Monitoring Distracted Driving in Europe: from Baseline to Trendline

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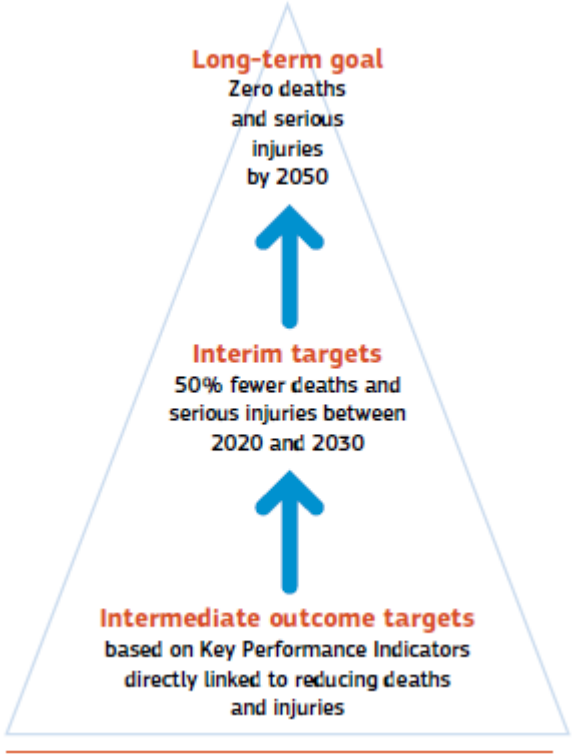
Introduction

- **EU Road Safety Policy Framework 2021-2030 - Next steps towards "Vision Zero"** (EC SWD 283, 2019)
  - 8 "new" Key Performance Indicators (KPIs) besides number of deaths and seriously injured
  - Collection of KPIs on a regular base supports road safety policies and interventions
  - to reach the European road safety targets by 2030 and 2050
- **Baseline project** (MOVE/C2/SUB/2019-558)**: 18 European countries + associated observers**
  - Collecting and reporting KPIs in a harmonized way
  - Capacity building for countries not yet collecting data

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



https://road-safety.transport.ec.europa.eu/document/download/03f1a1ef-56e6-4360-8ddb-02570e5e78ae_en?filename=1_en_document_travail_service_part1_v2.pdf

European KPI Distraction

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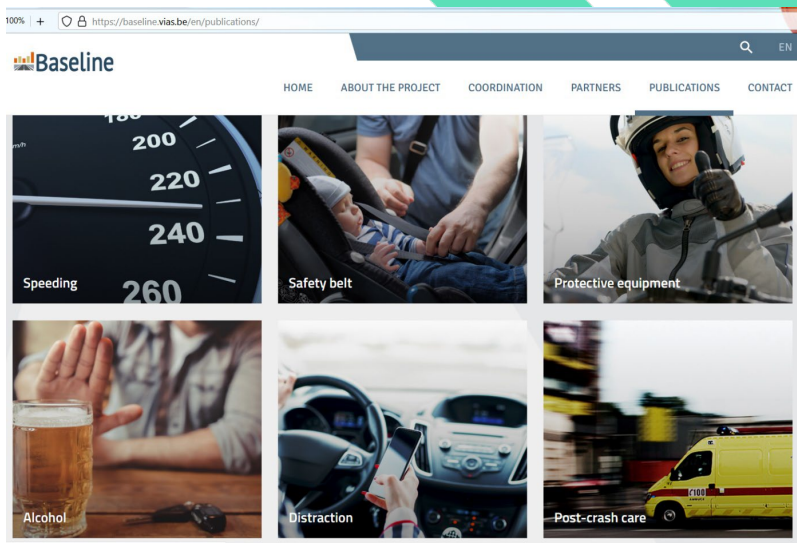
"Driver distraction is considered as a collision factor of growing importance due to the increased use of mobile devices (mainly smartphones) during the past years, and the widespread use of texting applications has aggravated the existing problem of phone calls." (EC SWD, 2019)

VIAS institute

Common methodological framework

- **Key definitions and operational specifications** determined in EC SWD 283
- Differentiation between **"behavioural KPI" and "technical" KPIs** (vehicle, infrastructure, post-crash):
  - Behavioural => sampling, direct observation
  - Non-behavioural => complete databases, exploitation of existing databases
- Detailed **methodological guidelines** for each KPI:
  - Key concept: percentage respecting rules => refers to total of kilometers driven
  - Key aspects: sampling methods and size, measurement tools, definitions
  - Minimum vs recommended requirements
  - Balancing exercise: feasibility / reliability-exploitability
- **Quality assurance** procedures:
  - Considerations for sampling weights
  - Common database format (including confidence intervals and meta-data)
  - Quality control procedures
- Data collection: Jan 2020 -> Oct 2022
- Publication: March 2023



Available at: https://baseline.vias.be

KPI Distraction: minimum requirements

- **Direct observation** of drivers
  - Trained observers
  - Camera/pictures
- **Random location sample**
  - **Urban roads, rural roads, motorways**
  - Min. 10 different locations per road type
- **Passenger cars, light good vehicles and busses**
- **Random driver selection** (if not all)
  - Min. 2.000 in total, min. 500 per road type
- **Weekday daytime** *(optional: weekend daytime)*
- **Flowing traffic** (no stopped drivers)
- **Not** during **holiday or heavy winter** period
- **Min. KPIs (95% CI)** for 3 vehicle types together
  - National aggregate (all road types)
  - by road type
  - *(optional: by vehicle type, age, sex, week period and all crossed KPIs)*

SWD minimum requirements	Baseline minimum requirements for on-road observation study	Baseline recommended options for on-road observation study
KPI: % not using a handheld mobile device - Method: observation - Road type: rural, urban, motorway - Vehicle type: min. cars, light goods vehicles and buses/coaches - Locations: random - Time: day	- % 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)	- 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

Methodological guidelines – KPI Distraction

Version 3.0, April 27, 2021

Baseline

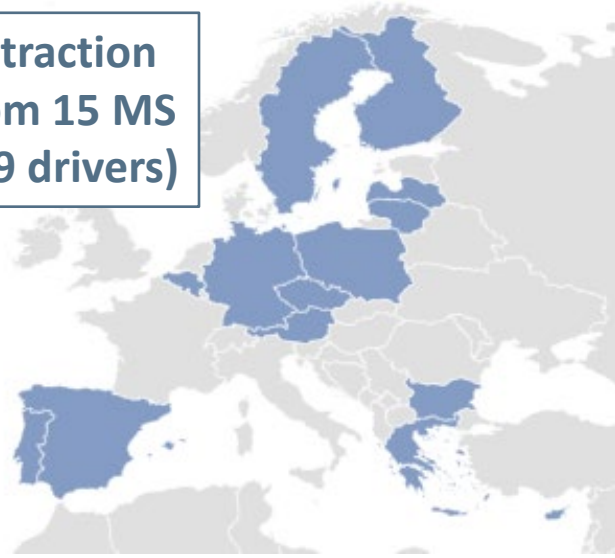
RESULTS

VAS institute

Compliance with methodological guidelines

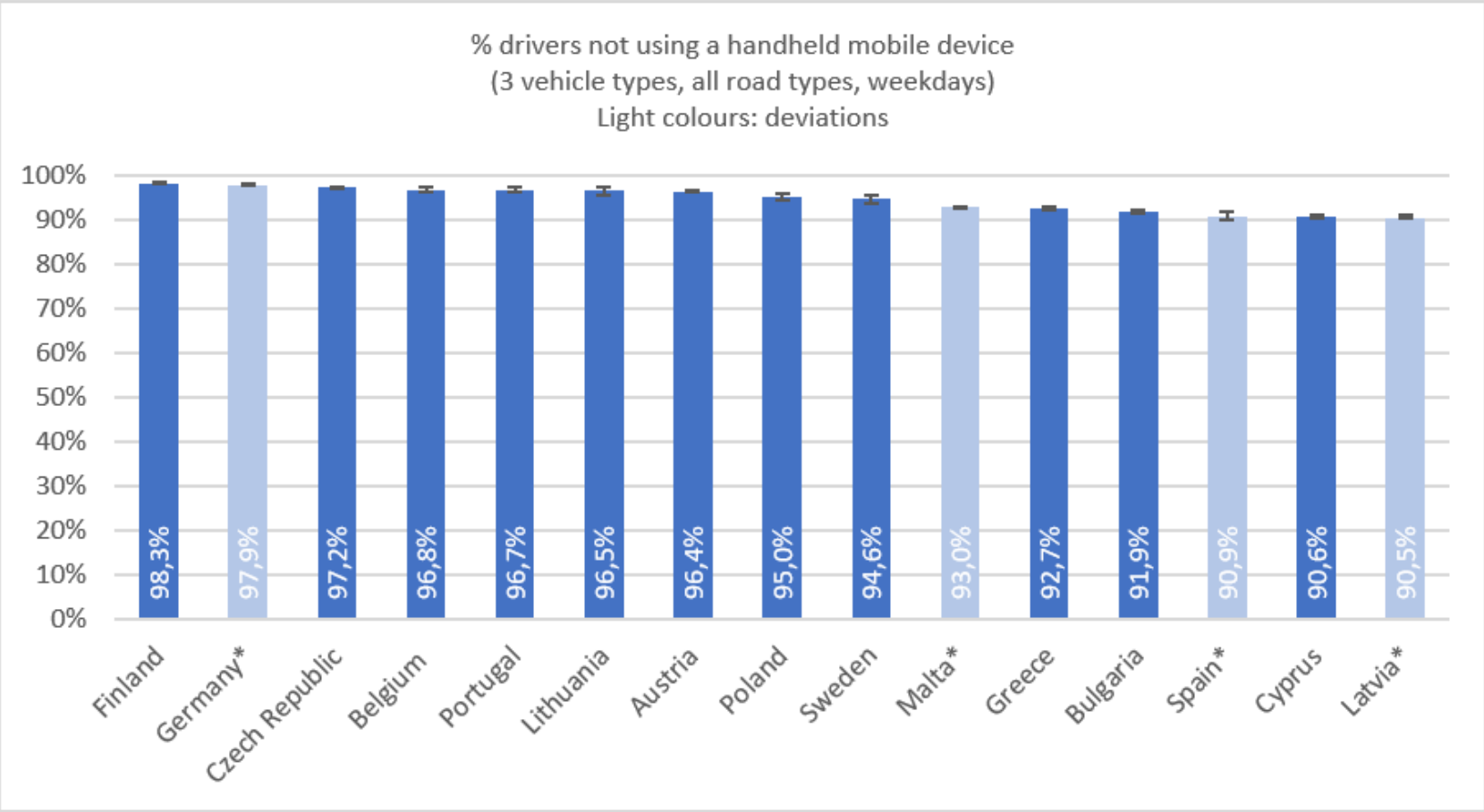
- **KPI definition: % drivers not using a handheld mobile device**
  - mobile 'phone' instead of mobile electronic screen device, cf. national legislation (3 MS)
  - 'use of a mobile or on-board device' (1 MS)
- **13 MS: trained observers - 2 MS: camera observation** ☑
- **Min. location and driver samples** ☑
- **Stratified random** location sample ☑
- **Flowing** traffic ☑
- **Delivered KPIs**
  - National aggregate (3 vehicle types, all road types, weekday) (2 MS not)
  - By road type (2 MS no motorways in network) ☑
  - *Optional: week + weekend (8 MS), per vehicle type (9 MS)*
- Variety in **data weighting** procedures (national traffic volume data (6 MS); not available for the other MS)

KPI Distraction data from 15 MS (437.579 drivers)



Some deviations and differences with impact on international comparability

Overall national KPI Distraction



*Malta, Latvia: no motorways in road network. *Latvia: week + weekend days. *Germany: only passenger cars. * Spain: broader KPI: % having in the hand or operating with the hand a mobile phone or other electronic devices, whether mobile or on-board. * Spain: 4 road types with expressways. *Austria, Greece, Cyprus: % not using a handheld mobile 'phone'. *Finland, Lithuania: based on analysis of camera images; other MS: based on roadside observations by trained observers.

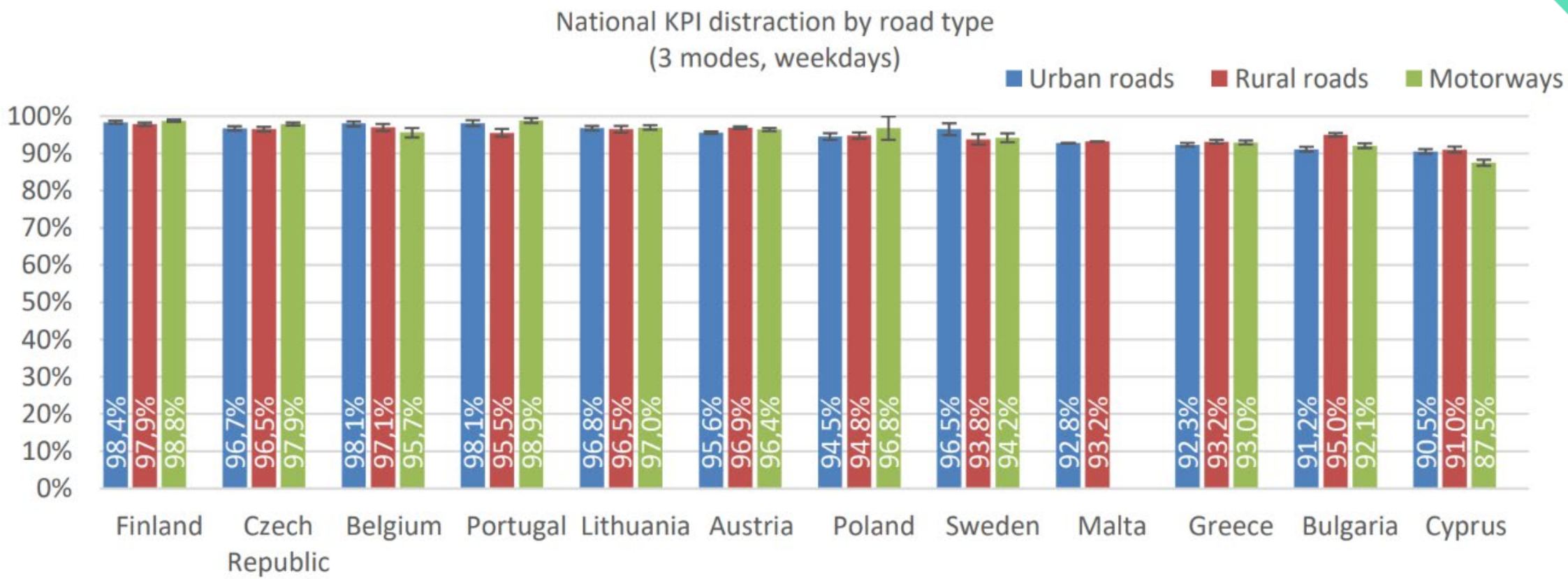
Estimated national mean % of drivers 'not' using a handheld mobile screen device is above 90% in all EU MS

Range: 90.6% (CY) - 98.3% (FI)

This refers to the point prevalence estimate of the behaviour = observed behaviour at specific points in space and time

<-> period prevalence (e.g. % drivers reporting to have done this in the last 30 days; generally higher %)

KPI Distraction by road type



Urban: 90.5% CY - 98.4% FI

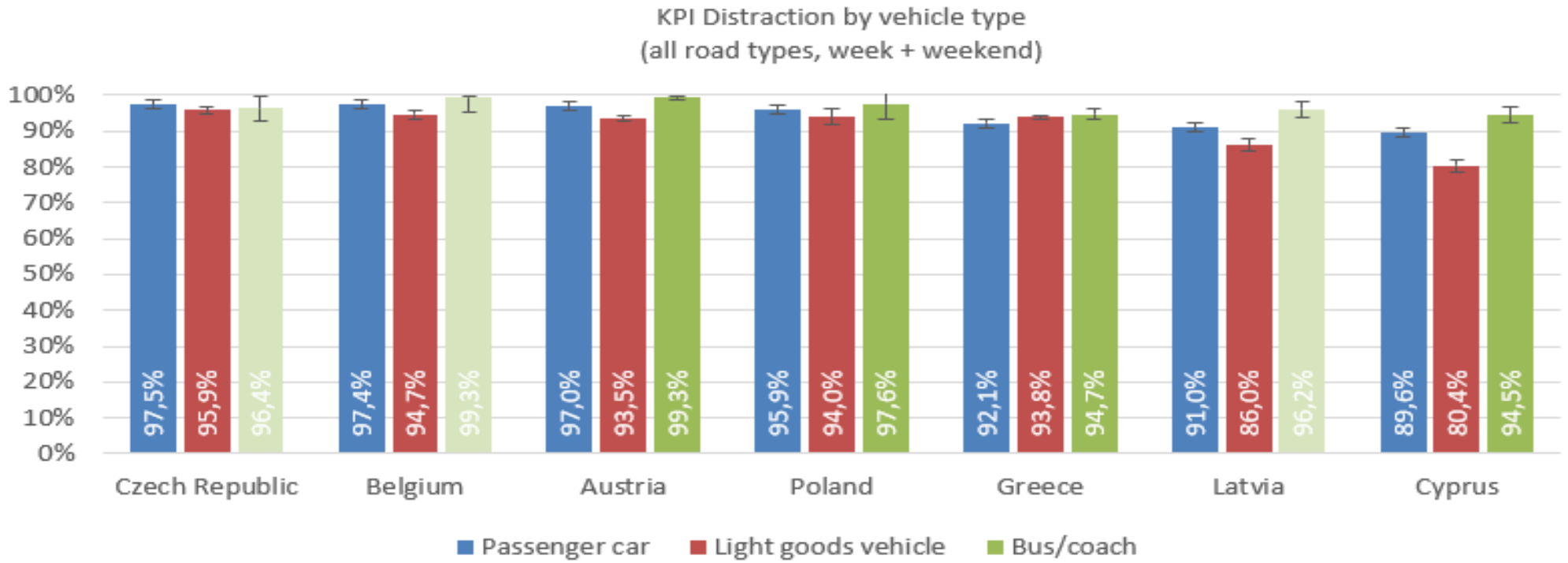
Rural: 91.0% CY - 97.9% FI

Motorway: 87.5% CY - 98.9% PT

National differences

No general pattern

KPI Distraction by vehicle type



*Latvia= no motorways. *Germany: only passenger cars. *Austria, Greece, Cyprus: % not using a handheld mobile phone. *Light coloured: deviating method (sample size).

Cars: 89.6% (CY) - 97.5% (CZ)

LGV: 80.4% (CY) - 95.9% (CZ)

*Bus (4): 94.5% (CY) - 99.3% (AT)

General pattern:

LGV drivers use a handheld mobile screen device while driving more often than car drivers (7 of 8 MS)

Bus drivers do this the least (all MS)

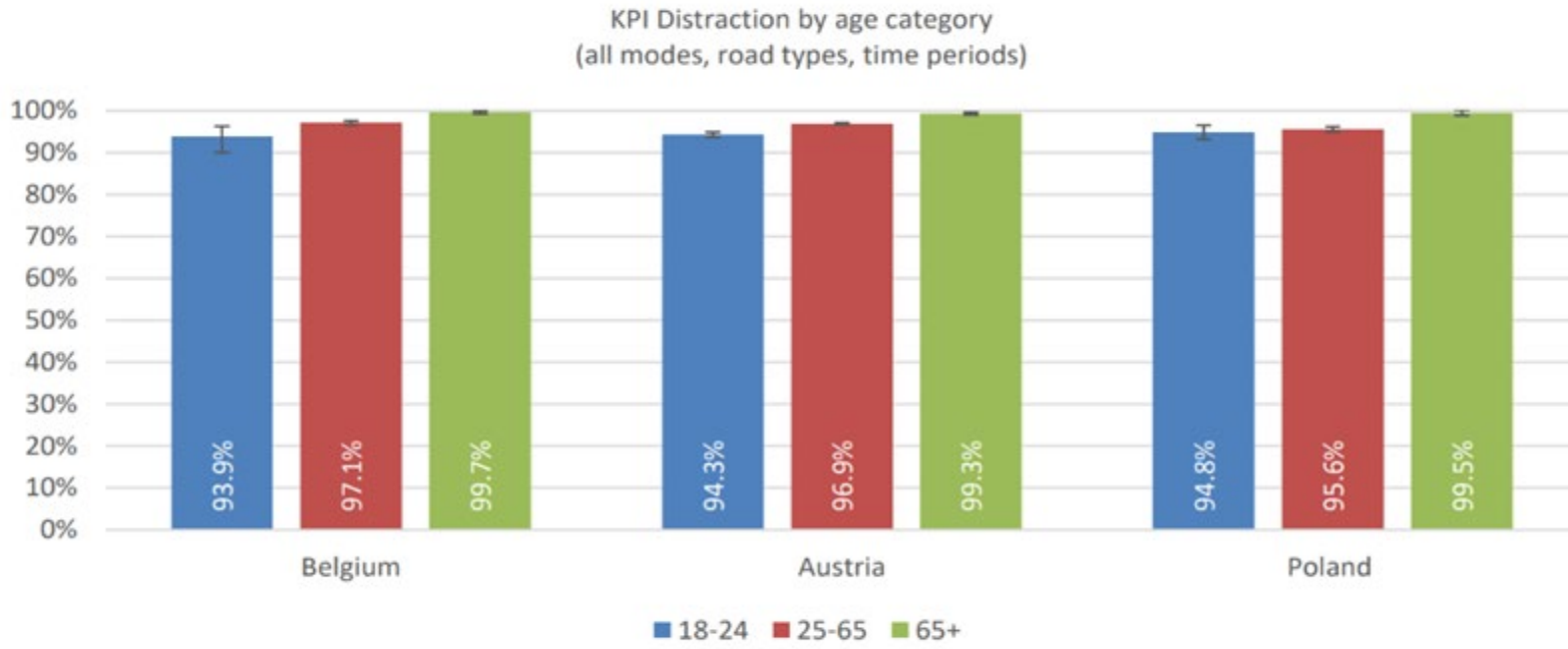
* Bus sample often too small sample

KPIs by age and sex

KPIs by observed driver age

18-24	93.9% (BE) - 94.8% (PL)
25-65	95.6% (PL) - 97.1% (BE)
65+	99.3% (AT) - 99.7% (BE)

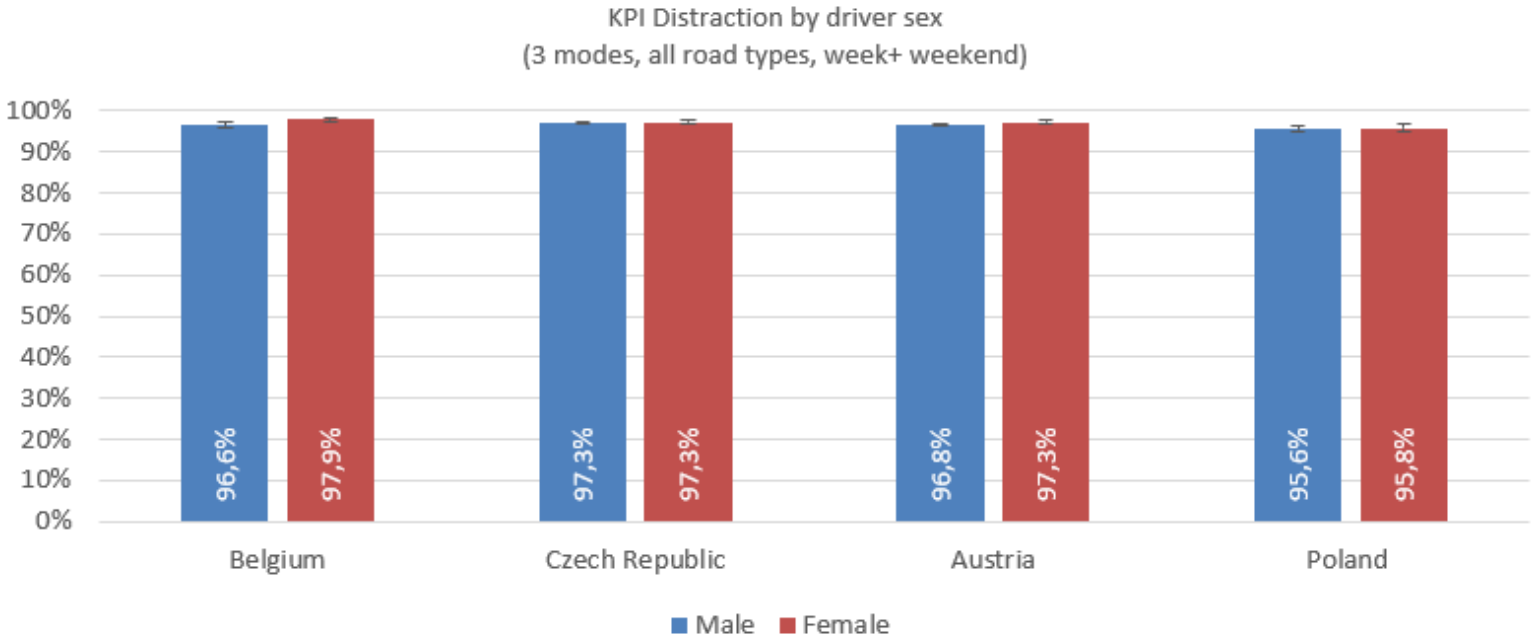
KPI values increase with higher age
65+ drivers use a handheld mobile screen device less often



KPIs by observed driver sex

Male	95.6% (PL) - 97.3% (CZ)
Female	98.8% (PL) - 97.9% (BE)

No general pattern
KPI values females > males (2) or similar (2)



Conclusions KPI Distraction

Methodology

- Both methods (observer, camera) are feasible (pros and cons)
- Requirements are generally feasible
  - Majority provided valid minimum KPIs
  - Differences and deviations from some MS impact international comparability

KPIs

- All mean national KPI estimates above 90% but differences according to specific variables, mainly:
  - Vehicle types: LGV < Cars < Bus
  - Age: 18-24 < 25-64 < 65+
- National differences: by road type, week period, sex

Main recommendations

- Bus sample generally very small ➔ replace by heavy goods vehicles
- Uniformity in data weighting - based on national exposure data to optimize KPI interpretation and comparability
- Boost sample size to have KPIs per vehicle type

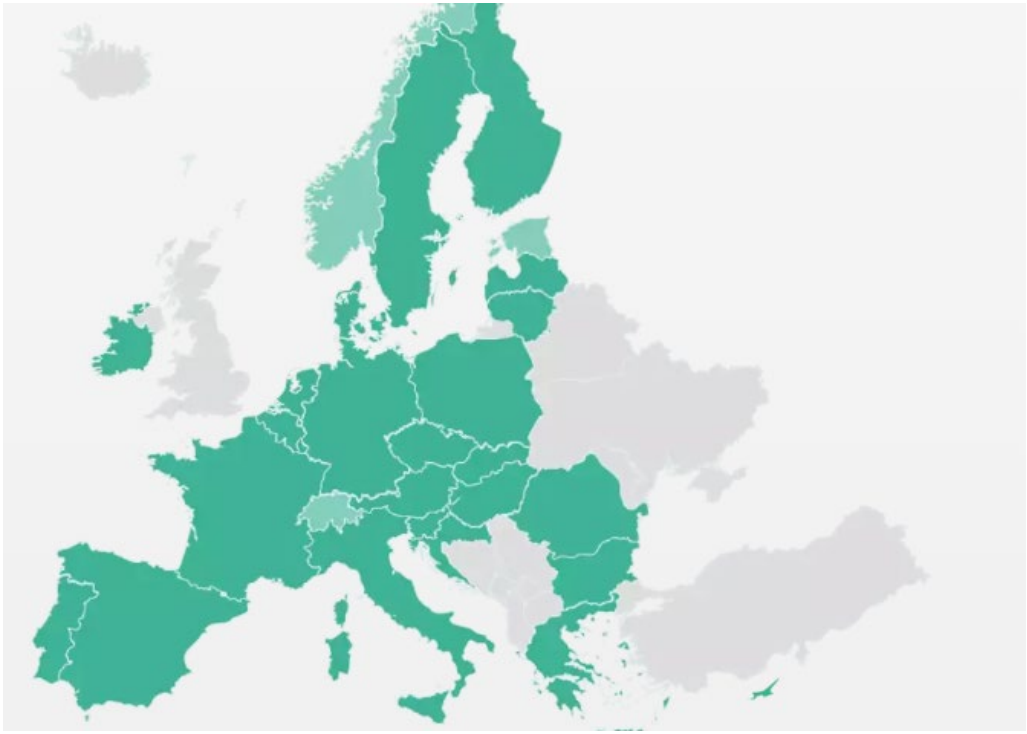
Trendline project

Follow-up project, builds on the experience gained in Baseline

25 EU countries

4 Observers: Estonia, Malta, Norway and Switzerland

Duration: Oct 2022-Oct 2025



https://trendlineproject.eu/

Co-funded by the European Union

KPI Distraction in Trendline

Country
Austria
Belgium
Bulgaria
Croatia
Czech Republic
Denmark
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Luxembourg
Netherlands
Poland
Portugal
Romania
Slovakia
Spain

- 21 countries intend to deliver distraction data
- Baseline methodology has been updated, see KPI Distraction Methodological guidelines at trendlineproject.eu/publications

- Main change concerns vehicle types included:
  - Baseline: passenger cars, light goods vehicles, buses/coaches
  - Trendline: passenger cars, light goods vehicles, heavy goods vehicles
- Data have been or are being collected
- Report on the results and recommendations available in Q3/Q4 2025

More information and reports

Website: https://www.baseline.vias.be/

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Agnieszka Stelling: Trendline@swov.nl

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Thank you!