

Title: **Observing observation of road user behaviour: A scoping review into current practices in scientific literature**

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Author keywords: Behavioral Observation, Road User Behavior, Scoping Review, Traffic Safety

Observation of road user behavior has been reported since the 1930s already, but especially during recent years the number of (peer-reviewed) studies and reports is increasing rapidly. Several methodologies have been used to study road user behavior (e.g., direct observation, driving simulator research and microsimulation), but an overview of the current extent, range and nature of this type of research is lacking. Therefore, a scoping review was performed in order to identify how road user behavior observation studies have been conducted, which topics have been covered and which research gaps still exist in literature. The aim of this paper is to a) provide an overview of conducted road user behavior observation studies, b) assess their usefulness, c) prevent duplicate research efforts, d) identify which indicators have been applied and e) indicate which areas of road user behavior research needs further examination.

The review team, consisting of two members, carefully created and tested a search protocol to systematically retrieve relevant literature from three major databases (ScienceDirect, Web of Knowledge and TRID). The search term "Traffic Behavio*r" AND "Safety OR Observation" was utilized and yielded more than 21.000 results. After the removal of duplicates, the number of studies was further reduced to around 7500 papers (only including peer-reviewed journal articles were kept). After the first review round, in which the articles were screened for their relevance based on title and abstract, 698 papers remained. Studies were excluded if they were published in any other language than English, if it only contained stated behavior (e.g., questionnaires and focus groups) and if the data was collected in an obtrusive manner (e.g., naturalistic driving and driving simulator research). From the remaining records, around 15 papers were not retrievable and 89 papers were excluded because the content of the paper revealed it met one or more exclusion criteria. Based on subsamples of the 621 papers, a codebook was designed in order to extract relevant information from the included studies. Extracted information included research goals, data collection characteristics and behavioral indicators. The publication years ranged from 1949 till 2016 and the majority of the studies were carried out in the USA (38%), Canada (8%) and China (8%). The preliminary analysis revealed that road user behavior observation studies are used for four main goals: monitoring a traffic situation, test the effectiveness of a certain measure, calibrate and validate models (mostly used for microsimulation) or the calibration and validation of (semi-)automated video analysis tools.

At this moment, the data collection and analysis are still ongoing. Therefore, it is not yet possible to communicate results and conclusions.