

Excessive speed as a contributory factor to personal injury road accidents

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Summary

This report analyses contributory factor data compiled between 1999 and 2002. Data is available for about 25 per cent of all recorded personal injury road accidents that occurred during this period. For each accident, one precipitating factor and up to four contributory factors are recorded by the police. The precipitating factor is the key action or failure that led to the impact, while contributory factors are factors contributing to the accident taking place.

Excessive speed is one of 54 possible contributory factors. It was identified as contributing to 12 per cent of all accidents and 28 per cent of fatal accidents between 1999 and 2002 where contributory factors were recorded. In the case of fatal accidents, *excessive speed* was the most frequently recorded factor.

The proportion of accidents where *excessive speed* was cited as a contributory factor was highest for accidents precipitated by two-wheeled motor vehicle accidents (21 per cent for 1999-2002), and lowest for those precipitated by HGVs (9 per cent for 1999-2002). Among car accidents, *excessive speed* was most frequently cited in accidents precipitated by young drivers. The proportion of accidents on rural roads associated with *excessive speed* was twice that of accidents on urban roads. *Excessive speed* also contributed to a slightly higher proportion of accidents on minor than on major roads.

In 2002, *excessive speed* was a contributory factor to 12 per cent of slight, 19 per cent of serious and 30 per cent of fatal accidents for which contributory factor data was available. If these percentages were extrapolated to the whole of Great Britain, it would imply that it contributed to over 1,000 deaths and to injuries to over 38,000 people in 2002 alone. It should be noted that the statistics from the trial presented in this article are not *National Statistics*.

Introduction

This article¹ examines accidents where *excessive speed* was recorded as a contributory factor, looking into the types of vehicle involved, the roads they happen on and the age of drivers precipitating the accidents. The term *excessive speed* can be interpreted as meaning either excessive for the conditions / location or exceeding the speed limit. It is not possible to differentiate between these two aspects. Furthermore, excessive speed is not easy to determine after the event and may be implied by other contributory factors such as *following too close*, *aggressive driving*, *behaviour - careless*, *reckless*, *thoughtless* and *behaviour - in a hurry*. The percentage of accidents in which *excessive speed* is explicitly cited as being a contributory factor might therefore underestimate its importance.

The data analysed in this article is not compiled from the whole of Great Britain. Under a voluntary scheme, several police forces recorded contributory factor data for accidents between the years 1999 and 2002. For each accident, the police record one

¹ The analyses presented in this article complement those presented in *Contributory factors to road accidents*, also available on the Department for Transport website.

precipitating factor out of a possible 15 and up to four contributory factors out of a possible 54. *Excessive speed* is one of these 54 contributory factors.

- The precipitating factor is the key action or failure that led directly to the actual impact. If the factor had not been present then the accident would *very probably* not have occurred. Where two or more precipitating factors are identified, the police are asked to record only the most important. The precipitating factor is linked to the vehicle or pedestrian for which it applies.
- The contributory factors are the causes of the precipitating factor (*Why did this failure or manoeuvre occur?*) and hence factors contributing to the accident taking place. The level of confidence in each factor is also recorded. Contributory factors are intended to refer to the precipitating vehicle or person, but this does not *always* appear to be so. For example, there are cases where a pedestrian casualty is identified as having precipitated an accident but where *excessive speed* is a contributory factor.

How representative is contributory factor data?

As contributory factor data is only available for a geographical subset of all accidents on roads in Great Britain, it is necessary to determine how representative this sub-set is in terms of the types of accident covered. Table 1 shows that contributory factor data is available for a similar proportion of accidents notwithstanding their severity. The table also shows how coverage increased from 1999 to 2002.

Table 1: Percentage of all accidents for which contributory factors are recorded, by year and severity: GB 1999-2002.

	Percentage				
	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>TOTAL</u>
Fatal	20	24	28	26	25
Serious	20	23	26	27	24
Slight	19	23	27	27	24
Total	19	23	27	27	24

Table 2 shows how representative contributory factor accidents are of all accidents in Great Britain according to road type. In general, contributory factor data is recorded for a similar proportion of accidents on different types of road. The only exception to this is the lower proportion of accidents on urban A roads and motorways. That some of the major urban forces are not included among the police forces collecting contributory factor data, most notably the Metropolitan force, may explain the relatively lower number of accidents on urban A roads and motorways.

Table 2: Number and percentage of all accidents for which contributory factors are recorded, by road class & type: GB 1999-2002

Road class & type		(i) All accidents in Great Britain	(ii) Accidents with contributory factors	(ii) as a percentage of (i)
Urban	A & Motorway	278,136	53,970	19
	Other	330,970	81,976	25
	All	609,106	135,946	22
Rural	A & Motorway	179,221	48,596	27
	Other	126,491	34,543	27
	All	305,712	83,139	27
All	A & Motorway	459,526	102,895	22
	Other	460,016	117,102	25
	All	919,542	219,997	24

Overall, the accidents for which contributory factors are recorded appear fairly representative of accidents in Great Britain in terms of their severity and the road type on which they occur. Although the proportion of accidents for which contributory factor data is available was slightly lower for 1999 and 2000, data for all four years is included in subsequent analyses.

Measuring the importance of excessive speed

The importance of *excessive speed* can be expressed as the percentage of all contributory factor accidents where it is listed among any of the (up to four) contributory factors to the accident. These percentages can be compared for different types of accidents, allowing the relative importance of *excessive speed* to be compared for a range of different accident types and conditions.

Accident severity

Table 3 shows the percentage of all contributory factor accidents where *excessive speed* is recorded for each of the years between 1999 and 2002. The proportion of accidents where *excessive speed* is a contributory factor increases with severity. *Excessive speed* is recorded as a contributory factor in 12 per cent of all accidents between 1999 and 2002, but in 28 per cent of fatal accidents. The table also indicates that there is little change over the years in the proportion of accidents to which *excessive speed* contributed.

Table 3: Number and percentage of accidents with *excessive speed* as a contributory factor, by accident severity and year.

Accident severity	Number					Percentage				
	1999	2000	2001	2002	1999-2002	1999	2000	2001	2002	1999-2002
Fatal	179	190	238	247	854	29	26	27	30	28
Serious	1,139	1,356	1,492	1,614	5,601	17	18	18	19	18
Slight	4,053	4,845	5,806	6,208	20,912	11	11	11	12	11
Total	5,371	6,391	7,536	8,069	27,367	12	12	12	13	12

Accidents by vehicle type

Accidents can be attributed to particular vehicle types by (i) whether a type of vehicle was involved in the accident, or by (ii) the type of vehicle that precipitated the accident. Because several vehicles may be involved in an accident, method (i) means that the same accident will be counted for each of the different vehicle types involved. For vehicles precipitating accidents each accident is only recorded once and so the sum across all vehicle types will equal the total number of accidents that occurred. Table 4 shows the percentage of accidents where *excessive speed* was a contributory factor for each vehicle type that was (i) involved or (ii) precipitated an accident.

For cars and light goods vehicles (LGV), both methods give similar results. Differences between the two methods are however observed for two-wheeled motor vehicles (TWMV) and heavy goods vehicles (HGV). *Excessive speed* contributes to a greater proportion of accidents *precipitated*² by TWMVs than it does to all accidents *involving* TWMVs. The reverse applies in the case of HGVs, where *excessive speed* is a less significant factor in accidents precipitated by such vehicles than it is for all accidents in which HGVs are involved. HGVs are defined as vehicles over 3.5 tonnes permissible weight and many of these vehicles will be fitted with speed limiters (all vehicles over 7.5 tonnes).

Table 4: Percentage of accidents with *excessive speed* as a contributory factor, by type of vehicle involved or precipitating the accident, as a total for 1999-2002.

	Percentage			
(i) Vehicle involved:	<u>TWMV</u>	<u>Car</u>	<u>LGV</u>	<u>HGV</u>
Fatal	40	30	20	13
Serious	20	20	17	17
Slight	9	12	12	10
Total	13	13	12	11
(ii) Vehicle precipitating:	<u>TWMV</u>	<u>Car</u>	<u>LGV</u>	<u>HGV</u>
Fatal	49	33	19	8
Serious	29	23	15	14
Slight	15	13	11	8
Total	21	15	12	9

A more detailed breakdown of the percentage of road accidents with excessive speed as a contributory factor is given in Table 5. As well as confirming the trends indicated in Table 4, the table demonstrates that there is relatively little change between the years. The larger yearly fluctuation in the contribution of *excessive speed* to some types of fatal accidents, such as those precipitated by HGVs, reflects the low number of such accidents (in 2002 there were 5 *excessive speed* accidents and only 47 accidents in total).

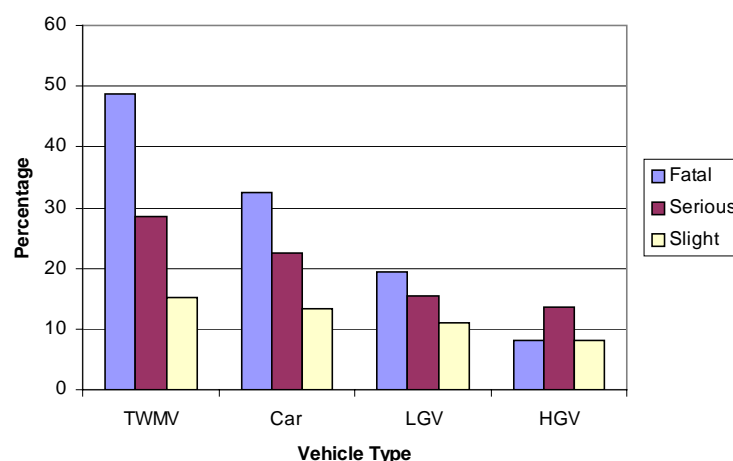
² Contributory factors are meant to apply to the precipitating vehicle or person but in practice this does not appear to be always the case.

Table 5: Number and percentage of accidents with *excessive speed* as a contributory factor, by type of precipitating vehicle, accident severity and year.

		Percentage				Number	
		1999	2000	2001	2002	1999-2002	
TWMV	Fatal	51	50	55	42	49	202
	Serious	29	29	28	29	29	1,139
	Slight	16	15	15	16	15	1,234
	Total	21	21	20	21	21	2,575
Car	Fatal	35	30	31	35	33	589
	Serious	22	23	22	23	23	3,957
	Slight	13	13	13	14	13	17,444
	Total	14	14	14	16	15	21,990
LGV	Fatal	20	19	16	22	19	23
	Serious	19	16	13	15	15	166
	Slight	11	10	10	13	11	896
	Total	12	11	11	13	12	1,085
HGV	Fatal	13	0	9	11	8	14
	Serious	10	11	16	16	14	128
	Slight	9	6	8	9	8	518
	Total	9	7	9	10	9	660

Figure 1 underlines the relationship between *excessive speed* and accident severity and illustrates how the highest proportion of accidents where *excessive speed* is a contributory factor are those precipitated by a two-wheeled motor vehicle.

Figure 1: Percentage of accidents with *excessive speed* as a contributory factor, by severity and the type of vehicle that precipitated the accident: 1999-2002.



Accidents by driver / rider age

Accidents can be classified not only the type of precipitating vehicle but also by the age of the precipitating driver or rider. Table 6 compares the percentage of accidents where excessive speed is a contributory factor according to vehicle type and driver / rider age. Overall, *excessive speed* is more frequently recorded as a contributory factor in accidents precipitated by younger drivers and riders.

Table 6: Percentage of accidents with *excessive speed* as a contributory factor, by precipitating vehicle type and driver / rider age, for fatal and all accidents: 1999-2002

Driver age	Percentage									
	TWMV		Car		LGV		HGV		All ¹	
	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All
17 to 19	54	17	47	26	..	19	..	5	47	24
20 to 24	65	25	48	22	30	16	..	9	48	21
25 to 29	55	27	42	17	27	14	10	11	41	16
30 to 39	48	25	34	13	20	11	11	10	34	13
40 to 49	39	18	23	9	14	9	7	9	23	9
50 +	40	12	10	6	14	9	7	7	11	6

¹ Excludes all accidents where the precipitating factor is not assigned to a vehicle.

.. Percentage not given because denominator less than 20

For accidents precipitated by cars, *excessive speed* is most often cited as a contributory factor where the driver was aged 17 to 19, although for fatal accidents it is slightly more often cited for 20-24 year old drivers. As driver age increases, the proportion of *excessive speed* accidents falls. A similar pattern is observed for light goods vehicles with the highest percentage (19 per cent) found for 17 to 19 year old drivers.

A slightly different pattern is observed for two-wheeled motor vehicles. The highest proportion of excessive speed accidents is found among riders aged between 25 to 29 and among 20-24 year olds in fatal accidents. The percentages remain high in the 30 to 39 year old age group and are much higher for older age groups than the percentages found among car drivers.

In the case of two-wheeled motor vehicles, there is known to be a tendency for older riders to use more powerful machines. Table 7 shows how *excessive speed* contributes to a higher proportion of accidents involving two-wheeled motor vehicles over 500cc. than accidents involving less powerful machines.

Table 7: Number and percentage of two-wheeled motor vehicle accidents with *excessive speed* as a contributory factor, by engine size and accident severity: 1999-2002

	<500cc			>500cc		
	All accidents	Excessive speed accidents	Percentage	All accidents	Excessive speed accidents	Percentage
Fatal	84	38	45	296	153	52
Serious	1,036	249	24	2,094	725	35
Slight	2,414	331	14	3,024	629	21
Total	3,534	618	17	5,414	1,507	28

Accidents by road class and type

The percentage of accidents on urban and rural roads where *excessive speed* is a contributory factor is shown in Table 8.

Table 8: Percentage of accidents on urban and rural roads with *excessive speed* as a contributory factor, by severity and type of precipitating vehicle: 1999-2002

		Percentage				Number
		<u>TWMV</u>	<u>Car</u>	<u>LGV</u>	<u>HGV</u>	<u>All¹</u>
<u>Urban</u>	Fatal	43	37	11	5	24
	Serious	25	18	9	10	13
	Slight	13	10	8	6	8
	Total	16	11	8	6	9
<u>Rural</u>	Fatal	51	31	22	9	30
	Serious	31	26	20	15	24
	Slight	19	18	16	10	17
	Total	25	20	16	11	18

¹ Includes accidents where the precipitating factor is assigned to a pedestrian casualty or other vehicle type.

On urban roads the percentage of all accidents where *excessive speed* is a contributory factor is half that for rural roads. For every vehicle type, one finds *excessive speed* to be more often cited as a factor in accidents on rural roads, as demonstrated by Figure 2. There is, however, less difference between the two road classes where fatal accidents are concerned. Indeed, for fatal accidents precipitated by a car, *excessive speed* is more frequently a factor in urban than in rural accidents.

Figure 2: Percentage of accidents on urban and rural roads with *excessive speed* as a contributory factor, by precipitating vehicle: 1999-2002.

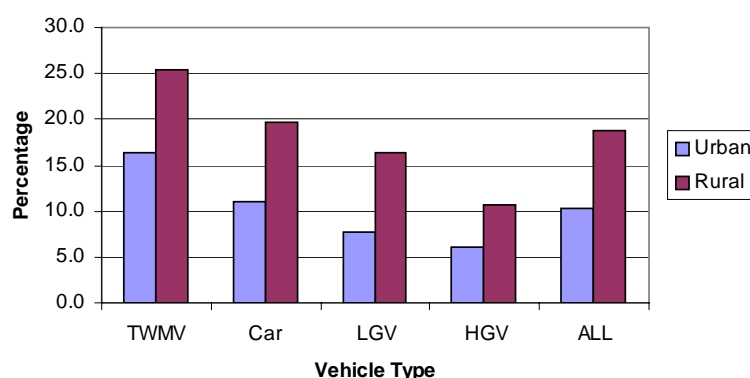


Table 9 compares the percentage of excessive speed accidents by road and vehicle type. The highest proportion of excessive speed accidents occurs on *other roads* which includes B, C and unclassified roads. This tendency is most noticeable for fatal accidents for which *excessive speed* is cited as contributing to 38 per cent of car-precipitated accidents and over half of TWMV-precipitated accidents on *other roads*.

Table 9: Number and percentage of accidents with *excessive speed* as a contributory factor, by type of precipitating vehicle, road type and severity: 1999-2002

		Percentage					Number
		<u>TWMV</u>	<u>Car</u>	<u>LGV</u>	<u>HGV</u>	<u>All²</u>	<u>All²</u>
Motorway	Fatal	..	14	..	6	13	27
	Serious	25	16	10	6	15	176
	Slight	13	12	11	4	11	987
	Total	18	12	11	5	11	1,190
All A roads	Fatal	47	31	19	9	26	437
	Serious	28	20	14	17	18	2,262
	Slight	15	12	10	9	10	8,149
	Total	20	13	11	10	12	10,848
Other¹ roads	Fatal	51	38	20	9	33	390
	Serious	30	25	18	12	19	3,163
	Slight	16	15	12	10	12	11,776
	Total	21	16	13	10	13	15,329

1 B roads, C roads and unclassified roads.

2 Includes accidents where the precipitating factor is assigned to a pedestrian casualty or other vehicle type.

.. No percentage calculated because denominator less than 20.

Excessive speed accidents involving pedestrians and pedal cyclist casualties

Pedestrians

Previous analyses by vehicle type excluded those accidents precipitated by a pedestrian. To examine the role *excessive speed* plays in pedestrian accidents, the proportion of *excessive speed* accidents was calculated for (i) accidents precipitated by and involving a pedestrian casualty, and (ii) accidents precipitated by a vehicle but involving a pedestrian casualty. Table 10 shows how, compared with other accidents, the percentage of *excessive speed* accidents is lower for both types of accident involving a pedestrian casualty. As contributory factors are intended to explain why a precipitating factor occurred, it is surprising that *excessive speed* should be recorded in any accidents precipitated by a pedestrian.

Table 10: Number and percentage of accidents with *excessive speed* as a contributory factor, by whether or not there was a pedestrian casualty: fatal and all accidents 1999-2002

Accident type & severity		All accidents (a)	<i>Excessive speed</i> accidents (b)	Percentage (b/a)
Precipitated by a pedestrian & causing a pedestrian casualty	Fatal	388	4	1
	All	20,884	123	1
Precipitated by a vehicle & causing a pedestrian casualty	Fatal	356	57	16
	All	14,119	1,097	8
No pedestrian casualty	Fatal	2,330	793	34
	All	184,994	26,147	14

Pedal cyclists

Table 11 shows the percentage of fatal and all accidents precipitated by or involving a pedal cyclist casualty that were attributable to *excessive speed*. Once again one finds that *excessive speed* is cited as a contributory factor in a smaller proportion of accidents compared with accidents not involving a pedal cyclist casualty.

Table 11 Number and percentage of accidents with *excessive speed* as a contributory factor, by whether or not there was a pedal cyclist casualty: fatal and all accidents 1999-2002

Accident type & severity		All accidents (a)	<i>Excessive speed</i> accidents (b)	Percentage (b/a)
Precipitated by a pedal cyclist & causing a cyclist casualty	Fatal	75	2	3
	All	8,429	296	4
Precipitated by a motor-vehicle but causing a pedal cyclist casualty	Fatal	81	7	9
	All	12,083	390	3
No pedal cyclist casualty	Fatal	2,918	845	29
	All	199,485	26,681	13

The results suggest that *excessive speed* is a less important contributory factor to accidents involving pedestrians and pedal cyclists, compared with other types of accident. It should be remembered that the majority of accidents involve two motor vehicles and it is largely against this type of accident that one is comparing accidents involving these road user groups. Furthermore, the trial method of collecting contributory factor data may not be suited to certain accident circumstances such as a pedestrian stepping into the road and being hit by a speeding vehicle.

Accidents by number of vehicles involved

Accidents can be classified according to the number of vehicles involved. In 2002, single vehicle accidents account for 30 per cent and two vehicle accidents nearly 60 per cent of all accidents. Table 12 shows the percentage of contributory factor accidents where *excessive speed* was recorded as a factor, by the number of vehicles involved.

The proportion of *excessive speed* accidents was highest for single vehicle accidents and for accidents involving more than two vehicles. For all types of precipitating vehicle, the proportion of excessive speed accidents was considerably higher for single vehicle compared with two vehicle accidents. As already observed, the proportion of accidents where *excessive speed* was recorded tends to increase with accident severity.

Table 12: Number and percentage of accidents with *excessive speed* as a contributory factor, by severity, the type of precipitating vehicle and total number of vehicles involved: 1999-2002

		Percentage				Number	
		<u>TWMV</u>	<u>Car</u>	<u>LGV</u>	<u>HGV</u>	<u>All¹</u>	
Single vehicle accident	Fatal	46	41	28	10	29	385
	Serious	29	32	17	25	20	2,564
	Slight	17	23	17	18	14	6,629
	Total	23	25	17	19	15	9,578
2 vehicle accident	Fatal	51	26	15	5	26	325
	Serious	28	17	14	9	16	2,356
	Slight	14	10	9	6	10	11,080
	Total	19	11	10	6	10	13,761
3 or more vehicle accident	Fatal	48	28	20	11	29	144
	Serious	32	23	18	13	22	681
	Slight	17	15	13	9	15	3,203
	Total	25	16	13	10	16	4,028

¹ Includes accidents where the precipitating factor is assigned to a pedestrian casualty or other vehicle type.

Excessive speed and other contributory factors

The previous analyses have demonstrated how frequently *excessive speed* is a contributory factor to different types of accident. However, they give no indication of the relative importance of *excessive speed* compared with the other fifty-three contributory factors.

All fifty four contributory factors may be ranked according to how frequently they are cited as having contributed to an accident, and this can be expressed as a percentage of all contributory factor accidents. As up to four factors may be recorded for each accident, the percentages for all fifty-four factors will add up to more than one hundred. Table 13 lists the ten most frequently recorded contributory factors for fatal and all accidents between 1999 and 2002.

Excessive speed was the 7th most commonly recorded contributory factor, cited as contributing to 12 per cent of all accidents. Among the factors that are more frequently recorded are *inattention*, and *failure to judge the other person's path or speed*. For those accidents precipitated by a two-wheeled motor vehicle, *excessive speed* is the 3rd highest at 21 per cent, 6th highest for cars at 15 per cent and 7th for light good vehicles and heavy goods vehicles at 12 and 9 per cent respectively.

In the case of fatal accidents, *excessive speed* is the most frequently recorded factor, cited in 28 per cent of fatal accidents. The percentage is highest for those fatal accidents precipitated by two-wheeled motor vehicles or cars. For fatal accidents precipitated by a light or heavy goods vehicles *excessive speed* was the 4th and 9th most common contributory factor.

Among fatal accidents precipitated by a pedestrian, the three most often cited contributory factors are *failed to look*, *impairment - alcohol* and *behaviour - careless / thoughtless / reckless*. *Excessive speed* is only the 14th most frequently cited contributory factor for these types of accident. For fatal accidents involving either a pedestrian or pedal cyclist casualty but precipitated by a vehicle, *excessive speed* is the 4th most cited factor, after *looked but did not see*, *behaviour - careless / thoughtless / reckless* and *inattention*.

Table 13: Percentage of fatal and all accidents with each of the ten main contributory factors: 1999-2002.

Fatal Accidents	%	All Accidents	%
Excessive speed	28	Inattention	25
Behaviour - careless/thoughtless/reckless	21	Failed to judge other person's path or speed	23
Inattention	18	Looked but did not see	19
Lack of judgement of own path	17	Behaviour - careless/thoughtless/reckless	18
Failed to judge other person's path or speed	16	Failed to look	16
Looked but did not see	14	Lack of judgement of own path	14
Impairment - alcohol	14	Excessive speed	12
Failed to look	10	Slippery road	8
Behaviour - in a hurry	7	Behaviour - in a hurry	7
Aggressive Driving	6	Impairment – alcohol	6

The clear relationship seen between *excessive speed* and accident severity is not observed for most other contributory factors. Among the ten most often recorded contributory factors, the only other to follow a similar trend to *excessive speed* was *alcohol impairment* which was cited for 14 per cent of fatal accidents, 11 per cent of serious and 6 per cent of slight.

Excessive speed and precipitating factors

Table 14 lists the five most frequent precipitating factors of all accidents and of those accidents where *excessive speed* was recorded as a contributory factor. The most common precipitating factor is where the driver or rider failed to avoid a vehicle or object in the carriageway. In the case of *excessive speed* accidents the two most frequently recorded precipitating factors were *loss of control of the vehicle*, and *failure to avoid a vehicle or object in the road*. Intuitively, both of these precipitating factors are among those one would imagine to be strongly influenced by the use of *excessive speed*.

Table 14: Percentage of accidents with each of the five main precipitating factors: 1999-2002

All accidents	%	Excessive speed accidents	%
Failed to avoid vehicle or object in road	28	Loss of control of vehicle	49
Loss of control of vehicle	19	Failed to avoid vehicle or object in road	23
Failed to give way	15	Failed to give way	6
Pedestrian entered road without due care	11	Poor turn/manoeuvre	5
Poor turn/manoeuvre	8	Sudden braking	4

Conclusions

The analyses presented in this study focus on comparing how the percentage of all accidents where *excessive speed* was recorded as one of four possible contributory factors varies between different types of accidents.

- *Excessive speed* was cited as a contributory factor to 12 per cent of all accidents between 1999 and 2002, ranking as the 7th most often cited of 54 contributory factors.
- The proportion of accidents to which *excessive speed* contributed increased with accident severity.
- *Excessive speed* was the most often recorded contributory factor for fatal accidents, being cited in 28 per cent of fatal accidents between 1999 and 2002.
- The proportion of *excessive speed* accidents was highest among those precipitated by two wheeled motor vehicles and lowest among HGV precipitated accidents.
- Among accidents precipitated by cars, the proportion to which *excessive speed* contributed was highest for accidents precipitated by young drivers and the proportion fell as driver age increased.
- *Excessive speed* contributes to a smaller proportion of accidents involving a pedestrian or pedal cyclist casualty compared with accidents without such casualties.
- The proportion of accidents where *excessive speed* was a factor was greater on rural than on urban roads, and slightly greater on minor roads compared to other road types.

Among the most striking findings is the way *excessive speed* contributes to a much higher proportion of severe and fatal accidents. This close relationship with accident severity is not observed for any other major contributory factor except *alcohol impairment*. This would confirm previous research indicating that as well as actually contributing to the occurrence of an accident, *excessive speed* may be a major factor determining the severity of injuries and likelihood of death.

Glossary

Car	Excludes taxis and minibuses
HGV	Heavy goods vehicle over 3.5 t. mgw
LGV	Goods vehicle up to 3.5 t. mgw
TWMV	Two wheeled motorvehicles including mopeds, motorscooters and motorcycles