



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

KPI area	KPI definition (European Commission 2019)
Speed	Percentage of vehicles travelling within the speed limit
Safety belt	Percentage of vehicle occupants using the safety belt or child restraint system correctly
Protective equipment	Percentage of riders of PTWs and bicycles wearing a protective helmet
Alcohol	Percentage of drivers driving within the legal limit for blood alcohol content (BAC)
Distraction	Percentage of drivers not using a handheld mobile device
Vehicle Safety	Percentage of passenger cars with a Euro NCAP safety rating equal or above a threshold
Infrastructure	Percentage of distance driven over roads with a rating above an agreed threshold
Post-crash care	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

- 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



Participating countries and organisations

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

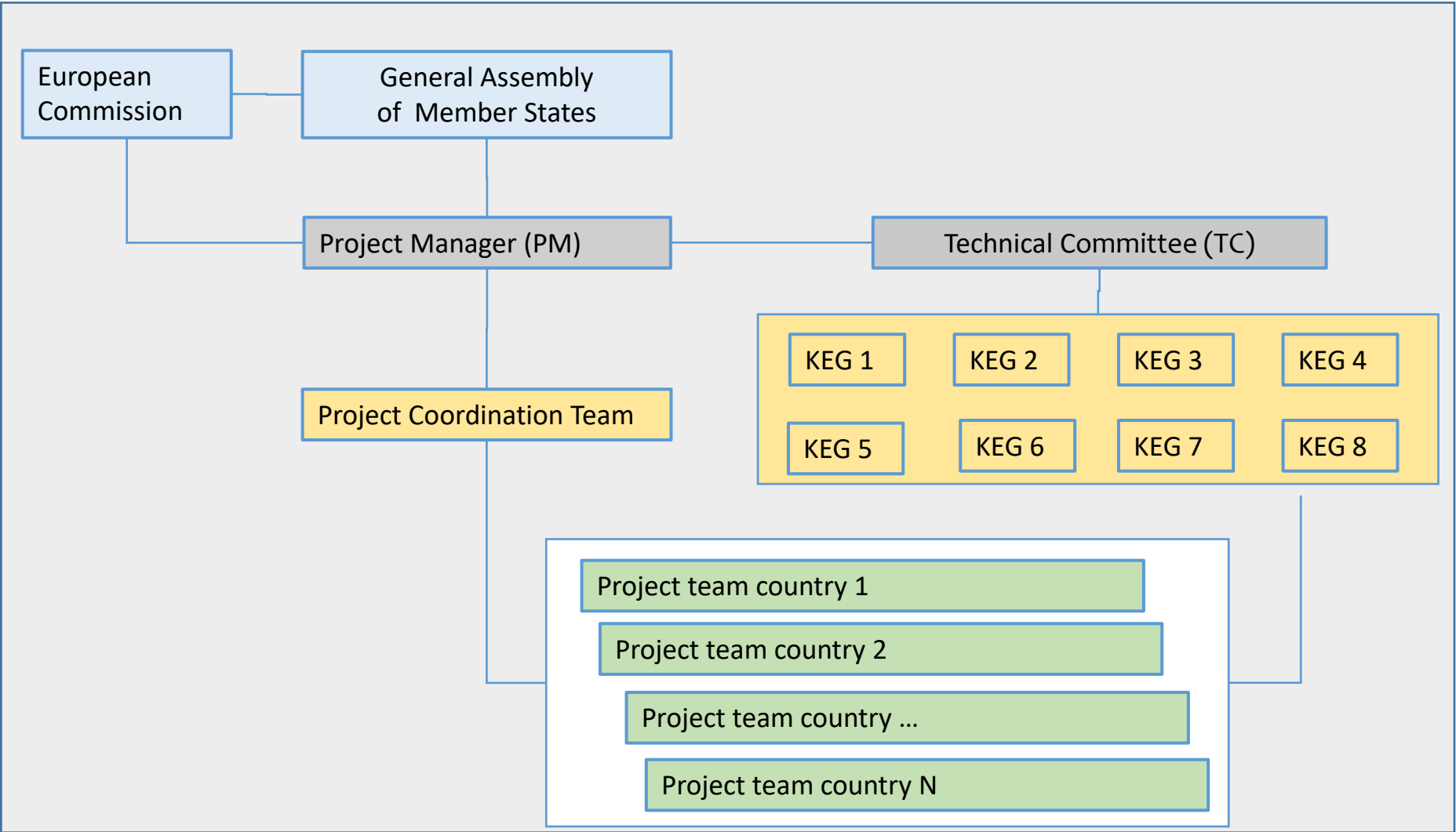
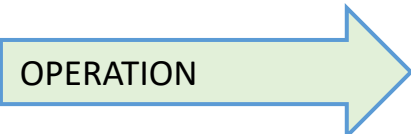
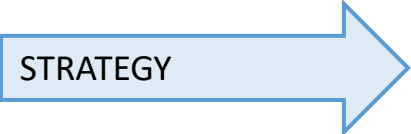
Project organisation

Baseline project organisation



ORGANISATION

METHODOLOGY



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

2	Scope
2.1	General principles.....
2.2	Type of distraction to be observed
2.3	Vehicle types to be included.....
2.4	Driver characteristics (optional).....
3	Measurement procedure
3.1	Sampling individuals.....
3.2	Minimum total sample size
3.3	Sample size per road type
3.4	Sampling and selection of locations.....
3.5	Optional further stratifications
3.5.1	<i>Stratification by time period</i>
3.5.2	<i>Stratification by region</i>
3.6	Practical organisation of the observations
3.6.1	<i>Fieldwork set-up and procedure</i>
3.6.2	<i>Observations at urban and rural roads</i> ...
3.6.3	<i>Observations on motorways</i>
3.6.4	<i>Counting of traffic</i>
3.6.5	<i>Time of the year</i>

Methodological guidelines: minimum requirements

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

SWD minimum requirements	Baseline minimum requirements for on-road observation study	Baseline recommended options for on-road observation study
<p>KPI: % not using a handheld mobile device</p> <ul style="list-style-type: none"> - Method: observation - Road type: rural, urban, motorway - Vehicle type: min. cars, light goods vehicles and buses/coaches - Locations: random - Time: day 	<ul style="list-style-type: none"> - % no device in the hand + CI aggregated - % no device in the hand + CI per road type (3) - Direct observation by well-trained observers along the road or from moving vehicles - Locations: good view, safe, inconspicuous - 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) - Min. 500 observations/road type (3) - Min. 10 different locations/road type - 1 location = min. 1 observation session of min. 30 minutes - Fieldwork organisation: mix of daytime hours: on and off peak on week days, balanced over road types/locations - Not during holidays or heavy winter period - Exclude observations of stopped vehicles, include all other - Traffic counts during sessions (10 min) for weighing data + estimates of road network length (3 types) 	<ul style="list-style-type: none"> - Boost sample size for more accurate estimates and further (crossed) stratifications - Geographical coverage - Complete disaggregated data (crossed strata) - Different types of distraction - Driver characteristics - Exclusion of locations with <10 vehicles/hour is allowed - 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) - Region stratification (e.g. NUTS1; min. sample size separately) - Vehicle type stratification (min. sample size separately) - Use available traffic volume data to sample locations and to weigh data according to included stratifications

Resources



Methodological guidelines – KPI Speeding

Version 3.1, April 27, 2021



Belgium | Austria | Bulgaria | Cyprus | Czech Republic | Finland | Germany | Greece | Ireland | Latvia | Lithuania | Luxembourg | Malta | Netherlands | PolandPortugal | Slovakia | Spain | Sweden

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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