BASELINE PROJECT:
A Common Methodology for the Collection of Key Performance Indicators for Road Safety in the EU

Transport community
8th Technical Committee on Road Safety
Online meeting, October 6th 2021

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(*) W. Van den Berghe & E. Boudry, A Common Methodology for the Collection of KPIs for Road Safety in the EU - Paper presented at ICTR 2021
Introduction

➢ Road crashes are one of the leading causes of death worldwide
➢ Compared to the global situation, Europe is showing a relatively better performance, with 42 road fatalities per million population in 2020
➢ The EC has put forward a new approach to EU road safety policy for the decade 2021-2030, highlighting also the need of establishing a range of road safety KPIs at European level, cf. https://ec.europa.eu/transport/sites/default/files/legislation/swd20190283-roadsafety-vision-zero.pdf: EU Road Safety Policy Framework 2021-2030 - Next steps towards "Vision Zero"
➢ KPIs are directly related to the prevention of road accident fatalities and serious injuries
➢ Baseline project aims to:
  ➢ assist authorities of EU Member States in the collection and harmonized reporting of KPIs for road safety and
  ➢ contribute to building the capacity of those MS that have not yet collected the relevant data
## EU Key Performance Indicators

<table>
<thead>
<tr>
<th>KPI area</th>
<th>KPI definition (European Commission 2019)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>Percentage of vehicles travelling within the speed limit</td>
</tr>
<tr>
<td>Safety belt</td>
<td>Percentage of vehicle occupants using the safety belt or child restraint system correctly</td>
</tr>
<tr>
<td>Protective equipment</td>
<td>Percentage of riders of PTWs and bicycles wearing a protective helmet</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Percentage of drivers driving within the legal limit for blood alcohol content (BAC)</td>
</tr>
<tr>
<td>Distraction</td>
<td>Percentage of drivers not using a handheld mobile device</td>
</tr>
<tr>
<td>Vehicle Safety</td>
<td>Percentage of passenger cars with a Euro NCAP safety rating equal or above a threshold</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Percentage of distance driven over roads with a rating above an agreed threshold</td>
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<tr>
<td>Post-crash care</td>
<td>Time elapsed between the emergency call following a collision resulting in personal injury and the arrival at the scene of the collision of the emergency services</td>
</tr>
</tbody>
</table>

➢ Measurements for most KPIs will take place in autumn 2021 and spring 2022

➢ KPIs for EU Member States are expected to be published by autumn 2022

➢ Ref. SWD 283
Objectives and Methodology

➢ Task 1: Define common methodological framework for collecting data for the estimation of comparable KPIs at EU level

➢ A survey among the MS was conducted on existing data collection methods and their needs for methodological support

➢ International guidelines and methodologies available in the literature were analysed

➢ For the development of the methodological guidelines a KPI Expert Groups (KEG) and a Technical Committee were established

➢ For each KPI methodological guidelines are published: translating SWD 283 specifications into operational definitions + defining minimum requirements needed to assure comparability and reliability

Available at: https://baseline.vias.be/en/
## Participating countries and organisations

<table>
<thead>
<tr>
<th>Member State</th>
<th>Applicant organisation</th>
<th>Implementing Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>Vias institute</td>
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<tr>
<td>Austria</td>
<td>Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology</td>
<td>Kuratorium für Verkehrssicherheit (KfV)</td>
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<tr>
<td>Bulgaria</td>
<td>Bulgarian State Agency for Road Safety</td>
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<tr>
<td>Cyprus</td>
<td>Ministry of Transport Communications and Works</td>
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<tr>
<td>Czech Republic</td>
<td>Ministry of Transport</td>
<td>Transport Research Center (CDV)</td>
</tr>
<tr>
<td>Finland</td>
<td>Finnish Transport and Communications Agency Traficom</td>
<td>VTT Technical Research Centre of Finland</td>
</tr>
<tr>
<td>Germany</td>
<td>Federal Highway Research Institute (BASt)</td>
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<tr>
<td>Greece</td>
<td>Directorate of Road Traffic &amp; Safety in the Ministry of Infrastructure &amp; Transport</td>
<td>National Technical University of Athens (NTUA)</td>
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<tr>
<td>Ireland</td>
<td>Road Safety Authority (RSA)</td>
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<tr>
<td>Latvia</td>
<td>Ministry of Transport</td>
<td></td>
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<tr>
<td>Lithuania</td>
<td>Public Enterprise Transport Competence Agency (TKA)</td>
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<tr>
<td>Luxembourg</td>
<td>Ministry of Mobility and public works</td>
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<tr>
<td>Malta</td>
<td>Transport Malta</td>
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<tr>
<td>Netherlands</td>
<td>Ministry of Infrastructure and Water Management</td>
<td>Stichting Wetenschappelijk Onderzoek Verkeersveiligheid (SWOV)</td>
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<tr>
<td>Poland</td>
<td>Motor Transport Institute (MTI)</td>
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<tr>
<td>Portugal</td>
<td>Portuguese Road Safety Authority (ANSR)</td>
<td>National Laboratory for Civil Engineering (LNEC), PRP, IMT, IP, INEM</td>
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<tr>
<td>Slovakia</td>
<td>Ministry of Transport and Construction</td>
<td></td>
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<tr>
<td>Spain</td>
<td>Directorate-General for Traffic (DGT)</td>
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<tr>
<td>Sweden</td>
<td>Sweden Transport Administration (Trafikverket)</td>
<td></td>
</tr>
</tbody>
</table>
Project organisation

**Baseline project organisation**

**ORGANISATION**

- European Commission
- General Assembly of Member States
- Project Manager (PM)
- Project Coordination Team
- Technical Committee (TC)
- KEG 1
- KEG 2
- KEG 3
- KEG 4
- KEG 5
- KEG 6
- KEG 7
- KEG 8

**METHODOLOGY**

- Project team country 1
- Project team country 2
- Project team country ...
- Project team country N
Example 1: Speeding

- **Data collection means**: inductive loop detectors, radar sensors, video-based software tools, manual observation by measuring devices

- **Minimum requirements**:
  - free flowing traffic
  - driving under normal conditions (e.g. no adverse weather)
  - random selection of observation locations; a representative sample for the national road network
  - measurements on late spring and early autumn

- **Temporal variations** (weekdays/weekends) and comparisons between day and night are recommended

- The **national KPIs** will be estimated separately by:
  - Vehicle type (personal cars)
  - Road type (motorways, rural roads, urban roads)
  - Time period (daytime on weekdays)
Example 2: DUI alcohol

➢ Three types of data collection:
  ➢ Random breath testing
  ➢ Breath testing results from enforcement actions (even if not random)
  ➢ Self-reported behaviour through anonymous surveys

➢ Random testing is preferred, however it is not allowed in some EU Member States

➢ During a roadside survey, drivers are sampled randomly; the selection is irrespective of possible suspicion for DUI

➢ Separate results are required for night hours and day time hours as well as for weekdays and weekend days

➢ Driver’s age and gender as well as trip characteristics can optionally be observed

➢ The national KPIs will be estimated by:
  ➢ Road type (motorways, rural roads, urban roads)
  ➢ Time period (night/day x week/weekend)
Example 3: Distraction

➢ Data collection means: observational roadside surveys by trained observers

➢ The minimum target groups are passenger car drivers; optionally drivers of light goods vehicles and buses/coaches

➢ The selection of locations should be as random as possible, covering the geographical area of the country

➢ Additional driver characteristics are also suggested to be collected, i.e. driver gender and age category

➢ Observation sessions should be planned at mixed time intervals during daylight hours of normal working days

➢ The national KPIs will be estimated by:
  ➢ Road type (motorways, rural roads, urban roads)
Methodological guidelines: key elements

- Measurement tools
  - General principles and technical specifications
  - Vehicle types
  - Parameters of interest

- Sampling
  - Overall sample sizes
  - Required strata & sample size per stratum
  - Selection and number of locations

- Field work specifications

- Data delivery
  - Datafile guidelines
Methodological guidelines: minimum requirements

- Example taken from guidelines on distraction
- Cf. column "minimum requirements"

<table>
<thead>
<tr>
<th>SWD minimum requirements</th>
<th>Baseline minimum requirements for on-road observation study</th>
<th>Baseline recommended options for on-road observation study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KPI: % not using a handheld mobile device</strong></td>
<td>- % no device in the hand + CI aggregated&lt;br&gt;- % no device in the hand + CI per road type (3)</td>
<td>- Boost sample size for more accurate estimates and further (crossed) stratifications&lt;br&gt;- Geographical coverage&lt;br&gt;- Complete disaggregated data (crossed strata)&lt;br&gt;- Different types of distraction&lt;br&gt;- Driver characteristics&lt;br&gt;- Exclusion of locations with &lt;10 vehicles/hour is allowed</td>
</tr>
<tr>
<td>- Method: observation&lt;br&gt;- Road type: rural, urban, motorway&lt;br&gt;- Vehicle type: min. cars, light goods vehicles and buses/coaches&lt;br&gt;- Locations: random&lt;br&gt;- Time: day</td>
<td>- Direct observation by well-trained observers along the road or from moving vehicles&lt;br&gt;- Locations: good view, safe, inconspicuous&lt;br&gt;- Min. sample size: 2,000 observations for the 3 vehicle types together (it is allowed not to report disaggregate data for the three included vehicle types)&lt;br&gt;- Min. 500 observations/road type (3)&lt;br&gt;- Min. 10 different locations/road type&lt;br&gt;- 1 location = min. 1 observation session of min. 30 minutes&lt;br&gt;- Fieldwork organisation: mix of daytime hours: on and off peak on week days, balanced over road types/locations&lt;br&gt;- Not during holidays or heavy winter period&lt;br&gt;- Exclude observations of stopped vehicles, include all other&lt;br&gt;- Traffic counts during sessions (10 min) for weighing data + estimates of road network length (3 types)</td>
<td>- Time period stratification: week day peak, week day off-peak, weekend day (min. 10 locations per time period; min. 2 locations per time period x road type; min. 500 observations/time period)&lt;br&gt;- Region stratification (e.g. NUTS1; min. sample size separately)&lt;br&gt;- Vehicle type stratification (min. sample size separately)&lt;br&gt;- Use available traffic volume data to sample locations and to weigh data according to included stratifications</td>
</tr>
</tbody>
</table>
Methodological guidelines – KPI Speeding

version 3, April 2020

Methodological guidelines

The methodological guidelines for all KPIs are designed to ensure international comparability between KPI values while taking into account feasibility and affordability for the Member States. To that end, the methodological guidelines have been defined in such a way that accurate and representative results can be obtained for all parameters of interest defined in the Commission staff working document “SWD 283”. The guidelines include clear specifications of the minimum requirements, which already include some compromises with respect to the initial specifications of the Commission. The methodological guidelines also include guidelines for the minimum sample size and the number of observations.
Discussion

➢ The common methodological framework will allow the collection of representative and comparable KPIs among the EU countries.

➢ This will constitute the basis for setting targets for the KPIs and monitoring and evaluating progress in road safety at national and EU level over the decade 2021-2030.

➢ Systematic collection of KPIs in the future will contribute to a better evaluation of the road safety performance and progress made over time.

➢ KPI data in higher detail should be collected at EU level, so that more critical and hidden road safety properties are revealed and more appropriate solutions are identified.
Thank you for your attention!

Further info at: BASELINE@vias.be