TRAFFIC ACCIDENTS AND THEIR MAIN CAUSES IN HUNGARY

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2.1 Comparative analysis

2.1.1 Frequency of traffic accidents in Hungary and within particular regions

In Hungary a more or less reliable and detailed database is available about accidents involving personal injury. According to surveys that started in 1960, accidents peaked out twice, in 1970 and in 1990. Until 1972 the number of accidents increased faster than the number of vehicles. From then on, the accident number increased more slowly or decreased compared to the increase of the number of vehicles. The same applies to the number of people who died in traffic accidents.

2.1.1.1 Traffic accidents: all offenders (1986 - 1994)

Our analysis and assessment encompasses the period between 1986 and 1994. Owing to delays in international data supply some of the foreign data refer to a period shorter than this. (NB: Owing to the shortfall in data supply the sum total of partial data does not reach 100%.)

a) Outcome of accidents

The period investigated shows 7.5% fatal injuries, 40.9% serious injuries healing over 8 days, and 51.6% light injuries healing within 8 days (according to the state 30 days after the accident). During the target period there was a slight drop in the number of fatal and serious accidents while the number of accidents with lighter injuries increased. (Table 2.1. and Figure 2.1.)

b) Distribution of accidents according to road type

Of the accidents, 1.5% took place on a divided highway or highway with limited access, 47.1% on a main road or highway with unlimited access, and 51.4% on other types of road.

c) Distribution of accidents according to road formation

Of all the accidents, 50.5% occur over a straight stretch of road, 11.2% around a bend, and 35.2% at an intersection.

d) Distribution of accidents according to road width

Of the accidents, 7.5% happened on a 5 meter wide or narrower road, 25.7% on a road 5.1-6.0 meter wide, 39.2% on a road of 6.1-8.0 meters, 11.0% on a 8.1-10.0 meter road, and 16.6% on a road wider than 10.0 meters.

e) Seasonal distribution of accidents

Of the accidents, 19.2% took place in winter, 23.0% in spring, 30.0% in summer, and 27.8% in the fall.

f) Distribution of accidents according to visibility

In terms of visibility, 63.1% of the accidents took place in day-time with good visibility, 7.1% in day-time with limited visibility, 11.1% at night on roads with no public illumination, and 17.8% at night on lighted roads; 19.4% occurred at night in inhabited areas, 51.1% in day-time in inhabited areas, 10.5% at night outside inhabited areas, and 19.0% in day-time outside inhabited areas.
In all, 70.2% of accidents take place in day-time and 29.8% at night. A relatively high number of accidents occurred outside inhabited areas at night, particularly in comparison with night-time accidents in inhabited areas. A slight change could be observed over the years. (Table 2.2. and Figure 2.2.)

g) Distribution of accidents according to time of the day

In the morning hours on the way to work or school (5 to 9 a.m.) 14.1% of accidents happen; 20.8% take place in the morning and midday (9 a.m. to 1 p.m.); 25.8% in the afternoon (1 to 5 p.m.); 25.3% late afternoon, in the evening (5 to 9 p.m.); and 8.4% late evening, at night (9 p.m. to 5 a.m.). According to another breakdown, almost as many accidents occur between 8 and 11 p.m. as early in the morning, between 5 and 8 a.m. (12.7% as opposed to 14.1%).
h) Distribution according to the nature of accidents
In terms of their nature, 11.7% of accidents were frontal collision of vehicles, 13.3% were collision of vehicles going in the same direction, 21.3% were transversal collision, 4.4% were collision with a stationary vehicle, 0.3% were road vehicle and railroad train collision, 6.4% were collision with a stationary object, 9.5% were skidding, 7.3% were overturning, 0.8% was other vehicle collision. Almost every fourth accident (23.8%) was a pedestrian hit. Accidents to passengers amounted to 0.9% and 0.5% were animal hits.

i) Distribution according to offenders

As regards offenders, 5.1% of accidents were caused by motor cycle drivers, 55.5% by car drivers, 1.4% by bus or coach drivers, 6.6% by truck drivers, 0.4% by railroad engine drivers, 9.8% by cyclists, 5.6% by scooter drivers, 1.0% by horse-drawn cart drivers and drivers of other vehicles. Pedestrians cause 12.9% of accidents, while animals cause 0.6%.

j) Distribution according to offenders' sex

Males caused 80.5% of accidents and females caused 19.5%.

k) Distribution of accidents according to offenders' age

Offenders aged 6 or less cause 2.0% of accidents. the age group 7-10 cause 2.4%. age 11-14 cause 2.7%. age 15-18 cause 8.3%. which means that 15.4% of accidents were caused by children and juveniles less than 18 years of age: 19-24 year-old cause 18.7%. which means that the age group 15-24 induce 27.0% of accidents; the age group 25-34 are responsible for 21.1%. 35-44 year-old cause 17.8%. the group 45-54 cause 11.2%. 55-64 cause 7.0%. 65-67 induce 4.2% and people of 75 years of age or older cause 4.4% of accidents.

2.1.1.2 Accidents caused by motor vehicle drivers (1986 - 1994)

Here again. our analysis and assessment encompasses the period between 1986 and 1994. The most important findings are as follows:

a) Distribution of offenders according to age

Aged 18 and younger 7.2%. aged 19-24 23.6%. aged 25-34 26.2%. aged 35-44 20.9%. aged 45-54 11.6%. aged 55-64 5.7%.and aged 65 and older 4.9%.

b) Offenders' sex

Males caused 84.7% of accidents and females caused 15.3%.

c) Estimated speed of offenders

Maximum of 30 kph or less 27.4%. 31-50 kph 28.3%. 51-60 kph 13.9%. 61-80 kph 20.7%. 81-100 kph 4.9%. and over 100 kph 4.8%.

d) Driving time until the accident

In 56.1% of the cases drivers caused accidents during the first 30 minutes of driving: in 12.7%. the accident took place within 31-60 minutes. and in 31.2%. after 1 hour of driving.

e) Position of offending vehicle

In terms of position. 2.6% of the offending vehicles were about to start. 64.6% were progressing straight. 4.4% were turning right. 15.9% were turning left. 6.1% were overtaking, 2.1% were braking. 2.0% were changing lane. and 1.6% were reversing.

f) Offending drivers' experience since the issuance of the driver's license

No driver's license was held by 5.0% of offenders. 10.7% had a license for less than 1 year. 16.4% for 2-3 years. 11.8% for 3-5 years. and 56.1% for over 5 years. (Table 2.3. and Figure 2.4.)

2.1.1.3 Traffic accidents: all offenders (1994)

Our analysis and assessment encompasses only the year 1994.

a) Outcome of accidents

Fatal accidents amounted to 6.7% 38.9% were serious and 54.4%. light.

b) Distribution of accidents according to road type

Divided limited access highways are the site of 1.5% of accidents. 0.5% take place on undivided limited access highways. 42% on main roads and highways with unlimited access. and 56.0% on other road types.

c) Distribution of accidents according to road formation

Of all the accidents in 1994. 51.8% occur over a straight stretch of road. 11.9% around a bend. and 33.8% at an intersection.

d) Distribution of accidents according to road width

Of the accidents. 8.6% happened on a 5 meter wide or narrower road. 25.5% on a road 5.1-6.0 meter wide. 40.1% on a road of 6.1-8.0 meters. 11.1% on a 8.1-10.0 meter road. and 14.7% on a road wider than 10.0 meters.

e) Seasonal distribution of accidents

Of the 1994 accidents. 19.6% took place in winter. 23.2% in spring. 29.1% in summer. and 28.1% in the fall.

f) Distribution of accidents according to visibility

In terms of visibility. 61.2% of the accidents took place in day-time with good visibility. 8.3% in day-time with limited visibility. 11.6% at night on roads with no public illumination. 18.0% at night on lighted roads. and 0.9% at night when public lighting was not working. This means that about twice as many accidents with light injuries take place at night on illuminated roads than at night on roads with no public lighting. With the increase of severity this proportion is gradually reversed. In the case of serious injuries. the rate is 60 versus 40%. and more fatal accidents take place on roads with no illumination during the night than on roads which are illuminated.

g) Distribution of accidents according to time of the day

Day-time accidents represent 69.5% compared to 30.5% night-time accidents. However. only 51.1% of the fatal accidents occur during the day compared to 68.0% of the serious. and 72.8% of the light accidents. (Figure 2.3.)

Of the fatal accidents. 20.2% take place in inhabited areas during the night. 24.7% in inhabited areas at day-time. 28.2% outside inhabited areas at night-time. and 26.3% outside inhabited areas during the day.

Of the serious accidents. 19.7% take place in inhabited areas during the night. 20.9% in inhabited areas at day-time. 12.2% outside inhabited areas at night-time. and 22.2% outside inhabited areas during the day.

Of the light accidents. 19.1% take place in inhabited areas during the night. 54.9% in inhabited areas at day-time. 8.1% outside inhabited areas at night-time. and 17.9% outside inhabited areas during the day.
Thus it can be stated that the rate of night-time accidents among accidents with fatal or serious injuries is high compared to the rate of traffic. It is particularly high among fatal accidents outside inhabited areas. While 55.2% of fatal accidents in inhabited areas occur during the day. 52.3% of fatal accidents outside inhabited areas occur at night.

h) Distribution according to the nature of accidents

In terms of their nature. 11.8% of accidents were frontal collision. 14.0% were collision of vehicles going in the same direction. 22.2% were transversal collision. 4.5% were collision with a stationary vehicle. 5.9% were collision with a stationary object. 10.3% were skidding. 6.3% were overturning. and 22.5% were pedestrian hits.
As regards fatal accidents. 15.8% were frontal collision. 8.7% were collision of vehicles going in the same direction. 10.5% were transversal collision. 2.2% were collision with a stationary vehicle. 5.1% were collision with a stationary object. 8.1% were skidding. 4.2% were overturning. and 29.0% were pedestrian hits.
Two groups emerge in this distribution of fatal accidents: frontal collision and pedestrian hits.

i) Distribution according to offenders

As regards offenders. 3.4% of accidents were caused by motor cycle drivers. 59.1% by car drivers. 1.2% by bus or coach drivers. 6.5% by truck drivers. 10.6% by cyclists. 5.3% by scooter drivers. and pedestrians caused 11.3% of accidents.
Of the fatal accidents. 3.1% were caused by motor cyclists. 59.6% by car drivers. 2.1% by bus or coach drivers. 8.9% by truck drivers. 9.3% by cyclists. 3.6% by scooter drivers. and 11.5% by pedestrians.
It can be stated that with the exception of motor cyclists all categories of drivers play a greater part in fatal accidents. whereas motor cyclists and cyclists contributed to less fatal accidents.

j) Distribution according to offenders' sex

Males caused 79.4% of accidents and females caused 20.6%.
Of the fatal accidents. 85.2% were caused by males and 14.8% by females.
k) Distribution of accidents according to offenders' age
Eighteen years or younger 14.3%. 19-24 years 19.9%. 25-34 years 21.1%. 35-44 years 17.8%. 45-54 years 11.2%. 55-64 years 6.0%. 65 years and older 9.7%.

2.1.1.4 Accidents caused by motor vehicle drivers (1994)

Again. our analysis and assessment comprise the year 1994. The most important findings are as follows:

a) Distribution of offenders according to age

Aged 18 and younger 5.6%. aged 19-24 24.4%. aged 25-34 26.4%. aged 35-44 20.5%. aged 45-54 11.5%. aged 55-64 4.9%.and aged 65 and older 6.8%.
Age distribution of offenders causing fatal accidents: aged 18 and younger 5.1%. aged 19-24 24.2%. aged 25-34 29.0%. aged 35-44 19.9%. aged 45-54 11.7%. aged 55-64 4.8%.and aged 65 and older 5.4%.

b) Offenders' sex

Males caused 83.0% of accidents and females caused 17.0%.
Of fatal accidents. males caused 88.8% and females caused 11.2%.

c) Estimated speed of offenders

Maximum of 30 kph or less 25.2%. 31-50 kph 25.2%. 51-60 kph 8.7%. 61-80 kph 20.9%. 81-100 kph 7.0%. and over 100 kph 13.0%.
Comparing the 1994 data with the average of the period 1986-1994. it is to be noted that the number of drivers causing an accident while driving at a speed above 80 kph increased considerably. The change in the vehicle stock that took place in Hungary allows high-speed driving and currently there are no efficient means to curb this.

d) Driving time until the accident

In 50.4% of the cases drivers caused accidents during the first 30 minutes of driving. in 11.3%. the accident took place within 31-60 minutes. and in 38.3%. after 1 hour of driving.

e) Position of offending vehicle

In terms of position. 3.0% of the offending vehicles were about to start. 63.2% were progressing straight. 4.5% were turning right. 16.0% were turning left. 6.1% were overtaking. 2.2% were braking. 2.2% were changing lane. and 2.1% were reversing.

f) Offending drivers' experience since the issuance of the driver's license

No driver's license was held by 4.8% of offenders. 7.1% had a license for less than 1 year. 13.0% for 2-3 years. 10.9% for 3-5 years. and 64.2% for over 5 years.
These data indicate that there was a decrease in the proportion of newly licensed drivers causing accidents compared to the average of the period 1986-1994. Contrariwise. the rate of drivers causing accidents whose license was older than 5 years increased significantly.

2.1.1.5 Regional distribution of accidents

General survey

One-fifth of the Hungarian population live in Budapest. Accordingly. 20% of accidents take place in the capital. where a quarter of vehicles are registered. Almost one-fifth of accidents happen in Pest county surrounding the capital city, where nearly one-tenth of the country's population live and almost one-tenth of vehicles are registered.

In Region 1 (Budapest and Pest county) the number of fatal accidents is underrepresented in terms of both population and the number of cars.

In Region 2 (North-East Hungary) the number of accidents in general and that of fatal accidents in particular are slightly underrepresented in terms of population and car number.

In Region 3 (Central-Eastern Hungary) the number of accidents is underrepresented in terms of population and overrepresented in terms of the number of cars. The number of fatal accidents corresponds to the population and is overrepresented in terms of car number.

In Region 4 (South-East Hungary) the number of accidents is slightly, and the number of fatal accidents significantly overrepresented in terms of both population and car number. Bács-Kiskun county should be mentioned specifically. This is where 5.2% of the Hungarian population live and 5.7% of the cars are registered while 11.3% of the country's fatal accidents occur in this county alone. The population is hardly more than a quarter of Budapest's inhabitants, yet more people die of a traffic accident here than in the capital.

In Region 5 (North-West Hungary) the number of accidents is in accordance with the population and the number of cars. Fatal accidents, however, are overrepresented on both accounts.

In Region 6 (South-West Hungary) the number of accidents is underrepresented while fatal accidents are overrepresented in terms of both population and car number. (Figure 2.5. and Figure 2.6.)

Regional characteristics of accidents regarding all offending parties

a) Distribution according to road formation

In Region 1 the proportion of straight roads is 48.5%, of bends 8.4%, and of intersections 40.4%.

In Region 2 the proportion of straight roads is 53.8%, of bends 17.3%, and of intersections 27.0%.

In Region 3 the proportion of straight roads is 58.2%, of bends 9.8%, and of intersections 29.3%.

In Region 4 the proportion of straight roads is 50.0%, of bends 11.3%, and of intersections 36.8%.

In Region 5 the proportion of straight roads is 52.9%, of bends 13.9%, and of intersections 30.2%.

In Region 6 the proportion of straight roads is 52.1%, of bends 16.4%, and of intersections 28.9%.

In all, geographical conditions play an obvious part in the rate of accidents around bends in a particular region. One may expect that an increased number of accidents around bends would mean less accidents on straight roads whereas in reality it is the number of accidents at intersections that decreases.

b) Distribution according to road width

In Region 1, 7.5% of accidents took place on roads narrower than 5 meters, 21.4% happened on roads 5.1-6.0 meters wide, 35.2% on roads 6.1-8.0 meters wide, 15.5% on roads 8.1-10 meters wide, and 20.4% on roads wider than 10 meters.

In Region 2, 10.8% of accidents took place on roads narrower than 5 meters, 30.3% happened on roads 5.1-6.0 meters wide, 37.9% on roads 6.1-8.0 meters wide, 8.2% on roads 8.1-10 meters wide, and 12.8% on roads wider than 10 meters.

In Region 3, 9.5% of accidents took place on roads narrower than 5 meters, 34.5% happened on roads 5.1-6.0 meters wide, 37.1% on roads 6.1-8.0 meters wide, 6.6% on roads 8.1-10 meters wide, and 12.3% on roads wider than 10 meters.

In Region 4, 9.8% of accidents took place on roads narrower than 5 meters, 25.9% happened on roads 5.1-6.0 meters wide, 43.4% on roads 6.1-8.0 meters wide, 8.9% on roads 8.1-10 meters wide, and 12.1% on roads wider than 10 meters.

In Region 5, 7.9% of accidents took place on roads narrower than 5 meters, 23.7% happened on roads 5.1-6.0 meters wide, 44.6% on roads 6.1-8.0 meters wide, 11.6% on roads 8.1-10 meters wide, and 12.2% on roads wider than 10 meters.

In Region 6, 13.7% of accidents took place on roads narrower than 5 meters, 23.8% happened on roads 5.1-6.0 meters wide, 47.1% on roads 6.1-8.0 meters wide, 9.6% on roads 8.1-10 meters wide, and 11.3% on roads wider than 10 meters.

c) Seasonal distribution

There is no difference among the regions.

d) Distribution according to visibility

Region 1 has less accidents in day-time with good visibility and at night-time on unlit roads. Conversely, it has more day-time accidents with limited visibility and at night on illuminated roads. Also it has more night-time accidents in inhabited areas than the other regions.

e) Distribution in terms of time of day

There is no difference among the regions.

f) Distribution according to the nature of accident

In Region 1 the proportion of frontal collision, skidding, and overturn is lower while there are more transversal collisions. Region 3 is overrepresented as to collision of vehicles going in the same direction and transversal collision, and underrepresented as to skidding. Region 6 is overrepresented as to skidding. There is no difference among the regions in terms of pedestrian hits.

g) Distribution according to offenders

There is only one point of difference among the regions: Region 1 in overrepresented as to accidents caused by pedestrians aged 15-24 and 25-60. According to a different breakdown the rate of offending car drivers is lower in Regions 2 and 3 while cyclist offenders play a lesser role in Region 1 and a greater one in Region 4. The rate of motor cyclists is greater in Region 1.

h) The role of alcohol

Although this issue is treated in depth in Chapter 3 of this book, at this point we examine the relationship between alcohol and the regions.
Blood alcohol concentration below 0.5 g/liter is found less frequently than the average in Regions 1 and 2, and more frequently in Rçgions 3 and 4.
Blood alcohol content between 0.51 and 0.79 g/liter is found less frequently than the average in Regions 1 and 6, and more frequently in Regions 3 and 4. Concentration between 0.8 and 1.49 g/liter occure less in Region 1 and more in Regions 2, 3 and 4. Concentration 1.5 g/liter and above is less frequent in Region 1 and more frequent in Region 6. Compared to other regions, Regions 3 and 4 have more accidents where alcohol play no part. It was also found that the apparently lesser contribution of Region 1 to accidents with the presence of alcohol is due primarily to less frequent checking of alcohol consumption. In Regions 2 through 6 only 5.6 to 7.3% of offenders are not checked for alcohol after an accident whereas the same rate is 23.8% in Region 1.

i) Offenders' age

There is no difference among the regions in this respect with the exception of Region 2 being overrepresented and Region 4 underrepresented regarding offenders of age 19-24. There are more offenders belonging to the age group 55-64 in Region 4 compared to other regions and Region 1 displays more than the average offenders aged 85 or older.

j) Offenders' sex

Region 1 is again conspicuous by the above-average lack of data answering this question. Nevertheless, men have a greater, and women a lesser part.

k) Outcome of accident

Compared to the average, there are less fatal and serious accidents, and more entailing light injury in Region 1.
Accidents in Region 4 involve more fatal and less lighter injuries than the average.
Regions 5 and 6 had more fatal accidents than the average.
In all, Regions 1 and 4 displays several features that differ from the majority. Budapest plays a dominating role in Region 1.

Regional characteristics of accidents in terms of offending vehicle drivers

a) Seasonal distribution

In Region 1. there are more than the average accidents in spring and less in summer. Contrariwise. the fall is underrepresented in Region 6.

b) Distribution according to visibility

In Region 1. limited vision in day-time seems to play a greater role. On the other hand. there are less accidents at night-time on roads without public lighting.
In Region 4. there are less accidents in day-time with limited visibility.
In another breakdown. Region 1 seems to dominate in terms of accidents in inhabited areas whereas it plays a lesser role in accidents outside inhabited areas. Region 4 displays more accidents that took place outside inhabited areas during the night.

c) Distribution according to time of the day

There is no significant difference among the regions.

d) Distribution according to the nature of accidents

In Region 1. there are less frontal collisions and more transversal collisions. Also there are more collisions of vehicles going in the same direction.
In Region 2. there are more frontal collisions and less collisions between vehicles going in the same direction.
Regions 3 and 4. there are more collisions between vehicles going in the same direction.
In Regions 5 and 6. there are less collisions between vehicles going in the same direction.
In Region 1. there are less accidents due to reversing.
In Region 2. there are more accidents due to reversing.
In Region 4. there are more collisions with objects. Also there are more overturns.
In Region 5. there are more collisions with objects.
In Region 6. there are more accidents due to reversing.
In Region 5. there are less hits of pedestrians aged more than 60.

e) Offenders

There are fewer vehicle driver offenders in Regions 3 and 4.

f) The role of alcohol

In Region 1. no alcohol check took place in 19.6% of the offenders. Consequently. there are more than the average intoxicated drivers and also more drivers who drank no alcohol.
In Region 3. there are less drivers whose blood alcohol level was more than 1.5 g/liter.
In Region 5. there are more drivers with blood alcohol level between 0.51-0.7 g/liter.

In Region 6. there are more drivers whose blood alcohol level was above 1.5 g/liter.

g) Offenders' age

There are more offenders aged 85 or above in Region 1.

h) Outcome of accidents

There are less fatal and serious accidents in Region 1. Contrariwise. there are more accidents with lighter injury.
In Region 4. there are more serious accidents and less accidents involving lighter injuries.

i) Road formation

In Region 1. there are fewer accidents that took place over a straight road and around a bend. On the other hand. there are more accidents at intersections.
In Region 3. more accidents take place on straight roads.

j) Road width

In Region 1. there are more accidents on roads wider than 8 metres.
In Region 2. there are more accidents on roads narrower than 5 metres.
In Region 3. more accidents take place on roads between 5.1 and 6 metres.
In Region 4. there are more accidents on roads between 6.1 and 10 metres.
In Region 6. there are more accidents on roads with a width between 6.1 and 8 metres.

k) Speed of offending vehicle

In Region 1. there are less accidents caused by vehicles running at a speed of 51 to 100 kph. and more above 100 kph.
In Region 2. more accidents were caused by vehicles travelling under 10 kph and 31 to 50 kph.
In Region 4. more accidents were caused by vehicles running at the speed of 10 to 30 kph and 81 to 100 kph. and less by vehicles of 31 to 60 kph.

l) Offender's driving experience

Region 1 is underrepresented in all categories. except for those including the accidents where data are lacking. In this region. 38.7% of the offenders are not included in the database regarding driving practice. (In other regions. no more than 5% of data are missing.)

m) Time of driving before the accident

In Region 1. the rate of accidents that took place within the first half hour of driving is low. Here again the value of information is questionable: compared to 3 to 5% of missing data in other regions. in this region 42.5% of the cases did not respond to this question.

In Region 2, there are fewer accidents in the second half hour of driving. In Regions 3 and 5, more accidents were caused after one hour of driving. In all, the conclusions are the same as those formulated in the previous sub-paragraph.

2.2 Comparison of Hungarian accident data with available European data

Hungarian data were compared to data from eight European countries. These countries included five Western European, two Northern European and one Central European countries. Accordingly, the first group included Austria (AUT), France (FRA), the Netherlands (NEL), Great Britain (GBR), and Italy (ITA). The second group included Finland (FIN) and Sweden (SWE). Only Poland (POL) could provide reliable data from among the Central European countries, since one of the countries observed earlier (the former German Democratic Republic) was reunited with Germany and Czechoslovakia and Yugoslavia were split up.

There is a great difference in terms of population among the countries compared. As a result, the absolute numbers are incomparable. Three relative groups were established in order to compare the regions and the individual country:

a.) Number of accidents and deaths compared to size of population

b.) Number of accidents and deaths compared to number of vehicles and cars

c.) Number of deaths compared to number of injured.

2.2.1 Number of accidents and deaths per population

The number of accidents in relation to the population reflects the differing level of motorization. These figures are highest in Austria, Great-Britain, followed by France, Italy and Hungary. Last in the line are Finland, Poland and Sweden. (Table 2.4. and Figure 2.7.)

It is to be noted that the level of motorization of Finland and Sweden is about twice that of Hungary.

As to the number of deaths per 100,000 Austria, France, Hungary and Poland display the highest figures. Italy is midfield and Finland, Great-Britain, the Netherlands and Sweden show the lowest numbers. (Table 2.5. and Figure 2.8.)

The high rate of fatal accidents in Hungary and Poland make the low level of motorization even more conspicuous.

2.2.2 Number of accidents and deaths per vehicle and car number

In all of the countries, cars dominated within vehicles. This shows a greater relative importance of cars. The following features are singled out:

In terms of number of accidents involving injuries per 10,000 cars,

a) High: AUT, GBR, HUN

b) Medium: NEL, POL, ITA, FRA

c) Low: FIN, SWE (Table 2.6. and Figure 2.9.)

Regarding the number of deaths per 10,000 cars,

a) High: POL, HUN

b) Medium: AUT, FRA

c) Low: FIN, GBR, ITA, NEL

d) Very low: SWE (Table 2.7. and Figure 2.10.)

Number of pedestrian deaths in inhabited areas per 100,000 cars,

a) Very high: POL

b) High: HUN

c) Medium: AUT, GBR, ITA

d) Low: FIN, FRA

e) Very low: NEL, SWE

Thus, the Central European region is characterized by the high number of deaths, in particular the high number of pedestrians who died in traffic accidents in inhabited areas. This feature distinguishes Central Europe from the other regions.

2.2.3 Number of deaths per number of injured

The number of injured persons per 100 accidents is lowest in the Netherlands while Poland, Hungary, Austria, Finland, France, Great-Britain and Sweden are midfield and Italy in the higher range. (Table 2.8. and Figure 2.11.)
In terms of the number of deaths per 100 injured, the worst result is showed by Poland followed by Finland, Hungary and France. The next group consists of Sweden and Italy, then the Netherlands and Austria. Great-Britain shows the best result. (Table 2.9. and Figure 2.12.)
From this, it appears that the various European countries follow different patterns:

a) In some countries, there are many injured persons and a lot of them die (e.g. Hungary and Poland).

b) In other countries, there are many injured people but relatively few of them die (e.g. Great-Britain and Italy).

c) In yet other countries, there are few injured people but relatively many of them die (e.g. Finland and Sweden).

Statistics offer no information regarding the number of injured persons who recovered and those who became disabled as a result of the accident. Therefore, Groups 2 and 3 above cannot be prioritised. All we can establish is that those belonging to Group 1 are in a worse situation compared to those in Groups 2 and 3.

The probability of a fatal outcome is highest among pedestrians, who are the most vulnerable participants of traffic. Regarding the number of pedestrian hits per 100,000 accidents the countries examined can be classified in four groups. (Table 2.10. and Figure 2.13.)

a) Low: NEL, ITA, SWE

b) Medium: AUT, FIN, FRA

c) High: GBR, HUN

d) Very high: POL

There is a constant division among the individual countries, country groups and regions. Various factors connected to motorization have similar effects in the various countries and apart from arbitrary fluctuation, there was very little or no change in the order of countries for ten years. This means that Hungary, and in general, the Central European region will catch up if:

They continue to follow the countries in a more favourable position; in other words the distance between them does not increase;

In a favourable situation, the distance decreases, particularly in terms of the fatal accidents. This would mean an improvement in the rate of fatal accidents compared within all accidents.

2.3 Assessment of accident latency

There may be a significant difference between statistically reported and the real number of accidents. (Similarly, there may be differences among accident statistics of the various countries because for instance, in one country only accidents with personal injury are reported, while in another country accidents causing significant damage are also included in the statistics.) Formerly full-scale accident data registration was done in Vas County, Hungary by the Accident Cause Research Committee of the Hungarian Academy of Sciences. One finding was that the authorities learn about one in every five accidents. While all fatal accidents are on file, not all accidents involving serious injuries are reported, and even less causing lighter injuries. Police lose track of accidents where no other party was involved. Offenders who cause such accidents are primarily cyclists and also to a lesser extent, drivers who speed.

2.4 Analysis of costs of hospitalization and economic losses

2.4.1 Message of the COST 313 analysis

The Hungarian National Health Insurance Fund commissioned the National Institute of Criminology and Criminalistics to prepare cost analyses of accidents in Hungary in 1985. Within the framework of this effort, the available modest literature was processed with the contribution of COMTRANS Ltd. The following is an excerpt from the survey prepared by COMTRANS Ltd.

COST 313 assesses the cost analysis experiences of 13 European countries. It starts out from the most general concept of costs, namely the fact that accidents have negative consequences which present losses in terms of human life, standard of living and materials. The following list of costs attempts to enumerate these losses. If the costs of the various countries involved in the analysis are to be compared, the method of gross performance loss analysis should be applied.

The authors of the survey consider the method of loss of productive capacity to be the most efficient one. The following human cost data were recorded and classified for the calculation. These cost components are related to the nature of traffic accidents but do not include costs that could have been involved in order to avoid the accident; nor do they include the pecuniary value of the fear of accident.

1. Costs per injured person

1.1. Medical costs (medical rehabilitation)

1.1.1. First aid and ambulance

1.1.2. Emergency and accident care

1.1.3. Hospitalization

1.1.4. Hospital outpatient care

1.1.5. Non-hospital care

1.1.6. Medical aids

1.2. Non-medical rehabilitation

1.2.1. Transformation of the disabled's home

1.2.2. Special personal transportation needs of the disabled

1.2.3. Occupational rehabilitation

1.2.4. Special education of children

1.3. Loss of production (net or gross)

1.3.1. Loss of production of employees

1.3.2. Loss of non-market related production (for example, housework or voluntary work)

1.3.3. Future or potential loss of production (for instance, children or unemployed)

1.4. **Other economic costs, such as**
- **visits to the sick,**
- **loss of production of household members,**
- **funerals,**
- **household helps, etc.**

1.5. **Human costs or losses**
1.5.1. **Loss of life expectancy due to deceased victims**
1.5.2. **Physical and psychological suffering of victims (pain, deterioration of quality of life, esthetic damage to physical appearance)**
1.5.3. **Psychological suffering of the victim's relatives and friends (pain, deterioration of quality of life)**

2. **Per accident costs**
2.1. **Material damage (including damage to the environment)**
2.1.1. **Vehicle damage (repair and replacement costs)**
2.1.2. **Road and environment damage**
2.1.3. **Damage to buildings**
2.1.4. **Damage to personal property**
2.1.5. **Damage or loss of cargo**
2.1.6. **Environmental damage**
2.2. **Administrative costs**
2.2.1. **Police costs**
2.2.2. **Fire Department costs**
2.2.3. **Administrative costs of health insurance**
2.2.4. **Non-health insurance related administrative costs**
2.2.5. **Legal and court costs**
2.3. **Other costs**
2.3.1. **Loss of capital (for example, costs of vehicle rental)**
2.3.2. **Costs of bottleneck (fuel consumption, air pollution, time loss, etc.)**
2.3.3. **Loss of production of persons imprisoned for causing accidents**

The COST 313 analysis shows that a single method is used in the 13 countries examined for the calculation of accidents resulting in personal injury (medical and non-medical rehabilitation costs). The cost components are the following:
- medical rehabilitation costs,
- non-medical rehabilitation costs,
- costs of lost production capacity,
- human costs.

The proportions of these cost elements vary from country to country. Nevertheless, once the variation is explained, 87% of the costs can be brought to the same level. On this basis and as an informative value, the following cost rates were found in the 13 countries:

dead	seriously injured	lightly injured
171	18	1

Costs of injuries in ECU:

fatal	408985
serious	35305
light	2132

If the value of a light injury is 1, serious injuries are approximately 16.5 and fatal injuries are approximately 192.

2.4.2 Message of the Hungarian surveys

a) Surveys in the 1980s - considerations and their weighting

Of the methods of calculation that emerged in previous years, the most general and comprehensive is the analysis by László Burján and György Halász. According to this method, social loss is composed of, but not the sum total of, the measurable economic and the non-measurable moral loss. They aim at determining the part of social loss which does not include moral losses: in other words, they attempt to calculate the national economic loss.

National economic losses resulting from traffic accidents can be classified in two major groups:

- direct losses, and
- indirect losses.

Direct losses include costs of repair to damages resulting from accidents (in other words, part of the income of the national economy should be used for repairing the damage caused by accidents).

The overwhelming majority of direct losses are composed of the pecuniary value of irreperable damages resulting from accidents. These values reduce the national economic income produced.
During the cost analysis of Hungarian traffic accidents, the following loss factors were taken into consideration:

1. Direct losses
1.1. Social and medical costs
1.1.1. Ambulance costs
1.1.2. Medical treatment costs
1.1.2.1. Costs of hospitalization
1.1.2.1.1. Intensive care
1.1.2.1.2. Traditional care
1.1.2.2. Outpatient care
1.1.2.3. Follow-up care
1.1.3. Sick benefits
1.1.3.1. Sick benefits for the period of hospitalization
1.1.3.2. Sick benefits for the period of home-care
1.1.4. Costs of disability pensions
1.2. Costs of repair of damage to objects and environment
1.2.1. Vehicle damages
1.2.1.1. Towing and storage
1.2.1.2. Repairs
1.2.2. Damage to cargo
1.2.2.1. Damage to goods
1.2.2.2. Damage to moveable property
1.2.3. Other damages to objects
1.2.3.1. Damage to road and its accessories
1.2.3.2. Damage to the natural environment
1.2.3.3. Damage to the man-made environment
1.3. General costs
1.3.1. Costs of police action
1.3.2. Costs of court and legal experts

2. Direct losses
2.1. Loss of labor force
2.1.1. Loss of production during the sick period of injured people
2.1.2. Loss of production of the deceased
2.1.3. Loss of production of the disabled
2.1.4. Loss of production of imprisoned offenders causing accident
2.2. Other direct losses
2.2.1. Costs of time lost due to traffic control

2.2.2. Depreciation of assets owing to accident
2.2.3. Loss of production of commercial vehicles
2.3. "Negative" loss factors
2.3.1. Lost education costs of accident victims who died before the accomplishment of training
2.3.2. Lost consumption of victims of fatal accidents

A loss factor is the smallest cost component which can be expressed in pecuniary terms. The quantification of direct and indirect losses presented great difficulties to the analysts, therefore, wherever it was possible, they made simplifications. Breakdown in terms of age of the cost components took place in the categories mentioned above. The time factor was also taken into consideration in the costs calculations on the grounds that losses occur not only in the year of the accident but also in subsequent years. Such time-related cost factors are the following:

- disability pension costs
- lost production of the deceased
- lost production of the disabled
- costs of lost education of the deceased
- lost consumption of the deceased

In the calculations, the authors accepted the economic postulate whereby any amount realized in the future is worth less than if it were realized in the year of examination. In view of this supposition, a discount element was built in the model by applying an updating (or "revaluing") index. When calculating the updating index, the current rate of interest, the GDP and the annual rate of inflation were taken into consideration.
After this theoretical foundation, it was possible to quantify the costs of traffic accidents. (The analysis treated the costs of losses as a result of disability caused by accident. However, these values are no longer applicable due to a complete change in economic conditions.)

b) Aspects of calculation prepared for the National Health Insurance Funds

The 1995 survey of the National Institute of Criminology and Criminalistics and COMTRANS Ltd. concentrated on the relationship between hospitalization and severity of injury. In this respect, it is closest to the aspects detailed in 1.1 of the COST 313 analysis. The terms used in the analysis are the following:
AIS (Abbreviated Injury Scale): the index denoting the severity of injury regarding the part of body injured. The six-grade scale is the following:

- minor
- moderate
- serious
- severe

- critical
- fatal

This assessment is in accordance with the internationally accepted classification also proposed by the WHO.

ISS (Injury Severity Scale): square of the AIS value. In the case of multiple injury, the square of the three most severe injuries is taken (for example, in the case of a severe, a light and an insignificant injury, the ISS value would be 4.+2.+1.=21.) This classification was prepared primarily from the standpoint of intensive care departments, therefore, it does not offer appropriate distinction in the case of outpatients (insignificant and light injuries, values 1 and 2, constitute jointly 96.3% of the total injuries). However, as it was included in the basic data set of WHO's European Regional Office, it was used by the Hungarian analysts.

ISS1 is a recoded compound value along the interpretation of AIS (the categories are as under AIS above). The conforming code interpretation was applied at the calculation of cost values described henceforth.

The following table describes the conforming code interpretation:

Code interpretation of ISS1 - ISS

ISS1	ISS
1	1-3
2	4-8
3	9-15
4	16-24
5	25-74
6	75 fatal

It is to be noted that ISS and ISS1 values offer a more refined means for describing the severity of injury compared to police statistics with their relevant categories. The "serious accident" category in the statistics of the Central Statistical Office conforms to 2-5 ISS1 and the fatal category would be 6 ISS1. The serious CSO category includes a large number of cases and many of these cases do not actually coincide with categories that are medically denoted as severe. This would have significant implications when calculating the costs involved by accidents.

With a view of the above, the 1993 figures were prepared in the following way: When assessing the severity of traffic accidents and the relevant costs of hospitalization, ISS and ISS1 values were used. The cases of the 125 victims of traffic accidents treated in 1993 by the National Traumatological Institute were studied by physicians and economists. On the basis of the ICD codes, the ISS and the ISS1 values were calculated. As a result of the cost analysis, the relationship between typical costs and ISS1 value was established. This can be considered as a national average, as the National Traumatological Institute calculates average costs refund for each patient group.

Recovery times relating the Vas county data were used in the cost analysis in the following breakdown:

Expected time of recovery

0-3 day	4.138=16,0%
4-8 day	11.367=44,0%
9-30 day	6.621=25,6%
31-60 day	2.651=10,3%
61-90 day	504=1,9%
over 90 days	436=1,7%
Fatal	105=0,4%

In 1993, there were a total of 27.108 victims of traffic accidents. Of them, 1.678 died, 9.328 were seriously injured and 16.102 lightly injured, according to the CSO statistics.

We noted that about half of the fatally injured were hospitalized. The costs of hospitalization of the 1993 fatal accident victims amounted to HUF 614.148.000.

The following is a table of the comprehensive values of a cost analysis.

According to the table above, the yearly costs of hospitalization of traffic accident victims amount to nearly 2 billion HUF.

More than 50% of the costs are taken up by costs of fatal victims and victims with 3-5 ISS1 severity of injury.

c) Other cost-related data from Hungary

Apart from the above, a number of cost analyses were published recently. According to one of the daily newspapers, for instance, a fatal victim involves 17.25 million HUF losses to the country, primarily in terms of lost production. Similarly, a seriously injured victim involves 1 million HUF and a lightly injured, 300.000 HUF damage to the national economy.

Accidents severity classes, and estimated unit and total costs on the basis of the 1993 accident data of CSO

ISS1 value	Number of injured	HUF/person	Total HUF
1	3,515	63,500	223,202,500
2	4,274	81,594	348,977,538
3	1,046	161,528	168,958,288
4	245	422,857	103,599,965
5	245	1,359,833	333,159,085
6	1,678	366,000	614,148,000
Inpatient	11,006		1,792,045,376
Outpatient	16,102	3,500	56,357,000
Total:	27,108		1,848,402,376

The insurance value of a fatal injury is 160,000 HUF, the same for seriously disability resulting from an accident is 8 million HUF (10% of the serious injuries belong to this category according to CSO), while the same value of a light injury is 30,000 HUF.
Other data from costs of hospitalization use 145,094 HUF in the case of light injuries (ISS 1-2), 1,944,218 HUF for a seriously injured accident victim (ISS 3-5), and 366,000 HUF for a fatally injured victim.
The above calculations do not consider economic losses caused by vehicles. Here values amount to 94,000 HUF per car, or up to 18 billion HUF per year.

d) Cost analysis best suited for Hungary

The authors consider the assessment prepared for the National Health Insurance Fund in 1995, which is based on the full fledged Vas county survey and the additional analysis of the National Traumatological Institute. (It is to be noted that the insurance-related values are closest to and OECD's COST 313 data are farthest from this assessment. The latter is close to most Hungarian assessments in terms of the rate of light and serious injuries. However, it is distinctly different from the Hungarian assessments as to the relation between fatal and serious injuries on the one hand and fatal and light injuries on the other hand. This can only be partly explained by the difference in the magnitude of the loss described above.) On the basis of the survey prepared for the National Health Insurance Fund, we could conclude that the damage

caused by traffic accidents in Hungary in 1996 would amount to 2-2.5 billion HUF, and this, only health care-related damage.
Attention should be drawn to the fact that while a serious injury resulting in disability undoubtedly imposes a burden on society, the same does not necessarily apply for fatal accidents in a market economy. In an economic planning system with full employment, the economic growth produced by a person during his/her lifetime can be estimated with more or less precision, having deducted the person's own consumption.

2.5 Factorial analysis of the main accident types

During our investigations, we tried to find out which of the accident characteristics apparent in the statistical records can be found in the same factor of the 1994 Hungarian accident database. In accordance with the rules of factorial analysis, we wanted to label them indicating these characteristics.

Before proceeding on to the mathematical process, the variables had to be changed to binary values. The mathematical essay then was done with the recoded database. (The very nature of this method allowed the application of only some of the variables.) A total of 20 variables were involved in the analysis. Some of them describe the circumstances of accidents, others are indicative of the person causing the accident, again others are related to the other party involved in the accident (if any). Seven variables were given a value higher than 1, and they explain 60.1% of the entire phenomenon. The first three variables cater for 34.7% of the phenomenon.

The factorial analysis tended to include in one factor variables which were evidently identical. (Such variables are, for example, speed and the accident location, namely accidents that took place in inhabited areas involved usually a lower speed.) It was also more or less evident that the factorial analysis put the two previously mentioned variables with high positive values in the same factor as the road number and road type with high negative values. This can be explained by the relationship between a close, negative connection between highways on the one hand, and speed and location on the other hand.

The most notable momentum of the analysis is that the objective characteristics of accidents (with a value above 0.5) never occur in the same factor with the subjective characteristics. This may give the impression that the objective characteristics of accidents have no connection whatsoever with the individual characteristics of persons involved either as causers, or as accidental participants.

There was only one confluence of the subjective characteristics. In this factor, driving experience of causers of accident and their alcohol consumption appear with high values of opposite signs. This denotes that drivers with more experience tend to cause more accidents when intoxicated.

Outcome 30 days after the accident

Year	Fatal	Serious	Light	Total	%
1986	1496	8125	9716	19337	9.6
1987	1450	8122	10276	19848	9.8
1988	1562	8801	10957	21320	10.5
1989	1943	10108	12320	24371	12.1
1990	2185	11738	13878	27801	13.7
1991	1875	10081	12633	24589	12.2
1992	1849	9886	12888	24623	12.2
1993	1460	7757	10310	19527	9.7
1994	1390	8054	11279	20723	10.2
Column Total	15210 7.5	82672 40.9	104257 51.6	202139	100.0

Table 2.1.

Time of accident according to accident site

Year	Inhabited area nighttime	Inhabited area daytime	Outside inhabited area nighttime	Outside inhabited area daytime	Total	%
1986	3458	10602	1768	3509	19337	9.6
1987	3596	10505	1739	3708	19548	9.8
1988	3860	11462	2016	3982	21320	10.5
1989	4720	12606	2499	4546	24371	12.1
1990	5660	13962	2962	5217	27801	13.7
1991	5077	12228	2688	4596	24589	12.2
1992	5137	12140	2769	4577	24623	12.2
1993	3634	9291	2407	4195	19527	9.7
1994	4020	10221	2308	4174	20723	10.2
Column Total	39162 19.4	103317 51.1	21136 10.5	38473 19.0	202139	100.0

Table 2.2.

Vehicle drivers according to driving experience

Year	No licence	1 year	2-3 years	3-5 years	Over 5 years	Total	%
1986	570	1409	2130	1591	6659	12359	8.9
1987	536	1610	2258	1563	6914	12875	9.2
1988	393	1768	2509	1724	7643	14239	10.2
1989	936	2092	3016	1905	8848	16797	12.0
1990	1051	2324	3183	2351	10441	19658	14.1
1991	932	1819	2827	2125	9856	17559	12.6
1992	960	1355	2724	2098	10214	17746	12.7
1993	684	1117	2088	1524	8533	13951	10.0
1994	699	1040	1895	1589	9392	14615	10.4
Column Total	6957 5.0	11925 10.7	22936 16.4	16472 11.8	78500 56.1	139790	100.0

Table 2.3.

Total number of accidents per 100.000 inhabitants

Year	AUT	FIN	FRA	GBR	HUN	ITA	NEL	POL	SWE
1980	612.43	142.08	462.43	459.89	177.33	291.62	349.24	113.47	183.26
1981	621.66	149.41	443.72	452.68	170.91	294.76	327.50	108.64	177.81
1982	621.43	153.35	424.59	464.24	170.19	287.79	318.08	106.68	183.64
1983	646.77	157.78	395.68	440.77	177.32	283.47	317.82	110.62	190.09
1984	637.53	154.51	369.57	459.61	180.90	279.12	307.33	96.91	198.28
1985	613.32	157.74	347.12	448.69	183.52	474.68	292.34	97.04	190.77
1986	595.44	176.78	333.95	448.87	181.69	349.64	299.11	98.83	199.25
1987	580.85	174.85	308.65	431.07	186.82	294.06	290.96	96.48	186.38
1988	582.45	193.16	316.86	447.91	201.01	288.73	284.48	99.04	203.95
1989	610.77	194.63	305.99	468.16	230.12	279.51	297.63	121.82	211.57
1990	594.76	203.54	287.74	462.63	267.96	280.99	301.43	132.34	198.33
1991	585.33	186.40	260.27	419.73	237.46	295.61	270.81	141.46	185.71
1992	567.35	154.77	249.21	420.48	238.20	298.10	271.40	132.72	179.96
1993	529.00	121.24	237.87	404.65	189.40	-	-	127.00	158.42

Table 2.4.

Number of fatal victims per 100.000 inhabitants

Year	AUT	FIN	FRA	GBR	HUN	ITA	NEL	POL	SWE
1980	25.85	11.53	25.45	11.15	15.22	16.26	14.12	16.87	10.20
1981	25.13	11.56	25.07	10.84	14.96	16.56	12.68	15.83	9.42
1982	24.85	11.79	24.99	10.92	14.46	15.36	11.95	15.21	9.11
1983	26.04	12.42	24.94	9.97	14.87	14.47	12.23	15.21	9.34
1984	24.02	11.08	23.23	10.27	14.90	13.49	11.20	13.55	9.61
1985	20.20	11.00	20.68	9.45	16.47	13.40	9.93	12.60	9.68
1986	19.78	12.38	21.61	9.93	15.34	13.36	10.49	12.42	10.08
1987	19.42	11.76	19.39	9.38	44.81	12.43	10.13	12.25	9.37
1988	19.04	13.18	19.00	9.49	16.09	12.06	9.28	12.80	9.64
1989	18.39	14.76	18.88	9.70	20.42	11.14	9.84	17.68	10.64
1990	17.85	12.98	18.21	9.41	23.41	11.50	9.24	19.20	9.02
1991	17.62	12.57	16.81	8.24	20.47	12.98	8.53	20.68	8.65
1992	17.80	11.89	15.79	7.68	20.33	12.97	8.39	18.08	8.76
1993	16.21	9.55	15.66	6.71	16.28	-	8.24	16.47	7.25

Table 2.5.

Number of accidents with personal injuries per 10.000 cars

Year	AUT	FIN	FRA	GBR	HUN	ITA	NEL	POL	SWE
1980	205.67	55.39	134.74	167.54	187.43	92.60	108.61	169.42	52.83
1981	203.03	56.07	125.32	151.77	165.62	90.07	101.23	150.78	51.16
1982	199.35	54.75	116.81	152.92	154.20	83.09	97.45	134.76	52.07
1983	202.22	54.40	106.47	141.89	150.74	79.02	95.77	127.26	44.12
1984	195.05	53.17	98.37	130.56	143.58	76.14	91.32	104.11	46.54
1985	182.85	50.18	91.89	141.75	136.24	120.17	86.06	98.33	41.79
1986	172.51	53.76	84.03	138.40	125.62	85.12	86.81	93.72	51.26
1987	163.69	50.84	77.83	130.13	119.51	70.09	83.35	86.10	46.49
1988	158.87	53.28	78.10	127.88	119.11	69.18	80.50	83.07	49.41
1989	160.41	51.04	74.14	128.06	140.66	64.33	82.03	95.61	50.22
1990	154.91	52.82	69.03	123.62	139.38	64.71	81.49	96.06	47.15
1991	148.43	48.76	62.53	112.47	122.00	65.65	72.99	88.41	44.21
1992	137.85	40.40	59.68	109.42	119.63	63.26	72.56	78.39	43.49
1993	124.10	32.82	56.39	-	93.36	-	-	72.23	38.73

Table 2.6.

Number of fatal victims per 10.000 cars

Year	AUT	FIN	FRA	GBR	HUN	ITA	NEL	POL	SWE
1980	8.68	4.49	7.41	4.06	16.05	5.16	4.39	25.19	2.94
1981	8.21	4.31	7.08	3.63	14.50	5.06	3.92	22.04	2.71
1982	7.97	4.21	6.85	3.60	13.19	4.34	3.66	19.21	2.58
1983	8.14	4.28	6.71	3.21	12.64	4.03	3.68	17.49	2.17
1984	7.35	3.67	6.18	3.36	11.83	3.68	3.33	14.59	2.16
1985	6.02	3.50	5.45	3.01	12.23	3.39	2.92	12.77	2.12
1986	5.73	3.77	5.41	3.06	10.61	3.25	3.05	11.78	2.39
1987	5.47	3.42	4.89	2.85	9.47	2.96	2.90	10.93	2.34
1988	5.19	3.64	4.68	2.71	9.53	2.89	2.63	10.73	2.33
1989	4.85	3.87	4.58	2.65	12.48	2.56	2.71	13.87	2.53
1990	4.65	3.37	4.37	2.31	12.19	2.65	2.50	13.94	2.14
1991	4.47	3.29	4.01	2.21	10.52	2.88	2.30	12.93	2.06
1992	4.32	3.19	3.78	2.00	10.21	2.75	2.27	10.68	2.12
1993	3.81	2.58	3.71	-	8.02	-	-	9.37	1.77

Table 2.7.

Number of injured per 100 accidents

Year	AUT	FIN	FRA	GBR	HUN	ITA	NEL	POL	SWE
1980	137.22	124.33	136.24	128.12	125.44	135.72	114.63	114.54	126.36
1981	132.70	126.47	138.97	128.81	127.03	135.55	114.68	117.95	125.36
1982	132.26	123.17	138.82	128.58	124.67	136.20	114.71	117.68	126.09
1983	132.26	122.16	138.97	125.12	126.18	136.06	114.95	117.33	124.96
1984	129.12	121.94	140.08	126.28	128.32	136.47	114.35	125.81	124.83
1985	129.26	123.25	141.19	127.60	126.97	79.76	114.41	117.15	129.77
1986	129.49	123.59	139.76	128.05	128.40	105.40	114.91	116.20	129.60
1987	130.15	124.50	138.46	128.79	128.42	129.31	115.32	116.03	130.76
1988	130.74	124.45	138.75	129.41	130.31	137.43	114.63	116.22	132.73
1989	130.19	125.38	138.34	129.74	131.54	134.51	114.16	115.76	130.95
1990	130.89	125.39	138.93	130.84	133.07	136.62	115.90	117.97	132.53
1991	131.13	123.18	138.54	130.94	132.89	141.00	116.59	120.73	131.58
1992	128.49	126.55	138.18	132.50	132.30	141.14	117.72	119.72	132.87
1993	129.18	126.99	137.47	132.05	130.23	-	-	120.27	142.92

Table 2.8.

Number of fatal victims per 100 injured

Year	AUT	FIN	FRA	GBR	HUN	ITA	NEL	POL	SWE
1980	3.08	6.33	4.04	1.89	6.84	4.11	3.53	12.98	4.41
1981	3.05	6.12	4.07	1.86	6.89	4.14	3.38	12.39	4.23
1982	3.02	6.34	4.22	1.83	6.81	3.92	3.28	12.11	3.93
1983	3.04	6.44	4.53	1.81	6.65	3.75	3.35	11.72	3.93
1984	2.92	5.85	4.49	1.77	6.42	3.54	3.19	11.11	3.88
1985	2.55	5.66	4.22	1.67	7.07	3.54	2.97	11.09	3.91
1986	2.56	5.67	4.63	1.73	6.57	3.63	3.05	10.82	3.90
1987	2.57	5.40	4.54	1.69	6.17	3.27	3.02	10.94	3.85
1988	2.50	5.48	4.32	1.64	6.14	3.04	2.85	11.12	3.56
1989	2.31	6.10	4.46	1.60	6.75	2.96	2.89	12.54	3.84
1990	2.29	5.09	4.56	1.55	6.57	3.00	2.64	12.30	3.43
1991	2.30	5.67	4.67	1.50	6.49	3.12	2.70	12.11	3.54
1992	2.44	6.07	4.58	1.38	6.45	3.08	2.66	11.38	3.66
1993	2.38	6.20	4.79	1.26	6.60	-	-	10.78	3.20

Table 2.9.

Number of car - pedestrian crash per 100 accidents

Year	AUT	FIN	FRA	GBR	HUN	ITA	NEL	POL	SWE
1980	12.52	18.03	-	22.90	30.26	-	11.29	-	11.44
1981	12.23	18.79	-	22.32	28.91	14.85	11.36	-	11.97
1982	12.80	18.54	-	21.77	28.01	-	10.91	42.99	10.59
1983	12.61	15.98	16.67	23.12	26.94	13.37	10.43	44.03	10.22
1984	13.00	17.10	16.92	22.88	26.53	13.05	10.20	-	10.48
1985	13.20	15.84	16.93	24.13	26.76	7.23	9.86	45.34	10.26
1986	13.10	16.49	16.11	22.32	26.64	-	9.47	44.81	9.94
1987	12.59	15.53	16.41	21.79	26.34	10.78	9.41	45.06	10.72
1988	12.60	15.27	16.12	-	24.34	11.17	9.48	44.49	9.75
1989	13.10	15.73	15.72	21.66	24.15	10.88	9.26	42.96	10.03
1990	12.90	15.80	-	21.19	23.11	10.33	9.00	39.69	9.29
1991	12.62	16.50	15.40	22.33	22.42	9.25	9.07	39.02	8.82
1992	12.72	16.25	15.29	21.28	22.67	8.79	8.44	41.32	8.58
1993	12.24	15.93	15.42	19.24	22.73	-	-	40.78	9.03

Table 2.10.

Outcome 30 days after the accident

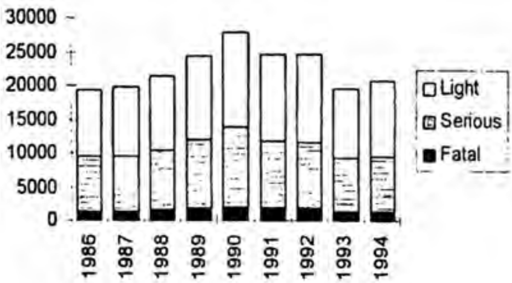


Figure 2.1.

Time of accident according to accident site

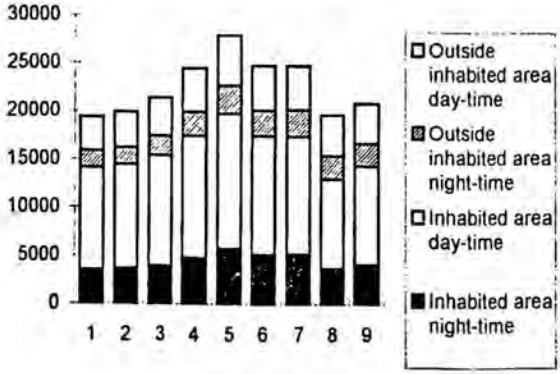
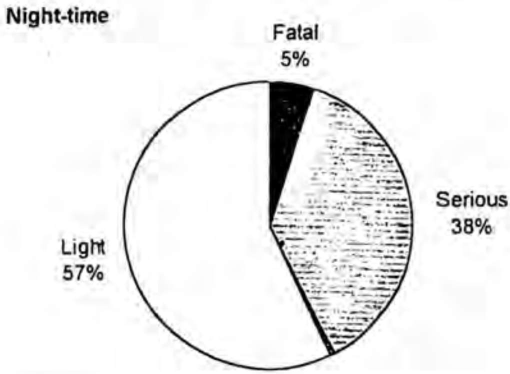


Figure 2.2.

Outcome of accidents according to 30 days state and day-time



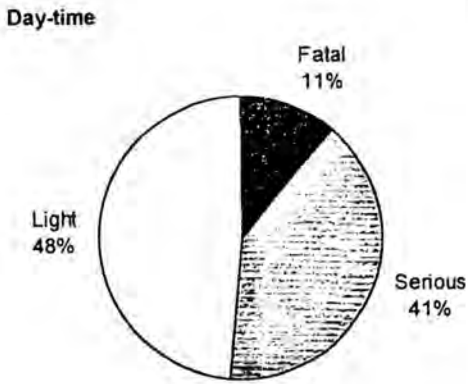


Figure 2.3.

Vehicle drivers according to driving experience

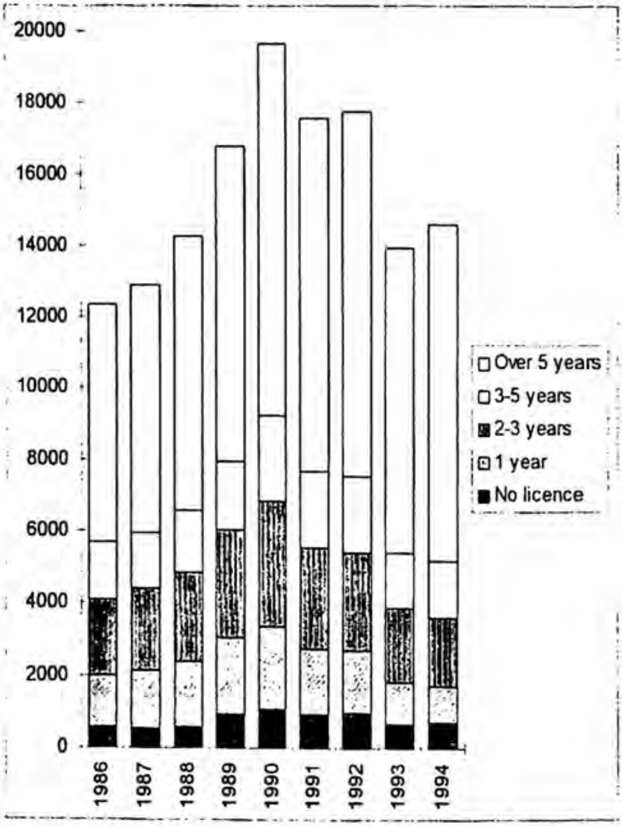
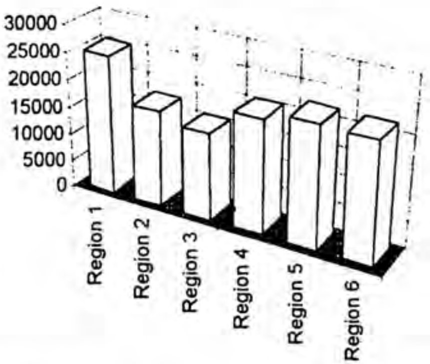


Figure 2.4.

Number of cars per 100.000 inhabitants in six regions of Hungary



Number of inhabitants per car in six regions of Hungary

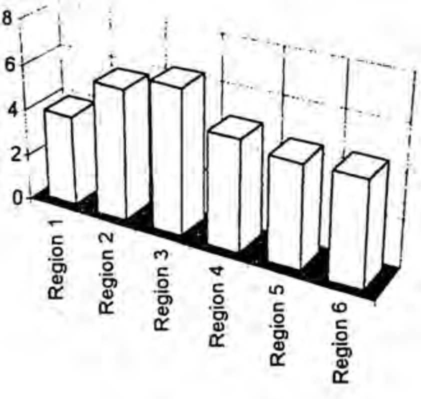
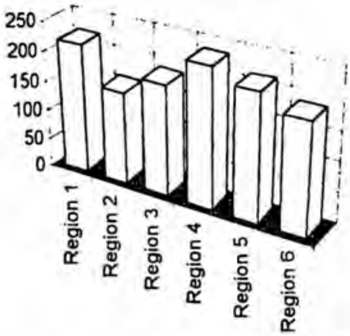


Figure 2.5.

Accidents per 100.000 inhabitants in six regions of Hungary



Fatal accidents per 100.000 inhabitants in six regions of Hungary

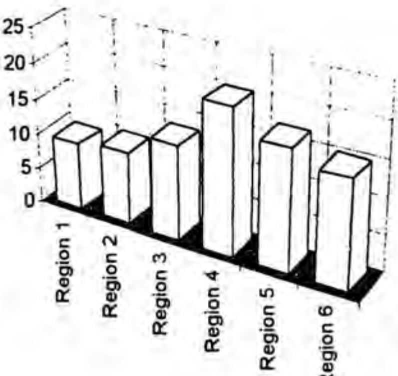


Figure 2.6.

Total number of accidents per 100.000 inhabitants

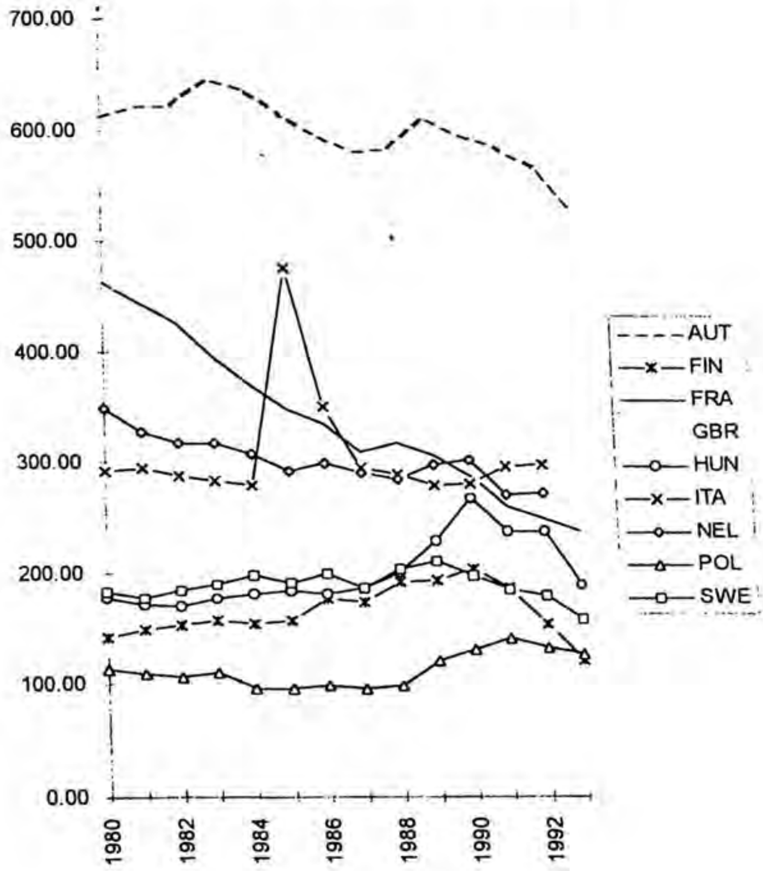


Figure 2.7.

Number of fatal victims per 100.000 inhabitants

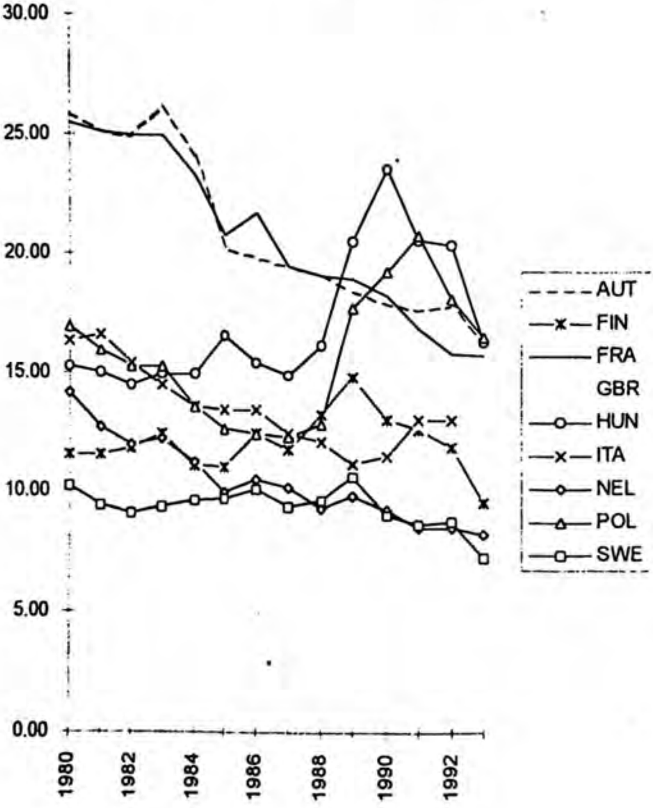


Figure 2.8.

Number of accidents with personal injuries per 10.000 cars

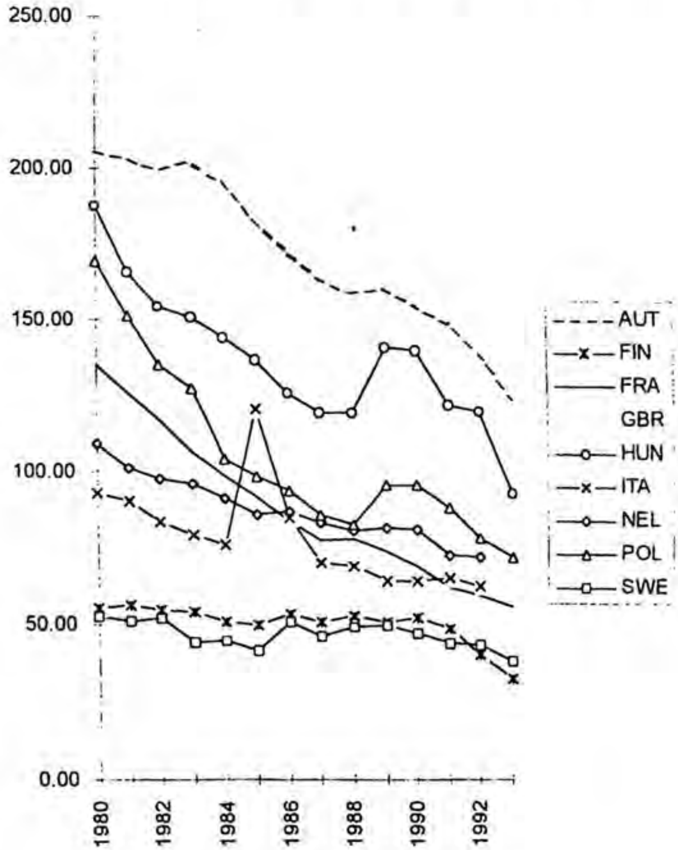


Figure 2.9.

Number of fatal victims per 10.000 cars

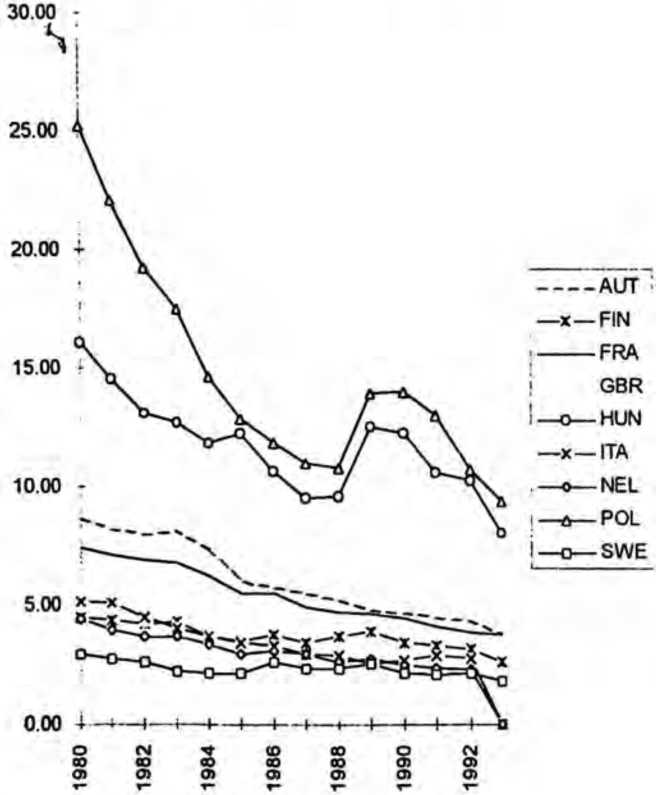


Figure 2.10.

Number of injured per 100 accidents

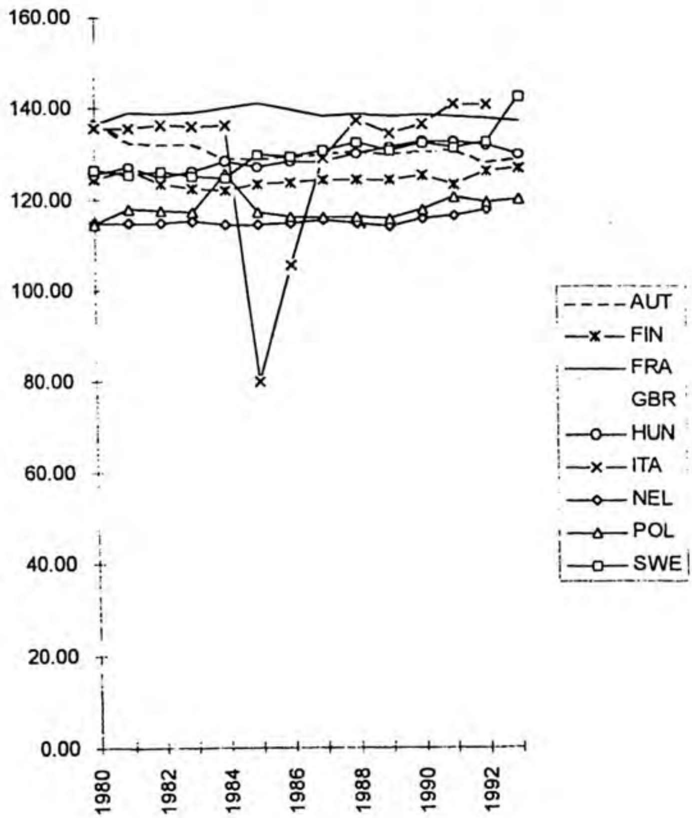


Figure 2.11.

Number of fatal victims per 100 injured

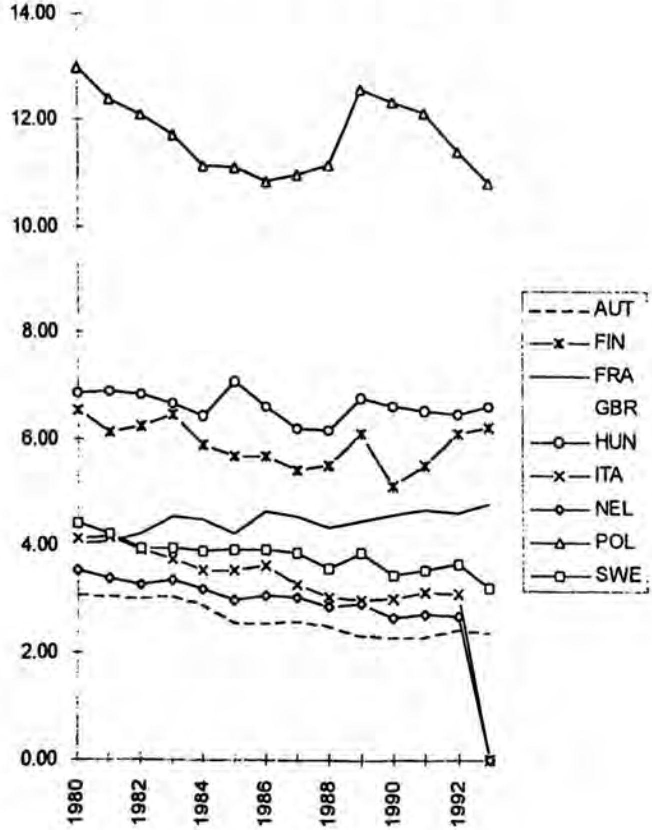


Figure 2.12.

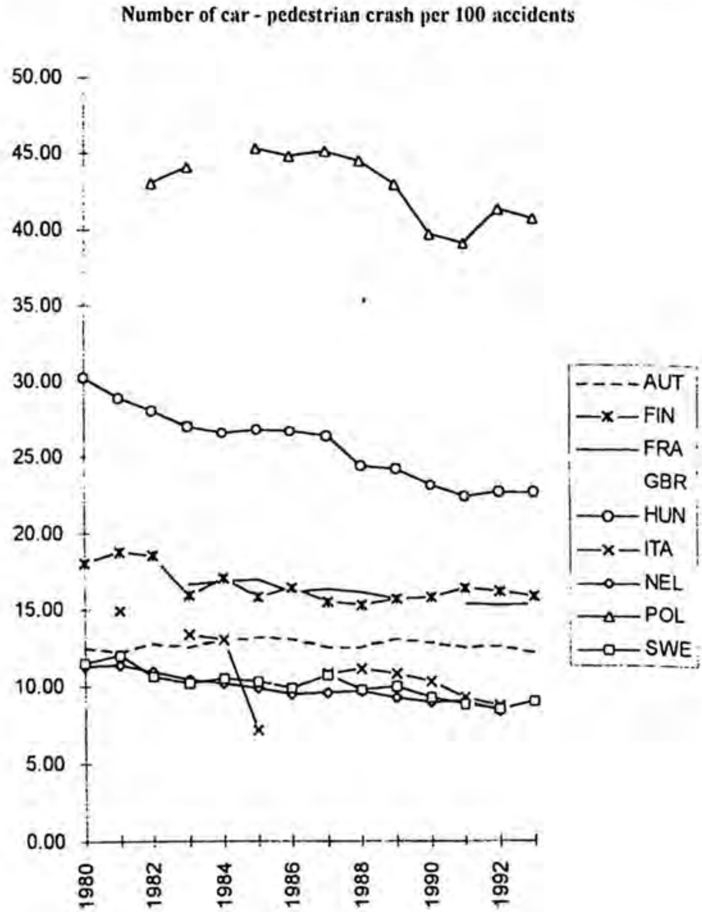

Number of car - pedestrian crash per 100 accidents
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
1980
1982
1984
1986
1988
1990
1992
AUT
FIN
FRA
GBR
HUN
ITA
NEL
POL
SWE

Figure 2.13.