
Objective Setting
Operational Resource Management (ORP)

It was pointed out earlier that in management terms there are always two basic options open within the decision making process. These are the 'do nothing' and 'do something' strategies. The 'do nothing' option is important when it is necessary to ride out the storm. The implications of this in a commercial environment can mean the difference between profit and loss. In safety management terms and more particularly at this juncture the 'do nothing' option would mean carrying on as at present. This is clearly undesirable if our objectives are to be realised. The 'do something' option is the important strategy to consider and this Chapter considers the findings of this research from this standpoint.

11.2 Stats 19 Data.

It is now known that to continue to use Stats 19 in its present form can lead the local safety practitioner to conclusions that might not be representative of events and reasons for this are outlined in earlier Chapters. A summary of those findings covering Stats 19 accuracy is given below in Table 43. The point now is whether the collection of Stats 19 can be made to be more accurate. This would involve the following being taken into account.

(i) From observations of the police whilst on duty it would mean that special teams of professionally trained officers would need to be set up in order to meet those requirements outlined earlier in Chapter 6. In the present economic climate it would seem unlikely that this would be a viable option and the Chief Constable is at present in difficulties trying to recruit additional staff to fight a rising crime rate. It is also argued that collecting data for data's sake is uneconomical and a waste of staff resources.

(ii) It might be more feasible to increase accuracy without necessarily increasing costs or manpower. From the questionnaire to police officers, it was clear that some dissatisfaction exists at present amongst members of the Traffic Division. It might therefore be possible to improve the situation in an attempt to improve the accuracy and reliability of the present database. To improve the recorded detail would not be a viable option as this would require additional manpower.

The questionnaire showed that there had been no explanation to them how the County Council used the data or shown examples of its use. This situation could be improved by holding in - service training courses for all police officers who would deal with an Road Traffic Accident. Such courses would need to include:

- the Stats 19 form and the details upon it.
- how the data is used and analysed.
- how it is involved in the decision making process.
- how effective remedial measures are implemented both engineering & Education, Training and Publicity examples.
- how technological aids can be relied upon to accurately record information at the time for recall later.

Summary of Stats 19 accuracy Table 43

The following table contains those variables currently contained on the Stats 19 form in current use in Dorset. Against each variable discovered to contain errors over 5% or where observations showed the police officer to encounter problems in accurate interpretation, is identified with a 'X'.

Attendant Circumstances

Variable	Comment	Variable	Comment
Record Type	None	Weather	X
Reference	None	Road Surface	X
Division	None	Special Cond.	None
Map	None	Carriageway Haz	None
Map Reference	X	Overtaking	X
Severity	X	Junction Type	None
No. of vehicles	None	Control	None
No. of casualties	X	2nd Road	None
Day of week	None	Road Safety Area	None
Date	None	Grid Reference	X
Time	None	Tara Reference	None
Local Authority	None	Road	None
Carriageway type	None	Speed Limit	None
Ped. Crossing	None	Light	X

Note Of those 28 variables given above difficulty was either found or observed in those 8 listed. This is 28.6%.

Vehicle Records

Variable	Comment	Variable	Comment
Record type	None	Reference	None
Vehicle Number	None	Vehicle Type	None
Towing	None	Manoeuvre	X
Vehicle Movement	X	Vehicle Location	None
Skidding	X	Hit object in Rd	None
Veh. Leaving Rd	None	Hit object Off	None
Vehicle Suffix	None	1st Point impact	None
Veh.parts damaged	None	Vehicle defects	X
Number of axles	None	Max weight	None
Sex of driver	None	Age of driver	X
Breath test	None	Hit and run	None
Learner driver	None	Drivers actions	X
Driver code	None		

Note Of those 25 vehicle records listed, problems were encountered in 6 areas. This is 24%.

Casualty Records

Variable	Comment	Variable	Comment
Record type	None	Reference	None
Veh. occupied by	None	Cas. Number	X
Cas class	None	Sex	None
Age	X	Severity	X
Ped. Location	X	Ped. Movement	None
Ped. direction	X	Seat belt	X
Car Passenger	None	PSV Passenger	None
School Pupil	None	School Number	None

Note From those 16 variables listed, 6 encountered problems. This is 37.5%

These tables above refer to 69 variables on the Dorset Stats 19 of which 20 encounter problems. This is 29%. However, this accuracy was observed to be more accurate where the police officer was considering prosecution. Records referring to Road Traffic Accident's where a NIP (notice of intended prosecution) was issued tended to be more accurate. All fatal accidents are similarly more accurate. This could probably due to the fact that the police are motivated by Road Traffic Accident detail receiving public discussion. This motivation should be engendered in none court case detail. If this could be achieved then the present Stats 19 data errors could be vastly improved.

It is important that the police officer understands fully the importance of Stats 19 data and he should feel involved in the decision making process from this initialisation phase. It has been discovered that the Stats 19 form is not user friendly and contains some information which could be deleted. Such an example was found to be manoeuvre in Chapter 8. From the 18 manoeuvres listed on the form it would appear that only 4 are used regularly. This could imply that the manoeuvre section on the form could use only those that are regularly used. These are:

Turning Left

Turning Right

Going Ahead

Going Ahead Other

The use of those other variables outlined on the form could be easily reclassified into a general 'other' category without detracting from the aim of the form. Police officers could not see the relevance of questions relating to the actual height of lamp posts, ie., whether they were over 7 metres or not. This could either be overcome via training or deleted or reworded in some way. The form in its present format is clearly unsatisfactory and a review is strongly recommended.

Through a closer co-operation with the police it would seem that the present administrative procedures in force could be reviewed to speed up the process. The police put the data on computer at their end then send the Stats 19's to County Hall to be checked and put onto computer again. It would seem technically feasible to interrogate the police data at their end and re-address it to our archives within 48 hours rather than experience the 3 month delays that exist at present. A road safety practitioner would require details of all accidents, preferably within 24 hours but at best 48 hours with a brief description of the Road Traffic Accident. This system would provide for this.

Technological aids could help overcome the subjective aspects to the form whilst at the same time help recall. The use of pocket tape-recorders and cameras would be useful. At the same time wind speed could be related to the Beaufort Scale and measured accordingly whilst light conditions could be measured using lighting metres appropriately scaled. It is a recommendation of this thesis that these areas be considered by both Dorset County Council and the Dorset Police.

With regards to the under - reporting, then it might be possible to take up those enquiries received via the Traffic Accident Clerk employed at the Poole And Weymouth Accident and Emergency Hospitals. However, this would only provide for updating injury classes and under - reporting but would not provide for any detail for Stats 19 purposes and would involve m/H in subsequent enquiry and completion of Stats 19 documentation. Because this would involve further m/H commitment from the Chief Constable it would be unlikely to succeed.

It is not recommended that Stats 19 be disregarded completely. It is essential that the safety practitioner be fully aware of their shortcomings so that appropriate caution can be exercised. From this the local RSO can advise on how this data might be made more reliable for analysis purposes. It has been said that Stats 19 data is useful for providing trend information and is useful for identifying, for example, peak accident periods and the like. It is stressed that in the short term that use of Stats 19 should be treated with caution and regrettably this thesis must recommend supplementing this data with other short term strategies. These are discussed below in more detail.

11.3 Hospital Records.

There are several issues with the present Stats 19 data that would require considerable input to rectify. This renders Stats 19 as a complete and accurate data source as a long term project. In the short term (or interim) it is necessary to recommend that hospital data be used instead. This has the advantage of being more reliable and can provide for around 95% of all injury Road Traffic Accident's. Although it can be reliable in terms of date of Road Traffic Accident, and casualty detail including injuries, this would not provide all Stats 19 detail. The important point to remember with hospital records is that the safety organisation can gain reliable data simply and reasonably cheaply. It is necessary for analysis purposes to have an accurate picture as is possible but it is also necessary to have detail. This aspect is discussed further in the text.

RSO's should be recommended to liaise with their local health authorities on a regular basis in order that this might be achieved. There is organisational 'mission' compatibility which has been shown to be helpful in these instances particularly at Community Medical Committee, Local Medical Committee and Family Practitioner Committee levels. There are natural spin - offs here in that the Health Authority becomes aware and involved in the efforts of the RSO to reduce accidents locally. The RSO in Dorset is now consulted regularly by local health authorities on a number of issues and more recently have been invited to have an input to nurse training, GP training and giving talks to Community Health personnel on road safety matters. The delegation of initiative is a useful tool to aid the corporate decision making process.

However, it is necessary for this thesis to stress that dealing with medical records can be a sensitive issue and confidentiality is an important consideration. There are also certain hospital procedures that an RSO should be made aware of before delving into the realms of this recommendation. It is recommended that such matters should be dealt with by in - service training although the whole question of training for safety practitioners is discussed in Chapter 12.

11.4 Statements Made to the Police.

This thesis took a detailed look at the value of Statements made to police as an aid to accident analysis. Although this is a recommendation of the Department of Transport and of RoSPA this thesis recommends that statements are not systematically relied upon to provide enlightened additional information. On the contrary, it was found that statements were only taken by the police where a prosecution was being considered so not every accident record will contain a statement. Even less will contain statements from independent sources and those that do were found to have been taken, in the majority of cases, too late to be considered acceptable. If statements could be taken for analytical reasons then it might be possible to get more reliable data but the police are considered 'high status' in this regard, therefore without specialist training and a change in police policy, it is unlikely that any of the recommendations made here could be implemented in the short - term and it is doubtful whether the long term situation could improve matters.

11.5 Interviewing Casualties.

During the work carried out for this thesis it was anticipated that statements made to the police may not readily lend themselves as aids to accident analysis. This was initially based upon weaknesses in witness reliability discussed earlier in Chapter 3. It was necessary therefore to consider alternative strategies in view of those results given in Chapter 8. This necessitated further co-operation with local health authorities so that a workable scheme could be implemented to obtain not only corroborated information but to primarily expand upon the detail required for accident analysis. From the trial period described above in Chapters 9 and 10 it would be a recommendation of this thesis that safety practitioners pursue a systematic programme of conducting confidential interviews with consenting participants. In this way the interview can be controlled more readily for analytical purposes. Such a system as that described here in this thesis is flexible enough to cater for any group or class of road user or can be geographically orientated to include only selected sites or group of sites. The methodology caters for the shortfalls identified earlier in Chapters 3 and 8 in that interviews, providing that the casualty is able to be interviewed, can be conducted within 24 hours. The conduct of the interview can be varied according to the type being undertaken.

This method of obtaining information does require certain counselling skills not covered on present RSO training programmes. In Dorset, the School of Nursing provided a series of training sessions for road safety staff which lasted over a period of 4 weeks. Counselling did not feature in any other types of general safety management courses considered as part of this research yet the interview technique provides an excellent opportunity to obtain detailed and reliable data at a reasonable level of resource commitment.

It is necessary when dealing with confidential information that it is stored and dealt with in a responsible manner. Once the findings of the interview have been quantified steps should be taken to ensure that personal identity cannot be easily related to the answers given or the records should be permanently destroyed. It must also be appreciated that a confidential trust should not be broken. An interviewer may receive some information that appalls him. Whatever is discussed should remain confidential and under no circumstances be passed on to a third party. It is a recommendation of this thesis that safety practitioners adopt a code of conduct sympathetic to this responsibility. With this particular aspect there is a further training input and this will be discussed in Chapter 12.

11.6 Objective Setting.

The importance of objective setting within the management system has been discussed above and contributions to its efficiency and effectiveness has been noted. Regrettably the suggestion has always been recommended by management trainers and strategists but in the public sector no evidence could be obtained to support that the systematic setting of objectives existed. Reasons given by safety practitioners for this tended to suggest that set objectives could never be met and took too long to set and implement. They were also subjected to political change.

As far as the safety practitioner is concerned he is fortunate in that safety is not a party political issue and receives wide spread support. Setting objectives has also been discussed above and has been demonstrated to take only a small proportion of the resource base. Objective setting is a regular feature now in Dorset which confirms this view. It must be a recommendation of this thesis that safety practitioner must set objectives and must receive guidance in the practical applications of the theory. Circumstances existing at present which allow for a safety practitioner to operate without any plan and without any requirement to show his contributions to the organisational 'mission' cannot be recommended.

Road Safety Officers are notorious for accepting that they never know whether Education, Training and Publicity programmes have reduced accidents. This is obvious when the service is structured as it is at present. Unless the practitioner commits his resources totally to the 'mission' then it must be accepted that this will occur. At the 54th RoSPA conference the author was invited to present a paper (see Appendix 70) on the subject of Secondary Education and how to find out from schools what work they are doing. The objective setting sequence described in this thesis was used in a practical sense to illustrate its importance. The safety work that is being conducted in schools might seem a fundamental issue to some but delegates at the conference responded fundamental questions which can only be properly dealt with via the training medium and is discussed later in Chapter 12.

11.7 Operational Resource Planning.

This is arguably the most important aspect of the objective setting phase and without it the process cannot be efficiently and effectively implemented. It is accepted that an organisation will commit differing levels of resource support in order to achieve certain defined aims. Management then implement certain strategies designed to meet these objectives. If the objectives cannot be met then the manager has a responsibility to let the organisational structure know some reasons as to why these deficiencies occurred. An organisation must be provided with an opportunity rectify the situation accordingly. Objectives have been shown earlier to fail for two main reasons. These are:

(i) insufficient resource commitment; and,
(ii) inefficient and ineffective management of these resources.

The Operational Resource Plan allows for these two vital issues to be considered and provides for effective apportioning of resources. A Tactical ratio shown to be working at the present in Dorset and calculated from those figures given in Tables 40 to 42 above as follows:

Tactical Objective 1 requires 28% of the resource base
Tactical Objective 2 requires 52% of the resource base
Tactical Objective 3 requires 20% of the resource base

Operational Resource Planning allows for modifications to be made and provides for the monitoring of efficiency v effectiveness, whilst at the same time it can be used to show the effects that additional requirements or responsibilities placed upon an organisation will have. Whilst the thesis would strongly recommend all safety practitioners to use Operational Resource Planning systematically it is recognised that this is not possible without the appropriate training input.

11.8 Summary of Recommendations.

The safety practitioner must recognise that he has a duty and a responsibility to reduce accidents and is therefore bound to carry out strategies that will either do this or help to prevent them occurring. It is important that the difference between the perceived and prime motivants are appreciated and understood and that the safety practitioner take steps to adopt a prime motivant policy in terms of accident reduction and prevention. To assist with this certain strategies have been discussed above which are conducive to prime motivant orientation. This involves a systematic approach to the decision making process involving Operational Resource Planning and can be listed as follows:

Stats 19 - These should be used with caution for detailed analysis and are useful for identifying trends of a general nature. Steps should be taken to improve reliability and accuracy in the long term. For other safety practitioners, official statistics can suffer from the same levels of under reporting therefore steps should be taken to obtain supplementary data from other sources as recommended above

Hospital Records - Efforts should be made to use hospital data for those reasons given above. The data is more reliable in that anyone injured is more likely to report for treatment. It is appreciated that there will be a shortfall of around 5% who attend their GP but this is significantly better than Stats 19 alone.

Interviewing Casualties - Once contact has been made with the local hospitals then this aspect becomes more attractive and should be recommended. At the present time it would seem that around one third would readily consent to be interviewed but it would need to be asked whether this applies to all groups of road user. It might be that elderly pedestrians are more likely to consent to be interviewed than the present study involving riders of Powered Two-Wheeled Vehicle's suggests. This might also apply in other fields for example a sailor might be less likely to consent than a agricultural worker.

Statements made to the police - These seem an attractive idea on the face of it but the evidence presented above suggests that these should not be used. It might be possible at some later stage to make these more reliable for analytical purposes but this seems highly unlikely.

For practical purposes it would not be a recommendation that they be used and safety practitioner should seek accurate detail from another source. This could easily and effectively be done by interview as described above.

Objective Setting - It is recommended that this be used by all safety practitioners who hope to reduce accidents and show that this has been achieved. This aids a proactive management style which is necessary in accident prevention and allows for maximum efficiency and effectiveness. There have been several attempts by management theorists to make objective setting attractive. Management by Objectives was probably the most widely taught and was used by RoSPA on its Advanced Professional Seminars up to 1982. Responsibility for the course work was delegated to the Institute of Local Government Studies at Birmingham University but students failed to understand the delicate bridge that exists between theory and practice. As a result of discussions between the County Road Safety Officers Association RoSPA discontinued objective setting from its revised training program currently in force. That system for setting objectives used in this thesis does not imply any special system. It uses merely logical steps to aid the decision making process as has been used by armies for centuries. MBO was rather complicated and difficult to comprehend.

Operational Resource Planning - It has been discussed in this thesis that there is a delicate bridge which exists between theory and practice. Operational Resource Planning provides meeting this important requirement because it requires the manager to consider his objectives at the tactical rather than operational level. Crucial to this is the resource base requirement and to consider how it will be distributed across the action plan. From this it will be possible to consider whether objectives are achievable or whether modifications are necessary. It is important that these are found out before plans become operational.

The research has provided an opportunity to test those theories put forward in this thesis and place them in an operational setting. This has required a commitment from members of staff involved and a desire to see the effects of a revised management strategy. The data collection exercise involving counselling skills is currently under way and some operational problems will need to be considered. There are problems in this regard which will need close scrutiny. It is not yet fully known how many interviews will be required from outside county boundaries and there will also need to be a policy regarding the acceptable number of attempts made to arrange such interviews. These are crucial considerations for the Operational Resource Planning.

Long term problems like those discussed above involving the collection of Stats 19 data will need to be emphasised particularly if this data is to be improved. Whilst steps can be taken to improve the under - reporting elements there must be some improvements made fairly urgently to improve the actual Stats 19 form in order to deal with the subjectivity of certain variables on the form and to delete those which have been found to be unused. There is genuine enthusiasm on the part of the police to become involved in the decision making process but the problems will require the local authority to reconsider its role in the data collection operation. Some of these areas, particularly in relation to the engineering function fall outside the brief of the authors interest but steps have now been taken by the County Surveyors Society and the regional groups of the Institutions of Civil Engineers and Highways and Transportation to consider the importance of this research. The author has been invited to present some finding on this research and this will have to be dealt with tactfully in view of the commitment to Stats 19 data by these professional groups.

Chapter 12

12.0 General Conclusions.

12.1 The research carried out as part of this thesis has implications both locally and nationally and it is intended to discuss these in the following order:

(i) Those implications for the road safety service in Dorset.

(ii) Those implications for road safety practitioners nationally.

(iii) The Implications for other safety professionals.

(iv) The need for an integrated training programme for safety practitioners.

(v) The need for an improved communication and dissemination of safety related information.

(vi) The need for a co-ordinated approach to education and training research as a remedial measure.

(vii) The need to adopt a corporate approach to publicity programmes.

(viii) The need for a corporate approach to safety management.

(ix) The need for a national resource centre.

(x) The future.

Having summarised those issues above for discussion, they are now discussed in more detail below.

12.2 Implication for the road safety practitioner in Dorset.

This research has received support from both engineer and road safety officer and has served as an experiment in practice. Whilst under-reporting of Road Traffic Accident's has been muted for a number of years many practitioner viewed this as a raw piece of academia which failed to pass the 'so-what' test. A large number of engineers at first refused to accept the relevance of under-reporting evidence on the basis that three years of data provided sufficient local knowledge and indicated trends sufficiently accurately. It required practical descriptions along those lines described earlier in the thesis to convince them that this was a vital issue. The fact that such evidence effects Economic Rate of Return's is, in itself, enough to compromise the whole traffic management decision making process in terms of objective setting particularly in relation to the ordering of priorities. Engineers locally are now convinced and are committed to supplementing their data from a reliable source by latching on to the data base set up as described earlier.

Road safety officers in Dorset were similarly sceptical and it required delicate discussions as described earlier to deal with this issue. This was largely effected via in-service training which remains a vitally important management tool. Essential to the success of such influence comes from those being responsible similarly becoming involved in the training process. Without this then change will not be efficiently effective. This was a factor pursued by Montgomery, 1958, in his 'memoires'. Montgomery also said that it is also important in any management theory that;

'those being influenced by change are fully aware of and can comprehend the reasons for it'.

Other management theorists, such as Cooke & Slack, 1984, op.cit., also deal with this issue under discussions concerning leadership.

Dorset County Council are now considering the work of this thesis as a basis for permanent inclusion in its management process and now recognises the importance and necessity for a reliable database. It has yet to decide on how it will distribute the m/H requirements outlined earlier in the text.

12.3 Implications for road safety practitioners nationally.

The atypical nature of Road Traffic Accident data prevents the findings within this thesis being logged and used verbatim. It will be necessary for each and every local authority with a responsibility under Section 8 of the Road Traffic Act 1974 to consider their own courses of action. What this thesis provides for is a methodology that has been implemented and tested in terms of feasibility and its resource commitment has been assessed in practical terms. The important aspect here, is to recognise that there will be a tendency to argue, as did the local practitioner described above, by admitting that three year trends are all that is required to plan and implement efficient and effective plans. It is essential, therefore that engineers and road safety practitioners generally, are shown the necessity and importance of the findings described in this text. As a result of this work, the County Surveyors Society has asked the author to present these findings to members in Exeter on 15th July 1987.It will be discussed later that dissemination of this information is one strategy but alone will not succeed. It will be necessary to discuss training contributions but these tend to be long term activities. Talking to interested groups such as the County Road Safety Officers Association, Institute of Road Safety Officers, County Surveyors Society, Institution of Civil Engineers, RoSPA and the like will only serve as a short term measure. A collective or corporate approach to this matter is essential and should involve the Department of Transport as soon as possible. It is appropriate to discuss training and those suggested topics for inclusion on courses and this is discussed in paragraph 12.5 below.

12.4 Implications for other safety practitioners.

The findings and recommendations within this thesis apply equally to the general safety practitioner and should not be considered in isolation. The safety practitioner must take effective and efficient steps to reduce accidents or to prevent them occurring. It has been discussed above in earlier chapters that there is 'mission' compatibility between road safety practising in other fields. The philosophy described above shows that there is similar compatibility at the Strategic and Tactical levels of operation. From a management operational point of view therefore, there will be no differences as operational planning is affected by both strategic and tactical considerations. This implies a much easier approach to management training for practitioners generally and in paragraph 12.5 below this is discussed in more detail.

Professional training will need to be considered separately and this falls outside the bounds of this thesis. The project assumes that, for example, those in the petroleum, nuclear, industrial, occupational, etc., fields will be appropriately qualified and experienced. What is being argued is that management training will allow this knowledge and expertise be used efficiently and effectively as a prime motivant. It is also believed that practitioners in other fields have much to offer each other and can learn a great deal from each others experiences. This provides for a corporate approach to safety management. Any training considerations should consider this at the planning stage.

12.5 Training Needs.

This is probably the most important aspect to develop from the thesis. The project has highlighted certain areas where the safety practitioner would need to improve upon his present knowledge and understanding. Both strategically and tactically there are similarities in philosophy, therefore a common approach to safety management training can be considered. This might be attractive to centres for learning who might otherwise consider specialised safety training demand too specialised to justify involvement. More general type courses can be more readily marketed to a wider audience and this should be considered by colleges, institutes of higher education and universities. Clearly such courses should be management rather than professionally orientated and should provide the student with tools to make him more efficient and effective within his particular organisation. Whilst management training should include objective setting and decision making generally, time must be spent discussing the role of the safety manager in practice. Running alongside this conclusion should be some study concerning those areas that will form strategic and tactical objective setting. There would be a need to make students aware of official statistics, and under-reporting whilst at the same time warning of witness reliability theory. On the positive side, time should be spent discussing ways of improving reliability including counselling of employees or casualties more generally and the advantages of working with other 'mission' compatible organisations.

The Health and Safety at Work Act 1974, is also relevant to the general safety practitioner and this should form a natural part of any intended safety management course. Without ORP being an integral part of any management course, safety or otherwise, it it unlikely that an organisation would reach its prime motives or 'mission'. It is also essential that safety managers are in a position to advise their organisation of resource commitment levels and can identify shortfalls before they occur. ORP provides that link between tactical and operational objective setting which is essential to efficiency and effectiveness and no course for safety managers should be considered without it.

Ideally such a course should be conducted with the co-operation of all interested safety organisations and would include safety professional institutions as well as interested associations and societies. The question of academic level could not be decided here as this would be a matter for discussion. However, it should be pointed out that present recruiting strategies for safety personnel may have to be changed in relation to the differing levels of academic requirements for posts and this will have implications for organisations giving low priority to safety management.

12.6 Improved Communications.

Throughout the work carried out for this thesis, it was evident that the safety profession as a whole do not have sufficient professional journals to keep the practitioner abreast of current research. Pergamon press produce a bi-monthly journal entitled 'Accident Analysis and Prevention' but at a price which is prohibitive to the small organisation working on a limited budget. Regrettably, the journal is aimed at the academic researcher rather than the practitioner. However, this journal did appear to be of quality and for those in a position to obtain it regularly would find it both informative and useful. RoSPA was the only organisation producing information aimed at the practitioner and those professional journals looked at from the Institutions of Road Safety Officers, Industrial Safety Officers and Occupational Safety & Health tended to lean towards the 'newsletter' type approach rather than the area of research. There are from time to time several quality journals producing safety related research information but these tend not to be read by the general safety practitioner (including road safety officers). Civil Engineers are more fortunate in that they do have access to regular up dates of information via their respective professional journals and the author has been forced to send papers published as part of this project to these 'other' journals in the hope that they will be read by safety practitioners. Clearly a new journal aimed at the practising safety manager is urgently required.

There are several safety organisations providing a seminar type approach to the dissemination of information and this aspect would seem reasonably well covered. Regrettably though, these can only be attended on a limited basis due to the costs involved and absences away from work. This thesis would not conclude that seminars are as urgently in need of review as would that of the journal described above.

12.7 A co-ordinated approach to education and training.

Road safety officers and health education officers have been observed to spend considerable time developing resources for education and training purposes. This does not necessarily provide for efficiency v effectiveness. At the same time we observe organisations such as RoSPA, County Road Safety Officers Association (CRSOA) and the British Institute of Traffic Education and Research (BITER) producing several resources. The safety practitioner has to decide which of these to support and usually bases this decision on financial rather educational criteria because these organisations fail to provide the safety practitioner with advise on 'how' and 'when' these resources should be used to be effective.

Only the Road Safety Education Unit at Reading University was able to overcome this problem and this was largely due to work carried out by Ken Jolly and his team. It is vital that resource materials are provided based upon sound principles and that local authorities requiring work to be carried out in the field of resource development should seek advice from those most qualified in that field. This thesis could find no justification at the strategic and tactical levels of objective setting to include resource development within it because the emphasis had to be on data reliability. Without this then resource development cannot be considered. The role of the safety practitioner is to reduce accidents by the effective and efficient implementation of remedial measures. Educational resource development forms no part of this definition. At the 53rd Road Safety Congress at Eastbourne in 1986 A. Singh, of Reading University presented a paper calling for the establishment of a centre to develop educational materials for safety practitioners and this thesis would support such a motion.

12.8 Co-ordinated approach to publicity.

Publicity is one of the most expensive remedial measures to be considered by a safety practitioner. Whilst there has been given no clear definition of publicity in Department of Transport Circular Roads 12/75, op.cit., it has largely been due to the practitioner to interpret what exactly 'publicity' means. Several local authorities use it in the 'perceived motivant' context and carry out low key public relations type exercises. Publicity campaigns should aim to reduce accidents in accordance with a safety practitioners 'mission'. He should not undertake or consider programmes which fail to recognise this. Publicity, therefore must be viewed from this standpoint. Effective publicity campaigns suffer from two main disadvantages and careful thought is necessary before such a remedial strategy is contemplated. First of all, any publicity campaign is expensive and requires planning well in advance so that appropriate 'before', 'during' and 'after' studies can be carried out. Secondly, any publicity campaign is going to have to compete for the same target audience against highly professional campaigns being conducted by large public corporations. It is unlikely that any safety practitioners budget will be able to cope with effective publicity locally for these reasons. There is merit in discussing regional campaigns where funds can be pooled. In this way they might be used more effectively. Latching on to Department of Transport campaigns might be possible if (a) it is relevant and (b) sufficient notice is given to allow for detailed planning. regrettably, the Department of Transport are notorious for giving extremely limited notice which does not allow for any detailed local initiative. As the Department of Transport publicity is handled by the Central Office of Information (COI) it is highly probable that other forms of safety publicity initiative would similarly be lost through lack of warning.

Because of the necessity for publicity strategies to conform to the strategic plan, it can only be concluded that regionalisation of the publicity initiative can be the only effective possibility for the local practitioner. This may then provide for a more co-ordinated and effective approach for the local initiative.

12.9 Corporate approach to safety management.

One of the main problems concerning road safety practitioners is that they tend to adopt a rather 'insular' approach to their activities. The author has been surprised at meetings both regionally and nationally when colleagues have condemned health education initiatives which are thought to have bordered on an area regarded by road safety officers as sacrosanct. It is disappointing though when two organisations whose 'missions' are compatible, to experience duplication of effort and it is for these reasons that a corporate approach is recommended. By adopting some of those approaches discussed in this thesis, co-operation between all 'mission' compatible organisations is possible. From the evidence presented in this project it can be seen that segregation of safety management between 'road', 'occupational', 'industrial', 'water', 'fire', 'health education' and all other forms of safety is an unnecessary division of interests. A safety practitioner should be able to implement efficient and effective remedial and preventative measures irrespective of these 'specialisations' outlined above and in any environment. This is further evidence to support general safety management courses as outlined above.

In the short term, however, safety practitioners should meet regularly in order to exchange ideas and plan strategies that compliment rather complicate each other and that effort can be directed to maximise effect. It would be to RoSPA, CRSOA, IRSO, IISO, etc., to take up this initiative and foster closer working relationships with safety colleagues.

12.10 The need for a resource centre.

This research involved contact with many sources in order to obtain the relevant literature required to deal with the specific nature of this study.. Libraries at the Dorset Institute and Southampton University were used as were those at Birmingham, Leeds and Manchester Universities. None could be regarded as having a reasonable safety related list although Reading University and the Department of Transport Transport and Road Research Libraries were better than most. RoSPA did have a vast library but when they moved from the centre of London to Croydon in the early 1950's, someone gave it away to someone at Liverpool University. It was so long ago that nobody could recall who was involved and Liverpool University deny all knowledge of receiving anything from RoSPA!

RoSPA is now attempting to develop a resource centre but it is far from complete. Safety students and practitioners are therefore required to scan the usual international research lists and expect to spend some time gathering the relevant papers together. It would be of immense help to safety practitioners if a resource centre was set up which would embark upon a programme of amassing safety related articles and papers. At present, the task is made more difficult for the practitioner (as apart from the researcher), in that there is no one journal or magazine currently specialising in material relevant to the practising safety professional. Now that a Centre for Safety Research has been set up at the Dorset Institute of Higher Education it might be possible to pursue this via this medium.

12.11 The future.

This thesis has enabled safety practitioners to consider both short and long term strategies that are conducive to aiding efficiency and effectiveness. It has been necessary to make a critical appraisal of existing tools and to suggest a methodology that will provide for practical solutions in an operational setting. By detailing those processes in a logical sequence it has been possible to estimate the resource base by integrating the ORP into the tactical plan prior to apportionment across described activities. It has been necessary to suggest ways in which existing requirements might be improved upon and made more acceptable for operational use but this has been shown to be a long term project particularly in relation to that data provided via police sources.

The police have been extremely helpful during this study and have made efforts to deal with those areas singled out for their attention. In respect to those delays being experienced in the actual completion of Stats 19 has resulted in a civilian clerk being appointed for this very task. Whether this will result in a saving of operational police time remains to be seen. All police officers are to be familiarised with the role of the safety practitioner and are to be shown some examples of how their data is used. It must be remembered that they suffer from 'mission' conflict in that they have a duty to reduce crime on the one hand but in traffic matters would wish to see accidents reduced. When such conflict exists then strategic and tactical objectives become less positive and to encourage direct remedial involvement at an operational level, within the decision making framework, can contribute to a decrease in motivation as was borne out by the questionnaire. This may result in increased reliability of trend data as a useful source of information but must not be assumed. The police have not been discouraged by the findings of this project and are actively seeking ways to improve their administration. Nothing would please them more than for the government to admit that the police were not in a position to provide data for accident analysis purposes due to 'mission' conflict. This is unlikely to happen in the short term.

Accidents, particularly road accidents are the main cause of death in this country yet successive governments spend little in terms of research by comparison to 'other' causes. Reducing accidents will have the single most dramatic affect on hospital waiting lists and it must be the concern of, not only the Department of Transport, but the DHSS to contribute more to the main efforts described in this thesis.

Finally, the thesis concludes that the government should consider its own involvement in the collection of data and examine the uses it is put to. Because of the atypical nature of accidents described earlier it is unlikely that the findings from any detailed analysis undertaken nationally would necessarily apply locally. The efficiency and effectiveness of the duplicating of data collection for this purpose is therefore questioned. The reliability of 'serious' and 'slight' categories are unreliable therefore it would seem, at the present time, that the collection of fatal accidents only would be appropriate. This would ease the management process considerably and would provide for a more efficient and effective use of the prime resource base.

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APPENDIX 1

Current Stats 19 Form (Revised) 1976

STATS 19 (T6)
D.L./5031

DORSET COUNTY ACCIDENTS SYSTEM

Record Type	Reference: Year	Reference: Division	Reference: Reference Number	Map	Map Reference	Severity	Number of Vehicles	Number of Casualties	Day of Week	Date: Day	Date: Month	Date: Year	Time: Hour	Time: Minutes	Local Authority	Road: Class	Road: Number	Carriageway Type	Speed Limit	Pedestrian Crossing	Light	Weather	Road Surface	Special Conditions	Carriageway Hazards	Overtaking
1							0																			

1 — 23 — 49

Junction Type	Control	Junction Accdts. Only, 2nd Road: Class	Junction Accdts. Only, 2nd Road: Number	Road Safety Area	Grid Reference: Easting	Grid Reference: Northing	Tara. Reference: Section	Tara. Reference: Node

50 — 80

1

Record Type	Reference: Year	Reference: Division	Reference: Reference Number	Vehicle Number	Vehicle Type	Towing	Manoeuvres	Vehicle Movement: From	Vehicle Movement: To	Vehicle Location at time of Accident	Junc Location of Veh	Skidding	Hit Object in Carriageway	Vehicle L'ving C'way	Hit Object off Carriageway	Vehicle Suffix	1st Point of Impact	Vehicle Number of other vehicle hit	Vehicle Parts Damaged 1	Vehicle Parts Damaged 2	Vehicle Parts Damaged 3	Vehicle Defects 1	Vehicle Defects 2	Vehicle Defects 3	Goods Vehs.: No. of Axles	Goods Vehs.: Max. Weight	Sex of Driver	Age of Driver	Breath Test	Hit & Run	Learner Driver	Drivers Actions	Driver Code
2				0 0 1																													
2				0 0 2																													
2				0 0 3																													
2				0 0 4																													
2				0 0 5																													
2				0 0 6																													
2				0 0 7																													
2				0 0 8																													

1 — 23 — 50

2

Record Type	Reference: Year	Reference: Division	Reference: Reference Number	Vehicle occupied or hit by (Number)	Casualty Number	Casualty Class	Sex	Age	Severity of Injury	Pedestrian: Location	Pedestrian: Movement	Pedestrian: Direction	Seat Belt	Car Passenger	PSV Passenger	School Pupil	School Number
3					0 0 1												
3					0 0 2												
3					0 0 3												
3					0 0 4												
3					0 0 5												
3					0 0 6												
3					0 0 7												
3					0 0 8												
3					0 0 9												
3					0 1 0												
3					0 1 1												
3					0 1 2												

1 — 23 — 32

3

1. Description of accident (if possible not more than one sentence; e.g. Veh. No. 1 entered main road and struck Veh. No. 2 which was then pushed into path of and was struck by Veh. No. 3):

2. Exact/Approx. Location of Accident

3. Tick appropriate boxes:

	Veh. No. 1	Veh. No. 2	Veh. No. 3	Veh. No. 4	Veh. No. 5	Veh. No. 6	Veh. No. 7	Veh. No. 8
(a) Driver/Rider lives within 10 miles of scene								
(b) Driver/Rider lives outside 10 miles radius								

4. Code appropriate boxes with direction of travel (e.g. NE, SW, etc.):

	Veh. No. 1	Veh. No. 2	Veh. No. 3	Veh. No. 4	Veh. No. 5	Veh. No. 6	Veh. No. 7	Veh. No. 8
(a) Direction from which vehicle came								
(b) Direction to which vehicle was going								

5. Where a vehicle is a potential "write-off" code registration number in appropriate box:

Veh. No. 1	Veh. No. 2	Veh. No. 3	Veh. No. 4	Veh. No. 5	Veh. No. 6	Veh. No. 7	Veh. No. 8

6. If person(s) killed or injured attends a school within the County enter name of school; if attending school outside county enter outside county.

Casualty Number	SCHOOL ATTENDED
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

APPENDIX 2

Original Stats 19 used prior to 1979

Department of Transport

VEHICLE RECORD

2.1 RECORD TYPE 1 2 [2][ ]

1 New vehicle record
5 Amended vehicle record

2.2 POLICE FORCE 3 4 [ ][ ]

2.3 ACCIDENT REF NO 5 6 7 8 9 10 11 [ ][ ][ ][ ][ ][ ][ ]

2.4 VEHICLE REF NO 12 13 14 [ ][ ][ ]

2.5 TYPE OF VEHICLE 15 16 [ ][ ]

01 Pedal cycle
02 Moped
03 Motor scooter
04 Motor cycle
05 Combination
06 Invalid Tricycle
07 Other three-wheeled car
08 Taxi
09 Car (Four wheeled)
10 Minibus/Motor
11 PSV
12 Goods not over 1½ tons UW (1·52 tonnes)
13 Goods over 1½ tons UW (1·52 tonnes)
14 Other motor vehicle
15 Other non motor vehicle

2.6 TOWING AND ARTICULATION 17 [ ]

0 No tow/articulation
1 Articulated vehicle
2 Double/multiple trailer
3 Caravan
4 Single trailer
5 Other tow

2.7 MANOEUVRES 18 19 [ ][ ]

01 Reversing
02 Parked
03 Waiting to go ahead but held up
04 Stopping
05 Starting
06 U Turn
07 Turning left
08 Waiting to turn left
09 Turning right
10 Waiting to turn right
11 Changing lane to left
12 Changing lane to right
13 Overtaking moving vehicle on its offside
14 Overtaking stationary vehicle on its offside
15 Overtaking on nearside
16 Going ahead left hand bend
17 Going ahead right hand bend
18 Going ahead other

2.8 VEHICLE MOVEMENT COMPASS POINT 20 21 [ ][ ] From To

1 N
2 NE
3 E
4 SE
5 S
6 SW
7 W
8 NW
or [0][0] Parked - not at kerb
[ ][0] Parked - at kerb

2.9 VEHICLE LOCATION AT TIME OF ACCIDENT 22 23 [ ][ ]

01 Leaving the main road
02 Entering the main road
03 On main road
04 On minor road
05 On service road
06 On lay-by or hard shoulder
07 Entering lay-by or hard shoulder
08 Leaving lay-by or hard shoulder
09 On a cycleway
10 Not on carriageway

2.10 JUNCTION LOCATION OF VEHICLE AT FIRST IMPACT 24 [ ]

0 Not at junction (or within 20 metres/22 yards)
1 Vehicle approaching junction/vehicle parked at junction approach
2 Vehicle in middle of junction
3 Vehicle cleared junction/vehicle parked at junction exit
4 Did not impact

2.11 SKIDDING AND OVERTURNING 25 [ ]

0 No skidding-jackknifing or overturning
1 Skidding
2 Skidded and overturned
3 Jackknifed
4 Jackknifed and overturned
5 Overturned

2.12 HIT OBJECT IN CARRIAGEWAY 26 27 [ ][ ]

00 None
01 Previous accident
02 Road works
03 Parked vehicle-lit
04 Parked vehicle-unlit
05 Bridge(roof)
06 Bridge(side)
07 Bollard/refuge
08 Open door of vehicle
09 Central island of roundabout
10 Kerb
11 Other object

2.13 VEHICLE LEAVING CARRIAGEWAY 28 [ ]

0 Did not leave carriageway
1 Left carriageway nearside
2 Left carriageway nearside and rebounded
3 Left carriageway straight ahead at junction
4 Left carriageway offside onto central reservation
5 Left carriageway offside onto central reservation and rebounded
6 Left carriageway offside crossed central reservation
7 Left carriageway offside
8 Left carriageway offside and rebounded

2.14 HIT OBJECT OFF CARRIAGEWAY 29 30 [ ][ ]

00 None
01 Road sign/Traffic signal
02 Lamp post
03 Telegraph pole/Electricity pole
04 Tree
05 Bus stop/Bus shelter
06 Central crash barrier
07 Nearside or offside crash barrier
08 Submerged in water (completely)
09 Entered ditch
10 Other permanent object

2·15 VEHICLE SUFFIX LETTER 31 [ ]

SUFFIX LETTER or one of the following codes –

0 More than twenty years old (at end of year)
1 Unknown/cherished number/not applicable
2 Foreign/diplomatic
3 Military
4 Trade plates

2.16 FIRST POINT OF IMPACT 32 [ ]

0 Did not impact
1 Front
2 Back
3 Offside
4 Nearside

2.17 OTHER VEHICLE HIT (VEH REF NO) 33 34 35 [ ][ ][ ]

2.18 PART(S) DAMAGED 36 37 38 [ ][ ][ ]

0 None
1 Front
2 Back
3 Offside
4 Nearside
5 Roof
6 Underside
7 All four sides

2.19 NO OF AXLES 39 [ ]

0 Not goods vehicle
2 2 axles
3 3 axles
4 4 axles
5 5 or more axles

(2–5: Goods Vehicles only)

2.20 MAXIMUM PERMISSIBLE GROSS WEIGHT 40 41 [ ][ ]

Metric tonnes (Goods vehicle only)

2.21 SEX OF DRIVER 42 [ ]

1 Male
2 Female
3 Not traced

2.22 AGE OF DRIVER 43 44 [ ][ ]

(Years estimated if necessary)

2.23 BREATH TEST 45 [ ]

0 Not applicable
1 Positive
2 Negative
3 Not requested
4 Failed to provide
5 Driver not contacted at time

2·24 HIT AND RUN 46 [ ]

0 Other
1 'Hit and run'
2 Non stop vehicle not hit

2.25 DTp SPECIAL PROJECTS 47 48 49 50 [ ][ ][ ][ ]

CASUALTY RECORD

3·1 RECORD TYPE (columns 1 2) [3][ ]

1 New casualty record
5 Amended casualty record

3·2 POLICE FORCE (columns 3 4)

3·3 ACCIDENT REF NO. (columns 5 6 7 8 9 10 11)

3·4 VEHICLE REF NO (columns 12 13 14)

3·5 CASUALTY REF NO. (columns 15 16 17)

3·6 CASUALTY CLASS (column 18)

1 Driver or rider
2 Vehicle or pillion passenger
3 Pedestrian

3·7 SEX OF CASUALTY (column 19)

1 Male
2 Female

3·8 AGE OF CASUALTY (columns 20 21)

(Years, estimated if necessary)

3·9 SEVERITY OF CASUALTY (column 22)

1 Fatal
2 Serious
3 Slight

3·10 PEDESTRIAN LOCATION (columns 23 24)

00 Not pedestrian
01 In carriageway crossing on pedestrian crossing
02 In carriageway crossing within zig-zag lines approach to the crossing
03 In carriageway crossing within zig-zag lines exit the crossing
04 In carriageway crossing elsewhere within 50 metres of pedestrian crossing
05 In carriageway crossing elsewhere
06 On footway or verge
07 On refuge or central island or reservation
08 In centre of carriageway not on refuge or central island
09 In carriageway not crossing
10 Unknown

3·11 PEDESTRIAN MOVEMENT (column 25)

0 Not pedestrian
1 Crossing from drivers nearside
2 Crossing from drivers nearside-masked by parked or stationary vehicle
3 Crossing from drivers offside
4 Crossing from drivers offside-masked by parked or stationary vehicle
5 In carriageway stationary-not crossing (standing or playing)
6 In carriageway stationary-not crossing (standing or playing)-masked by parked or stationary vehicle
7 Walking along in carriageway facing traffic
8 Walking along in carriageway back to traffic
9 Unknown

3·12 PEDESTRIAN DIRECTION (column 26)

Compass point bound
1 N
2 NE
3 E
4 SE
5 S
6 SW
7 W
8 NW
or 0 - Pedestrian - standing still

3·13 SCHOOL PUPIL CASUALTY (column 27)

0 Not a school pupil
1 Pupil on journey to/from school
2 Pupil NOT on journey to/from school

3·14 SEAT BELT USAGE (column 28)

0 Not car or van
1 Safety belt in use
2 Safety belt fitted-not in use
3 Safety belt not fitted
4 Child safety belt/harness fitted-in use
5 Child safety belt/harness fitted-not in use
6 Child safety belt/harness not fitted
7 Unknown

3·15 CAR PASSENGER (column 29)

0 Not car passenger
1 Front seat car passenger
2 Rear seat car passenger

3·16 PSV PASSENGER (column 30)

0 Not a PSV passenger
1 Boarding
2 Alighting
3 Standing passenger
4 Seated passenger

3·17 DTp SPECIAL PROJECTS (columns 31 32 33 34)

APPENDIX 3

D.Tp criteria in respect of Fatal, Serious, Slight and Non-Injury Road Traffic Accidents.

D.T.p criteria in respect of Fatal, Serious, Slight and Non-Injury Road Traffic Accidents

FATAL: Human casualties who sustained injuries which caused death less than 30 days (before 1954, about 2 months) after the accident.

SERIOUS INJURY: An injury for which a person is detained in hospital as an 'in-patient', or any of the following injuries whether or not he is detained in hospital: fractures, concussion, internal injuries, crushing, severe cuts and lacerations, severe general shock requiring medical treatment, injuries causing death 30 or more days after the accident. An injured casualty is coded as seriously or slightly injured by the police on the basis of information available within a short time of the accident. This generally will not include the results of a medical examination, but may include the fact of being detained in hospital, the reasons for which may vary somewhat from area to area.

SLIGHT INJURY: An injury of a minor character such as a sprain, bruise or cut which are not judged to be severe, or slight shock requiring roadside attention.

HMSO Road Accidents Great Britain 1985 The Casualty Report Pages 5 and 6.

APPENDIX 4

Stats 19 - Vehicle Type

Each vehicle involved in an accident is recorded as follows:-

01 Pedal Cycle

02 Moped

03 Motor Scooter

04 Motor Cycle

05 Combination

06 Invalid Tricycle

07 Other Three-wheeler car

08 Taxi (purpose built only)

09 Car (Four Wheeled)

10 Minibus/Motor Caravan

11 PSV

12 Goods not over $1\frac{1}{2}$ tons unladen weight

13 Goods over $1\frac{1}{2}$ tons unladen weight

14 Other Motor Vehicle including vehicle of unknown type

15 Other non Motor Vehicle

APPENDIX 5

Stats 19 - Towing Records

VEHICLE TOWING

Each vehicle involved in an accident is recorded as follows:-

0	No Tow/Articulation
1	Articulated vehicle
2	Double/Multiple Trailer
3	Caravan
4	Single Trailer
5	Other Tow
V	Tow not known (Non-injury Accidents Only)

APPENDIX 6

Stats 19 - Manoeuvres

Each vehicle involved in an accident is recorded as follows:-

01	Reversing
02	Parked
03	Waiting to go ahead but held up
04	Stopping
05	Starting
06	U-turn
07	Turning left
08	Waiting to turn left
09	Turning right
10	Waiting to turn right
11	Changing lane to left
12	Changing lane to right
13	Overtaking moving vehicle on its offside
14	Overtaking stationary vehicle on its offside
15	Overtaking on nearside
16	Going ahead left hand bend
17	Going ahead right hand bend
18	Going ahead other
VV	Manoeuvres not known (Non-injury Accidents only)

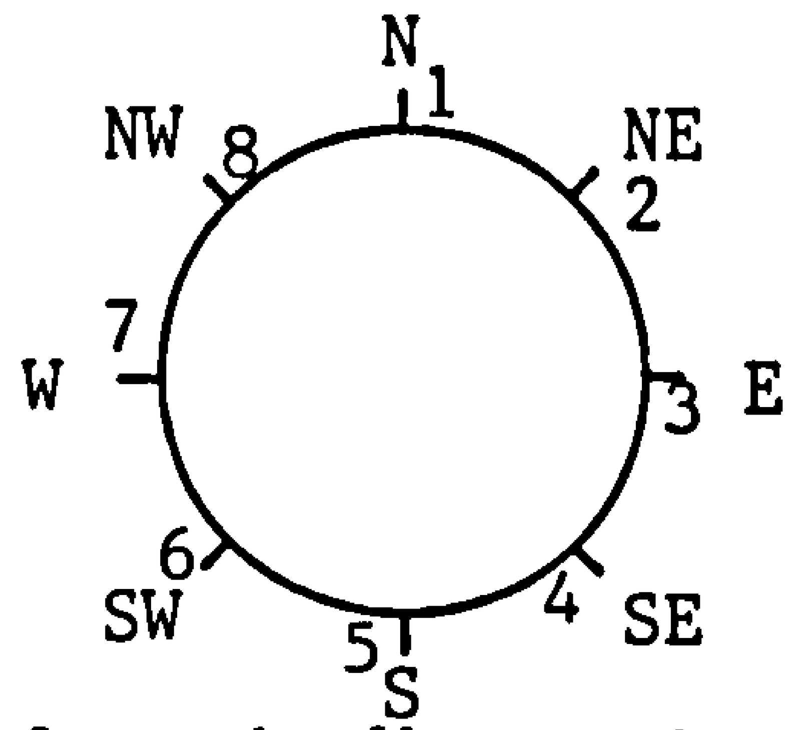
APPENDIX 7

Stats 19 - Vehicle Movement Example

VEHICLE MOVEMENT EXAMPLE

This field must be completed for each vehicle involved in an accident unless the vehicle has been coded as 'Hit and Run'. The valid range for the field is 00, 10-88 with blanks permissible in addition for 'Hit and Run' vehicles or vehicles involved in non-injury accidents. The codes reflect true compass directions, the field 'From' representing the direction from which the vehicle has come prior to the accident and the field 'To' representing the direction in which the vehicle intended to proceed.

The compass points are coded as follows:-



Thus a vehicle travelling from the West and turning southwards will be coded '75'.

A vehicle parked at a kerb should be coded with the direction from which it would have come were its nearside to the kerb. The 'To' direction should always be zero for such vehicles.

Vehicles parked other than at a kerb should be coded '00'.

U-turns should have the same 'From' and 'To' codes.

APPENDIX 8

Stats 19 - Vehicle Location of Time of Accident

VEHICLE LOCATION AT TIME OF ACCIDENT

Each vehicle involved in an accident is recorded as follows:-

01	Leaving main road
02	Entering main road
03	On main road
04	On minor road
05	On service road
06	On lay-by or hard shoulder
07	Entering lay-by or hard shoulder
08	Leaving lay-by or hard shoulder
09	On cycleway
10	Not on carriageway
VV	Vehicle location not known (non-injury accidents only)

APPENDIX 9

Stats 19 - Junction Location of Vehicle

JUNCTION LOCATION OF VEHICLE

Each vehicle involved in an accident is recorded as follows:-

0 Vehicle not at or within 20 metres of a junction

1 Vehicle approaching junction or parked at a junction approach and impacted

2 Vehicle on junction and impacted

3 Vehicle cleared junction or parked at junction exit and impacted

4 Vehicle did not impact

5 Vehicle may or may not have impacted

V Location not known (Non-injury accidents only)

APPENDIX 10

Stats 19 - Skidding records

VEHICLE SKIDDING

Each vehicle involved in an accident is recorded as follows:-

0	No skidding or jack-knifing
1	Skidded
2	Skidded and overturned
3	Jack-knifed
4	Jack-knifed and overturned
5	Overturned
V	Not known (Non-injury only)

APPENDIX 11

Stats 19 - Hit objects in the carriageway

HIT OBJECT IN CARRIAGEWAY

Each vehicle involved in an accident is recorded as follows:-

00	None
01	Previous Accident
02	Raod Works
03	Parked Vehicle - lit
04	Parked Vehicle - unlit
05	Bridge (roof)
06	Bridge (side)
07	Bollard/refuge
08	Open door of vehicle
09	Central island of roundabout
10	Kerb
11	Other object
12	Not known (Non-injury only)

APPENDIX 12

Stats 19 - Vehicle leaving the carriageway

VEHICLE LEAVING THE CARRIAGEWAY

Each vehicle involved in an accident is recorded as follows:-

0	Did not leave carriageway
1	Left carriageway nearside
2	Left carriageway nearside and rebounded
3	Left carriageway straight ahead of junction
4	Left carriageway offisde onto central reservation.
5	Left carriageway offside onto central reservation, rebounded
6	Left carriageway offside and crossed central reservation
7	Left carriageway offside
8	Left carriageway offside and rebounded
V	Not known (Non-injury only)

APPENDIX 13

Stats 19 - Vehicle suffix

Each vehicle involved in an accident is recorded as follows:-

0	Pre-1963 (with registration)
1	Unknown/Not applicable
2	Foreign
3	Military
4	Trade Plates
A-Z	Registration suffix letter of post 1963 vehicles

APPENDIX 14

Stats 19 - 1st Point of Impact

Each vehicle involved in an accident is recorded as follows:-

0	Did not impact/Point of impact unknown
1	Front
2	Back
3	Offside
4	Nearside
V	Not known (Non-injury only)

APPENDIX 15

Stats 19 - Vehicle parts damaged

VEHICLE PARTS DAMAGED

Each vehicle involved in an accident is recorded as follows:-

0 None/Not Known

1 Front

2 Back

3 Offside

4 Nearside

5 Roof

6 Underside

7 All four sides

The valid range for the two remaining fields includes

V No further damage

APPENDIX 16

Stats 19 - Vehicle defects

VEHICLE DEFECTS

Each vehicle involved in an accident is recorded as follows:-

0	Vehicle Examiner's Report requested
1	Lights - Front
2	Lights - Rear
3	Brake lights
4	Trafficators
5	Vision - includes glass, wipers, washers
6	Load
7	Tyres
8	Brakes
9	Steering

APPENDIX 17

Stats 19 - Number of axles

NUMBER OF AXLES

Each vehicle involved in an accident is recorded as follows:-

0	Not a goods vehicle
2	2 axles
3	3 axles
4	4 axles
5	5 axles
V	Not known (Non-injury only)

APPENDIX 18

Stats 19 - Maximum weight

Each vehicle involved in an accident is recorded as follows:-

VV	Not a goods vehicle/not known
03	Less than 1.5 metric tonnes unladen weight
04-99	Metric weight in tonnes

APPENDIX 19

Stats 19 - Breath Test

BREATH TEST

Each driver involved in an accident is recorded as follows:-

0	Not applicable (for pedal cyclists and other non-motor drivers to whom legislation does not apply)
1	Positive
2	Negative
3	Not requested
4	Failed to provide
5	Not contacted (for drivers who absent themselves from the sceme of the accident)
V	Not known (Non-injury only)

APPENDIX 20

Stats 19 - Drivers actions

Each driver involved in an accident is recorded as follows:-

1 Disobeyed double centre white lines

2 Disobeyed double offset white lines

3 Junction overshoot

4 Junction restart

5 Disobeyed road sign/signal

6 Failure to give precedence at pedestrian crossing

7 Opened door negligently

8 Possible driver fatigue

9 Inadequate lights used

APPENDIX 21

Stats 19 - Pedestrian location

Each casualty involved in an accident is recorded as follows:-

00 Not pedestrian

01 In carriageway crossing on pedestrian crossing

02 In carriageway crossing whinin zig-zag lines approach to crossing.

03 In carriageway crossing within zig-zag lines exit to crossing

04 In carriageway crossing elsewhere within 50 metres of pedestrian crossing.

05 In carriageway crossing elsewhere

06 On footway or verge

07 On refuge or central island

08 In centre of carriageway not on refuge or central island

09 In carriageway not crossing

10 Unknown

APPENDIX 22

Stats 19 - Pedestrian movement

Each casualty involved in an accident is recorded as follows:-

0 Not pedestrian

1 Crossing from drivers nearside

2 Crossing from drivers nearside and masked by parked or stationary vehicle

3 Crossing from drivers offside

4 Crossing from drivers offside and masked by parked or stationary vehicle

5 In carriageway not crossing, standing or playing

6 In carriageway not crossing, standing or playing, masked by a parked or stationary vehicle

7 Walking along facing traffic

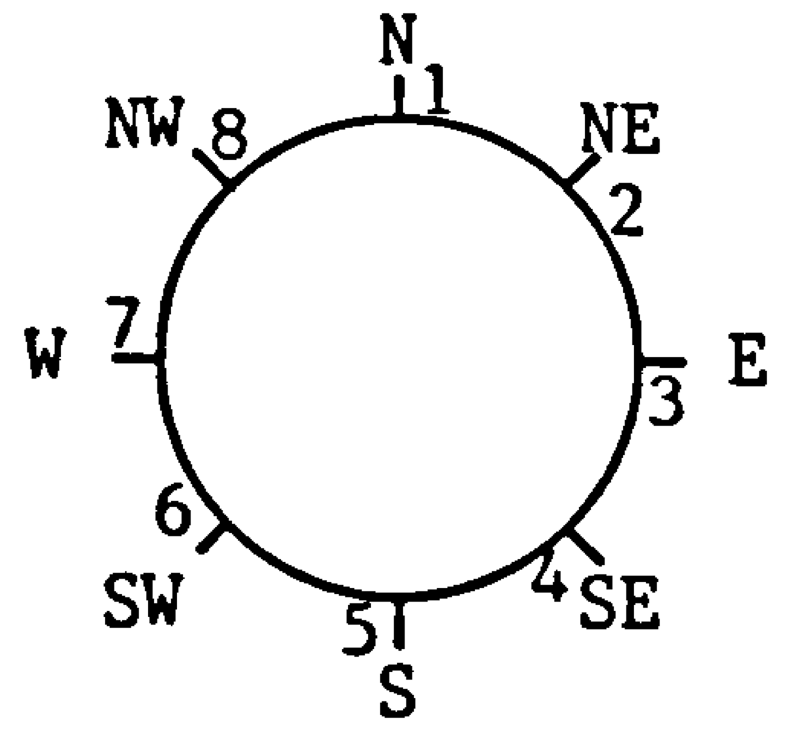
8 Walking along back to traffic

9 Unknown

APPENDIX 23

Stats 19 - Pedestrian direction

This field should only be completed for pedestrians. The field range is 0-8, each code representing the direction in which the pedestrian was bound and reflecting true compass points as follows:-



Thus a pedestrian travelling due East will be assigned a code (3).

Pedestrians standing still should be assigned a code of '0'.

APPENDIX 24

Stats 19 - Seat-belt

Each casualty involved in an accident is recorded as follows:-

0 Casualty not occupying car or van

1 Safety belt in use by casualty

2 Safety belt fitted but not used by casualty

3 Safety belt not fitted (especially in case of rear seat passengers)

4 Child safety belt/harness fitted and in use by child casualty

5 Child safety belt/harness fitted and in use by child casualty

6 Child safety belt/harness not fitted for child casualty

7 Unknown

APPENDIX 25

Stats 19 - PSV passenger

PSV PASSANGER

CASUALTY RECORDS

Each casualty involved in an accident is recorded as follows:-

0	Not a PSV (Public Service Vehicle) passenger
1	Boarding PSV when injured
2	Alighting from PSV when injured
3	Standing passenger when injured
4	Seated passenger when injured

APPENDIX 26

Stats 19 - School pupil and school number

SCHOOL PUPIL — CASUALTY RECORDS

Each casualty involved in an accident is recorded as follows:-

0 Not a school pupil

1 Pupil on journey to/from school

2 Pupil NOT on journey to/from school

SCHOOL NUMBER — CASUALTY RECORDS

To be completed for school pupils and pre-school children. The field is to be coded by members of the Accident Team and has a range of 0001 - 9999.

APPENDIX 27

Stats 19 - Reverse side

REVERSE SIDE OF STATS 19

This section of the form contains verbal descriptions of the accident and the accident site. They are completed by Police Officers and referred to by members of the Accident Team when identifying the exact location and possible causes of an accident.

Areas numbered 3, 4, 6 are completed by Police Officers and enable members of the Accident Team to determine appropriate values for DRIVER CODE and SCHOOL CODE. These sections also aid Police in the coding of VEHICLE MOVEMENT.

Area 5 is completed for vehicles which are potential 'write-offs'. This information is not used within the accidents system but will be made available on STATS 19 forms for reference purposes.

APPENDIX 28

Stats 19 - Attendant Circumstances -
Fields completed at County Hall

ATTENDANT CIRCUMSTANCES - FIELDS COMPLETED AT COUNTY HALL

This field will contain '11' if a new accident record or '15' if an amended accident record is being submitted.

Submission of amended accident records should be preceded by a 'Deletions' computer run if the accidents have already been accepted onto the accident Master File.

Amended accident records are not checked against current dates and may, therefore, be submitted for processing at any time.

Those submitted with monthly accident returns will be included on the Magnetic Tape dispatched to D.T.p and will also update the Accident Master File.

Those submitted in "Additions" Computer runs will update the Accident Master File only.

This number uniquely identified each accident and comprises three parts.

(a) YEAR - A two digit value representing the year in which the accident occurred. The year value must be greater than or equal to 79 and in the case of monthly returns equal to the year of the returns.

(b) DIVISION - The Police Division i n which the accident occurred and must be '1' or '2'.

1 = Western

2 = Eastern

(c) REFERENCE NUMBER - A sequence number given to accidents in each Police Division. The sequence number for accidents within each division commences at 0001 at the beginning of the calendar year and may proceed to 9999.

A single character Police Reporting Area in the range B-D, F-L.

APPENDIX 29

Stats 19 - Map reference

MAP REFERENCE

ATTENDANT CIRCUMSTANCES RECORD

A two character sub-division of the Police Reporting Area. This field may contain values according to the following table:-

(a) WESTERN DIVISION

MAP	POLICE REPORTING AREA	VALID MAP REFERENCES	SUB-AREA
B	Wareham	AB-AE	Wool
		BA-BE	Wareham
		CA-CE	Swanage
C	Blandford	DA-DH	Blandford
		EA-EH	Shaftesbury
F	Dorchester	FA-FM	Dorchester
G	Bridport	GA-GK	Bridport
		HA-HC	Lyme Regis
H	Sherborne	IA-IF	Sherborne
J	Weymouth	JA-JP	Weymouth

(b) EASTERN DIVISION

MAP	POLICE REPORTING AREA	VALID MAP REFERENCES	SUB-AREA
D	Canford	GA-GI	Gravel Hill
		GJ-GM	Wimborne
		HA-HH	Ferndown
I	Poole	EA-EI	Poole
		FA-FC	Ashley Road
K	Bournemouth	AB-AE	Kinson
		BA-BF	Winton
		CA-CF	Bournemouth
L	Christchurch	DA-DE	Boscombe
		LA-LH	Christchurch

APPENDIX 30

Stats 19 - Local authority area

LOCAL AUTHORITY AREA

ATTENDANT CIRCUMSTANCES RECORD

The Local Authority in which the accident occurred.

The following Authorities are valid for the County:-

Bournemouth	=	640
Christchurch	=	641
North Dorset	=	642
Poole	=	643
Purbeck	=	644
West Dorset	=	645
Weymouth and Portland	=	646
Wimborne	=	647

APPENDIX 31

Stats 19 - Road class and number

ROAD CLASS AND NUMBER

ATTENDANT CIRCUMSTANCES RECORD

The first road on which the accident occurred. This field comprises ROAD CLASS and ROAD NUMBER

Road Class has a valid range of 1-6 and Road Number has a valid range of 00001 to 99999, ∇∇∇∇∇

CLASS 1 = Motorway

2 = A Class (Motorway Standard)

3 = A Class

4 = B Class

5 = C Class

6 = Unclassified or D Class (including private)

(6∇∇∇∇∇ = private)

APPENDIX 32

Stats 19 - Carriageway type

CARRIAGEWAY TYPE

Description of the carriageway on which the accident occurred. The valid range is 1-9, ∇ as follows:-

At or within 20 metres of a roundabout	= 1
One Way Street	= 2
Dual Carriageway - two lanes	= 3
Dual Carriageway - three or more lanes	= 4
Single Carriageway - Single track road	= 5
Single Carriageway - two lanes (one in each direction)	= 6
Single Carriageway - three lanes (two way capacity)	= 7
Single Carriageway - four or more lanes (two way capacity)	= 8
Unknown	= 9
Unknown (non-injury)	= ∇

APPENDIX 33

Stats 19 - Pedestrian Crossing

PEDESTRIAN CROSSING

ATTENDANT CIRCUMSTANCES RECORD

Pedestrian Crossing facilities at or within 50 metres of the accident site. This field must always be completed, the valid range being 00-09, VV.

Facilities should be coded as follows:-

CODE	FACILITY
00	No crossing facilities within 50 metres of the accident
01	Zebra Crossing at or within 50 metres
02	Zebra Crossing but controlled by school crossing patrol
03	Zebra Crossing controlled by another authorised person
04	Pelican Crossing at or within 50 metres of accident location
05	Other light controlled crossing
06	Other sites controlled by a school crossing patrol
07	Other sites controlled by other authorised persons
08	Central Refuge where no other controls are in force
09	Foot-bridge or subway at or within 50 metres of accident site.
VV	Not known (Non-injury accidents only)

APPENDIX 34

Stats 19 - Light conditions

LIGHT CONDITIONS

ATTENDANT CIRCUMSTANCES RECORD

The light conditions at the time of the accident. This field must always be completed, the valid range being 1-9, ∇ (Blank is permitted for non-injury accidents only when the lighting conditions are not known).

(a) Daylight Codes

1 Street lights 7 metres (20 feet) or higher

2 Street lights less than 7 metres (20 feet) high

3 No street lighting

4 Street lighting unknown

(b) Darkness Codes

5 Street lights 3 metres (20 feet) or higher lit

6 Street lights less than 7 metres (20 feet) high lit

7 No street lighting

8 Street lights unlit

9 Street lighting unknown

(c) Non-injury Codes

1 Daylight

2 Dark - Street lighting on

3 Dark - Street lighting not on

4 Dark - No street lighting

∇ Unknown light conditions

APPENDIX 35

Stats 19 - Weather conditions

WEATHER CONDITIONS

The weather conditions at the time of the accident. This field must be completed and has a valid range of 0-9.

0 = Windy (Non-injury Accidents only)

1 = Fine (Without high winds)

2 = Raining (Without high winds)

3 = Snowing (Without high winds)

4 = Fine (With high winds)

5 = Raining (With high winds)

6 = Snowing (With high winds)

7 = Fog (or mist if a hazard)

8 = Other

9 = Unknown

APPENDIX 36

Stats 19 - Road surface conditions

ROAD SURFACE CONDITIONS

The road surface condition relating to weather conditions at the accident site.

∇ = Not known (Non-injury accidents only)

1 = Dry

2 = Wet/Damp

3 = Snow

4 = Frost/Ice

5 = Flood (Surface water over 3cm (1 inch) deep)

APPENDIX 37

Stats 19 - Special conditions

SPECIAL CONDITIONS

ATTENDANT CIRCUMSTANCES RECORD

This field should always be completed whether or not the conditions prevailing were considered contributory to the accident. The special conditions coded should be within the range 0-6 as follows:-

0 No special conditions

1 Automatic traffic signal-out

2 Automatic traffic signal partially defective

3 Permanent road signing defective or obscured

4 Road works present

5 Road surface defective

6 Unknown (non-injury accidents)

APPENDIX 38

Stats 19 - Carriageway hazards

CARRIAGEWAY HAZARDS

ATTENDANT CIRCUMSTANCES RECORD

The codes for this field are to be used only to indicate an object not expected to be found in the carriageway.

Dead animals should be coded as other object in carriageway. This field has a range o 0-7 as follows:-

0 No carriageway hazards

1 Dislodged vehicle load in carriageway

2 Other object in carriageway

3 Involvement with previous accident

4 Dog in carriageway

5 Other animal in carriageway

6 Pedestrian in carriageway (not injured)

7 Unknown (Non-injury Accidents only)

APPENDIX 39

Stats 19 - Overtaking pattern

OVERTAKING PATTERN

ATTENDANT CIRCUMSTANCES RECORD

This field should be completed to indicate overtaking manoeuvre patterns and may indicate non-parked vehicles not suffering impact. The field must be completed within the range 0-9 as follows:-

0 No overtaking

1 Two vehicle pattern - both same direction, one overtaking

2 Three vehicle pattern - all same direction, two overtaking

3 Three vehicle pattern - two same direction, one opposite direction

4 Three vehicle pattern - two same direction, one from the side

5 Four vehicle pattern - three same direction, one opposite, one overtaking

6 Four vehicle pattern - three same direction, one opposite, two overtaking

7 Four vehicle pattern - two same direction, two opposite, one overtaking

8 Four vehicle pattern - two same direction, two opposite, two overtaking

9 Other pattern

APPENDIX 40

Stats 19 - Junction type

JUNCTION TYPE

ATTENDANT CIRCUMSTANCES RECORD

Description of junction at or within 20 metres of the accident location. The field must be completed within the range 00-09, VV as follows:-

00	Accident site not at or within 20 metres of a junction
01	Roundabout
02	Mini Roundabout
03	'T' or Staggered junction
04	'Y' junction
05	Slip road
06	Crossroads
07	Multiple junction
08	Private drive or entrance in use and contributory whether or not within 20 metres of a junction
09	Other junction
VV	Not known (Non-injury accidents only)

APPENDIX 41

Stats 19 - Control

CONTROL

ATTENDANT CIRCUMSTANCES RECORD

This field is to be completed only when ´Junction Detail´ is not coded ´0´ and should describe how the junction was controlled. The field should be coded within the valid range 1-5, ∇ as follows:-

1 Authorised person in control

2 Automatic traffic signal operating

3 Stop sign present

4 Give way sign or road markings present

5 Junction was uncontrolled

∇ Unknown (Non-injury only)

APPENDIX 42

Stats 19 - 2nd Road

2ND ROAD

Again this field should only be coded for junction accidents. The Class and number of the most major road at the junction (other than the road on which the accident occurred or to which the accident has been coded) should be placed in this field as follows:-

CLASS 1 = Motorway

2 = A Class (Motorway Standard)

3 = A Class

4 = B Class

5 = C Class

6 = D Class or Unclassified (including private)

APPENDIX 43

Stats 20 - Manoeuvre explanatory notes

MANOEUVRE EXPLANATORY NOTES

CODES

1. Reversing
2. Parked
3. Waiting to go ahead but held up
4. Stopping
5. Starting
6. U Turn
7. Turning left
8. Waiting to turn left
9. Turning right
10. Waiting to turn right
11. Changing lane to left
12. Changing lane to right
13. Overtaking moving vehicle on its offside
14. Overtaking stationary vehicle on its offside
15. Overtaking on nearside
16. Going ahead left hand bend
17. Going ahead right hand bend
18. Going ahead other

NOTES

A. This refers to actions immediately before the accident.

B. Code 14 should be used:

   a. Where the vehicle being overtaken on the offside is temporarily held up:

   b. Where a parked vehicle is being overtaken on the offside and a vehicle record has been produced for that parked vehicle.

C. Code 15 should be used where the vehicle being overtaken is parked (See note B(b) above), temporarily held up or moving.

D. Codes 1 to 9 should be prefixed with a zero, eg. U terns, code 6 should be entered as | 0 | 6 | .

E. A PSV stationary at a bus stop should be coded as parked, code 2.

F. A vehicle moving across the road to park on the offside should be coded 12 even if lanes are not marked.

APPENDIX 44

Stats 19 - Examples from other authorities

A

ACCIDENT RECORD

(* ESSENTIAL INFORMATION)

30/1137

41 Accident Ref. No. * Year Div. Sec. Ref.

42 Record Type *

1 New record
2 Corrected Record
5 Amended record

B

For local use only

43 Road Length Number

44 Kilometrage

45 Contributory Factors

See separate Code Sheet

Selected by — Primary — Others

46 Parish

Description

C

47 Line of Road

1 Straight
2 Bend to right for 1st Vehicle
3 S Bend
4 Bend to left for 1st Vehicle

48 Slope of Road

1 No slope
2 Hill up for 1st Vehicle
3 Hill top or hump bridge
4 Hill down for 1st Vehicle

49 Alleged contributory Highway Defect

0 None
1 Loose stones or sand on road
2 Mud, oil, leaves, or other deposit on road
3 Potholes or general surfacing
4 Trench deformity or road subsidence
5 Road Works unlit, unsigned or unguarded
6 Defective roadmarkings
7 Signs or vision obsured by hedging etc.
8 Any other (state)

410 Driver(s) local resident(s)

0 No
1 Yes

411 Was accident initiated by skidding

0 No
1 Yes

D 412 Exact Location

E 413 Description

E

E

E

F

Fatal
Serious
Slight
Damage only

414 Police/LA Special Projects

Daylight
Dark

Road Number ....

STATS 19(d)

ACCIDENT RECORD ATTENDANT CIRCUMSTANCES

30/1135

13 Accident Ref. No. Year Div. Sec. Ref.

11 Record Type 1

1 New accident record
2 Corrected Accident Record
5 Amended accident record

14 Severity of Accident

1 Fatal
2 Serious
3 Slight
4 Damage only

15 Number of Vehicles

16 Number of Casualty Records

17 Date Day Month Year

18 Day of Week

1 Sunday
2 Monday
3 Tuesday
4 Wednesday
5 Thursday
6 Friday
7 Saturday

19 Time Hrs. Mins. 24 hour

110 Local Authority

111 Location 10 digit reference no. Easting Northing

113 1st Road Class & Number

114 Carriageway Type or Markings

1 Roundabout
2 One way street
3 Dual carriageway - 2 lanes
4 Dual carriageway - 3 or more lanes
5 Single carriageway - single track road
6 Single carriageway - 2 lanes (one each direction)
7 Single carriageway - 3 lanes
8 Single carriageway - 4 or more lanes
9 Unknown

115 Speed Limit m.p.h.

116 Junction Detail

0 Not at or within 20 metres of junction
1 Roundabout
2 Mini-roundabout
3 'T' or staggered junction
4 'Y' junction
5 Slip road
6 Crossroads
7 Multiple junction
8 Using private drive or entrance
9 Other junction

117 Junction Control

0 Not Applicable
1 Authorised person
2 Automatic traffic signal
3 Stop sign
4 Give way sign or markings
5 Uncontrolled

119 2nd Road Class & Number

(JUNCTION ACCIDENTS ONLY)

120 Pedestrian Crossing Facilities

0 No crossing facilities within 50 metres
1 Zebra
2 Zebra crossing controlled by school crossing patrol
3 Zebra crossing controlled by other authorised person
4 Pelican
5 Other light controlled crossing
6 Other sites controlled by school crossing patrol
7 Other sites controlled by other authorised person
8 Central refuge - no other controls
9 Footbridge or subway

121 Light Conditions

DAYLIGHT
1 Street lights 7 metres or more high
2 Street lights under 7 metres high
3 No street lighting
4 Daylight street lighting unknown
DARKNESS
5 Street lights 7 metres or more high lit
6 Street lights under 7 metres high lit
7 No street lighting
8 Street lights unlit
9 Darkness street lighting unknown

122 Weather

1 Fine (without high winds)
2 Raining (without high winds)
3 Snowing (without high winds)
4 Fine with high winds
5 Raining with high winds
6 Snowing with high winds
7 Fog (or mist if hazard)
8 Other
9 Unknown

123 Road Surface Condition

1 Dry
2 Wet/Damp
3 Snow
4 Frost/Ice
5 Flood (surface water over 3 cms. (1 inch) deep)

124 Special Conditions at Site

0 None
1 Automatic Traffic Signal - out
2 Automatic Traffic Signal partially defective
3 Permanent road signing defective or obscured
4 Road works present
5 Road surface defective

125 Carriageway Hazards

0 None
1 Dislodged vehicle load in carriageway
2 Other object in carriageway
3 Involvement with previous accident
4 Dog in carriageway
5 Other animal in carriageway

126 Overtaking Manoeuvre Patterns

(including non-parked vehicles not suffering impact)

0 No overtaking
1 Two vehicle pattern - both same direction one overtaking
2 Three vehicle pattern all same direction two overtaking
3 Three vehicle pattern two same direction one opposite direction
4 Three vehicle pattern two same direction one from the side
5 Four vehicle pattern three same direction one opposite one overtaking
6 Four vehicle pattern three same direction one opposite two overtaking
7 Four vehicle pattern two same direction two opposite one overtaking
8 Four vehicle pattern two same direction two opposite two overtaking
9 Other pattern

127 D Tp Special Projects

STATS 19(a)

VEHICLE RECORD

(* ESSENTIAL INFORMATION)
30/1136

23 Accident Ref. No. Year / Div. / Sec. / Ref.

24 Vehicle Ref. No. *

M | **25 Type of Vehicle**

01 Pedal cycle
02 Moped
03 Motor scooter
04 Motor cycle
05 Combination
06 Invalid Tricycle
07 Other three-wheeler
08 Taxi
09 Car (Four wheeled)
10 Minibus/Motor caravan
11 PSV
12 Goods not over 1½ tons UW (1.52 tonnes)
13 Goods over 1½ tons UW (1.52 tonnes)
14 Other motor vehicle
15 Other non motor vehicle

26 Towing and Articulation

0 No tow/articulation
1 Articulated vehicle
2 Double/multiple trailer
3 Caravan
4 Single trailer
5 Other tow

27 Manoeuvres

01 Reversing
02 Parked
03 Waiting to go ahead but held up
04 Stopping
05 Starting
06 U turn
07 Turning left
08 Waiting to turn left
09 Turning right
10 Waiting to turn right
11 Changing lane to left
12 Changing lane to right
13 Overtaking moving vehicle on its off
14 Overtaking stationary vehicle on its offside
15 Overtaking on nearside
16 Going ahead left hand bend
17 Going ahead right hand bend
18 Going ahead other

N | **28 Vehicle Movement Compass Point**

From To / From To / From To

1N
2NE
3E
4SE
5S
6SW
7W
8NW
00 Parked - Not at edit

29 Vehicle Location at time of impact

01 Leaving main road
02 Entering main road
03 On main road
04 On minor road
05 On service road
06 On lay-by or hard shoulder
07 Entering lay-by or hard shoulder
08 Leaving lay-by or hard shoulder
09 On a cycleway
10 Not on carriageway

210 Junction Location of Vehicle at first impact

0 Not at junction (or within 20 metres/22 yards)
1 Vehicle approaching junction/vehicle parked at junction approach
2 Vehicle in middle of junction
3 Vehicle cleared junction/vehicle parked at junction
4 Did not impact

O | **211 Skidding**

0 No skidding or jackknifing
1 Skidding
2 Skidded and overturned
3 Jackknifed
4 Jackknifed and overturned
5 Overturned

212 Hit object in Carriageway

00 None
01 Previous accident
02 Road works
03 Parked vehicle - lit
04 Parked vehicle - unlit
05 Bridge (roof)
06 Bridge (side)
07 Bollard/refuge
08 Open door of vehicle
09 Central island of roundabout
10 Kerb
11 Other object

213 Vehicle Leaving Carriageway

0 Did not leave carriageway
1 Left carriageway nearside
2 Left carriageway nearside and rebounded
3 Left carriageway straight ahead at junction
4 Left carriageway offside onto central reservation
5 Left carriageway onto central reservation and rebounded
6 Left carriageway offside crossed central reservation
7 Left carriageway offside
8 Left carriageway offside and rebounded

P | **214 Hit object off Carriageway**

00 None
01 Road sign/Traffic signal
02 Lamp post
03 Telegraph pole/Electricity pole
04 Tree
05 Bus stop/Bus shelter
06 Central crash barrier
07 Nearside or offside crash barrier
08 Submerged in water (completely)
09 Entered ditch
10 Other permanent objects

215 Vehicle Suffix Letter

SUFFIX LETTER or one of the following codes:-
0 Pre 1963
1 Unknown
2 Foreign
3 Military
4 Trade

216 First Point of impact

0 Did not impact
1 Front
2 Back
3 Offside
4 Nearside

217 Other Vehicle Hit (Veh. Ref. No.)

Q | **218 Part(s) Damaged**

0 None
1 Front
2 Back
3 Offside
4 Nearside
5 Roof
6 Underside
7 All four sides

219 No. of Axles

0 Not goods vehicles
2 2 axles
3 3 axles
4 4 axles
5 5 or more axles
(2–5: Goods Vehicles Only)

220 Maximum Permissible Gross Weight

Metric tonnes (Goods vehicles only)

221 Sex of Driver

1 Male
2 Female
3 Not traced

R | **222 Age of Driver**

(Years, estimated if necessary)

223 Breath Test

0 Not applicable
1 Positive
2 Negative
3 Not requested
4 Failed to provide
5 Driver not contacted at time

224 Hit and Run

0 Other
1 "Hit and Run"

S | **225 D Tp Special Projects**

226 Police/LA Special Projects

T

CASUALTY RECORD

(* ESSENTIAL INFORMATION)

33 Accident Ref. No. Year Div. Sec. Ref.

35 Casualty Ref. No. *

30/1138

34 Vehicle Ref. No. *

36 Casualty Class
1 Driver or rider
2 Vehicle or pillion passenger
3 Pedestrian

37 Sex of Casualty
1 Male
2 Female

U

38 Age of Casualty
(Estimated if necessary)

39 Severity of Casualty
1 Fatal
2 Serious
3 Slight

310 Pedestrian Location
00 Not pedestrian
01 In carriageway crossing on pedestrian crossing
02 In carriageway crossing within zig-zag lines approach to the crossing
03 In carriageway crossing within zig-zag lines exit the crossing
04 In carriageway crossing elsewhere within 50 metres of pedestrian crossing
05 In carriageway crossing elsewhere
06 On footway or verge
07 On refuge or central island or reservation
08 In centre of carriageway not on refuge or central island
09 In carriageway not crossing
10 Unknown

V

311 Pedestrian Movement
0 Not pedestrian
1 Crossing from drivers nearside
2 Crossing from drivers nearside - masked by parked or stationary vehicle
3 Crossing from drivers offside
4 Crossing from drivers offside - masked by parked or stationary vehicle
5 In carriageway stationary - not crossing (standing or playing)
6 In carriageway stationary - not crossing (standing or playing) - masked by parked or stationary vehicle
7 Walking along facing traffic
8 Walking along back to traffic
9 Unknown

312 Pedestrian Direction
Compass point bound
1 N
2 NE
3 E
4 SE
5 S
6 SW
7 W
8 NW
or 0 - Pedestrian - standing still

313 School Pupil Casualty
0 Not a school pupil
1 Pupil on journey to/from school
2 Pupil NOT on journey to/from school

W

314 Seat Belt Usage
0 Not car or van
1 Safety belt in use
2 Safety belt fitted - not in use
3 Safety belt not fitted
4 Child safety belt/harness fitted - in use
5 Child safety belt/harness fitted - not in use
6 Child safety belt/harness not fitted
7 Unknown

315 Car Passenger
0 Not car passenger
1 Front seat car passenger
2 Rear seat car passenger

316 PSV Passenger
0 Not a PSV passenger
1 Boarding
2 Alighting
3 Standing passenger
4 Seated passenger

X

317 D Tp Special Projects

320 Police/LA Special Projects

HAMPSHIRE CONSTABULARY – INJURY ACCIDENT REPORT

01 RT | FORM NO | DIV/SECT REF NUMBER | DAY MONTH YEAR | HOURS MINS | TOTAL NO OF CASUALTIES | TOTAL NO OF VEHICLES

ATTENDANT CIRCUMSTANCES (COMPLETE THIS SECTION ON FIRST FORM ONLY)

02 DAY | CAUSE | SPEED LIMIT | LA NUMBER | MAP REFERENCE | NF | FIRST ROAD NUMBER | TRK

05 DTp SPEC PROJ | LOCAL SPEC PROJ

06 M/WAY INT NO | SECOND ROAD NUMBER

ALL SECTIONS TO BE COMPLETED (FIRST FORM ONLY)

11 **SEVERITY OF ACCIDENT**
1 Fatal
2 Serious
3 Slight

CARRIAGEWAY TYPE OR MARKINGS
1 Roundabout
2 One way street
3 Dual carriageway – 2 lanes
4 Dual carriageway – 3 or more lanes
5 Single carriageway – single track road
6 Single carriageway – 2 lanes (one each direction)
7 Single carriageway – 3 lanes (two way capacity)
8 Single carriageway – 4 or more lanes (two way capacity)
9 Unknown

ROAD SURFACE CONDITION
1 Dry
2 Wet/Damp
3 Snow
4 Frost/Ice
5 Flood (surface water over 3 cm (1 inch) deep)

WEATHER
1 Fine (without high winds)
2 Raining (without high winds)
3 Snowing (without high winds)
4 Fine with high winds
5 Raining with high winds
6 Snowing with high winds
7 Fog (or mist if hazard)
8 Other
9 Unknown

LIGHT CONDITIONS
Daylight Codes
1 Street lights 7 metres or more high
2 Street lights under 7 metres high
3 No street lighting
4 Daylight street lighting unknown

Darkness Codes
5 Street lights 7 metres or more high lit
6 Street lights under 7 metres high lit
7 No street lighting
8 Street lights unlit
9 Darkness street lighting unknown

CARRIAGEWAY HAZARDS
0 None
1 Dislodged vehicle load in carriageway
2 Other object in carriageway
3 Involvement in previous accident
4 Pony in carriageway
5 Cow in carriageway
6 Dog in carriageway
7 Pig in carriageway
8 Donkey in carriageway
9 Deer in carriageway
10 Other animal in carriageway

OVERTAKING MANOEUVRE PATTERNS
0 No overtaking
1 Two vehicle pattern – both same direction one overtaking
2 Three vehicle pattern – all same direction two overtaking
3 Three vehicle pattern – two same direction one opposite direction
4 Three vehicle pattern – two same direction one from the side
5 Four vehicle pattern – three same direction one opposite one overtaking
6 Four vehicle pattern – three same direction one opposite two overtaking
7 Four vehicle pattern – two same direction two opposite one overtaking
8 Four vehicle pattern – two same direction two opposite two overtaking
9 Other pattern

JUNCTION DETAIL
0 Not at or within 20 metres (22 yards) of junction
1 Roundabout
2 Mini roundabout
3 T or Staggered junction
4 Y junction
5 Slip road
6 Crossroads
7 Multiple junction
8 Using private drive or entrance
9 Other junction

JUNCTION CONTROL
0 Not at or within 20 metres (22 yards) of junction
1 Authorised person
2 Automatic traffic signal
3 Stop sign
4 Give way sign or markings
5 Uncontrolled

PEDESTRIAN CROSSING FACILITIES
0 No crossing facility within 50 metres (55 yards)
1 Zebra
2 Zebra crossing controlled by school crossing patrol
3 Zebra crossing controlled by other authorised person
4 Pelican
5 Other light controlled crossing
6 Other sites controlled by school crossing patrol
7 Other sites controlled by other authorised person
8 Central refuge – no other controls
9 Footbridge or subway

SPECIAL CONDITIONS AT SITE
0 None
1 Automatic traffic signal – out
2 Automatic traffic signal partially defective
3 Permanent road signing defective or obscured
4 Road works present
5 Road surface defective

T1A
12/82

CASUALTY DETAILS (ALL SECTIONS TO BE COMPLETED)

03 CASUALTY NUMBER | AGE | VEHICLE REF NO | PEDESTRIAN DIRECTION
04 DTp SPEC PROJ | LOCAL SPEC PRO
07 CASUALTY NUMBER | AGE | VEHICLE REF NO | PEDESTRIAN DIRECTION
08 DTp SPEC PROJ | LOCAL SPEC PRO
09 CASUALTY NUMBER | AGE | VEHICLE REF NO | PEDESTRIAN DIRECTION
10 DTp SPEC PROJ | LOCAL SPEC PRO

12 13 14

CASUALTY CLASS
1 Driver
2 Vehicle or Pillion Passenger
3 Pedestrian

SEX OF CASUALTY
1 Male
2 Female

SEVERITY OF CASUALTY
1 Fatal
2 Serious
3 Slight

CAR PASSENGER (NOT DRIVERS)
0 Not car passenger
1 In front seat
2 In rear seat

SEAT BELT USAGE
0 Not car or van
1 Safety belt in use
2 Safety belt fitted – not in use
3 Safety belt not fitted
4 Child safety belt/harness fitted – in use
5 Child safety belt/harness fitted – not in use
6 Child safety belt/harness not fitted
7 Unknown

PSV PASSENGER
0 Not a PSV passenger
1 Boarding
2 Alighting
3 Standing passenger
4 Seated passenger

15 16 17

PEDESTRIAN LOCATION
0 Not pedestrian
1 In carriageway crossing on pedestrian crossing
2 In carriageway crossing within zig-zag lines approach to the crossing
3 In carriageway crossing within zig-zag lines exit the crossing
4 In carriageway crossing elsewhere within 50 metres (55 yards) of pedestrian crossing
5 In carriageway crossing elsewhere
6 On footway or verge
7 On refuge or central island or reservation
8 In centre of carriageway not on refuge or central island
9 In carriageway not crossing
10 Unknown

PEDESTRIAN MOVEMENT
0 Not pedestrian
1 Crossing from drivers nearside
2 Crossing from drivers nearside – masked by parked or stationary vehicle
3 Crossing from drivers off side
4 Crossing from drivers off side – masked by parked or stationary vehicle
5 In carriageway – not crossing (standing or playing)
6 In carriageway – not crossing (standing or playing) masked by parked or stationary vehicle
7 Walking along facing traffic
8 Walking along back to traffic
9 Unknown

SCHOOL PUPIL CASUALTY
0 Not a school pupil
1 Pupil on journey to/from school
2 Pupil NOT on journey to/from school

INSTRUCTIONS FOR THE COMPLETION OF ROAD ACCIDENT REPORTS - T1A

(Condensed from the Department of Transport Manual - Stats 20)

Where the multiple choice is displayed, tick the box. In other cases fill in the details required.

ATTENDANT CIRCUMSTANCES

RECORD TYPE (R.T.)
For A.D.P. use only.

FORM NUMBER
If only one form is used, enter 1. For additional forms number consecutively.

ACCIDENT REFERENCE NUMBER
To contain Divisional/Section identification letters and accident number. No reference to year is required.

DATE
Unused boxes to the left of the day or month are to be entered as zero's; thus 9th May, 1978 is coded 09 05 78.

TIME
Use 24 hour clock.

TOTAL NUMBER OF CASUALTIES/VEHICLES
Enter total number of casualties in accident.
Enter total number of vehicles in accident.

SPEED LIMIT
Enter speed limit applicable to the road. Speed limits which are temporarily in force should not be included.

LOCAL AUTHORITY
Consult Stats 20 para. 1.10.

MAP REFERENCE
A standard six figure map reference is required.

N.F. (NEW FOREST)
For A.D.P. use only.

1st ROAD CLASS AND NUMBER
Enter the class and number of road on which the accident occurred. If unclassified enter 'U'.

2nd ROAD CLASS AND NUMBER
For accidents occurring at junctions only.

LIGHT CONDITIONS
Codes 1 - 4 apply to daylight accidents
Codes 5 - 9 apply to darkness accidents.

OVERTAKING MANOEUVRE PATTERN
Tick the appropriate box. Consult Stats 20 para. 1.26.

CASUALTY DETAILS

Each casualty to be numbered consecutively. (i.e. 1, 2, 3 on Form 1 and 4, 5, 6 on Form 2, etc.)

VEHICLE REFERENCE NUMBER
To identify the vehicle occupied by a casualty prior to the accident on the associated vehicle record - T 1 B.
Pedestrian casualty records should quote the vehicle reference number by which the pedestrian is first hit.

PEDESTRIAN DIRECTION (LEAVE BLANK IF NOT PEDESTRIAN)
The actual or intended direction of travel of the pedestrian should be shown by compass point.
Pedestrian standing still should be coded zero.
For further directions consult Stats 20 para. 3.12.

CAR PASSENGER
In the case of drivers, tick 'O - Not car passenger'

DIp SPECIAL PROJECTS

LOCAL SPECIAL PROJECTS
Use only when directed

N.B.
Section 03, 12, 15 relate to first casualty on Form.
Sections 07, 13, 16 relate to second casualty on Form.
Sections 09, 14, 17 relate to third casualty on Form.

HAMPSHIRE CONSTABULARY—INJURY ACCIDENT REPORT

18 | RT | FORM NO | DIV/SECT | REFERENCE NUMBER | DAY MONTH YEAR | HOURS MINS

VEHICLE DETAILS

19 | VEHICLE REF NO | VEH SUFFIX | VEH MOVEMENTS FROM TO | DRIVERS AGE | GOODS VEH MX GR WT | OTHER VEH HIT | 20 | DTp SPEC PROJ | LOCAL SPEC PROJ

21 | VEHICLE REF NO | VEH SUFFIX | VEH MOVEMENTS FROM TO | DRIVERS AGE | GOODS VEH MX GR WT | OTHER VEH HIT | 22 | DTp SPEC PROJ | LOCAL SPEC PROJ

23 | VEHICLE REF NO | VEH SUFFIX | VEH MOVEMENTS FROM TO | DRIVERS AGE | GOODS VEH MX GR WT | OTHER VEH HIT | 24 | DTp SPEC PROJ | LOCAL SPEC PROJ

ALL SECTIONS TO BE COMPLETED

25 27 29

TYPE OF VEHICLE
1 Pedal cycle
2 Moped
3 Motor Scooter
4 Motor Cycle
5 Combination
6 Invalid Tricycle
7 Other three wheeled car
8 Taxi
9 Car (Four wheeled)
10 Minibus/Motor Caravan
11 PSV
12 Goods not over 1 ½ tons u.w. (1.52 tonnes)
13 Goods over 1 ½ tons u.w. (1.52 tonnes)
14 Other Motor Vehicle
15 Other non Motor Vehicle

NUMBER OF AXLES (GOODS VEH)
0 Not goods vehicle
2 Two axles
3 Three axles
4 Four axles
5 Five or more axles

TOWING AND ARTICULATION
0 No tow/articulation
1 Articulated vehicle
2 Double/Multiple Trailer
3 Caravan
4 Single Trailer
5 Other Tow

FIRST POINT OF IMPACT
0 Did not impact
1 Front
2 Back
3 Offside
4 Nearside

26 28 30

PART(S) DAMAGED
N.B. See Instructions
0 None
1 Front
2 Back
3 Offside
4 Nearside
5 Roof
6 Underside
7 All four sides

31 32 33

MANOEUVRES
1 Reversing
2 Parked
3 Waiting to go ahead but held up
4 Stopping
5 Starting
6 U Turn
7 Turning left
8 Waiting to turn left
9 Turning right
10 Waiting to turn right
11 Changing lane to left
12 Changing lane to right
13 Overtaking moving vehicle on its offside
14 Overtaking stationary vehicle on its offside
15 Overtaking on nearside
16 Going ahead left hand bend
17 Going ahead right hand bend
18 Going ahead other

VEHICLE LEAVING CARRIAGEWAY
0 Did not leave carriageway
1 Left carriageway nearside
2 Left carriageway nearside and rebounded
3 Left carriageway straight ahead at junction
4 Left carriageway offside onto central reservation
5 Left carriageway offside onto central reservation and rebounded
6 Left carriageway offside crossed central reservation
7 Left carriageway offside
8 Left carriageway offside and rebounded

SKIDDING AND OVERTURNING
0 No skidding or jack-knifing or overturning
1 Skidded before accident
2 Skidded before accident and overturned
3 Skidded after accident
4 Skidded after accident and overturned
5 Jack-knifed
6 Jack-knifed and overturned
7 Overturned

34 35 36

HIT OBJECT IN CARRIAGEWAY
0 None
1 Previous accident
2 Road works
3 Parked vehicle—lit
4 Parked vehicle—unlit
5 Bridge (roof)
6 Bridge (side)
7 Bollard/refuge
8 Open door of vehicle
9 Central island of roundabout
10 Kerb
11 Other object

HIT OBJECT OFF CARRIAGEWAY
0 None
1 Road sign/traffic signals
2 Lamp post
3 Telegraph pole/electricity pole
4 Tree
5 Bus Stop/Bus Shelter
6 Central crash barrier
7 Nearside or offside crash barrier
8 Submerged in water (completely)
9 Entered ditch
10 Other permanent object

37 38 39

SEX OF DRIVER
1 Male
2 Female
3 Not contacted

BREATH TEST (see reverse)
1 Positive
2 Negative
3 Not requested
4 Failed to provide
5 Driver not contacted at time
0 Not applicable

HIT AND RUN
0 Other
1 Hit and Run
2 Non-stop vehicle not hit

VEHICLE LOCATION AT TIME OF IMPACT
1 Leaving main road
2 Entering main road
3 On main road
4 On minor road
5 On service road
6 On lay-by or hard shoulder
7 Entering lay-by or hard shoulder
8 Leaving lay-by or hard shoulder
9 On cycleway
10 Not on carriageway

JUNCTION LOCATION OF VEHICLE AT FIRST IMPACT
0 Not at junction (or within 20 metres/22 yards)
1 Vehicle approaching junction/vehicle parked at junction approach
2 Vehicle in middle of junction
3 Vehicle cleared junction/vehicle parked at junction exit
4 Did not impact

T1B
9/78

INSTRUCTIONS FOR THE COMPLETION OF ROAD ACCIDENT REPORTS - T1B

(Condensed from the Department of Transport Manual - Stats 20)

Where the multiple choice is displayed, tick the appropriate box. In other cases fill in the details required.

VEHICLE RECORD

FORM NUMBER

If only one form is used, enter 1. For additional forms number consecitively.

ACCIDENT REFERENCE NUMBER

To contain Divisional/Section identification letters and accident number. No reference to year is required.

DATE

Unused boxes to the left of the day or month are to be entered as zero's; thus 9th May, 1978 is coded 09 05 78.

TIME

Use 24 hour clock.

VEHICLE REFERENCE NUMBER

Each vehicle is to be numbered consecutively (i.e. 1, 2, 3 on Form 1 and 4, 5, 6 on Form 2, etc.)

VEHICLE SUFFIX

Enter suffix letter from the vehicle registration number. If this is not possible use one of the following codes.

0 Pre 1963
1 Unknown
2 Foreign
3 Military
4 Trade Plate

The object is to give an indication of the vehicle age. Personal numbers cannot be distinguished and should be coded 1 - unknown.

VEHICLE MOVEMENT

The first box should indicate the direction in compass point from which the vehicle came. The second box should indicate in compass point the intended direction of travel. For further information consult Stats 20 para. 2.8.

MAXIMUM PERMISSIBLE GROSS WEIGHT (METRIC TONNES) (Applies only to Goods Vehicles)

Where possible the weight should be taken from the Ministry Plate.

OTHER VEHICLE HIT

Enter the vehicle reference number of the first other vehicle (if any) with which the vehicle being coded collided.

DTp SPECIAL PROJECTS

LOCAL SPECIAL PROJECTS

Use only when directed.

NUMBER OF AXLES (Applies only to Goods Vehicles)

Where an articulated vehicle, caravan, trailer or other towing arrangement is involved, the number of axles to be coded is the number of axles on the entire unit. Non goods vehicles to be coded zero.

PART(S) DAMAGED

Up to three codes may be ticked in this section for each vehicle.

BREATH TEST

In cases where the breathalyser procedure cannot in law be applied, e.g. in the case of non-motor vehicles, tick 'O. Not applicable. Where a negative breath test has been given T28A must also be submitted.

N.B.

Sections 19, 20, 25, 26, 31, 34, 37 relate to first vehicle on Form
Sections 21, 22, 27, 28, 32, 35, 38 relate to second vehicle on Form
Sections 23, 24, 29, 30, 33, 36, 39 relate to third vehicle on Form.

HAMPSHIRE CONSTABULARY—INJURY ACCIDENT REPORT

NARRATIVE DETAILS

4 0

RT	DIV/SECT	REFERENCE NUMBER	DAY	MONTH	YEAR	HOURS	MINUTES

4 1

LOCATION

4 2

NARRATIVE

4 3

ROAD DEFECT AND ACTION

T1C(7-78)

STATS 19 Coding Form - all fields must be completed

Form TA 1a

Exact Location

Map Reference (East) (North) Parish Local Authority

Description (In difficult cases attach sketch plan)

Record Type: 1 | Accident Ref No. | Date | Time | Day | Speed: 0 | 1st Rd Class & Num. * | 2nd Rd Class & Num. *

Weather | Carriageway Type | Junction Detail | Junction Control | Pedestrian Crossing | Road Surface | Carriageway Hazards * | Parked veh. involved | Overtaking Pattern | Light | Special Conditions * | No. of Casualties: 0 | No. of Vehicles: 0 Ɲ

Vehicle Reference | Suffix letter | Vehicle Type | No. of axles | Max. weight | Age of driver | Sex of driver | Parts damaged * | 1st point of impact | Breath Test | Towing | Vehicle Location | Manoeuvres | Compass point | Junction Location | Hit and Run | Hit objects off Carriageway * | Skidding | Hit objects in Carriageway * | Other vehicle hit | Vehicle leaving c/w | Sp Proj. Ɲ

C | Casualty | Age | Sex | Severity | School Pupil | School Attended * | Vehicle Reference | Vehicle Type | Class | Pedestrian Location | Pedestrian Movement | Pedestrian Direction | Car Passenger | Seat Belts | P.S.V. Passenger | Sp Proj. Ɲ | School Attended

Pedestrian involved not hit - P

Q | Sel. | Contributary Factors * | Attended | D.T.P. Sp. Proj. * | T.V.P./L.A. Sp Proj. Ɲ

FOR COUNTY COUNCIL USE

Location: L Ɲ

1st Section No. | Grid Reference | TARA Junction Node * | 1st. TARA Section * | 2nd TARA Section * | 2nd Section No. *

Accident Type * | L.A. | Parish No. | Local Area Code * | Rec. No. of Cas. | Rec. No. of Veh. Ɲ

Description: D Ɲ

H22 (L128)

APPENDIX 45

Example of how an engineer uses Stats 19

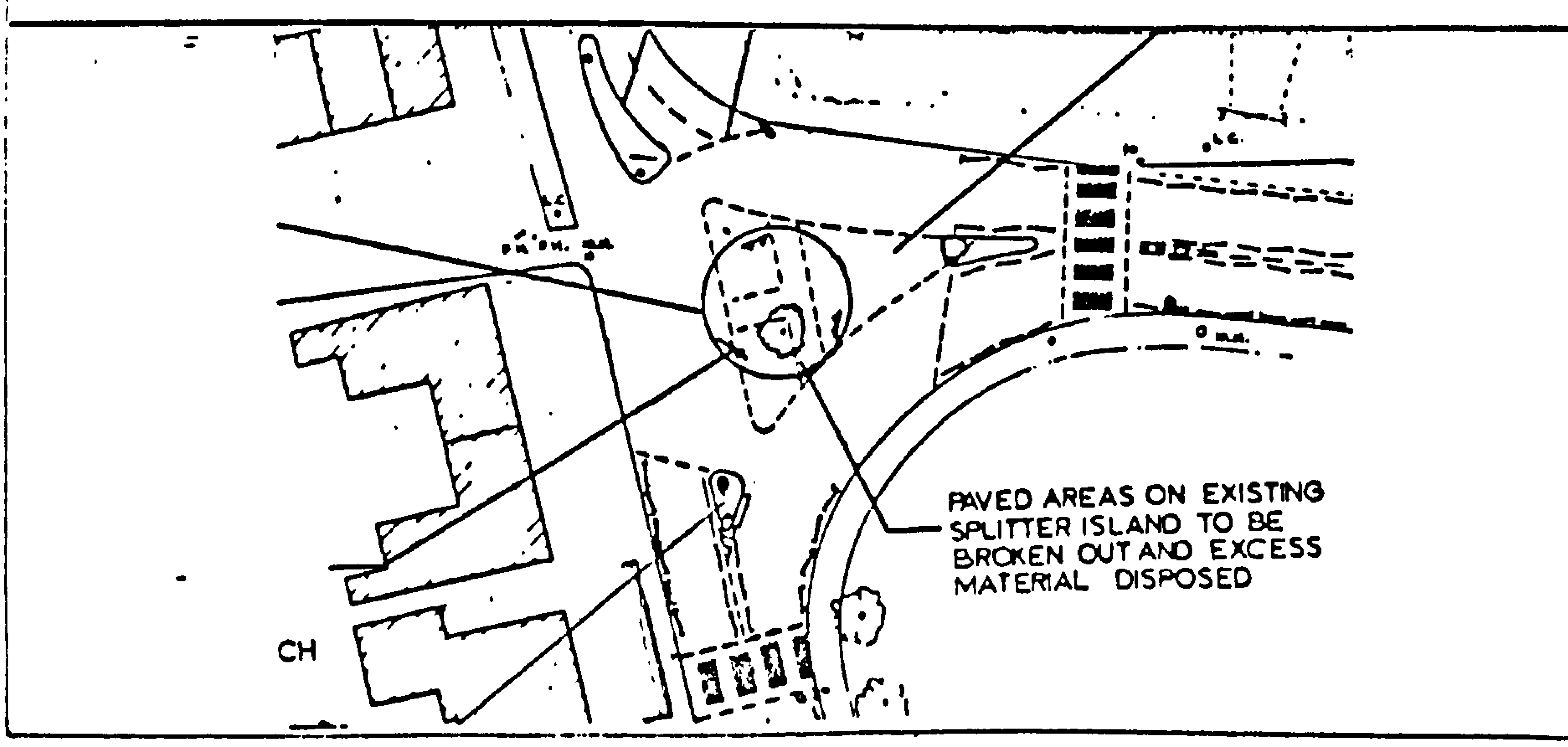
EXAMPLE OF CARD RECORD SYSTEM FOR BLACKSITE REMEDIAL TREATMENT

BLACK SITES						~~LINK~~/NODE No: BN 0755			
LOCATION: BEDFORD ROAD / FISHPONDS ROAD HITCHIN.							METREAGES —		
ROAD NO: A600 / A505				~~T~~/P/~~NP~~		GRID REF: 5179 - 2297			
DISTRICT: NORTH HERTS					URBAN ~~RURAL~~	INVESTIGATION BY COUNTY/~~AGENCY~~			
ACCIDENTS PER YEAR, COMMENCING JANUARY 19									
1976	1977	1978	1979	1980	1981	1982	1983	1984	19
4	5	4	6	6	1	1	1	2	
SELECTED FOR INVESTIGATION: 1979							AVERAGE P.S.V.: 52 DATE TAKEN: OCT. '79		
DETAILED INVESTIGATION COMMENCED: JAN. 1980 - AUG. 1980									
ORDERS REQUIRED: T~~RUNK~~/S~~IDE ROA~~D/TRAFFIC ZEBRA CROSSINGS							LAND ACQ.: ~~YES~~/NO		
ESTIMATED COST: £14,850				WORKS ORDER GIVEN: 23 SEPT. 1980					
WORKS PERIOD: Start: SEPT. 1980 Finish: DEC. 1980				ACTUAL COST: £18,360					

O.S. SHEET SHOWING LOCATION OF BLACK SITE AND DISTRIBUTION OF ACCIDENTS TO BE FIXED BELOW

TYPE AND EXTENT OF REMEDIAL MEASURES TO BE DETAILED ON PLAN WHEN WORKS ORDER GIVEN

SITE PLAN



APPENDIX 46

Variables deleted from 'old style' Stats 19

A55–A59

VARIABLES FOR DELETION FROM CURRENT STATS 19

VARIABLE	REASONS FOR DELETION
1. Vehicle occupied	This information is no longer required of the linkage system.
2. Vehicle Make	In order to limit the number of variables on the report form it has been decided to delete these variables.
3. Vehicle Model	They are both complicated to record and code accurately and require constant reference to Stats 20. Little use is made, at the national level, of the data collected which is both incomplete and unreliable.
4. Vehicle defects	After much discussion the Steering Group recommended the deletion of this variable. Information collected has proved to be statistically unreliable and it is thought that to retain this variable and make reporting reliable places too great a burden on the reporting officer. It has been suggested that the Vehicle Safety and Engineering divisions of DTp, which make use of vehicle defect information, should receive data on defects collected by the Police during their in-depth investigation of fatal accidents. Though this would result in a smaller sample of injury accidents the data would be completely reliable.
5. Number of seats occupied	This information is no longer required for statistical analysis.
6. Learner Driver	The data at present collected were found to be unreliable. This variable is not allocated to the "Contributory Factors" List/Matrix (See Appendix D).
7. Driver's Actions 8. Passenger Actions	A prime consideration of the Group was to keep the information required on the revised form as factual as possible. It was considered that these two variables required a subjective assessment by the reporting officer. Part of each of the variables have been included in the "Contributory Factors" section (See Appendix D).

9.	Movements before Accident	Replaced by extended manoeuvre categories and vehicle compass directions.
10.	Clearway in force	This information was no longer required for statistical analysis.

APPENDIX D

ACC REF NO

CONTRIBUTORY FACTORS

CONFIDENTIAL

FACTORS SELECTED BY

SELECT UP TO MAXIMUM OF SIX FACTORS

	ROAD ENVIRONMENT		DRIVER / RIDER				PASSENGER/ PEDESTRIAN	VEHICLE	LOCAL CODES		FACTORS SELECTED BY
	PHYSICAL CONTRIBUTORY	VISION OBSCURED	JUDGEMENT ERROR	INJUDICIOUS	SPECIAL FACTORS	VISION AFFECTED	PASSENGER	DEFECT			
CODE	1	2	3	4	5	6	7	8	9	0	
1	SLIPPERY ROAD (Not weather) 11	BY STATIONARY VEHICLES 21	DISOBEYED DOUBLE WHITE LINE 31	TURNING RIGHT INJUDICIOUSLY 41	GOING TOO FAST 51	DAZZLED BY HEADLIGHTS 61	BOARDING P.S.V. 71	OVERLADEN 81	91	01	POLICE OFFICER ATTENDING SCENE 1
2	BEND 12	BY VEGETATION 22	DISOBEYED PEDESTRIAN CROSSING 32	TURNING LEFT INJUDICIOUSLY 42	INJUDICIOUS EMERGENCE FROM PRIVATE ENTRANCE 52	DAZZLED BY SUN 62	ALIGHTING FROM P.S.V. 72	POORLY SECURED LOAD 82	92	02	OTHER PERSON POLICE ATTENDED SCENE 2
3	LOW BRIDGE 13	BY PEDESTRIANS 23	DISOBEYED SIGN / SIGNAL 33	'U' TURNING INJUDICIOUSLY 43	INJUDICIOUS EMERGENCE FROM MINOR ROAD 53	HEAVY RAIN SNOW SLEET 63	HOLDING ON (Stealing a ride) 73	OVERHANGING LOAD. (Front, Rear, Side) 83	93	03	OTHER PERSON POLICE NOT ATTENDED SCENE 3
4	SPEED CONTROL HUMP 14	BY ROAD SIGNS/ FURNITURE 24	JUNCTION OVERSHOT 34	REVERSING INJUDICIOUSLY 44	INEXPERIENC DRIVER/ RIDER 54	INADEQUATE LIGHTS USED 64	OPEN DOOR NEGLIGENTLY 74	DEFECTIVE BRAKES 84	94	04	
5	STEEP HILL 15	BY BUILDINGS/ FENCES/ WALLS 25	JUNCTION RESTART 35	STOPPING INJUDICIOUSLY 45	'L' DRIVER/RIDER 55	DISTRACTED BY ACTION INSIDE VEHICLE 65	PEDESTRIAN	DEFECTIVE STEERING/ SUSPENSION 85	95	05	
6	RAILWAY LEVEL CROSSING 16	BY VERTICAL CURVE (HILL CREST) 26	WRONG COURSE/ POSITIONING 36	STARTING INJUDICIOUSLY 46	FATIGUE 56	DISTRACTED BY ACTION OUTSIDE VEH. 66	CROSSING ROAD HEEDLESS OF TRAFFIC 76	DEFECTIVE LIGHTS 86	96	06	
7	HUMP BACK BRIDGE 17	27	DRIVING TOO CLOSE 37	OVERTAKING ON NEARSIDE INJUDICIOUSLY 47	UNFAMILIAR WITH LOCATION 57	BY PED./RIDER DARK CLOTHING 67	UNFAMILIAR WITH LOCATION 77	TYRE BLOW OUT BEFORE IMPACT 87	97	07	
8	BUS LANE IN OPERATION 18	28	FAULTY SIGNALLING 38	OVERTAKING ON OFFSIDE INJUDICIOUSLY 48	PHYSICAL/ MENTAL ILL./DEFECT 58	68	PHYSICAL/ MENTAL ILL./DEFECT 78	DEFECTIVE/ ILLEGAL TYRES" 88	98	08	
9	TEMPORARY TRAFFIC SIGNALS 19	29	MISJUDGED SPEED/DISTANCE 39	CHANGING LANE INJUDICIOUSLY 49	ALCOHOL/ DRUGS 59	69	ALCOHOL/ DRUGS 79	V.E. REPORT 89	99	09	
0	10	OTHER ROAD ENVIRONMENT FACTOR 20	30	OPENING DOOR NEGLIGENTLY 40	HIGH WIND CONTRIBUTORY 50	OTHER DRIVER/RIDER FACTOR 60	OTHER PASS./PED. FACTOR 70	OTHER VEHICLE FACTOR 80	90	NO APPARENT CAUSE 00	

CONTRIBUTORY FACTORS - CONFIDENTIAL

ACC REF NO ________

SELECT UP TO MAXIMUM OF SIX FACTORS

FACTORS SELECTED BY

ROAD ENVIRONMENT

PHYSICAL CONTRIBUTORY

11. Slippery Road (not weather)
12. Bend
13. Low Bridge
14. Speed Control Hump
15. Steep Hill
16. Railway Level Crossing
17. Hump Back Bridge
18. Bus Lane in Operation
19. Temporary Traffic Signals

VISION OBSCURED

21. By Stationary Vehicles
22. By Vegetation
23. By Pedestrians
24. By Road Signs/Furniture
25. By Building, Fences/Walls
26. By Vertical Curve (Hill Crest)

20. Other Road Environment Factor

DRIVER/RIDER

JUDGEMENT ERROR

31. Disobeyed Double White Line
32. Disobeyed Pedestrian Crossing
33. Disobeyed Sign/Signal
34. Junction Overshoot
35. Junction Restart
36. Wrong Course/Positioning
37. Driving too Close
38. Faulty Signalling
39. Misjudged Speed/Distance

INJUDICIOUS

41. Turning Right Injudiciously
42. Turning Left "
43. "U" Turning "
44. Reversing "
45. Stopping "
46. Starting "
47. Overtaking on Nearside Injudiciously
48. Overtaking on Offside "
49. Changing Lane "
40. Opening Door Negligently "

SPECIAL FACTORS

51. Going too fast
52. Injudicious emergence from Private Entrance
53. Injudicious emergence from Minor Road
54. Inexperience Driver/Rider
55. L Driver/Rider
56. Fatigue
57. Unfamilar with Location
58. Physical/Mental Illness
59. Alcohol/Drugs
50. High Wind Contributory

VISION AFFECTED

61. Dazzled by Headlight
62. Dazzled by Sun
63. Heavy Rain/Snow/Sleet
64. Inadequate Lights used
65. Distracted by Action inside Vehicle
66. Distracted by Action outside Vehicle
67. By Ped/Rider Dark Clothing

60. Other Driver/Rider Factor

PASSENGER/PEDESTRIAN

PASSENGER

71. Boarding PSV
72. Alighting from PSV
73. Holding on (Stealing a Ride)
74. Open Door Negligently

PEDESTRIAN

76. Crossing Road Heedless of Traffic
77. Unfamilar with Location
78. Physical/Mental Illness
79. Alcohol/Drugs

70. Other Pass/Ped Factor

VEHICLE DEFECT

81. Overladen
82. Poorly Secured Load
83. Overhanging Load (Front, Rear or Side)
84. Defective Brakes
85. Defective Steering/Suspension
86. Defective Lights
87. Tyre Blow Out before Impact
88. Defective/Illegal Tyres
89. VE Report
80. Other Vehicle Factor

LOCAL CODES

90-99 AND 01-09

NO APPARENT CAUSE

00

FACTORS SELECTED BY

1. Police Officer Attending Scene
2. Other Person - Police Attended Scene
3. Other Person - Police not Attended Scene

APPENDIX 47

Items for inclusion on Stats 19 (Revised)

ANNEX B

RECOMMENDED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT RECORD STATS 19

KEY 1 N = Final National Requirement L = Final Local Requirement

2 SF = Retained in Same Format as Present Stats 19 MF = Retained in Modified Format

NF = New Variable not on Present Stats 19

Variable Name and Codes	Key 1	Key 2	Remarks
1. ACCIDENT RECORD			
1.1 RECORD TYPE 11 New Accident Record 15 Amended Accident Record	N	NF	Control variable to enable accident records to be selected out easily during processing/analysis.
1.2 POLICE FORCE	N	SF	
1.3 ACCIDENT REFERENCE NUMBER	N	NF	The accident number is required to identify each accident to enable the link to be made between vehicles and casualties.
1.4 SEVERITY OF ACCIDENT	N	NF	Control variable so that the severity of the most serious casualty can be ascertained without reference to individual casualty records.
1.5 NUMBER OF VEHICLES	N	NF	Control variable to enable a check to be made that there are the correct number of vehicle records for each accident.
1.6 NUMBER OF CASUALTY RECORDS	N	NF	Control variable to enable a check to be made that there are the correct number of casualty records for each accident.
1.7 DATE (day, month, year)	N	MF	
1.8 DAY OF WEEK 1 Sun 2 Mon 3 Tues 4 Wed 5 Thurs 6 Fri 7 Sat	N	MF	
1.9 TIME (24 HOUR)	N	MF	
1.10 LOCAL AUTHORITY REFERENCE NUMBER	N	SF	

RECOMMENDED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT FORM STATS 19

KEY 1 N = Final National Requirement L = Final Local Requirement

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	Variable Name and Codes	Key 1	Key 2	Remarks
1.11	LOCATION (GRID REFERENCE)	N	MF	It is proposed that provision should be made for the use of an 8 figure grid reference plus sheet reference number in some areas with agreement of Police and Local Authorities. Otherwise a 6 figure reference will be acceptable.
1.12	1st ROAD CLASS 1 Motorway 2 A(M) 3 A 4 B 5 C 6 Unclassified 7-9 Local authority use only	N	MF	
1.13	1st ROAD NUMBER (If within 20metres of junction, major road number as well)	N	MF	Location of specific accidents required
1.14	CARRIAGEWAY TYPE OR MARKINGS 1 Roundabout 2 One way street 3 Dual carriageway - 2 lanes 4 " " - 3 or more lanes 5 Single " - single track road 6 " " - 2 lanes (one each direction) 7 " " - 3 lanes 8 " " - 4 or more lanes 9 Unknown	N	MF	Analysis is often required by carriageway and lane markings of accidents
1.15	SPEED LIMIT (mph)	N	MF	Analysis by speed limit is required at National and Local level to monitor speed limit legislation: The breakdown of Built-up and non Built-up areas is also defined from this variable. Actual speed limit to be inserted, three boxes [illegible]

RECOMMENDED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT FORM STATS 1)

KEY 1 N = Final National Requirement L = Final Local Requirement
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Variable Name and Codes	Key 1	Key 2	Remarks
1.20 PEDESTRIAN CROSSING FACILITIES 0 No crossing facility within 50 metres 1 Zebra 2 Zebra Crossing controlled by School Crossing Patrol 3 " " " "Other Authorised Persons 4 Pelican 5 Other light Controlled Crossing 6 Other sites controlled by School Crossing Patrol 7 " " " "Other authorised person 8 Central refuge - no other controls 9 Footbridge or subway	N	MF	It is important to have information on the safety and efficacy of the various types of pedestrian crossings.
1.21 LIGHT CONDITIONS Daylight 1 Street lights 7 metres or more 2 Street lights under 7 metres high 3 No Street lighting 4 Daylight street lighting unknown Darkness 5 Street lights 7 metres or more lit 6 Street lights under 7 metres high lit 7 No street lighting 8 Street lights unlit 9 Darkness street lighting unknown	N	MF	From a comparison between daylight and darkness accidents o[n] the same type of road it is possible making use of known criteria to test the effectiveness of the installation of lights of different heights.
1.22 WEATHER 1 Fine (without high winds) 2 Raining (" " ") 3 Snowing (" " ") 4 Fine with high winds 5 Raining with high winds 6 Snowing " " " 7 Fog (or mist if hazard) 8 Other 9 Unknown	N	MF	Analysis by weather condition is required by most users

PROPOSED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT FORM STATS 19

KEY 1 N = Final National Requirement L = Final Local Requirement

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Variable Name and Codes	Key 1	Key 2	Remarks
1.23 ROAD SURFACE CONDITION 1 Dry 2 Wet/Damp 3 Snow 4 Frost/Ice 5 Flood(Surface water over 3 cm (1 inch) deep)	N	MF	Analysis by road surface condition is required by most users
1.24* .SPECIAL CONDITIONS AT SITE 0 None 1 Automatic Traffic Signal - out 2 " " " - partially defective 3 Permanent road signing defective or obscured 4 Road works present 5 Road surface defective	N	MF	* By the analysis of these two variables information will be available to engineers and other interested parties on accident circumstances where remedial measures may be effective
1.25* CARRIAGEWAY HAZARDS 0 None 1 Dislodged vehicle load in carriageway 2 Other object in carriageway 3 Involvement with previous accident 4 Dog in carriageway 5 Other animal in carriageway	N	MF	Modified for greater clarification and precision

RECOMMENDED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT FORM STATS 19

KEY 1 N = Final National Requirement L = Final Local Requirement

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	Variable Name and Codes	Key 1	Key 2	Remarks
1.26	OVERTAKING MANOEUVRES PATTERNS (including non-parked vehicles not suffering impact) 0 No Overtaking 1 Two vehicle pattern - both same direction, one overtaking 2 Three vehicle pattern - all same direction, two overtaking 3 Three vehicle pattern - two same direction, one in opposite direction 4 Three vehicle pattern - two in same direction, one from side 5 Four vehicle pattern - three same direction, one opposite - one overtaking 6 Four vehicle pattern - three same direction, one opposite - two overtaking 7 Four vehicle pattern - two vehicles same direction, two opposite - one overtaking 8 Four vehicle pattern - two vehicles same direction, two opposite - two overtaking 9 Other pattern	N	NF	The contents of this variable were agreed by the Steering Group after considering the results of a pilot exercise on diagrammatic output and a further review since the first report was issued. It was felt that 'output' diagrams giving patterns of vehicle movements, and incorporating data from other variables on Stats 19 eg junction type, pedestrian crossings, first point of impact and other vehicle hit, show potentially great benefits for local accident investigation teams and DTp alike. The proposed diagrammatic output relies heavily on this variable; it may be that by producing lists of accidents that show the same patterns, remedial measures can be produced at a fairly low cost which will cut the occurrence of such accidents.
1.27	DTp SPECIAL PROJECTS	N	NF	DTp special projects have been separated from local authority/police special projects to allow for simultaneous use.
1.28	PARISH & TOWN COUNCIL AREA	L	NF	This will enable LAs to identify smaller areas than given by the new district council areas.
1.29	POLICE/LA SPECIAL PROJECTS	L	NF	
1.30	RECORD TYPE	L	NF	For local identification of clear language description if this variable is to be held on computer file.
1.31	CLEAR LANGUAGE DESCRIPTION OF LOCATION	L	NF	Considered essential by local authority investigation teams
.32	RECORD TYPE	L	NF	See 1.30

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Variable Name and Codes	Key 1	Key 2	Remarks
2. VEHICLE RECORD			
2.1 RECORD TYPE 21 New Vehicle Record 25 Amended Vehicle Record	N	NF	Control variable to enable vehicle records to be selected out easily during processing/analysis.
2.2* POLICE FORCE	N	SF	*These are required to allow for the linkage of accidents, vehicles and casualties.
2.3* ACCIDENT REFERENCE NUMBER	N	NF	
2.4* VEHICLE REFERENCE NUMBER	N	NF	
2.5 TYPE OF VEHICLE 1 Pedal cycle 2 Moped (solo or pillion) 3 Motor scooter (solo or pillion) 4 Motor cycle (solo or pillion) 5 Combination motor cycle/scooter or moped 6 Invalid Tricycle 7 Other 3 wheeled car 8 Taxi 9 Car (4 wheeled) 10 Minibus/motor caravan 11 PSV (bus, coach, tram or trolley-bus) 12 Goods not over $1\frac{1}{2}$ tons unladen weight 13 Goods over $1\frac{1}{2}$ tons unladen weight 14 Other motor vehicle (including motor vehicle of unknown type) 15 Other non-motor vehicle (including ridden horse)	N	MF	This replaces in a simplified format the present make/model variable. Code 10 has been added for vehicles which serve a similar function to PSVs but which are not licensed as such.
2.6 TOWING AND ARTICULATION 0 [illegible]ow/articulation 1 Articulated Vehicle 2 Double/Multiple trailer 3 Trailer Caravan 4 Single trailer 5 Other tow	N	MF	Modified for greater clarification and precision

APPENDIX B (cont)

RECOMMENDED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT FORM STATS 19

KEY 1 N = Final National Requirement L = Final Local Requirement

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Variable Name and Codes	Key 1	Key 2	Remarks
2.7 MANOEUVRES 1 Reversing 2 Parked 3 Waiting to go ahead but held up 4 Stopping 5 Starting 6 U-turn 7 Turning left 8 Waiting to turn left 9 Turning right 10 Waiting to turn right 11 Changing lane to left 12 Changing lane to right 13 Overtaking moving vehicle on offside 14 Overtaking stationary vehicle on offside 15 Overtaking on nearside 16 Going ahead left hand bend 17 Going ahead right hand bend 18 Going ahead other	N	MF	Modified for greater clarification and precision
2.8 VEHICLE MOVEMENT - COMPASS POINT 1 N 2 NE 3 E 4 SE 5 S 6 SW 7 W 8 NW 00 PARKED Not at kerb.	N	NF	To produce a reconstruction of the accident circumstances it is necessary to know the direction of travel of the vehicles which were involved in the accident. Clock type coding is essential for the operation of the diagram system.

RECOMMENDED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT FORM STATS 19

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Variable Name and Codes	Key 1	Key 2	Remarks
.9 VEHICLE LOCATION 1 Leaving main road 2 Entering main road 3 On main road 4 On minor road 5 On service road 6 On lay-by or hard shoulder 7 Entering lay-by or hard shoulder 8 Leaving " " " " 9 On Cycleway 10 Not on carriageway	N	MF	Modified for greater clarification and precision.
.10 JUNCTION LOCATION OF VEHICLE AT FIRST IMPACT 0 Not at junction (or within 20 metres/22 yards) 1 Vehicle approaching junction/vehicle parked at junction approach 2 Vehicle in middle of junction 3 Vehicle cleared junction/vehicle parked at junction exit 4 Did not impact	N	NF	This information is required to enable a complete reconstruction of the accident to take place without reference back to the original police report.
.11 SKIDDING 0 No skidding 1 Skidded 2 Skidded and overturned 3 Jack-knifed 4 Jack-knifed and overturned 5 Overturned	N	MF	Modified for greater clarification and precision.

RECOMMENDED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT FORM STATS 19

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Variable Name and Codes	Key 1	Key 2	Remarks
HIT OBJECT IN CARRIAGEWAY 0 None 1 Previous accident 2 Road works 3 Parked vehicle - lit 4 Parked vehicle - unlit 5 Bridge (roof) 6 Bridge (side) 7 Bollard/refuge 8 Open door of vehicle 9 Central Island of roundabout 10 Kerb 11 Other object	N	MF	Modified to allow greater clarification and precision (the 'special conditions at site' variable on the existing stats 19 form has been split into three variables ie 2.12 to 2.14)
VEHICLE LEAVING CARRIAGEWAY 0 Did not leave carriageway 1 Left carriageway nearside 2 " " nearside and rebounded 3 " " straight ahead at junction 4 " " offside onto central reservation 5 " " offside onto central reservation and rebounded 6 " " offside crossed central reservation 7 " " offside 8 " " offside and rebounded	N	MF	To assist in the design of carriageway barriers these data are required by engineers and other interested parties. Basic description of vehicle movement.

[illegible] NATIONAL ROAD ACCIDENT [illegible] STATS 19

KEY 1 N = Final National Requirement L = Final Local Requirement
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Variable Name and Codes	Key 1	Key 2	Remarks
2.14 HIT OBJECT OFF CARRIAGEWAY 0 None 1 Road sign/Traffic signal 2 Lamp post 3 Telegraph pole/Electricity pole 4 Tree 5 Bus stop/Bus shelter 6 Central crash barrier 7 Nearside or offside crash barrier 8 Submerged in water (completely) 9 Entered ditch 10 Other permanent objects	N	MF	Modified for greater clarification and precision.
2.15 VEHICLE SUFFIX LETTER OR ONE OF THE FOLLOWING CODES: 0 Pre - 1963 1 Unknown 2 Foreign 3 Military 4 Trade	N	MF	Codings designed to simplify the data collection task of the police; year of registration (August - July) can be evaluated from suffix letter.
2.16 FIRST POINT OF IMPACT 0 Did not impact 1 Front 2 Back 3 Offside 4 Nearside	N	NF	Essential for diagram system as this yields an indication of the movements of vehicles in which an occupant was injured and/or which was damaged.
2.17 OTHER VEHICLE HIT (Vehicle reference No)	N	NF	Essential for the diagram system to establish which other vehicle was involved in multiple vehicle collision
2.18 PART(S) DAMAGED 0 None 1 Front 2 Back 3 Offside 4 Nearside 5 Roof 6 Underside 7 All four sides	N	MF	

APPENDIX B (cont)

RECOMMENDED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT FORM STATS 19

KEY 1 N = Final National Requirement L = Final Local Requirement

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Variable Name and Codes	Key 1	Key 2	Remarks
2.19* NUMBER OF AXLES 0 Not goods vehicle 2 2 axles 3 3 axles 4 4 axles 5 5 or more axles (GOODS VEHICLES ONLY)	N	NF	*To enable an analysis of Goods vehicles which is comparable with the National Traffic Census; if 2.19 is coded zero, then variable 2.20 can be skipped in data preparation.
2.20* MAXIMUM PERMISSIBLE GROSS WEIGHT (METRIC TONNES) (GOODS VEHICLES ONLY)	N	NF	
2.21 SEX OF DRIVER 1 Male 2 Female 3 Not traced	N	MF	The third category is required for "hit and run" cases
2.22 AGE OF DRIVER (years, estimated if necessary)	N	MF	
2.23 BREATH TEST 0 Not applicable 1 Positive 2 Negative 3 Not requested 4 Failed to provide 5 Driver not contacted at time	N	MF	
2.24 HIT AND RUN 0 Other 1 Hit and Run	N	NF	This variable will give an indication of the incidence of "hit and run" cases.
DTp SPECIAL PROJECTS	N	NF	
2.26 [illegible]CE/LA SPECIAL PROJECTS	[illegible]	[illegible]	

APPENDIX B (cont)

RECOMMENDED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT FORM STATS 19

KEY 1 N = Final National Requirement L = Final Local Requirement

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	Variable Name and Codes	Key 1	Key 2	Remarks
3.	CASUALTY RECORD			
3.1	RECORD TYPE 31 New casualty record 35 Amended casualty record	N	NF	Control variable to enable casualty records to be selected out easily during processing/analysis *Required for the linkage of accidents, vehicles and casualties
3.2*	POLICE FORCE	N	SF	
3.3*	ACCIDENT REFERENCE NUMBER	N	NF	
3.4*	VEHICLE REFERENCE NUMBER	N	NF	
3.5*	CASUALTY REFERENCE NUMBER	N	NF	
3.6	CASUALTY CLASS 1 Driver or rider 2 Vehicle or pillion passenger 3 Pedestrian	N	MF	
3.7	SEX OF CASUALTY 1 Male 2 Female	N	SF	
3.8	AGE OF CASUALTY (Estimated if necessary)	N	SF	
3.9	SEVERITY OF CASUALTY 1 Fatal 2 Serious 3 Slight	N	SF	

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Variable Name and Codes	Key 1	Key 2	Remarks
3.10 PEDESTRIAN LOCATION 0 Not pedestrian 1 In carriageway crossing on pedestrian crossing 2 " " " within zig-zag lines approach to the crossing 3 In carriageway crossing within zig-zag lines exit the crossing 4 In carriageway crossing elsewhere within 50 metres of pedestrian crossing 5 In carriageway crossing elsewhere 6 On footway or verge 7 On refuge or central island or reservation 8 In centre of carriageway - not on refuge, or central island 9 In carriageway - not crossing 10 Unknown	N	MF	The expansion of this variable will help in the analysis of pedestrian casualties who represent about one-quarter of all road accident casualties.
3.11 PEDESTRIAN MOVEMENT 0 Not pedestrian 1 Crossing from driver's nearside 2 " " " " /masked by parked or stationary vehicle 3 Crossing from driver's offside 4 " " " " /masked by parked or stationary vehicle 5 In carriageway stationary - not crossing (eg stending or playing) 6 In carriageway stationary - not crossing (eg standing or playing) - masked by parked or stationary vehicle 7 Walking along facing traffic 8 " " back to traffic 9 Unknown	N	MF	The expansion of this variable will help in the analysis of pedestrian casualties who represent about one-quarter of all road accident casualties.

APPENDIX B (cont)

RECOMMENDED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT FORM STATS 19

KEY 1 N = Final National Requirement L = Final Local Requirement

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Variable Name and Codes	Key 1	Key 2	Remarks
3.12 PEDESTRIAN DIRECTION - Compass point bound 1 N 2 NE 3 E 4 SE 5 S 6 SW 7 W 8 NW or 0 Pedestrian standing still	N	NF	Required for more comprehensive data on pedestrian movements
3.13 SCHOOL PUPIL CASUALTY 0 Not a school pupil 1 Pupil on journey to/from school 2 Pupil NOT on journey to/from school	N	NF	Many school pupils are involved in accidents. The present number is unknown.
3.14 SEAT BELT USAGE 0 Not car or van 1 Safety belt in use 2 Safety belt fitted - not in use 3 Safety belt not fitted 4 Child safety belt/harness fitted in use 5 Child safety belt/harness - not in use 6 Child safety belt/harness not fitted 7 Unknown	N	MF	
3.15 CAR PASSENGER 0 Not car passenger 1 Front seat car passenger 2 Rear seat car passenger	N	SF	
3.16 PSV PASSENGER 0 Not a PSV passenger 1 Boarding 2 Alighting 3 Standing Passenger 4 Seated Passenger	N	MF	Modified for greater clarification and precision

APPENDIX B (cont)

RECOMMENDED ITEMS FOR INCLUSION ON NATIONAL ROAD ACCIDENT FORM STATS 19

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Variable Name and Codes		Key 1	Key 2	Remarks
3.17	DTp SPECIAL PROJECTS	N	NF	
3.18	RECORD TYPE	L	NF	For local access to 'school attended' if that variable is added to computer data file.
3.19	SCHOOL ATTENDED	L	NF	Required for local road safety education purposes or remedial measures.
3.20	POLICE/LA SPECIAL PROJECTS	L	NF	

APPENDIX 48

Validity Checks for Stats 19

VALIDITY CHECKS FOR STATS 19

The following are checked on incoming Stats 19 that they conform to recognised codes. This does not necessarily mean that they are accurate or representative of the accident detail.

Day of week, Local Authority, Road Class and Number, Carriageway Type, Pedestrian Crossing, Junction Type, Vehicle Manoeuvres, Vehicle Directions, Vehicle Location, Junction Location, Drivers Actions, Vehicle Occupied by (Nos.), Pedestrian Location, Pedestrian Movement, Pedestrian Direction, Seat Belt.

Suspicious Boxes:-

Vehicle Type, 1st Point of Impact, Age of Driver, Age of Casualty, (+ No of Axles and maximum weight).

The boxes which are "suspicious" are those few which give the impression that the attending officer has guessed the details to complete the form T1

APPENDIX 49

Traffic and Accident on Roads Analysis (TARA)

TRAFFIC AND ACCIDENTS ON ROADS ANALYSIS (TARA)

DORSET ROADS INFORMATION SYSTEM

1.1 Introduction

The Dorset Roads Information System is an integrated system which stores, processes, and provides means of retrieval of highway related data. The heart of the system is a digital model of the County Road Network, and this model has been assembled and is maintained and managed using the TARA system.

1.1.2 The Digital Highway Model

The model which is related to Ordnance Survey Grid References is used to provide many of the facilities contained within the System. Amongst the most important are:-

The ability to plot to any scale and in a variety of formats, the whole or any part of the Highway System.

The ability to superimpose data (e.g. Traffic flows, Accident Information, or Highway Maintenance data) onto such maps, either separately, or in combination.

The ability to check that a given Grid Reference lies upon a specified road, or alternatively, to determine the closest road to a given Grid Reference.

The ability to convert a Spatial Reference in one form to a Reference in another form (e.g. OSGR to CHART Reference, CHART Reference to TARA Reference, Grid Reference to Road Number and Chainage etc.)

Consequently, the ability to cross-reference Applications Data referenced by identical, or different Spatial Referencing Systems, and to combine that data in a meaningful way to produce results in Text, Tabular, Graphical or Cartographical form.

The ability to generate routes through the Highway Network satisfying a given set of criteria.

1.1.3 The System is so designed that it is not normally necessary for the User to have any knowledge of the referencing system used by the Network Programs. Users will, however, often need to supply a Road Number and/or a Grid Reference.

1.1.4 Road Numbers

Road Numbers used within the System for Classified roads are those normally found on Ordnance Survey maps or on the standard 1" map of the County Highway Network. (e.g. A35, A303, B3157, C157).

Every unclassified road in the county has been assigned a unique Road Number. There is however, at present, no one source of information giving these numbers. In most cases the number can be determined from the Divisional Road schedules using the following methods:-

a) All Unclassified road number consist of six digits.

b) The first digit is always ´D´.

c) The second digit is the Division number (or 6 for Bournemouth, 7 for Poole, 8 for Christchurch, or 9 for Weymouth and Portland).

d) The third and fourth digits are the Road Number given in the Schedule.

e) The fifth and sixth digits are the number given in the Schedule against the particular road in question.

Thus, Plowmans Close, Marnhull, found on Page 28 of the Schedule for Division 3, is the D30934.

1.1.5 Grid References

Grid References, as required by the Information System, are 2 by 6 figure references to an accuracy of one metre. It is not normally necessary to specify Grid references to this accuracy, but it is still necessary to supply the full six figures for Eastings and Northings by including a zero or zeros for the final digit(s).

To understand the generation of such references give consideration on the 1" County Map to Top o´ Town Roundabout, Dorchester. A Grid reference to an accuracy of 10 metres is to be generated.

The Grid Line to the left of the Roundabout is numbered on the map 68. Because this is to the west of the North-South line labelled 00 passing through Poole Harbour, this number is preceded by 3, thus 368. Should the point under consideration lie East of the 00 line the number is preceded by 4. Estimating or measuring the distance east of Top o´ Town from the 68 line as 920 metres (the side of one Grid Square on this map is 1000 metres), the full Easting becomes 368920.

In a similar fashion the Northing becomes 090640 (this may be written as 90640). Points South of East-West line 00 passing through Wimborne are preceded by zero, those North of the 00 line by 1).

1.1.6 An understanding of the Road Numbers and Grid References used are all that is required of the User, but the section following is provided for those with an interest in the method by which the Model is stored.

1.1.7 Storage of the Highway Model

1.1.7.1 The digital model of the Highway Network is stored as a series of numbers held on four Direct Access files. The network thus held is constructed as follows:-

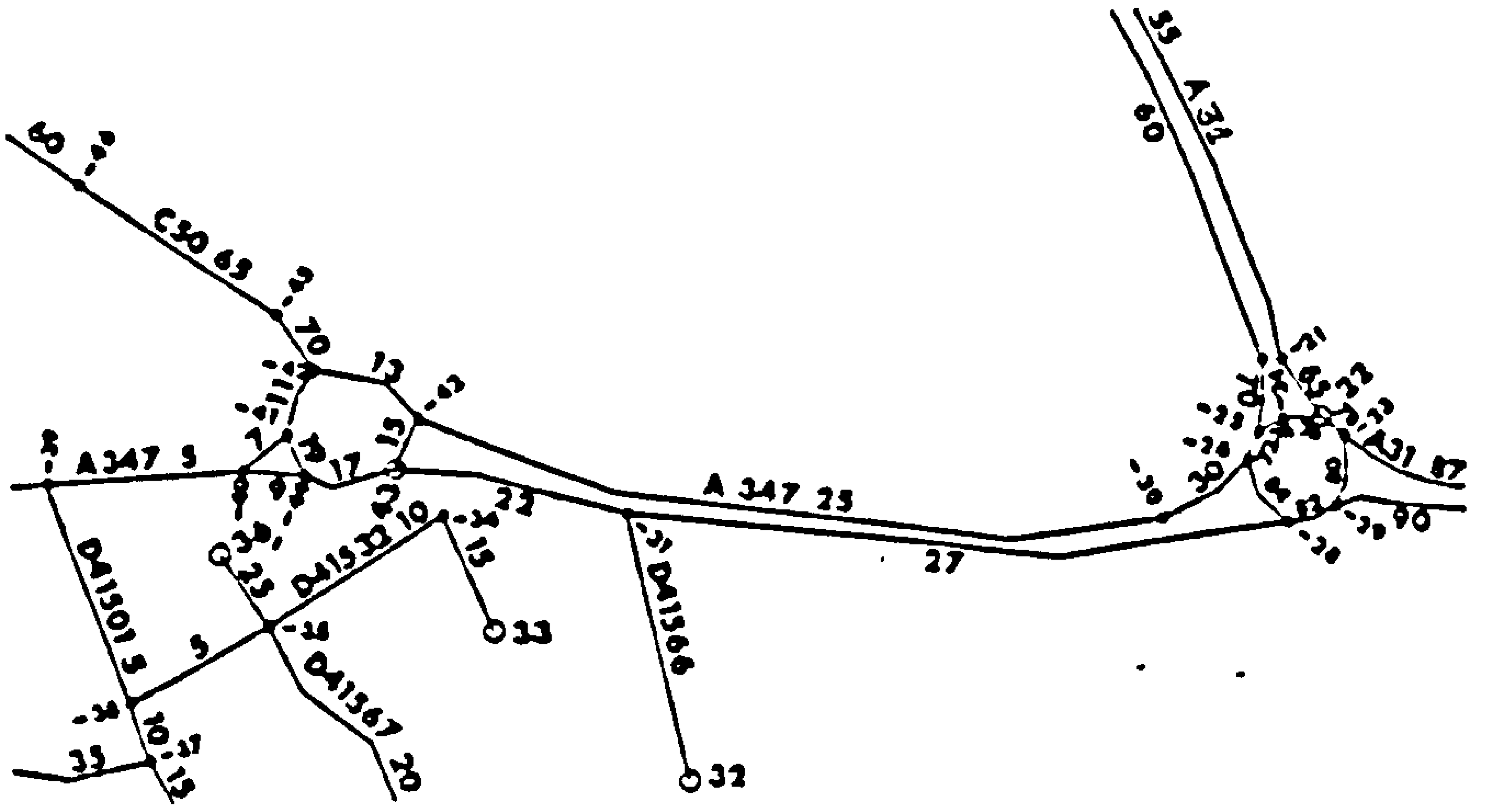
a) Each road is divided into a number of sections. Each section is given a Section Number that is unique within that Road.

b) The point at which two or more sections intersect is known as a node. Each node is given a unique Node Number.

c) Particularly significant nodes (e.g. those where three or more sections of A or B roads intersect) are termed Major Nodes, and these are assigned positive Node Numbers. The remaining nodes are termed Minor Nodes and are assigned negative Node Numbers.

d) A node is positioned at every road junction, but they may also be placed at other relevant points, either to mark a feature such as a bridge, or to separate sections of road where a change in characteristics occur (e.g. change in Speed Limit).

e) For Dual Carriageways each carriageway is separately detailed and numbered. Roundabouts are also recorded as a series of short separate sections.



Fictitious Example of a Part of the Network

1.1.7.2 The information held on the Network Files is as follows:-

Sections — Section File

Road Number
Section Number
Section Length
Start Node
Finish Node
Section Type (Dual c/w, Roundabout, other)
Direction of Traffic Movement

Road File

Road Number
Section Number
Up to 250 Grid References specifying the alignment of the road.

Nodes — Node File

Node Number
Grid Reference
List of Sections intersecting at Node

Grid File

Grid Reference
Node Number

In addition to the data shown above, each record of each file holds a Start and Finish Date, indicating the period during which the information was current. Thus full details of the Highway Network at any date can be found and historic Applications Data related to the appropriate network.

A number of permanent files are also held, which while not holding details of the Highway network, contain data specifying County and District Boundaries, the Coastline, and Town and Village Names. This data is automatically added to any maps produced by the system.

1.1.8 The Scope and Accuracy of the Model

At the time of writing (January 1987) the following Roads are included in the Model:-

1) All Classified Roads
2) All Heavily Trafficked Unclassified Roads
3) All Unclassified Roads in Divisions 1,2,3,4 and 5

An on-going programme of work to complete the model by adding all Unclassified Roads is in hand, and it is hoped that Division 1 will be completed by Autumn 86. Completion of the Urban Areas of the county is unlikely to be before the end of 1987.

As far as is known all modifications to the Highway Network be Improvements or New Schemes have been incorporated into the model, but should Users become aware of inaccuracies in the model they should inform Research and Information Section (Ext. 4464) immediately, in order that they can be corrected.

The alignment of sections of road within the model is specified by a series of short straight lines. It is therefore apparent that the digitised alignment will generally differ from the actual. The model has been constructed to keep such inaccuracies to a minimum, and the digitised line should be generally differ from the actual by more than ten metres.

1.2 Facilities Provided by the Information System

At present the System provides facilities relating to Traffic, Accident and Maintenance Data. Considerable benefits will be obtained when owner Systems and Data are linked to the Information System.

APPENDIX 50

Letters of support from Wessex RHA, MCA and TRRL

WDHA
WEST DORSET HEALTH AUTHORITY

Extension: 355

Our Ref: MD/SS Your Ref: RAS/KYB/R22/25

District Administrative Offices, Herrison House,
Herrison Hospital, Dorchester, Dorset, DT2 9RL.
Telephone: Dorchester 63661

3rd February, 1986

Mr. R.A. Saunders,
Chief Road Safety Officer,
Dorset County Council,
County Hall,
DORCHESTER.

D.C.C.
T & E DEPT.
-5 FEB 1986
REF. R22/25

Dear Mr. Saunders,

UNDER-REPORTING OF ROAD TRAFFIC ACCIDENTS

Thank you for your letter of the 28th January, which Dr. Harker has passed on to me for action.

I am sure you will appreciate that the collection of information about non-reported incidents is a sensitive issue and will require careful handling in relation to the confidentiality of medical records, etc. I should like to suggest approaching both the Local Medical Committee and the Community Medical Committee about participating in the exercise. The L.M.C. is comprised of general practitioners from both East and West Dorset Health Authority districts, whilst the C.M.C. is a West Dorset grouping of general practitioners, community health doctors and my own department. Having ascertained the interest and willingness to co-operate in the study it would be possible to be either more or less comprehensive in terms of the scope of the study itself.

Obviously a one year project would be desirable but I think that it might be difficult to ensure a high accident record return rate, knowing that several other one year projects have just been mounted in the district. I suspect agreement might be given for a shorter time scale, e.g. a one month period, or a small group of general practitioners might be encouraged to undertake a more protracted survey.

Should you wish I will ask the Secretary of the L.M.C. and of the C.M.C. to put your project on the next agenda for preliminary discussion. The next meeting of the L.M.C. will be on 25th March and that of the C.M.C. on 20th March, 1986. I feel that the project is a valuable and interesting one and look forward to hearing from you.

Yours sincerely,

Maria Dlugolecka

Dr. M.J. Dlugolecka
Director of Community Medicine.

The Motor Cycle Association of Great Britain Ltd

Registered in England 1113282

Registered Office and Correspondence

Starley House
Eaton Road
Coventry CV1 2FH

Telephone 0203 27427
Telex 31590 MOCYAS

D.C.C.
T & E DEPT
7 OCT 1985
TO DH RAS
REF. K22 TO FILE

Our Ref. NMR/JCM

3rd October 1985

R.A. Saunders Esq.,
Chief Road Safety Officer,
Dorset County Council
Transportation and Engineering Department
County Hall
DORCHESTER.
DT1 1XJ

Dear Roger,

Re: Accident Research

Further to my letter dated 25th July 1985, I am now in a position to give you details of the support which the MCA can offer for your research,

In view of our other budget committments, the MCA Training Group have agreed that a sum of £2,500 should be allocated to your project subject to agreement being reached as to the information we will receive in return.

My notes of our meeting in May, indicate that in 1985, you intended to complete the Computer Analysis and produce a typology of accidents as well as photocopies of the relevant police records for later analysis. We see our contribution as going towards the estimated £3,000 for this exercise. In return, we wish to have a copy of your full report on this stage of the research as this will be most useful and will enable us to consider further support for years two and three.

Continued .....

mca

CONTINUATION PAGE

NMR/JCM

3rd October 1985

R.A. Saunders Esq.,
Continued .....

Perhaps your research design has changed slightly, but, my notes indicate that 1986 was to be taken up with an analysis of the police report, on a case by case basis, supplemented with a limited number of case study interviews from a representative sample. We pencilled in a provisional figure of £3,000 for this stage of your research, but clearly, we need to compare notes once again to ensure that your project still remains relevant to our interests and that our proposals are acceptable to you and Ian Anderson.

I think it will be helpful if we could arrange a joint meeting between the three of us to discuss your research and perhaps I could ask you to contact me once you have had an opportunity to discuss possible dates with Ian before a meeting at Starley House.

In the meantime, I enclose two tickets to the Motorcycle Show in the hope that you will be able to find the time to visit us.

Kind Regards.

Yours sincerely

Nick Rogers.

N.M. ROGERS BA PHD
TECHNICAL OFFICER

Enc.

Transport and Road Research Laboratory
Department of Transport
Old Wokingham Road Crowthorne Berkshire RG11 6AU
Telex 848272 Telephone 0344 (Crowthorne) 773131 ext
GTN 2091

Mr R A Saunders
Dorset Institute of Higher Education
Centre for Safety Research
Wallisdown Road
POOLE
Dorset BH12 5BB

Your reference

Our reference

Date
20 May 1986

Dear Mr Saunders

Thank you for your letter of 18 April describing your project on hospital records. I have delayed replying until the MCAP Transport Committee met yesterday.

The Committee was interested to learn of the proposed hospital study, and left it to me to explore this with you further.

May I suggest you visit us at TRRL to discuss this and other aspects of your work. Perhaps you could ring my Secretary to arrange a suitable date, though owing to other commitments this will not be possible before July.

Yours sincerely

Barbara Sabey

BARBARA E SABEY (Miss)
Head of Road Safety Division

APPENDIX 51

Letters of authority, CMC, LMC, DMC and FPC

A86–A90

WDHA
WEST DORSET HEALTH AUTHORITY

Extension: 355

Our Ref: MD/SS Your Ref: RAS/KYB/R22/25

District Administrative Offices, Herrison House,
Herrison Hospital, Dorchester, Dorset, DT2 9RL.
Telephone: Dorchester 63661

3rd February, 1986

Mr. R.A. Saunders,
Chief Road Safety Officer,
Dorset County Council,
County Hall,
DORCHESTER.

D.C.C.
T & E DEPT.
- 5 FEB 1986
R22/25

Dear Mr. Saunders,

UNDER-REPORTING OF ROAD TRAFFIC ACCIDENTS

Thank you for your letter of the 28th January, which Dr. Harker has passed on to me for action.

I am sure you will appreciate that the collection of information about non-reported incidents is a sensitive issue and will require careful handling in relation to the confidentiality of medical records, etc. I should like to suggest approaching both the Local Medical Committee and the Community Medical Committee about participating in the exercise. The L.M.C. is comprised of general practitioners from both East and West Dorset Health Authority districts, whilst the C.M.C. is a West Dorset grouping of general practitioners, community health doctors and my own department. Having ascertained the interest and willingness to co-operate in the study it would be possible to be either more or less comprehensive in terms of the scope of the study itself.

Obviously a one year project would be desirable but I think that it might be difficult to ensure a high accident record return rate, knowing that several other one year projects have just been mounted in the district. I suspect agreement might be given for a shorter time scale, e.g. a one month period, or a small group of general practitioners might be encouraged to undertake a more protracted survey.

Should you wish I will ask the Secretary of the L.M.C. and of the C.M.C. to put your project on the next agenda for preliminary discussion. The next meeting of the L.M.C. will be on 25th March and that of the C.M.C. on 20th March, 1986. I feel that the project is a valuable and interesting one and look forward to hearing from you.

Yours sincerely,

Maria Dlugolecka

Dr. M.J. Dlugolecka
Director of Community Medicine.

WDHA
WEST DORSET HEALTH AUTHORITY
Child Development Unit, Damers Road,
Dorchester, Dorset, DT1 2LB.
Telephone: Dorchester 63123

Extension: 179

Our Ref: MB/BB Your Ref:

4 August 1986

Mr. R. A. Saunders,
Chief Road Safety Officer,
Transportation and Engineering Department,
County Hall,
DORCHESTER.

D.C.C.
T & E DEPT.
-7 AUG 1986
DH RAS
REF. R22 TO FILE

Dear Mr. Saunders,

RE DORSET ACCIDENT PREVENTION PROJECT.

Thank you very much for the detailed letter you sent to me dated July 15, and I do apologise for my delay in replying. There will not be another meeting of the Community Medical Committee until September, but you have covered in your letter each of the misgivings which certain committee members held and I am sure that the committee would want me to write on their behalf giving approval to the project as you have defined it.

Yours sincerely,

Margaret Barker

DR. MARGARET BARKER
Consultant Community Paediatrician.

SALISBURY HEALTH AUTHORITY

SALISBURY GENERAL INFIRMARY

Fisherton Street
Salisbury, SP2 7SX
Telephone Salisbury
(0722) 336212

Ext.....503......

28 November 1985

Please ask for: Your ref: RAS/AJR/R22/25 Our ref: BLPM/RP/67

Mr R A Saunders
Chief Road Safety Officer
Dorset County Council
Transportation and Engineering Department
County Hall
Dorchester
DT1 1XJ

Dear Mr Saunders

INVESTIGATION INTO POWERED TWO-WHEELED VEHICLE ACCIDENTS IN DORSET

I refer to your letter dated 21 November 1985 to Mr C Laughton which has been passed to me for attention.

The RTA Clerk for this district is a member of my staff, and I see no reason why you cannot contact her direct with regard to your enquiry. Her name is Mrs Ann Jerred and she can be contacted at this hospital on Extension 509. Works afternoons only.

I would hope that we can confine your enquiry to a maximum period of one year as we shall have to examine approximately 1,000 files to establish site of accident and county of residence. I would expect that the proportion of cases treated here which meet the parameters of your investigation will be extremely small.

Please do not hesitate to contact me if you have any further enquiry.

Yours sincerely

Brian Mould

B L P MOULD
Medical Records Officer

cc Mr C Laughton
Mrs A Jerred

84 642 G

21

Somerset Health Authority

Yeovil District Hospital,
Higher Kingston,
Yeovil, Somerset BA21 4AT
Telephone Yeovil 75122 ext 331

If telephoning, please ask for Mrs Chadwick

30 JAN 1986

R22

F

Our Ref RSC/DMB Your Ref

29 January 1986

Mr R A Saunders
Chief Road Safety Officer
Dorset County Council
Transportation & Engineering Department
County Hall
DORCHESTER DT1 1XJ

Dear Mr Saunders

Your letter of the 14 Janaury has been passed to me by Mr Mitchell. We do note RTA against such accidents in our A/E register, and I am sure we can help you in collecting the necessary information. We do not record all that you are interested in our register so this will involve checking records, and I imagine this could be quite a lengthy task.

Please let me know when you are planning to visit.

Yours sincerely

R S Chadwick

Ruth S Chadwick
PATIENT SERVICES ADMINISTRATOR

WZF032

NATIONAL HEALTH SERVICE
FAMILY PRACTITIONER COMMITTEE FOR DORSET

J. V. KNIGHTON, F.C.I.S., F.H.A.
Administrator
Telephone: Ferndown 893000 (STD Code 0202)

VICTORIA HOUSE
PRINCES ROAD
FERNDOWN
WIMBORNE BH22 9JR

Committee's Reference: GMS 4/2 - idb

Your Reference: RAS/KYB/R22/25

16th April 1986

When telephoning or calling at the office please ask for Mrs S Jones

Chief Road Safety Officer
Transportation and
Engineering Department
Dorset Council Council
County Hall
Dorchester
DT1 1XJ

T & E DEPT
18 APR 1986
~~DSM~~ RAS
REF R22/65 TO FILE

Dear Mr Saunders

ROAD TRAFFIC ACCIDENT INFORMATION

Thank you for your letter of 11th April 1986. I am able to inform you that if you would care to forward 333 of the pads of forms in question I will arrange for one pad to be sent to each doctor in Dorset.

Yours sincerely,

S Jones

pp Administrator

APPENDIX 52

Letter from LMC giving details of Community Hospitals

DORSET LOCAL MEDICAL COMMITTEE

R. W. Bush, A.C.I.S., A.H.A.
Secretary

Tel: Wimborne 887582

6 Melverley Gardens
Wimborne
Dorset
BH21 1HJ

D.C.C
T & E
30 APR 1986
TO DJS/AH R.S
REF. R22

Your ref: RAS/AJR/R22/25

R.A. Saunders Esq,
Chief Road Safety Officer,
Transportation & Engineering Dept.,
Dorset County Council,
County Hall,
Dorchester,
Dorset DT1 1XJ

26th April, 1986

Dear Mr. Saunders,

Road Traffic Accident Survey Amongst G.P.s

Thank you for your letter of the 10th April. We have already spoken on the telephone concerning Mr. Knighton's address. The details of the Community Hospitals are as follows:

Swanage Hospital, Queen's Road, Swanage, Dorset, BH19 2ES

Victoria Hospital, Victoria Road, Wimborne, Dorset, BH21 1ER

Blandford Hospital, Milldown Road, Blandford Forum, Dorset, DT11 7DD

Bridport Hospital, Park Road, Bridport, Dorset, DT6 5DB

Lyme Regis Hospital, Pound Road, Lyme Regis, Dorset, DT7 3HY

Yeatman Memorial Hospital, Hospital Lane, Sherborne, Dorset, DT9 3JV

Westminster Memorial Hospital, Shaftesbury, Dorset, SP7 8BD

Yours sincerely,

Secretary

APPENDIX 53

Map of Dorset

LOCAL GOVERNMENT REORGANISATION

NEW COUNTY OF DORSET

5173 D.L./3802

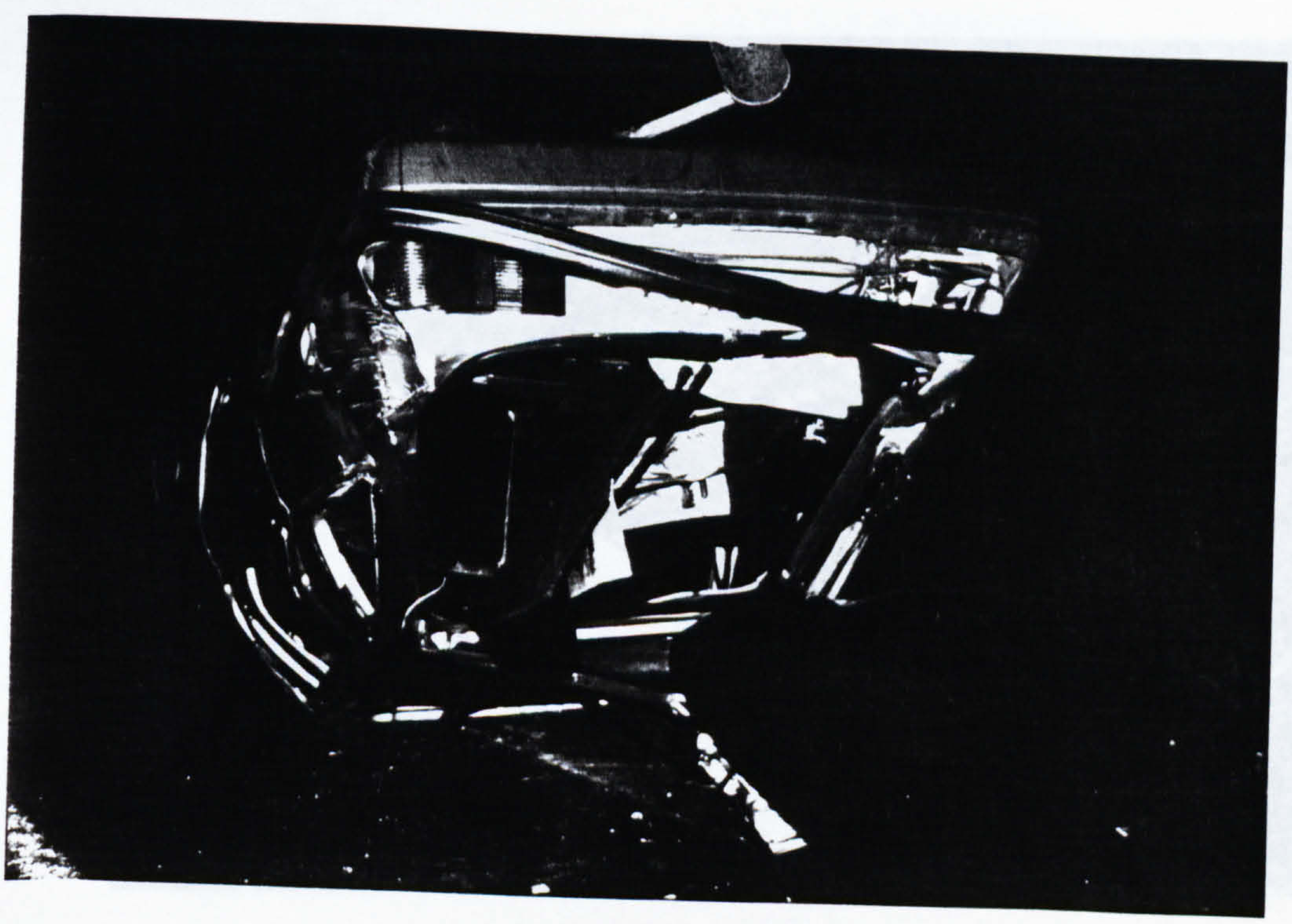
APPENDIX 54

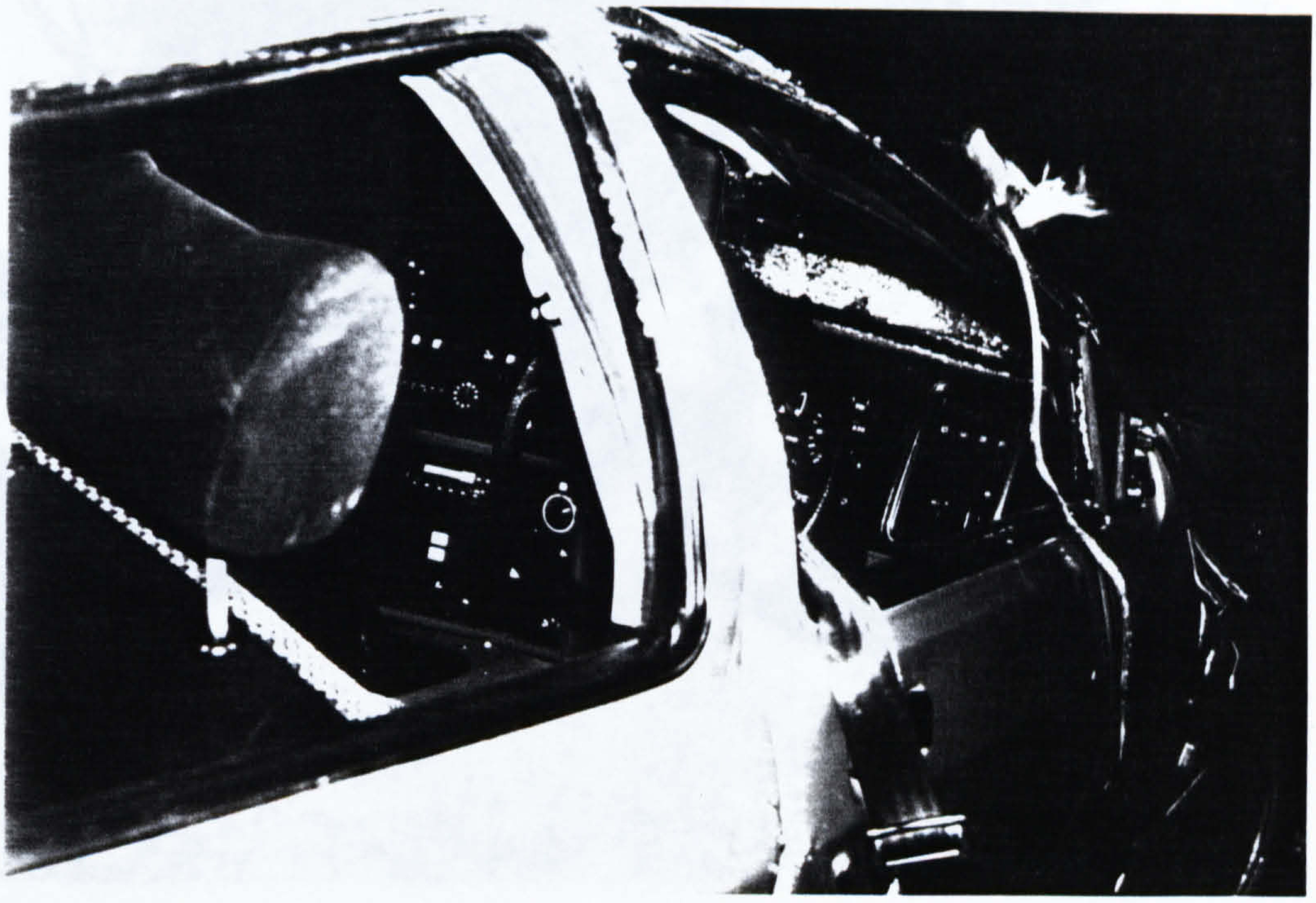
Photographs of None-Injury RTA's

Author

Director of Studies

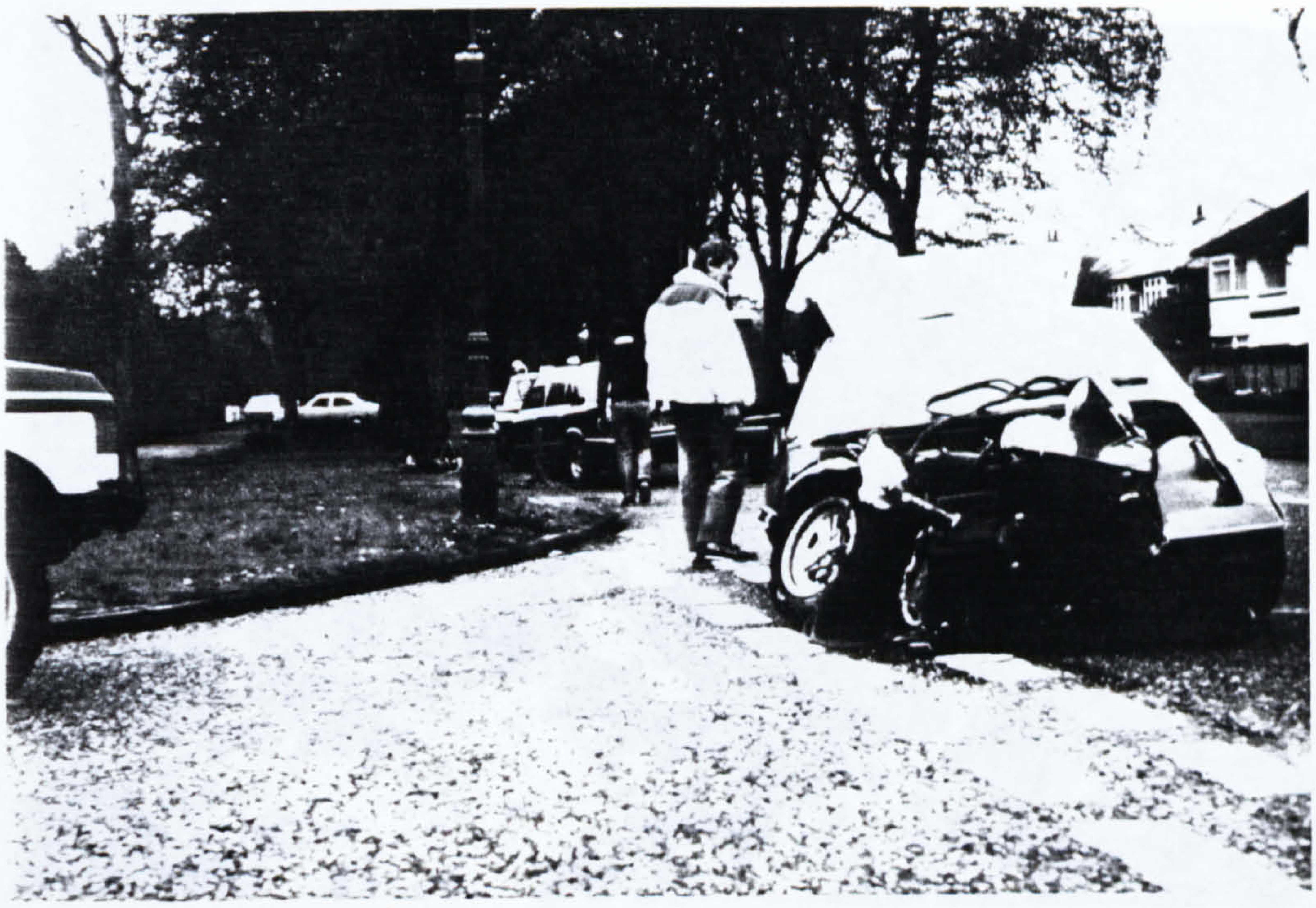
Uninjured driver and his car





A further [illegible] accident showing immense vehicle damage

Note uninjured driver



A further non-injury accident showing immense vehicle damage

Both uninjured drivers

Serious injury of motorcyclist

APPENDIX 55

Dorset Police Form T1

Rev. 2/81
D.L./2128

DORSET POLICE

USE BLOCK CAPITALS ONLY

FATAL/SERIOUS/SLIGHT/NON-INJURY

ACCIDENT DIV. NO. A : YEAR : DIV : FORM NO. T1

OFFICER REPORTING — Function / Number / Stn.

LOCATION CODE

DATE

TIME

REALLOCATE Y/N

REALLOCATED OFFICER

EXACT LOCATION

ROAD CLASSIFICATION

ROAD SAFETY AREA

DISTRICT AUTHORITY ______ SPEED LIMIT OF ______ M.P.H. in force

CONDITIONS OF – LIGHT – 1 Daylight 2 Dark Streetlighting on 3 Dark Streetlighting off 4 Dark - No Streetlighting
WEATHER – 1 Fine 2 Rain 3 Snow 4 Fog 5 Highwind 6 Other
ROAD SURFACE – 1 Dry 2 Wet 3 Snow 4 Ice 5 Frost
TRAFFIC – Heavy/Moderate/Light.

WET SKID Y/N

NAMES AND ADDRESSES OF INDEPENDENT WITNESSES — IF STATEMENT MADE

______ YES/NO
______ YES/NO
______ YES/NO
______ YES/NO

NUMBER OF PERSONS INVOLVED

NUMBER OF VEHICLES INVOLVED

NAMES AND ADDRESS OF PERSON INVOLVED	Age	Status *	Which Vehicle In	Injury Code †	Safety Belts Worn	Statement made
					YES/NO N:A	YES/ NO
					YES/NO N:A	YES/ NO
					YES/NO N:A	YES/ NO
					YES/NO N:A	YES/ NO
					YES/NO N:A	YES/ NO
					YES/NO N:A	YES/ NO
					YES/NO N:A	YES/ NO
					YES/NO N:A	YES/ NO
					YES/NO N:A	YES/ NO
					YES/NO N:A	YES/ NO

*STATUS – DR–Driver/Rider; PA–Passenger; PE–Pedestrian; OW–Owner; AN–Another; CY–Cyclist
†INJURY CODE – 1. Fatal; 2. Serious; 3. Slight; 4. No Injury; 5. Not Involved
ϕD of E Code: 01–Pedal Cycle; 02–Moped; 03–Motor Scooter; 04–Motor Cycle; 05–Combination; 06–Invalid Tricycle; 07–Other three wheeled car; 08–Taxi; 09–Car (4 wheeled); 10–Minibus/Motor Caravan; 11–PSV; 12–Goods not over 1½ tons u/w; 13–Goods over 1½ tons u/w; 14–Other Motor Vehicle; 15–Other Non-Motor Vehicle.

VEHICLE 1 Reg. Mark ϕ D of E Code Compass Direction Make and Type ______
Direction of Travel ______
Owner if not above ______ Address ______
Cert. of Ins. No. ______ Issued By ______ From ______ To ______
D.Lic. No. ______ Towing other Veh. ______ if Yes type of Veh. Towed ______
Damage ______ Verified Y/N
Position of Vehicle stating if moved since Accident ______

VEHICLE 2 Reg. Mark ϕ D of E Code Compass Direction Make and Type ______
Direction of Travel ______
Owner if not above ______ Address ______
Cert. of Ins. No. ______ Issued By ______ From ______ To ______
D.Lic. No. ______ Towing other Veh. ______ if Yes type of Veh. Towed ______
Damage ______ Verified Y/N
Position of Vehicle stating if moved since Accident ______

DAMAGE TO PROPERTY (including Animals) AND NAME OF OWNER ______

ACCIDENT REPORTED BY ______ TO ______ AT ______ am/pm ON ______

Doctor / Ambulance } called at ______ am/pm Arrived at ______ am/pm. Conveyed injured to ______

Detained/Not detained. Details of relations/friends informed ______

Brief Description of Accident including if Hit and Run ______

Rough Sketch Plan (with measurements)

		Vehicle 1	Vehicle 2
Vehicle Defects where they are thought to have contributed to accident.	LIGHTS (including failure to switch on as well as defects)	YES/NO	YES/NO
	MECHANICAL (brakes, steering, wheels, tyres, chain, frame)	YES/NO	YES/NO
	OTHER (trafficators, stop lights, over-loading, etc.)	YES/NO	YES/NO
	Skid marks present	YES/NO	YES/NO
	Does driver admit marks to be his	YES/NO	YES/NO
VEHICLE EXCISE LICENCE		Correct/Report submitted	Correct/Report submitted
TEST CERTIFICATE		N.A./Correct/Report submitted	N.A./Correct/Report submitted

DRIVING LICENCE.	Driver No. 1	Provisional/Full	Correct/Report submitted.	BREATH TEST.	Driver No. 1	YES/NO	POS/NEG.
	Driver No. 2	Provisional/Full	Correct/Report submitted.		Driver No. 2	YES/NO	POS/NEG.

Submitted by ______________________________

Sergeant's recommendation. (If applicable) / See T33. Sir ______________________________

____

SUPERINTENDENT'S ORDER for disposal or submission ______________________________

____

Notice prepared and despatched to ______________________________

on ______________ by ______________________________

PROCEEDINGS: Court ______________________________ Date ______________

Result ______________________________

INQUEST: Verdict ______________________________ Date ______________

Crime Report Ref. No. ______________________________ ARPRO No: ______________________________

APPENDIX 56

Time-sheet used by AIU

ACTIVITY RECORD

Date: ______________________ Day of Week: ______________________

Before 9 a.m.		1 p.m.	
9 a.m.		2 p.m.	
10 a.m.		3 p.m.	
11 a.m.		4 p.m.	
12 noon		5 p.m. and after	

APPENDIX 57

Stats 19 Questionnaire of County Surveyors Society

County Surveyors Society 1985. - Standing Cttee

SCRA(85)11

STATS 19 QUESTIONNAIRE

The proposal to circulate a questionnaire on local Stats 19 procedures was first put to the Standing Committee at the meeting held in April 1983. STC explained that they did not know in any detail what procedures were followed by the police forces and counties on such aspects of Stats 19 use as the existance of local road accident report forms, where coding of data and where validation procedures are carried out, what liaison exists between police forces and counties over validation and what locational data is used. It was agreed by the Committee that STC should prepare a questionnaire which would be approved by members before it was issued to Local Processing Authorities.

A draft questionnaire was presented to the November 1983 meeting and it was agreed that, before it was sent out, it should also be presented to the County Surveyors Society. However, before this was done, comments on the form were received from Mr Jones (Association of County Councils) which effectively replaced the free-form draft with a tick-box questionnaire. At the November 1984 meeting, STC were able to announce that the revised questionnaire had been presented to the County Surveyors Society who had agreed that it should be circulated. The questionnaire was sent out to Local Processing Authorities on 20 February 1985.

Fifty three questionnaires were sent out and 48 returned. South Yorkshire County Council applied a policy of non co-operation towards the questionnaire but, despite this, the South Yorkshire Police were able to make a nearly complete return.

The completed questionnaires have yielded very interesting and valuable information which provides a helpful and effective background that will be of considerable assistance in analysing and interpreting road accident data on a national basis. For instance, STC is well aware of the difficulty of correctly coding some of the more obscure Stats 19 variables and this can partly be explained and set in context by the information given that in some areas the police are unable to attend at the scene in as many as 34 per cent of accidents. Similarly, while STC has known that there are personal injury accidents which go unreported, it is very usefull to have a locally based estimate, particularly in view of the large divergence between areas.

The Committee is invited to note the results of the questionnaire, a resume of which is set out below. A full account of the replies to each question is set out as annexe A in the form of an annotated questionnaire. Three percentages have been written against each question; the first, on the left hand side, gives the proportion of LPA's who replied to the question, while on the right hand side of each question is written the proportion of those responding replying 'yes' or 'no'. The latter are used in the resume given below.

STATS 19 QUESTIONNAIRE RESULTS

REPORT FORM

Only 23 per cent of authorities use the Stats 19 format as issued by the Department; the remaining 77 per cent use variations which collect extra data. Sixty six per cent would be willing to supply additional statistics from these extra variables to the Department, 55 per cent on a regular basis.

Seventy five per cent collect data on non injury accidents, 46 per cent using the same form as used in reporting personal injury accidents. Fifty four are prepared to make non injury data available to the Department. In only one instance (2 per cent) does the number of injury accidents exceed the number of non injury accidents.

The percentage of injury accidents which are attended by the police vary from 100 per cent to 66 per cent; the percentage of injury accidents 'thought to go unreported' range from one per cent to 30 per cent

In only 21 per cent of LPA's do reporting officers refer regularly to Stats 20 and in 23 per cent reporting officers have access to a simplified, portable version

CODING AND VALIDATION

In 52 per cent of LPA's all of the basic report form is completed by the police reporting officer ; where it is not, the remaining variables are mostly coded by civilians. Keying of the data onto a computer medium is carried out by the County (48 per cent) and civilians (44 per cent) with the most common form of first computer medium being VDU input (57 per cent) followed by magnetic tape (23 per cent). At this stage, some 81 per cent carry out a validation.

The bulk of the main processing (81 per cent) and the main validation (63 per cent) is carried out by county computers. Full Stats 21 validations are carried out in nearly every case (97 per cent), generally at the standard required by Stats 21 (58 per cent) but to a higher level in 39 per cent. More than half (64 per cent) take up local validation queries with the original reporting officer. Only 25 per cent carry out additional, local, validation after tapes are dispatched to the Department.

Sixty nine per cent of tapes are sent by Counties and 27 per cent by police forces. Preparation of a tape for the Department involves conversion of data formats and translation of variables etc for 70 per cent but only 7 per cent would favour another physical form - and this small minority would all prefer terminal entry.

It is clear that there is more than one factor involved in deciding when to send tapes to the Department but the completion of validation checks is by far the most common (93 per cent). The end of year tape is delayed for extra completeness in 41 per cent of cases but only 6 per cent impose an artificial cut off date for dispatch in the belief that the Department does not want later data.

More than half (68 per cent) of LPA's continue to enhance their previous years file with further amendments and somewhat fewer (39 per cent) with later reports after data to the Department for the year has ceased.

In 53 per cent of areas, queries from the Department are always referred to police headquarters in 53 per cent of areas but only rarely in 40 per cent. These queries are referred back to the original reporting officer in 20 per cent of areas. In the event of subsequent amendment, the majority of systems include provision for amendment of their records (93 per cent), DTp records (76 per cent) and procedures (57 per cent).

SPECIFIC VARIABLES ON STATS 19

Severity, 1.4/3.9

Less than half (47 per cent) of police forces always check that serious casualties are still alive after 30 days, while 16 per cent usually check and 20 per cent sometimes check. Only 11 per cent check whether persons involved in accidents, but not dispatched to hospital, are subsequently hospitalised. Uninjured casualties taken to hospital for overnight observation are coded as serious injuries by 58 per cent of forces and as slight by 40 per cent.

Location, 1.11

Most accident locations (83 per cent) are first described in some other way and coded to grid reference later, generally by the reporting officer (30 per cent) or police civilian (26 per cent). Most counties (60 per cent) use Ordnance Survey grid references as their locational reference system. In 35 per cent, grid references are validated by matching with a network file. In 70 per cent, the 100km grid reference columns 33 and 38 are completed by the same person as the rest of the reference.

Road Class, 1.12/1.18

Road classifications are determined primarily from maps (74 per cent) or signs on site (7 per cent) or a mixture of both (20 per cent).

Road Class, 1.12/1.18 - Local Authority Use of Codes

Only 28 per cent distinguish between trunk and principal roads; in 71 per cent the assingment to "lst" and "2nd" road class at junctions cofirms strictly to Stats 20.

Type of Vehicle, 2.5

Additional local codes are used in only 15 per cent of cases.

Hit and Run, 2.24

Sixty nine per cent of LPA's have adopted the new optional code 2 "non-stop vehicle not hit".

DTp Special Projects, 2.25

Data on motorcycle L plate display and engine size is collected by 83 per cent and 73 per cent include mopeds, scooters and motorcycle combinations.

Breath Test, 2.23

When a screening breath test is administered to an involved driver, it is normal practise in 86 per cent of areas to use one of the codes 3 - 5 "requirement made under" in the Home Office form CrimSec 21.

Gyratory Roads

Gyratory roads are coded solely as one way streets by 56 per cent and as roundabouts by 24 per cent but as both by 20 per cent.

EXTRA VARIABLES ON LOCAL DATA FILES

Seventy seven per cent code data relating to the contributory factors of accidents and 48 per cent on accidents involving horses. Data on actual causes are collected by 35 per cent, on registration number by 22 per cent and on driving licence status by 20 per cent.

CONCLUSIONS

It is always very important, for those who are responsible for analysing and interpreting data, to be aware of how the data are collected and processed. Even under such a standard system as 'Stats 19', where everyone uses the same codes and carries out the same validation, variations in procedure and even in coding exist, and a knowledge of such variations is essential in interpreting otherwise inexplicable spatial variations. STC4 is extremely grateful to those who took the trouble to complete this rather long questionnaire. The results will be of considerable use to us and to others who process and interpret national road accident data.

ANNEX A

QUESTIONNAIRE

STATS 19 - LOCAL PROCEDURE ENQUIRY

This form completed by:- (Please state name of Authority)

.... POLICE FORCE

.... HIGHWAY AUTHORITY

% who answered	PART A: REPORT FORM		Please tick YES	NO
91	A1.	Which style of STATS 19 does your Authority use?		
		as issued by Department of Transport	[23]	[77]
		local variant	[77]	[23]
	NB.	Please enclose copies of all forms used between incident on road and data transfer to computer file and variants used since 1968 if available.		
91	A2.	Does your Authority collect extra data not shown on STATS 19?	[77]	[23]
72	A3.	If yes, are they computer coded?	[87]	[13]
		Please list additional data collected in Part D (Use separate sheets if necessary)		
72	A4.	Would your authority be willing to supply additional statistics from these extra variables.	[66]	[34]
72	A5.	If yes, regularly?	[55]	[45]
		or occasionally?	[11]	[89]
		Whom should we contact		
		Tel: .... Ext:		
91	A6.	Do police collect data on non-injury accidents?	[75]	[25]
70	A7.	If yes is this on the same type of report form?	[46]	[54]
		If no, please enclose copy of form used.		
	A8.	What is non-injury accident annual total for 1983? [ ]		
	A9.	What is PIA (Personal Injury Accident) Annual total (for comparison) for 1983? [ ]		

Please tick

YES | NO

91 A10. Could non-injury accident data be made available to Dept. Transport? [54] [46]

64 A11. What % of PIA are actually attended at the scene by reporting police? [66-100]%

45 A12. What % of PIA are thought to go unrêported? [1-30]%

91 A13. Do reporting officers refer regularly to Stats 20 as issued by Department of Transport? [21] [79]

91 A14. Do reporting officers have a simplified portable version of Stats 20? [23] [77]

If yes, please send a copy.

89 A15. Does your Police Force supply data to two or more Counties? [28] [72]

If yes, state which.

If particular problems arise because of this, please state briefly (use separate sheet if necessary).

....

87 A16. Does your Authority receive data from two or more police forces? [13] [87]

If yes state which.

If particular problems arise because of this, please state briefly (use separate sheet if necessary).

....

PART B: CODING AND VALIDATION

87 B1. Is all the basic report form completed by the police reporting officer? [52] [48]

B2. If no, which variables are left for someone else

....
(grid reference coding is covered in part C)

58 B3. Who completes the remaining variables?

police [10] county [23] Police & Civilian [10]
civilian [55] other [—] County & Civilian [3]

91 B4. Who keys data onto a computer medium?

police [2] county [48] Police & Civilian [2]
civilian [44] other [ ] County & Civilian [2]

Please tick

			YES	NO
91	B5.	Is any validation carried out at this stage?	[81]	[11]
74	B6.	If yes, by whom?		

police [3]
civilian [46] other [49]
county [8]

89 B7. What is the first computer medium?

paper tape [4] punch card [2] VDU input [57]

mag tape [23] other [13]

91 B8. Which computer carries out main processing?

police [15] county [81] other [4]

please state ....

91 B9. Where is main validation carried out?

police HQ [25] other police establishment [6]

county [63] other [6]

please state ....

			YES	NO
74	B.10	Are full recommended Stats 21 validations carried out?	[97]	[3]

fewer than Stats 21 [3] same as Stats 21 [58]

more than Stats 21 [39]

B11. Which variables are not so validated?

....

B12. List additional variables validated ....

....

			YES	NO
89	B13.	Are local validation queries taken up with original reporting officer?	[64]	[36]
101	B14.	Does additional local validation take place after despatch to Department of Transport?	[25]	[75]

91 B15. Who sends accident tapes to Department of Transport?

police [27] county [69] other [4]

			YES	NO
87	B16.	Does the preparation of a DTp tape involve conversion of data formats, translation of variables etc?	[70]	[30]
87	B17.	Would other physical forms now be favoured?	[7]	[93]

Please tick

		YES	NO
6	B18. If yes, which form?		
	floppy disc [–] terminal entry [100]		
	other [–] please state		
85	B19. What determines the date of despatch of tape to Dept of Transport?		
	completion of validation checks	[93]	[7
	delayed to include late reports	[24]	[76
	delayed to included deaths within 30 days	[4]	[96
	sent before completion of validation checks in order to meet DTp deadline	[4]	[96
	B20. What validation is missed from DTp tape if the last case applies?		
	....		
89	B21. Is the procedure any different at the end of the calender year, ie is the December tape treated differently?	[28]	[72
87	B22. Is it held up to achieve extra completeness?	[41]	[59
51	B23. If not, which of the new year monthly tapes would normally include the last data for the old year? Month		
	Late reports [ ]		
	Amendments [ ]		
45	B24. After what date, roughly, would the last of these arrive?		
	[ ]		
64	B25. Is this an artifical cut-off, in the belief that DTp does not want later data?	[6]	[94
83	B26. After data to DTp ceases for the previous year, does the local file continue to be enhanced with:		
	Later reports [39]		
	Further amendments [68]		
81	B27. Are queries from Department of Transport referred to police HQ?		
	Always [53]		
	Often [7]		

Please tick

			YES	NO
87	B28.	Are such queries referred to the original reporting officer?	[20]	[80]
83	B29.	Are these queries dealt with by the county instead?	[34]	[66]

77 B30. Does your system include provision for amendment of records or procedures as a result of DTp validation queries?

Your records [93]

DTp records [76]

Procedures [57]

PART C: SPECIFIC VARIABLES ON STATS 19

Severity, 1.4/3.9:

85 C1. Do police check that serious casualties are still alive after 30 days?

Always [47]

Usually [16]

Sometimes [20]

No [18]

89 C2. When persons involved in accidents are <u>not</u> despatched to hospital is a check made to see if they are subsequently hospitalised? [11] [89]

85 C3. When people are taken to hospital for overnight stay for observation, but with no injury being revealed, are they coded?

non injury [2] slight [40] serious [58] No Standard !!

Location, 1.11:

87 C4. Is grid reference completed by

reporting officer [30] police civilian [26] county [20]

other [24] please state ....

91 C5. Is the accident location first described in some other way and coded to grid reference later [83] [17]

89 C6. What does the county use for locational reference system for its own purposes?

OSGR [60] Both [26]

Other [15]

Please tick

			YES	NO
	C7.	What scale maps are used to derive grid references		
		in built up areas .... Scale 1: [ ]		
		in non built up areas .... Scale 1: [ ]		
87	C8.	Is matching with a network file used to validate grid references?	[35]	[65]
83	C9.	Are the 100km grid reference columns 33 and 38 completed by same person as rest of reference?	[70]	[30]
		Road class, 1.12/1.18:		
87	C10.	From what are road classifications determined?		
		maps [74] signs on site [7] other please state .... Maps, Signs & Others [20]		
		Road class, 1.12/1.18 - Local Authority Use of codes 7, 8, 9		
89	C11.	Is the distinction between trunk and principal road used	[28]	[72]
	C12.	Which of the following road class codes are used for urban areas?		
		5 [ ] 6 [ ] 7 [ ] 8 [ ] 9 [ ]		
	C13.	If relevant, please indicate what type of "highway" is used for:		
		Code 7		
		Code 8		
		Code 9		
91	C14.	Does assignment to '1st' and '2nd' road class conform strictly to Stats 20 at junctions?	[71]	[29]
89	C15.	Does assignment differ in some police divisions?	[4]	[96]
		Type of Vehicle, 2.5:		
91	C16.	Are any additional codes used locally?	[15]	[35]
	C17.	What is used to discriminate between minibus and PSV/coaches?		
		seating [ ] If so, how many [ ]		
		length of vehicle [ ] If so, what length [ ]		
		Hit and run, 2.24:		
91	C18.	Has new optional code 2 "non-stop vehicle not hit" been adopted?	[69]	[31]

		Please tick YES	NO
	DTp Special Projects, 2.25		
91	C19. Is this in use for m/c L plate and engine size in your authority?	[83]	[17
	If so, are mopeds included?	[73]	[27
	are scooters included?	[73]	[27
	are m/c combinations included?	[73]	[27
	Breath test, 2.23		
81	C20. When a screening breath test is administered to a driver involved in an injury accident (and reported on in 2.23), will it normally be the case that one of the codes 3-5 is used for "requirement made under:" in H.O. form CrimSec 21?	[86]	[14
	Carriageway type or marking, 1.4:		
77	C21. How are 'gyratory' roads coded?		

Roundabout [24] One way street [56] Both [20]

Explain criterion ....

PART D: EXTRA VARIABLES POSSIBLY CODED ON LOCAL DATA FILES

		YES	NO
83	Driving licence status (give details)	[20]	[80]
85	Registration number	[22]	[78]
85	Make and model	[13]	[87]
85	Involvement of tanker	[4]	[96]
85	Vehicle with "hazchem" marking	[2]	[98]
85	Accident involving release of chemicals	[9]	[91]
85	Accident involving radioactive materials	[4]	[96]
87	Accident involving horses	[48]	[52]
89	Contributory factors of accidents	[77]	[23]
87	Actual causes	[35]	[65]
81	Adverse circumstances not on Stats 19	[21]	[79]
85	Use to which vehicles are put: eg buses used as school buses cars used as taxis	[2]	[98]

		Please tick YES	NO
83	Other road network information - perhaps obtained by matching other data	[11]	[89]
83	Any other information on injuries - eg length of stay in hospital	[0]	[-]

Others:- please write in

QUESTIONNAIRE NOTES

PART A Report form

Question

A1 The majority of police forces evidently do not use Stats 19 in the style issued by DTp, but a locally (or Home Office) constructed equivalent. We would like copies of the current form(s) in use, and, if convenient, copies of earlier variants used since say 1968 (the earliest year for which we have national data available for analysis).

A2, 3 Some local authorities collect extra data for local statistical purposes. If these are not shown on the above mentioned forms, please let us know what they are and which of them are computer coded.

A4, 5 If the local authority is willing to supply coded data relating to any such extra variables regularly or occasionally to help with specific problems, we ask to know whom we should contact? There is no intention to make a practice of this. Occasionally DTp might refer outside enquirers to a local authority known to have data of the type required.

A6-10 The department is frequently asked about non-injury accidents. It would be valuable to know which counties could assist.

A11 The proportion of injury accidents actually attended at the scene by the reporting policeman, will help explain the difficulty in getting some of the more obscure codings correct.

A12 We would like your subjective estimate as to the proportion of injury accidents thought to go unreported. We are well aware that it is well below 100% for some accident types.

A13, 14 We would like to know just how the Stats 20 is used to help us produce it in the most convenient form. Extensive use of more portable simplified versions of Stats 20 may undermine some of our efforts at improvement.

A15, 16 DTp is aware of the main overlaps between areas but probably not aware of all the minor ones.

PART B Coding and Validation

All the different variations implied by the alternative answers in this section are believed to exist but DTp generally does not know the procedure in each area.

B1-9 If peoples job descriptions (for example) conveniently describe these procedures please feel free to use them in lieu of detailed responses to the question.

B10-14 Stats 21, which sets out the procedures, has been simplified, since the first edition relating to the present Stats 19 system, to take account of the lower amount of validation which local authorities found it practicable to apply. DTp would like to know how much validation above the minimum is carried out. A full list would be appreciated.

B15 This is of course generally the authority of our regular contact for data.

B16-18 It may be that other media than tape would now be convenient.

B19-20 There is great variation in the timeliness of despatch of tapes to DTp. Some authorities prepare and send the tape only when data have been fully validated; some wait till all 'late reports' are available; others, however, send DTp a tape before validation is complete in order to avoid delay.

B21-26 Practice often varies at the end of the calendar year. With some authorities anxious to close their own file by a specified date. Others try not to keep sending old data to DTp in the belief that it cannot be used. (DTp does not in practice operate a cut off in terms of main month of data tapes, but instead continues to accept data or amendments for the previous calender year until the date after which the file must be closed for RAGB tabulations).

B27-30 DTp would like to have a clearer idea what happens to queries raised by the DTp validation process, how they are dealt with locally and which files are amended when errors are corrected.

PART C Questions relations to specific variables on Stats 19

C1-3 There is evidence from hospital studies that some in-patients are coded as slight casualties - or even as serious when death occurred within 30 days. DTp would like to know to what extent police check that serious casualties are still alive after 30 days, and whether casualties not despatched to hospital, are followed up to see if they subsequently have to be hospitalised. The practice regarding coding of persons, taken to hospital 'for observation', who stay at most one night (not covered well by Stats 20) also appears to vary.

C4-9 Location: many errors continue to be found in the grid reference, whether completed by the police reporting officer or by coders in the police force or county from some other description. Not all counties use the same locational reference system for their own purposes.

C10-15 Different methods used to discriminate between road classes give different reliability. Code 2 A(M) continues to be misused. What about road class in urban areas. The distinction between trunk and principal roads, if used locally, could save DTp some of the matching done with a network file. Assignment of roads to '1st' and '2nd' does not always conform strictly to Stats 20 at junction accidents. At least one authority continues to put the major road first. Perhaps some police divisions also.

C16-17 Is any finer division used locally. The size discrimination used to separate minibuses and buses/coaches (previously described as PSV), may well vary as Stats 20 does not give one.

C18 Where the new optional code 2 'non-stop vehicle not hit' has been adopted, DTp will be able to make use of it.

C19 This variable has generated much interest.

C20 The HO form does not state that accident involvement should be the priority code, if one of the others also applies.

C21 DTp would like to clarify Stats 20 instructions according to the most common practice.

PART D Extra local variables

This section lists some of the possible extra variable which may be used local for ease of recording - see question 3 in Part A. The list is far from exhaustive.

C. Questions relations to specific variables on Stats 19

1.4/3.9 There is evidence from hospital studies that some in-patients are coded as slight casualties - or even as serious when death occurred within 30 days. To what extent do police check that serious casualties are still alive after 30 days. What is the practice regarding coding of persons, taken to hospital 'for observation', who stay at most one night; this is not covered well by Stats 20. Is anyone, not despatched to hospital, followed up to see if they subsequently have to be hospitalised.

1.11 Location: many errors continue to be found

- Is this completed by the police reporting officer or by coders in the police force or county from some other description.
- Does the county use the same reference system for its own purposes.
- What scale of maps are used to derive the grid references.
- Are the 100 km grid digits (cols 33 and 38) completed by the same person as the rest?

1.12/1.18 What method is used to discriminate between road classes - maps or roads signs or what? (Code 2 continues to be misued). What about road class in urban areas.

Does assignment of roads to '1st' and '2nd' conform strictly to Stats 20 at junction accidents? In all police divisions? (At least one authority continues to put the major road first).

2.5 Is any finer division used locally. What size discrimination is used to separate minibuses and buses/coaches (previously described as PSV)?

2.24. Has the new optional code 2 'non-stop vehicle not hit' been adopted.

2.25 Is this in use for motorcycle L-plate and engine size in your county/ police force.

APPENDIX 58

Questionnaire to police officers

CONFIDENTIAL

DORSET County Council

Please answer these questions from the point of view of your own experience.

OFFICE USE

Q1. Your Age [ ]

Q2. Sex | Male | Female |

Q3. How long have you been a police officer? [ ] years

Q4. Are you a specially trained traffic officer? | Yes | No |

Q5. If yes to Q4 how long have you spent on Traffic duties?

[ ]

Q6. Do you personally regard the completion of Stats 19 details as;

	Please Tick
Very Useful	
Quite Useful	
Not very useful	
A waste of time	

Q7. The County Engineer and the Chief Road Safety Officer use Stats 19 details in particular ways. Have you been formally shown how they use it?

| Yes | No |

Q8. If yes to Q7, when was this? [Month]

[Year]

Q9. If yes to Q7, where were you shown how they use it?

[ ]

Q10. On average, how long after the road traffic accident does it take you to obtain all the information necessary to complete the Stats 19 form?

[ ]

Q11. What causes you most delays? (please list)

(i) ....(ii)....................

(iii)......................(iv)....................

OFFICE USE

Q12. At the scene of a RTA how do you collect data required for the completion of Stats 19?

(a) Fill in form T1 only

(b) Fill in form T1 and police notebook

(c) Fill in form T1 and from memory complete additional items required

(d) Do not fill out anything at the scene but complete details later at the station

(e) None of these things (please list below what you actually do)

....

....

....

....

Q13. When you had/have to complete Stats 19 yourself how long did it/does it take you to complete (on average)?

Q14. Please list, in sequence, the procedure you actually follow at the scene of a RTA (include data collection for Stats 19).

(i)....................(ii)........................

(iii)..................(iv)........................

(v)....................(vi)........................

(vii)..................(viii)......................

(ix)...................(x).........................

(xi)...................(xii).......................

Q15 Do you consult Stats 20 - (Stats 20 = T6)

Always

Sometimes

Never

Q16 Would you please add any comments you feel might be helpful either in relation to the collecting of Stats 19 data or the actual completion of the form.

....

....

....

....

May I take this opportunity to thank you for your co-operation in this matter

RAS/KYB
JUNE 1986

APPENDIX 59

Letters of approval from the Health Authorities

A119-A121

38

EAST DORSET HEALTH AUTHORITY

CENTRAL ADMINISTRATIVE OFFICES
ROYAL VICTORIA HOSPITAL Shelley Road Bournemouth BH1 4HX
Telephone 303581 ext

Our ref: TH/DMJ
Your ref:

13 October 1986

D.C.C.
T & E DEPT
17 OCT 1986
TO ~~DH~~ RAS
REF. R22 TO FILE

Mr R A Saunders
Chief Road Safety Officer
Dorset County Council
County Hall
Dorchester

Dear Mr Saunders

<u>Dorset Accident Prevention Project</u>

At its meeting on 11th September, the Research & Ethical Sub-Committee confirmed the Chairman's action in giving approval to the above project.

Yours sincerely

TERRY HAMBLIN
Chairman
Research & Ethical Sub-Committee

64

EAST
DORSET
HEALTH
AUTHORITY

CENTRAL ADMINISTRATIVE OFFICES
ROYAL VICTORIA HOSPITAL Shelley Road Bournemouth BH1 4HX
Telephone 303581 ext

Our ref: TH/JAS
Your ref

16 February 1987

D.C.C.
T & E DEPT
TO DH RAS
REF R22

Mr R A Saunders
Chief Road Safety Officer
Dorset County Council
County Hall
Dorchester

Dear Mr Saunders

Dorset Accident Prevention Project

Your request to use an alternative consent form was considered at the meeting of the Research & Ethical Sub-Committee on 12 February 1987. Unfortunately the Sub-Committee are not empowered to give approval to the use of the words 'East Dorset Health Authority' and the use of the Authority's logo on the proposed consent form. You should send such a request to Mr R S Hardie, the District General Manager at the above address.

Yours sincerely

TERRY HAMBLIN
Chairman
Research & Ethical Sub-Committee

Mr. Howlett. ... approved
1700hrs 260287

(5)

WDHA

WEST DORSET HEALTH AUTHORITY

Blandford Community Hospital, Milldown Road, Blandford Forum, Dorset, DT11 7DD.
Telephone: Blandford (STD 0258) 56541

Extension: 247/242

Our Ref: GEP/CJL *Your Ref:* RAS/KYB/R22/25

23 October 1986

Mr R A Saunders
Chief Road Safety Officer
Transportation and Engineering Department
Dorset County Council
County Hall
DORCHESTER
Dorset DT1 1XJ

27 OCT
~~DH~~ RAS
R22/25

Dear Mr Saunders

Dorset Accident Prevention Project

I would refer to our recent conversation regarding your letter to Dr Harker dated 30 September concerning the questionnaire relating to PTWV casualties in the above survey.

Your point is accepted that the questions detailed on the questionnaire will not be asked directly but rather used as a 'format' by your interviewers to ensure that all appropriate information is collected. As you will appreciate from our conversation, I am still not happy with the patient consent form being signed so soon after an accident and whilst the patient is in the Casualty Department. A preferable system would be for the patient to be given a questionnaire for completion and/or a home visit consent form with a request that they return either to you within twenty four hours. This would retain patient confidentiality and choice. Perhaps we could discuss this when you are in the area.

In the meantime, the survey appears to be operating very satisfactorily in other respects as far as this hospital is concerned.

Yours sincerely

Geoff. Prangnell

G E PRANGNELL
LOCALITY MANAGER
BLANDFORD/SHAFTESBURY

APPENDIX 60

Hospital PTWV Enquiry Form

DEPARTMENT OF TRANSPORTATION AND ENGINEERING
DORSET COUNTY COUNCIL

DORSET County Council

Medical Enquiry Form for use in connection with persons attending hospital for treatment having been injured whilst riding a powered two-wheeled vehicle.

(Please delete) Salisbury General Infirmary/Poole General/Weymouth General/Yeovil District

DATE	SEX	AGE	TOWN WHERE PERSON RESIDES	DATE & TIME OF ACCIDENT	LOCATION OF ACCIDENT	TYPE OF MACHINE	INJURIES SUSTAINED	DIS-CHARGED DATE

Notes: 1. For location of accident write distance from nearest junction and include A/B/C class road numbers wherever possible.
2. For types of machine insert M-C for Motorcycle, M for Moped, S for Scooter, P for Pillion, C for Combination and O for Others.

D.L./4894

APPENDIX 61

Letter to GP's re:- Start of Study

Your ref

My ref RAS/KYB/R22/25

Date May 1986

DORSET County Council

TRANSPORTATION AND ENGINEERING DEPARTMENT

G L Vizard B.SC., DIP.TP(LOND)., C.ENG., MICE., MRTPI., ASVA., MISWM., FRSA., FIHT., DipTE

County Surveyor

County Hall
Dorchester DT1 1XJ

Tel: (STD 0305) 63131 Extn. 4573
Tel: Facsimile (STD 0305) 66120

Dear Doctor

<u>DORSET ACCIDENT PREVENTION PROJECT</u>

May I take this opportunity to appeal for your support in the above matter and ask that you provide the information which will enable me to consider the accident problem in Dorset more comprehensively. It is important that you provide Nil returns where appropriate and in any case you should use the reply paid envelopes to me at County Hall, Dorchester at the end of each month. It would be helpful if you could provide the following additional information with each return;

1. Size of Practice.
2. Area of Practice.
3. Number of Doctors in Practice.

Two forms for this purpose are enclosed.

Your very valuable help in this research programme is greatly appreciated.

Yours sincerely

R A SAUNDERS
Chief Road Safety Officer

EUROPEAN ROAD SAFETY YEAR 1986

DORSET
County Council

ROAD SAFETY UNIT
DORSET COUNTY COUNCIL

DORSET ACCIDENT PREVENTION PROJECT

The Local Medical Committee have now approved this project, which is to run from 1st July 1986 to 31st August 1986. Your valuable co-operation in this matter is vital.

OBJECT	To identify trends and road traffic accident casualty classes in Dorset.
AIM	To consider remedial measures and other appropriate strategies.
METHOD	To complete the minimum of non-confidential information relating to patients you treat who have been injured whilst a road user.

Further details will be sent shortly via the Family Practitioner Committee for Dorset.

EUROPEAN ROAD SAFETY YEAR
1986

Your ref

My ref RAS/AJR/R22/25

Date 26 June 1986

DORSET County Council

TRANSPORTATION AND ENGINEERING DEPARTMENT

G L Vizard B.SC., DIP.TP(LOND)., C.ENG., MICE., MRTPI., ASVA., MISWM., FRSA., FIHT., DipTE

County Surveyor

County Hall
Dorchester DT1 1XJ

Tel: (STD 0305) 63131 Extn. 4558
Tel: Facsimile (STD 0305) 66120

Dear Doctor

The information that you have been asked to provide in relation to road traffic accident detail refers only to 'new patients' and not hospital referrals.

I am sorry for any inconvenience caused.

Thank you.

Roger Saunders

R A SAUNDERS
Chief Road Safety Officer

EUROPEAN ROAD SAFETY YEAR 1986

APPENDIX 62

Form sent to GP's for Collection

DEPARTMENT OF TRANSPORTATION AND ENGINEERING
DORSET COUNTY COUNCIL

DORSET
County Council

Medical Enquiry Form for use in connection with persons attending their G.P. for treatment having been injured as a road user.

DATE	SEX	AGE	TOWN WHERE PERSON RESIDES	DATE & TIME OF ACCIDENT	LOCATION OF ACCIDENT	TYPE OF VEHICLE	INJURIES SUSTAINED	CASUALTY CLASS

Notes:
1. For location of accident write distance from nearest junction and include A/B/C class road numbers wherever possible.
2. For types of vehicle insert M-C for Motorcycle, M for Moped, S for Scooter, P for Pillion, C for Combination, Cy for Cycles and O for Others. Otherwise insert CAR, TAXI, PSV, HGV, etc.
3. Casualty Class should be Pedestrian, Driver, Passenger, Pillion, etc.
4. Type of Vehicle should be the vehicle the casualty was in charge of when injuries were sustained. Where casualty is a pedestrian, other vehicle involved can be added here.

D.L./4894(A)

APPENDIX 63

MSC DAPP PROJECT

CENTRE FOR SAFETY RESEARCH
DORSET ACCIDENT PREVENTION PROJECT

DORSET County Council

MEDICAL ENQUIRY FORM

For use only with person attending for medical treatment having been injured in an accident

Medical Centre ....

Date	Sex	Age	Town of Residence	L or H	Date of Accident	Time of Accident	Location of Accident	Type of Accident	Injuries Sustained	AIS	Referred Yes/No	Admitted	Discharge Date	Consent	Interview Date	Interview Ref. No.	Record Number
Description																	
Description																	
Description																	
Description																	
Description																	
Description																	
Description																	
Description																	
Description																	
Description																	

D.L./4360(A)

APPENDIX 64

Ethics Committee Approval

GU.

WDHA

WEST DORSET HEALTH AUTHORITY

Herrison Hospital,
Dorchester, Dorset, DT2 9RL
Telephone: Dorchester 63681

Extension: 420

Our Ref: DHD/KEU

Your Ref:

17 October 1986

TO DHRAS
REF. R22

Mr R A Saunders
Chief Road Safety Officer
Transportation and Engineering Department
County Hall
DORCHESTER
Dorset
DT1 1XJ

Dear Mr Saunders

re: DORSFT ACCTDENT PREVENTION PROJECT

I must apologise for the delay in replying to your previous correspondence. The West Dorset Ethical Committee only meets on an adhoc basis with the result that there are some very frustrating delays.

However having now sought the opinion of the Committee, you may take it that you have the support of the Ethical Committee as requested.

Yours sincerely

Dr H Dick
Chairman
West Dorset District Ethical Committee

55

EAST DORSET HEALTH AUTHORITY

CENTRAL ADMINISTRATIVE OFFICES
ROYAL VICTORIA HOSPITAL, Shelley Road
Bournemouth [illegible] Telephone [illegible] ext 202

TH/JD/MBA

10th July, 1986

Mr. R.A. Saunders,
Chief Road Safety Officer,
Dorset County Council,
County Hall,
Dorchester.

D.C.C.
15 JUL 1986
To DH RAS
Ref R22

Dear Mr. Saunders,

I see no real problems to supporting your study directly providing you use our consent form and maintain confidentiality. The submission will be considered formally on September 11th.

I enclose a consent form for your information.

Yours sincerely,

Terry Hamblin
Chairman
Research and Ethical
sub Committee.

ENCLOSURE.

EAST DORSET HEALTH AUTHORITY.

RESEARCH AND ETHICAL SUB-COMMITTEE OF THE

DISTRICT MEDICAL COMMITTEE.

CONSENT FORM.

TITLE OF RESEARCH PROJECT:

NAME OF PATIENT:

THE PURPOSE, METHOD AND RISKS OF THE ABOVE PROJECT HAVE BEEN FULLY EXPLAINED BY THE PRINCIPAL INVESTIGATOR TO ME AND I HAVE FREELY GIVEN MY CONSENT TO PARTICIPATE.

SIGNED 1.....................................

PATIENT OR VOLUNTEER

2.....................................

PRINCIPAL INVESTIGATOR

3.....................................

WITNESS

APPENDIX 65

Consent Form

DORSET County Council

WEST DORSET HEALTH AUTHORITY

0001

DORSET ACCIDENT PREVENTION PROJECT

We are carrying out research which it is hoped, will lead to a reduction in road traffic accidents in Dorset. As part of this research we need your help.

If you agree to help us, then one of our researchers will contact you for information concerning your accident. Of course, this information would remain confidential.

If you agree then please sign this form and we would like to thank you for your help.

If there is anything further that you wish to know about the project, the researcher will be happy to give you any details.

I .... of (address) ....

.... Tel. No. ....

agree to helping with this project, and I understand that I may be contacted by a reasearcher at my home address, to answer a short questionnaire.

If you are under 18 years of age please indicate your age ....

Signed ....

Date ....

If you would like to know more about this study please contact:

R. A. Saunders,
Chief Road Safety Officer,
County Hall,
Dorchester DT1 1XJ

Tel: (STD 0305) 63131 Ext. 4558/4548
(STD 0202) 22151 Ext. 1007/1008

D.L./2255(b)

DORSET County Council

EAST DORSET HEALTH AUTHORITY

0003

DORSET ACCIDENT PREVENTION PROJECT

We are carrying out research which it is hoped, will lead to a reduction in road traffic accidents in Dorset. As part of this research we need your help.

If you agree to help us, then one of our researchers will contact you for information concerning your accident. Of course, this information would remain confidential.

If you agree then please sign this form and we would like to thank you for your help.

If there is anything further that you wish to know about the project, the researcher will be happy to give you any details.

I .... of (address) ....

.... Tel. No. ....

agree to helping with this project, and I understand that I may be contacted by a reasearcher at my home address, to answer a short questionnaire.

If you are under 18 years of age please indicate your age ....

Signed ....

Date ....

If you would like to know more about this study please contact:

R. A. Saunders,
Chief Road Safety Officer,
County Hall,
Dorchester DT1 1XJ

Tel: (STD 0305) 63131 Ext. 4558/4548
(STD 0202) 22151 Ext. 1007/1008

D.L./2255(C)

APPENDIX 66

Interview Sheet

DORSET County Council

QUESTIONNAIRE TO CASUALTIES INJURED WHILST RIDING A PTWV *

*(SINGLE PTWV RTA's ONLY)

RECORD No [| |]   DATE OF INTERVIEW [| | | | |]   TIME OF INTERVIEW [| | |]

A. CASUALTY DETAILS

1. AGE [|] yrs   2. SEX [M | F]   3(a) TOWN OF RESIDENCE [ ]

3(b) COUNTY [ ]   4. OCCUPATION [ ]

5. CASUALTY CLASS [ ]   6(a) CURRENTLY IN WORK [YES | NO]

6(b) IF NO TO 6, HOW LONG OUT OF WORK [ ] yrs [ ] months

6(c) ESTIMATED ANNUAL PTWV MILEAGE [| | | |] BUSINESS [| | |] PLEASURE

6(d) EYESIGHT TEST [P | F]   6(e) SPECTACLES [YES | NO]   6(f) WORN AT TIME OF RTA [YES | NO]

6(g) IF NO, WHY NOT? [ ]

B. LICENCE DETAILS

7. TYPE OF LICENCE HELD. GROUP [ ]   8. [FULL | PROVISIONAL]

9. EXPIRY DATE [| | | | |]   10. HOW LONG LICENCE HELD [ ] yrs.

C. MACHINE DETAILS

11(a) IS THE MACHINE YOURS [YES | NO]   11(b) IF NO, WHOSE IS IT [ ]

12. DID YOU BUY YOUR MACHINE [NEW | SECOND-HAND]   13. HOW LONG OWNED [| | |] yrs/mths

14. DRIVING EXPERIENCE [| | |] yrs/mths.

15. WAS PART ONE TEST TAKEN ON THIS MACHINE [YES | NO]   15(b) YR/MONTH OF PART 1 TEST [|]

16. WAS PART TWO TEST TAKEN ON THIS MACHINE [YES | NO]   17. YEAR OF PT 2 TEST [| | |]

18. MACHINE MAKE [ ]   MODEL [ ]   CC RATING [ ]

19(a) INSURANCE Co. [ ]   TYPE OF COVER [ ]

19(b) CURRENT MOT [YES | NO]

D. TRAINING DETAILS

20(a) TRAINING TAKEN [YES | NO]   20(b) IF YES, WITH WHOME [ ]

20(c) WHEN WAS TRAINING TAKEN [|] (year and month)

21 CLOTHING WORN AT TIME OF ACCIDENT. (a) HEAD [ ]

(b) TOP TORSO [ ]   (c) LEGS [ ]   (d) FEET [ ]

(e) HANDS [ ]   (f) CONSPICUITY AIDS [ ]

22. WERE HEADLIGHTS ON AT TIME OF RTA [YES | NO]

E. ACCIDENT DETAILS

23. DATE OF RTA [| |] 24. TIME OF RTA [|]

25. PURPOSE OF JOURNEY WHEN RTA OCCURRED [   ]

26. RIDER OR PILLION

27. WHAT WERE YOU DOING BEFORE THE JOURNEY COMMENCED ....

....

28. HEALTH BEFORE RTA (Include alcohol/Drug usage) [   ]

29. BRIEF DESCRIPTION OF WHAT HAPPENED AT RTA SITE (list any manoeuvres undertaken and ask casualty for detailed breakdown of his actions)

....

....

....

....

30. (a) ESTIMATED SPEED AT TIME OF RTA [| |] mph (b) WHICH GEAR WERE YOU IN [ ]

31. SKETCH PLAN OF RTA (Include exact location of RTA) (i) Weather [   ]
(ii) Road State [   ]

31. (b) WHO DO YOU THINK WAS TO BLAME FOR RTA [   ]

32. WITH HINDSIGHT, IS THERE ANY ACTION YOU WISHED YOU HAD TAKEN TO AVOID THIS RTA?

....

....

33. VISIT TO ACCIDENT SITE YES | NO SITE VISIT REFERENCE NUMBER [   ]

34. SIGNATURE OF CASUALTY........................ DATE........................

INTERVIEW SHEET FOR USE IN
CONNECTION WITH RIDERS OF PTWV'S

DORSET
County Council

Date of Interview		Time Interview Commences	
Date of RTA		Time Interview Ceases	
Time of RTA			

A. Accident Details

1. Purpose of Journey when RTA occurred?

....

....

....

2. What was the rider doing one hour before the RTA occurred. Trace this as accurately as possible.

....

....

....

....

....

....

....

....

....

....

....

3. Injuries received as a result of this RTA.

....

....

....

According to DTp criteria is this a SERIOUS / SLIGHT RTA?

4. Health/Medical treatment being received at the time of the RTA.

....

....

....

....

....

....

5. Description of RTA and sketch plan.

6. Detailed manoeuvres being carried out at the time of RTA as described (unprompted) by the rider.

7. Estimated speed at the time of the RTA. [ ] mph

8. Which gear was the rider in at the time. [ ]

9. Attendant circumstances at the time of RTA.

   (i) Weather ....

   (ii) Road state ....

   (iii) Exact location (describe if necessary) ....

   ....

   ....

   (iv) Other circumstances (please list these) ....

   ....

   ....

   ....

   ....

   ....

10. Who does the rider blame for the RTA? ....

....

....

....

11. What does the rider think were the cause/s of the RTA? ....

....

....

....

....

12. With hindsight, what action would the rider think necessary to have avoided the RTA?

....

....

....

....

....

....

....

....

....

....

....

....

B. Previous Accident History

13. Has the rider been involved in a RTA previously as a rider? | YES | NO |

14. If YES to 13, please complete the following (up to 4 previous RTA's are catered for).

	DATE	TIME	LOCATION	INJURIES
RTA 1				
RTA 2				
RTA 3				
RTA 4				

15. What manoeuvres were evident in previous RTA history.

	MANOEUVRE
RTA 1	
RTA 2	
RTA 3	
RTA 4	

C. Training Details

16. Has the rider received formal training with a recognised training scheme?

| YES | NO |

17. If YES to 16, who was training taken with?

....

....

....

18. When was training taken? [ ] MONTH [ ] YEAR

19. If NO to Question 16, ascertain reason for this.

....

....

....

....

....

....

....

20. Was Part 1 Test taken? | YES | NO |

21. If YES to 20, was Part 1 Test taken on this machine? | YES | NO |

22. If YES to 20, when was Part 1 Test taken? [ ] YEAR [ ] MONTH

23. Has Part 2 Test been taken? | YES | NO |

24. If YES to 23, was Part 2 Test taken on this machine? | YES | NO |

25. If YES to 23, when was Part 2 Test taken? [ ] YEAR [ ] MONTH

D. <u>Conspicuity Detail and Clothing</u>

26. Clothing worn at time of RTA?

(i) HEAD ....

(ii) TOP TORSO ....

(iii) LEGS ....

(iv) FEET ....

(v) HANDS ....

(vi) SAM BROWNE | YES | NO | If NO why? ....

(vii) REFLECTIVE JACKET | YES | NO | If NO why? ....

(viii) HEADLIGHTS ON AT TIME OF RTA | YES | NO | If NO why? ....

....

E. <u>Machine Details involved in RTA</u>

27. Does the machine belong to the rider? | YES | NO |

28. If NO to 27, who does the machine belong to?

....

....

29. Was the machine purchased | NEW | SECOND-HAND |

30. How long owned? [ ] YEAR [ ] MONTHS

31. Riding experience [ ] YEAR [ ] MONTHS

32. Machine Make [ ] Model [ ]

33. cc Rating [ ] cc

34. Insurance Cover

	Tick
Comprehansive	
3rd Party F&T	
3rd Party	
H Act only	

35. Current MOT

YES	
NO	
NA	

36. Previous RTA's on this machine | YES | NO |

37. If YES to 36, which RTA's in Question 14 refer to this machine?

RTA 1	RTA 2	RTA 3	RTA 4

F. Licence Details

38. Type of licence held: GROUP/S [ ]

| FULL | PROVISIONAL GROUP D |

EXP DATE [ ]

39. Is Licence Group A being used as a provisional licence? | YES | NO |

G. Personal Details: Ask only for Date of Birth - calculate age from this.

40. Date of Birth [ ] Age [ ]

41. Sex [ ]

42. Town of Residence [ ]

43. County [ ]

44. Occupation (Now or before retirement or leaving previous job/If School pupil please state name of School)

....

....

45. Currently in work | YES | NO |

46. If NO to 45, how long out of work or retired? [ ] YEARS [ ] MONTHS

47. Estimated Annual PTWV mileage [ ] Business

Estimated Annual PTWV Mileage [ ] Pleasure

48. Are spectacles worn for driving? | YES | NO |

49. If YES to 48, were they worn at the time of RTA? | YES | NO |

50. If NO to 48, why was this? ....

....

....

....

....

This interview was conducted by ....

in the casualties

HOME	
HOSPITAL WARD	

APPENDIX 67

National Travel Survey Table 5.13 and 5.14

13 Average length of journey between home and work: household car availability by gross annual income of individual

	No car	One car	2 or more cars	All employed individuals	Number of journeys in sample (000's)
Under £750	1·9	2·1	2·7	2·1	3·3
£1,500	2·2	3·4	4·5	3·2	9·4
£2,000	3·7	4·6	5·1	4·3	7·1
£2,500	4·0	5·1	6·1	4·8	7·9
£3,000	4·6	6·3	7·4	5·9	6·3
£4,000	5·5	7·1	8·5	7·0	6·6
£5,000	10·2	8·3	11·9	9·1	2·4
	7·8	10·7	11·4	10·2	2·3
…e groups	3·8	5·5	7·2	5·2	
…of journeys in sample (000's)	13·9	25·0	6·4		45·3

14 Length of journey by average journey speed (7th day data)

Percentage

	Under one mile	One mile and under 2 miles	2 miles and under 3 miles	3 miles and under 5 miles	5 miles and under 10 miles	10 miles and under 15 miles	15 miles and over	All lengths	Number of journeys in sample (000's)
Under									
5 mph	87	38	13	3	1	–	–	26	3·4
10 mph	13	35	32	27	13	3	1	21	2·8
20 mph	1	26	42	55	42	27	13	31	4·1
30 mph	–	1	11	11	36	50	34	16	2·1
40 mph	–	–	2	2	7	16	40	5	0·7
	–	–	–	–	1	4	13	1	0·2
…ey speeds	100	100	100	100	100	100	100	100	
…of journeys in …e (000's)	2·5	2·5	1·7	2·4	2·5	0·9	0·8		13·4
…e speed (miles …our)	3·7	7·9	12·6	14·2	19·5	24·3	30·3	13·5	

APPENDIX 68

DTp Circular Road 12/75

A139–A151

Department of the Environment
Caxton House Tothill Street London SW1

Telephone 01-834 8540 ext-

RECEIVED
M7/17

The Chief Executive
County Councils (England)
Greater London Council
London Borough Councils
The Common Council of the City of London
District Councils - for information

Your reference Copy to M.7/15

Our reference RS 29/1/0166 Box HL.G. 98D. DH.H. RAS

Date 11 April 1975

Dear Sir

DUTY OF LOCAL AUTHORITIES TO PROMOTE ROAD SAFETY

1. Local authorities will be aware that section 8 of the Road Traffic Act 1974 was brought into operation on 1 March 1975 by Commencement No 1 Order made on 10 December. The effect was to replace the former permissive powers of certain local authorities to promote road safety with a statutory duty to carry out local road safety work in the manner prescribed by the Act. This circular offers advice to local authorities on the exercise of this duty and is particularly directed to those whose experience of work in this field has been limited. Conversely it is of less direct application to London where long-standing arrangements of the kind required by section 8 were not disturbed by local government reorganisation in 1974. This Circular also consolidates and amend where necessary advice given in Circulars Roads 14/69, 14/70 and 39/73 all of which ar now cancelled.

LEGISLATIVE FRAMEWORK

2. Section 8 of the Road Traffic Act 1974 amends section 38 of the Road Traffic Act 1972, so that each local authority is required to prepare and carry out a program of measures designed to promote road safety, and is empowered to make contributions to the cost of measures for promoting road safety taken by other authorities or bodies.

3. Subsection (2A) of section 38 of the Road Traffic Act 1972 as provided by section of the Road Traffic Act 1974, requires that in pursuance of the above duty local authorities -

(1) shall carry out studies into accidents arising out of the use of vehicles on roads or parts of roads, other than trunk roads, within their area;

(2) shall in the light of those studies, take such measures as appear to the authority to be appropriate to prevent such accidents, including the disseminatio of information and advice relating to the use of roads, the giving of practical training to road users or any class or description of road users, the constructio improvement, maintenance or repair of roads for which they are the highway authority and other measures taken in the exercise of their powers for controlli protecting or assisting the movement of traffic on roads;

(3) in constructing new roads, shall take such measures as appear to the authority to be appropriate to reduce the possibilities of such accidents when the roads come into use.

4. By virtue of section 186 of the Local Government Act 1972, the duties and powers specified in section 38 of the Road Traffic Act 1972, as amended, are exercised by county and metropolitan county councils and by the London authorities. However, by virtue of section 101 of the Local Government Act 1972, county and metropolitan county councils may enter into agency arrangements with district councils for the discharge of any of their functions.

EFFECTIVE USE OF AVAILABLE RESOURCES

5. The guidance given by Circular 171/74 on the need to restrict local authorities' expenditure and manpower requirements in 1975/76 makes it clear that this is not an opportune time for the assumption of new functions and the Department recognises therefore that local authorities may be constrained in the resources they can at present commit to work on the promotion of road safety. But road accidents cause 7,500 deaths and 350,000 injuries a year, at a cost to the community of £700 million, and without assiduous action both locally and nationally this waste of life and resources is likely to increase. The Authorities are therefore urged to take the ar ly hidden cost of road casualties into account in weighing the conflicting claims of different services.

6. On reorganisation some local authorities anticipated the enactment of section 8 in the restructuring and staffing of their highways departments; but others may be less well placed to expand road safety under present restrictions. In either case they will recognise the need to use their resources in a way that will give the best return for expenditure. Annex 1 (which is largely based on earlier circulars) is intended to help local authorities to understand how their activities fit in with action by other organisations, so that effort may be concerted. Publicity and road user training both warrant greater emphasis. The Department's national publicity is directed to fields where it appears to be most productive; local authorities arranging for complementary publicity and training in their areas will be able to obtain advice from the Royal Society for the Prevention of Accidents.

7. Annex 2 outlines an empirical approach to the promotion of road safety programmes, explaining current thinking on some of the many factors contributing to road safety. One of the most important of these is the small road improvement scheme. The Department wishes to stress the value it places on such schemes, based on detailed accident study. They produce great savings at little cost and justify high priority in local authorities' road safety programmes. Road works for which there are emotional local pressures often fail to save as many accidents and to produce as good economic returns as schemes less in the public eye. But to identify the most profitable locations for road improvements means careful and detailed accident analysis, study of individual problems and the evaluation of options. If authorities temporarily have spare staff capacity available in consequence of the reduction of capital expenditure on highways they may consider whether such staff could usefully undertake investigation and planning work of individual problems as an investment for the future. Indeed the carefully selected remedial work itself might well be undertaken at very small expense to other highways work, for it is not universally appreciated what a minute proportion of total highways expenditure such works take. Advice on the likely savings in life and resources to be achieved from these schemes and methods of determining investment levels are given in Annex 3, which deals with the preparation of road safety policies and programmes.

8. The Department has set up a Steering Group to study the revision of the accident report form Stats 19 and the logic of accident data recording and processing locally.

9. Expenditure on the study of road accidents and the carrying out of programmes of remedial measures of an engineering, publicity and training nature is eligible for Transport Supplementary Grant (within the general Rate Support Grant system) in accordance with the arrangements set out in Circulars 104/73, 27/74 and 60/74.

Yours faithfully

V G Curtis

V G CURTIS
Assistant Secretary

NOTE: Any telephone enquiries on this circular should be made to RSTL Division - 01 834 8540 Extn 402. Distribution enquiries to 01 212 4944.

3F

TAFF TRAINING AND LIAISON WITH OTHER BODIES

OYAL SOCIETY FOR THE PREVENTION OF ACCIDENTS (RoSPA)

Local government reorganisation and the imposition of new duties upon local uthorities by the Road Traffic Act 1974 required a change in the role and organisa-ion of RoSPA. The Secretary of State's former agency agreement with RoSPA has ccordingly been replaced by a new agreement more suited to the present circumstances. his provides for a reduced RoSPA territorial organisation but a strengthened central rganisation which, in consultation with the Secretary of State, will be responsible or research and development in local publicity and in road user training. In articular it will pay attention to methods of designing and evaluating local publicity nd training schemes, and will suggest ways and means of improving them. On behalf f the Secretary of State RoSPA will also provide training facilities for local uthority road safety staffs at all levels. Under the new agreement RoSPA will be vailable to advise the Department and local authorities on policies and programmes or the phased reduction of road accidents within the general framework of Transporta-ion Policies and Programmes.

The Department will continue to make a substantial grant to RoSPA and trusts that ocal authorities will also support the Society both by way of membership and by he purchase of the publicity material, teaching aids and so on required for local ublicity campaigns. In particular the Department hopes that local authorities will dopt the various RoSPA national training schemes wherever appropriate.

HE POLICE

Close co-operation with the police continues to be essential. In order to study oad accidents thoroughly, local authorities need access to police accident records, ncluding the statements of witnesses and those involved in the accidents; these are he only sources of clues to some accident factors but they may not be available until ny proceedings have been completed. The Department has set up a working party of nterested bodies to look into the logic of accident data recording at local level.

Many local accident problems can only be solved by a mixture of engineering, ducation and enforcement measures. The police should, therefore, be closely associated ith the problem solving process. Some police forces are setting up traffic management ections and these can contribute experience relevant to the prevention of accidents. Via their many contacts with road users the police can also support local authorities' fforts in the publicity and road user training fields. However, it is essential that e road safety work of local authorities' staff and the police should be planned ointly and integrated into a single programme.

OAD SAFETY EDUCATION IN SCHOOLS

The education of the young to take care of themselves and others on the roads ntinues to be of the utmost importance and local programmes of road safety education schools should receive a high priority. To be effective these need to be continuous; nual or termly visits to schools by road safety and police officers are insufficient themselves but give full value only if they are part of coordinated effort by alified teaching staff. Local authorities should therefore give every encouragement schools to arrange continuous road safety teaching programmes and ensure that there a teacher in each school who is responsible for these. The road safety officer ll need to provide teachers with specialist advice, local information on the factors volved in child accidents and supporting material.

PUBLIC INVOLVEMENT

6. Proper analysis of the local accident situation and programming of remedial action greatly simplifies the handling of complaints about alleged local danger spots because most of the information required to deal with these is available without further detailed study. It is possible to inform the complainant of the facts sooner and to give information regarding the relative priority of the problem. But in order not to distract staff engaged on analysis and remedial programming, many local authorities find it advantageous to have a separate officer handling complaints he should pass information received from complainants to those responsible for analys

7. In order to reduce to the minimum uninformed pressure for the less economically viable schemes it is essential to ensure that there is full opportunity for public participation in the preparation of policies and programmes for the phased reduction of road accidents. It is necessary to consult with local communities as well as district councils. Given his many contacts with the press and the public, the road safety officer operating in close liaison with the planners and engineers is well placed to carry out this work.

8. It is vital to maintain the interest and enthusiasm of local communities for local safety education and training schemes. When the county council does not enter into a formal agency arrangement with district councils, it should consider setting up area road safety committees serviced by an area road safety officer.

PUBLICITY CAMPAIGNS

9. Government publicity is designed to change attitudes and behaviour in ways which evaluation shows to be effective. Local authorities will be kept informed of national campaigns and will be consulted whenever the need arises, eg where the national publicity would benefit from local support.

COURSES AND OTHER GUIDANCE

10. The Department will continue to maintain close liaison with local authorities. As foreshadowed in Circular 39/73 the Department's Road Safety Units are in process of closure, but advice will continue to be available from its Regional Controllers (I and the RoSPA territorial office.

11. Draft copies of the Accident Investigation and Prevention manual foreshadowed in Circular 39/73 have now been distributed to local authorities having section 8 duties In collaboration with RoSPA it is planned to extend this manual to cover the Design and Evaluation of Local Publicity and Road User Training Schemes. The Department wil continue to hold its well established courses for local authority engineers on the Techniques of Accident Investigation and Prevention at its Training and Conference Centre, Cardington, Bedfordshire. Details of this course are available from the Department (RSTL Division) on request. In collaboration with the Department RoSPA a preparing a new course on the Design and Evaluation of Local Publicity and Training Schemes. It is intended that guidance on applied techniques of statistical evaluati and interpretation will form an integral part of the course and work on the developm of a suitable methodology continues.

LONDON AUTHORITIES

12. In London the Greater London Council and the London Boroughs have concurrent duties and powers to promote road safety. In practice some aspects of the road safe task (eg accident study for Greater London as a whole) are exercised by the GLC and others (eg local publicity and training) by the boroughs. The police and others concerned are represented on committees dealing with the various aspects of road safety.

AN EMPIRICAL APPROACH TO THE PROMOTION OF ROAD SAFETY PROGRAMMES

INTRODUCTION

1. A road accident may be said to occur when a road user fails to cope with his environment, the latter being taken to include everything which impinges or fails to impinge upon the consciousness of the road user. Therefore there are two approaches to reducing the risk of road accidents:-

(1) The environment may be changed in such a way as to reduce the severity of the problems faced by the road user.

(2) The road user's ability to cope with these problems may be improved by the provision of information and practical training and in the ultimate by enforcement.

CHANGING THE ENVIRONMENT

Major road works

2. While major road works make a substantial contribution to reducing accident risks, they are seldom economically justified on these grounds alone. Moreoever, because they tend to generate additional traffic they frequently do not reduce the absolute number of accidents to the degree expected. For this reason they are not widely regarded as a cost effective means of dealing with problems solely related to the prevention of accidents.

Small road improvement schemes

3. It is impossible to assign a single cause to road accidents, which are random multifactor events. The factors interact in a complex manner and each does not contribute a fixed element of risk. Reducing the risk attributable to one factor leads to a reduction in the risk attributable to the remainder. Therefore the aim is to identify one or two factors common to a substantial proportion of the accidents in a cluster and to treat these by way of small road improvements.

4. Small road improvements fall into two broad categories: those which seek to raise generally the design standards at the site; and those which simply seek to reduce the risk of recurrence in one or two selected accident factors. Raising design standards generally is usually much more expensive than treating one or two accident factors selected as a result of detailed study. Moreover evaluation of a substantial number of small road improvement schemes has shown that the raising of design standards generally is much less likely to achieve a reduction in accidents than are less expensive schemes which seek to treat carefully selected accident factors. Therefore the raising of design standards generally is not widely regarded as a cost effective means of dealing with sites where the problem is solely one of preventing accidents.

PROGRAMME OF SMALL ROAD IMPROVEMENT SCHEMES

Mass programmes

5. It will often be found that certain factors are common to groups of accidents scattered widely throughout an area - for example, skidding, darkness, nose to tail

collisions with vehicles waiting to turn right from a main road, overshooting a give-way line, misjudgement when restarting from a give-way line. These are factors for which there are well tried remedies, so that once the sites have been identified by analysis of the recorded accident data little or no detailed accident study is required in order to prepare programmes of treatment. Consequently, the overhead costs of such schemes are relatively small and the programmes easy to manage.

Route programmes

6. It sometimes happens that certain routes through a county or certain radial routes into towns and cities exhibit a higher than average accident risk when compared with similar roads and conditions. In these circumstances better results can usually be achieved by a coordinated programme of small road improvements and publicity along the entire route rather than by sporadic treatment of certain sites.

Neighbourhood programmes

7. Particularly in older towns and cities there are some neighbourhoods which have a higher than average density of accidents although the individual clusters may be quite small. Here again better results may be obtained from a coordinated programme of small road improvements and publicity than can be obtained from sporadic treatment of certain sites. Quite often such programmes can be related to general improvement areas.

Single site programmes

8. After accounting for the sites included in the foregoing special programmes there will be a substantial number of sites requiring individual treatment. These will normally be widely scattered throughout the county, and a programme will be required to deal with them in order of priority. Quite often these sites require intensive study in order to identify common accident factors susceptible to inexpensive remedy.

Improved signing programmes

9. A recent study in depth of over 1,000 accidents by the Transport and Road Research Laboratory revealed that in about 5% inadequate or badly sited signs were present and could reasonably be assumed to be a factor. Analysis of accident clusters may reveal an obvious need for attention to signs (eg overtaking accidents on a bend where the double white line criteria are met) but the more subtle and less easily recognised effects of poor signing ought not to be overlooked (eg hesitation and confusion from lack of continuity of good direction signs; single vehicle accidents associated with poor lane and edge lining.) Although proper priority should be given to marking hazards, care is needed to avoid the devaluation that follows over-proliferation if warning signs are provided in response to emotional appeals. Traffic signs need to be considered as an integral part of any large or small scheme at an early stage. This is particularly important where traffic management measures are involved. Sophisticated management schemes which cannot be conveyed simply by standard prescribed signs are unlikely to be effective or safe. Bringing direction signing up to the modern standard set out in the Traffic Signs Manual and subsequent relevant Roads Circulars should be a phased programme giving precedence to primary routes and other busy traffic routes. The programme needs to be planned in close association with neighbouring highway authorities to ensure consistency and regular adaptation to meet changed road patterns

Speed limit review programmes

10. The Department's speed limit policy is set out in Circulars Roads 10/69, 75/70 and 17/73 which give advice on the implementation of the policy, and set criteria which will enable local authorities to identify stretches of road on which speed limits will be of real value, and the levels at which these should be set. The Department's aim is a consistent pattern of realistic speed limits throughout the country. Such limits make the greatest contribution to accident prevention when they are set at levels which the majority of drivers will respect and which will enable the police to enforce them.

Programmes for the protection of pedestrians

11. Physical aids for the protection of pedestrians are discussed in the Department's Manual on Pedestrian Safety. These fall into two broad groups: a. the segregation of pedestrians and vehicular traffic by careful planning, using pedestrian precincts, separate pedestrian ways and guard rails; and b. the provision of special crossing facilities such as zebra crossings, pelican crossings and pedestrian phases at traffic signal controlled junctions. The analysis of local accidents will identify the ways in which the local arrangements for the protection of pedestrians require strengthening, and enable suitable programmes of remedial action to be drawn up.

ROAD USER PUBLICITY PROGRAMMES

12. Local publicity programmes fall into two categories: a. those which aim to provide road users with essential local information related to the use of local traffic management schemes, parking facilities, places and periods of high risk and so on; and b. those which aim to change road user attitudes and behaviour to the specific local risks revealed by local accident analysis. The former is a straightforward public relations exercise using well established principles. The latter is a more complex process requiring understanding of human motivation and of principles of behaviour modification.

Changing road user attitudes and behaviour

13. The evaluation of past publicity campaigns together with research within the fields of psychology and sociology shows that road user attitudes and behaviour can be changed by publicity, provided that there is a predisposition to change on the part of the road user concerned. His readiness is strengthened if the message is clearly seen to be applicable to him so that it is to his advantage to respond to it. Hence publicity should be directed to local risks which can be easily recognised by the road user once his attention is drawn to them. His response will depend upon the conciseness and clarity with which information on how to deal with these risks is presented.

14. However, the person needs to be heavily exposed to the chosen media if his attitudes and behaviour are to be successfully changed. It is for this reason that local authorities working on restricted budgets and without access to the mass media are advised to concentrate upon one selected group of road users in one selected area at a time. A series of small concentrated schemes can of course be programmed over a suitable period of time. It has been demonstrated that lightweight and diffuse publicity schemes are ineffective.

15. It is easier to influence the behaviour of road users when stationary (eg to fasten a seat belt or adjust a mirror) than it is to influence behaviour when moving (eg to adopt a certain overtaking procedure or maintain a proper separation distance.) This is not to say that there should not be experimentation with the latter type of publicity, but every scheme should be carefully evaluated in order to assess its effectiveness and obtain the information required to improve future schemes of this kind.

16. General exhortations such as "Mind how you go" and "Mind that Child" have not been found to be a satisfactory means of influencing road user attitudes and behaviour The recipient of the message needs to be clearly told precisely what to do and how to do it. The more specific the message the better. Such gimmicks as pencils or paper serviettes carrying vague messages like "Take care on the roads" or "Have you taken the Cycling Proficiency Test?" are of minimal value.

17. The more personal the method of communication the more successful it is likely to be. A talk to a group of road users is more likely to be effective than a poster message; personal instruction is likely to be more effective than group instruction. But the more personalised the method of communication the more restricted is the audience which can be reached with the same resources. Consequently posters and newspaper advertising together with the occasional well chosen gimmick will remain important forms of communication. The proper balance between these various forms of communication, having regard to the resources available, can only be determined locall by experimentation and continuous evaluation.

18. The evaluation of past national publicity campaigns suggests that the effect of publicity reaches its peak in about three to four weeks, after which decay sets in, although this may taper off before reaching the original level. This suggests that local campaigns should be arranged in monthly bursts.

ROAD USER TRAINING PROGRAMMES

19. Road user training programmes fall into three broad categories: a. those which aim to provide the road user with the basic skills required, eg the instruction of learner drivers or young cyclists; b. those which aim to change attitudes and behaviour, eg driver improvement classes and pre-driver training in schools; and c. those which attempt to achieve both objectives simultaneously, eg driver training in schools using a vehicle.

20. Evidence suggests that courses which provide instruction in basic skills are effective when properly designed. But there is evidence from America and the Salford experiment to show that courses which aim to change attitudes and behaviour may lead to a further increase in basic skills without necessarily leading to an increased reduction in accidents.

21. Recent research suggests that the reason why attempts to change road user attitudes and behaviour have not been particularly successful in reducing accidents among those taking part, lies in the fact that the aim of such courses has been to persuade road users not to take risks. The underlying presumption is that road users are fully aware of the risks, but evidence suggests that accidents arise because the road user concerned is unable to recognise the rapid build up of risk as it takes place. This suggests that those courses which seek to change road user attitudes and behaviour as opposed to providing basic skills should be radically reappraised, and fresh approaches to the problem developed and carefully evaluated. Further advice on methods of evaluation is given at Annex 3.

PREPARATION OF POLICIES AND PROGRAMMES FOR THE PROMOTION OF ROAD SAFETY

SMALL ROAD IMPROVEMENTS BASED ON DETAILED ACCIDENT STUDY

Essential parameters

1. To prepare realistic and cost effective policies and programmes of small road improvements based on detailed accident study it is necessary to establish three local parameters:

(1) the proportion of accident locations which are susceptible to treatment by inexpensive small road improvements;

(2) the average accident reduction likely to be achieved at the locations so treated;

(3) the average benefit-cost ratio likely to be achieved.

2. Often it will not be possible to establish these local parameters until the first phase of programmes has been carried out and properly evaluated. Therefore, when preparing the initial programmes it will be necessary to make certain assumptions regarding the parameters. The experience of the Department's Road Safety Units and certain local authorities who have already carried out similar programmes suggests that the following values of the three parameters may be assumed in the absence of more precise local data:

(1) approximately one-third of all accident locations are susceptible to treatment by inexpensive small road improvements based on detailed accident study;

(2) a one-third reduction in accidents may be expected on average at the locations so treated;

(3) a discounted benefit-cost ratio of 4 to 1 may be expected on average (approximately equivalent to a first year rate of return of 50%).

Accident reduction target

3. Assuming the values of the parameters given at 2(1) and 2(2) the potential accident saving due to small road improvements alone is of the order of one-ninth. This may be taken as the target accident reduction for small road improvements. The limitation of resources means that this target will have to be achieved by stages.

4. Having determined the local target it is necessary to estimate the investment required over the complete life of the programme in order to achieve that target. While the discounted economic rate of return should always be used when ranking schemes in order of priority, the first year rate of return may be used for sake of simplicity when estimating the level of investment required to achieve the local target. An example will best show how this can be done.

Estimating long term investment required to achieve target

5. Assume that there are 5000 injury accidents per year in the county, and that the cost of an injury accident is £2,000 per year (see note below). The annual cost of accidents in the county will then be £10M. If for the sake of simplicity it is assumed that the potential accident reduction over the complete life of programme is 10%, the annual saving in accident costs will be £1M. Assuming an average first year

rate of return of 50% a total investment of £2M will be required, spread over the complete life of the programme to achieve this target.

6. It follows that if say £50,000 per year is available for small road improvements the programme will take 40 years to complete, or eight 5-year phases. Assuming a steady investment of £50,000 per year at constant prices the accident reduction will be ½% in the first year and will increase by ½% per year on average. The discounted benefits will ultimately be of the order of £8M for an expenditure of £2M.

ROAD USER PUBLICITY AND TRAINING PROGRAMMES

Need for publicity and training

7. Some 90% of all road accidents exhibit a predominance of human factors. While many of these human factors may be greatly influenced by engineering remedies of the kind discussed earlier, there are certain classes of road user (eg young and elderly pedestrians, riders of two-wheeled vehicles and young drivers) who will remain especially vulnerable no matter how well engineered a site may be. It would be social unacceptable not to take steps to protect these particular people on the grounds that this work may not produce the same accident savings and consequently the same economic rates of return as engineering based remedies, or because it is difficult to evaluate the results of publicity and training remedies at the present time.

Level of investment

8. It will therefore be necessary to determine a proper balance between investment on small road improvement programmes and road user publicity and training programmes. Since few if any well established parameters are available such a balance will need to be arrived at on the basis of local knowledge and experience of past practice. It is of the utmost importance, however, that steps should be taken to evaluate publicity and training programmes in order to develop parameters which will assist in determinin a proper balance of investment. Furthermore, it is only through proper programmes of evaluation that the information necessary for the proper design of publicity and training programmes can be gained.

Evaluation methods

9. It is notoriously difficult to evaluate such broad areas of work as poster advertising or the training of school children, so that it is necessary to select comparatively small areas of work and to prepare a programme for evaluating these over say 5 years. Each of these small areas of work will need to be designed in such a way that it is capable of being evaluated. In fact the evaluation process needs to be designed into the scheme from the outset.

10. Evaluation of selected publicity and training schemes can be carried out in two stages. In the first stage it is necessary to discover whether or not road user behaviour has been changed in the manner intended, the established principles of survey and market research being utilised. In the second stage, which will normally be about 3 years later, it is necessary to discover whether or not any change in road user behaviour has led to a reduction in the appropriate type of accidents. At this stage some statistical interpretation of the results will be required.

Examples

11. At a high risk city centre site it is proposed to mount a publicity campaign to encourage pedestrians to use the crossing instead of crossing within 50 yards of it.

Before the start of the campaign a pedestrian count needs to be taken to establish the ratio of pedestrians crossing on the crossing to those crossing within 50 yards of it. After the campaign the count needs to be repeated at intervals to establish whether or not this ratio has increased and to establish the decay rate. After a suitable period the accidents need to be analysed in order to determine whether any change in number, rate or type has taken place. Evaluation of this kind will not only provide a measure of the effectiveness of the campaign; it will also provide valuable information for improving the design of future campaigns.

12. It is desired to evaluate the effectiveness of training schoolchildren. It would be an impossible task to carry this out on a county wide basis, but a possible approach would be to identify a group of schools in some compact area having a particularly high number of child accidents. It would then be necessary to obtain the full accident reports, survey the accident sites and obtain as much information about the children involved as is possible. In this way the dominant accident factors could be identified, and a tailor-made training programme devised to help the children to combat the particular risks they have to face. The before and after data necessary to evaluate any change in behaviour can be obtained by personal survey or the use of video equipment. Again, after a suitable period a statistical analysis of the accidents will need to be carried out in order to determine whether or not there has been a reduction or change in type. Because children move on from class to class and school to school, the analytical, training and evaluation stages of the project will need to be carefully phased.

13. Further work on the development of methods of evaluating local road safety publicity and training schemes is being carried out by the Department in collaboration with RoSPA who are concurrently preparing a course for local authority road safety staff on the Design and Evaluation of Local Publicity and Training Schemes. This will eventually replace the Department's course for road safety officers which has been held in abeyance.

NOTE

In paragraph 5 the cost of £2,000per accident was selected for sake of arithmetic simplicity. The cost of various types of accidents at 30 June 1974 values is shown in the table. These are revised annually. It is advisable to use the value obtained by taking the total national cost of all accidents divided by the national annual total of personal injury accidents given on the bottom line of the table. In this way account will be taken of the attendant damage only accidents. Separate values are given for various classes of road and the cost of accidents on these can be computed separately and summed to obtain the total cost. If the necessary data are not available it may be assumed that 75% of all accidents occur on roads with a speed limit of 40 mph or less and that 25% occur on roads with a speed limit in excess of 40 mph.

TABLE : THE COST OF ACCIDENTS AS AT 30 JUNE 1974 (£)

	Roads subject to 40 mph limit or less	Roads subject to limits in excess of 40 mph	Motorways	All roads
Fatal accident	28,000	33,000	38,000	30,000
Serious accident	2,000	2,800	3,000	2,200
Slight accident	350	600	650	400
Damage-only accident	160	200	230	170
Average injury accident	1,300	3,000	3,600	1,700
Total cost of all accidents divided by the number of injury accidents	2,300	3,900	4,600	2,700
Number of damage-only accidents per injury accident	6.4	4.6	4.5	6.0

NOTE: Costs may be expected to increase at a rate of 3% pa in real terms in the case of injury accidents, and to remain constant in real terms in the case of damage-only accidents.

APPENDIX 69

Economic Rates of Return

A152-A155

Chapter 11

Cost-benefit analysis

11·1 **Introduction**

Cost-benefit analysis is the name given to the procedure devised to work out how much would be saved in financial terms by implementing a scheme.

As finance becomes more scarce, the need to obtain value for money spent increases. Although RSOs may not be required to ensure financial benefit from their programmes, a measure of cost benefit can be used to help choose between two or more optional plans of action.

The criteria that will affect the decisions to be made are:

- The statistical significance of the accident data.
- The likely effectiveness of the remedial measure.
- The discounted economic rate of return on expenditure.
- Political preferences from elected committees.
- Resource allocation and availability.

The statistical significance of the accident data and likely effectiveness of the remedial measure are based on past-accident records and the results of actions previously tried out. The discounted economic rate of return is dealt with below in section 11·3. Political preferences have to be considered but should not normally dictate choice. Competing demands for resources will influence decision making.

11·2 **Benefits and costs**

The **Accident Investigation and Prevention Manual** gives some examples of calculations of benefits and costs. For larger and more complex schemes there is a government computer program (COBA).

The problem of costing human life is very difficult but has been attempted in terms of loss of working ability for society and in terms of emotional loss to a family. Whereas the first of these factors can be calculated roughly, given age, sex and social status of the person, the second has been found much more difficult to assess. When figures are given for the cost of an accident, there is usually a notional amount added for the emotional effects but whether this sum is realistic is open to debate.

Figures for the costs of fatal, serious, slight and damage-only road traffic accidents are published annually by the DTp in Highways Economic Note (see Section 6 for the most recent) and all calculations involving accident savings need to use these figures, however unrealistic the amounts, if valid comparisons of schemes are to be made.

11·3 The discounted economic rate of return

When calculating the discounted economic rate of return of a scheme there are two major factors to be taken into account:

- The capital cost of the scheme.
- The benefits obtained over the life of the scheme computed at current value.

The capital cost will be a once and for all payment whereas the benefits may take several years to accrue.

When one scheme is chosen and capital is spent on it, other schemes cannot be implemented, so there is a loss of potential benefit from them. This loss of benefit reduces that actually gained from the chosen scheme. The rate of loss due to not spending the capital in another way is called the **discount rate.** However, because prices may increase in the future this rate is adjusted and is then called the **net discount rate.** It is the latter that is always used in calculations.

Benefits over the life of a scheme can be calculated if the likely first year saving is known. The first year benefit (B) multiplied by the factor from the net discount table (V) (see table at end of chapter) for the relevant number of years (i.e. expected life of the scheme) will give the expected total benefits. For example: if the benefit in the first year is £1,000 and the life of the scheme is 15 years and the net discount rate is 7%, then the total benefit over 15 years will be £1,000 × 9.108 = £9,108, where 9.108 is the multiplier from the net discount table.

This is usually written BV and is the benefit receivable over the full life of the scheme.

The first year benefit (B) must take account of the net annual value of accident savings as well as any changes in maintenance costs and journey costs which are brought about by the scheme. So, if

A = accident savings
M = difference in maintenance costs
J = difference in journey costs

then $B = A \pm M \pm J$

and $BV = (A \pm M \pm J)V$.

However once the capital has been spent it cannot be spent again. So the capital cost (C) must be subtracted from the benefit received to produce a net benefit over the life of the scheme, i.e. BV − C gives the net benefit.

The discounted economic rate of return is the net benefit receivable over the life of the scheme expressed as a percentage of the original cost. The discounted economic rate of return is therefore,

$$\frac{BV - C}{C} \times 100\%$$

Putting B a different way into the formula above, the discounted economic rate of return is given by,

$$\frac{(A \pm M \pm J)V - C}{C} \times 100\%$$

This is the basic formula used for working out cost benefit analysis for comparison of options. If more detail is required there is a vast array of economics books available that cover the subject.

Discount Multiplier Tables 1

RoSPA

Years 0 to	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	Years 0 to
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	1
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528	2
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106	3
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	3.102	3.037	3.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589	4
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991	5
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326	6
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605	7
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837	8
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031	9
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192	10
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327	11
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439	12
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533	13
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611	14
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675	15
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730	16
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775	17
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812	18
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843	19
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.818	9.129	8.514	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870	20
21	18.857	17.011	15.415	14.029	12.821	11.764	10.836	10.017	9.292	8.649	8.075	7.562	7.102	6.687	6.312	5.973	5.665	5.384	5.127	4.891	21
22	19.660	17.658	15.937	14.451	13.163	12.042	11.061	10.201	9.442	8.772	8.176	7.645	7.170	6.743	6.359	6.011	5.696	5.410	5.149	4.909	22
23	20.456	18.292	16.444	14.857	13.489	12.303	11.272	10.371	9.580	8.883	8.266	7.718	7.230	6.792	6.399	6.044	5.723	5.432	5.167	4.925	23
24	21.243	18.914	16.936	15.247	13.799	12.550	11.469	10.529	9.707	8.985	8.348	7.784	7.283	6.835	6.434	6.073	5.746	5.451	5.182	4.937	24
25	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.823	9.077	8.422	7.843	7.330	6.873	6.464	6.097	5.766	5.467	5.195	4.948	25
26	22.795	20.121	17.877	15.983	14.375	13.003	11.826	10.810	9.929	9.161	8.488	7.896	7.372	6.906	6.491	6.118	5.793	5.480	5.206	4.956	26
27	23.560	20.707	18.327	16.330	14.643	13.211	11.987	10.935	10.027	9.237	8.548	7.943	7.409	6.935	6.514	6.136	5.798	5.492	5.215	4.964	27
28	24.316	21.281	18.764	16.663	14.898	13.406	12.137	11.051	10.116	9.307	8.602	7.984	7.441	6.961	6.534	6.152	5.810	5.502	5.223	4.970	28
29	25.066	21.844	19.188	16.984	15.141	13.591	12.278	11.158	10.198	9.370	8.650	8.022	7.470	6.983	6.551	6.166	5.820	5.510	5.229	4.975	29
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.427	8.694	8.055	7.496	7.003	6.566	6.177	5.829	5.517	5.235	4.979	30
31	26.542	22.938	20.000	17.588	15.593	13.929	12.532	11.350	10.343	9.479	8.733	8.085	7.518	7.020	6.579	6.187	5.837	5.523	5.239	4.982	31
32	27.270	23.468	20.389	17.874	15.803	14.084	12.647	11.435	10.406	9.526	8.769	8.112	7.538	7.035	6.591	6.196	5.844	5.528	5.243	4.985	32
33	27.990	23.989	20.766	18.148	16.003	14.230	12.754	11.514	10.464	9.569	8.801	8.135	7.556	7.048	6.600	6.203	5.849	5.532	5.246	4.988	33
34	28.703	24.499	21.132	18.411	16.193	14.368	12.854	11.587	10.518	9.609	8.829	8.157	7.572	7.060	6.609	6.210	5.854	5.536	5.249	4.990	34
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.644	8.855	8.176	7.586	7.070	6.617	6.215	5.858	5.539	5.251	4.992	35
36	30.108	25.489	21.832	18.908	16.547	14.621	13.035	11.717	10.612	9.677	8.879	8.192	7.598	7.079	6.623	6.220	5.862	5.541	5.253	4.993	36
37	30.800	25.969	22.167	19.143	16.711	14.737	13.117	11.775	10.653	9.706	8.900	8.208	7.609	7.087	6.629	6.224	5.865	5.543	5.255	4.994	37
38	31.485	26.441	22.492	19.368	16.868	14.846	13.193	11.829	10.691	9.733	8.919	8.221	7.618	7.094	6.634	6.228	5.867	5.545	5.256	4.995	38
39	32.163	26.903	22.808	19.584	17.017	14.949	13.265	11.879	10.726	9.757	8.936	8.233	7.627	7.100	6.638	6.231	5.869	5.547	5.257	4.996	39
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.779	8.951	8.244	7.634	7.105	6.642	6.233	5.871	5.548	5.258	4.997	40
41	33.500	27.799	23.412	19.993	17.294	15.138	13.394	11.967	10.787	9.799	8.965	8.253	7.641	7.110	6.645	6.236	5.873	5.549	5.259	5.997	41
42	34.158	28.235	23.701	20.186	17.423	15.225	13.452	12.007	10.813	9.817	8.977	8.262	7.647	7.114	6.648	6.238	5.874	5.550	5.260	4.998	42
43	34.810	28.662	23.982	20.371	17.546	15.306	13.507	12.043	10.838	9.834	8.989	8.270	7.652	7.117	6.650	6.239	5.875	5.551	5.260	4.998	43
44	35.455	29.080	24.254	20.549	17.663	15.383	13.558	12.077	10.861	9.849	8.999	8.276	7.657	7.120	6.652	6.241	5.876	5.552	5.261	4.998	44
45	36.095	29.490	24.519	20.720	17.774	15.456	13.606	12.108	10.881	9.863	9.008	8.283	7.661	7.123	6.654	6.242	5.877	5.552	5.261	4.999	45
46	36.727	29.892	24.775	20.885	17.880	15.524	13.650	12.137	10.900	9.875	9.016	8.288	7.664	7.126	6.656	6.243	5.878	5.553	5.261	4.999	46
47	37.354	30.287	25.025	21.043	17.981	15.589	13.692	12.164	10.918	9.887	9.024	8.293	7.668	7.128	6.657	6.244	5.879	5.553	5.262	4.999	47
48	37.974	30.673	25.267	21.195	18.077	15.650	13.730	12.189	10.934	9.897	9.030	8.297	7.671	7.130	6.659	6.245	5.879	5.554	5.262	4.999	48
49	38.588	31.052	25.502	21.341	18.169	15.708	13.767	12.212	10.948	9.906	9.036	8.301	7.673	7.131	6.660	6.246	5.880	5.554	5.262	4.999	49
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.915	9.042	8.304	7.675	7.133	6.661	6.246	5.880	5.554	5.262	4.999	50

Discount Multiplier Tables 2

RoSPA

Years 0 to	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	0.826	0.820	0.813	0.806	0.800	0.794	0.787	0.781	0.775	0.769
2	1.509	1.492	1.474	1.457	1.440	1.424	1.407	1.392	1.376	1.361
3	2.074	2.042	2.011	1.981	1.952	1.923	1.896	1.868	1.842	1.816
4	2.540	2.494	2.448	2.404	2.362	2.320	2.280	2.241	2.203	2.166
5	2.926	2.864	2.803	2.745	2.689	2.635	2.583	2.532	2.483	2.436
6	3.245	3.167	3.092	3.020	2.951	2.885	2.821	2.759	2.700	2.643
7	3.508	3.416	3.327	3.242	3.161	3.083	3.009	2.937	2.868	2.802
8	3.726	3.619	3.518	3.421	3.329	3.241	3.156	3.076	2.999	2.925
9	3.905	3.786	3.673	3.566	3.463	3.366	3.273	3.184	3.100	3.019
10	4.054	3.923	3.799	3.682	3.571	3.465	3.364	3.269	3.178	3.092
11	4.177	4.035	3.902	3.776	3.656	3.543	3.437	3.335	3.239	3.147
12	4.278	4.127	3.985	3.851	3.725	3.606	3.493	3.387	3.286	3.190
13	4.362	4.203	4.053	3.912	3.780	3.656	3.538	3.427	3.322	3.223
14	4.432	4.265	4.108	3.962	3.824	3.695	3.573	3.459	3.351	3.249
15	4.489	4.315	4.153	4.001	3.859	3.726	3.601	3.483	3.373	3.268
16	4.536	4.357	4.189	4.033	3.887	3.751	3.623	3.503	3.390	3.283
17	4.576	4.391	4.219	4.059	3.910	3.771	3.640	3.518	3.403	3.295
18	4.608	4.419	4.243	4.080	3.928	3.786	3.654	3.529	3.413	3.304
19	4.635	4.442	4.263	4.097	3.942	3.799	3.664	3.539	3.421	3.311
20	4.657	4.460	4.279	4.110	3.954	3.808	3.673	3.546	3.427	3.316
21	4.675	4.476	4.292	4.121	3.963	3.816	3.679	3.551	3.432	3.320
22	4.690	4.488	4.302	4.130	3.970	3.822	3.684	3.556	3.436	3.323
23	4.703	4.499	4.311	4.137	3.976	3.827	3.689	3.559	3.438	3.325
24	4.713	4.507	4.318	4.143	3.981	3.831	3.692	3.562	3.441	3.327
25	4.721	4.514	4.323	4.147	3.985	3.834	3.694	3.564	3.442	3.329
26	4.728	4.520	4.328	4.151	3.988	3.837	3.696	3.566	3.444	3.330
27	4.734	4.524	4.332	4.154	3.990	3.839	3.698	3.567	3.445	3.331
28	4.739	4.528	4.335	4.157	3.992	3.840	3.699	3.568	3.446	3.331
29	4.743	4.531	4.337	4.159	3.994	3.841	3.700	3.569	3.446	3.332
30	4.746	4.534	4.339	4.160	3.995	3.842	3.701	3.569	3.447	3.332
31	4.749	4.536	4.341	4.161	3.996	3.843	3.701	3.570	3.447	3.332
32	4.751	4.538	4.342	4.162	3.997	3.844	3.702	3.570	3.447	3.333
33	4.753	4.539	4.343	4.163	3.997	3.844	3.702	3.570	3.448	3.333
34	4.755	4.540	4.344	4.164	3.998	3.845	3.703	3.571	3.448	3.333
35	4.756	4.541	4.345	4.164	3.998	3.845	3.703	3.571	3.448	3.333
36	4.757	4.542	4.345	4.165	3.999	3.845	3.703	3.571	3.448	3.333
37	4.758	4.543	4.346	4.165	3.999	3.845	3.703	3.571	3.448	3.333
38	4.759	4.543	4.346	4.165	3.999	3.846	3.703	3.571	3.448	3.333
39	4.759	4.544	4.346	4.166	3.999	3.846	3.703	3.571	4.448	3.333
40	4.760	4.554	4.347	4.166	3.999	3.846	3.703	3.571	3.448	3.333
41	4.760	4.544	4.347	4.166	4.000	3.846	3.703	3.571	3.448	3.333
42	4.760	4.544	4.347	4.166	4.000	3.846	3.704			
43	4.761	4.545								
44	4.761									
45	4.761									
46	4.761									
47	4.761									
48	4.761									
49	4.761									
50	4.762	4.545	4.348	4.167	4.000	3.846	3.704	3.571	3.448	3.333

31%	32%	33%	34%	35%	36%	37%	38%	39%	40%	Years 0 to
0.763	0.758	0.752	0.746	0.741	0.735	0.730	0.725	0.719	0.714	1
1.346	1.331	1.317	1.303	1.289	1.276	1.263	1.250	1.237	1.224	2
1.791	1.766	1.742	1.719	1.696	1.673	1.652	1.630	1.609	1.589	3
2.130	2.096	2.062	2.029	1.997	1.966	1.935	1.906	1.877	1.849	4
2.390	2.345	2.302	2.260	2.220	2.181	2.143	2.106	2.070	2.035	5
2.588	2.534	2.483	2.433	2.385	2.339	2.294	2.251	2.209	2.168	6
2.739	2.677	2.619	2.562	2.508	2.455	2.404	2.355	2.308	2.263	7
2.854	2.786	2.721	2.658	2.598	2.540	2.485	2.432	2.380	2.331	8
2.942	2.868	2.798	2.730	2.665	2.603	2.544	2.487	2.432	2.379	9
3.009	2.930	2.855	2.784	2.715	2.649	2.587	2.527	2.469	2.414	10
3.060	2.978	2.899	2.824	2.752	2.683	2.618	2.555	2.496	2.438	11
3.100	3.013	2.931	2.853	2.779	2.708	2.641	2.576	2.515	2.456	12
3.129	3.040	2.956	2.876	2.799	2.727	2.658	2.592	2.529	2.469	13
3.152	3.061	2.974	2.892	2.814	2.740	2.670	2.603	2.539	2.478	14
3.170	3.076	2.988	2.905	2.825	2.750	2.679	2.611	2.546	2.484	15
3.183	3.088	2.999	2.914	2.834	2.757	2.685	2.616	2.551	2.489	16
3.193	3.097	3.007	2.921	2.840	2.763	2.690	2.621	2.555	2.492	17
3.201	3.104	3.012	2.926	2.844	2.767	2.693	2.624	2.557	2.494	18
3.207	3.109	3.017	2.930	2.848	2.770	2.696	2.626	2.559	2.496	19
3.211	3.113	3.020	2.933	2.850	2.772	2.698	2.627	2.561	2.497	20
3.215	3.116	3.023	2.935	2.852	2.773	2.699	2.629	2.562	2.498	21
3.217	3.118	3.025	2.936	2.853	2.775	2.700	2.629	2.562	2.498	22
3.219	3.120	3.026	2.938	2.854	2.775	2.701	2.630	2.563	2.499	23
3.221	3.121	3.027	2.939	2.855	2.776	2.701	2.630	2.563	2.499	24
3.222	3.122	3.028	2.939	2.856	2.777	2.702	2.631	2.563	2.499	25
3.223	3.123	3.028	2.940	2.856	2.777	2.702	2.631	2.564	2.500	26
3.224	3.123	3.029	2.940	2.856	2.777	2.702	2.631			27
3.224	3.124	3.029	2.940	2.857	2.777	2.702	2.631			28
3.225	3.124	3.030	2.941	2.857	2.777	2.702	2.631			29
3.225	3.124	3.030	2.941	2.857	2.778	2.702	2.631			30
3.225	3.124	3.030	2.941	2.857	2.778	2.703	2.631			31
3.225	3.125	3.030	2.941	2.857	2.778	2.703	2.631			32
3.225	3.125	4.030	2.941	2.857	2.778	2.703	2.632			33
3.225	3.125									34
3.226	3.125									35
3.226	3.125									36
3.226										37
3.226										38
3.226										39
3.226										40
3.226										41
										42
										43
										44
										45
										46
										47
										48
										49
3.226	3.125	3.030	2.941	2.857	2.778	2.703	2.632	2.564	2.500	50

APPENDIX 70

Paper to RoSPA Conference

Research

Roger Saunders discussed the approach to road safety education by Dorset County Council. In 1982, a working party consisting of teachers' advisers, and road safety officers was established. It was agreed that traffic education should be available to all children. It was thought that an examination approach was inappropriate and that the best vehicle for road safety was through personal and social education. (PSE).

A survey undertaken at the 54 secondary establishments in Dorset, revealed that very few schools had any active road safety involvement. The working party had to consider how to make traffic education available in an efficient and effective way to all seconary school children at some stage in their school career.

The working party agreed that road safety must be available to all children and not be an option. Road safety officers in the county ensured that they made contact with a member of staff responsible for PSE in the school. It was also considered that maintenance of any scheme is crucial and that monitoring is a useful tool. Detailed school visit forms are completed by road safety officers after a school visit which include information such as the number of students on rol, names of teachers responsible for PSE, size of groups for traffic education and the frequency of sessions.

In the first operational year of the project, some eight per cent of students undertook traffic programmes and it is hoped that the project will increase this figure to 16—20 per cent.

Roger Saunders from Dorset

Seconding the motion, Frazer Dryburgh from RoSPA said that if the road safety movement were being honest it would admit that it was not ready. He added that as far as road safety officers were concerned, secondary education was mentioned in one line in their official handbook. He said that those who had been teachers before becoming road safety officers were more fortunate than most, as they understood the system, but many do not, and this does not help the overall case. There is a need to train the trainers to ensure they are considered experts in their field.

Opposing the motion, Roger Saunders refuted these allegations claiming that growing numbers of road safety officers are now from the teaching profession, or other highly qualified professions. He claimed that at present more safety officers need to publicise themselves more as many teachers do not know of their existence. It was also pointed out that most road safety work is too piecemeal, and lacking in structure and co-ordination.

Summing up the conference Gordon Craig, former dean of the Faculty of Education, Sheffield City Polytechnic, felt that it might be wise at present not to have a single policy, if the educational world is at present in confusion, perhaps it would be better to continue with several incentives. The aim should be to develop first class teaching materials, for use in as many subjects as possible, and to strive to develop strong links with schools, particularly PSE teachers.

He felt that we should press in every way possible for a national curriculum, and that to gain true recognition for road safety education that adequate political pressure must be brought to bear.

Paper presented to delegates at the RoSPA National Road Safety Officers Course, Bournemouth 6th - 8th April, 1987.

Welcome delegates to Dorset.

Title of Paper : **Operational Resource Planning in Traffic Education.**

I have been asked to present this paper to you as an example of management practice that allows for objective assessment within an operational organisation. To illustrate this it is necessary to give a brief outline of the Traffic Education policy within the county of Dorset.

In 1982, the County Council Policy and Resources Committee made a decision that road safety education would be made available to all classes of road user without favour or bias. Further more it agreed to set up a working party to look into various educational strategies within local schools. This paper refers to one of these committees set up in 1984 to look at traffic education in secondary schools.

The Education Committee set up a small working party consisting of:

The Principal Adviser (Secondary)
The Chief Road Safety Officer
Two Teachers

Mr John Alexander, retired HMI (with a responsibility for safety education) was co-opted onto the working group which met initially once per term and more recently to once per year.

Following the work of this group it was decided and lately agreed that in order for the county council's policy to be met then traffic education should form part of the Personal and Social Education programme (PSE). Having decided where the main thrust would lie it was then necessary to announce the work of the group on the appropriate school population. To assist with this a series of seminars were held throughout the county and this was followed up by visits to the meetings of the Dorset Group of the National Association for Pastoral Care in Education (NAPCE). Each Road safety Officer responsible for an area was requested to carry out the following:

1. Visit each school in order to obtain past and current levels of activity; and,
2. Follow this up 12 months later in order to identify any changes.

This information was to be used as part of the operational resource plan and to aid the data collection sequence a standard format was agreed (show **OHP slide No 1** of format) go through it........

Previous to this exercise evidence existed that of the then 45 schools participating, 22 originally undertook the old STEP scheme which by 1980 had fallen to 15 schools involving 436 pupils. This represented less than 1% of the school population. (Show **OHP slide 2** giving figures and graph).From this, the present situation is as follows (show **OHP slide No 3** of present situation).

You will see from this that some 16% now receive traffic education. Those schools not yet participating are those currently being reorganised or closed/merged. It is anticipated that involvement will increase to around 20% by the end of the year. Assuming that at least one different group undertakes traffic education each term then it is reasonable to assume on this basis that all pupils will receive some form of traffic education at some stage within their secondary career.

Dorset **Statement on Curriculum** shows that all children will undergo PSE studies at some stage during their secondary level.....outline.

Traffic Education is currently provided for as follows:

Tutorials	10%
PSE	61%
Gen. Educ.	12%
Health Educ.	5%
None	12%
Total	100%

A number of delegates have asked how do we know what is going on in our secondary schools regarding traffic education and this shows how we have tried to deal with this aspect of our work in Dorset.

No doubt there will be questions so Mr Chairman I hand over to you.

Time for the talk 20 minutes with 10 minutes questions.

NATIONAL COURSE FOR ROAD SAFETY OFFICERS

ROYAL SOCIETY FOR THE PREVENTION OF ACCIDENTS 6th to 8th APRIL

A paper is to be presented at the above course concerning the work being done in Dorset Schools in relation to road safety and the 13+ age group. To quantify our situation more accurately I would like you to obtain the following information for each school in your area which have a population aged 13+.

1. Name of School ....

2. No. on role. ....

3. No. of Teachers dealing with road safety (or PSE) ....

4. Do they use Children & Traffic I, II, III or ALL?

5. Do they use Teenagers and Traffic?

6. If Teenagers and Traffic, which is used mostly?

....

7. With Teenagers and Traffic what size are the groups?

....

8. How long is each session? ....

9. How many sessions per 'course'? ....

10. How many courses per year? ....

11. Age range of groups ....

12. Are the groups conducted as:-

    (i) A Tutorial.
    (ii) Social Education
    (iii) Health Education
    (iv) General Education

RAS/AJR/January 1987

SCHOOL AGE-GROUP POPULATIONS	TITLE: School No's
PROJECT:	AGES AS AT: 31 August

		under 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	TOTAL.
																23270			2666		
1978															7912	7678	7680	1545	1052	69	25,936
																23677			2834		
1979															7943	8024	7710	1748	1018	73	26 511
																24145			2943		
1980															8026	8051	8038	1720	1150	73	27 088
																24048			3464		
1981															7474	8293	8281	2029	1340	95	28.012
																24412			3836		
1982															8043	8070	8299	2271	1460	105	28.248
																24082			3652		
1983															7771	8068	8243	2128	1379	145	27.699.
																23735			3617		
1984															7951	7683	8101	2121	1390	106	27,552
																23506			3331		
1985															7545	8068	7893	1918	1303	110	26,837
																23008			3207		
1986															7299	7631	8078	1885	1235	87.	26,215
1987																					

NOTES:

ORIGINATOR	DATE	SOURCE OF FIGURES

SCHOOL AGE-GROUP POPULATIONS

TITLE:

PROJECT: Age Groups

AGES AS AT: 31 August 1983 →

		under 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
1974																						
1975																						
1976																						
1977																						
1978															7912	7678	7680	1545	1052	69		
1979															7943	8024	7710	1748	1015	75		
1980															8026	8081	8058	1720	1150	75.		
1981															7474	8293	8281	2029	1340	95		
1982															8043	8010	8299	2271	1460	105:		
1983														7771	8068	8243	2128	1379	145			
1984														7951	7883	8101	2121	1390	106			
1985														7545	8068	7893	1918	1303	110			
1986														7299	7631	8078	1885	1255	87			
1987																						

NOTES:

ORIGINATOR:

DATE:

SOURCE OF FIGURES:

PUBLISHED PAPERS

Reliability of Road Accident Statistics

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INTRODUCTION

IN 1974, local authorities were required by law to standardise their approach to systematically reduce road traffic accidents. In Department of Transport Circular Roads 12/75, the philosophy of the new legislation was discussed. It stated that engineers and road safety officers were to carry out remedial measures in a number of ways. These were (and still are) as follows:-

(i) the environment may be changed in such ways as to reduce the severity (or eliminate the problem all together) of the problems faced by the road user; and/or
(ii) the road users ability to cope with these problems may be improved by the provision of information and practical training and in the ultimate by enforcement.

This basic approach to road accident reduction is generally accepted and most highway authorities employ a variety of engineering, education, training and/or publicity strategies to effect this improvement. Such methods which were recommended in Circular Roads 12/75(op.cit.) are outlined below. These are:-

(i) Major Works.
(ii) Small road improvements.
(iii) Mass programmes where it is found that common factors are common to groups of accidents scattered widely throughout an area (eg. poor lighting, skidding etc).
(iv) Route programmes.
(v) Single-site programmes.
(vi) Improved signing programmes.
(vii) Speed limit review programmes.
(viii) Pedestrian protection programmes.

In addition, all programmes wherever possible must be evaluated. Crucial to the efficiency and effectiveness of these strategies is the use of data collected via the police on the standard Stats 19 form. Although the format varies from authority to authority the data collected is standardised. This data is formed into three basic groups and concern:-

— Vehicle detail
— Casualty detail
— Attendent circumstance detail

It is from this data that appropriate remedial measures are considered and evaluated.

A number of problems exist if these forms are to be relied upon to reflect the road traffic accident problem locally. As early as 1973, Bull and Roberts discovered that accidents to two-wheeled vehicle riders were under-reported. In 1981, Pedder et al, similarly discovered further under-reporting of two-wheeled vehicles and in 1984, Hepworth et al, confirmed a similar situation in Southampton. These studies were conducted in large Accident and Emergency units of city hospitals, and whilst all their findings were significantly different regarding the levels of under-reporting, further problems arise for the road safety practitioner in that it can be argued that Stats 19 data is atypical. Different areas in the country have, for example, differing lengths of road, registered vehicles and population spread. In Dorset, almost one third of its population is retired and 66% of this population reside in Bournemouth, Poole or Christchurch. By comparing accidents per head of vehicle population Dorset differs from other areas in the country, particularly the South West Region. It is for these reasons that the road safety practitioner needs to examine his own areas of responsibility in more detail. In Bull and Roberts, op.cit., it was also discovered that a descrepency existed between those road traffic accidents described as serious by the police and those so described by the hospital. For example, out of 1200 cases, 7 RTA's were reported by the police as 'serious' where the hospital regarded them as 'slight', whilst 42 were reported as 'slight' by the police and were rated 'serious' by the hospital. Clearly, records should be updated in this regard, but little evidence could be found locally to show that hospitals, police and local authorities update their Stats 19 data base systematically. Indeed, it is questioned whether any local situation is systematically updated.

So far, therefore, it can be established that it is highly probable that a data base used by a road safety practitioner is not truly representative of the situation in his area.

Disregarding the fact that Stats 19 data might be unrepresentative of the population for a moment, let us turn to the actual document itself. It contains many requests for information which can only be regarded as subjective. Also, a busy police officer at the scene of a RTA has many priorities, none of which includes the immediate completion of Stats 19. These two basic issues need further discussion here. It is probably better to illustrate the process in case study form and the following is based upon an actual occurrence in which the author was observing police officers on duty as part of a management project. The following is extracted from tape recordings made throughout.

1504hrs — Control reported a RTA at a location. A code was given indicating that the RTA was a nasty one and was probably fatal.

1516hrs Patrol arrived at the scene of the RTA. All traffic was at a standstill and the road was blocked. The police vehicle moved forward to the actual RTA site. From an immediate assessment of the scene it appeared that two vehicles had collided head-on. An ambulance had arrived from the opposite direction and a crowd had formed around the scene. The two persons in one vehicle appeared to be badly injured whilst the other three casualties, all young men, sat on the grass verge nursing what looked like minor cuts and bruises. Both vehicles were severely damaged.

1520hrs — One ambulance departed the scene as one other arrived. One police officer had immediately reported their involvement in this RTA and that 'diversions' were necessary, whilst the other began the task of helping with the injured. Warning signs were erected and traffic turned away.

1522hrs — Site was cleared of waiting traffic. At this point it was discovered that from the crowd of onlookers, only one was prepared to come forward as having witnessed the accident. This person was on holiday and lived some 250 mile away in Yorkshire.

1540hrs — The injured driver, who had stopped breathing by this time, was extracted from his damaged vehicle and taken to Poole General hospital.

1542hrs — The police officers then began the task of finding vehicle and casualty details of those remaining.

1605hrs — As the RTA was now classified as 'fatal', the scene had to be measured and photographed.

1645hrs — The photographer and measurement takers completed their respective tasks.

1710hrs — Breakdown vehicle arrived and vehicles towed away.

1735 — Both police officers sweep away debris and leave the site clean. Warnings signs were taken in.

1810hrs — Patrol departs scene for Poole General Hospital in order to obtain casualty details. It arrives at the hospital at approximately 1835hrs.

It must be noted from this scenario that already some three hours had passed since the patrol had arrived at the scene and the police at this stage had no details of the hospitalised casualties. At this point only half of the police RTA form had been completed. This particular problem was observed to be common in all serious RTA's observed. It was also noted that the patrol officers had had no time to write notes in their note books or had no technological aids to help record information which would need to be accurately recalled later. On this point, it is understood from police headquarters that pocket tape recorders are available for patrol officers to use but they choose not to use them they say, for reasons of reliability! All that was obtained by the police officers here was a piece of scrap paper bearing a rough sketch of the RTA site with appropriate dimensions on. Although the example described above was photographed, this policy exists in Dorset only for 'fatal' RTAs. No photographs are taken at the scenes of 'serious' or 'slight' accidents. Finally, the names and addresses of the casualties was obtained by 1940hrs.

Taking the case study incident described above one stage further, the two patrol officers dealing with this RTA were now some two hours into overtime and returned to their base at 2015hrs. On arrival, the police RTA form was completed as far as possible, statements from the young men in the other vehicle, sketch of the scene together with the name and address of the one independent witness was filed. The author was asked for the timings of the various events so that police note books could be accurately made up. This was easily provided for as the whole incident together with appropriated timings had been recorded on a small pocket tape-recorder. When asked what they would do for timings if I was not with them recording them they replied that they would have to take estimates.

The police officers went off duty at 2040hrs. Twenty five hours later, the independent witness was contacted and a statement was taken from him. Some fifty hours later the Stas 19 form was completed and took some twelve minutes to complete .This is particularly important in terms of memory recall. Bartlett (1932), Bull et al (1983) and Herriot (1974) show that in certain circumstances a person can only remember half of what he originally took in after 24 hours. However, it was mentioned above that subjective items on the actual Stats 19 form is a cause for concern and is now discussed.

The Department of Transport publish a comprehensive reference book designed to assist the police officer (and others involved with RTA data) and is referred to as Stats 20. Little evidence could be found that this reference book was used regularly by officers. However, this reference manual is of little help anyway when it comes to those subjective issues on the Stats 19 form. For example what is the difference between mist and fog, drizzle and rain, frost and ice. What is high wind? Apart from these obvious questions, Stats 20 suggets that if 'age' is not known, the police officer should make an estimation! The accuracy in guessing peoples ages is widely known and should not be a serious recommendation. Light conditions was found to be a problem in several cases, particularly where poor light in daytime is concerned. What was 'light' in one estimation was considered 'dark' by another. Whether there is street lighting also causes some considerable confusion for the police officer. He has enough excitement and trauma to deal with at the scene of an RTA and the fact that there might or might not be street lighting along a particular road during daylight hours is a variable considered some hours after he has left the scene. Whether a street lighting column is less than or greater than 7 metres in height was also found to be rather inaccurate. We have also seen above that 'time' can also be regarded as inaccurate in some cases.

Manoeuvre being carried out by the vehicles involved was also found to be inaccurate. At several RTA's observed, vehicles come to rest in positions sometimes bearing no relationship to the manoeuvres being carried out at the time. Without independent witness statements to confirm or deny those statements made by drivers it was a matter for the police officer to rely on his experience to assess the situation on arrival. This was not always possible and made particularly worse when seriously injured casualties were despatched to hospital before the police officer could establish any detail. Overtaking pattern was found to be similarly inaccurate for the same reasons. In a survey of 50 powered two wheeled vehicle accidents in Dorset, only 18% had independent witnesses.

Hit objects on and off the carriageway was also found to be inaccurate in some cases as was 'skidding'.

WITNESS STATEMENTS

IT HAS long been recommended that road safety officers should make use of statements made to the police as an aid to accident analysis. Chapter 4 of the Department of Transport manual 'Accident Investigation and Prevention', 1974 states:

"In those cases where the preliminary study fails to reveal dominant accident types in which the common factors clearly indicate the remedial action required, it will, if the problem is seriously serious, be necessary to undertake a study in greater depth. Whereas the preliminary study relies on the more general accident detail selected for routine processing plus a systematic but relatively brief site survey, depth study involves the analysis of the entire data contained in the original police reports for each accident plus the statements of witnesses and those involved . . ."

Loftus, (1979) showed that before a witness can recall a complex incident, that incident must be bright enough, loud enough and close enough to be perceived but even when attention is paid to an incident, significant errors have been discovered in a witnesses recollection of the event. This gets worse as time passes. Laughery, et al (1971), confirms this view too. Loftus goes on to say that stress and/or fear a witness experiences will affect perception. Jones (1979), concludes that noise affects at the aquisition stage, temperature affects retention and recall, time of day was found to be crucial on memory loading (he found memory performance best in the morning) and sleep loss produces lapses of attention for example.

Loftus and Palmer (1974), show how leading questions can affect an eyewitness report. For example, "how fast was the car going when it *smashed* into the other vehicle" produced higher estimates of speed than did the same question when the word 'smashed' was replaced with 'ran'. Clifford (1979), argues that; "a high status questioner would produce an inhibiting effect on testimony recall".

The police must be regarded as 'high status' in this regard as described by Clifford, as they have the power to prosecute. Clifford and Scott (1978), strongly suggest that one must expect different qualities of recall depending on the type of incident witnessed.

Clearly, eyewitness testimony cannot be relied upon to be accurate unless careful steps are taken to maximise this accuracy right from the outset. A police officer is required at the scene of a RTA to see if a traffic offence has been committed and if so, to take the appropriate action. Statements made for the purposes of prosecution rather than analysis must produce biased information if the above research is to be accepted.

SUMMARY

FROM THE discussion so far, the road safety practitioner must feel frustrated in that all the usual tools available to him to plan efficient and effective remedial measures are suspect. We now find ourselves with:-

(i) an incomplete injury RTA database.
(ii) a database containing possible inaccurate information.
(iii) witness statements unable to provide much additional accurate detail.

Faced with this problem, what can the practitioner do? All research if it is to be of any use in practical terms must pass the 'so what' test, and so far much of what has been discussed above has not completely passed this test. When a management problem has been highlighted there are usually two basic considerations. These are always the 'do nothing strategy' and the 'do something strategy'. In this particular case, the effects on the organisation by following a 'do nothing' policy would be a meaningless exercise, therefore the second option needs consideration here.

It has been suggested that the under-reporting of RTA's might be atypical, therefore, each county having a statutory responsibility for road safety should make efforts to assess these levels but must include:-

— Accident and Emergency Departments
— Community Hospitals
— General Practitioners

Data contained on the Stats 19 has been shown to be suspect due to its subjectivity. At the same time, it is of interest and relevance to any study that data not catered for on the current Stats 19 form is of interest. This might include such areas as; exposure to risk, attitudes, perception, health, training, eyesight, etc. Localised and more comprehensive data should be recorded.

Any statement made for the purposes of RTA analysis should be made in confidence to a properly trained interviewer where the problems of eyewitness evidence can be controlled more scientifically. The police force in this country are highly professional in the way that they conduct their business but are under resourced. At the scene of a RTA they have many priorities in dealing with difficult situations. Their job could be made more effective by introducing simple aids such as personal tape recorders and cameras. The onus of providing an accurate research data base should not be placed upon their already overworked shoulders.

It is the belief of the author that the most efficient and effective way of improving accident analysis is through very close cooperation with local health authorities.

THE FUTURE

DORSET COUNTY Council, in conjunction with the Centre for Safety Research at the Dorset Institute of Higher Education, East Dorset Health Authority, West Dorset Health Authority and the Wessex Regional Health Authority currently have a detailed survey underway examining the whole question of accident analysis and the use of medical records and further reports are to be published on this from time to time.

ACKNOWLEDGEMENTS

THE AUTHOR would like to thank the Traffic Division of Dorset Police for their valuable contribution and support to this project.

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37

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March 30th, 1987

R.A. Saunders, Esq.,
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Transportation and Engineering Department,
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DORSET DT1 1XJ.

~~DH~~ RAS
R22

Dear Mr Saunders,

When my Editorial Board met earlier this month it considered your and Dr. Wheeler's paper submitted to me on December 10th. I am pleased to teel you that this was accepted for publication in the journal with the one proviso that the title is changed. Something short and snappy is required, but the final choice I will leave to you.

The paper is likely to appear towards the end of 1987. Could you let me have, as soon as possible, a list of firms/organisations who might care to take advertising space.

Yours sincerely,

John Barrett

John Barrett,
Assistant Editor.

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Dear Mr Saunders,

Your paper entitled:

Age as a factor in Powered Two-wheeled Road Traffic Accidents

has been accepted for publication in the Journal of the Royal Society of Health and galley proofs will follow in due course.

Yours sincerely,

[signature]
Editor

126

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Dear Mr Saunders

Your paper entitled:

Records involving Riders of Powered Two Wheeled Vehicles
(We shall use this shorter title)

has been accepted for publication in the Journal of the Royal Society of Health and galley proofs will follow in due course.*

Yours sincerely,

Editor

* We are rather heavily stocked with papers and this will not appear until 1988.