The safe system approach in evidence-based road safety policy making

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Summary:
SafetyCube has been developing a Decision Support System (DSS) to support European policy making at all levels. Here, the advantages of evidence-based policy making are discussed and the safe system and systems approach within SafetyCube are defined.

Evidence-based policy making
Evidence-based policy making enables policy makers to make justified decisions in the complex reality of road safety interventions. It refers to the use of objective, scientifically-based evidence in all stages of the policy making process. Two important pillars for evidence-based road safety policy making are:

- road safety data and statistics &
- scientific knowledge (Wegman et al, 2015).

The DSS that has been developed within SafetyCube aims to support decision makers as well as other stakeholders in their evidence-based policy making and covers the green phases in the road safety policy making cycle shown in Figure 1.

Evidence-based policy making is beneficial for a number of reasons:

- It is crucial for identifying relevant road safety problems, and selecting the most appropriate road safety interventions.
- It helps to ensure governments allocate an appropriate share of their total budget to road safety.
- It enables policy makers to justify expenditure on road safety policy interventions and provides them with convincing arguments in the face of sceptical and sometimes hostile lobbies.

The Safe System and Systems Approach

The Safe System (road safety area)
A broad philosophy or ideology

Aims to steer away from the more traditionally ‘human error’ blame focussed approach to road safety,

- Takes into account all ‘components’ in a system (i.e. road users, vehicles, roads) which contribute to a risk of an accident occurring.

No human being should be killed or seriously injured in a road crash (OECD/ITF, 2016)

Applies the systems theory in order to create a Safe System

Aims to strengthen all dimensions of road safety, including the organisational levels & manage them holistically

A comprehensive set of policy tools have the potential to be applied to all relevant components of the road system in order to improve road safety.

References:

SafetyCube Taxonomy

The structure consists of 3 levels, which are topic, subtopic and specific topic. Below, the figures 1 & 2 represent the hierarchical 3 level structure for human related risk factors and measures (1) and an Example for division of a main topic in two sublevels (2).

Some overlaps between risk factors in one taxonomy & risk factors in another (e.g. is poor vehicle maintenance a Vehicle or Road User-related risk factor?)

*14 main risk factor topics*
- Speed choice, influence driving by alcohol & drugs, risk taking, fatigue, distraction and inattention, functional impairment, insufficient skills, insufficient knowledge, emotions and stress, misjudgment and observation, traffic rule violation, personal factors, age, diseases and disorders

*5 main measures topics*
- Law and enforcement, education & voluntary training, driver training & licensing, fitness to drive assessment, awareness raising & campaigns.

*7 main risk factor topics*
- Crashworthiness, injury mechanism, protective equipment design, relevant factors in crash data, technical defects, vehicle design, visibility & conspicuity

*3 main measures topics*
- Crashworthiness, active safety, tertiary safety


Road User Behaviour

Infrastructure

Vehicles

Post Impact Care

Some overlaps where a topic could be a risk factor or a countermeasure

• 14 main risk factor topics
  • Exposure, Road type, Road surface, Road environment, Work zones, Alignment-Road segments, Cross-section - road segments, Traffic control - Road segments, Traffic control – Junctions, Alignment- Junctions.

• 11 main measures topics
  • Exposure, infrastructure safety management, Road type, Road surface, lighting, Work zones, Alignment-Road segments, Cross-section - road segments, Traffic control - Road segments, traffic control – Junctions, alignment- Junctions.

• 9 main measures topics
  • Ambulances & helicopters, extraction from vehicle, pre-hospital medical care, triage & allocation to trauma facilities, first aid training for drivers.
  • (based on the DaCoTa webtext on Post Impact Care, 2012)