Submission No. 67

DRIVER EDUCATION, TRAINING AND ROAD SAFETY

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Organisation: National Motorists Association Australia
Date Received: 12/03/2017

Submission to the NSW Staysafe Committee from the National Motorists Association of Australia (NMAA)

NATIONAL MOTORISTS ASSOCIATION AUSTRALIA .

Enquiries

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[redacted]

STAYSAFE (JOINT STANDING COMMITTEE ON ROAD SAFETY)

Inquiry into Driver Education, Training and Road Safety

Terms of Reference

The Committee will inquire into, and report on, the role of whole-of-life driver education and training in supporting improved road safety outcomes in New South Wales, with particular reference to:

a) Trends in road safety research and crash statistics

b) Evaluating current driver training, including the effectiveness of refresher training and skills updating, and adaptation to changing vehicle technology

c) The needs of any particular driver groups

d) The needs of driver trainers, both professional and non-professional

e) The needs of metropolitan, rural and regional drivers

f) The needs and expectations of passengers and other road users

g) The cost of driver training standards and how the costs should be allocated

h) The experience of other jurisdictions, and interstate cross-border issues

i) Other related matters.

Introduction

The National Motorists Association of Australia is a small group of people with a deep interest in road safety. We are not involved in insurance, road side break-down assistance or any commercial function and are not associated with any other motoring organisations.

We are all of mature years with a very wide range of experience both here and overseas. Most have achieved a high standard of driver training and most are university educated.

Our concern with improving road safety gives rise to acute observations of safety measures and their impact on risk reduction. We are constantly evaluating how systems can be improved both in terms of improved road safety and the amenities of road use for commercial vehicles, cars and other road users.

Our experiences and evaluations have lead us to the conclusions that there are far better systems to improve road safety than are currently being used in systems design, regulation, construction, enforcement, research and training.

Our observation is that Australia has very low standards of training and testing compared with Europe; for example, very few Australian trained drivers would pass the German driving test without significant remedial training.

The Authors

Michael Lane

Some 2 million kilometres, 55 years driving experience, initially 5 years in the UK thence in Australia and in recent years a regular driver in most of Western Europe. He has been closely involved in teaching his two children to drive but having professional instructors to teach them to pass their test.

Much of his professional life involved assessment of Industrial Research and Development projects including the technology, scientific methodology, innovation, managerial abilities, Finance prospects and commercial prospects.

He was appointed as National Spokesman for the NMAA in 2003.

Graham Pryor

Graham has had a life-long strong interest in road safety and was the first person in Australia to pass the advanced driving test to the gold standard with Australian Driver Education. Subsequently, he became an Instructor for the Chapter of Advanced Motorists of the VMA from the age of 21 until the Chapter was dissolved.

He is a graduate engineer and a qualified mine manager. Also, he achieved a Master of Management degree with an award from the Australian Institute of Management for academic excellence.

Graham operated potentially dangerous underground mines in private industry for more than 35 years and was employed previously as a District Inspector of Coal Mines for the NSW Mines Department. He attributes the reduction in fatalities in NSW mines to the “risk assessment” approach that is now required by legislation.

He was appointed to the Executive Committee of the NMAA in the year 2000 in the role of National Liaison Officer.

NMAA Submission

a) Trends in road safety research and crash statistics

Crash cause analysis is the fundamental input into any safety programme. The aviation industry is as safe as it is now because of the intense evaluation of the causes of crashes and the application of the lessons learned to policy frameworks. Proper crash cause analysis is a two stage process; the first is a reconstruction of what occurred followed by analysis of why each contributory factor happened. It is axiomatic that this be undertaken by highly trained personnel with investigative skills and powers.

Within the English speaking world the UK Police system is outstanding as the best system of road crash cause analysis. Specially selected traffic officers, who are trained to a much higher standard than here, undergo an external training course and qualify as accident investigators under the auspices of the London based City and Guilds training and examination system. This course is regarded as difficult even for a science graduate. These professionals do not initiate prosecutions and that is a function of senior prosecution specialists.

While this is expensive the fatality rate in Australia is the equivalent of several large aircraft (Boeing 747) crashes per year. There are many times this who suffer life changing injuries.

Our research shows that there is a wide variance between UK and NSW in claims of the importance of speed as a causal factor in crashes. The NMAA stance is that the more professional the investigators are the lower the contribution of speed is to crash causes. The reasons for this are complex, however, they centre on a bias, whether conscious or otherwise, to conduct research in such a manner that the operator's favourite causation is highlighted. The outcome of this distortion in crash causes impacts on both remedial measures and in the curriculum for driver training.

State and Territory governments in Australia do not analyse crash causation factors properly and consequently little or no data exists for non-serious injury crashes and the data for more serious crashes is, at best, unreliable. The NSW authorities habitually tick the "speed" box resulting in the preposterous

claim by the then RTA that, in 2002, “46% of fatal crashes were caused by speed”. This is based on summing “Speed in excess of speed limit” and “Speed excessive for circumstances” which are separately listed in the UK system as they are completely different causes. In 2014 the NSW Centre for Road Safety is still claiming that speeding causes 42% of fatal crashes although it cannot legitimately justify this statement. These claims are based on the inappropriate criteria which police are directed to utilise when attending a road crash.

The first stage of the UK system of crash cause analysis is discovering what happened. This involves taking measurements in a similar manner to the process used here if the crash investigation squad attend, however, with refinements including confirmation of coefficient of friction with the road surface and the development of a computerised comparison of the damage with manufacturer’s test crashes (which have known parameters) to give a good assessment of the actual impact speed. The investigators then can select up to 6 contributory causes which are determined and reported in a standard format. This information together with the injury information is sent to the central government statistics office in addition to being used in the second stage of the investigation. The reporting methodology and contributory cause assessment is based on research work done by the UK Transport Research Laboratory (Report TRL 323).

The second stage involves determining why the contributory causes occurred. This may involve further site inspections and interrogation of witnesses and participants. The final report is then sent to senior officers for determination if any prosecution is warranted. The investigating officers do not initiate prosecutions, however, they may be called as expert witnesses. The second stage findings are not published. The Transport Research Laboratory report 323 suggests that only some 4 to 8 percent of fatal crashes have speed in excess of the speed limit as a significant or primary cause; speed in excess of the limit in many cases derives from other primary causes such as intoxication, suicide etc.

The UK Institute of Advanced Motorists conducted an appraisal of 5 years of the official crash cause statistics held by the UK Government which is appended. Table 1 shows quite clearly that speed in excess of the speed limit was a CONTRIBUTORY (not necessarily significant) causal factor in less than 14% of fatal crashes and much less in serious (7.2%) or minor injury crashes (4.2%). The study covered some 700,000 accidents so should be regarded as robust.

(Attachment 1 - Institute of Advanced Motorists Factors in Accidents report)

The category of “Inappropriate speed for the conditions” is largely identified in inclement weather which is not as widespread here – NSW does not suffer the thick fogs nor widespread frost and snow of the UK.

The NSW Parliament’s Public Accounts Committee recently reported on the outcomes of various Auditor General’s reports. A copy of Chapter Six – Improving Road safety: Speed Cameras of the NSW Auditor General’s report is attached. Attention is directed to clauses 6.16 and 6.17 and to Recommendations 6 and 7. It is noted that one of the NMAA Committee members was mentioned.

(Attachment 2 – PAC Report Chapter 6)

The NSW government and its agencies are still quoting “speeding” as the cause of over 40% of fatal crashes. Given the highly professional international sources which state that exceeding the speed limit is

a contributory cause in a fraction of this figure, it is considered that the official RMS figures are deceptive and grossly overstate the contribution of speed to crashes.

The estimate of speed in excess of the speed limit being the prime cause of between 4% to 8% of fatal crashes is supported by other sources.

Australian research by Monash University Accident Research Centre (MUARC) determined that, if all vehicles were fitted with a satellite controlled system that prevented **every** vehicle from exceeding the posted speed limit, the maximum potential reduction in fatal road crashes would be 8 per cent.

See MUARC report #253 'On-road evaluation of Intelligent Speed Adaptation, Following Distance Warning and Seatbelt Reminder Systems: final results of the TAC SafeCar project' at http://www.monash.edu.au/muarc/reports/muarc253.html.

Quote: "Based on the logged data, the ISA system by itself is expected to reduce the incidence of fatal crashes by up to 8 percent and serious injury crashes by up to 6 percent."

It is often claimed by those who support low speed limits that the result is fewer fatal/serious injuries. This is only true if the speed of impact is similar to the speed of travel which is often not the case. The argument on these grounds for lower speeds is tantamount to saying that it is okay to crash so long as you do so at low speeds and only injure or maim people. We are firmly of the belief that the objective of safety measures is to reduce crashes. Harm minimization is best achieved by engineering methods.

Crash statistics are often quoted relating to population however this can cause distortions. The optimum standard should relate to distance travelled as this reflects exposure rate more fully. However care should be taken when making comparisons between regions as there are many factors involved. For example, in urban areas paramedics should be on-site within a few minutes but in country regions it may be hours before medical assistance arrives. The first hour after an injury is critical to survival.

Recommendation

1) A specialist unit be developed within the NSW Police to conduct crash cause analysis to the UK standard and follow the operational methodology of the UK Police Services. Findings of this unit should be published annually. Training to be to the standard of the UK City and Guilds course.
2) That crash cause evaluation be used in developing and modifying the curriculum for driver training and testing.
3) That crash cause evaluation be used in developing effective crash counter measures including regulation and engineering standards.

b) Evaluating current driver training, including the effectiveness of refresher training and skills updating, and adaptation to changing vehicle technology

Current driver testing requires barely more than demonstrating a hill start, reverse parking and a three-point turn. Young and inexperienced drivers are over-represented in road fatalities, however, young and inexperienced pilots are not over-represented in aviation. The significant difference is in the standard of training required for a driver's licence and a pilot's licence.

The consequence of the very limited test system is that formal training by driving instructors is aimed at passing the test rather than the broader aspects of sound driving techniques.

Many countries do not permit unqualified instructors to supervise learners or do not accept periods of unqualified supervision in log book records.

Most driver training is done by parents/relatives and, to a lesser extent, friends of older learners. Unfortunately these people usually have bad driving habits, poor attitudes and rarely have an understanding of matters essential to making a good and safe road driver beyond simplistic law compliance. For example, observation skills are critical to being aware of all that is going on around the vehicle and which could have an effect on what the driver must do. Sound observation skills will identify a problem before it happens; reading the “body language” of a vehicle/driver will pre-warn of an erratic action.

In longer distance driving moving the eyes around avoids the mesmerising effect of staring at the road in front; this helps early detection of erratic events which may require action.

Rarely, if ever, is the concept of courteous co-operation taught. This is not the same as encouraging people into a dangerous situation by, for example, stopping in a busy road and waving pedestrians across into the path of other vehicles! Such things as when on a freeway moving to the adjacent lane to allow traffic to enter from a slip road, which is termed doing a “zip merge”, when technically traffic on the entering lane should completely give way.

There are far too many instances of teaching about rights but not responsibilities.

There are many techniques that are preferable to teach a new driver which are not fully accepted by traditional drivers. Push-pull steering was valid when steering was heavy; in a modern power assisted steering system with few turns lock to lock the hand-over method is best and it is much better if a rapid steering correction is needed. As many cars are automatic, left foot braking can be taught; this will save up to half a second in reaction time, which equates to 7 metres stopping distance at urban speed. Every driver should be taught how to stop the vehicle in the shortest possible distance so as to be capable of avoiding a crash.

It is often suggested that driver training be conducted in high schools. There are good reasons not to do so. The school curriculum is already crowded, few teachers have adequate driving skills, pupils and parents are likely to object to the diversion of time during the critical Higher School Certificate year. However the simpler parts of the Highway Code (as detailed elsewhere) could be taught as part of Civics from an early age. The concepts of good manners and self-preservation never go astray.

The speed restrictions on learner drivers in NSW creates significant problems. There are obvious issues with having them on rural roads and freeways due to the speed differential however in terms of teaching it is impossible (legally) to teach learners merging techniques on entering freeway style roads or higher speed cornering (including adjusting speed from the normal highway cruise speed). Overtaking is a difficult task and the low speed permitted to learners makes this impossible to teach. New drivers have to learn these matters unsupervised and too often with disastrous results.

The National Motorists Association of Australia advocates a higher standard of training prior to the practical driving test and that all drivers be required to satisfactorily complete an advanced roadcraft

style course with an accredited training organisation before progressing beyond P-plates. The RMS does not support advanced training based on an old desk analysis of reports on the outcomes of advanced training overseas. This compared people who had volunteered to undertake “advanced” training with those who had not and found that it tended to create “over-confidence” in those who had undertaken these courses. There are obvious errors in these findings such as that the comparison is between different cohorts. Enthusiastic high exposure individuals are different from the average; the courses also tend to emphasise trackwork rather than roadcraft. A true comparison of the effect of more advanced driver training is when whole populations are required to undertake this, with an emphasis on roadcraft, and compared with other whole populations or by pre and post methods.

Adaptation to changing vehicle technology

The resistance from the government to higher driver training standards extends to refusing to include emergency braking in the training package which reduces the number of log book hours. The new driver thus has no idea what happens in hard braking; the feedback from an anti-lock braking system (ABS) can easily frighten them into releasing pressure on the brake pedal for example. Most new drivers have no idea of how long it takes to stop a car from normal speeds in dry and wet conditions. Unfortunately they too often learn by accident.

Learning how to stop a vehicle in the shortest possible distance is fundamental to most advanced roadcraft training courses. Some use the more brief term of “emergency barking” to describe stopping a vehicle in the shortest possible distance. Being able to brake efficiently is an effective means of avoiding many types of crashes. Anti-lock braking systems also facilitate “swerve and avoid” actions which cannot be taught on public roads.

GPS guidance systems are now common, however, they do require some guidance in their use. In the UK testing procedures are now being adjusted to testing the driver’s use of them. Instead of the tester directing each turn, the candidate is instructed to proceed to a place some distance away to test their ability to manage a GPS guidance system.

Before anti-lock braking systems became almost universal Germany required the instructor to certify that the new driver could perform an emergency stop from 130 km/h in wet conditions.

It has been reported that when Denmark changed its driver testing regime from compliance to advanced (defensive) driving that there was a significant reduction in young drivers involved in fatal crashes.

Refresher Training

Refresher training is a requirement for most professional vocations. There are clear benefits in all areas of skill training.

However, the government is not likely to contemplate legislating a requirement for regular driver refresher training, say at ten year intervals, as it would be electorally unpopular. The consequence is likely to be measured in increasing road fatality, injury and crash statistics.

Refresher training could be incorporated into penalty regimes where driving incompetency is observed rather than numerical breaches such as minor speed infringements. Some examples of such is when drivers swing outwards, often close to or even into, an adjacent lane when making a turn; failure to signal intent; failure to keep left unless overtaking etc.

This would require a different approach to policing.

In many countries a refresher course (and enhanced test) is required after a period of licence suspension.

The world's highest standard of driver training and testing is in Germany and this is discernible in comparison with other drivers on the road in Europe. Although it is often said that it would be impossible to upgrade existing drivers the re-unification of Germany provides an example to the contrary. After only a couple of years the "Ossis" had improved their driving standards to a commendable standard.

Recommendations

1)That the special speed limits for learners and P-platers be abolished and that they should comply with normal limits as posted or default.

2)That the standard of driver training during the learner period and the practical test be improved continuously with the aim of reaching the German standard as the world's best.

3)That a course of advanced roadcraft be successfully completed before progress from a provisional licence to a full licence.

4)That the government seeks the cooperation of vehicle manufacturers in providing driver training facilities. There are benefits in this for vehicle manufacturers and many of them have operated such training for many years, including Honda and BMW. These training facilities and the training they provide would be ideal for refresher training and advanced road craft courses.

The cost of attending the course should be borne by drivers. The cost of advanced roadcraft courses is far less than the cost of the "excess" payable on a car insurance claim.

5)That refresher courses/tests be introduced for those returning from licence suspension

6)That a refresher course be an alternative penalty in appropriate cases.

c) The needs of any particular driver groups

In the general case please refer to the NMMA response in topic (e).

Just as disabled drivers need specialised equipment on their vehicles so do they need specialised training to ensure that they are compatible with good driving skills. This is a very broad subject requiring co-operation between rehabilitation specialists and driving trainers.

Elderly drivers needing refresher courses and those who have been penalised (if that recommendation is adopted) will also require trainers with special aptitudes.

We cannot comment on the needs of heavy vehicle driver training as this is outside our knowledge base.

See recommendations in topic (d)

d) The needs of driver trainers, both professional and non-professional

The NMAA draws attention to the media release statement by Staysafe Chairman Mr Greg Aplin: ”We want to know what things we can do more effectively to **improve skills**, **change attitudes**, and deliver better road safety outcomes.”

Improving skills is a direct outcome of driver training. A significant aspect of driver training is that it is the ideal opportunity to **change the attitude** of the driver. The “attitude” of the driver to driving safely is a huge factor in deriving positive outcomes.

The current attitude of many drivers in NSW to the road rules is similar to the definitions of ignorance and apathy: “I don’t know and I don’t care”. Driving at or below the posted speed limit does not overcome inadequate skills nor inadequate knowledge of road rules nor good road manners. Unfortunately this attitude is too often passed on by non-professional trainers.

The government can create the goal for all drivers of achieving a high standard such as becoming an Advanced Motorist with the Institute of Advanced Motorists. An example would be granting a “gold” driver’s licence upon achieving that standard at any age. Non-professional driver trainers need the government to **encourage and support** achievement of a high standard of training. By such action the government would have a direct involvement in improving road safety at minimal cost.

Both professional and non-professional driver trainers need the government support of formally creating the goal for all drivers to achieve a high standard of driver training.

The best method of introducing advanced driver training is to initially encourage it by formally recognising the achievement with a notional award such as granting a “gold” driver’s licence. When the present driver training facilities have expanded to being able to meet the training needs for all drivers, then the government can evaluate the approach of making it compulsory.

Non-professional trainers have no incentive to upgrade/refresh their skills. While it would be possible to require such people to undertake a course and have a supervisors endorsement on their licence the intermittent supervisor domestic duties would create a form of resistance – if both parents and possibly elder siblings needed an endorsement it would be regarded as excessively onerous. Public persuasion would be the optimal compromise over compulsion.

Professional instructors in most advanced countries are required to have formal training and qualifications often graded. This ensures that they are knowledgeable of not only the laws but also the concepts of good driving which cannot be clearly defined in regulations. They must also demonstrate that they can teach. Regular updating is normally required.

This is one way to improve standards of driving instruction and thus outcomes on a continuous basis.

Recommendations

1)That non-professional trainers be encouraged to take refresher courses

2)Professional (on-road) trainers should be licenced with graded qualifications and this be subject to continuous improvement with the ultimate objective being world class standards.

3)High grade trainers would be needed for refresher training and they could be permitted to “sign off” on the trainee’s satisfactory achievement

e) The needs of metropolitan, rural and regional drivers

The NMAA disagrees that these groupings of drivers have different needs. All drivers should be trained to the same high standard so they are competent on all road surfaces and be equally competent in both city driving and driving on country roads. There is no excuse for lower standards in any area of NSW. There may not be freeway style roads but a good trainer will ensure that the trainee is well versed in that type of driving.

Rural learner drivers should not be excused from advanced driving training. It is a sad reflection on the government that rural based learner motorcycle drivers are not required to attend the rider training due residing a long distance from a motorcycle rider training facility. An example of the consequence of that approach is the Eurobodalla Shire Council recognised that this exoneration was directly responsible for the above state average fatality rate for motorcyclists in that Shire and introduced a motorcycle rider training program to remedy the situation. The NMAA congratulates the Eurobodalla Shire Council on taking positive action to reduce motorcycle rider fatalities.

The NMAA also notes that a significant proportion of the population travel and drive overseas. Although the NSW Government does not have a direct responsibility for the actions of those travellers an additional benefit lies in the improved safety of NSW residents while overseas. The standard of driver training that should be aimed for in NSW is that of the highest in the first world – Germany.

f) The needs and expectations of passengers and other road users

Drivers have an implied “duty of care” for their passengers and all other road users. Driver “attitude” to driving safely is a major factor in achieving positive outcomes. A significant aspect of advanced driver training, and refresher training, is that it is the ideal opportunity to **position the attitude** of the driver.

As passengers we expect that the driver will be competent and not place us at risk by making errors of judgement. As road users we expect others to be competent (but wary of those that fail) and that they will exhibit good road manners.

g) The cost of driver training standards and how the costs should be allocated

The government continues to allow unqualified parents to be instructors for their children so the parents/learners avoid the cost of paying for professional training. The consequence is that inadequate skills and poor attitude is perpetuated in another generation of drivers. More onerous testing will drive learners into getting professional training.

The cost of driver training to obtain a licence in Germany is thousands of dollars. The difference is that Germany has one of the lowest fatality rates per vehicle kilometres driven in the world despite the unrestricted speeds (prima facie) on many autobahns and their winter conditions of fog, ice and snow on the roads as well as being the "cross roads" of Europe for road freight.

The cost must be the responsibility of the person being trained. Free driver training is not an "entitlement". Being granted a driver's licence is not an "entitlement" and it comes with responsibilities including an implied "duty of care" for their passengers and all other road users.

Charities may play a role in assisting the impecunious.

h) The experience of other jurisdictions, and interstate cross-border issues
Other jurisdictions

The world's highest standard of driver training and testing is in Germany and this is discernible in comparison with drivers trained in other countries in Europe which in turn are at a much higher standard than in Australia although there are local quirks – the French for example rarely signal exit on roundabouts.

German driver training is extremely thorough and includes several hours of classroom training as well as on road practice. The classroom training is given to groups which reduces costs. Significantly the training includes first aid (all German cars have a comprehensive first aid kit) and traffic management around a crash until officials arrive. It is a requirement in Germany to stop and render assistance at a crash even if you are not involved. It is regarded as unacceptable to breakdown on autobahns as it is dangerous to others as well as the occupants – fines are applied where the breakdown is avoidable eg running out of fuel. Pupils are taken to full speed on restricted roads (130 km/h) and up to 200 km/h on "unrestricted" (actually prima facie) autobahns. Road rage, even at the lowest level, is strictly controlled in Germany. These concepts are part of the intensive tuition.

German companies often send their employees who are required to drive as part of their duties to more advanced car control driving centres.

In Finland there is a greater emphasis on car control as in winter the roads are largely covered by ice and snow and, outside major roads, are usually gravel or stones.

The Dutch are Europe's most rule compliant drivers but have little understanding of what is happening around them. This is believed to be an outcome of a highly regimented system where obedience to rules and signs is more important than moving without integrating into other traffic.

Throughout Europe drivers are patient when people need to do things but can get quite loud when someone does something unreasonable; blocking an intersection will incur wrath but

holding up traffic while an old person exits a car, even for several minutes, will be accepted. This is a matter of politeness.

Driver training is improved by the use of a "Code of conduct" system as in the UK's Highway Code and the French "Code de la route". This method explains the reason for doing things rather than setting blind rules. Most people accept a dictat when given a rational reason and they respond better when treated like an adult instead of a child. Some refer to this method as "appealing to the intellect".

The UK Police have a handbook "Roadcraft" available to the public which takes the principles of safe driving further. It is based on the methodology in police driver training (excluding pursuit methodology!) which has resulted in a marked reduction in their crash rate. The original training to this standard reduced the crash rate of ordinary police by two thirds.

Recommendation

1) That NSW develops a Highway code and Roadcraft book based on the UK publications and that these be used as teaching aids.

2) That these be used as a basis for enhancing the practical test.

Interstate cross-border issues

Interstate cross-border issues include differences in state laws intended to minimise the impact of peer pressure on inexperienced drivers. For example, Victoria disallows more than one passenger between 16 and 22 years of age for 24 hours per day whereas NSW has a curfew disallowing a passenger under 21 years of age only between the hours of 11pm and 5am.

The states even disagree on what law applies to P-platers as it is reported that NSW insists the harsher restriction on Victorian P-plate licences also apply to them when driving in NSW and Victoria insists that the 24 hour curfew applies to NSW licensed P-plate drivers on Victorian roads.

Another example is the speed restrictions applied to P1 and P2 P-plate drivers in NSW which do not apply in other states.

A newspaper article in the Illawarra Mercury, dated 5 January 2017, highlights these issues under the heading "P-plate drivers sent in circles over contradicting road rules between NSW

and Victoria": www.illawarramercury.com.au/story/4386646/p-plate-drivers-sent-in-circles-over-road-rules

P-plates were introduced in 1966 with the intent of reducing new drivers' crash rates. No information is available as to its effectiveness. Originally it was accompanied by a 50 mph (80 km/h) speed limit. This system has been supplemented by the P1, P2 system. Again there seems to be no assessment of benefits.

The P-plate system is an admission of the inadequacy of current training and testing – it states that the newly qualified driver is not sufficiently skilled to drive on the public roads without onerous restrictions. Some seem to be based on nothing more substantial than biased outrage; others are out of date because of changes in design. The prohibition on turbo charged or high powered vehicles are examples. These special restrictions lead to conflict with authority which is fundamentally undesirable in the young.

Our earlier recommendation of abolishing special speed limits for learners (and consequentially for P-platers) is based on enabling better driver training. Further improvements in training should enable the removal of further restrictions.

Recommendation

That restrictions on P-plate drivers be reviewed in the light of results and the outcomes of improved driver training.

i) Other related matters

The NMAA strongly recommends that every member of the Staysafe Committee completes an advanced driver training course. It is appropriate that the Staysafe committee members have a thorough knowledge in the areas where they make decisions. The NMAA is able to provide a list of organisations that provide suitable advanced driver training facilities. The life you save may be your own.

It is also strongly recommended that the Committee examine and test drive vehicles from the mid 1960s. The inaccurate steering, doubtful brakes, a steel rod steering column aimed at the sternum, below dash parcel shelves aimed at the knees, bonnet/headlight ornaments to spear pedestrians and complete lack of restraints, crumple zones, occupant restraints etc will help the Committee understand that these improvements have had an enormous effect on the road toll.

Attachment 1 IAM Factors in Accidents Report

Attachment 2 NSW Public Accounts Committee report "Speed Cameras"

Licensed to skill

contributory factors in road accidents

Great Britain 2005 - 2009

IAM
DRIVING ROAD SAFETY

Foreword

In recent years, most of the big leaps forward in road safety have come as a result of vehicle and road design. Looking forward there are very few new technological advances on the horizon to help maintain the downward trend in road casualties.

Five-star cars on five-star roads need five-star drivers. To make the final push towards minimising death, injury and emotional pain on our roads we must tackle the common denominator – human behaviour. Errors – unintentional or intentional, and lapses – momentary or through lack of experience – are behind the vast majority of crashes in the UK today. Our new report looks at hundreds of thousands of police crash reports to pick out the top ten crash contributory factors for a range of road, vehicle and driver types.

For many the results will come as no surprise although they do question the focus on speeding which has for so long underpinned many road safety campaigns. **For the IAM the key issue is what we do next with this information.** For too long technological fixes have been sought when improving the quality of our drivers and riders was clearly the key issue.

The IAM, with its track record of success in delivering advanced drivers and riders, is well placed to help improve the skills of British road users. 'Failure to look' is by far the most common factor recorded along with 'failed to judge another person's path or speed' and 'loss of control'. Advanced driving provides the best solution to these problems through its principles of anticipation, positioning and awareness of hazards. Taking an IAM test and adopting a more measured style of driving would also reduce factors such as 'careless, reckless or in a hurry' and 'travelling too fast for the conditions'.

However, we cannot tackle driver behaviour alone and we are calling for the government to undertake a fundamental review of driver training and link it firmly to continuous post-test learning with real incentives to reward the best drivers.

Alistair Cheyne OBE, IAM Chairman
Simon Best, Chief Executive

Licensed to skill: Contributory factors in accidents is published by the IAM.

IAM, IAM House, 510 Chiswick High Road, London W4 5RG

Institute of Advanced Motorists Limited. Registered in England and Wales, Company number 562530.Charity Number 249002 (England and Wales), SC041201 (Scotland). Published April 2011.

Contents

Licensed to skill: contributory factors in road accidents: Great Britain 2005 - 2009

Executive summary

Since 2005, official accident records have included additional information on contributory factors which are designed to provide insights into why and how road crashes happen and to help develop measures aimed at preventing them. A total of 77 categories of contributory factor are available. These provide information on the factors which the police officer attending the scene considers may have contributed to the cause of the accident. They are intended to identify the key actions and failures which led directly to the impact. This report looks at over 700,000 items of official crash data to pick out common themes.

- Driver and rider error or reaction' factors are recorded more frequently than other types – 68% of all crashes
- The next most common are 'injudicious action' factors – 26% of all crashes
- This is closely followed by 'behaviour or inexperience' factors – 25% of all crashes

Many of the issues which receive the most media coverage are not actually among the most common contributory factors. Speeding, drink driving, mobile phone use, tailgating, road rage and bad weather are all important but are not as frequently reported as driver errors;

- 'Exceeding the speed limit' (13.9% of fatal, 7.2% of serious and less for slight)
- 'impaired by alcohol' (10% of fatal and 7% of serious accidents, less slight accidents)
- 'aggressive driving' (8% of fatal accidents, less serious and slight accidents)
- 'slippery road - due to weather' (11% of slight and 8% of serious accidents but less frequently reported in fatal accidents)
- 'sudden braking' and 'following too close' (8% of slight accidents each, but less frequently reported in fatal and serious accidents)
- 'Driver using mobile phone' (0.8% of fatal crashes, but only 0.2% of all injury crashes)
- Vehicle defects are recorded in very few cases (2%).

The report shows the top ten factors for different crash severities, driver age, road types and other issues such as weather and time of crash. These 'top tens' show key variations which the IAM believe can be useful in the design of future interventions. Accidents involving younger and older drivers show different contributory factors and these can be used to tailor training and assessment solutions. For example, 'Learner or inexperienced' is recorded as a contributory factor more frequently on rural roads, minor roads and 60 mph roads than elsewhere confirming the IAM's view that the driving test does little to prepare new drivers for the highest risk activities.

- Younger and older drivers and riders (under 30 and over 70) have 'error or reaction' factors recorded in a larger proportion of cases than among those between 30 and 70
- Older drivers have 'failed to look properly' recorded more frequently than younger drivers and factors associated with ageing and difficulty coping with the traffic environment, which are less frequently recorded for younger drivers.
- Car drivers under 25 have 'exceeding the speed limit' 'travelling too fast for the conditions' and 'learner/ inexperienced' recorded more frequently than drivers over 25
- 'Exceeding the speed limit' features in the top ten factors for motorcyclists in the under 30 and 30 – 59 age groups
- Alcohol features in the top ten factors for drivers aged 25 – 69 and ranks eleventh for drivers under 25, but is less frequently recorded for motorcyclists
- Comparisons between men and women car drivers show many similarities in the contributory factors reported, but 'careless, reckless or in a hurry', 'travelling too fast for the conditions' and 'impaired by alcohol' are recorded more frequently for men than for women, while 'learner or inexperienced driver' is recorded more frequently for women
- In fatal accidents on motorways, alcohol, fatigue and vehicle defects (mainly tyres and brakes) are more frequently reported than in other accidents suggesting the continued need for motorway campaigns and enforcement to focus on these areas.

Using contributory factors to improve road safety

This report provides a subjective indication of the causes of accidents, not a definitive view. Factors which are more obvious to the police officer attending will tend to be recorded more than those which are less obvious or require more in-depth reconstruction. However, the results can still be used to highlight areas for further investigation or to suggest what the priority areas for road safety should be.

It is clear that driver and rider errors, particularly 'failure to look properly' and 'failure to judge the path or speed of other road users correctly' remain significant contributory factors in road accidents. Factors such as 'careless, reckless or in a hurry', 'loss of control' and 'travelling too fast for the conditions' together make up another significant group which could be addressed by a more measured style of driving, taking greater account of the traffic and road conditions prevailing. These human factors are attributed to drivers of all ages, although some factors are more frequently assigned to young drivers and others to older drivers, which points to the value of post-test driver training for improving the quality and safety of drivers.

Some factors are reported in relatively few accidents in total, but are more prominent in specific situations. Analysing these specific groups of accidents can provide insights into their causes which may help to develop measures for reducing the number of injuries.

The IAM believe that this report delivers important insights into what is actually happening on our roads. We should be ensuring that the police are encouraged to view the completion of this information as a high priority and that quality control measures are in place to ensure researchers and policy makers can continue to rely on this rich source of road safety data.

Glossary and definitions

Definitions of accidents and casualties

Accident	Involves personal injury occurring on the public highway (including footways) involving at least one road vehicle or a vehicle in collision with a pedestrian and which becomes known to the police within 30 days.
Fatal injury/ casualty	Injury causes death within 30 days of the accident
Serious injury/ casualty	Injury does not cause death within 30 days of the accident and either results in the casualty being detained in hospital as an in-patient, or any of the following injuries: fractures, concussion, internal injuries, crushings, severe cuts and lacerations, severe general shock requiring treatment, or any injury which causes death more than 30 days after the accident
Slight injury/ casualty	Injury of a minor character such as a sprain (including whiplash neck injury), bruise or cut which are not judged to be severe, or slight shock requiring roadside attention. Injuries not requiring medical treatment are included
Fatal accident	Accident involving at least one fatal casualty
Serious accident	Accident in which no one is fatally injured, but at least one casualty received serious injuries
Slight accident	Accident in which at least one casualty receives slight injuries but no fatal or serious injuries

Other definitions

Car	Taxis and private hire cars are included with private cars
Motorcycle	Includes moped
Rural roads	Roads which are either outside towns, or in towns with less than 10,000 population.
Season	Spring: March – May, Summer: June – August, Autumn, September – November, Winter: December - February

1 Introduction

1.1 Previous work

The IAM Policy and Research Division has funded a series of projects over the past few years which have looked in detail at the national accident data on specific issues. A unique aspect of these studies was that they combined accident data for several years. The number of accidents included in the combined data was large enough for more complex and multi-dimensional breakdowns of the data to be carried out than are usually possible.

Since 2005, the accident records have included additional information on contributory factors which is designed to provide insights into why and how road accidents happen, to assist in investigating measures aimed at preventing accidents. A total of 77 categories of contributory factor are available. These provide information on the factors which the police officer attending the accident considers may have contributed to the cause of the accident. They are intended to identify the key actions and failures which led directly to the impact.

This report presents the results from a small project which has carried out some preliminary analysis of the contributory factors data for the five years that are currently available: 2005 to 2009.

1.2 Project objectives

The main objective of the project is to analyse and report on contributory factors data for accidents and vehicles to identify the main contributory factors involved for:

- drivers and riders in different age groups, men and women
- accidents on different types of road
- accidents at different times
- accident severity.

The secondary objectives are:

- to identify the role of factors associated with driver error in contributing to road accidents, with a view to focusing on ways to improve the quality of driving
- to use this initial analysis to gain an understanding of the potential for the data to be used to support further investigations on specific topics in future, complementing the IAM's earlier projects based on analysis of the national road accident data.

1.3 This report

This report presents the results of the initial analysis, with a brief commentary. The focus at this stage is on the eight main groups of factors[1] and the 'top ten' individual factors associated with different groups of drivers or accident circumstances (where and when

[1] Road environment; Vehicle defects; Injudicious action; Driver/ Rider error; Impairment or distraction; Behaviour or inexperience; Vision affected; Pedestrian; Special codes

accidents happen). Before that, all of the contributory factors are presented, comparing fatal, serious and slight accidents, to illustrate the full range of information available and the proportion of accidents in which each of the 77 factors is reported.

Over the five years (2005-2009) covered by this analysis, there were almost 700,000 accidents which were attended by the police and for which contributory factors were recorded. These are the accidents which are analysed in Sections 2, 3 and 4. They represent about three-quarters of all accidents reported to the police and recorded in the accident database during this five year period.

Section 5 presents the contributory factors recorded for cars and motorcycles in accidents which were reported to the police during this five year period and shows how these factors vary with the age of drivers and riders, and the gender of car drivers.

The results are summarised in Section 6, along with conclusions on the options for further analysis of the contributory factors data.

1.4 Limitations of the analysis

The contributory factors can be used to provide more insights into the causes of the accident than can be gleaned from the facts about the accident circumstances in the remainder of the accident record. However it is important to bear in mind that there are certain limitations which mean that the contributory factors recorded can only be taken as an indication of the cause of the accidents.

The factors tend to be subjective, reflecting the opinion of the police officer reporting on the accident. They are not necessarily based on a detailed investigation of the accident. Some factors are more 'obvious' than others at the time when the police officer attends the scene. Because the information recorded is admissible as evidence in court, any factors that are recorded need to be supported by clear evidence.

Some research has been done comparing the factors recorded in specific accidents in the national accident database with those recorded in an in-depth study (Richards et al 2010). This found that in general fewer factors were recorded per accident in the national data than in the in-depth study. The types of factor which were less likely to be recorded in the national data than in the in-depth study were those which appear to allocate blame for an accident (such as those in the 'injudicious action' group, which includes 'exceeding the speed limit') and one of the factors in the 'behaviour' group - 'careless, reckless or in a hurry'.

1.5 Contributory Factor Data

The reporting form used by the police at the scene of an accident is designed for recording up to six of the factors which are considered to have contributed to the accident occurring. The 77 factors available for recording are grouped into nine different types.

Factors are assigned to individual participants, and multiple factors can be recorded for individuals. Thus more than one factor can be attributed to accidents, individuals and their vehicles. The percentages presented in this report are the percentage of accidents or vehicles having a specific contributory factor attributed to them, and because more than one factor can be attributed, they do not total 100.

Details of how each factor is defined can be found in the instructions for completing road accident reports (known as Stats20 - see Department for Transport, 2004).

2 Contributory Factors and Accident Severity

A fatal accident is one in which at least one person is killed, a serious accident involves at least one serious injury but no fatalities, and a slight accident involves at least one casualty with minor injuries but no serious injuries or fatalities. (See the Glossary on page iv for definitions.)

Table 1 (which is spread over two pages) shows the proportion of fatal, serious and slight accidents with each of the 77 contributory factors attributed to them, and the proportion with each of the nine types of factor (shown in bold above the group of factors which they describe). Both the groups of factors and the individual factors within these groups are listed in the order of frequency with which they are reported. The key points are:

- At all levels of accident severity, the 'driver/ rider error or reaction' factors are recorded more frequently than other types – 68% of all accidents
- The next most common are 'injudicious action' factors – 26% of all accidents, but a larger proportion of fatal (31%) than serious or slight (26%)
- This is closely followed by 'behaviour or inexperience' factors – 25% of all accidents and again a larger proportion of fatal (28%) than serious or slight (24%)
- Other types of factor which vary with accident severity are:
    - 'road environment' (more often recorded in slight accidents than more serious incidents)
    - 'impairment/ distraction' (more often in fatal accidents than serious or slight accidents) and
    - pedestrian behaviour (more often recorded in fatal accidents and serious accidents than slight accidents).
- Vehicle defects are recorded in very few cases (2%).

Table 1 Contributory factors and accident severity

Contributory factor reported in accident	Accident severity			All accidents
	Fatal	Serious	Slight	
Driver/ Rider Error or Reaction	**65.3%**	**61.8%**	**68.6%**	**67.5%**
Failed to look properly	20.5%	29.3%	36.3%	35.0%
Failed to judge other person's path or speed	11.6%	14.0%	20.0%	18.9%
Loss of control	34.0%	19.7%	13.4%	14.7%
Poor turn or manoeuvre	12.0%	13.8%	14.1%	14.1%
Sudden braking	3.0%	4.5%	7.7%	7.2%
Swerved	6.2%	4.2%	3.7%	3.8%
Junction overshoot	1.7%	1.9%	2.4%	2.3%
Failed to signal or misleading signal	0.6%	1.3%	2.0%	1.9%
Junction restart (moving off at junction)	0.9%	1.1%	1.8%	1.7%
Passing too close to cyclist, horse rider or pedestrian	1.1%	1.4%	1.4%	1.4%
Injudicious Action	**31.4%**	**25.0%**	**26.1%**	**26.0%**
Travelling too fast for conditions	15.9%	11.3%	9.9%	10.2%
Following too close	1.3%	2.8%	7.5%	6.7%
Exceeding speed limit	13.9%	7.2%	4.6%	5.2%
Disobeyed 'Give Way' or 'Stop' sign or markings	2.1%	2.8%	3.5%	3.4%
Disobeyed automatic traffic signal	1.0%	1.4%	1.8%	1.8%
Cyclist entering road from pavement	0.5%	1.0%	0.9%	0.9%
Illegal turn or direction of travel	0.7%	0.8%	0.7%	0.8%
Disobeyed pedestrian crossing facility	0.4%	0.7%	0.4%	0.4%
Vehicle travelling along pavement	0.4%	0.3%	0.3%	0.3%
Disobeyed double white lines	0.9%	0.5%	0.2%	0.2%
Behaviour or Inexperience	**28.0%**	**25.8%**	**24.4%**	**24.7%**
Careless, reckless or in a hurry	17.2%	16.7%	16.1%	16.2%
Learner or inexperienced driver/rider	5.3%	5.5%	5.2%	5.3%
Aggressive driving	8.3%	5.1%	3.6%	3.9%
Nervous, uncertain or panic	1.1%	1.3%	1.8%	1.7%
Unfamiliar with model of vehicle	1.4%	1.1%	0.8%	0.8%
Inexperience of driving on the left	0.4%	0.4%	0.5%	0.5%
Driving too slow for conditions or slow vehicle (e.g. tractor)	0.1%	0.1%	0.1%	0.1%
Road Environment	**10.9%**	**13.3%**	**15.6%**	**15.1%**
Slippery road (due to weather)	5.9%	7.9%	10.6%	10.1%
Road layout (e.g. bend, hill, narrow carriageway)	3.2%	2.8%	2.7%	2.7%
Deposit on road (e.g. oil, mud, chippings)	0.8%	1.7%	1.5%	1.5%
Animal or object in carriageway	0.8%	1.0%	1.2%	1.2%
Poor or defective road surface	0.7%	0.8%	0.6%	0.5%
Inadequate or masked signs or road markings	0.4%	0.4%	0.5%	0.3%
Temporary road layout (e.g. contraflow)	0.2%	0.2%	0.3%	0.2%
Defective traffic signals	0.0%	0.1%	0.2%	0.1%
Traffic calming (e.g. speed cushions, road humps, chicanes)	0.1%	0.2%	0.1%	0.1%

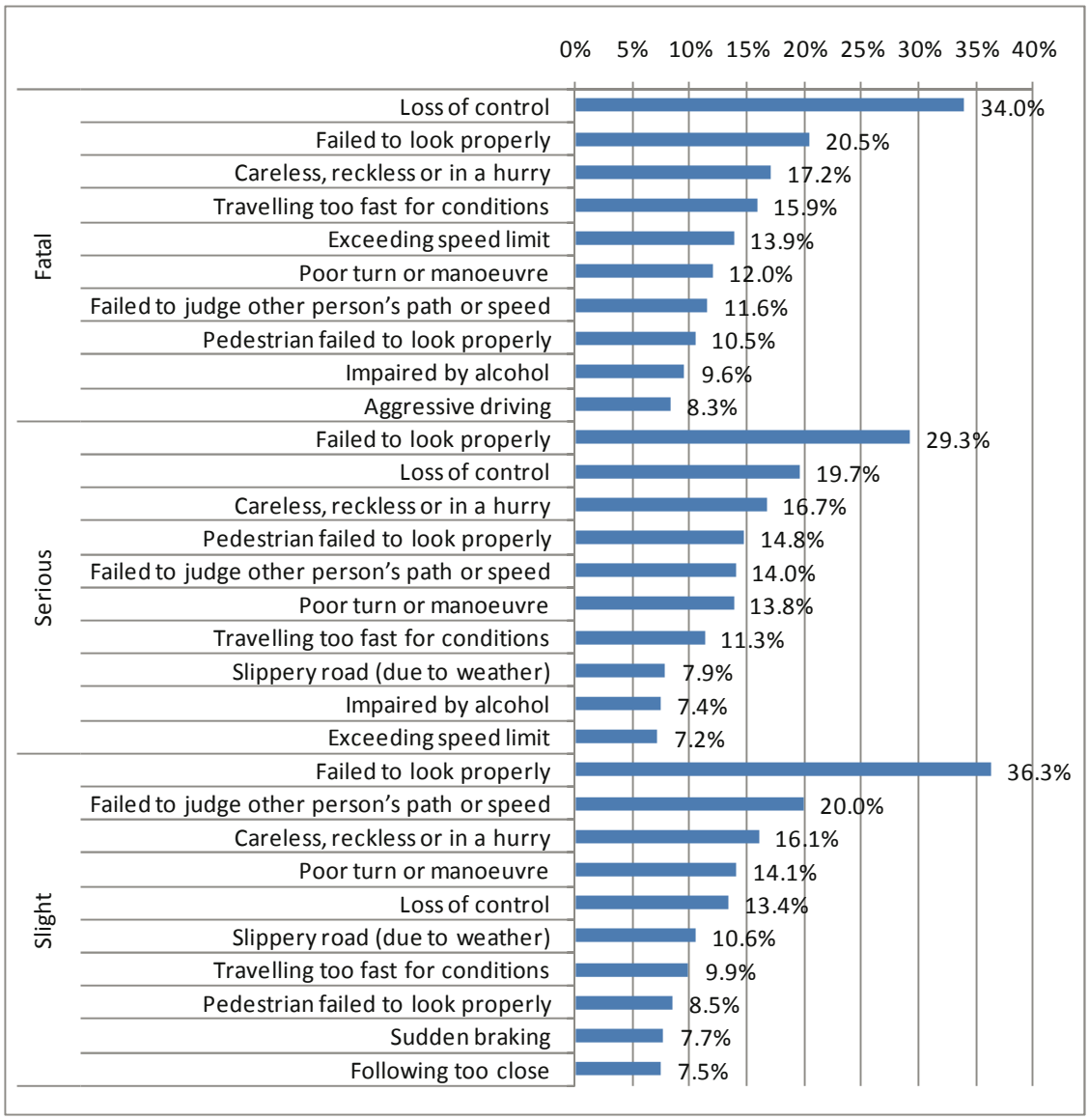
Contributory factor reported in accident	Accident severity			All accidents
	Fatal	Serious	Slight	
Pedestrian only (casualty or uninjured)	**18.2%**	**20.4%**	**11.5%**	**13.0%**
Pedestrian failed to look properly	10.5%	14.8%	8.5%	9.5%
Pedestrian careless, reckless or in a hurry	3.4%	6.3%	3.6%	4.0%
Pedestrian crossing road masked by stationary or parked vehicle	1.9%	4.4%	2.4%	2.7%
Pedestrian failed to judge vehicle's path or speed	5.2%	4.5%	2.4%	2.8%
Pedestrian impaired by alcohol	4.1%	3.5%	1.5%	1.9%
Dangerous action in carriageway (e.g. playing)	2.2%	1.9%	0.9%	1.1%
Pedestrian wrong use of pedestrian crossing facility	1.2%	1.4%	0.7%	0.8%
Pedestrian wearing dark clothing at night	3.3%	1.3%	0.5%	0.7%
Pedestrian disability or illness, mental or physical	1.9%	0.8%	0.3%	0.4%
Pedestrian impaired by drugs (illicit or medicinal)	0.4%	0.3%	0.1%	0.2%
Impairment or Distraction	**19.6%**	**14.2%**	**11.1%**	**11.7%**
Impaired by alcohol	9.6%	7.4%	4.7%	5.2%
Distraction in vehicle	2.6%	1.7%	2.1%	2.1%
Fatigue	3.1%	1.8%	1.3%	1.4%
Distraction outside vehicle	1.0%	1.0%	1.5%	1.4%
Illness or disability, mental or physical	3.6%	1.8%	1.2%	1.3%
Impaired by drugs (illicit or medicinal)	2.2%	0.9%	0.4%	0.5%
Not displaying lights at night or in poor visibility	0.4%	0.4%	0.3%	0.3%
Cyclist wearing dark clothing at night	0.4%	0.4%	0.3%	0.3%
Driver using mobile phone	0.8%	0.3%	0.2%	0.2%
Uncorrected, defective eyesight	0.4%	0.2%	0.1%	0.2%
Vision Affected by:	**7.5%**	**9.2%**	**10.5%**	**10.3%**
Stationary or parked vehicle(s)	1.1%	2.9%	3.2%	3.1%
Dazzling sun	1.5%	1.8%	2.2%	2.2%
Rain, sleet, snow, or fog	1.5%	1.5%	1.9%	1.9%
Road layout (e.g. bend, winding road, hill crest)	1.7%	1.5%	1.5%	1.5%
Vehicle blind spot	1.0%	1.0%	1.3%	1.2%
Vegetation	0.4%	0.4%	0.4%	0.4%
Dazzling headlights	0.4%	0.3%	0.3%	0.3%
Buildings, road signs, street furniture	0.2%	0.2%	0.2%	0.2%
Spray from other vehicles	0.1%	0.2%	0.2%	0.2%
Visor or windscreen dirty or scratched	0.2%	0.1%	0.1%	0.1%
Special codes	**6.1%**	**5.2%**	**4.5%**	**4.6%**
Other	4.4%	3.3%	2.7%	2.8%
Stolen vehicle	1.1%	1.0%	0.7%	0.8%
Emergency vehicle on a call	0.3%	0.4%	0.6%	0.5%
Vehicle in course of crime	0.4%	0.4%	0.4%	0.4%
Vehicle door opened or closed negligently	0.1%	0.4%	0.4%	0.4%
Vehicle Defects	**2.8%**	**2.2%**	**1.9%**	**1.9%**
Tyres illegal, defective or under inflated	1.5%	0.9%	0.7%	0.7%
Defective brakes	0.7%	0.6%	0.6%	0.6%
Overloaded or poorly loaded vehicle or trailer	0.4%	0.3%	0.2%	0.2%
Defective lights or indicators	0.2%	0.2%	0.2%	0.2%
Defective steering or suspension	0.2%	0.2%	0.2%	0.2%
Defective or missing mirrors	0.0%	0.0%	0.0%	0.0%
Total number of accidents	**11,968**	**104,760**	**576,959**	**693,687**

Figure 1 shows the ten most frequently reported of the individual factors in fatal, serious and slight accidents. The key points are:

- Seven factors are in the top ten for fatal, serious and slight accidents, but their ranking varies with severity of the accident. These are 'loss of control', 'failed to look properly', 'careless, reckless or in a hurry', 'travelling too fast for the conditions', 'poor turn or manoeuvre' 'failed to judge another person's path or speed' and 'pedestrian failed to look properly'
- 'Loss of control' is the most frequently recorded single factor in fatal accidents (34%); it ranks second in serious accidents (20%) and fifth in slight accidents (13%)
- 'Failure to look properly' is the most frequently recorded factor in both serious (29%) and slight (36%) accidents, and is the second most frequently recorded in fatal accidents (21%)
- A driver or rider who is 'careless, reckless or in a hurry' is the third most common factor in fatal, serious and slight accidents, accounting for 16-17% in each case
- 'Travelling too fast for the conditions' and 'exceeding speed limit' are the fourth and fifth most frequently recorded in fatal accidents (16% and 14%) but rank lower in serious (11% and 7%) and slight accidents.[2]
- 'Failed to judge another person's path or speed' is the second most frequently recorded in slight accidents (20%), but ranks seven in fatal accidents and six in serious accidents
- Factors which are not in the top ten in fatal, serious and slight accidents are:
    - 'impaired by alcohol (10% of fatal and 7% of serious accidents, less slight accidents)
    - 'aggressive driving' (8% of fatal accidents, less serious and slight accidents)
    - 'slippery road - due to weather' (11% of slight and 8% of serious accidents but less frequently reported in fatal accidents)
    - 'sudden braking' and 'following too close' (8% of slight accidents each, but less frequently reported in fatal and serious accidents).

[2] Note that 'exceeding speed limit' takes precedence and is intended to be recorded in cases where vehicles were also travelling too fast for the conditions. 'Travelling too fast for the conditions' is intended to be recorded in cases where the driver or rider was travelling within the speed limit, but too fast for the conditions. However some drivers have both factors recorded.

Figure 1 Ten most frequently reported factors in fatal, serious and slight accidents



3 Accidents on different types of road

3.1 Road class

Table 2 shows the types of contributory factor reported for accidents on different classes of road.

- 'Driver/ rider error or reaction' is reported in a larger proportion of accidents on motorways and A roads than on minor roads, particularly C and unclassified roads
- 'Behaviour or inexperience' is less frequently reported in motorway accidents (where learner drivers are not legally able to drive) than on other types of road
- Factors associated with pedestrians are, as expected, rarely reported on motorways and are reported for higher proportions of accidents on minor roads than on major roads
- 'Impairment or distraction' and 'vehicle defects' are reported for a larger proportion of motorway accidents than for accidents on other types of road.

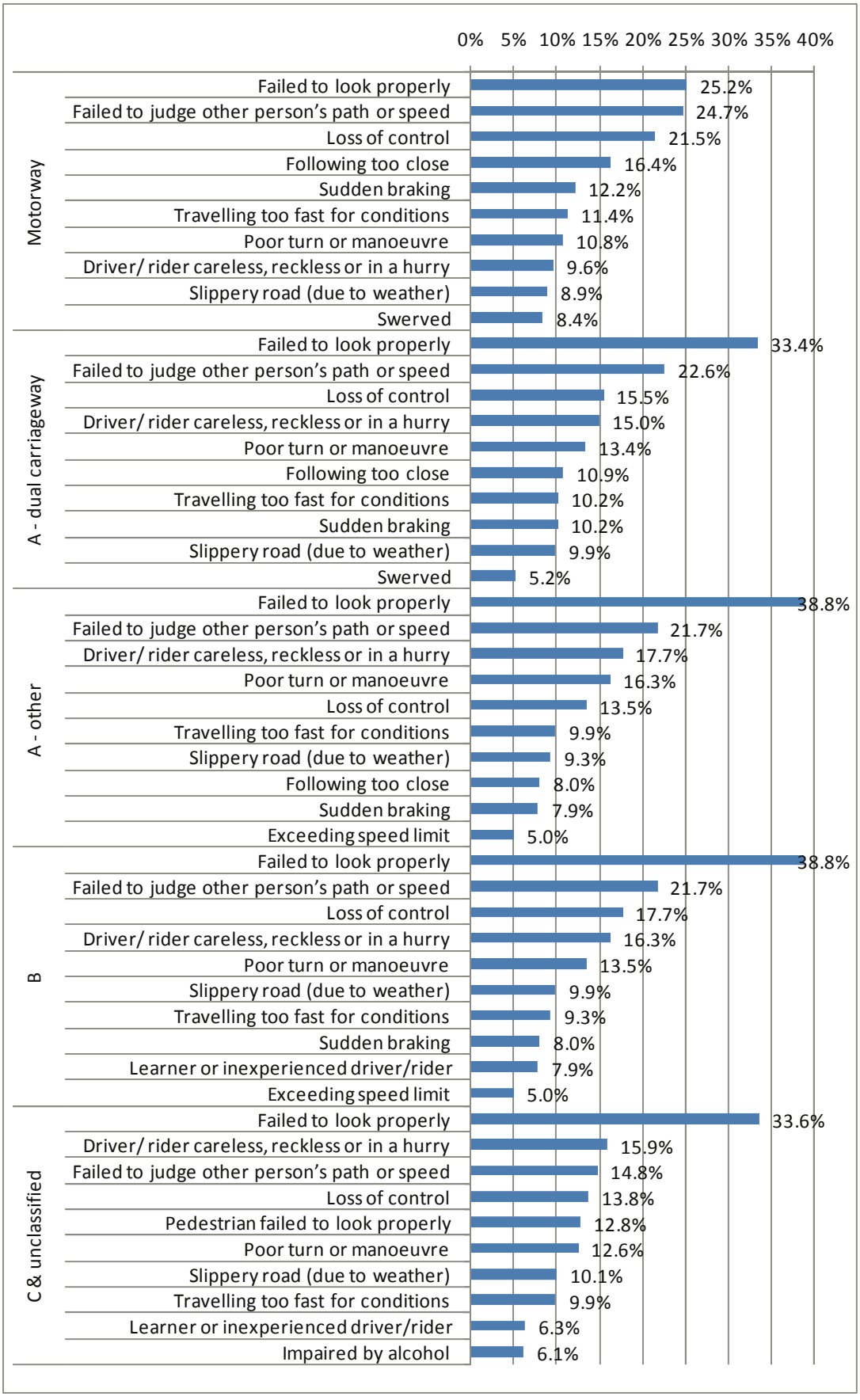
Table 2 Types of contributory factor reported for accidents on different types of road

Contributory factor type	Road Class and Type					All roads
	Motorway	A - dual carriageway	A - other	B	C & unclassified	
Driver/ Rider Error or Reaction	71.3%	69.7%	71.2%	68.0%	62.7%	67.5%
Injudicious Action	26.6%	29.4%	26.6%	26.6%	24.2%	26.0%
Behaviour or Inexperience	16.2%	23.0%	25.4%	25.4%	25.4%	24.7%
Road Environment	12.6%	13.8%	13.6%	19.2%	15.9%	15.1%
Pedestrian only (casualty or uninjured)	1.3%	8.7%	11.6%	11.4%	17.7%	13.0%
Impairment or Distraction	14.7%	11.6%	11.2%	12.2%	11.7%	11.7%
Vision Affected	9.7%	7.6%	9.0%	10.7%	12.2%	10.3%
Special codes	5.1%	4.7%	4.3%	4.0%	5.1%	4.6%
Vehicle Defects	4.1%	2.4%	1.7%	1.7%	1.8%	1.9%
Number of accidents	33,971	71,334	247,090	89,237	252,055	693,687

Figure 2 shows that:

- 'Failed to look properly' is the most frequently reported factor on all types of road but is less frequently reported on motorways (25%) than on other roads (33% - 39%)
- 'Failure to judge another person's path or speed' ranks second on all types of road except for minor roads
- 'Following too close' is reported more frequently on motorways (16%) and dual carriageways (11%) than other roads (less than 5% on minor roads)
- Seven factors appear in the top ten on all classes of road: failed to look properly', 'failure to judge another person's path or speed', loss of control, 'travelling too fast for the conditions', 'poor turn or manoeuvre', 'driver/ rider careless, reckless or in a hurry' and 'slippery road' (due to weather)
- The factors which appear in the top ten on some, *but not all*, classes of road are:
    - 'exceeding the speed limit' (single carriageway A roads and B roads only)
    - 'learner or inexperienced driver/ rider' (B, C and unclassified roads only)
    - 'pedestrian failed to look properly' (C and unclassified roads only)
    - 'impaired by alcohol' (C and unclassified roads only).
- These factors which are in the top ten for minor roads only may reflect the way minor roads are used (pedestrians and learner drivers may be found more on such roads; drink drivers tend to report that they drive on local quiet roads after drinking alcohol (Hopkin et al 2010, Sykes et al 2010).

Figure 2 Ten most frequently reported factors in accidents on different classes of road



3.2 Rural and urban roads

Table 3 shows two main differences in the types of factor reported between accidents in urban and rural roads:

- road environment factors are reported in a larger proportion of accidents in rural areas than urban areas
- pedestrian factors are, as expected, reported in a larger proportion of accidents in urban areas.

Table 3 Types of contributory factor reported for accidents in urban and rural areas

Contributory factor type	Area	
	Urban	Rural
Driver/ Rider Error or Reaction	66.2%	69.6%
Injudicious Action	25.1%	27.5%
Behaviour or Inexperience	24.8%	24.5%
Road Environment	9.1%	24.4%
Pedestrian only (casualty or uninjured)	18.7%	4.2%
Impairment or Distraction	10.5%	13.6%
Vision Affected	10.0%	10.6%
Special codes	5.2%	3.8%
Vehicle Defects	1.5%	2.6%
Number of accidents	417,887	275,710

Figure 3 shows that eight factors appear in the top ten for both urban and rural roads.

- 'Failed to look properly' is the most frequently recorded factor in both, but is recorded in 41% of accidents in urban areas and 26% in rural areas.
- 'Loss of control' and 'slippery road – due to weather' are recorded more frequently on rural roads than urban.
- Factors which are in the top ten for urban but not rural roads are:
    - 'poor turn or manoeuvre', 'pedestrian failed to look properly' and 'pedestrian careless, reckless or in a hurry'
- Factors in the top ten for rural but not urban roads are:
    - 'sudden braking' and 'learner or inexperienced driver/ rider'.

Figure 3 Ten most frequently reported factors in accidents in urban and rural areas

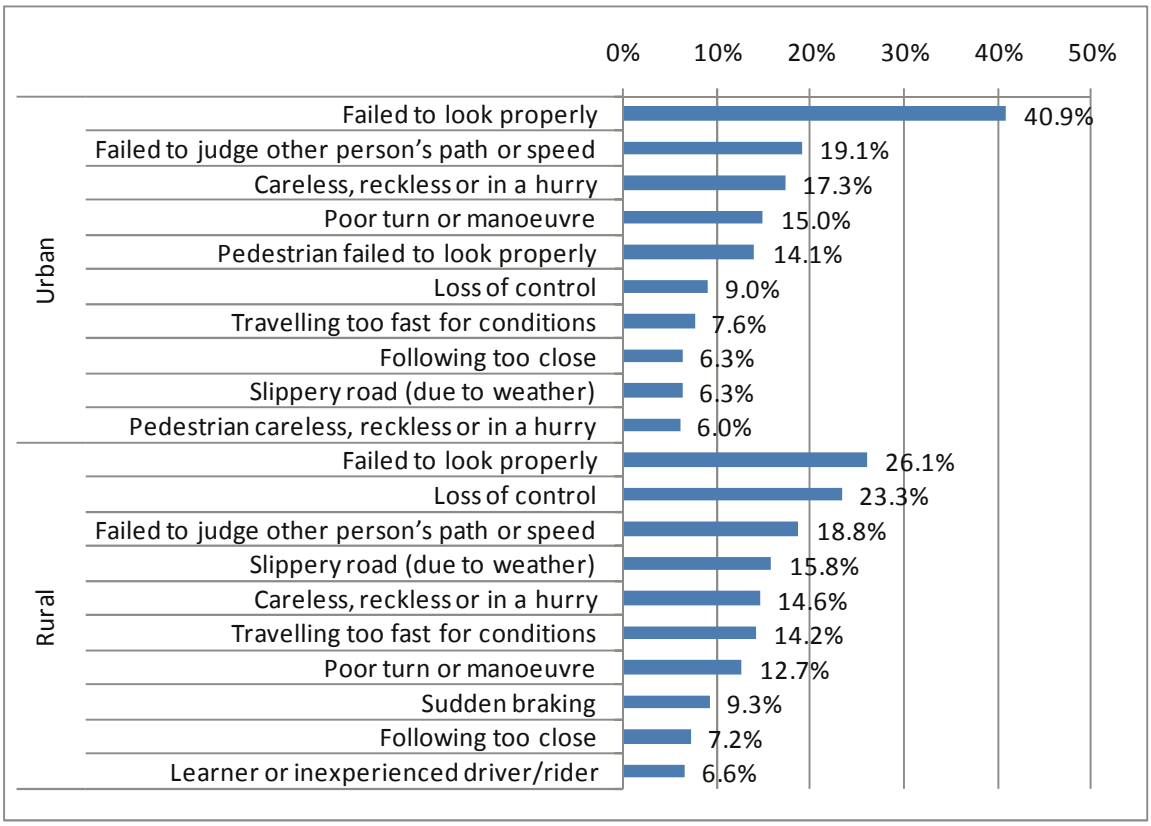


Table 4 shows that comparing types of road between urban and rural areas:

- 'Injudicious action' is reported in a larger proportion of accidents on motorways and dual carriageways in urban areas than on other types of road (in urban or rural areas)
- 'Road environment' factors are reported in a larger proportion of accidents on minor roads in rural areas than in urban areas or on major roads
- 'Impairment or distraction' factors are reported in a larger proportion of accidents on each type of road in rural areas than on equivalent roads in urban areas
- 'Pedestrian' factors are reported in a larger proportion of accidents on minor urban roads than rural roads or major roads.

Table 4 Types of contributory factor reported: road class in urban and rural areas

Contributory factor type and area	Road class and type			
	Motorway	A - dual carriageway	A - other	B, C or unclassified
Urban area				
Driver/ Rider Error or Reaction	73.6%	67.7%	69.7%	63.6%
Injudicious Action	31.7%	31.7%	25.7%	23.4%
Behaviour or Inexperience	17.9%	24.2%	25.7%	24.5%
Road Environment	13.7%	10.1%	7.5%	9.7%
Pedestrian only (casualty or uninjured)	1.3%	13.4%	17.3%	20.9%
Impairment or Distraction	11.5%	9.6%	9.5%	11.2%
Vision Affected	9.0%	7.3%	8.5%	11.5%
Special codes	4.6%	4.8%	5.0%	5.4%
Vehicle Defects	2.7%	1.5%	1.2%	1.6%
Number of accidents	4,444	40,527	142,967	229,949
Rural area				
Driver/ Rider Error or Reaction	70.9%	72.3%	73.3%	65.0%
Injudicious Action	25.9%	26.5%	27.9%	27.7%
Behaviour or Inexperience	16.0%	21.3%	25.0%	27.2%
Road Environment	12.4%	18.7%	22.1%	31.2%
Pedestrian only (casualty or uninjured)	1.2%	2.6%	3.7%	5.9%
Impairment or Distraction	15.2%	14.2%	13.4%	13.2%
Vision Affected	9.8%	8.0%	9.6%	12.5%
Special codes	5.2%	4.7%	3.2%	3.7%
Vehicle Defects	4.4%	3.5%	2.3%	2.1%
Number of accidents	29,523	30,801	104,088	111,298

3.3 Speed limit

The following types of factor are reported in a larger proportion of accidents on roads with a speed limit of 70 mph than on other roads:

- ‘Impairment or distraction’
- ‘Vehicle defects’.

‘Road environment’ factors are reported in a larger proportion of accidents on 60 mph roads than on other roads.

Table 5 shows the following factors to be reported in a smaller proportion of accidents on roads with a speed limit of 30 mph or under than on other roads:

- ‘Driver/ rider error or reaction’
- ‘Injudicious action’
- ‘Road environment’.

The following types of factor are reported in a larger proportion of accidents on roads with a speed limit of 70 mph than on other roads:

- ‘Impairment or distraction’
- ‘Vehicle defects’.

‘Road environment’ factors are reported in a larger proportion of accidents on 60 mph roads than on other roads.

Table 5 Types of contributory factor reported for accidents: speed limit

Contributory factor type	Speed limit				All roads
	30 mph or less	40 - 50 mph	60 mph	70 mph	
Driver/ Rider Error or Reaction	65.3%	72.3%	69.7%	71.9%	67.5%
Injudicious Action	24.4%	29.7%	28.9%	25.7%	26.0%
Behaviour or Inexperience	24.9%	24.4%	26.9%	18.7%	24.7%
Road Environment	9.7%	16.4%	31.6%	15.0%	15.1%
Pedestrian only (casualty or uninjured)	19.3%	6.1%	2.2%	1.7%	13.0%
Impairment or Distraction	10.8%	12.4%	12.7%	14.8%	11.7%
Vision Affected	10.6%	8.8%	10.9%	8.7%	10.3%
Special codes	5.3%	3.8%	3.1%	4.9%	4.6%
Vehicle Defects	1.5%	1.9%	2.3%	4.0%	1.9%
Number of accidents	418,327	80,927	133,824	60,609	693,687

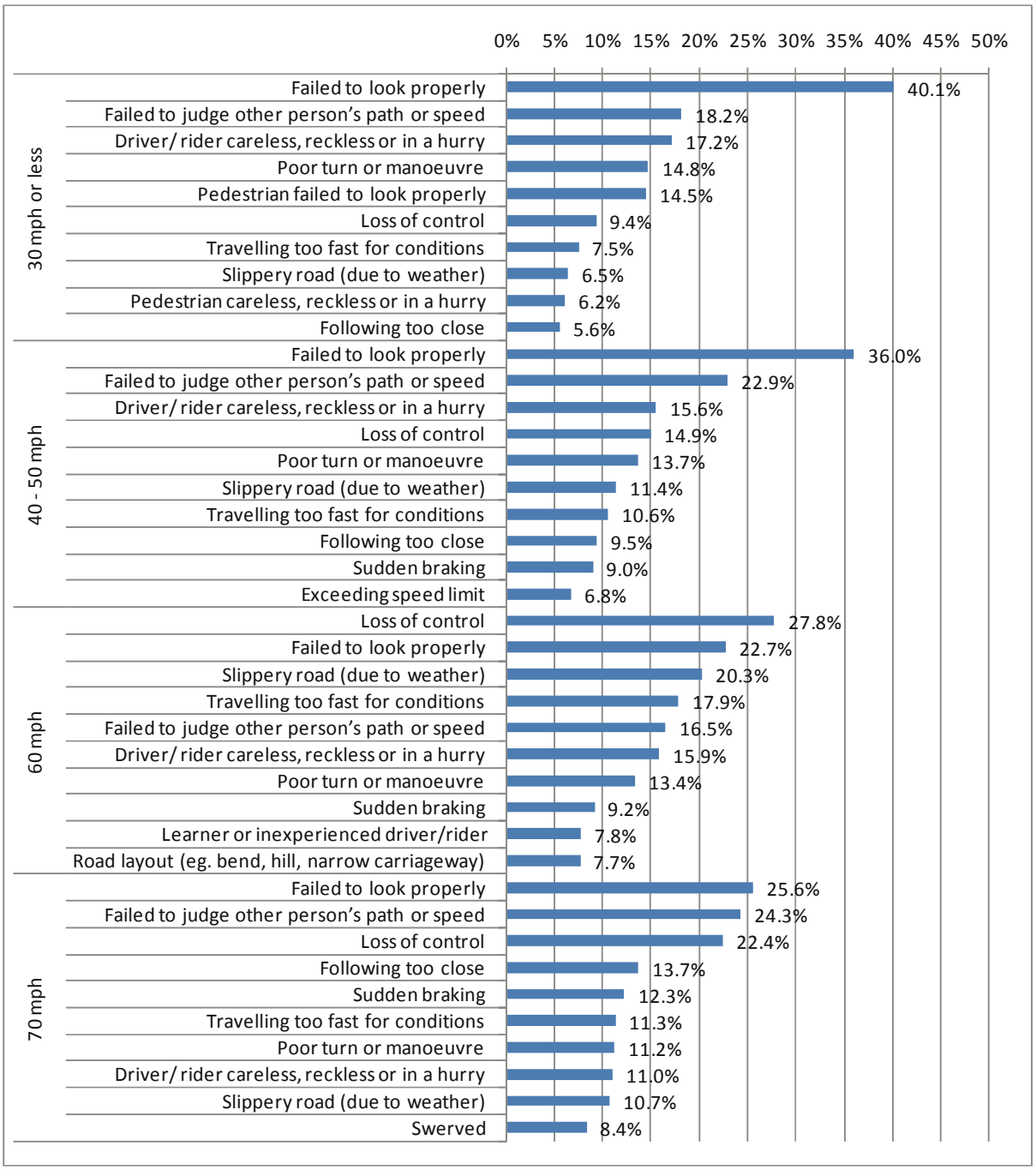
Figure 4 shows that seven factors appear in the top ten for all speed limits.

- Recording of ‘failed to look properly’, the most frequently recorded factor, varies with speed limit from 40% of accidents on roads with a speed limit up to 30 mph to 26% of accidents where the speed limit is 70 mph.
- ‘Slippery road due to weather’ is more commonly recorded on roads with a speed limit of 60 mph than elsewhere.

Factors which appear in the top ten for some speed limits only are:

- ‘Sudden braking’ is in the top ten for roads with a speed limit of 40 mph or more
- ‘Pedestrian failed to look properly’ and ‘pedestrian careless, reckless or in a hurry’ are reported in the top ten for 30 mph roads only
- ‘Learner or inexperienced driver/ rider’ and ‘road layout’ (e.g. bend, hill, narrow carriageway) are ranked nine and ten respectively on 60 mph roads but do not appear in the top ten on other roads.

Figure 4 Ten most frequently reported factors in accidents on roads with different speed limits



3.4 Type of road and accident severity

Table 6 shows that there are some differences in the types factors reported on different classes of road which vary with accident severity:

- 'Impairment or distraction' is reported in a larger proportion of fatal accidents on motorways (31%) than on other classes of road and is also reported in a larger proportion of serious accidents on motorways (24%) than other roads; but in slight accidents, the proportion of accidents with this type of factor varies less with road class.

- ‘Injudicious action’ is reported in a larger proportion of fatal accidents on A, B and minor roads than on motorways, while there is less variation with road class in the proportion of serious and slight accidents with such factors reported.
- ‘Behaviour or inexperience’ is reported in a larger proportion of fatal accidents on minor roads (32%) than on other classes of road or in accidents with less severe injuries.
- On motorways, ‘pedestrian’ factors are reported in 13% of fatal accidents but only 2% of serious and 1% of slight accidents on motorways.

Table 6 Types of contributory factor reported: road class and accident severity

Contributory factor type and severity	Road class and type			
	Motorway	A - dual carriageway	A - other	B, C or unclassified
Fatal				
Driver/ Rider Error or Reaction	61.1%	60.0%	68.2%	64.8%
Injudicious Action	23.4%	29.9%	31.9%	32.6%
Behaviour or Inexperience	16.0%	23.6%	28.0%	31.5%
Road Environment	8.1%	8.4%	10.7%	12.5%
Pedestrian only (casualty or uninjured)	13.2%	24.0%	16.8%	18.4%
Impairment or Distraction	30.9%	18.4%	18.8%	19.2%
Vision Affected	4.4%	6.0%	7.5%	8.4%
Special codes	9.2%	6.6%	4.5%	7.2%
Vehicle Defects	5.2%	3.2%	2.4%	2.8%
Number of accidents	676	1,693	4,972	4,627
Serious				
Driver/ Rider Error or Reaction	68.6%	62.1%	65.4%	58.5%
Injudicious Action	23.7%	26.2%	25.9%	24.2%
Behaviour or Inexperience	18.6%	23.6%	26.2%	26.5%
Road Environment	12.7%	11.0%	12.4%	14.4%
Pedestrian only (casualty or uninjured)	1.9%	18.5%	18.5%	23.5%
Impairment or Distraction	24.1%	14.9%	13.4%	13.9%
Vision Affected	6.8%	6.5%	8.5%	10.4%
Special codes	6.4%	5.7%	4.6%	5.5%
Vehicle Defects	5.8%	2.4%	1.9%	2.2%
Number of accidents	3,579	10,033	38,561	52,587
Slight				
Driver/ Rider Error or Reaction	71.9%	71.2%	72.4%	65.1%
Injudicious Action	27.1%	30.0%	26.7%	24.8%
Behaviour or Inexperience	16.0%	22.9%	25.2%	25.1%
Road Environment	12.7%	14.5%	13.9%	17.3%
Pedestrian only (casualty or uninjured)	0.9%	6.6%	10.1%	14.6%
Impairment or Distraction	13.3%	10.9%	10.6%	11.3%
Vision Affected	10.2%	7.8%	9.1%	12.1%
Special codes	4.8%	4.5%	4.2%	4.7%
Vehicle Defects	3.9%	2.3%	1.6%	1.7%
Number of accidents	29,716	59,608	203,557	284,078

Table 7 shows some variations with accident severity between urban and rural roads:

- ‘Driver/ rider error or reaction’ and ‘impairment or distraction’ are reported in a larger proportion of fatal and serious accidents in rural areas than urban areas

- ‘Pedestrian’ factors are reported in a larger proportion of fatal and serious accidents in urban areas than in rural areas or in slight accidents
- In slight accidents, the reporting of most factors does not vary between urban and rural areas, except that ‘road environment’ is reported more frequently in rural areas and ‘pedestrian’ factors more in urban areas

Table 7 Types of contributory factor reported: accident severity and urban and rural areas

Contributory factor type	Fatal		Serious		Slight	
	Urban	Rural	Urban	Rural	Urban	Rural
Driver/ Rider Error or Reaction	56.6%	70.2%	56.5%	68.4%	67.9%	69.8%
Injudicious Action	30.5%	31.9%	22.8%	27.7%	25.4%	27.3%
Behaviour or Inexperience	27.0%	28.6%	24.5%	27.5%	24.9%	23.7%
Road Environment	5.4%	14.0%	6.9%	21.3%	9.4%	25.4%
Pedestrian only (casualty or uninjured)	33.7%	9.7%	31.4%	6.7%	16.5%	3.5%
Impairment or Distraction	15.7%	21.7%	11.9%	17.0%	10.2%	12.6%
Vision Affected	8.4%	6.9%	9.3%	9.1%	10.1%	11.1%
Special codes	7.6%	5.3%	6.1%	4.2%	5.0%	3.7%
Vehicle Defects	1.5%	3.6%	1.7%	2.9%	1.5%	2.5%
Number of accidents	4,267	7,701	58,386	46,357	355,234	221,652

4 Accidents at different times

4.1 Time of day

Table 8 shows that the main variations are between accidents at night and those during the day:

- ‘Behaviour or inexperience’, ‘impairment or distraction’ and ‘injudicious action’ are reported in a larger proportion of accidents between 7 pm and 7 am than during the day
- ‘Vision affected’ is reported in a larger proportion of accidents between 7 am and 7 pm than at night
- ‘Road environment’ is reported in a larger proportion of accidents at night and in the morning rush hour than between 10 am and 7 pm.

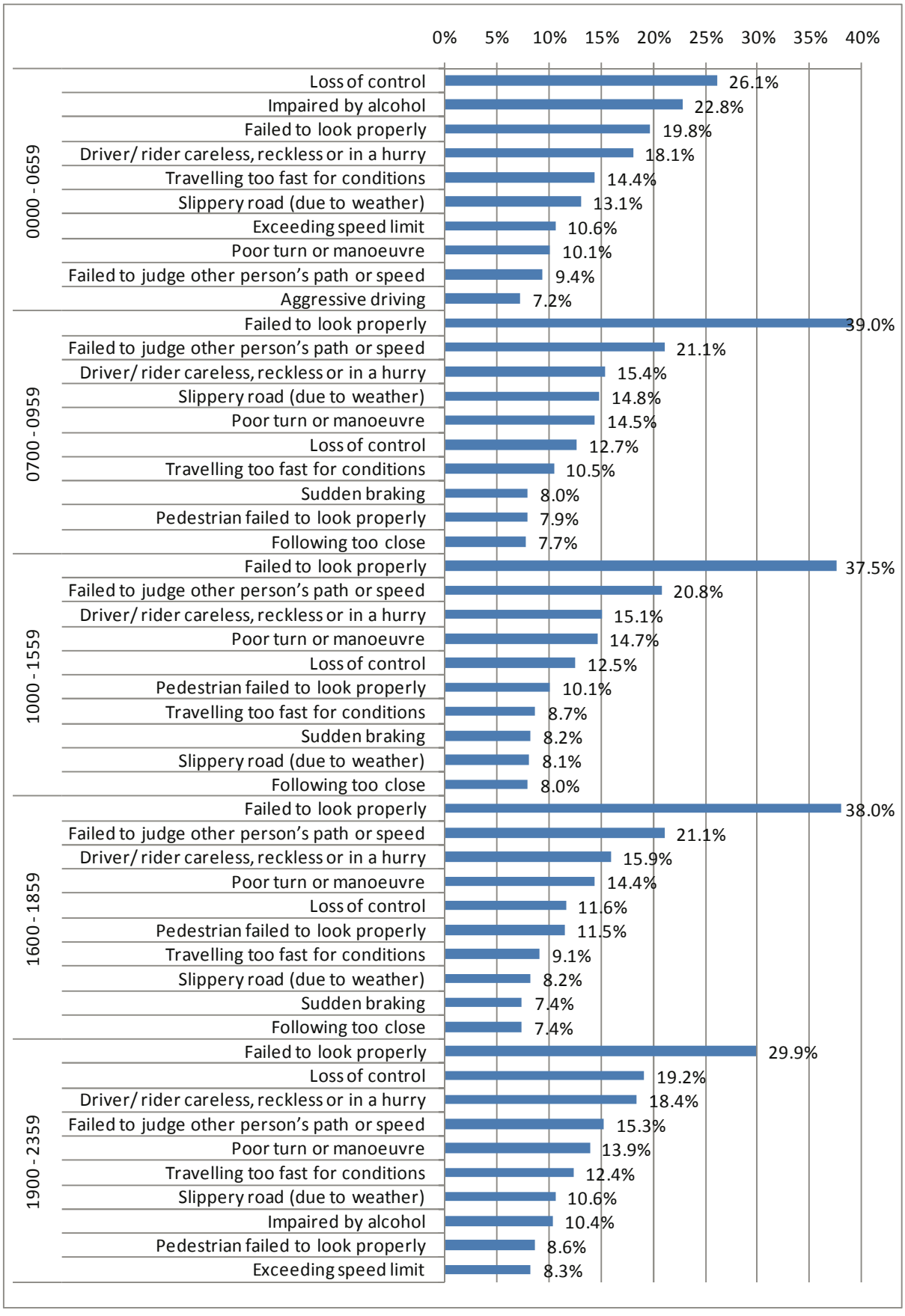
Table 8 Types of contributory factor reported: time of day

Contributory factor type	Time of day					All times
	0000 - 0659	0700 - 0959	1000 - 1559	1600 - 1859	1900 - 2359	
Driver/ Rider Error or Reaction	57.8%	70.2%	69.7%	68.3%	64.5%	67.5%
Injudicious Action	29.7%	25.3%	24.5%	25.0%	29.2%	26.0%
Behaviour or Inexperience	28.2%	21.4%	23.0%	23.9%	30.1%	24.7%
Road Environment	18.8%	19.8%	13.2%	12.7%	16.1%	15.1%
Pedestrian only (casualty or uninjured)	11.4%	10.0%	13.1%	15.2%	13.2%	13.0%
Impairment or Distraction	31.9%	7.1%	8.2%	9.2%	16.4%	11.7%
Vision Affected	6.0%	13.7%	10.6%	10.9%	7.8%	10.3%
Special codes	7.4%	3.4%	4.6%	4.0%	5.3%	4.6%
Vehicle Defects	1.8%	1.8%	2.0%	1.8%	2.0%	1.9%
Number of accidents	57,368	109,723	238,992	159,712	127,818	693,613

Figure 5 shows that seven individual factors are in the top ten at each time of day, but the ranking of the factors within the top ten varies:

- ‘Impaired by alcohol’ is the second most frequent factor reported for accidents between midnight and 7 am (23% of accidents); it features in 10% of accidents between 7 pm and midnight but is not in the top ten at other times
- ‘Exceeding the speed limit’ also features in the top ten between 7 pm and midnight and between midnight and 7 am but not at other times
- ‘Aggressive driving’ ranks tenth between midnight and 7 am but is not in the top ten factors at other times
- ‘Sudden braking’ features in the top ten in accidents between 7 am and 7 pm, but not at night
- ‘Pedestrian failed to look properly’ is one of the top ten factors in each time period except between midnight and 7 am.

Figure 5 Ten most frequently reported factors in accidents at different times of day



4.2 Weekdays and weekends

Table 9 shows that proportion of accidents with different types of factor reported is similar at weekends and on weekdays, except that 'impairment or distraction' is reported in a larger proportion of accidents at weekends (17%) than on weekdays (10%).

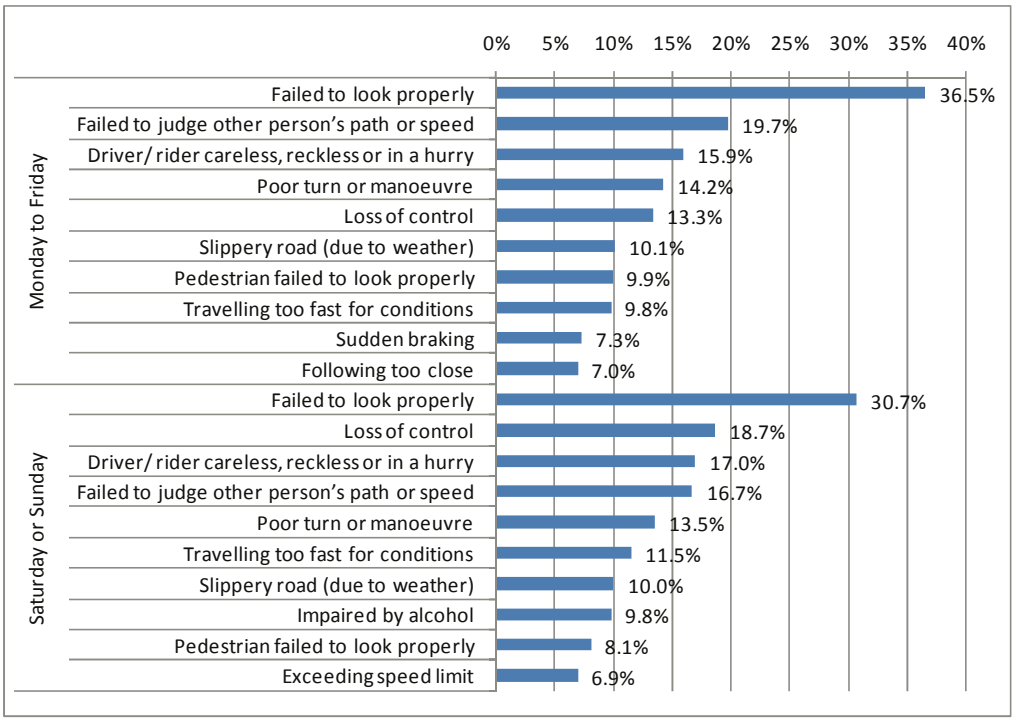
Table 9 Types of contributory factor reported: weekdays and weekends

Contributory factor type	Weekday or weekend	
	Monday to Friday	Saturday or Sunday
Driver/ Rider Error or Reaction	68.1%	65.9%
Injudicious Action	25.4%	27.8%
Behaviour or Inexperience	24.0%	26.8%
Road Environment	24.0%	26.8%
Pedestrian only (casualty or uninjured)	13.3%	12.0%
Impairment or Distraction	10.1%	16.5%
Vision Affected	10.8%	8.7%
Special codes	4.5%	5.0%
Vehicle Defects	1.9%	2.0%
Number of accidents	515,754	177,933

Figure 6 shows that of the top ten factors reported, eight are the same on weekdays and weekends, although the ranking varies. The differences are:

- 'Impaired by alcohol '(10%) and exceeding the speed limit (7%) are in the top ten at weekends only
- 'Sudden braking' and 'following too close' are in the top ten on weekdays (7%) but not at weekends.

Figure 6 Ten most frequently reported factors in accidents on weekdays and at weekends



4.3 Season

Table 10 shows that the main difference between different times of year is that 'road environment' factors are reported in a larger proportion of accidents in winter (21%) than at other times (e.g. 13% in summer).

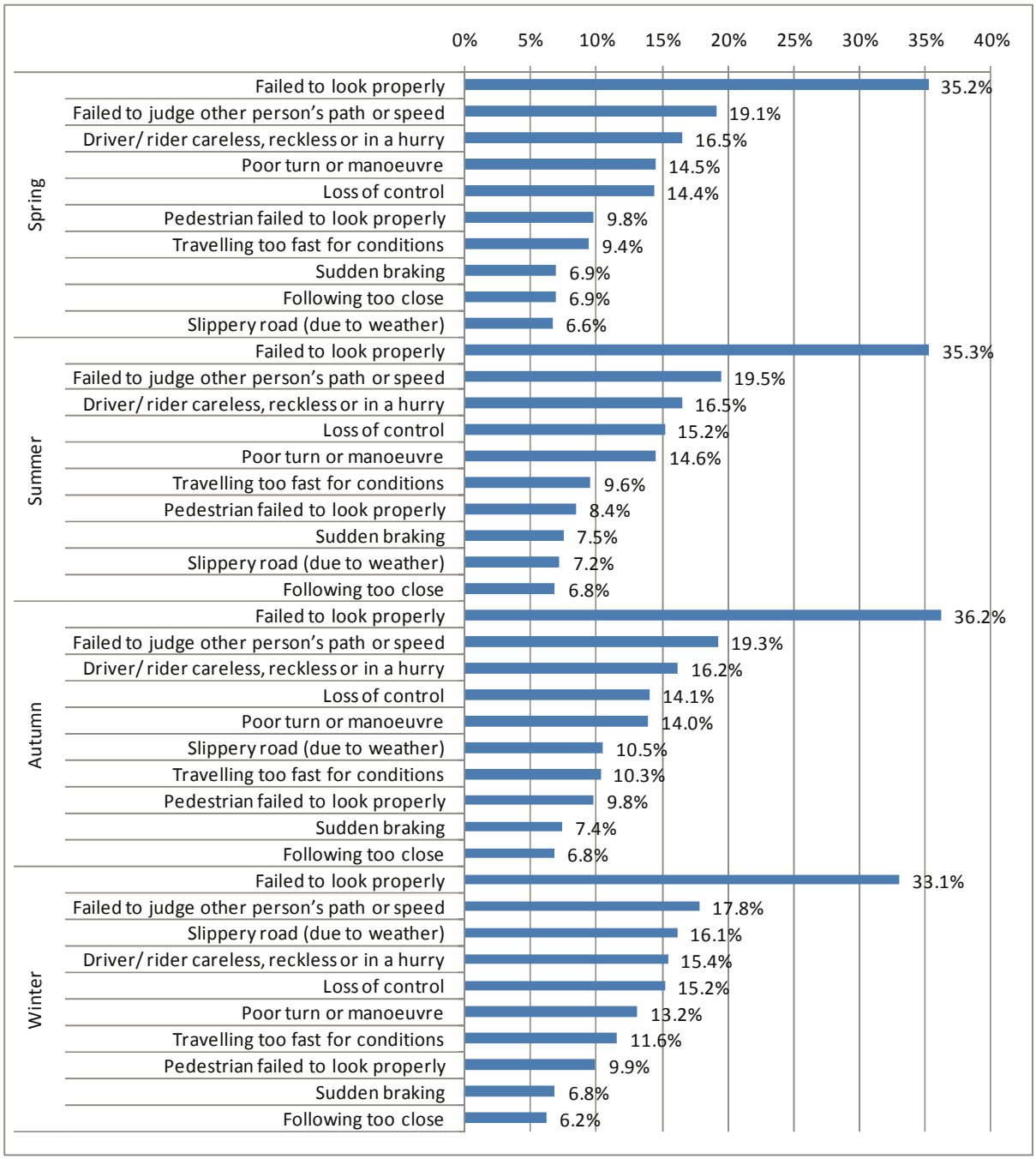
Table 10 Types of contributory factor reported: season

Contributory factor type	Season				All year
	Spring	Summer	Autumn	Winter	
Driver/ Rider Error or Reaction	67.7%	69.1%	68.0%	65.3%	67.5%
Injudicious Action	26.0%	26.1%	25.8%	26.2%	26.0%
Behaviour or Inexperience	25.4%	25.5%	24.6%	23.3%	24.7%
Road Environment	11.9%	12.7%	15.4%	20.8%	15.1%
Pedestrian only (casualty or uninjured)	13.4%	11.7%	13.2%	13.5%	13.0%
Impairment or Distraction	12.1%	12.1%	11.4%	11.3%	11.7%
Vision Affected	9.5%	9.4%	10.9%	11.1%	10.3%
Special codes	4.9%	4.8%	4.4%	4.5%	4.6%
Vehicle Defects	1.9%	2.2%	1.8%	1.7%	1.9%
Number of accidents	166,279	176,710	185,641	165,057	693,687

Figure 7 shows that in each season, the top ten factors reported in accidents are the same, but their ranking differs.

- The main difference is that 'slippery road (due to weather)' ranks third in winter (16% of accidents) but as expected, has a lower ranking at other times of year (7% in spring and summer, 10% in autumn).

Figure 7 Ten most frequently reported factors in accidents at different times of year



4.4 Time and severity

Table 11 shows that within an accident severity category, many of the types of factor are reported in a similar proportion of accidents in each time period, with a few exceptions:

- 'Impairment or distraction' and 'injudicious action' are reported in a higher proportion of accidents between midnight and 7 am, to a lesser extent in the evening and much less during the day, in the case of fatal, serious and slight accidents.

Table 11 Types of contributory factor reported: time of day and severity

Contributory factor type and severity	Time of day				
	0000 - 0659	0700 - 0959	1000 - 1559	1600 - 1859	1900 - 2359
Fatal					
Driver/ Rider Error or Reaction	57.4%	69.2%	70.7%	67.4%	61.5%
Injudicious Action	36.0%	28.6%	26.5%	30.5%	35.7%
Behaviour or Inexperience	29.1%	22.7%	23.6%	24.9%	30.6%
Road Environment	12.1%	15.3%	10.2%	8.9%	10.6%
Pedestrian only (casualty or uninjured)	17.5%	14.2%	16.8%	21.5%	19.6%
Impairment or Distraction	33.5%	15.5%	14.3%	14.8%	21.2%
Vision Affected	5.3%	10.7%	9.0%	8.1%	5.2%
Special codes	9.1%	4.1%	5.7%	4.9%	6.2%
Vehicle Defects	2.0%	3.8%	3.0%	2.3%	3.4%
Number of accidents	2,135	1,294	3,396	2,279	2,864
Serious					
Driver/ Rider Error or Reaction	54.1%	66.7%	63.8%	62.0%	59.3%
Injudicious Action	30.4%	23.6%	22.5%	22.9%	29.0%
Behaviour or Inexperience	29.1%	22.7%	23.6%	24.9%	30.6%
Road Environment	14.7%	18.1%	12.4%	11.2%	13.3%
Pedestrian only (casualty or uninjured)	16.6%	16.1%	20.9%	23.9%	20.6%
Impairment or Distraction	36.5%	8.2%	9.2%	9.6%	19.1%
Vision Affected	5.3%	13.4%	10.0%	10.0%	6.7%
Special codes	8.2%	4.0%	5.2%	4.3%	5.6%
Vehicle Defects	2.1%	2.1%	2.3%	2.1%	2.3%
Number of accidents	11,334	13,613	33,518	24,281	22,002
Slight					
Driver/ Rider Error or Reaction	58.8%	70.8%	70.7%	69.5%	65.7%
Injudicious Action	30.4%	23.6%	22.5%	22.9%	29.0%
Behaviour or Inexperience	27.9%	21.2%	22.9%	23.7%	30.0%
Road Environment	20.1%	20.1%	13.4%	13.1%	16.9%
Pedestrian only (casualty or uninjured)	9.7%	9.1%	11.7%	13.5%	11.5%
Impairment or Distraction	30.6%	6.8%	7.9%	9.0%	15.7%
Vision Affected	6.3%	13.7%	10.7%	11.1%	8.1%
Special codes	7.1%	3.3%	4.5%	4.0%	5.2%
Vehicle Defects	1.7%	1.7%	2.0%	1.8%	1.9%
Number of accidents	43,899	94,816	202,078	133,152	102,952

Similarly, Table 12 shows that ‘impairment or distraction’ factors are reported more frequently for accidents at the weekend than in the week, in fatal, serious and slight accidents. ‘Injudicious action’ is reported more frequently for fatal accidents at weekends (35%) than on weekdays (30%), but the difference in reporting of ‘injudicious action’ for serious and slight accidents between weekends and weekdays is smaller.

Table 12 Types of contributory factor reported: weekdays and weekends and severity

Contributory factor type	Fatal		Serious		Slight	
	Monday to Friday	Saturday or Sunday	Monday to Friday	Saturday or Sunday	Monday to Friday	Saturday or Sunday
Driver/ Rider Error or Reaction	65.0%	66.0%	62.0%	61.1%	69.2%	66.9%
Injudicious Action	29.5%	35.2%	24.0%	27.4%	25.6%	27.7%
Behaviour or Inexperience	26.7%	30.8%	24.9%	28.0%	23.8%	26.4%
Road Environment	10.4%	12.1%	13.0%	13.9%	15.4%	16.0%
Pedestrian only (casualty or uninjured)	19.4%	15.8%	21.4%	18.1%	11.8%	10.7%
Impairment or Distraction	17.5%	23.8%	12.1%	19.3%	9.6%	15.7%
Vision Affected	10.0%	7.4%	10.0%	7.4%	11.0%	9.0%
Special codes	5.1%	5.5%	5.1%	5.5%	4.4%	4.8%
Vehicle Defects	2.8%	2.9%	2.2%	2.2%	1.8%	1.9%
Number of accidents	7,962	4,006	74,477	30,283	433,315	143,644

5 Contributory factors reported for vehicles: cars and motorcycles

While a large proportion of accidents have at least one contributory factor reported, many vehicles involved in accidents have no contributory factor; 46% of cars and 39% of motorcycles have no contributory factor reported. The figures presented in this section show the percentages of vehicles with contributory factors as a percentage of all vehicles in accidents where the police attended the scene, including those with no contributory factor reported.

5.1 Car drivers

The proportion of car drivers with no contributory factor reported is lower for young drivers and drivers over 70 than for those between 30 and 70, as Table 13 shows.

- 'Driver error or reaction' is reported more frequently for younger and older drivers than for those between 30 and 70, reflecting factors such as poor judgement by younger drivers and decrease in functioning among older drivers
- 'Injudicious action' and 'behaviour or inexperience' are reported more frequently for drivers under 30, and particularly under 20, than for drivers over 30
- 'Impairment or distraction' is reported more frequently for drivers over 70 and slightly more frequently for those under 30, than for those aged 30-70, again reflecting decrease in functioning among older drivers
- 'Road environment' factors are also reported more frequently for younger drivers, particularly those under 20, reflecting inexperience and poor judgement in more difficult driving conditions
- 'Vehicle defects', although reported in only a small proportion of accidents, are reported for a larger proportion (1%) of drivers under 30, who tend to drive older vehicles, than for drivers over 30 (around 0.5% - 0.7%).

Table 13 Types of contributory factor reported for cars: driver age

Contributory factor type	Driver age									All ages
	Under 20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90+	
Driver/ Rider Error or Reaction	49.8%	42.1%	34.7%	32.2%	32.4%	35.3%	46.0%	58.7%	65.0%	38.1%
Injudicious Action	24.9%	18.3%	12.4%	10.3%	9.4%	8.9%	9.7%	10.9%	11.9%	14.0%
Behaviour or Inexperience	33.4%	15.3%	9.5%	7.5%	6.9%	6.9%	8.5%	10.6%	12.1%	12.3%
Road Environment	16.6%	11.4%	7.9%	7.1%	6.5%	6.0%	5.8%	6.2%	5.8%	9.1%
Impairment or Distraction	8.3%	8.3%	6.2%	5.2%	5.0%	5.5%	8.4%	12.4%	16.6%	6.7%
Vision Affected	6.3%	6.2%	5.7%	5.7%	5.9%	6.7%	7.9%	9.6%	9.5%	6.1%
Special codes	2.7%	2.1%	1.9%	1.5%	1.2%	1.3%	1.6%	2.5%	5.0%	1.8%
Vehicle Defects	1.4%	1.1%	0.7%	0.6%	0.5%	0.5%	0.6%	0.7%	0.6%	0.8%
No factor recorded for vehicle	26.3%	39.0%	50.0%	54.1%	54.8%	52.0%	40.3%	25.8%	18.9%	45.7%
Number of car drivers	88,285	248,251	207,255	179,811	113,795	64,241	33,993	13,804	862	950,297

Table 13 shows that the variation in the frequency of reporting different types of factor between drivers in their 30s, 40s, 50s and 60s is relatively small; the main differences are between younger drivers, older drivers and drivers in this 30 – 69 group. Therefore the analysis of the top ten individual factors which follows in Figure 8 shows the top ten factors reported for drivers in three key age groups with different levels of accident involvement: young drivers under 25, 25 to 69 year olds and over 70s. Six of the top ten factors reported for drivers in each of these groups are the same in each group and in most cases these are in the top six, but there are differences in ranking and frequency of reporting.

The main differences are between drivers over 70 and others:

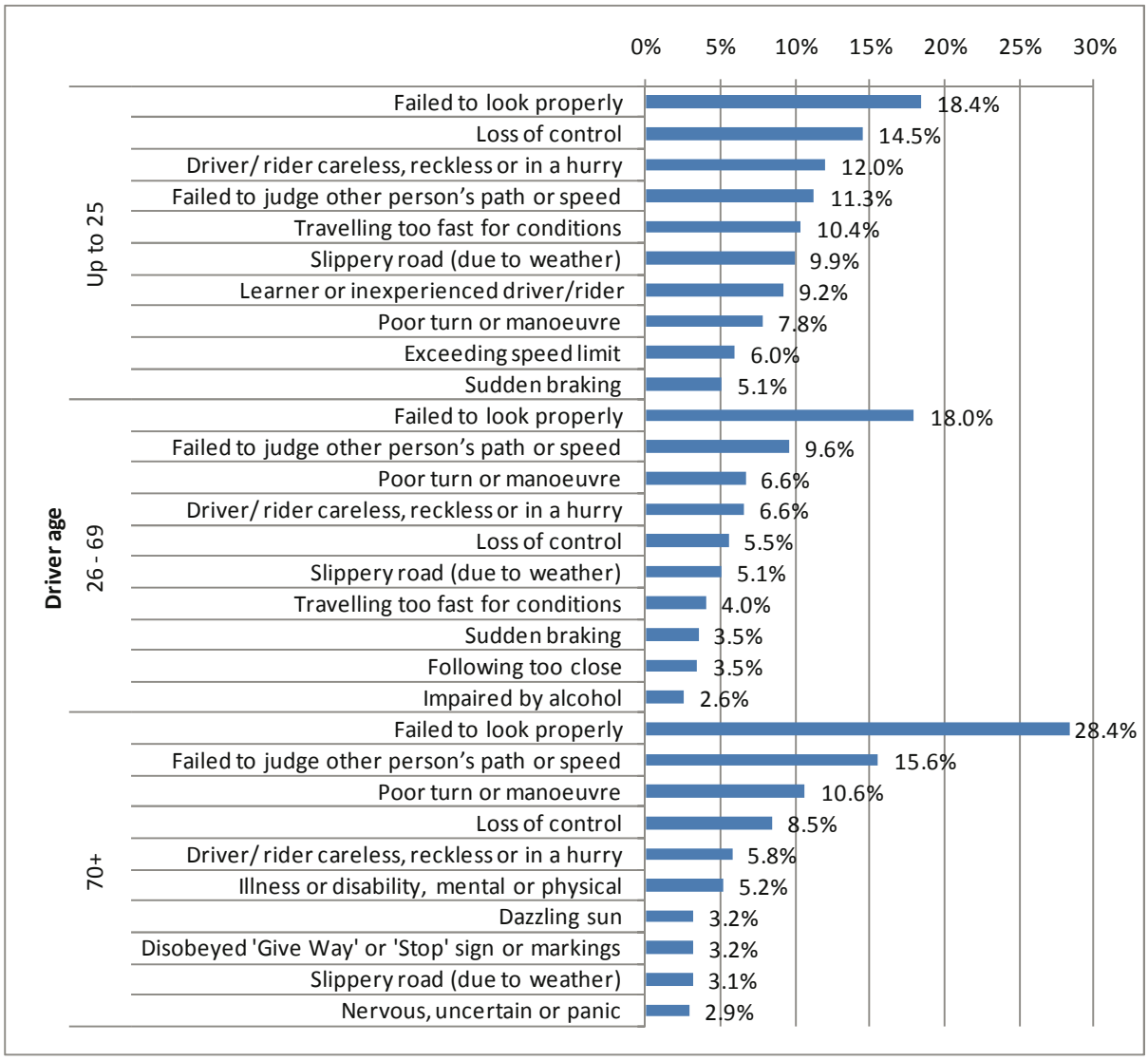
- 'Failure to look properly' is reported more frequently than other factors in each of the three age groups but is reported far more frequently in the case of older drivers (28%) than in the other two groups (18%)
- The factors ranked six to ten in frequency of reporting for older drivers include some associated with ageing and difficulty coping with the traffic environment which do not appear in the top ten for other drivers: 'illness or disability', 'dazzling sun', 'disobeyed Give Way or Stop sign' and 'nervous, uncertain or in a panic'.

In the other age groups:

- Some of the factors associated with more aggressive driving styles appear in the top ten: 'exceeding the speed limit' in the under 25 age group and 'travelling to fast for the conditions', 'sudden braking', 'following too close', in the under 25 and 25 – 69 age groups
- Alcohol features in the top ten factors for drivers aged 25 – 69 (3%) and ranks 11 (4.6%) in the 17-24 age group
- Inexperience features in the top ten for those under 25
- 'Slippery road due to weather' is recorded for almost 10% of drivers under 25 but 5% of those aged 25 - 69; this may be associated more driving on rural roads but may also reflect lack of experience with these conditions.

These differences in the frequency with which contributory factors are assigned to drivers of different age groups are consistent with findings of other research (as summarised in Hopkin 2010 and Hopkin 2008) and can to some extent be explained by where drivers of different ages are driving.

Figure 8 Ten most frequently reported factors for cars: driver age



Almost half of the cars involved in accidents which are driven by women have no contributory reported (49%) this is rather higher than the proportion for cars driven by men (44%).

The main difference between men and women in the types of factor reported is that a smaller proportion of women than men are attributed with 'injudicious action' and 'behaviour or inexperience'.

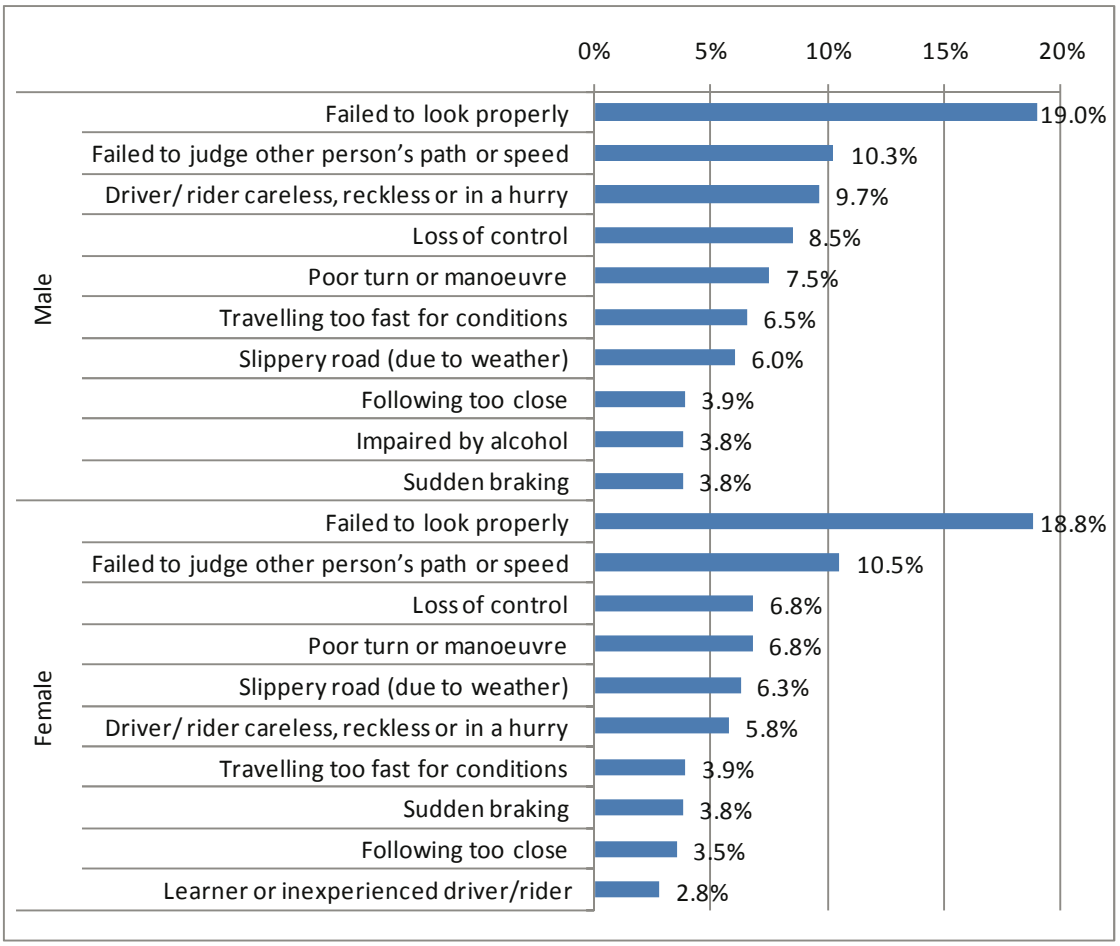
Table 14 Types of contributory factor reported for cars: male and female drivers

Contributory factor type	Driver gender	
	Male	Female
Driver/ Rider Error or Reaction	38.9%	37.0%
Injudicious Action	15.8%	11.0%
Behaviour or Inexperience	14.2%	10.0%
Road Environment	8.8%	9.0%
Impairment or Distraction	7.6%	5.0%
Vision Affected by	5.8%	6.4%
Special codes	2.3%	1.3%
Vehicle Defects	0.9%	0.7%
No factor recorded for vehicle	43.8%	48.7%
Number of car drivers	633,601	348,294

Nine of the top ten individual contributory factors are the same for men and women. 'Careless, reckless or in a hurry' is recorded more frequently for men (10%) than women (6%), while 'travelling too fast for the conditions' is recorded for more men (7%) than women (4%).

- 'Impaired by alcohol' appears in the top ten factors for men (reported for 4% of men driving a car involved in an accident)
- 'Learner or inexperienced driver' is in the top ten for women (reported for 3% of women driving a car involved in an accident).

Figure 9 Ten most frequently reported factors for cars: male and female drivers



5.2 Motorcyclists

As for car drivers, the proportion of motorcyclists with no contributory factor reported is lower under the age of 30 and over 70 than in the 30-70 age group, as Table 15 shows:

- 'Rider error or reaction' is reported more frequently for those over 70 (48%) and under 30 (43%) than for those aged 30-70 (39%)
- 'Behaviour or inexperience' is reported for a larger proportion of riders under 30 (and particularly those under 20) than for riders in other age groups
- 'Injudicious action' is reported rather less frequently for riders over 50 than in other age groups.

Table 15 Types of contributory factor reported for motorcycles: rider age

Contributory factor type	Rider age							All riders
	Under 20	20-29	30-39	40-49	50-59	60-69	70+	
Driver/ Rider Error or Reaction	43.1%	43.0%	40.1%	38.9%	38.8%	40.7%	47.7%	41.3%
Injudicious Action	17.2%	18.4%	15.3%	13.5%	10.6%	10.2%	8.5%	15.6%
Behaviour or Inexperience	34.7%	20.5%	13.7%	10.4%	8.7%	8.3%	7.0%	19.2%
Road Environment	13.4%	11.7%	11.4%	12.2%	13.6%	12.6%	12.4%	12.3%
Impairment or Distraction	4.3%	4.2%	3.1%	2.6%	2.3%	2.5%	2.2%	3.5%
Vision Affected	5.2%	4.6%	4.3%	4.4%	4.4%	4.5%	4.2%	4.6%
Special codes	3.3%	2.0%	1.6%	1.6%	1.4%	1.4%	1.6%	2.1%
Vehicle Defects	1.7%	1.2%	0.8%	0.9%	1.0%	1.1%	1.6%	1.1%
No factor recorded for vehicle	31.6%	36.8%	42.3%	44.5%	45.0%	44.3%	37.1%	39.1%
Number of riders	24,051	24,262	21,495	18,929	8,275	2,549	669	100,230

Figure 10 shows the top ten factors reported for riders in three key age groups, with different levels of accident involvement: young drivers under 30, 30 to 59 year olds and over 60s.

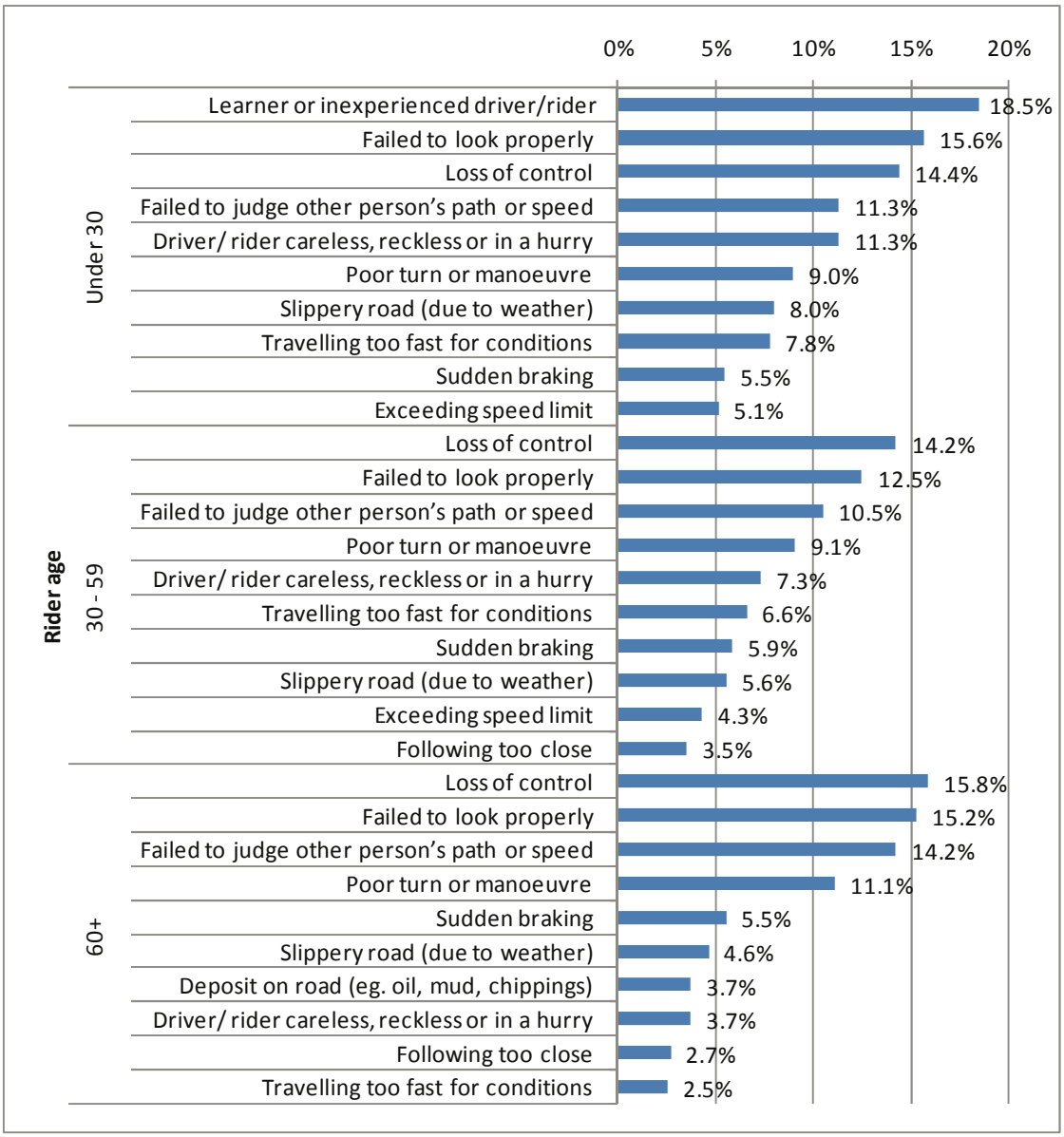
- ‘Failed to look properly’ and ‘loss of control’ were the most frequently reported factors for riders aged 30 – 60 and over 60 (13% - 16%).
- ‘Learner/ inexperienced’ was the factor reported most frequently for riders under 30 (19%), with ‘failed to look properly’ and ‘loss of control’ ranking second and third (16% and 14%).

Ranking of factors varied between age groups but most of the top ten factors were the same for riders in each of the three age groups. Factors which did not appear in the top ten in all three age groups were:

- ‘Deposit on road’ - 4% of riders over 60 but less frequently for other age groups
- ‘Learner/ inexperienced’ – 19% of riders under 30
- ‘Exceeding speed limit’ – 5% of riders under 30 and 4% of riders aged 30 – 59 but fewer riders over 60.

These differences between age groups are consistent with the findings of other research on motorcycle accidents (see Hopkin 2009).

Figure 10 Ten most frequently reported factors for motorcycles: rider age



5.3 Comparison between car drivers and motorcyclists

As mentioned earlier, the proportion of motorcyclists with no contributory factor reported is lower than for car drivers. Comparison of Table 13 with Table 15 shows:

- 42-45% of motorcyclists in their 30s, 40s, 50s and 60s have no contributory factor reported compared with 52-55% of car drivers in these age groups
- 32% of motorcyclists under the age of 20 have no contributory factor reported compared with 26% of car drivers under 20.

The main differences in the types of factor reported for motorcyclists and car drivers are:

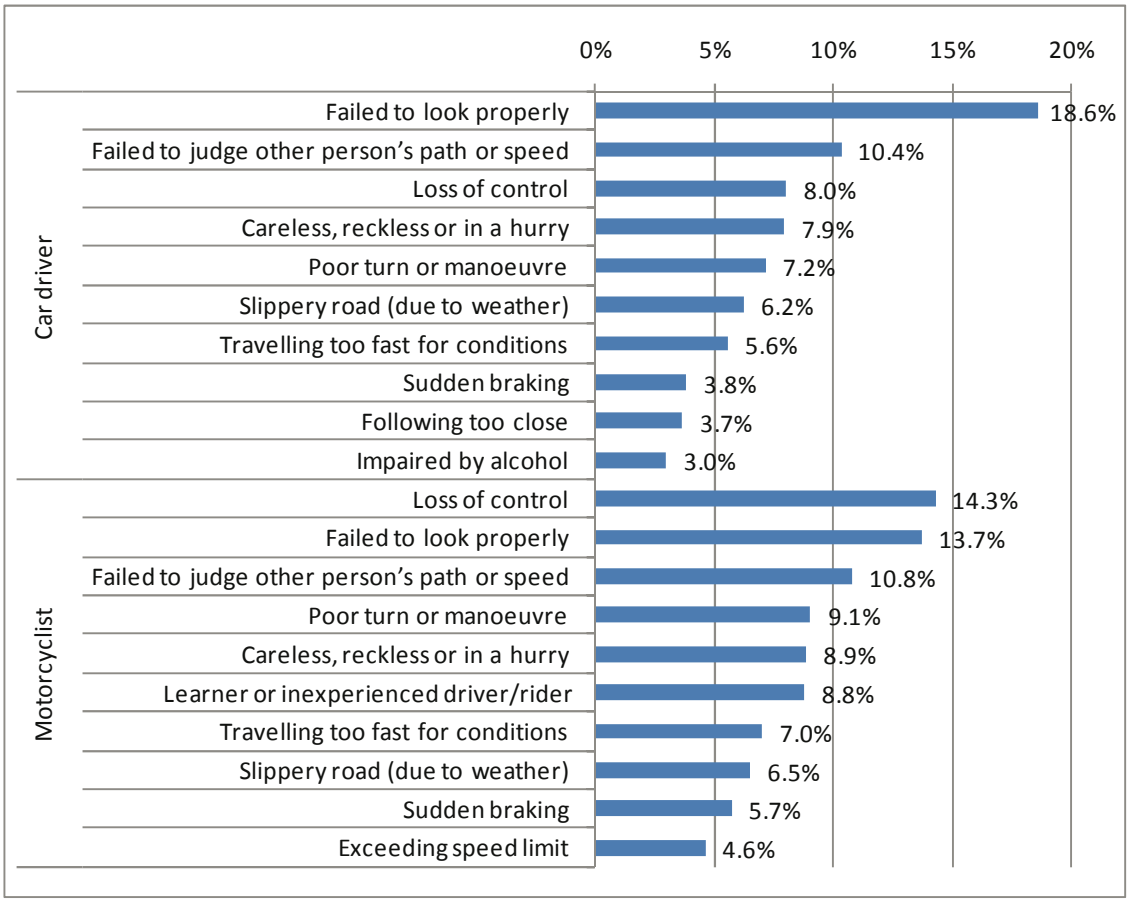
- 'Behaviour or inexperience' is reported more frequently for motorcyclists than for car drivers, particularly between the ages of 20 and 50, reflecting the greater take up of motorcycling over the age of 30 compared with driving

- ‘Road environment’ is reported more frequently for motorcyclists than car drivers over the age of 30.

Figure 11 shows that of the top ten factors reported for car drivers and motorcyclists, nine are the same, although the ranking varies:

- ‘Loss of control’ is more frequently reported for motorcyclists than other factors (14%) and is less frequently reported for car drivers (8%)
- ‘Failure to look properly’ is more frequently reported for car drivers than other factors (19%) and is less frequently reported for motorcyclists (14%)
- ‘Impaired by alcohol’ is the tenth most frequently reported factor for car drivers (3%) but ranks 15 (2%) for motorcyclists
- ‘Learner or inexperienced’ ranks 6 for motorcyclists (9%) but ranks 12 for car drivers (3%).

Figure 11 Ten most frequently reported factors: cars and motorcycles



6 Summary and conclusions

6.1 Summary of results

Types of factor

Human factors are recorded as contributing to the cause of accidents far more frequently than the road environment or defects in the vehicle.

The most frequently recorded factor type is ‘driver/ rider error or reaction’, in 68% of all accidents. Two other types of factor are reported in a quarter of all accidents: ‘injudicious action’ and ‘behaviour or inexperience’. Between 10 and 15% of accidents are recorded in the ‘road environment’, ‘pedestrian’, ‘impairment or distraction’ or ‘vision’ groups. Vehicle defects are recorded in just 2% of accidents.

Accident severity

There are some differences between fatal, serious and slight accidents in the individual contributory factors recorded.

‘Loss of control’ is recorded in a third of fatal accidents, a fifth of serious accidents and fewer slight accidents.

‘Failure to look properly’ is the second most frequently recorded factor in fatal accidents (one fifth) and the most frequently recorded factor in serious and slight accidents (one third).

‘Failed to judge another person’s path or speed’ is the second most frequently recorded factor in slight accidents (one fifth) but less often in serious or slight accidents.

‘Travelling too fast for the conditions’ and ‘exceeding the speed limit’ are more frequently recorded for fatal accidents than less severe incidents.

‘Slippery road due to weather’ is the main ‘road environment’ factor and is more commonly reported for slight accidents (one tenth) than fatal or serious accidents.

Where accidents happen

‘Failed to look properly’ is recorded more frequently than other factors on all types of road but is more frequently recorded on roads in towns, roads which are not motorways, and roads with a speed limit of 50 mph or less, than on rural roads, motorways and high speed roads.

‘Failed to judge another person’s path or speed’ the second or third most frequently recorded on most types of road and at most speed limits, the exceptions being minor roads and 60 mph roads.

‘Loss of control’ is recorded in a higher proportion of accidents on motorways, high speed roads and rural roads, than lower speed and urban roads.

Factors associated with pedestrians are recorded more frequently on minor urban roads than other roads, reflecting different patterns of use.

‘Learner or inexperienced’ is recorded as a contributory factor more frequently on rural roads, minor roads and 60 mph roads than elsewhere.

‘Slippery road due to weather’ is one of the top ten factors on all types of road but is recorded more frequently on 60 mph roads and rural roads than elsewhere.

Factors associated with impairment or distraction are more frequently recorded in fatal and serious accidents on motorways and rural roads, than in slight accidents or more severe accidents on other roads.

‘Behaviour or inexperience’ is reported in a larger proportion of fatal accidents on minor roads than on other roads or in accidents with less severe injuries.

When accidents happen

The contributory factors recorded vary between accidents at night and in the daytime. Between 7 pm and 7 am, ‘loss of control’, ‘failed to look properly’ and ‘driver/ rider careless reckless or in a hurry’ are the most frequently recorded factors. In addition between midnight and 7 am ‘impaired by alcohol’ is the second most frequently recorded factor.

At other times, ‘failed to look properly’, ‘failure to judge another person’s path or speed’ and ‘driver/ rider careless reckless or in a hurry’ are the three most commonly recorded factors, with ‘failed to look properly’ recorded far more frequently than at night.

Comparing weekdays and weekends shows that many of the most commonly recorded factors are recorded to a similar extent on weekdays and weekends. However ‘impaired by alcohol’ and ‘exceeding the speed limit’ are among the ten most frequently recorded factors at weekends but not during the week , while ‘sudden braking’ and ‘following too close’ are more frequently recorded on weekdays than at weekends.

In winter, ‘slippery road due to weather’ is recorded more frequently than at other times of year but otherwise differences between seasons in the types of factor recorded are small.

Cars and motorcycles involved in accidents

A larger proportion of motorcyclists involved in accidents are reported with a factor thought to have contributed to the accident, compared with car drivers. Younger motorcyclists and younger car drivers more frequently have contributory factors reported than their older counterparts.

Younger and older drivers and riders (under 30 and over 70) have ‘error or reaction’ factors recorded in a larger proportion of cases than among those between 30 and 70.

Young drivers and riders also have ‘behaviour or inexperience’ factors attributed to them more frequently than older people.

Older car drivers have ‘failed to look properly’ recorded more frequently than younger drivers and factors associated with ageing and difficulty coping with the traffic environment, which are less frequently recorded for younger drivers.

Car drivers under 25 have ‘exceeding the speed limit’ ‘travelling too fast for the conditions’ and ‘learner/ inexperienced’ recorded more frequently than drivers over 25. ‘Exceeding the speed limit’ features in the top ten factors for motorcyclists in the under 30 and 30 – 59 age groups.

Alcohol features in the top ten factors for drivers aged 25 – 69 and ranks 11 for drivers under 25, but is less frequently recorded for motorcyclists.

Comparisons between men and women car drivers show many similarities in the contributory factors reported, but ‘careless, reckless or in a hurry’, ‘travelling too fast for the conditions’ and ‘impaired by alcohol’ are recorded more frequently for men than for women, while ‘learner or inexperienced driver’ is recorded more frequently for women.

6.2 Conclusions

Improving safety

The data provide a subjective indication of the causes of accidents, not a definitive view. Factors which are more obvious to the police officer attending will tend to be recorded more than those which are less obvious, while those which allocate blame or imply careless or reckless behaviour are less likely to be recorded. However the results can still be used to highlight areas for further investigation or improvement in road safety.

It is clear that driver and rider errors, particularly failure to look properly and failure to judge the path or speed of other road users correctly remain significant contributory factors in road accidents. Factors such as 'careless, reckless or in a hurry', 'loss of control' and 'travelling too fast for the conditions' together make up another significant group which could be addressed by a more measured style of driving, taking greater account of the traffic and road conditions prevailing. These human factors are attributed to drivers of all ages, although some factors are more frequently assigned to young drivers and others to older drivers, which points to the value of post-test driver training for improving the quality of driving, and hence road safety.

Some factors which are reported in relatively few accidents in total, are more prominent in specific situations. Analysing these specific groups of accidents can provide insights into their causes which may help to develop measures for improving road safety - for example accidents involving specific groups of road users, or particular combinations of accident circumstances. In fatal accidents on motorways for example, alcohol, fatigue and vehicle defects (mainly tyres and brakes) are more frequently reported than in other accidents. Information on the increased risks of driving in these specific circumstances may encourage drivers to take a more responsible approach.

Factors associated with the road environment are less frequently attributed as factors contributing to the cause of accidents than the 'human' factors. Engineering measures have been developed to address many of these, but an anticipatory and measured driving style will reduce the role of factors such as road surface conditions and the road layout in causing accidents.

The analytical approach

One of the objectives of this report was to explore the potential for the data to be used further. The results have demonstrated the feasibility of comparing the types of contributory factors recorded for four or five different accident circumstances. Graphical presentation of the 'top ten' individual factors recorded for two or three different sub-groups of accidents has successfully depicted the key factors and how they vary (or not) with accident circumstances. More specific conclusions on the options for further analysis are summarised below.

Number of cases for analysis

This analysis has not been limited by small numbers of cases. With nearly 700,000 accidents having contributory factors recorded, it would be feasible to undertake further analysis of variations in contributory factors with accident circumstances, or of accidents with specific factors recorded. There is also some scope for further analysis of contributory factors attributed to broad sub-groups of drivers or riders. However it is recommended that

analysis should focus on simple categorisations and on two-dimensional rather than three-dimensional comparisons, as explained below.

Approach to presentation

Presenting the percentage of accidents or vehicles for which the full range of 77 factors was reported (as in Table 1) provides a comprehensive picture of the data. However because most of the factors are reported in a very few cases, the value of these '77 factor' tables appears limited.

The graphs showing the 'top ten' individual factors provide a snapshot of the key factors (reported for at least 5-8% of accidents and at least 3-5% of drivers or riders) and how they vary with accident circumstances and driver characteristics. This appears to be a more useful approach to presenting the individual factors than the tables covering all 77, and does show some differentiation between sub-groups, often in the factors ranked towards the bottom of the top ten.

The tables showing how the incidence of reporting the nine contributory factor types vary with accident circumstances and driver or rider characteristics provide an overview. In further work, commentary on the main factors reported within some of these groups would enhance this type of analysis.

Complexity of analysis

Some of the analysis has compared factors in fatal, serious and slight accidents on different types of road or time of day. Presenting variations in the incidence of the types of contributory factor becomes complex when there are more than four or five categories to compare (such as Table 4, Table 6, Table 7, and Table 11). However the results show that combining fatal and serious accidents into one group to simplify the comparisons would mask differences in factors reported in fatal and serious accidents. Graphs illustrating the top ten individual factors should be limited to two or three categories (see for example Figure 2 and Figure 5 which have more categories).

For any future analysis of the contributory factors data, it would be worthwhile to refine the grouping of accidents to simplify the presentation and focus on the main differences, taking these considerations into account.

Confidence in factors recorded

When contributory factors are recorded, they are assigned a 'confidence' rating by the police officer at the scene: factors are recorded as either 'possible' or 'very likely'. One element of further analysis could focus on the contributory factors recorded as 'very likely', omitting those classified as 'possible', to investigate whether different patterns and associations emerge among the factors which police officers felt more certain about recording.

7 Acknowledgements

The assistance of the Department for Transport Accident Statistics Branch, for providing a copy of the accident records for analysis, is gratefully acknowledged.

Thanks are due to Neil Greig, who managed the project at the IAM.

8 References

Department for Transport, 2004. Instructions for the completion of road accident reports. http://www.dft.gov.uk/pgr/statistics/datatablespublications/accidents/casualtiesgbar/s20instructionsforthecom5094.pdf

Hopkin J, 2010. Older drivers safe or unsafe? IAM, London. http://www.iam.org.uk/images/stories/Policy_Research/Older_drivers_Safe_or_Unsafe_main_report_Issue_2.pdf

Hopkin J, 2009. Motorcycle casualties: analysis of road accidents in Great Britain 2000 – 2006. IAM, London. http://www.iam.org.uk/images/stories/Policy_Research/Older_drivers_Safe_or_Unsafe_main_report_Issue_2.pdf

Hopkin J, 2008. Young drivers – where and when are they unsafe: analysis of road accidents in Great Britain 2000 – 2006. IAM Motoring Trust, London. http://www.iam.org.uk/images/stories/Policy_Research/Young%20drivers%20full%20report.pdf

Hopkin J, Sykes W, Groom C and Kelly J 2010. A qualitative study of drinking and driving: report on the literature review. Road Safety Research Report 113. Department for Transport, London. http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme3/report13review.pdf

Richards DC, Cookson RE, Cuerden RW, 2010. Linking accidents in national statistics to in-depth accident data. PPR 513 Transport Research Laboratory, Wokingham. http://www.trl.co.uk/online_store/reports_publications/trl_reports/cat_road_user_safety/report_linking_accidents_in_national_statistics_to_in-depth_accident_data.htm

Sykes W, Groom C, Kelly J and Hopkin J 2010. A qualitative study of drinking and driving: report of findings. Road Safety Research Report 114. Department for Transport, London. http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme3/report14review.pdf

The IAM

President: Nigel Mansell OBE

Chairman: Alistair Cheyne OBE

The IAM (Institute of Advanced Motorists) is the UK's largest independent road safety charity, dedicated to raising driving standards, engaging with the road-using public and influencing road safety policy.

Established in 1956, the IAM is best known for the advanced driving test and the advanced driving course. The IAM directly influences the driving and riding of more than 160,000 road users a year (full members, associates and commercial clients) in the UK and Ireland.

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IAM products include:

- Skill for life: the advanced driver programme
- DriveCheck
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- Momentum, for younger drivers
- Special assessment, for advanced drivers
- Skill for life: the advanced motorcyclist programme
- RoadRider+
- RideCheck+
- RideCheck
- Special assessment, for advanced riders
- CycleCheck
- CycleRide
- CycleRide+
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- Online learning
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Director of policy and research: Neil Greig

Established in 2007 the IAM policy and research division supports the advocacy work of the IAM. Core activities include:

- undertaking a unique programme of road safety research
- encouraging responsible motoring by promoting advanced driver and rider training
- promoting practical evidence-based policies that improve the safety of all road users

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- IAM older drivers – safe or unsafe?
- IAM motorcycling facts
- Cycling motorists
- 16 – the dangerous age for moped riders
- Young drivers – where, when and why they are unsafe
- Barriers to change – designing safer roads for motorcyclists
- Rural roads – the biggest killer
- Star rating roads for safety (partnership with the Highways Agency)
- Traffic laws and policing – does Sweden do them better?
- Child safety – a guide for parents

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The study was carried out by road safety researcher Jean Hopkin.

The recommendations shown in the foreword are those of the IAM.

The IAM welcomes debate on the facts and issues that Jean Hopkin's analysis presents; please email us at **info@iamtrust.org.uk** to tell us what you think should be done to increase the priority given to solving the human factors in crashes.

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Chapter Six – Improving Road Safety: Speed Cameras

INTRODUCTION

6.1 Speed cameras aim to improve road safety by reducing speeding and, consequently, the number and severity of vehicle crashes.[183] The Roads and Traffic Authority (the RTA, now called Roads and Maritime Services) estimated that around 40 per cent of road deaths in NSW were caused by speed, resulting in more than 170 deaths each year from speeding.[184]

6.2 People filmed by a camera driving over the speed limit are fined and accumulate demerit points on their drivers licence.[185] All fines for speeding offences captured by the RTA or NSW police cameras are issued by the State Debt Recovery Office (SDRO). Over 370,000 speeding fines were issued in the 2010-11 financial year, netting over $58 million in revenue. According to the RTA, only the revenue generated from drivers speeding around school zones is allocated to specific road safety programs. The bulk of revenue collected is re-distributed through other government programs.

THE PERFORMANCE AUDIT

6.3 The audit assessed whether the speed cameras of the Road and Traffic Authority's (RTA) are located in places that reduce speeding and make NSW roads safer. Specifically, the audit assessed whether:

- speed cameras are located in areas identified by RTA as having the greatest road safety risk
- comprehensive selection criteria have been developed by RTA to determine the location of cameras
- the RTA analyses crash and speeding data to identify black spots before camera installation
- speed cameras reduce speeding and road crashes
- the RTA reviews potential high risk and existing sites for camera suitability
- speed cameras have improved road safety in NSW
- fine revenue from speed cameras reduce after installation
- an evaluation framework is in place to assess camera effectiveness

[183] NSW Auditor-General's Office Performance Audit Report, Improving Road Safety: Speed Cameras, July 2011, p. 8
[184] Improving Road Safety: Speed Cameras, p. 8
[185] Improving Road Safety: Speed Cameras, p. 8

- information on the road safety impact of each camera is publicly available.[186]

6.4 Due to community concerns about the usefulness of speed cameras, as part of the audit process, the public were invited to nominate fixed speed cameras that they were most concerned about and those they believed improved road safety. Over 1,700 people responded, with 69 per cent of respondents viewing cameras as revenue-raisers and only 15 per cent in support of them.[187]

6.5 The Auditor-General engaged an independent road safety consultant to provide expert advice and guidance throughout the audit, in relation to comparative practices and approaches in other jurisdictions.

6.6 The Audit did not examine:

- signs or the accuracy of speed cameras
- speed enforcement by police
- the future roll out of cameras
- other road safety measures such as road engineering and public education.[188]

Audit Conclusions

6.7 The Auditor-General found that there was no overall criteria to determine the most appropriate camera type for roads classed as high risk. The audit found that camera type dictates site selection decisions, rather than the nature of the black spots,[189] and that there might be more appropriate cameras than the ones currently in place.[190] Roads and Maritime Services advised that it is shifting focus from fixed speed cameras at black spots to an increase in mobile cameras, aimed at reducing speeding across the network.[191]

6.8 The Auditor-General found that the RTA had developed different site selection criteria for the three different camera types used in NSW. The audit also noted that site selection criteria for fixed cameras were more comprehensive than for mobile speed cameras, and were in fact more comprehensive that in many other jurisdictions. However, the selection criteria for mobile cameras were not as comprehensive as in other jurisdictions with longer-established mobile camera programs. One criterion for locating a mobile camera is that it must have been a location used by the NSW Police Force in their mobile camera program. The Auditor-General found that 'by restricting sites to former Police locations, sites with greater road safety risk may not be given priority.'[192]

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[186] NSW Auditor-General's Performance Audit Report, Improving Road Safety: Speed Cameras, p. 25
[187] Improving Road Safety: Speed Cameras, p. 9
[188] Improving Road Safety: Speed Cameras, p. 10
[189] Improving Road Safety: Speed Cameras, p. 13
[190] Improving Road Safety: Speed Cameras, p. 13
[191] Improving Road Safety: Speed Cameras, p. 13
[192] Improving Road Safety: Speed Cameras, p. 12

6.9 The report also noted that RTA analysis of safety camera locations does not include vehicle speeds or the number of speed-related crashes.[193]

6.10 In addition, the audit found that some mobile locations where there are high numbers of crashes have not yet had cameras deployed. More information and comprehensive monitoring is needed to determine the impact of speed cameras on speeding behaviours.[194] There may be locations for mobile cameras with greater road safety risk than the existing mobile camera positions that were formerly used by police. The RTA indicated during the audit that an arrangement was being made to expand the selection criteria to include locations outside those formerly used by the Police and increase the mobile speed cameras enforcement hours from 1,000 to over 12,000.[195]

6.11 In relation to the question of whether speed is a cause of crashes and fatalities, the audit observed that the RTA only analysed crash data to identify potential sites for different camera types. Speeding data analysis from speed-related crashes was limited and there was no comprehensive examination by the RTA. Vehicle speeds were only reviewed for non-school zone fixed speed camera locations.[196]

6.12 In relation to fine revenue generated by the cameras, the audit noted that the face value of fines from fixed speed cameras declines the longer they have been operating.[197] However, the Auditor-General did not find any evidence that potential revenue is a factor in decisions about where cameras are located. He concluded that site selection criteria for all camera types focused on road safety.[198] The report also concluded that, while there is information about fines and revenue per camera publicly available through State Debt Recovery Office's (SDRO) website, more effort is needed to provide information on the road safety impact of each speed camera to the public. Current information on the SDRO's website does not show trends since camera installation, which would make it easier for the public to see the impact of cameras on speeding and driver behaviour.[199]

6.13 The Auditor-General found that the RTA evaluation framework, which includes speed surveys, crash and injury analysis, and the community attitude survey, helps to assess the impact of fixed speed cameras. However, the audit found that the RTA needs to include reduction in vehicle speed as a key performance measure.

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[193] NSW Auditor-General's Performance Audit Report, Improving Road Safety: Speed Cameras, p. 14

[194] Improving Road Safety: Speed Cameras, p. 15

[195] Improving Road Safety: Speed Cameras, p. 15

[196] Improving Road Safety: Speed Cameras, p. 14

[197] Improving Road Safety: Speed Cameras, p. 23

[198] Improving Road Safety: Speed Cameras, p. 22

[199] Improving Road Safety: Speed Cameras, p. 25

Auditor-General's Recommendations

6.14 The Auditor-General made six recommendations:

1	By March 2012, develop an overarching strategy for speed cameras incorporating all camera types, which: • includes criteria to determine the appropriate camera type for each road with a high safety risk. • prioritises potential sites based on death or serious injury. • defines how the effectiveness of each camera type will be assessed, including the analysis timeframe, and key performance indicators on vehicle speed, infringements, and crash severity. • includes its new focus on reducing speeding across the road network, as well as at specific locations.
2	Document the reasons for all future camera decisions where the location is inconsistent with site selection criteria.
3	By December 2011, annually review existing site locations to check if speed cameras are still appropriate.
4	By September 2011: • assess the crash impact of existing fixed speed cameras for a minimum of five years post installation. • where there has been no significant impact, consider an alternative camera site and other road safety treatments for that site.
5	By March 2012, annually monitor the effectiveness of individual speed cameras.
6	By June 2012, publicise trends in crashes, revenue, and speeding or infringement data, for each speed camera, and update this annually.

THE COMMITTEE'S EXAMINATION

6.15 As part of the Committee's follow up of the Auditor-General's Performance Audits, the Chair wrote to Transport for NSW (TfNSW) on 25 September 2012, inviting the agency to provide a submission detailing action taken in response to the Performance Audit. TfNSW responded on 21 November 2012.

6.16 A submission was also received from Mr Michael Lane, in his capacity as a member of the public. He was advised that the Committee was conducting a follow-up audit of the implementation of recommendations made by the Auditor-General, and not a general inquiry into speed cameras.

6.17 The submissions were forwarded to the Auditor-General for comment, and he in turn responded on 5 February 2013. In relation to Mr Lane's submission, the Committee requested the Auditor-General respond only to the extent that it related to the performance report.

6.18 Questions on notice were sent to TfNSW on 13 March 2013, requesting additional information. They responded to the Committee on 16 April 2013.

6.19 All of the Auditor-General's recommendations have been accepted, with the majority already implemented.

6.20 **Recommendation 1** has been completed, with the strategy launched on 1 June 2012.[200] The aims of the strategy are clearly outlined in the introductory section:

> This strategy aims to outline the current speeding problem, community attitudes to speeding and speed enforcement and clearly articulate the benefits of a comprehensive speed camera strategy for speed cameras in NSW. The strategy reassures the community that speed enforcement together with comprehensive public education campaigns and engineering treatments can save lives on our roads.[201]

6.21 **Recommendation 2** was accepted and is currently ongoing.[202] TfNSW advised that the Centre for Road Safety (CRS) determines the location of cameras based on criteria for each type of camera as described in the NSW Speed Camera Strategy. [203]

6.22 In relation to mobile speed cameras, TfNSW identified three broad criteria used in selecting this type of camera location:

i Assessing road safety risk through the review of crashes or identifying the road as high risk, based on crash types.

ii Consultation and nomination by the NSW Police Force through the joint *'Strategic Road Safety Coordination Group'*.

iii Community members nominating locations and the Centre for Road Safety assessing those locations for suitability.[204]

6.23 For red-light speed cameras, intersections are prioritised based on the frequency and severity of crashes and the proximity to other fixed enforcement cameras on the network.[205] Fixed speed camera locations were selected based on a high frequency and severity of crashes over a length of roads no longer than 1000m. Also, fixed cameras were considered the best option for areas that are difficult to

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[200] http://www.rta.nsw.gov.au/roadsafety/downloads/nsw_speed_camera_strategy.pdf, viewed 22 March 2013.

[201] Transport for NSW, *NSW Speed Camera Strategy*, June 2012, p. 3

[202] Submission 12, Transport for NSW, p. 2

[203] Submission 1, Transport for NSW, p. 2

[204] Submission 1, Transport for NSW, p. 2

[205] Submission 1, Transport for NSW, p. 2

enforce such as tunnels and school zones with high severity of crashes or locations that have a high risk of pedestrian crashes.[206]

6.24 Point-to-Point speed cameras are used for heavy vehicle speeding enforcement. Location information for this camera type was not provided. However, TfNSW advised the Committee that enforcement lengths were based on assessment of heavy vehicle crashes or speeding behaviour.[207]

6.25 **Recommendations 3, 5 and 6** have all been addressed as part of the annual review of speed camera programs.[208] TfNSW also advised that Speed Camera Safety Reviews would be included as part of the safety treatment announcement in the coming months. The deployment of mobile speed cameras is overseen by Roads and Maritime Services, based on the CRS deployment strategy. Roads and Maritime Services conducts random surveillance activities, GPS monitoring and desktop review to ensure that the speed camera operator conducts enforcement as specified.[209]

6.26 The Hon Duncan Gay, Minister for Roads and Ports, announced on 16 April 2013 that as a result of the inaugural Speed Camera Performance Review, speed cameras were to be removed from two locations in NSW.[210] The review found that fixed cameras had 'reduced fatalities at their locations by a massive 87 per cent, but there was a handful of cameras where further investigations were necessary.'[211]

6.27 **Recommendation 4** was accepted and completed in March 2012.[212] A five year analysis was completed in September 2011, followed by reviews of 38 individual fixed digital speed camera locations.[213] The first annual review, issued on 17 July 2012, identified five fixed cameras locations for review and a sixth location identified for further consultation with NRMA Motoring and Services. [214]

6.28 In relation to maintenance of speed cameras, TfNSW confirmed that all speed measuring devices are tested for accuracy by both the manufacturer and RMS at least once per year. All instruments are tested to the base measurements of time (seconds), frequency (Hz) and length (Metre) and maintained with "certificate of traceability" under the appropriate regulation.[215]

6.29 The Committee examined the need for speed cameras in NSW to have approval from the International Organisation of Legal Metrology (OIML).[216] TfNSW stated that there was no requirement for approval as the OIML did not approve speed

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[206] Submission 1, Transport for NSW, p. 2
[207] Response to questions on notice, Mr Tim Reardon, Deputy Director General, Transport for NSW, p. 2
[208] Response to questions on notice, Mr Tim Reardon, Deputy Director General, Transport for NSW, p. 2
[209] Submission 1, Transport for NSW, p. 3
[210] The Hon Duncan Gay, Roads Minister, *Three Speed Cameras to be removed after review*, 16 April 2013
[211] The Hon Duncan Gay, Roads Minister, *Three Speed Cameras to be removed after review*, 16 April 2013
[212] Response to questions on notice, Mr Tim Reardon, Deputy Director General, Transport for NSW, p. 2
[213] Response to questions on notice, Mr Tim Reardon, Deputy Director General, Transport for NSW, p. 3
[214] Response to questions on notice, Mr Tim Reardon, Deputy Director General, Transport for NSW, p. 3
[215] Submission 1, Transport for NSW, p. 4
[216] Response to questions on notice, Mr Tim Reardon, Deputy Director General, Transport for NSW, p. 4

measuring devices. TfNSW also commented that the role of the OIML was to 'promote the global harmonisation of legal metrology procedures'.[217] Australia's National Measurement Institute (NMI) is a member of the OIML and oversees the implementation of metrology standards in Australia.

6.30 TfNSW confirmed that speed cameras in Australia are regulated through the *Road Transport (Safety and Traffic Management) Act 1999* and do not require approval from the NMI.[218]

6.31 NSW figures currently state that 42 per cent of all fatal crashes are caused by speed. This is used as a key rationale for the use and placement of speed cameras in NSW. The Committee requested additional information about the data collected by TfNSW, citing statistics from the United Kingdom (UK) as a comparison. The UK figures show that only 13.9 per cent of fatal crashes have speed as a contributing factor with other causes reported on separately. TfNSW commented that when the figures for the United Kingdom include 'fatal crashes where travelling too fast for the conditions and where speeding was involved,' the figures would be much closer to the NSW figure.[219]

6.32 TfNSW advised that the Centre for Road Safety collects data on a range of contributing factors involved in crashes such as drink driving, fatigue and seatbelt use. This results in the higher percentage of cases where speed may only be a contributing factor.

6.33 In a supplementary submission to the Committee, Mr Lane also raised concern about the crash statistics collected by TfNSW, commenting that adding 'speed related' crashes to 'exceed speed limit' crashes over inflates the figures:

> NSW are inflating the 'speeding problem' by including crashes which do not involve speed in excess of the speed limit [to the category of crashes that include speed] as a contributing cause. As speed cameras can only detect vehicles that are exceeding the speed limit they are only an effective deterrent to a portion of these, e.g. drunks thieves, suicides etc. are unaffected.
>
> The use of the grossly inflated figures achieved by adding "speed related" crashes to "Exceed speed limit" crashes distorts the input into policy framework. Additionally crashes involving over limit speed but where camera detection would have no effect should also be removed from the policy framework supporting cameras.
>
> Given that the conditions in the UK are significantly worse than NSW it is abundantly clear that NSW figures are a gross exaggeration.[220]

Committee Comment:

6.34 It is encouraging that that TfNSW has accepted all six of the Auditor-General's recommendations, and that many of the Auditor-General's recommendations have been encompassed in the recent Speed Camera Strategy.

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[217] Response to questions on notice, Mr Tim Reardon, Deputy Director General, Transport for NSW, p. 4

[218] Response to questions on notice, Mr Tim Reardon, Deputy Director General, Transport for NSW, p. 4

[219] Response to questions on notice, Mr Tim Reardon, Deputy Director General, Transport for NSW, p. 5

[220] Submission 2, Mr Michael Lane, p. 3

6.35 One outstanding area remains regarding the data collected around fatal crashes. The Committee believes that TfNSW should review what data it collects, particularly where the data has been used as the rationale for the location of a camera.

6.36 The Committee believes that TfNSW should be more specific in its reporting on the statistics regarding fatal crashes. If speed is not the only reason for the crash then this should be captured. For example, if a drunk driver has a crash involving speed then both speed and alcohol should be reported as a cause of the crash. The Committee is concerned that incidents where speed is involved, but is not the main cause, are not reflected adequately in the statistics reported by TfNSW.

RECOMMENDATION 5

That Transport for NSW review the data collected in relation to causes of fatal accidents, particularly where the data has been used as, rationale for the location of a camera, and that all causes of a fatal accident, including speed, be collected and transparently reported on in greater detail.

RECOMMENDATION 6

That causes of fatal crashes be more precisely identified and include categories such as driving too fast for conditions and speed as a contributing factor (where another factor such as alcohol is the primary cause), rather than relying on 'exceed speed limit' as an all-encompassing speed-related factor.

6.37 The NSW Parliament's Joint Standing Committee on Road Safety (Staysafe) has a broad remit to monitor, investigate and report on road safety issues in New South Wales. This includes countermeasures aimed at reducing deaths and injuries. The Committee recommends that the Minister for Roads refer to the Staysafe Committee an inquiry into the appropriateness of the current categories of causes of fatal crashes, with a view to developing the more precisely defined categories referred to in Recommendation 6. In conducting the inquiry, the Committee should refer to best practice in other jurisdictions including the United Kingdom.

RECOMMENDATION 7

That the Minister for Roads refer an inquiry into the appropriateness of current categories of causes of fatal crashes, with a view to developing more precisely defined categories referred to in Recommendation 6.

6.38 The Performance Audit highlighted the importance of monitoring whether speed cameras are being appropriately used. The Committee is aware of public scepticism around speed cameras being revenue-raisers rather than having a primary road safety purpose. To address this scepticism, and help increase public confidence, the Committee recommends that the Staysafe Committee be given an ongoing role to monitor speed cameras, including their use and location. In undertaking this role, the Staysafe committee should engage with road user groups, police and other stakeholders.

RECOMMENDATION 8

That the resolutions appointing the Joint Standing Committee on Road Safety (Staysafe) be amended to include an ongoing monitoring of speed cameras, in consultation with road user groups, police and other stakeholders.