SafetyCube - the European Road Safety Decision Support System
www.roadsafety-dss.eu

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National Road Safety Policy development – trends and challenges

Tbilisi, 14 November 2018

The SafetyCube Project

Funded by the European Commission under the Horizon 2020 research framework programme.

- Coordinator: Pete Thomas, Loughborough University
- Start: May 2015
- Finish: April 2018
- 17 partners from 12 EU countries

- The SafetyCube DSS objective is to provide the European and Global road safety community a **user friendly, web-based, interactive Decision Support Tool** to properly substantiate their road safety decisions for the actions, measures, programmes, policies and strategies to be implemented at local, regional, national, European and international level.
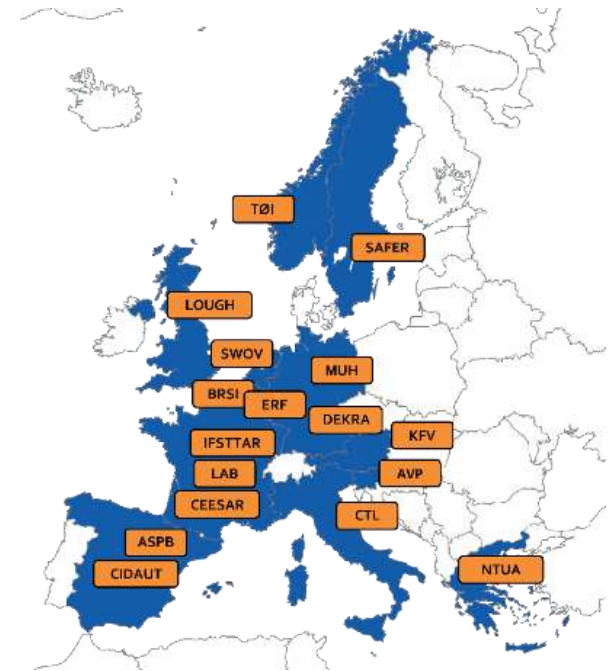
SafetyCube Methodology

1. Creating **taxonomies** of risk factors and measures
2. Exhaustive **literature review** and rigorous study selection criteria
3. Use of a template for **coding studies,** to be introduced in the DSS back-end database
4. Carrying out **meta-analyses** to estimate the effects of risk factors / measures.
5. Drafting **Synopses** summarising results of risk factors / measures.
6. Carrying out **cost-benefit analyses** for the most effective measures

- **Systems approach:** links between infrastructure, user and vehicle risks
- Rigorous assessment of the **quality of the data / study methods**

SafetyCube Taxonomies

Three-level taxonomies

Separately for risks and measures

- **4 Categories**
  road user, infrastructure,
  vehicle, post impact care

- **38 risks, 50 measures (88 in total)**
  e.g. distraction, roadside,
  crashworthiness

- **120 specific risks, 193 specific
  measures (313 in total)**
  e.g. mobile phone use, no clear-zone,
  low pedestrian rating (NCAP)

Selection and Coding of Studies

Study search in key databases

(Scopus, TRID, Elsevier, Taylor & Francis, Springer etc.)

Study selection and prioritization criteria

– Studies with quantitative results

– Meta-analyses, or other high quality studies
  (peer-reviewed)

– Recent studies

– European studies

Study selection and prioritization criteria

– Study design and methodology

– Results and their confidence intervals

– Study limitations

The Search Structure

- **Search**
  (5 entry points: Keyword, Risk factor, Measures, Road Users, Accident Categories)

- **Results pages**
  (Introduction, Colour codes, Synopses, Coded studies)

- Individual **Studies** pages
  (Disaggregate level, detailed effects listed, some studies not in synopses)

- **Links** between Risk Factors
  Information about which risks
  can be remedied by which types
  of measures

Keyword Search

Accident Categories Search

Measures Search

Risk Factors Search

Road User Groups Search

The Results Page

Related Risk Factors / Measures

Individual Synopsis

Individual Study Page

SafetyCube DSS Results Pages

Search results

- Synopses, and their short summaries & colour codes
- Table listing the available studies

Refine search

- Specific Risk factor / Measure
- Other **search filters:**
  - <u>Road user groups:</u> All, car occupants, drivers, passengers, PTW riders, pedestrians, cyclists, HGVs.
  - <u>Road types:</u> All, motorways, rural roads, urban roads
  - <u>Country:</u> EU, EU countries, US and Canada, Australia, Asia.

Links to related measures

- Select a specific risk factor / measure
- Get the list of related measures
- Linking based on a dedicated model categorizing risks
- A total of 762 links between risk factors and measures

SafetyCube Synopses

215 Syntheses on risk factors / measures

Summary (2 pages)

– Effect of risk factor / measure and ranking (colour code)

– Risk / safety effect mechanisms

– Risk / safety effects size, transferability of effects

Scientific overview (4-5 pages)

– Comparative analysis of available studies

– Analysis results:
Meta-analysis/Vote-count analysis/Qualitative analysis

Supporting document (3-10 pages)

– Literature search strategy and study selection criteria

– Detailed analyses

SafetyCube DSS Individual Study Pages

Title, author, source, abstract
- Link to URL for full-text download (depending on Institute permissions)

Study design info:
- Country
- Research Method, Design, Sample
- Exposure/Control group
- Risk/Outcome Group
- Modifying Conditions
- Potential limitations

Study results:
- Table **listing the detailed effects** reported in the study

SafetyCube DSS Calculator

- Combines information about the **effectiveness of a measure** (i.e. the percentage of crashes or casualties prevented) with the **costs** of this measure.

- Integrates updated information of **crash costs in the European countries**

- Allows to express all costs and benefits of a measure in monetary values and conduct **cost benefit analysis.**

Main Functions

- Perform cost-benefit analysis with **own input data**.

- Select one of the **SafetyCube examples** of cost benefit analyses
  – Measures with high effectiveness
  – For which reliable cost information could be found

SafetyCube DSS Knowledge Wealth

SafetyCube DSS contains**:**

- more than 1,250 **studies**,
- with more than 7,500 **estimates** of risks/measure effects on:
  - behaviour,
  - infrastructure,
  - vehicle, and
  - post impact care
- **215 Synopses**
- **37 cost-benefit analyses examples** (adjustable)
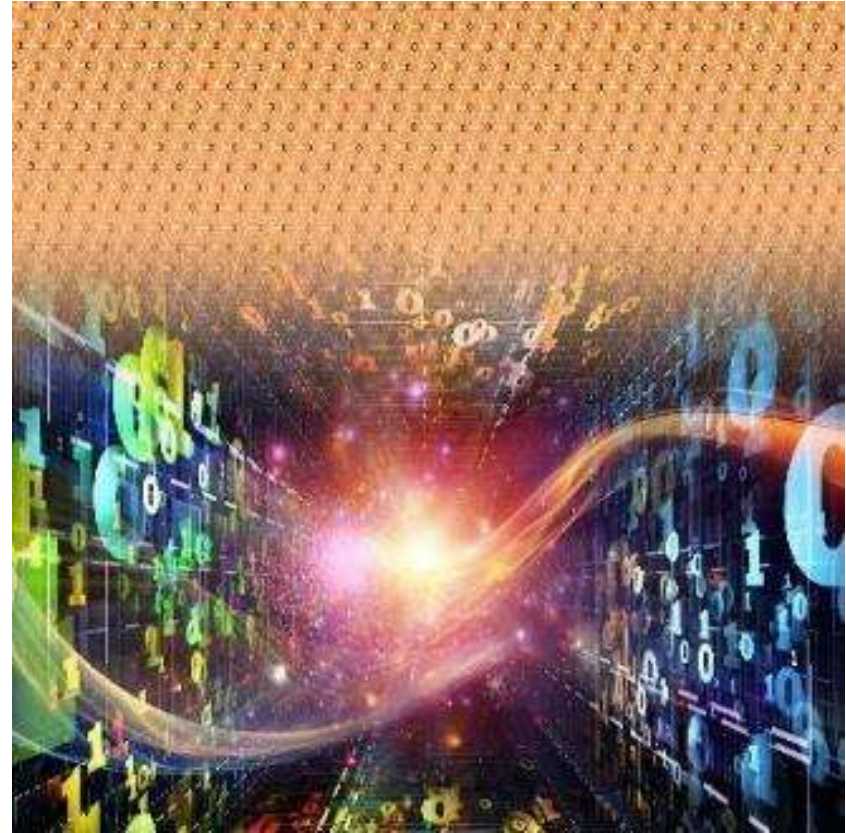
Delivering a long waited powerful tool

- SafetyCube DSS is the first integrated road safety support system **developed in Europe**
- SafetyCube DSS **offers for the first time** scientific evidence on:
  - risks and not only measures
  - risks and measures not only on infrastructure
  - a very large number of estimates of risks and measures effects
  - links between risks factors and measures
- SafetyCube DSS aims to be a **reference system** for road safety in Europe, constantly improved and enhanced

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