

More could be done to prevent road deaths in France

Claude Got*, Patricia Delhomme** and Sylvain Lassarre**

For many years, the French roads were among the most deadly in the European Union, but this is no longer the case. With fewer than 5,500 deaths recorded in 2005, there is no doubt that the government measures introduced over the last 30 years have been highly effective. But could even more lives be saved? Five specialists examine the factors behind traffic accident mortality in France, the potential for reducing road deaths even further, and the experience of the United States in this area.

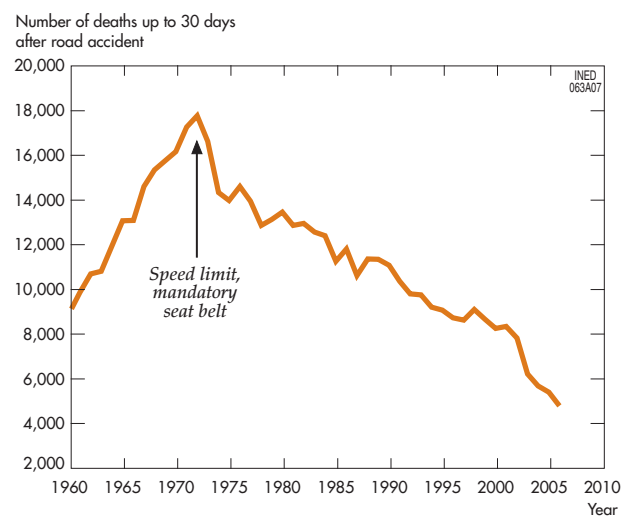
Road traffic accidents killed 5,318 people in France in 2005. This figure seems low compared with the total of 528,000 deaths from all causes (1%). But road deaths are avoidable, so the figure is still unacceptably high. The curve of road traffic accident mortality since 1960 shows the effect of successive road safety measures (Figure 1). The growing use of motor vehicles in the post-war years pushed the death toll up to almost 18,000 in 1972, but this upward trend was broken by the introduction of speed limits and mandatory car seat belts in 1972. By 1995, despite the ever-increasing volume of cars on the road, accident fatalities had fallen below the level recorded in 1960.

◆ Speed limits reduce traffic fatalities

After several years of stagnating traffic accident statistics, new policy measures based on stricter enforcement of traffic rules – speed limits in particular – were introduced in 2003. They produced encouraging results and road deaths fell by more than 40% (Figure 2). The improvement began in December 2002, following the widely publicized announcement of the Comité interministériel de sécurité routière (interministerial

road safety committee) which prompted an abrupt change in French driving behaviour. This media-driven revolution provided scientists with an almost experimental situation, enabling them to measure with certainty the relationship between average speed and mortality, as in the American example (see Box).

Figure 1 – Road deaths in France, 1960-2006



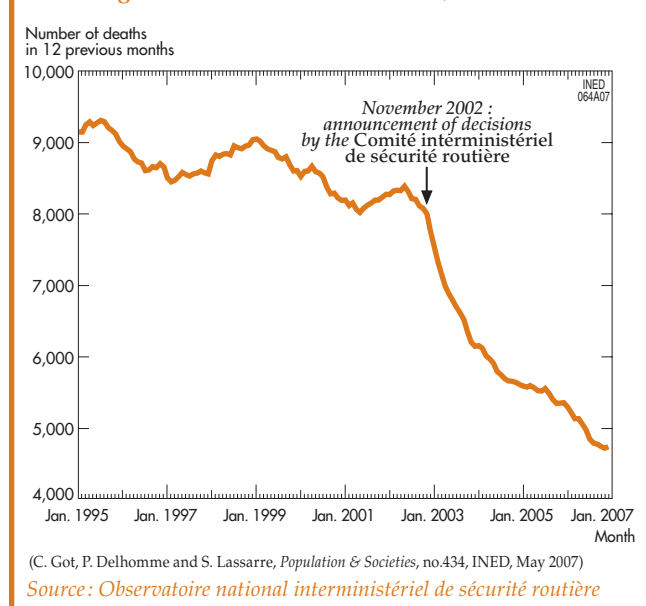
(C. Got, P. Delhomme and S. Lassarre, *Population & Societies*, no.434, INED, May 2007)

Source: Observatoire national interministériel de sécurité routière

* Comité des experts auprès du Conseil national de sécurité routière

** Institut national de recherche sur les transports et leur sécurité

Figure 2 – Road deaths in France, 1995-2006



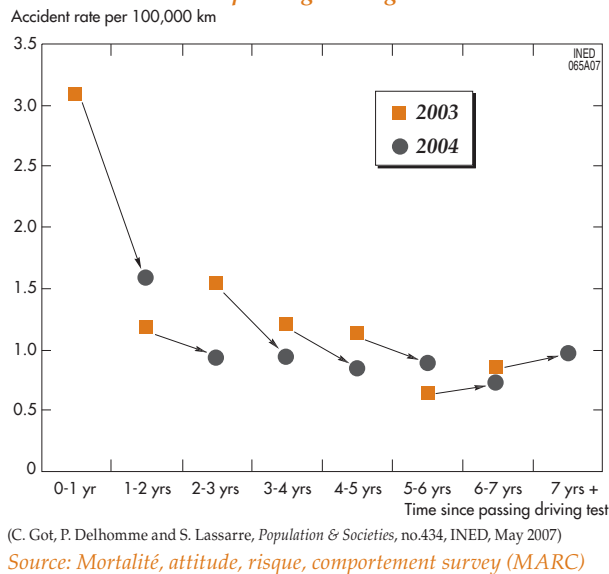
The steady decline in road deaths between 2002 and 2005 deserves closer study to identify the factors involved in fatal accidents – drink-driving, non-use of a seat belt, excessive speed (on certain types of road especially), imprudent motorcyclists, bicycles without lights, etc. – so that policy makers can build on this success and save even more lives. In particular, the relationships between certain risk factors need to be studied in more detail. For example, we lack information similar to that available in the United States (see Box) on the characteristics of the vehicles involved.

Modelling specialists have been saying for many years that a 1% decrease in average driving speed reduces mortality by 4%, and data from the Observatoire des vitesses (1) confirm this relationship [1]. But further points need to be explored. For example, the proportion of accidents involving drivers above the legal alcohol limit dropped to the same extent as overall traffic mortality over the period 2002-2005. Does this mean that drivers have cut their alcohol consumption as well as their speed? This question is difficult to answer since no representative studies of the blood-alcohol levels of drivers in general have been conducted in recent years. It is possible that lower speed is the key factor behind the drop in alcohol-related accident mortality, since the two factors are not independent.

◆ A heavy death toll among the young

Road traffic mortality is especially high among the young. In the OECD countries, most fatal accidents involving young people occur at night during the weekend. But what is the overall risk of accidents involving material damage or injury among this age group? To address this question, a survey was conducted among 3,000 light vehicle licence-holders aged 18-24 living in

Figure 3 – Change in accident rate over a year by time since passing driving test



France. Known as MARC (2), the survey provided data on the age-sex distribution of drivers. Among the age group studied, there are slightly more male drivers than female drivers (53% vs. 47%), as men pass their driving test four months earlier than women on average. Three-quarters of respondents obtained their licence before age 20, while those who followed an accompanied driving practice programme (3) (one-third of the sample) qualified one year earlier.

Young men reported slightly more accidents in the year preceding the survey than young women: the male-to-female ratio of material damage and injury risk is 1.1 for an equal distance covered (this is an important factor, since young women drive much less than young men: 9,260 km per year versus 15,070). The risk of material damage (91% of accidents) is the same for both men and women, again for the same distance covered. But for injury and death, the national records of traffic accident casualties in 2003 show that men have very high excess risk: 1.5 for injury and 3.2 for death in a road accident. Several mutually aggravating factors are involved: non-use of a seat belt, driving under the influence of alcohol or drugs, the presence of other occupants and the use of the most dangerous road networks, such as secondary roads bordered by trees (fixed obstacles account for 58% of deaths on main and secondary roads).

(1) Programme developed by the Observatoire national interministériel de sécurité routière (French interministerial road safety observatory)

(2) The MARC survey (Mobilité, attitude, risque, comportement - mobility, attitudes, risk, behaviour) is a joint project of the Institut national de recherche sur les transports et leur sécurité (INRETS). It is a face-to-face panel survey that was conducted in three waves in the winters of 2003, 2004 and 2005. Its aim is analyse the traffic accident risk of young drivers from sociological, psychological and economic viewpoints.

(3) Young people can start accompanied driving practice at age 16 in France, and take their driving test at age 18 after clocking up 3,000 km.

Box

Speed and road accident mortality: the experience of the United States in the years 1973-1995

Stève Bernardin* and Scott Falb**

The European road safety debate is dogged by the conflicting attitudes of different European countries and by the reluctance of car manufacturers to accept driving restrictions or vehicle adaptations that improve road safety but do little to enhance customer appeal. The example of the United States illustrates these difficulties and provides a few pointers for Europe.

All forms of public intervention must be weighed against the need to safeguard individual liberty. In the United States, the federal authorities traditionally maintain a distance on issues handled at city or state government levels. But for road safety, the situation changed in the 1960s and 1970s. Using the work of epidemiologists to argue its case, a consumer rights movement lobbied Congress for the creation of statistics to determine the impact of vehicle design standards on crash injuries [3]. As a result, the National Highway Traffic Safety Administration was set up in 1966 with the initial purpose of informing consumers about vehicle safety and setting new standards to harmonize safety regulations at state level [3]. One of its missions was to examine the feasibility of enforcing uniform speed limits across the entire United States. However, the new Administration soon faced strong pressure from political and economic lobbies opposed to the harmonization of state regulations.

In 1973, the first oil shock brought the question back into the spotlight. As an emergency measure, the federal government suggested that harmonized speed limits be enforced throughout the US as a means to reduce petrol consumption. Voted in 1974, the National Maximum Speed Law provided for federal subsidies to be withdrawn from states refusing to apply a limit speed of 55 mph (88 km/h) on all their highways.

With the falling oil price in the 1980s, fuel economy was no longer a valid reason for imposing speed limits. Faced with a lobby of rural states wishing to raise maximum speed, the key argument now switched to the number of lives saved. These states wanted to prove scientifically that the 1975 legislation was statistically unfounded, and based solely on populism and arbitrary political interests. A detailed study was conducted in 1984 by the National Academy of Sciences [4], but the 262-page report simply released the familiar demons of statistical inference: What proves that the number of lives saved is due exclusively to lower speed? What about other factors such as a lower total traffic volume or improved vehicle design? While research on these

questions developed rapidly, certain influential economists claimed that low speed limits encourage motorists to drive more dangerously, since drivers tend to maintain a level of risk perceived as constant [5].

All in all, the studies of the 1980s produced results that varied widely, depending on the statistical inference methods applied. They nevertheless sowed the seed of doubt which caused Congress to abolish the national speed limit for rural highways in 1987. Within a few months, around forty states passed legislation to increase maximum speed on these types of road. Faced with the zeal of the state legislatures, the President of the United States followed the recommendations of Congress and, in 1995, repealed the Maximum Speed Law voted twenty years previously. Three years later, the public authorities pointed out with exasperation that the number of road deaths had increased by 9% on average in the states where maximum speed had been raised [6]. Studies in Iowa confirmed the trend: in 1974 the state opted for a speed limit of 55 mph rather than 75 mph on highways. In the following three years, road deaths fell by 71% compared with the period 1971-1973. In 1987, the speed limit on rural highways was raised again to 65 mph and in the next three years, the number of crash fatalities rose by 87% compared with the period 1985-1987 [7]. After the total abolition of federal speed limits in 1995, a comparative study of the Midwest states showed likewise that the states who had raised their maximum speed above 65 mph had 7 to 13% more road deaths, while those whose legislation remained unchanged recorded an average 10% drop [7].

Though these results appear to speak for themselves, the issue of maximum speed is a complex one. As was the case in 1973, road safety is not the only question at stake. Certain advocates of higher limits point to the increased traffic congestion due to slower driving speeds. The controversy is still raging and each state adopts its own speed limits. This example illustrates the difficulty of enforcing measures that concern not only road safety, but also economic factors (energy dependence) and political principles (non-interference in the affairs of state government). In such a context, the debate over statistical inference methods is not only a scientific issue but also a political one.

* École nationale des travaux publics de l'État, France

** Iowa Department of Transportation, United States

Driving experience considerably reduces accident risk. The accident rate per 100,000 km decreases with time, especially after the first year (Figure 3). The number of first accidents peaks at around five months after passing the driving test, and declines from then on, in an identical manner for both sexes, and whatever the type of accident. For all drivers, experience and familiarity with driving situations reduce all types of road accident risk.

Accompanied driving practice does not improve young people's driving safety. It does not delay the first accident and even tends to increase the accident risk and encourage earlier transgression of the highway code from the first year. Among drivers who learn to drive in the traditional way, these behaviour trends are usually observed in the second year. [2]. Might the overconfidence resulting from 3,000 km of accompanied driving practice actually encourage risk behaviour?

◆ Speeding: the influence of peers

The over-representation of young people in traffic accident mortality is very often attributable to a driving speed which is either inappropriate to the circumstances or simply above the legal limit. Young drivers (age 18-24), primarily men, are both the main perpetrators and the main victims of such behaviour: almost one in five men killed on the road has been driving for less than two years.

The MARC survey asked respondents whether they intended over the next 12 months to "drive at more

than 110 km/h on a road with a speed limit of 90 km/h". The proportion who gave a positive answer is the same among men and women, and among novices and more experienced drivers. But the motives are different. Men are more strongly influenced by their male peers, while women follow the example of their partner or friends. On the other hand, young people with a non-negative self-image (who see themselves as neither overconfident nor foolhardy) are less likely to answer yes, women especially.

Novices exceed the speed limits mainly because they know and admire another young driver who does so, and because they enjoy the sensation of speed. After a year's experience, it is the driver's impression that he/she is in full control that best predicts the intention to break the highway code. After three years, previous speeding convictions are the strongest factor in reducing such intentions. Safety campaigns and training programmes for young people should be designed with these factors in mind.

* * *

Average speed, blood-alcohol level, sex, age and driving experience are all factors affecting traffic accident mortality. The progress achieved in recent years is real. Yet there is no doubt that many more accidents could be prevented and more lives saved. Between prevention and repression, a fair balance must be found to protect road users, young people especially, who are still involved in far too many fatal accidents.

REFERENCES

- [1] Simon COHEN, Hubert DUVAL, Sylvain LASSARRE and Jean-Pierre ORFEUIL - 1998, *Limitations de vitesse, les décisions publiques et leurs effets*, éditions Hermès
- [2] Sylvain LASSARRE - 2005, Presentation of the initial findings of the MARC survey, in *Actes du Colloque « Parents, enseignants, médias: quel rôle face à l'hécatombe des jeunes sur la route? »*, Prévention Routière et Fédération Française des Sociétés d'Assurances, Paris
- [3] Steve BERNARDIN - 2006, « Compter autrement. Mouvements sociaux et réforme des pratiques statistiques dans les années 1960 aux États-Unis », Journées d'Histoire de la Statistique, CREST-INSEE
- [4] National Academy of Sciences - 1984, *55: A decade of experience*, Transportation research Board, Washington, DC: National Academy of Sciences
- [5] Sam PELTZMAN - 1975, The Effect of Automobile Safety Regulation, *Journal of Political Economy*, vol. 83, pp. 677-725
- [6] National Highway Traffic Safety Administration - 1998, *The Effect of Increased Speed Limits in the Post-NMSL Era: Report to Congress*, Washington, DC: US Department of Transportation
- [7] Scott FALB - 2006, *Iowa Rural Interstate Fatalities and Fatal Crashes From 1970-2005 and An Iowa Study of Speed Limit Increases and the Effect on Traffic Fatalities and Fatal Crashes in Iowa and Surrounding Midwestern States*, Des Moines, IA: Iowa Department of Transportation, 1-2

ABSTRACT

In France, traffic accident mortality peaked at 18,000 deaths in 1972 before falling back quite steadily to just 5,500 deaths in 2005 as successive road safety measures were introduced. Among the various factors behind this fall, the introduction of speed limits and mandatory seat belts (1972) followed by a stricter enforcement policy from 2003 played a decisive role. The recent decrease in average speed has also reduced the number of road deaths.

Traffic accident mortality remains very high among young people however (one-fifth of all road deaths), men in particular. For this age group, the MARC survey of 18-24 year-olds reveals the importance of peer influence on risk behaviour (speeding, drink-driving, non-use of a seat belt, etc). The survey also shows the propensity of young people to play down such behaviour: though the motives vary, the "intention to break the highway code" is equally common among men and women, and among novice and more experienced drivers.