Developing the European Road Safety Decision Support System

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SafetyCube concept

• Problem
  – *Evidence based road safety policies are becoming more usual and there is much better availability of national data to describe the problem areas*
  – *Effective road safety policies need good information about accident risk factors and about measures*
  – *Impact studies are typically used to assess viability of road safety measures*
Accessing the evidence base

• Much of the evidence on risks and measures is in the research literature – how can it be brought together?
• How can we assess transferability of measures from one country to another?
• How can the available information and data be synthesised?
Challenges of the evidence based approach

• Do we have a comprehensive method to identify risks and measures?
  – *Road, road users and vehicles*
• How do we estimate the likely casualty reduction of a measure that has not been introduced to the real-world?
• Do we have a comprehensive method to evaluate cost-effectiveness?
• How do we handle the situation where there are many measures of effectiveness but they disagree?
What is a risk?

- “Risk factor” denotes any factor that contributes to accidents or injuries.
- There are risk factors related to all elements of the road system and the interactions between these elements.
- The importance of a risk factor can be defined as the size of the contribution it makes to accidents or injuries.
What is a measure?

• A measure is any action intended to reduce the numbers of accidents or injuries.
  – *May reduce the risk of a crash*
  – *May reduce the risk of injury*
  – *May reduce exposure to risk*
Example: taxonomy of infrastructure risk factors and measures

More than 90 risk factors and 95 measures in 15 infrastructure areas

**Exposure**
- Traffic flow
- Traffic composition

**Road safety management**
- Road safety audits, inspections etc.
- Blackspots treatment
- Speed management

**Horizontal alignment**
- Road curvature (curve radius, curve frequency, transition curves etc.)

**Vertical alignment**
- Gradient
- Vertical curvature (sight distance)

**Cross-section**
- Superelevation, cross-slopes
- Lanes (number, type, width)
- Shoulder (type, width)
- Median / barrier

**Roadside**
- guardrails, obstacles, visibility
- Sidewalks, cycle lanes

**Road surface**
- Friction
- Uneven surface
- Oil, leaves, ice, snow etc.

**Junctions alignment**
- Roundabouts
- Interchanges & ramps
- At-grade junctions
- Channelization (left turn lanes, traffic islands)
- Rail/road crossings

**Traffic control**
- Speed (speed limits, section control, speed humps)
- Traffic signs
- Delineation and Road markings
- Traffic signals (installation, timing)
- ITS (VMS, V2I)

**Lighting**

**Weather**

**Workzones**
Methodology - Guidelines and tools

- A taxonomy of study designs

- Different estimators of effects
  - Crash Modification Factor (CMF)
  - Absolute difference
  - Regression coefficient / slope
  - Odds ratios
  - Accident rates ratios
Coding template and database

- A template for coding research studies and existing results (excel)
- A template for summarising results / meta-analysing
- The templates of coded studies will undergo a thorough checking and debugging process, in order to be eventually stored in a relational database, which will serve as the back-end of the DSS
DSS-Analysis of user needs

- Stakeholders from government, industry, research, and user associations.
- The DSS should be suitable for use by a wide range of end users, not be limited to EU policy makers, but also local authorities.
- The DSS should have the following characteristics:
  - *include robust data which allow for critical analysis and transparency*
  - *access to the studies used and to all results as well*
  - *information of the best quality studies and recommendations*
Progress to date

- **Wealth of risks, countermeasures and studies** related to behaviour, road infrastructure and vehicle (CMF approach).
- Already analysed approx. 500 studies, and many more in progress.
- Updated more than 20 existing meta-analyses, about 65 more in progress.
- The design of the DSS is finalized and the first static prototype of the DSS will be available by the end of June 2016.
- The DSS testing phase (with test tables) will be ready in August 2016.
- The DSS Pilot Operation will start on September 2016.
- The final opening of the DSS will start on September 2017 and will be constantly updating from April 2018 and onwards.

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