Project

Behavioural adaptation, risk perception and vulnerable road users: Prediction of outcomes of Intelligent Transport Systems (ITS)

Funding: National (Norway)
Duration: Jan 2013 - Dec 2016
Status: Complete with results

Background & policy context:

Behavioural adaptation is the general ability that human beings possess and which has been of utmost importance for survival through evolution processes. When new technologies are introduced, it is not uncommon to observe less than expected safety improvements, a phenomenon frequently referred to as risk compensation.

Objectives:

The prime objective of the project is to improve the safety of vulnerable road users, i.e. pedestrians, cyclists and motorcyclists, and to study behaviour adaptation and risk compensation to Intelligent Transport Systems (ITS) aiming at increasing the safety of vulnerable road users.

Methodology:

The project will initially describe the State-of-Art of the outcomes of ITS, acknowledging the fact that some measures are ambiguous regarding their effectiveness in reducing the number of accidents where vulnerable road users are involved.

Some evaluations even indicate counter-intuitive results, i.e. that accidents may increase for some of the measures that have been implemented in the road system. The project will specifically address ITS, as one basic hypothesis is that systems utilizing lighting may activate the orienting reflex and then contribute to improved outcomes of ITS.

The project will collect empirical evidence from several angles and initially describe State-of-the-Art of Intelligent Transport Systems (ITS) by assessing their effects on accidents involving vulnerable road users. Three separate behaviour studies will focus on measures addressing pedestrians, risk perception and risk compensation among cyclists (field-experiment) and risk compensation among motorcyclists (field-experiment).

The project will evaluate and assess user needs based on Norwegian, German, English and Dutch accident data-bases. These analyses will focus on aspects that may reduce the intended outcomes and propose improvements of ITS if and when relevant. The project is proposed to contribute to theoretical development and better predictions of ITS by stating testable hypotheses.

Parent Programmes:
Transport 2025 (TRANSPORT)

Institute type: Public institution
Institute name: The Research Council of Norway
Funding type: Public (national/regional/local)

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Key Results:

The project resulted in following conclusions:

One consideration regarding driver support systems is whether a given system limits or hinders the driver in engaging in driver behaviours that are deliberate violations of traffic law.

ISA, Alcolock, maximum speed governor, seat belt lock and Smartcard/MyKey are clearly in the category of limiting the driver’s windows of opportunities. ACC and ESC are also appraised as limiting systems, but not necessarily of behaviour that violate traffic law and regulations.

The only systems that in this context should be regarded as potentially increasing drivers’ windows of opportunities are systems that warn the driver of falling asleep at the wheel. Such systems may increase the number of sleepy drivers in the road system and, hence, also increase the number of accidents if the systems fail to prevent drivers from falling asleep. Estimates of lives saved are for the most part based on in-depth investigation of fatal accidents that may have been prevented if respective systems had been activated.

All systems reducing the windows of opportunities, or limiting driver choices, are likely to be unpopular among drivers. Consequently, it is unlikely that car manufacturers will introduce such systems which may need legal support to be implemented. Decision-makers may, however, hesitate to introduce the necessary regulations if the devices are unpopular among drivers.

Documents:

STRIA Roadmaps:  Cooperative, connected and automated transport, Smart mobility and services
Transport mode:  Road transport
Transport sectors:  Passenger transport, Freight transport
Transport policies: Societal/Economic issues,
Decarbonisation
Geo-spatial type: Other