In-depth understanding of accident causation for vulnerable road users

InDev Consortium

Lunds Universitet
www.lu.se
Aalborg Universitet
www.aau.dk
Universiteit Hasselt
www.uhasselt.be
Polytechnique Montréal
www.polymtl.ca
Bundesanstalt für Straßenwesen
www.bast.de
Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek
www.tno.nl
Ingeniería de Tráfico SL
www.intrasl.net
Politechnika Warszawska
www.pw.edu.pl
Transportøkonomisk institutt
www.toi.no

InDev is financed within HORIZON 2020, the European Union Framework Programme for Research and Innovation.

InDev

Contact:
Aliaksei Laureshyn, Project Manager
aliaksei.laureshyn@tft.lth.se
Phone +46 46 2229131
http://www.tft.lth.se/english
www.indev-project.eu

In-depth understanding of accident causation for vulnerable road users
Objectives

The main InDeV objective is to contribute to the improvement of VRUs’ safety in Europe by developing an integrated methodology (compiled in a toolbox) for understanding accident causes for VRUs and a framework for a comprehensive assessment of socio-economic costs related to road-accidents involving VRUs.

A significant part of the project will be the development of technical tools to allow professionals, analysts and researchers to collect surrogate data using promising techniques that today are not evolved enough to be applied by them. The toolbox will enable analysis of traffic situations involving VRUs in a time and cost efficient way and help to provide a solid basis for developing preventive countermeasures and a better input for socio-economic cost calculations considering VRU accidents.

Overall approach and methodology

• Review of existing safety analysis tools
  The project will start with a critical review of quality and expediency of methods broadly applied in accident causation studies aiming to link accident causation factors and VRUs’ accident risk.

• Analysis of safety-critical factors
  Typical sites in the participating municipalities where most VRU accidents occur will be identified for subsequent field observations. The selected sites will be 3 weeks video recorded. Three sites with a very high VRU accident frequency will be video recorded during up to 1.5 years to collect enough data to validate surrogate safety indicators (traffic conflicts) against real accidents and to develop an automatic detection of safety critical events.

• Tools for automated data collection and analysis
  A system for risk factor determination for VRUs in a naturalistic cycling/walking study will be developed. This will be used for detecting accidents/conflicts that are not formally registered as traffic accidents, e.g. falling accidents with pedestrians in the winter. This system will be brought in a form of an APP for smart phones. The data can be used for identifying the locations with high single-accident risk (that might be quite different from car-to-VRU accidents), but also the most risky/vulnerable groups of VRUs, or other special conditions (lighting, atmospheric and road surface conditions) which imply a higher risk for VRUs.

• A good-practice framework to assess socio-economic costs of VRU accidents
  Accident cost calculation models used in different countries will be critically reviewed. A good practice framework for adjustment of existing cost calculation methods for peculiarities of the VRU accidents will be developed.

• Compiling hands-on documentation for road safety practitioners
  A hands-on manual for practitioners and analysts for using the automated surrogate safety indicator tool will be introduced. Besides, a hands-on manual for a naturalistic cycling/walking study tool will be developed. Finally, a handbook describing the toolbox for improved diagnosis of VRUs’ road safety problems will be created. The handbook is aimed at a wide target group of road safety practitioners (including local government, police departments, road designers) and will describe the different methods for VRU safety diagnosis and techniques to combine different types of data to overcome their individual limitations.

Expected outputs

• a unified methodology for using surrogate safety indicators with focus on VRU’s accident risk
• a mobile phone application for naturalistic cycling/walking studies
• an automated traffic conflict detection tool
• a framework for accident cost calculation methods for the assessment of socio-economic costs for vulnerable road users.