

The major data on accidentology

INTRODUCTION

The aim of this chapter is to provide an introduction to the results for the year 2007¹ by presenting the most relevant and most permanent data on accidentology.

The national accidents file. Our general knowledge of accidents and their causes basically come from accident sheets that are filled in by the police after each accident causing death or injury.

The risks evaluation is essential: The great methodological difficulty, in the field of accidentology, lies in not being content to appraise the frequency of accidents but to evaluate the risks, in other words, the frequency of accidents in relation to exposure to the danger which is often the number of kilometres covered, but which can be another variable². It is not enough to note a greater frequency of a particular factor in accidents, it must be checked that there is a greater frequency in the traffic. It is often here that data lack or are inaccurate and this is the reason why a certain amount of additional enquiries must be carried out to obtain information on the journeys made.

And distinguishing the real causal relation. Furthermore, there is a very large number of factors coming into play in accidents: a distinction must be made between coincidences and the real causal relations.

The plan adopted takes the most current analyses parameters which are the means of travel (light vehicle, heavy goods vehicle, etc.), user characteristics (age, gender, etc.), location (type of network: motorway, national road, etc.); the various localities), the moment (month, day, time) and the violation (alcohol, speeding, wearing a seat-belt).

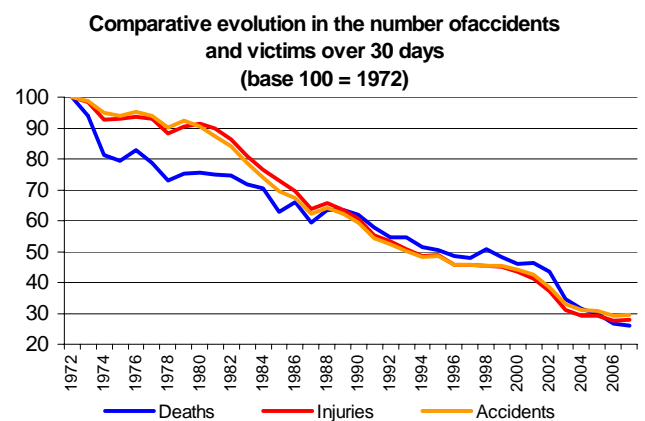
To be remembered, in particular. In all, the following points will be remembered in particular:

¹ Data referring to other years are indicated

² For example, the number of telephone calls made, with regard to the danger caused by the use of a mobile telephone when driving.

- it is **the motorcycle** which is the most dangerous means of travelling,
- it is the **age group between 15 and 24 years for men** which is the most concerned,
- it is the **rural roads** (national and secondary roads) which are the most dangerous,
- It is alcohol that has become the leading factor in accidents, ahead of speeding.

Long-term trend. Over a long period between 1975 and 2001, the average annual in the number of deaths is 2.3%. Since then, significant reductions has been registered: 6.2% in 2002, 20.9% in 2003, 8.7% in 2004, 4.9% in 2005 and 11.5% in 2006. However, this trend slowed in 2007 with a decrease of 1.9%. In five years, between 2002 and 2007, the benefits come to – 40.3% in deaths and – 24.9% in injured. Compared with the long-term trend, the benefit accumulated over five years is estimated at 9,800 lives saved. During the last 10 years, since 1997, the number of accidents decreased by 35.1%, deaths by 45.9% the one of injured people by 38.9%.



Very seriously injured.

From the Lyon's Register data base, it can moreover be estimated that for one death, there is one case of very serious injury with severe consequences.

Orphans. The consequences of road accidents is not limited to the number of victims, killed or injured. Sometimes, these accidents have serious consequences for a family, in particular for children who are orphaned after such accidents.

To assess this impact, and failing a systematic gathering of information, the Observatory has used a method based on cross-tabulated demographic data with the absolute frequencies by age of those skilled in the accidents. In this way, an estimate was made of approximately 3,000 children under the age of 18 left orphans by road accidents in 2007, which means about six orphans for 9 deaths.

MEANS OF TRAVELLING

Deaths	1997	2007
Pedestrians	11.6 %	12.1 %
Cyclists	4.1 %	3.1 %
Moped riders	5.9 %	7.0 %
Motorcyclists	10.4 %	18.0 %
Light vehicle users	63.5 %	53.3 %
LVU users	1.5 %	2.8 %
Heavy vehicle users	1.4 %	1.5 %
Other users	1.6 %	2.1 %

The "other" means of travelling are mainly vans, very small cars and buses

The change over time in the breakdown of deaths per means of travelling results to a large extent, from its evolution: reduction in the proportion of deaths among pedestrians, cyclists and private car users; increase in deaths among moped users, motorcyclists, heavy goods vehicles, and the occupants of small vans.

The key issue: motorised two-wheeled users

The risk per kilometre covered for motorcycles is 23 times greater than that for a light vehicle.

Motorcycle only represent 1.1% of traffic but 10.1% of drivers involved in accidents and 18.0% of deaths.

*Figures for 2007 except**

Breakdown in relation to number of vehicles	Deaths per million vehicles	Average kilometrage	Deaths per billion vehicle/km
Mopeds	258	2,020*	127
Motorcycles	665	4,728*	141
Light vehicles	81	13,029	6
Heavy vehicles	122	50,084	2

* figures half- 2003

sources: National road safety observatory

There is a particular correlation in the specific danger in **motorcycles** and age: young people chose a motorcycle as a style (81% of motorcycle riders are between 15 and 44 years and 50% between 20 and 34 years) and motorcycle riding by more experienced users increases the danger in motorcycles. The 125 cm³ motorcycles have a death rate per km ridden half that of the more powerful ones.

Motorcycle accidents are concentrated in a small number of regions: Ile-de-France and the South of France (Provence-Alpes-Côte-d'Azur) represent 56.5% of the total of motorcycle accidents, and 38.2% of light vehicle accidents. First of all, the **moped** is a means of travelling for young people aged 15 to 19 years representing 44% of deaths with mopeds. Nevertheless, the number of mopeds is decreasing.

The number of kilometres covered by **bicycle** is not known, but we know that cycling has substantially increased with the development of leisure cycles and the urban bikes

Heavy goods vehicles represent 6.6% of kilometres driven and only 3.6% of vehicles involved in accidents but 10.4% in fatal accidents. Per kilometre driven, they are therefore less involved but their accidents are more serious: 14.3% of deaths of which 1.5% are the occupants heavy goods vehicles. Overall, heavy goods vehicle traffic is increasing similarly to that of light vehicles, on the other hand, foreign goods vehicle traffic, which does not cause any particular safety problems, is increasing much faster to reach almost 29% of the total traffic of heavy goods vehicles.

Pedestrians accidents are first of all an urban phenomenon: 67.6% of pedestrians killed are in towns while, for other victims, the rate is less than ¼.

The risk in built-up areas

Driving in towns is more dangerous than is generally thought. Even if the accidents are less serious in built-up areas than in rural area, on the other hand, they are much more frequent, and in all, the risk per kilometre driven is much greater. In this way, it has been established that even if the risk of being killed per kilometre driven is comparable to that in rural area, the risk of being injured in built-up areas is five times greater.

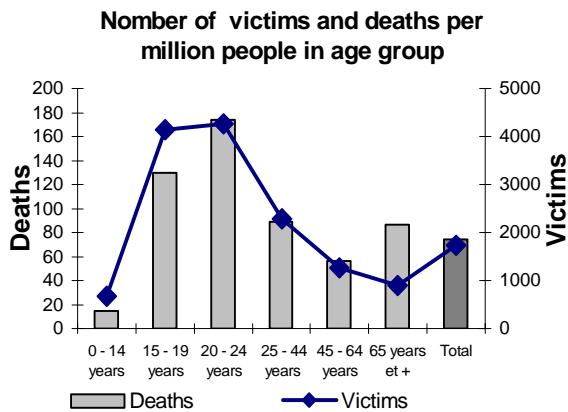
Vehicle age

A study using data from 2006 shows vehicles aged less than four years cover almost 30% of all the kilometres driven. They are involved in less than 20% of fatal accidents. The risk, per kilometre driven, of having a fatal accident with a vehicle of less than four years is half that of a vehicle of more than eight years, the difference being even greater for accidental injuries.

The age of the drivers does not appear to be an explanation for this phenomenon, as it is known that age has a strong influence on the risk of having an accident. It must be possible to connect these results to the progress made in the design of new vehicles which, nevertheless, seems to be slowing down since a lesser difference is noted between vehicles aged less than four years and those aged between four and eight years.

USER CHARACTERISTICS (AGE AND GENDER)

By age

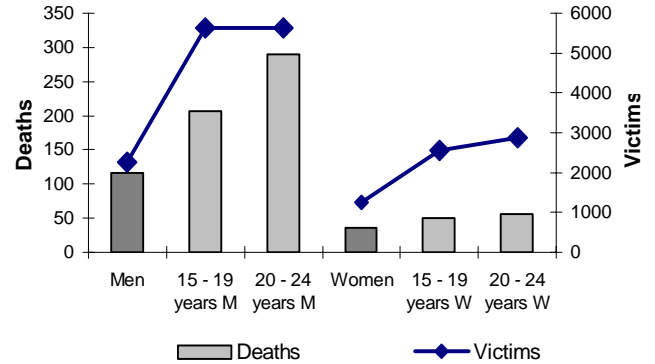


It notes the importance of risk for youth 15 to 24 years, and the greatest severity of accidents involving over 65.

Young people from 18 to 24 years are proportionally killed more at night-time (58% against 45% for the rest of the population) and the week-end (40% against 33%).

By gender

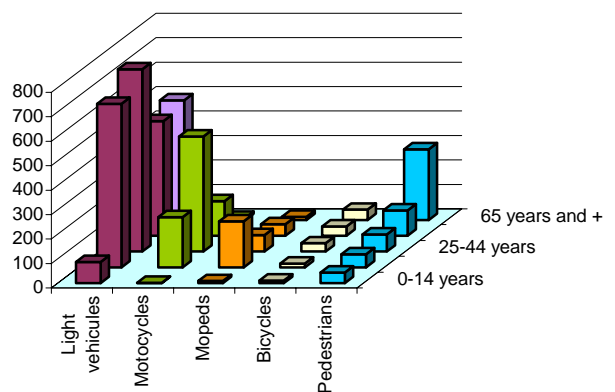
Number of victims and deaths per million people by age group and gender



It notes the importance of the underestimation of risk and / or willingness of risk-taking among men in general and young boys in particular.

Age by user category

Deaths by user category according to age



Age by user category

% of users killed by age bracket	0-14	15-24	25-44	45-65	65 +	Total *
Pedestrians	7.8 %	9.6 %	12.5 %	18.5 %	51.5 %	100 %
Bicycles	7.8 %	11.3 %	24.1 %	27.0 %	29.8 %	100 %
Mopeds	2.8 %	58.0 %	20.7 %	14.5 %	4.0 %	100 %
Motorcycles	0.2 %	24.7 %	56.8 %	17.1 %	1.1 %	100 %
Light vehicles	3.5 %	27.2 %	30.3 %	19.1 %	19.9 %	100 %
Heavy goods vehicles	0.0 %	16.1 %	42.5 %	35.6 %	5.7 %	100 %

* excluding undetermined age

Young people. The 0 to 14 years are substantially the vulnerable users: about 28% of deaths in this age group are pedestrians or cyclists.

A large number of surveys or sociological

studies confirm the specific attitude of young people and, young boys in particular, with regard to taking risks. The 15-24 years represent 12.6% of the population but 25.6% of road deaths and almost 40% of the total years of human life lost. The road is the prime cause of mortality among young people from 15 to 24 years of age (41% of the causes of death for young boys from 15-19 years of age)³.

Women. For the same number of kilometres covered, it was calculated that women had in 2007 3.1 times less likely to be killed and 1.7 times less likely to be injured in a road accident than men.

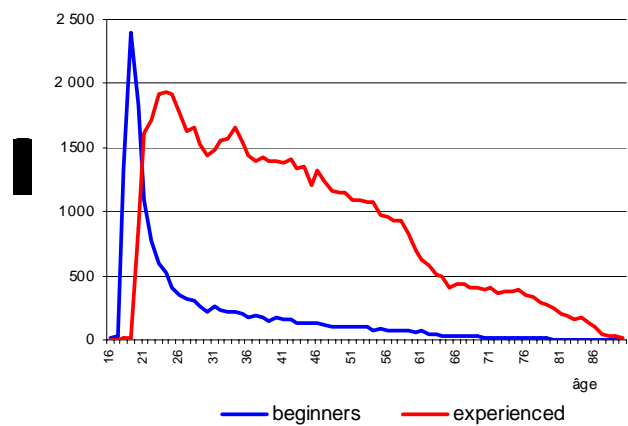
Elderly people Elderly people have less accidents but they are more serious even though they do not use fast means of travelling: pedestrians of 65 years and over killed represent more than 51.5% of pedestrian deaths and almost 30% of cyclist deaths.

Drivers. The yearly survey carried out by polling institute on households' cars enable the number of driving licence holders to be estimated in metropolitan France as being almost 40 million and that of drivers at 37.5 million. 7% of driving licence holders have declared that they do not drive, 82.6% drive regularly and 10.4% only occasionally.

Number of passengers. The number of passengers per vehicle on average is in the range of 1.5 over the whole network in rural area, with very little difference between the motorways, main roads and secondary roads. On the other hand, the average number of passengers increases from 1.4 during the week to 1.6 during the week-end. In built-up areas, records in Paris and some major regional cities show quite substantial differences of between 1.2 in Lyon, 1.3 in Paris, and 1.6 in the Lille and Nantes urban areas.

The year where driving licence was passed. There is naturally a link between the length of time since the driving licence was passed and the driver's age but it is age which explains the number of accidents more than the time since the licence was passed.

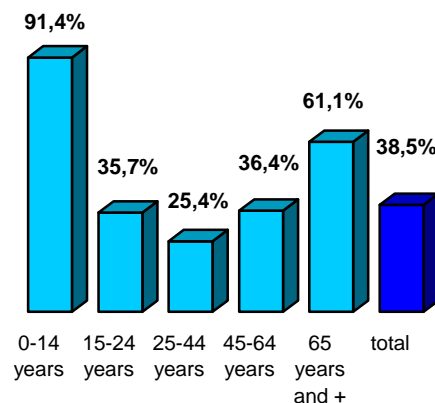
Drivers involved in an accidental injury according to age and length of time since the driving licence was passed



Foreigners: On the national territory, foreign vehicles represent 2.2% of vehicles involved in accidents while they represent 5.6% of traffic.

Active users and Passive users. The breakdown of active (drivers of motor vehicles) and passive (passengers) or vulnerable (pedestrians and cyclists) victims is very different depending on age.

Proportion of passive or vulnerable victims by age



Approximately 60% of victims killed are not responsible for the accident: pedestrians, non-driving occupants, non-responsible drivers.

³ INSERM 2004 data

LOCATION: TYPE OF NETWORK, VARIOUS PLACES

By network

	Part of km	Part of traffic	Part of accidents	Part of deaths
Motorways	1.0%	22.9%	6,6%	5.9%
Main roads	0.9%	17.3%	8.1%	11.9%
Secondary roads	36.7%	35.2%	29.4%	61.8%
Others*	61.2%	25.6%	56.0%	20.3%

* generally urban network

This table shows the importance of the motorway traffic and the relatively low percentage of accidents that occur; the important part of the main roads and secondary roads from the viewpoint of accidents and deaths with a considerable linear element, which makes both surveillance of this network and its safety more difficult.

It enables an understanding of the extent of the density in all space comparisons (between departments or countries⁴).

Rural areas. The roads in rural areas, characterised by freely moving traffic allowing high speeds as well as low level of surveillance, represent the most important issue with regard to safety: 59% of total deaths occur on two-way roads in open country. One of the major factors in deaths in rural countries is on side obstacles: 1,248 deaths in 2007; 552 of which were caused by trees or poles. The EDA⁵ have shown importance of recovery verge on bends.

Urban areas. In towns, the influence of traffic can also be checked: the seriousness of the accidents declines very substantially in accordance with the size of the built-up area. Among those killed, the categories of most vulnerable users are pedestrians (27.9% of deaths against 5.6% in rural areas), motorcyclists (22.7% against 16.0%) moped riders (13.5% against 4.4%).

Indicators in local accidentology. The ratio of deaths per one million inhabitants ranges from 17 for Paris to 178 for Lot (77 for France). In fact, this ratio is very dependent on the urban or

⁴ As an example, we would say that if 1% of the traffic is transferred from open country to the motorway network the number of deaths would be reduced by 1%

⁵ Etudes Détaillées d'Accidents (Detailed Accident Studies)

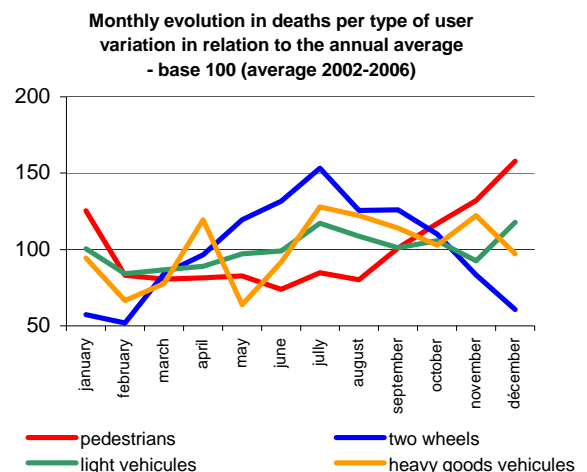
non-urban character of the departments. The indicators in local accidentology developed by the Observatory try to take account of the exposure to the risk depending on the various types of network (motorways, country roads, urban areas). They made it possible to show that the urban departments are among the safest ones.

CIRCUMSTANCES (MONTH, DAY, TIME, CAUSE)

Depending on the month. There is a seasonal element in the monthly series with a low level of accidents during the winter months (January to March) and an increase in the spring coming to a peak during the summer and gradually dropping down again during the autumn.

This variation is partly due to changes in traffic patterns and partly to weather conditions as well as those relating to light (day/night comparison).

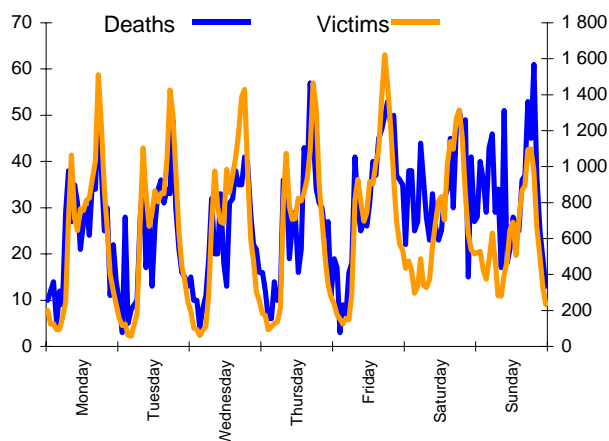
The seasonal effect is very different depending on the type of user: evolution from one year to another for heavy goods vehicles is the same as for light vehicles, however with pronounced peaks in July and April; all two-wheeled vehicles have a very marked peak during the summer while the contrary applies for pedestrians.



Weather effect. The effect of the weather in a given month compared with the seasonal average for the month can be considerable (in the range of 5 to 6%). But, overall, over the whole year, the weather effect barely exceeds 2 to 3%.

The weather effect is quite complex: bad weather has a positive effect as it reduces traffic, but the first showers cause accidents.

Depending on the time and the day of the week



The days early in the week have a lower average than the days at the end of the week: heavy traffic week-ends have lower averages than an ordinary week-end. A substantial daily peak is observed around 6 p.m. Furthermore, during the nights of Friday to Saturday and Saturday to Sunday between 4 a.m. and 6 a.m., a substantial difference can be seen between the number of deaths and the total number of victims which shows the increase in the level of seriousness of accidents during this period.

Night-time represents less than 10% of traffic but 34.3% of hospitalised injured people and 44.7% of deaths.

Other parameters.

75% of victims were local residents⁶,

15.4% of drivers and pedestrians were victims of an accident when travelling from their homes to work, and 8.5% when travelling for business.

Accident conditions: 20.6% of accidents concern one vehicle only without a pedestrian involved, 16.0% one vehicle only with a pedestrian involved. 11.1% collisions are head-on collisions.

In more than 93% of fatal accidents there was only one death; less than 0.4% of fatal accidents had more than three deaths,

⁶ either pedestrians or occupants of a vehicle registered in the department

THE PRINCIPAL FACTORS AND THE MOST EFFECTIVE ACTIONS

FACTORS

Alcohol. Driving while under the influence of alcohol is now the main factor in accidents ahead of speeding. Contrary to speeding, driving under the influence of alcohol is a less frequent behaviour but which has much greater effect on accidentology since it is estimated that the 2.8% of drivers exceed the legal consumption, 5.9% for accidents causing death or injury and 17.0% on average in fatal accidents in 2007. The proportion of accidents causing death or injury with alcohol involved comes to 10.5% in 2007 (29.0% for fatal accidents).

The rate of drivers under the influence of alcohol depends on the user's age and gender and, above all, the time and day (night-time and week-end).

Victims of accidents with alcohol involved are basically drunk-drivers and their passengers since these represent about 84% of deaths.

It is estimated that almost 26.9% of deaths could have been avoided if drivers had not driven with a positive level of alcohol in the blood.

Speeding. Exceeding speed limits, even if it markedly decreased in 2007, is a mass behaviour since more than 37% of motorists, almost 47% of heavy goods vehicle drivers and almost 55% of motorcyclists all networks included. Excesses of more than 10 km per hour of the permitted speed limit substantially declined in 2007. They came to 13.7% for private cars (against 15.4% in 2005) to 14.4%, for heavy goods vehicles out of motorways (13.7% in 2006) and 33.6% for motorcycles (against 30.2% in 2005).

It is in towns that the speed limits are exceeded the most frequently with more than 62% on the entry and exit points to the built-up areas. On the other hand, there is a tendency to drive faster at night on all networks excluded on interurban motorways.

With regard to the average speed at which motorists drive in France, it has been observed

that in three years, between 2002 and 2006, it declined more than 8 km per hour, going from 89.5 km per hour to 81.6 km per hour, including all networks.

Safety distances. 2007 data collected on safety distance confirmed the first observations made in 2002. For all traffic conditions, on all networks 4.7% of drivers keep to an inter-vehicle time less than one second (same proportion as in 2004). This indicator rises to 11.0% (against 12.1% in 2006) under the heavy traffic, defined as traffic inter-vehicle time with less than four seconds.

Furthermore, it is still noted that it is not on the motorways that the inter-vehicle times is the greatest, but on the main roads and secondary roads in open country.

Other violations. They are much less frequent, but their number is not negligible, such as right of priority violation (2,4%), going through traffic lights (1.1%), and not stopping at stop signs (0,7%).

Seat-belt. The rate of seat-belt wear has greatly increased in recent years, particularly from the moment when not wearing the belt became punishable by the loss of three points since March 2003). In 2007, the overall rate of seat-belt wear in the front seat of light vehicles improved, in particular in urban areas. In rural areas, it rose at 98.6%. It was 93.9% 10 years ago. In towns, the increase over the past 10 years is even more spectacular with a growth of more than 27 points: 68.9% of wear in 1997, 95.9% in 2006.

The rate of seat-belt wear is lowest in rear seats, even if considerable progress was made in 2007 compared to 2006, increasing from 77.8% to 77.8% in built-up areas and from 85.2% to 86.1% on motorways.

Furthermore, it is estimated that at least 393 lives could have been saved if all the occupants fastened their seat-belt (70% for drivers, 13% for occupants in front or rear seats and 17% for passengers in the rear seats).

Mobile telephone. The results of the first poll observation roadsides of mobile phone use hand-held by drivers show that 2.0% of drivers were observed with hand-held phone and near the ear and 0, 4% with hand-held phone but not near the ear is 0.4%. Based on

an epidemiological research conducted in Australia, which estimates the risk of having an injury accident when phone while driving to 4.9 for hand-held phone and 3.8 for hands-free kit, the stakes in France for the single hand-held phone can be estimated at 6 to 7% of injury.

Cannabis. About 2.5% of fatal accidents could have been avoided if all drivers abided by the laws on the consumption of cannabis.

Other factors: Fatigue or drowsiness are noted in 2.8% of fatal accidents.

PRINCIPAL ACTIONS

Information to the public (media campaigns) and local mobilisation on the one hand, enforcement and sanction on the other hand are the most effective counter-measures for road safety.

In addition, the regular improvement of infrastructure and vehicles take part in the road safety. Thus the treatment of the side obstacles (trees or posts) would make it possible to reduce by 6% the number of people killed on the road.

Furthermore, it is estimated that separating the traffic directions on 10% of the most frequently used two-way roads would enable a reduction of 5% in the number of road deaths.

Effectiveness of the control/sanction. In 2007, the number of penalties out of parking was 13.0 million (12.1 in 2006) the share of the automated speeding control being of 6.7 million. Since the first radar units were installed in 2003 November, the number of speed controls increased substantially and the violations noted more than doubled, the share of automated control having reached the 82% in 2007.

Checks on alcohol consumption substantially increased during the past 10 years since their number went from 6.8 million preventive tests in 1998 to 8.9 million in 2007.

Points driving licence. The system plays an important role to improve the driver's behaviour.

In 2007, 5,866,802 drivers lost 9,500,000 points (average violation 1.6 point); but only 88,698 licences were disqualified while 1,431,057 drivers recovered their capital of points after three years without any violations.