STATISTICS AND DATABASES IN ROAD SAFETY PROBLEM

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Transport is fundamental to our economy and society

Mobility is vital for the internal market and for the quality of life of citizens as they enjoy their freedom to travel. Transport enables economic growth and job creation: it must be sustainable in the light of the new challenges we face. Transport is global, so effective action requires strong international cooperation.

The future prosperity of our continent will depend on the ability of all of its regions to remain fully and competitively integrated in the world economy. Efficient transport is vital in making this happen. A lot needs to be done to complete the internal market for transport, where considerable bottlenecks and other barriers remain. We need to readdress these issues - how to better respond to the desire of our citizens to travel, and the needs of our economy to transport goods while anticipating resource and environmental constraints. The transport systems of the eastern and western parts of Europe must be united to fully reflect the transport needs of almost the whole continent and our 500 million citizens [1].

Increasing the efficiency of transport and of infrastructure use with information systems is very important.

Road safety problem

Even though the number of road fatalities in the EU was almost halved in the past decade, 34 500 people were killed on EU roads in 2009. Initiatives in the area of technology, enforcement, education and particular attention to vulnerable road users will be key to drastically reduce these losses of life even further.

The White paper on transport published in 2011 [2], stresses the critical road safety problem. The quality, accessibility and reliability of transport services will gain increasing importance in the coming years, inter alia due to the ageing of the population and the need to promote public transport.

In 2011, more than 30,000 people died on the roads of the European Union, i.e. the equivalent of a medium town. For every death on Europe's roads there are an estimated 4

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permanently disabling injuries such as damage to the brain or spinal cord, 8 serious injuries and 50 minor injuries.

The Commission has adopted an ambitious Road Safety Programme which aims to cut road deaths in Europe between 2011 and 2020. The programme sets out a mix of initiatives, at European and national level, focusing on improving vehicle safety, the safety of infrastructure and road users' behavior. [6]

The EU publishes various statistics and other data on road safety problem.

Road crashes in databases

EU support several programs and campaigns in road safety. Many databases created in EU provide valuable information about road accidents and road safety problem.

It is possible to use annual national databases in European countries to compare accidents and road safety. However, one must be careful in interpreting the data, because countries do not always define the terms in the same way.

The road-crash databases should

- present specific information, such as the time and place of each accident, severity of accidents, type and number of road users involved, direct causes and consequences

- cover a long enough time period, at least five years

- provide information at the local, regional, national or international levels

Severity of accidents is classification how serious accident is. It is possible to classify them as fatal accidents, personal injury accidents or property-damage-only accidents. This classification is an indicator of the importance and urgency of accidents [3].

Information about the time and number of vehicles in an accident tells you whether or not the accident concerns a particular type of vehicle (bicycles, cars, vans, etc.).

It is important to analyze the statistics over a sufficiently long time period in order to determine whether the accident rate remained stable, increased or decreased.

Comparison and analysis of relevant national statistics will establish whether the problem is local or general. Other countries or regions may have developed best practices to solve the problem effectively.

The current results and statistics show that there are large differences between member states but also that especially age and gender play an important part.

Several international databases on road safety can be used to obtain road accident statistics:

- ERSO

- IRF

- IRTAD

- CARE

ERSO (The European Road Safety Observatory) is a website for all European road safety professionals. It is a gateway into a central resource of European road-safety data, knowledge, and links. It offers information about alcohol and driving, novice drivers, older drivers, cost-benefit analysis, post-impact care, road-safety management, road-safety ratings, speeding, vehicle safety, pedestrians and cyclists, etc.

ERSO has been first developed as a pilot stage during the period 2004 - 2008 within the project Safety Net. Since then, the content of ERSO has been integrated into the "Europa" Commission Road Safety website [4].

You will find in ERSO the following areas:

- EU road safety policy: a comprehensive overview of European legislation, including when relevant the detail of national implementing legislation.

- Road Safety knowledge base: high quality information, scientifically founded, easy to read and ready to use on main road safety subjects.

- Projects: an extensive list of EU-funded projects with the links to the projects websites, the main results and the links with the website of the project participants

Database IRF (The International Road Federation) is a non-governmental, non-profit organization with the mission of encouraging and promoting development and maintenance of better, safer, and more sustainable roads and road networks. The IRF Word Road Statistics is a global compilation of road and vehicle statistics from 1958 for more than 180 countries.

IRTAD - The International Road Traffic and Accident Database provides an aggregated database of about 500 data items from 30 countries over the world, for which international accident and risk data are collected on the continues bases.

The 2011 Annual Report of the IRTAD Group comprises [5] a synthesis of the main trends in the year 2010, in terms of developments in the number of traffic deaths and crashes and preliminary data for the year 2011. It presents longer-term trends in order to better understand the developments taking place in the different countries. It also presents a summary of road safety strategies that have been developed in IRTAD countries in the context of the UN Decade of Action for Road Safety and detailed reports from 32 countries.

CARE (Community Road Accident Database) of the European Commission's Directorate-General for Energy and Transport (DG-TREN) is a database on road accident resulting in death or injury. CARE includes detailed data on individual accidents as collected by Europe's member states.

CARE is the European centralized database on road accidents which result in death or injury across the EU. CARE provides Member States access to this central database which is hosted by the European Commission at the Luxembourg data center. The CARE system is a powerful tool that makes it possible to identify and quantify road safety problems throughout Europe's roads. Users can evaluate the efficiency of road safety measures, determine the relevance of Community actions and as exchange studies.[6]

Each country produces its own road accident statistics. CARE pulls together non-confidential data from across the EU Member States into one central database. Each year, each country is responsible for producing road safety statistics, which it then submits in the form of a report to the European Commission. The reports exclude confidential information like the precise location of the accident and the brand of car.

Each participating Member State has its own standards to adhere to as well as statistical formats. In addition to the report mentioned above, each country sends to the European Commission the structure of the data and their own definitions.

CARE has developed a framework of transformation rules from an analysis of the original structure and definitions to ensure the compatibility of data variables and values. In order to harmonize statistics from across the EU Member States, CARE applies the necessary transformation rules to standardize the information. Harmonizing the data contained inside the database allows international comparisons and exchange of experiences.

In addition, a CARE website has been created on Europa and some reports are available to the public. This site also includes a glossary of definitions concerning the categories of information required to build statistics on road traffic accidents. These include:[6]

- Person Class;

- Gender;

- Age group;

- Vehicle group;

- Area type;

- Motorways;

- Junctions;

- Collision type;

- Lighting conditions;

- Weather conditions;

- Day of the week.

CARE is a database on road accidents resulting in death or injury (no statistics on damage-only accidents are kept). The major difference between CARE and most other existing international databases is the high level of disaggregation, i.e. CARE is based on detailed data of individual accidents as collected by the Member States and in Switzerland and Iceland. This structure allows for maximum flexibility and potential with regard to analyzing the information contained in the system and opens up a whole set of new possibilities in the field of accident analysis.

National data sets are integrated into the CARE database in their original national structure and definitions, with confidential data blanked out. However, transformation rules are implemented in the CARE database in order to increase data compatibility and thus enhance the functioning of the system.

Some examples of outputs

Access to the database is often restricted to the staff members, but there are several databases with interesting outputs common accessed on the Internet. Here are some examples of outputs published in annual report on International Transport Forum website.

Chart 1 illustrates road fatalities in the EU since 2001. Chart 2 shows the road safety evolution in EU since 1991.
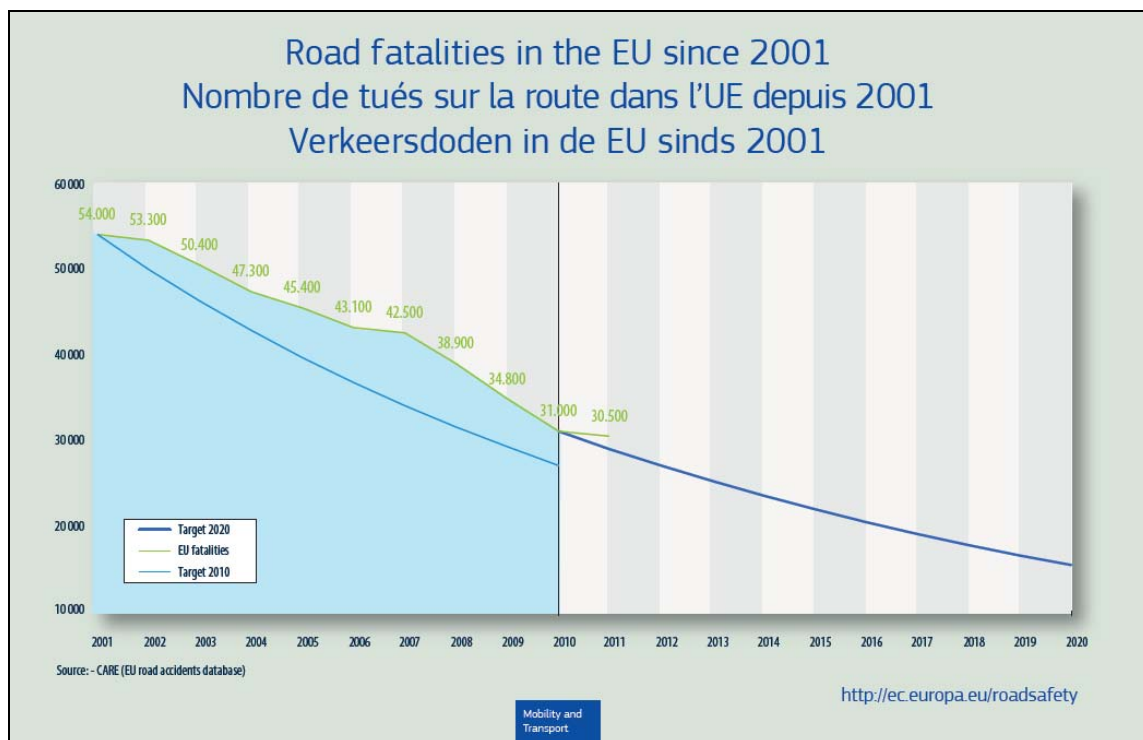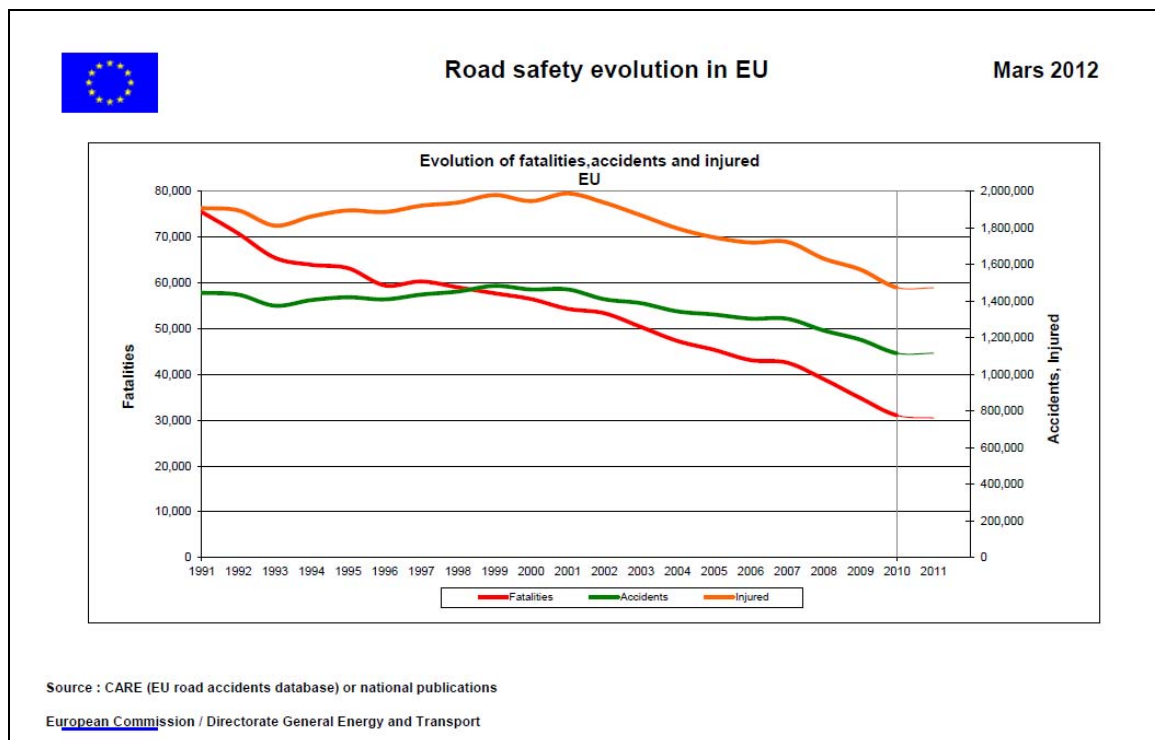

Chart 1. Road fatalities in the EU since 2001. [8]

Chart 2: Road safety evolution in EU [8]

Conclusion

Using and evaluating road crashes databases are to enable identification and quantification of road safety problems, evaluation of the efficiency of road safety measures. It helps to analyze and determine the relevance of Community actions and facilitate the exchange of experience in this field.

Road-related deaths are unacceptably high in Europe – a stark statistic that research aims to bring under control. The EU-funded projects are developing new technologies to improve the safety of all categories of road users: car occupants, pedestrians and pedal cyclists, motorcyclists and truck occupants.

To achieve this, researchers using statistics and road-crashes databases are developing new injury criteria, innovative mathematical models, and intelligent safety systems based on enhanced virtual testing technologies.

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