

Vehicle Safety Development in Europe - Achievements and Research for the Future

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ABSTRACT

The transportation of goods and people has long been an essential part of life, trade and commerce. The importance of goods transportation and personal mobility grows with rising economic development, increased division of labor and industrialization. Automobiles have also become part of individual development through the freedom of movement they offer.

However, the rapid growth of traffic in Europe has led to an increase in the frequency and total harm of vehicle collisions that resulted in rising numbers of deaths and injuries. The reduction of this danger through higher road safety has become a goal which traffic planners, legislators, automobile companies, and the education system are addressing in various ways.

According to the accident statistics of countries in the European Union, the highest levels of deaths and injuries on the roads were recorded in the early 1970s. Since then the statistics in central and western European countries have shown continuous improvement. To give some examples, although the amount of traffic in Germany has tripled, the number of deaths in road accidents has been reduced by 80 percent since 1970. The improvement is even more significant if the risk of fatal injury through traffic accidents is considered. Compared with 1965, in Sweden the number of fatalities per km driven decreased to around 14 percent until 2004; compared with 1950, to around six percent

In order to identify the necessary steps for the future, it is first necessary to understand how the past improvements were made. There are numerous influences coming from infrastructure, the active and passive safety of automobiles, the safety services, education, traffic regulation and legislation. Their effects on accident statistics are not always recognizable directly. Improvements through traffic control and changes to infrastructure have an immediate effect on accident black-spots. Legislation can also achieve rapid benefits, for example, by making it compulsory to wear a seat belt or a crash helmet on a motorcycle, defining speed limits on country roads and setting blood alcohol limits - when they are complied with. That is partly to do with human nature.

The acceptance of guidelines has significant influence, as does training of the driver and his correct behavior in traffic. Awareness of the vehicle's driving characteristics and the limits of vehicle stability must be learned and trained. The use of safety systems such as safety belts, child seats or the securing of loads requires a contribution from the driver. Without his input, the state-of-the-art safety systems cannot provide the intended protection in an accident.

Since safety became an integral part of automobile development in Europe between 1960 and 1970, safety standards have taken great strides to their current high level. In the process, the focus of development has increasingly shifted from reducing the effects of an accident through passive safety features, to accident avoidance and collision mitigation. In order to be effective on the roads, these new safety standards need to be present in a correspondingly high number of modern vehicles, and older vehicles need to be replaced. Only then the effectiveness of mandated and non-mandated technologies can be reflected by the statistics. In Europe, where the vehicle park is renewed every eight years on average, this can take more than ten years. It is also becoming clear that economic conditions, the affordability of the technology and the purchasing power of the population have an influence on how long it takes for technological progress to achieve a widespread effect on the road. The influence of income gets visible even between the western and eastern European states but the contrast gets more apparent with view to the low income countries.

Promoting road safety in low- and middle-income countries is the objective of seven of the world's largest automotive and oil companies. Ford, GM, Honda, Michelin, Renault, Royal Dutch Shell and Toyota have set up the five-year (2005–2009) Global Road Safety Initiative (GRSI). They chose the Global Road Safety Partnership (GRSP) to implement the initiative because of its proven ability to work in partnership with governments and non-governmental and international organizations in order to build the capacity of targeted developing countries to reduce traffic fatalities.

Safety technology in future will increasingly strengthen the bond between both components of vehicle safety, and also include the communication between vehicles and with the infrastructure. Thus all elements of road safety, which until now have been considered in isolation, will merge together, to the benefit of accident protection and accident avoidance.