

Bringing Structure into Road Safety Evaluation: A Hierarchy of Indicators

In recent years, there has been an explosion of interest in indicators in several domains. This reflects growing recognition of the important role indicators can play as a tool for enhancing the quality of decision making. Indicators express an aspect of a phenomenon in an understandable and relevant way and are useful in terms of monitoring, evaluation and communication. Like other policies, road safety policy could benefit from the use of indicators able to measure changes and progress towards postulated targets. Currently, the number of road fatalities or injury accidents per million inhabitants are often used indicators. Nevertheless, many more relevant road safety indicators exist. In order to increase the level of road safety, as many factors as possible influencing the frequency and severity of accidents should be considered. For example, key road safety risk factors (such as alcohol and drugs, speed, protective systems, vehicles, etc) should be represented by appropriate indicators as well.

To keep an overview on the structure and interrelationships between all indicators a framework should be elaborated on. In this paper, a hierarchical road safety indicator framework is presented. In the first layer, general categories of road safety indicators are distinguished such as outcome indicators, risk indicators, etc. Next, each category (e.g. risk) is divided into different aspects (e.g., speeding). At the subsequent level of the hierarchy, various specific (e.g. speed) indicators are formulated (e.g., the average speed per road type; the share of drivers violating the legal speed limit; etc). By making use of a layered hierarchy the structure within the extensive set of road safety indicators can be overseen.

Furthermore, the combination of various indicators into an aggregated index has advantages in terms of communication and benchmarking. The hierarchy of indicators enables a stepwise combination in which first the most specific (e.g. speed) indicators are combined in a (speed) index. Together with other (e.g. alcohol and drugs) indexes an overall risk index can be composed, which can be grouped with other indexes (e.g. the outcome index) in the end. That way, it is possible to evaluate the road safety performance of countries on the overall road safety index level, the risk index level, the speed index level or the level of an individual indicator (depending on the context).