

Young driver accidents in Europe

Characteristic young driver accidents in the member states of the EU

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Summary

On behalf of the European Road Safety Federation, the SWOV was commissioned by the Royal Dutch Touring Club ANWB, to bundle the information (from the member states of the European Union) on characteristic young driver accidents. To date such a bundling of material at European level was lacking.

In order to gather the information, research institutes in the member states were requested by questionnaire to send any relevant information. Information was received from all but one country.

A closer look at the received information showed that detailed information on young driver accidents is missing in several countries. Especially in the Southern countries information is lacking. Of those studies which were more detailed, some were incomplete as exposure related information was not included in the study.

The conclusions drawn in the present study on the basis of these data should therefore be treated with some caution.

All countries report a high proportion of young driver accidents with the exception of Ireland, where the young motor cycle accidents are more frequent. Both males and females are frequently involved in accidents, but the problem is greater with the young male.

Especially the weekend night accidents are typical young driver accidents. The majority of the detailed studies show a significant proportion of accidents of this type. The over-representation is partly caused by the mere fact that young drivers drive more kilometres in the weekend night than other age groups. Also young drivers drive primarily during the weekend night.

Also the 'single accident' is a typical young driver accident that decreases with age and experience. This was reported in all five detailed studies. Young drivers are not over-represented in alcohol accidents. In comparison with older drivers they are even under-represented. Only in the weekend night accidents, alcohol seems to play a significant role. Then young drivers tend to be over-represented.

Young driver accidents are often characterized by driving too fast for prevailing conditions. This may also account for the high proportion of accidents in curves, and single accidents.

Young drivers get more often involved in the more serious accidents, partly because of the presence of many passengers. (Only one study has addressed this issue of passengers). Furthermore, young drivers drive more often with inappropriate speeds. Speed is directly related to the seriousness of the accident.

It was concluded that because of the limitations of the information, an analysis on which a European policy can be based cannot be provided. Yet, there are many comparable characteristics between the countries, which might provide a scope for European policy. It was recommended to stimulate at a national level, the analysis of young driver accidents, in a fixed format, that also accounts for differences in exposure, and which uses agreed upon classifications and definitions. The outcome of these analyses may provide a more solid base for European policy.

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1. Introduction

1.1. General

Since the 1960s, it has been acknowledged that young drivers are more likely to be involved in an accident than other road users. Study has shown that this phenomenon is apparent in the majority of western countries (OECD, 1975).

Although the fact that young drivers run a greater risk of being involved in an accident has been described for some time, the understanding of the characteristic conditions under which these accidents occur is considerably limited. It is true that various countries have performed extensive accident analyses in certain areas, but insofar this material is available and/or accessible, a bundling of this material at European level is lacking to date.

The European Road Safety Federation (ERSF) recognises the need to bundle these data in order to:

- chart the nature and scope of the problem in the various member states;
- note the differences and similarities between the member states.

The objective of the study envisaged is to bundle information (from the EU member states) about the characteristic accidents involving young drivers for the purposes of the ERSF. This further explores the different accident causes and also describes the relationship between age and level of experience for young or novice drivers.

Similarities and differences between the member states are described. Explanations for these will not be presented within the limited scope of the study. The study was commissioned on behalf of the ERSF by the Royal Dutch Touring Club ANWB, member of the Alliance Internationale de Tourisme AIT.

1.2. Setup and method of the study

It was not possible to use the existing European databases IRTAD and CARE to provide an answer to the question regarding the characteristic accidents, since:

1. IRTAD does not contain information about the conditions under which accidents occur. The database contains only information about accidents and victims as a proportion of the population, per mode of transport. The database can therefore be consulted to obtain part of the information, as described under 'background'.
2. CARE is not yet operational.

Because the results of this study are required in the short term, it was deemed satisfactory to perform an inventory of knowledge already available in this field, such as that already noted in the research reports. To this end, a brief literature study was performed, and research institutes in the field of road safety in the other 11 EU member states were approached with a request to provide their most recent information, preferably in report form. If reports were written in the national language (with the exception of French, German and English language reports), they were asked to provide a French, German or English summary of these reports.

A questionnaire was sent out (see Annex 2) and experts in the different research institutes were contacted by phone. For the list of participating institutes and names of experts see Annex 1. All but one expert contributed to the project.

The author wishes to thank all colleagues of the European research institutes who contributed so expertly to this study.

The present report is structured in the following way:

In order to understand the limited scope of the present study, Chapter 2 contains a description of the functional requirements to which a valid international comparison of characteristic young driver accidents should comply.

Chapter 3 describes the nature and the completeness of the available information in each country.

Chapter 4 gives the description of characteristic young driver accidents in each country.

The study is concluded with a between country comparison, conclusions and recommendations (Chapter 5).

2. Accident patterns: Some theoretical considerations

2.1. General

In understanding the contributing factors to young driver accidents it may be helpful to have a list of accident causes that could be placed in rank order, and that clearly indicates measures to combat young driver unsafety. However, such an exercise is not feasible for the following reason.

Studies of the accident process demonstrate that accidents are often the result of a critical combination of circumstances. By indicating a single cause or pointing out the guilty party, the complexity of the true situation is not recognised and as a consequence the selected means of preventing accidents are too limited in scope. After all, this approach is inherently associated with the risk that measures are based on the immediate cause of the accident, as recorded by the police, and not on the more fundamental combination of causes.

One of the contributors to the present study writes about this: "In this context, another important consideration to bear in mind is that (as Maycock et al. remind us), accidents have multiple causes. Furthermore, as Rolls et al. (1991; p.77) imply, the multiple factors are likely to be combined logically, (e.g. a particular accident occurs because either factor x or factor y or factor z was present) and the logical methods used in present studies have not means of representing such logical combinations of elements" (Downs, 1994). This also implies that there might be no single characteristic of young driver accidents that can be rank ordered, but combinations of characteristics by which young driver accidents can be typified.

2.2. Important classifications

In general, an accident analysis should investigate when certain accidents occur, at what locations, and who is involved. In order to define significant characteristics of accidents, it is relevant to make the following distinction between accidents:

- Under which conditions did the accident take place?
 - day or night time
 - day of the week
 - type of road

- Which parties were involved in the accident?
 - other motor vehicle
 - pedestrian or cyclist
 - no other party was involved (unilateral accident)

- What was the physical and psychological condition of the driver?
 - use of alcohol
 - medical fitness

- What was the trip motive?
 - work or leisure

- What driver categories?
 - age of the driver
 - sex of the driver
 - level of experience of the driver.

With respect to the age of the driver, data collected in this study can apply from the first year (age) at which one can legally drive a car until six years after that date.

With respect to the level of experience, two measures can be used, namely the number of months since the licence was issued to the driver and/or the estimated number of kilometres travelled.

2.3. Over-representation and exposition

In an analysis of characteristic accidents, the following should be investigated:

- What type of accident occurs relatively often with the group of young drivers, and are there any differences between young women and young men?
- What types of accident may relate to a higher level of exposure? For example, it could be that night time accidents occur more frequently amongst young drivers than daytime accidents, since this age group is more often on the road at night than in the daytime.
- What types of accident can be regarded as *characteristic* for young drivers? The accident types demonstrate the circumstances under which various groups of young drivers are involved in accidents. However, they do not demonstrate whether these accident patterns are characteristic for these groups. It may be that these accident patterns do not deviate at all from the accident patterns of other groups in that country. In order to be able to speak of characteristic accident patterns, it is necessary to compare these accident patterns to the accident patterns of a reference group.

2.4. Background data

In order to establish to what degree young drivers in the other member states form a risk group, and whether the degree to which young drivers are subjected to risk also differs between the member states, the following background information is important:

- The absolute number of accidents in which a young driver is involved where at least one fatality or serious injury results, and the proportion with respect to the total number of casualty-related accidents (accidents in which at least one fatality or serious injury occurs).
- In order to correct the degree to which certain age groups possess a driving licence, this figure should be expressed as a proportion of the driving licence owners in a certain age group.
- In addition, it is possible to correct for the number of inhabitants of the country in question, based on the age category.
- In order to correct for exposure (as described in the previous paragraph), the risk of an accident needs to be expressed as the number of accidents per kilometre travelled in a certain age group.

In her conclusions with respect to the finding that in the UK young drivers have more accidents on major roads than on minor roads, Markey (1993) refers to this when she writes: "The distributions of casualties will

be influenced by the young drivers' patterns of travel to some extent. For example, the results by road type probably imply that young drivers prefer to avoid major roads rather than that they are especially at risk when driving on minor roads".

2.5. Limitations of between study comparisons

In the present study results from existing studies on characteristic young driver accidents are compared. This provides a good overview of:

- the issues that have been studied;
- the distribution of studies over countries; in some countries there may be lots of information, while in other countries data on young driver unsafety are almost absent.

It is unlikely that the existing data will be detailed enough to be the basis for thorough comparisons between countries. Such comparisons can only be made if in all countries, all information as described in the previous paragraph is available.

One of the contributors to the present study refers to this as he writes: "The main value in reviewing studies in this way is to suggest factors which may be important for further research; generally, it is not possible to combine or directly compare the findings of the studies, because each study tends to assess different dimensions of the problem. For example, one study might find 'hazard perception' was associated with accidents, whereas a second study might find this played no role. However, the second study might simply have chosen not to assess hazard perception (Downs, 1994).

3. Nature of the data available in the twelve member states

3.1. Completeness of information

All countries but one responded to the questionnaire. From the responses it becomes clear that only in five countries some detailed information is available. In ten countries basic information is available and in two other countries information appears to be completely absent. Information from the Southern European countries is almost absent.

Country	Detailed information	Basic information
Belgium	yes	yes
Denmark	no	yes
France	yes	yes
Germany	yes	yes
Greece	yes	yes
Ireland	no	Yes
Italy	no reaction	no reaction
Luxembourg	no	no
Netherlands	yes	yes
Portugal	no	yes
Spain	no	yes
United Kingdom	yes	yes

Table 1. *An overview of the amount of information available in the 12 countries.*

3.2. The nature of information

In Chapter 2 it was described what kind of data, is needed to determine whether young drivers are over-represented in accidents or not. It was argued that young drivers may be over-represented in accidents simply because of the fact that they drive more, form a larger proportion of the population, drive more frequent under particular conditions etc. In understanding the nature of young driver unsafety these variables are of importance especially in designing effective countermeasures. In this paragraph the detailed information received from the five countries (see Table 2) will be described in terms of the variables included in the analyses.

Country	Year data	Age young driver	Nature data	Exposure control	Age control-group	Other control
France	1984-1985	18-25	self-report?	No	25-60	No
Germany		18-20 21-24	national statistics	No	25-34	No
NL	76/77 83/84	18-24	national statistics	Yes per km	35-54	
UK	1991	17-20	national statistics	Yes per km	25-34	
Belgium	1989	18-19 20-24	national statistics	No	30-34	No

Table 2. Data available in the detailed studies.

The table shows that in few studies, exposure has been accounted for. Only in two of the five studies such is the case. Age classifications of young drivers differ, but all have included the 18-20 year group. The UK has data on each age (between 17 and 20 year).

All studies have made comparisons with a control group possible, however the age of the control group varies between countries. It is likely that countries have chosen that age group as a control group, which appears least to be at risk.

Most countries have used the national accident data. The UK has done many studies using different data sources. In the between country comparisons the UK study that is based on the national statistics will be used.

3.3. Conclusions

- Detailed information on young driver accidents is missing in several countries. Especially in the Southern countries information is lacking.
- In the more detailed studies, analyses of the nature of typical young driver accidents is still hazardous because in some studies exposure related information is not included in the study.
- The conclusions drawn in the present study (next chapter) on the basis of these data should therefore be treated with some caution.

4. Typical young driver accidents in the twelve member states

4.1. Ireland

In 1992 there were 384 persons killed and 6293 seriously injured in traffic in Ireland.

Of all car driver and car passenger casualties (injured and killed), about 9% were in the age group 18-20 and about 11% in the age group 21-24 (Road accident facts Ireland, 1992; p.23). About 5% of all drivers of cars involved in fatal and injury accidents are in the age group 18-20, and 9% are in the age group 21-24 (p.29). In Ireland more youngsters in the age group 18-24 get killed as motorcyclists, than as car drivers.

No information is available on typical young driver accidents.

4.2. Luxembourg

No information is available on typical young driver accidents.

4.3. Greece

Official data are those provided by the Statistical Service of the Ministry of Public Order. The tabulation was done by a private consultants office, mainly for use by the press. In that sense, the present analysis is not based on an official report by any state organization. There are no existing reports relative to the time or the type of accident or the driver's behaviour. The data refer only to the fatal and serious injury accidents. No light injuries or material damage are included. The data refer to the last 25 month, i.e. April 1992 - April 1994.

In Greece 82% of all casualties are occupants of passenger cars (drivers and passengers). This relatively high proportion may indicate that in the Greece statistics the definition of driver, includes all operators of vehicles, and not only operators of cars.

Of all driver casualties, 21% is in the age group 21-25. In Greece this is the driver age group most frequently injured or killed in a traffic accident, closely followed by the younger age group 16-20 (Table 3).

The proportion of driver casualties decreases with age. Referring to all driver accident casualties, the driver age group 16 to 30 are most frequently injured or killed compared to other age groups. They account for 52% of all driver casualties.

To passengers a similar pattern arises as for drivers. A high proportion of passenger casualties are in the age group 16-30. The data also show that the frequency of passenger casualties decreases with age.

Age	Deaths	Serious injury	Totals
16-20	13%	19%	16%
21-25	19%	23%	21%
26-30	12%	17%	15%
31-35	10%	9%	9%
Total accidents 0-76	2369 (100%)	3473 (100%)	5869 (100%)

Table 3. *Driver casualties by age group as a proportion of all driver casualties in Greece.*

Age	Deaths	Serious injury
16-20	16%	21%
21-25	19%	19%
26-30	12%	11%
31-35	7%	8%
Total accidents 0-76	1349 (100%)	1283 (100%)

Table 4. *Passenger casualties by age group as a proportion of all passenger casualties in Greece.*

4.4. Portugal

According to the Laboratorio Nacional de Engenharia Civil (LNC) there are no published studies on Portuguese young drivers. Additional analysis has provided information on young driver accidents in relation to time of day and day of week, and distribution of accidents over age groups and groups with different levels of driver experience (based on the 1992 data).

In Portugal there is a difference in accident involvement of 18-24 and 25-45 year old drivers with respect to the time of day. 37% of the accidents of the young age group happen during darkness, whereas 30% of the accidents of the older age group happen during darkness.

There is no difference with respect to road characteristics, such as accidents in curves, on straight roads, the width of the roads, the road surface. Also weather conditions do not differentiate between the two age groups. Further no differences were found with respect to type of collisions. In

contrast to the frequently reported pattern in the other countries, the proportion of young drivers involved in single accidents is not higher than the proportion of older drivers involved in this type of accident. Also the type of manoeuvre that led to the accident did not differentiate between the two age groups.

In addition no differences were found with respect to alcohol related accidents. In both age groups only 8% were found to be between $>0.0 < 0.5$ g/l; about 6% were above (the) >0.5 g/l.

Age	18-24	25-45
<1	13%	6%
1 < 2	20%	8%
2 < 3	14%	3%
3 < 5	19%	13%

Table 5. Years of licence possession by age of accident involved car drivers in Portugal.

There were differences with driving experience and accident involvement. Table 5 shows that in the younger age groups, drivers with less experience are more frequently involved than inexperienced drivers in the older age group are. However, the data cannot be interpreted as being evidence for over involvement of young inexperienced drivers. It is likely that a high proportion in the total population of young drivers are inexperienced drivers, whereas in the older age group this proportion might be much lower. If this is the case then accident involvement patterns frequency simply mirrors the distribution of driving experience in the total driver population.

4.5. Denmark

In Denmark at present no information is available on accident types of young drivers. A research programme has been started, to get more information on young driver accident types, both on the basis of official statistics and on the basis of self-reported accidents. Also recently, a recurring survey has been started on driver accidents.

The accident statistics show that young drivers in the age group 18-24 have an accident risk per kilometre about four times that of 35-64 years old drivers.

In Denmark there is no information which would permit a rank ordering of accident types. There is some evidence however that young drivers get relatively more often involved in single accidents than older drivers do. A study on drunken driving showed, that the accident risk for young drivers, when driving in an intoxicated state, was higher than that of more mature drivers. In this study exposure and BAC-level was accounted for.

4.6. France

The data presented are based on accidents in the years 1984-1985.
 In 76% of all traffic accidents in which a youngster in the age group 18-25 is involved, the youngster is driving a passenger car.
 In 38% of all *fatal* car accidents, a young driver in the age group 18-25 is involved.

4.6.1. Urbanisation grade

Accidents with passenger cars	Rural area	Urban area	Transit area
Age 18-25	58%	31%	11%
Age 25-60	63%	28%	9%

Table 6. *Accidents by age group of the driver and the urbanisation grade in France.*

Accidents in France happen most often in rural areas. And there does not seem to be major age differences.

4.6.2. Day of week and time of day

Accident with passengers cars	Working day	Week-end
Age 18-25	48.5%	51.5%
Age 25-60	60.5%	39.5%

Table 7. *Accidents by age group of the driver and the day of the week in France.*

Young drivers are more often involved in week-end accidents than in working day accidents, whereas in the older age group this is the other way around.

Accidents with passengers cars	Day time	Night-time
Age 18-25	36%	64%
Age 25-60	48%	53%

Table 8. *Accidents by age group of the driver and the time of day in France.*

Most accidents happen during the night. This phenomenon is most marked in young drivers. Young driver accidents tend to happen most frequently between 0 hrs - 05 hrs at night.

4.6.3. Performance level of the cars used

Accidents with passenger cars	Less than 7 Hp	More than 7 Hp	Sport type cars
Age 18-25	75%	18%	7%
Age 25-60	66%	31%	3%

Table 9. Accidents by age group of the driver and the performance level of the cars used (Hp = horse power).

The performance of the car does not seem to be a major difference between the 18-25 and the 25-60 age group of drivers. In general young people tend to get into accidents with less powerful cars, with the exception that the sport type cars (high performance cars) seem to be more frequently involved.

4.6.4. Age of the car

Accidents with passenger cars	New car	Middle aged	Old	Wreck
Age 18-25	28%	19.5%	50%	2,5
Age 25-60	36,5%	25.5%	37%	1%

Table 9. Accidents by age group of the driver and age of the car in France.

The car of the young accident involved driver is in general older than that of the older accident involved driver. Furthermore, young driver accidents seem to be more often related to the condition of the vehicle. In 23% of the accidents a technical failure was diagnosed, while only in 15% of the older age group such was the case. Especially problems related to the tires were prominent.

4.6.5. Trip motive

Accidents with passenger cars	Work related	Leisure
Age 18-25	22%	64%
Age 25-60	41%	44%

Table 11. Accidents by age group of the driver and trip motive in France.

Accidents of young drivers happen most often on 'leisure' trips.

4.6.6. Driver condition and/or skills

Accidents with passenger cars	Age 18-25	Age 25 - 60
Bad driving skills	25%	7%
Alcohol	26%	27%
Tiredness	22%	17%
Lack of attention	15%	15%
Physiological or sociological problems	9%	14%

Table 12. Accidents related to the driver's condition and/or skills by age group in France.

A slight difference exist with respect to tiredness. This may be related to the time of night at which young drivers tend to get into accidents. The older age group score higher in the category physiological and sociological problems.

There are major differences between the age groups with respect to 'bad driving skills'. This may be partly due to the lack of driving experience of the younger age group.

39% of all accidents with young drivers happen to drivers who are for less than a year in possession of a driving licence.

4.6.7. Driving related accident factors

Speed is the factor distinctly separating the age groups. In the younger age group speed is more often a factor than in the older age group.

Accidents with passenger car	Age 18-25	Age 25-60
Speed	53%	45%
Seatbelts	23%	22%
Emergency manoeuvre	13%	12%
Dangerous manoeuvre	11%	10%
Violations	8%	9%

Table 13. Accidents related to accident factors by age group in France.

4.6.8. *Single accidents*

Young drivers are over-represented in single vehicle accidents. This accident type is responsible for 40% of all accidents with young drivers, whereas in the older age group only 27% is of this type.

Young drivers are also over-represented in accidents in curves (49%) whereas in the older age group this is only 39%.

Accident frequency related to infrastructural factors did not differ between the age groups.

4.7. **United Kingdom**

The Transport Research Laboratory has summarized seven studies on accident involvement of young drivers. The results are presented in Table 14.

The researcher concludes: Factors on which there seems to be some agreement include:

- single vehicle accidents
- driving too fast
- driving too close
- male drivers

4.7.1. *Single vehicle accidents*

The percentage of single vehicle accidents falls steadily with age, and is higher for men than for women (1991 data).

Age	Male drivers	Female drivers
17	41%	26%
18	35%	21%
19	32%	18%
20	30%	16%
25-34	20%	12%

Table 15. *Percentage of single vehicle accidents by sex and age in UK (Modified table on the basis of Table 3f in Markey (1993)).*

Study	Age group	No. of cases	Data collection	Method of analysis method	Factors linked with young driver accidents	Factors not linked	Accident measures
Carsten et al. (1989)	17-19 & 20-24	c. 2,000	interviews	inspection of accident statistics	* loss of control * manoeuvre problems * failure to anticipate	(none clearly identified)	observed accident involvement
Markey (1993)	17-20 & 17-24	c. 21,000	none collected for study	inspection of UK accident statistics	* minor roads * in dark * single vehicle * non-junction * on bends	* weather * major roads * manoeuvre types	injury accidents
Maycock et al. (1991)	< 23	18,500	self-report	statistical combination of predictors	* single vehicle * male * annual mileage, age and experience	(non clearly identified)	accident liability (injury &/or damage)
Quimby (1987)	17-24	1,384	at-scene study/ interviews	statistical measure of association	* at night * single vehicle * more to blame... - driving too fast - driving too close - distraction	* weekend vs weekday * weather conditions * road type	observed accident involvement (injury or damage)
Rolls et al. (1991)	17-20	439	driver self-report observer ratings	statistical combination of predictors	* violations * driving too fast * driving too close * driving with friends in vehicle	* drink-driving violations * sex * competence (not performance)	accident frequency
Thomson & O'Reilly (1993)	17-24	n/a	literature review	narrative review	* poor hazard perception * driving style... too fast too risky	* low level control skills	various

Table 14. Comparison of prominent young driver accident studies in UK.

4.7.2. *Time of day and day of week*

Age	Daylight		Darkness	
	male	female	male	female
17-20	53%	66%	47%	34%
21-24	58%	71%	42%	29%
25-34	63%	77%	37%	23%

Table 16. *Accident frequency in relation to daylight and darkness by sex and age in UK.*

"For both sexes the casualty rates for 17-20 yrs olds are higher during the evening and at the weekend; the peak for young males in the evenings at weekends is very prominent. Rates for drivers in the 21-24 age group have similar patterns during the week and at the weekend. Rates for older drivers fall slightly at the weekend, particularly for female drivers".

4.7.3. *Driver condition and/or skills*

Age	Male		Female	
	not tested	positive	not tested	positive
17	55%	2.6%	73%	0.6%
18	56%	4.0%	71%	0.9%
19	57%	5.8%	72%	1.2%
20	56%	6.7%	74%	1.6%
25-34	64%	7.5%	77%	1.5%

Table 17. *Alcohol tests after accidents by sex and age in UK.*

Mackey (1993) concludes: "It can be seen that, for both sexes, the percentage of drivers who are not breath tested rises with age. Approximately a third fewer drivers over the age of 55 were tested than those aged between 17 and 21. The reason may be that younger drivers are targeted by the police for breath testing. It could be a consequence of the fact that the rate of breath testing is higher in the evening than during the day, as young drivers are involved in relatively more accidents during the evening. Although drivers under 21 are most frequently tested, the greatest percentage of positive results are found for male drivers aged between 21 and 34, and for female drivers aged between 25 and 54. This suggests that young drivers are less likely to drink and drive than their older counterparts" (p.34).

4.8. Germany

4.8.1. General

In Germany a distinction should be made between the former East and West Germany, because of the different historical developments. In the Former West Germany (old counties) about 80% of all accidents involving youngsters in the age group 18 to 20 years, happen with passenger cars. In the former East Germany (new counties) this is significantly lower: 63%. This is not a 'real' safety difference as the authors conclude that although the accessibility of cars in the new counties has dramatically increased, it still is not at the same level as in the old counties (Brühning & Kühnen, 1993). The accidents in the 'new' counties with young drivers are more serious.

4.8.2. Driving experience

In Germany, if an accident happens, the length of time the driver is in possession of a driving licence is registered. The results indicate that especially in the 'old' counties accident involvement decreases significantly the longer the driver is in possession of a driving licence. To a lesser extent this also holds true for the new counties. However, in these counties initial accident levels are lower in the first year, but do stay at a relatively high level in the third year.

4.8.3. Single accidents

Single accident frequency decreases with age and experience. That is the older one is, and the longer one is in possession of a driving licence, the less frequently one gets involved in single accidents. And this type of accident happens more often to males than to females. In general single accidents are much more frequent in the new counties than in the old counties.

4.8.4. Accident seriousness

Accidents in the new counties are more serious in the sense that more people get killed. While the seriousness of accidents decreases with experience, in the old counties, this does not seem to happen in the new counties. Also multiple vehicle accidents are age and experience related. Young men with little experience are more often found responsible for causing the accident.

4.8.5. Accident causes: driver errors and alcohol

Age	18-20	21-24	25-34
Alcohol	12.2%	14.8%	13.9%
Speed	32.4%	30.2%	27.1%
Priority	9.4%	10.0%	11.6%
Changing direction	5.5%	5.4%	6.9

Table 18. Accident causes by age in the new counties in Germany.

Age	18-20	21-24	25-34
Alcohol	6.5%	8.3%	9.1%
Speed	29.7%	26.6%	22.6%
Priority	11.8%	11.7%	12.9%
Changing directions	10.8%	11.7%	13.5%

Table 19. Accident causes by age in the old counties in Germany.

Both in the new and in the old counties 'speed' is the most prominent accident cause. The relative frequency decreases with age. This tendency is stronger in the old counties than in the new counties. This is probably due to the fact that in the old counties more women and more drivers with more experience were involved in accidents.

With respect to alcohol, a comparison between the old and new counties shows that in the new counties the frequency of alcohol related accidents in all age groups is significantly higher. In the youngest age group it is about twice as high.

In the old counties alcohol related accidents increases with age. In the new counties no significant differences do exist between the age groups. It is high in all age groups.

4.8.6. Time of day and day of week

Youngsters drive very often during the weekend nights. The accident data (1985) indicate that in the old counties of all fatalities of 18-24 year old drivers 20 % were killed during the weekend nights (in only 12 hrs) and 25% of all passenger fatalities in this age group. Especially those not in possession of a driving licence constitute a relatively high proportion. The weekend accident frequency decreases with age, but driving experience does not seem to play an important role.

Men get more often involved in this type of accidents than women do. A comparison between the former two Germanies shows that weekend night accidents are even more frequent in the new counties. In general weekend night accidents are often more severe accidents in which alcohol and speed plays an important role. This is more so in the new counties.

Killed in weekend night	New	Old
Driver 18-20	27%	22%
Passenger 18-20	30%	24%

Table 20. *Proportion of drivers and passengers killed in weekend nights in the 'new and old' counties in Germany.*

4.8.7. *Unqualified driving*

In Germany there is special concern about young drivers without a valid driving licence. This group causes a great many single accidents but are also more frequent at fault in multiple vehicle accidents. The accidents they cause are often very serious. Furthermore this group is often found to be under the influence of alcohol. Their accidents are concentrated during the weekend nights.

In conclusion, in Germany the typical young driver accidents are related to:

- driving without a valid driving licence
- lack of driving experience
- driving under the influence of alcohol, especially during the weekend nights.

These characteristics are more prominent in the 'new' counties than in the 'old' counties.

4.9. **Belgium**

4.9.1. *General*

With respect to accident casualties in Belgium, 41,5% of all car drivers and passengers killed or injured in accidents are younger than 25 years of age.

With respect to accidents, 24,6% of all car drivers involved in injury accidents are between 18-24 years of age (1989 statistics).

4.9.2. *Driver condition (alcohol)*

The younger age groups are more often stopped by the police while older drivers are stopped less often. This in contrast to road side drink/driving surveys, which indicate that the older driver is more often under the influence of alcohol, than the younger driver.

In Belgium DWI is concentrated in the age groups 25-49

Age	Positive (A)	Negative (B)	A/B
18-19	3.95	5.07	0.77
20-24	21.21	21.39	0.99
30-34	14.98	12.44	1.1

Table 21. *Relative frequency of drunk car drivers involved in accidents in Belgium.*

4.9.3. Type of accidents

- Single accidents are more frequent (about 22% of all accidents) in young drivers (18-19 years olds), and frequency decreases with age to about 6%.
- Head-tail collisions are more frequent in the age group 30-69, and account for about a quarter of all accidents in this age group.
- Frequency of frontal collisions (account for 9% of all accidents) do not differentiate between the age groups.
- Accidents at intersections account for most of the Belgian accidents (about 42%), but their frequency is relatively low in the younger age groups (37%).
- Frequency of collisions with a parked car (accounts for about 2% of all accidents) does not vary between the age groups.
- Hitting a pedestrian (accounts for about 8% of all accidents) is relatively low in the younger age groups and increases with age.

In Belgium two young drivers age groups can be distinguished:

- 18-21 years olds. This age group is most often involved in accidents in the weekend night. The driver is often a male. The accident is often a single vehicle accident and there are often many passengers in the car. The young driver has only recently qualified and wishes to impress his friends in a jolly night out. Alcohol does not seem to play a prominent role.
- 22-24 years olds. This age group has more driving experience. It is not only the male but more and more the female drivers who constitutes a relatively high proportion of accident involved drivers. Alcohol plays a prominent role, and trips do not only take place during the weekend nights, but also at other times of day and days of week.

4.10. Spain

Information on accident frequency, of different age groups of car drivers is available in Spanish.

In Spain 5.103 persons are killed as a result of accidents with passenger cars, and 82.190 are seriously injured.

The 1992 data show that accident frequency decreases with experience (see Figure 1).

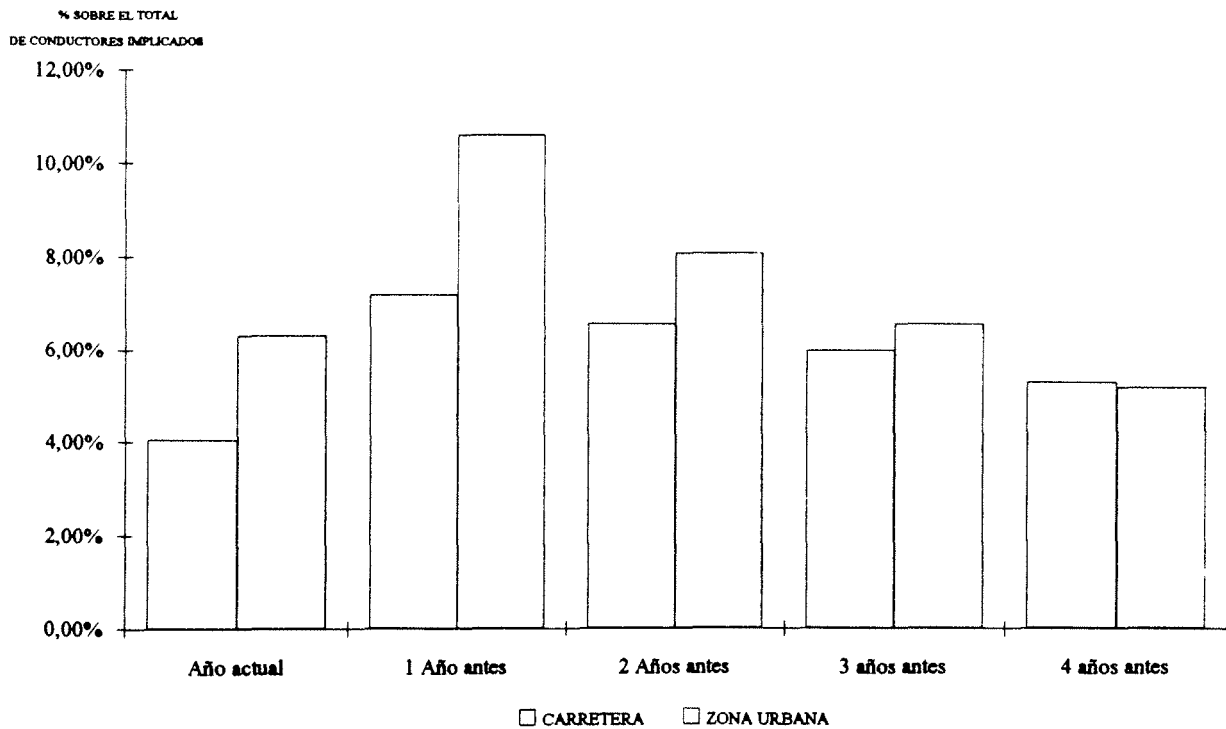


Figure 1. *Driver involvement in accidents with casualties; by experience and urbanisation grade.*

The graph shows that the highest proportion of serious accidents happen not within the first year but in the year after. The following three years there is a steady decline. Accidents happen more frequently in the built-up areas, especially in the second year. These findings cannot be treated as evidence for the safety effects of increased experience, as the same patterns may result from the mere fact that only a relatively low proportion of the driver population holds a licence for less than a year; a high proportion holds a licence for one to two years, and a relative low proportion are 3 to 4 years in possession of a driving licence. If such is the case than accident involvement by experience only mirrors licence distribution in the total driver population.

Age	Sex	Accidents	
18-24	M	18.078	20%
	F	3.333	4%
25-34	M	22.305	25%
	F	4.817	5%
Total		90.770	100%

Table 22. *Age of the car drivers involved in accidents with casualties in Spain.*

Table 22 shows that in every fifth accident with casualties a young male driver is involved. The accident of female driver involvement is very low (4%).

4.11. Italy

For the purpose of this study no information was obtained from Italy.

4.12. The Netherlands

Dutch young drivers (18-24 years) differ from older drivers (35-54 years) in accident involvement rates. Their accident risk is twice as high as the risk of the older age group. These findings are based on a study (Van Kampen, 1988) in which accident involvement was studied in combination with exposure, and in this way accident involvement and accident patterns could be controlled for exposure under particular trip conditions, such as type of road, day of week, time of day etc.

Typical young driver accidents are:

- weekend night accidents
- single vehicle accidents (especially collisions with stationary objects)
- accidents in curves
- alcohol accidents

These over-involvement rates are more marked in young male drivers than in young female drivers, and for both sexes involvement rates decrease with age.

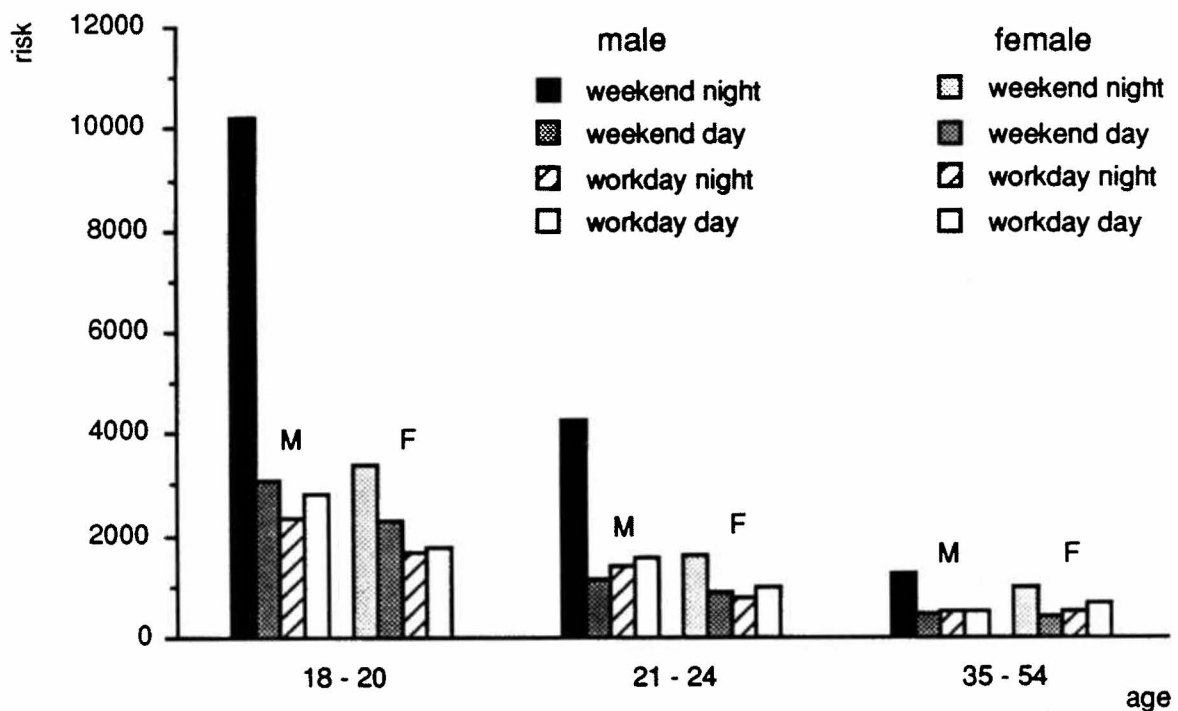


Figure 2. Risk of car drivers by sex, day of the week and time of day in the Netherlands.

4.12.1. *Weekend night accidents*

The weekend night accidents can partly be explained by the differences in trip motives and trip circumstances. Young drivers use cars more often for leisure purposes and use cars more often during the weekend nights than the older age group. The trips in the weekend nights are not only more frequent in the younger age group, they are also of a greater length. Although the accident characteristics are related to exposure factors, the results show that if these factors are controlled, large differences still remain.

In the weekend night 24% of all driver casualties (killed + injured) in the age group 18-24 occur during the weekend nights: 27% of young men; 15% of young women.

The weekend night accidents are often the more serious accidents. This is due to high speeds, tiredness and the presence of many passengers.

4.12.2. *Single vehicle accidents in curves*

Young drivers drive faster than more experienced drivers. It is not that they speed more often, they tend to drive too fast for prevailing conditions. Because of this driving style and their relative frequent usage of minor roads outside the built-up areas, accidents in curves are more frequent in the younger age group. Especially those curve accidents in which a driver collides with a stationary object are frequent in the younger age group.

4.12.3. *Alcohol*

Young drivers drink/drive patterns do not differ significantly from the older age group. However, young driver weekend-late night accidents are often alcohol related. This may be caused by the combination of two factors. Firstly young drivers are frequently driving during the early hours of the morning, and secondly research indicates that young drivers are more sensitive to the effects of alcohol, which accounts for the fact that at the same BAC levels their accident risk is higher than that of older, more experienced drivers (Behrendorff et al., 1989).

4.12.4. *Age of car*

Young drivers use older cars more often. A consequence is that these older cars lack certain safety features such as head rests and occupant protection zones. Furthermore it is likely that technical vehicle failure is higher in this category of cars.

5. Between country comparisons, conclusions and recommendations

5.1. General

As was shown in Chapter 3 only a few European countries have detailed information on young driver accidents. The conclusions will therefore primarily be based on these detailed studies. The consequence is that the conclusions will be severely biased, as the detailed studies are concentrated in the northern part of the European countries.

From the global information from some southern countries it becomes clear that patterns may be rather different between countries and that it is hazardous to generalize the findings of the detailed studies to all European countries.

An example: the Portuguese data indicates that only few female drivers get killed in traffic, whereas the majority of all driver fatalities are male. Most likely this difference is not due to an extreme cautious and competent Portuguese female driver, but it is basically the result of a difference in licensing rates and access to cars. None of the five detailed studies have mentioned differential licensing rates as a possible explanation for the different accident patterns of males and females.

An other example: the Irish data show that car driving in Ireland is not as risky for 18-20 year olds as riding a motorcycle. In Ireland this mode of transport accounts for most casualties in this age group. Car driving only becomes a safety problem for the 20-34 year olds. This in contrast to the five detailed studies, where the data show that car driving accounts for most of the accidents in the age group 18-20 year of age.

Both examples show that there are between country differences, that are important to take into account, which are not included in the study yet.

Despite these restrictions with respect to the validity of the conclusions, still a rather salient picture is appearing of a young car driver, in particular the male driver, who is frequently involved in accidents in the majority of the countries of the EU.

In this respect it can be argued that the unsafety related to car driving is a serious public health problem in the EU.

To understand the nature of this problem and to recognize possible areas of concern, in this study it was attempted to identify characteristic young driver accidents.

Most of the countries have not conducted studies of enough detail to identify the characteristic young driver accident. Still, five countries provided enough information to get an outline of the issues involved (concentrating on the 18-20 age group), and to detect similarities. The results are presented in Table 23.

Country	NL	B	UK	Fr	GE W	E
Alcohol	-/+	-	-	-	--	0
Weekend	?	?	+++	+++	?	
Night	0	?	+++	+++	?	?
Weekend night	+++	+++	+++	?	+++	+++
Speed	+++	?	?	+++	+++	++
Single accident	++	+++	+++	++	+++	+++
Severity	++	++	?	++	+++	++
Experience	+++	+++	?	+++	+++	++
Hp of cars	?	?	?	-	?	
Passengers	++	?	?	?	?	
Priority	—	—	?	?	0	+
Curves	++	?	?	?	?	
Gender (males)	+++	+++	+++	?	+++	+++
Young age	+++	+++	+++	?	+++	++
No licence	?	?	?	?	++	++
Leisure trips	+++	+++	?	+++	?	
Age of car	++	?	?	++	?	

+++ strongly over-represented
 ++ moderately over-represented
 + weakly over-represented
 0 no over-representation
 - weakly under-represented
 --- strongly under-represented
 ? no information available on the issue

Table 23. *Summary of the results of the 5 detailed studies.*

5.2. Conclusions

- The international data suggest that especially the week-end night accidents are typical young driver accidents. The majority of the detailed studies show a significant proportion of accidents of this type. The over-representation is partly caused by the mere fact that young drivers drive more kilometres in the weekend night than other age groups. Also young drivers drive primarily during the weekend night.
- Also the 'single accident' is a typical young driver accident that decreases with age and experience. It was reported in all five detailed studies.
- Young drivers are not over-represented in alcohol accidents. In com-

parison with older driver they are even under-represented. Only in weekend night accidents, alcohol seems to play a significant role. Then young drivers tend to be over-represented.

- Young drivers accidents are often characterised by driving too fast for prevailing conditions. This may also account for the high proportion of accidents in curves.
- Young drivers get more often involved in serious accidents, partly because of the presence of many passengers. (Only one study has addressed this issue). Furthermore young drivers drive more often with inappropriate speeds. Speed is directly related to the seriousness of the accident.
- Both males and females are at risk. But the problem is greater with the young male.
- All countries report a high proportion of young driver accidents with the exception of Ireland, where the young motor cycle accidents are more frequent.
- There is evidence that young driver accidents have certain features in common that are different from accidents with older more experienced drivers, and that there are similarities between countries. However, it is not possible to provide an explanation for the similarities on the basis of the present material. As a consequence it is also not feasible to determine which countermeasures might be effective.

Furthermore the concentration of information in the 'western European countries' and the relative absence of information in the southern countries, makes recommendations for a European policy on young drivers hazardous. In this study evidence was found that the background of young driver unsafety may be very different from that in the western countries. So may low accessibility of car and licences in particular age groups and for women account for certain patterns.

5.3. Recommendations

There are many comparable characteristics between the countries, which might provide a scope for European policy.

- In order to develop a European policy on young drivers, the first step should be to chart the young driver unsafety in all European countries in enough detail.

For this reason the analyses of accident records of young drivers in relation to older drivers should be stimulated in the member states.

- The data should be of such quality, that comparisons between countries can be made. This implies that besides accident data, also exposure data should be collected and analyzed (see Chapter 3 for a detailed description).
- The data should be collected, classified and analyzed in a standard manner. Agreement between countries should exist for instance on the definitions of:
 - young driver (age group/ experience)
 - the reference group (what age?)
 - accident fatality (casualty who dies within xx hours after the accident)
 - exposure indices.

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Attention :

Telefax number :

Sent by

SWOV : mw. drs. D.A.M. Twisk

Date : 27 April 1994

Number of pages, including this page : 3

Remarks

Dear Sir / Madam,

The accident involvement of young drivers is reported to be high in most western industrialized countries. However, up to now detailed information on the nature of the unsafety of young drivers and the characteristics of young driver accidents in the EU is missing.

The coming year will be the "year of the young driver" in the EU and to understand what issues are involved, one of the necessary documents is an overview of the young driver accidents in the 12 member states. The SWOV has been asked by a Dutch organisation to provide such a review and to discuss the similarities and differences between the states. Because of time and financial constraints the review and comparison need to be based on existing information. The final report will be written in English and needs to be completed before the 21st May 1994.

I would be most grateful if you could provide me with the available information about young driver accidents in your country. If information is not available in your country please explicitly state this. In order to be able to meet the deadline of the project I need to receive your information in about 2 weeks time.

For the project, information on the following topics is relevant:

General:

1a. Rank order of absolute number young driver accident types.

With regard to young driver accidents only, what seems to be the most frequent accident types? Please rank order them in terms of absolute numbers of accidents or fatalities.

1b. Rank order of accident types in which young drivers are over-represented.

Comparing young driver accidents with that of more mature and experienced drivers, are there certain types of accidents which happen more frequently with younger drivers? Can you rank order the accident type over-representation of young drivers for your country?

1c. Is there evidence that these differences are not the result of differential exposure?

For instance, young drivers can be over-represented in weekend night accidents simply because of the fact that they primarily drive during this period of the week, while older and more experienced drivers do not.

Specific:

The literature indicates that the following distinctions in accident types may be relevant for young driver over-representation.

Have you done a study dealing with the following accident characteristics and what was the outcome?

1. Circumstances

- day
 - weekend
 - week
- night
 - weekend
 - week
- other.....

2. Condition of driver

- sleep
- alcohol
- illegal drugs
- other.....

3. Accident type

- single accident
 - straight road
 - in a curve
- with other vehicles
- with pedestrians
- carrying passenger
- other.....

4. Driving behaviour

- driving too fast for conditions
- violating speed limit
- not wearing seatbelts
- other

5. Trip motive

- leisure
- work
- school
- shopping
- other.....

In addition could you provide the references to the reports on which the rankorders are based. Furthermore could you send the reports by post, and if the report is written in a language other than French, English or German, could you also provide a summary of the main conclusions in the aforementioned languages?.

The information will be analyzed by SWOV and you will receive the final draft review when completed. Please provide your answers by fax.

If you have any questions please contact me, preferably by fax.

SWOV Institute for Road Safety Research
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Yours sincerely,
SWOV Institute for Road Safety Research

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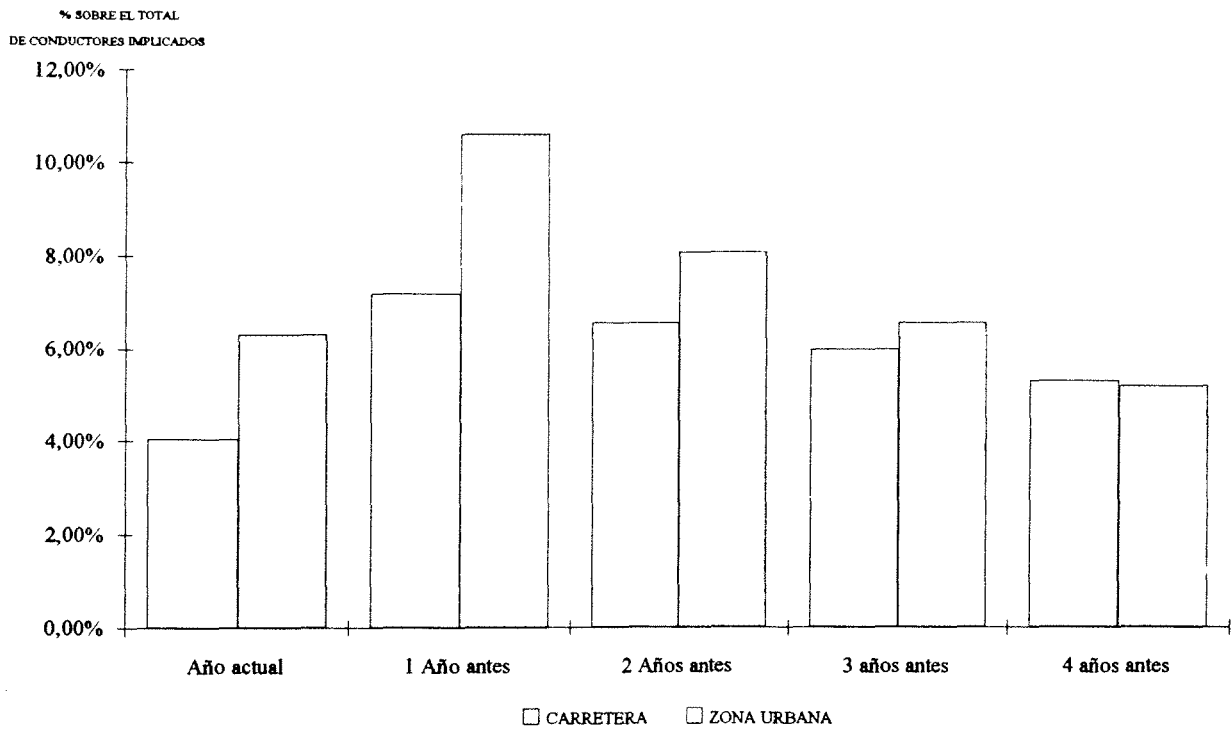


Figure 1. Driver involvement in accidents with casualties; by experience and urbanisation grade.

The graph shows that the highest proportion of serious accidents happen not within the first year but in the year after. The following three years there is a steady decline. Accidents happen more frequently in the built-up areas, especially in the second year. These findings cannot be treated as evidence for the safety effects of increased experience, as the same patterns may result from the mere fact that only a relatively low proportion of the driver population holds a licence for less than a year; a high proportion holds a licence for one to two years, and a relative low proportion are 3 to 4 years in possession of a driving licence. If such is the case than accident involvement by experience only mirrors licence distribution in the total driver population.

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Total		90.770	100%

Table 22. Age of the car drivers involved in accidents with casualties in Spain.

Table 22 shows that in every fifth accident with casualties a young male driver is involved. The accident rate of female driver involvement is very low (4%).

4.11. Italy

For the purpose of this study no information was obtained from Italy.

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Typical young driver accidents are:

- weekend night accidents
- single vehicle accidents (especially collisions with stationary objects)
- accidents in curves
- alcohol accidents

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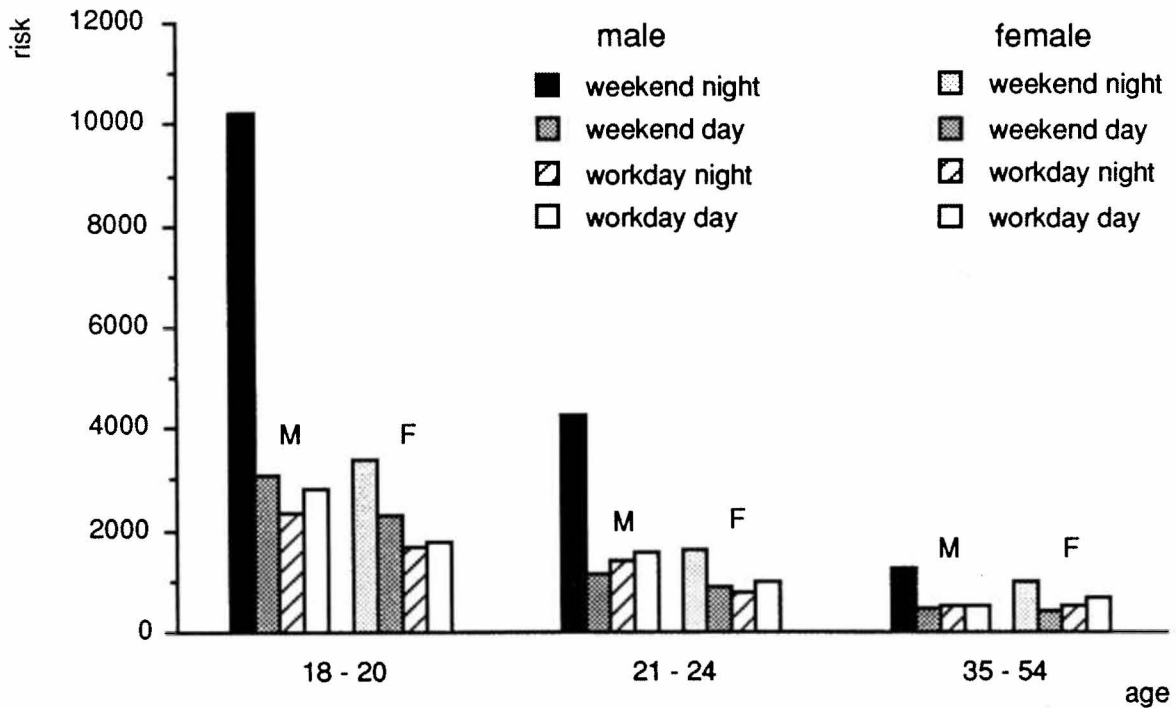


Figure 2. Risk of car drivers by sex, day of the week and time of day in the Netherlands.