

Anpassning av svenska trafiksäkerhetsindikatorer till nya EU-krav

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Diarienummer: 2020/0226-8.3

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Datum: 2022-03-01

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Godkänd avrapportering

Denna avrapportering har genomgått peer review *1 mars 2022* och ansvarig chef *Ellen Grumert* har den 1 mars 2022 godkänt denna avrapportering för leverans till uppdragsgivare.

Sammanfattning

I samband med att EU beslutade om nya trafiksäkerhetsmål för 2030 uppmanade kommissionen alla länder i EU att, förutom utfall av dödade och skadade, också redovisa ett antal trafiksäkerhetsindikatorer (KPI for road safety).

Syftet med projektet som redovisas här var att göra en grundlig genomgång av Sveriges nuvarande trafiksäkerhetsindikatorer som årligen mäts för att se om och i så fall hur de behöver anpassas eller kompletteras för att uppfylla EUs krav.

Projektets mål var att ta fram ett dokument som redovisar hur Sveriges nuvarande trafiksäkerhetsindikatorer förhåller sig till EUs indikatorer. Redovisningen av projektet beskriver nuläge, ger förslag på hur kompletteringar kan genomföras samt hur nya data kan samlas in. I projektet ingick även att följa arbetet på EU-nivå för att dels bidra med erfarenheter från Sverige, dels att i möjligaste mån se till att indikatorerna inom EU harmoniserar med varandra.

Sammanfattningsvis visar projektet att de indikatorer som samlas in i den årliga uppföljningen i Sverige till stor del kan användas för rapporteringen till EU. Det finns i vissa fall mindre avvikelser som gör att vi inte exakt uppfyller de rekommendationer som finns kopplat till EUs uppföljning. De indikatorer som samlas in i den svenska uppföljningen och som till stor del uppfyller Eus rekommendationer är:

1. Hastighetsefterlevnad i tätort och på landsbygd
2. Bältesanvändning
3. Cykelhjälmansvändning
4. Nyktra förare
5. Säker infrastruktur
6. Säkra fordon.

De indikatorer som vi inte följer upp i dagsläget men kommer att följas upp är (datainsamling är planerad till april 2022):

1. Distraction (handhållen mobiltelefonanvändning)
2. Post-crash care

De indikatorer som vi i dagsläget inte följer upp och som inte kommer att rapporteras in är:

1. Motorcykelhjälm användning
2. Bilbarnsstolanvändning.

1. Bakgrund

Sverige har en lång tradition av att arbeta med trafiksäkerhetsindikatorer för att följa hur trafiksäkerheten utvecklas inom olika områden. Den så kallade analysgruppen, bestående av forskare och analytiker från Trafikverket, VTI och Transportstyrelsen tar varje år fram en resultatrapp för att följa hur trafiksäkerheten utvecklas i Sverige. I rapporten studeras dels hur antalet döda och allvarligt skadade i trafiken förändras, dels hur 11 indikatorer med tydlig koppling till trafiksäkerheten förändras mellan åren. Indikatorerna handlar t.ex. om hastighetsefterlevnad, hjälmanvändning, bältesanvändning, nyktra förare, säkra fordon, säkra vägar, drift och underhåll mm.

I samband med att EU beslutade om nya trafiksäkerhetsmål för 2030 uppmanade kommissionen att alla länder i EU, förutom utfall av dödade och skadade, också ska redovisa liknande trafiksäkerhetsindikatorer (KPI for road safety). EU har genom bakgrundsarbete i olika arbetsgrupper beslutat om sju indikatorer inom följande områden: hastigheter, bältesanvändning, hjälmanvändning, alkohol, distraktion (handhållen mobiltelefon), fordonssäkerhet samt post-crash-care. Dessutom finns en valfri indikator gällande infrastruktur. I vissa fall (t.ex. alkohol) behövssannolikt ingen anpassning, men för t.ex. hastighetsefterlevnad så efterfrågar EU vissa redovisningar som vi i dagsläget inte tar fram. I andra fall kommer vi sannolikt att behöva göra kompletterande datainsamlingar och för två indikatorer, nämligen distraktion och post-crash care, finns ingen metod och datainsamling i Sverige för att i dagsläget kunna mäta och redovisa den.

Sverige och samtliga EU-länder har förbundit sig att leverera de sju indikatorerna årligen med start under 2020, eller eventuellt under 2021 pga förseningar som uppstår i och med Coronakrisen.

1.1. Syfte

Syftet med projektet är att göra en grundlig genomgång av Sveriges nuvarande trafiksäkerhetsindikatorer som årligen mäts för att se om och i så fall hur de behöver anpassas eller kompletteras för att uppfylla EUs krav.

Projektets mål var att redovisa hur Sveriges nuvarande trafiksäkerhetsindikatorer förhåller sig till EUs indikatorer. Redovisningen av projektet beskriver nuläge, ger förslag på hur kompletteringar kan genomföras samt hur nya data kan samlas in. I projektet ingick även att följa arbetet på EU-nivå för att dels bidra med erfarenheter från Sverige, dels för att i möjligaste mån se till att indikatorerna inom EU harmoniserar med varandra.

I detta PM redovisas de delfleveranser som har lämnats till Trafikverket inom ramen för detta projekt i syfte att bistå Trafikverkets arbete med indikatorer på EU-nivå. Dessa leveranser är skrivna på engelska och redovisas i kapitel 2 – 4 med rubriker:

2. Summary of EU KPIs in relation to Swedish SPIs
3. Baseline – Swedish KPIs
4. Short comments of KPIs to be delivered from Sweden.

Dokumentet är att betrakta som ett internt dokument och denna avrapportering ingår inte i någon av VTI:s publikationsserier och publiceras därmed inte av VTI.

2. Summary of EU KPIs in relation to Swedish SPIs

In relation to the EU's decision on new road safety targets for 2030, the Commission calls on all EU countries to report similar road safety indicators (KPIs for road safety).

The aim of this document is to give an overview of Sweden's current road safety performance indicators and describe to what extent they meet EU requirements.

The information about the requirements of the EU-indicators are taken from the “Working document” from the commission. According to Wouter van der Berge, ViAS institute and coordinator for the EU-project Baseline, these descriptions will be elaborated in Baseline as well and should therefore not be seen as the final requirements.

Below is a first comparison of the eight indicators suggested by EU in relation to the Swedish indicators.

2.1. Speed

Definition EU	Definition Sweden
Percentage of vehicles travelling within the speed limit	Percentage of vehicles travelling within the speed limit

2.1.1. Summary of the Swedish data

Rural roads: Data is collected by pneumatic tubes on the roads. The measurements take place at about 1500 randomly selected spots so that the results can be generalized for the whole country. The measurements are done every 4th year. Measurements are done on all road types, all days of the week and about 24 hours at each spot. Measurements take place during May – September and in total speed of 8.5 million vehicles are collected. Cars, trucks with trailers and MC can be reported separately.

Urban roads: Speed data is collected by radars at the side of the roads. The measurements take place at 69 different locations distributed over 23 cities across the country. The spots are not strictly randomized, but chosen to represent the urban roads environment at roads with speed limits 40 – 70 km/h. In total, speeds of 1.5 million vehicles are collected during September each year. At each spot, speeds are measured for one week. Cars, trucks with trailers and MC/mopeds can be reported separately.

2.1.2. Comments

This indicator is already used in Sweden both for urban and rural roads. However, some corrections might be needed depending on the final requirements from the EU.

The following specific requirements are specified by EU.

- Random sample: Ok, 1500 measurement spots during May – September on rural roads, probably ok for urban roads .
- Road type coverage: urban, rural non-motorways, motorways. Ok.
- Vehicle type: at least passenger cars as a start. Ok for now.
 - LGV and HGV not possible to distinguish between with pneumatic tubes and radar, but we can report trucks with trailers and trucks without trailers/buses separately both for urban and rural roads. Trucks without trailers/buses are not reported today for rural roads.
- Time of day: separately for day/night and free flow traffic. New analyses needed.
 - How is free flow traffic defined? Not a big issue for Sweden.
- Day of week: Weekdays and weekends. New analyses needed.
 - We must check whether it is possible rural areas.

- Measurements to be done in late spring/early autumn and not bad weather. Ok.

2.1.3. Conclusion

Ok to use at an aggregated level, both for urban and rural roads. Every 4th year, the measurements are very extensive on the rural road network, but not meeting all the specific requirements above. In principle data is collected, but some new analyses might be needed.

On the rural road network, we need to use another set of data for the three years in between the more extensive measurements, since Sweden do not plan to do the extensive measurements every year. We have 83 fixed measurement spots that collect speed all over the year. The speeds collected at these spots are used in a “Speed index”, today. However, no levels of speed compliance are shown, only the development between successive years. We suggest that it is investigated if and how the 83 fixed measurement spots can be used for every-year reporting on speed compliance in rural areas.

2.2. Safety belt

Definition EU	Definition Sweden
Percentage of vehicle occupants using the safety belt or child restraint system correctly	Seat belt use in the front seat of passenger cars

2.2.1. Summary of the Swedish data

An observational study is conducted annually at 13 sites in 8 different cities. In 2019, 29 449 passenger cars, 577 taxis, and 10 952 other type of cars were observed. Each measurement site is a larger roundabout placed in the outskirts of a city or in semi-central areas. The selected roundabouts have heavy traffic and a mix of several types of traffic, local traffic, long-distance traffic, rush hour traffic and everyday traffic. The main aim of the Swedish indicator is to follow the overall trend, not to provide a representative level.

2.2.2. Comments

This indicator is already produced in Sweden regarding safety belts. However, we have no data on child restraint systems. We believe that is it rather complex to measure CRS since it can be difficult to observed from moving traffic and because it is related to the age of the child. In, 2017, the National Society for Road Safety (NTF) in Sweden conducted a study based on observations of cars outside preschools. In that study, the observers could look inside the car and ask about the age of the child. However, this type of study is not done on a regular basis.

The following specific requirements are specified by EU.

- The indicator should cover motorways, non-urban roads, and urban areas: in Sweden, the observations are conducted at larger roundabouts where traffic from urban and rural areas often are mixed. Therefore, this requirement is fulfilled indirectly. However, separate measures could not be provided.
- The indicator should include passenger cars as a minimum and goods vehicles (results shown separately) where possible: This is fulfilled, the observations include passenger cars (defined as passenger cars with possibility to have occupants in the rear seat), light goods vehicles, heavy goods vehicles and taxis (small sample), separate estimates are provided.
- Front and rear seats should be presented separately: Separate results for front occupants, rear adult occupants and rear child occupants are available.

- Safety belt and child restraint systems to be differentiated in the data collection: this is not differentiated in the Swedish observations.
- Random sample: not randomized, instead chosen to represent different types of traffic. The main aim is to study the trend, not levels.
- Separate observations for weekdays and weekend: Observations are conducted Monday through Saturday (at one site 2019). No separate estimates.
- Observations to take place during daylight and during late spring or early autumn: this is fulfilled.
-

2.2.3. Conclusion

This data is probably ok to use for seat belts, perhaps with supplement data from observations conducted by NTF on urban roads. However, child restraint systems are not included in the observations.

2.3. Protective Equipment

Definition EU	Definition Sweden
Percentage of riders of powered two-wheelers and bicycles wearing a protective helmet.	Percentage of cyclists and moped drivers wearing a protective helmet

2.3.1. Summary of the Swedish data

Observational study in 21 cities across the country. In 2019, almost 43 000 cyclists and 1000 moped drivers were observed at 160 different locations. The locations are not strictly randomized but chosen to represent the urban road environment where cyclists are common. Only moped drivers and cyclists. Data collected on Monday – Saturday, but too limited data on Saturdays to report weekends separately. Observations are done at daytime in early autumn.

2.3.2. Comments

This indicator is already used in Sweden both for cyclists and moped drivers. However, no data regarding motorcyclists. Some corrections for cyclists and mopeds might be needed depending on the final requirements from the EU.

The following specific requirements are specified by EU.

- Random sample. We do not have a random sample, but observations at 21 cities. In 2019, almost 43 000 cyclists and 1000 moped drivers were observed at 160 different locations.
- Road type; urban, rural non-motorways, motorways. Not possible with present data, only urban for cyclist and moped drivers.
- For ptw – both drivers and passengers, i.e. riders. Only drivers of mopeds, not passengers and not motorcycles.
- Cyclists – if any legal requirements, separate for children (<15) and adults. Almost ok.
- Day of week: Weekdays and weekends. For weekends, we have only limited data on Saturdays before lunch.
- Observations at day-time and late spring/early autumn. Ok

2.3.3. Conclusion

Ok to use at an aggregate level for mopeds and cyclists. Data for motorcyclists are missing and only moped drivers are observed. The use of motorcyclist in Sweden differ from many other countries and motorcycles are mainly used for recreational purposes. The helmet use is rather high according to previous studies. Based on in-depth-analyses, lack of helmet use is not seen as a main problem related to motorcycle use in Sweden. It might therefore be considered if it is sufficient to use questionnaire data to follow this indicator.

2.4. Alcohol

Definition EU	Definition Sweden
Percentage of drivers driving within the legal limit for blood alcohol content (BAC)	Share of traffic volume with sober drivers

2.4.1. Summary of the Swedish data

The Swedish indicator has previously been based on breath testing results from enforcement actions, but this will be difficult during 2020 and 2021 due to changes in enforcement due to the pandemic. Self-reported behavior is also available and could perhaps be used instead.

Regarding the previous indicator, data from all breath tests conducted in Sweden are analyzed and tests that are taken at police controls with the aim of prevention (random breath tests) is selected for the indicator. In 2019, the indicator was based on almost 390 000 breath tests.

2.4.2. Comments

The following specific requirements are specified by EU (answers based on breath tests).

- Motorways, rural non-motorway roads and urban roads to be covered: Urban and rural areas can be calculated separately, but this is not done today. Road type is not indicated in the data and random police checks are seldom conducted on motorways.
- Passenger cars as a minimum; goods vehicles, buses and motorcycle if possible (results disaggregated by vehicle type): Breath testing results can not be disaggregated. Self-reported data include car drivers only.
- Separate results for weekdays and weekends: not provided today but can be calculated. Not possible for self-reported data.
- Late spring, early autumn: not provided today, but can be calculated. Not possible for self-reported data. It is not clear to us why this is relevant for alcohol.

2.4.3. Conclusion

In general, the specific requirements could be met, except for disaggregating by vehicle type. However, data is not reliable for 2020 and 2021 (probably) because of the pandemic. Probably, we will have to use self-reported data instead. When/if breath testing data are available again, the methodology needs an update.

2.5. Distraction

Definition EU	Definition Sweden
Percentage of drivers NOT using a handheld mobile device.	No data

2.5.1. Summary of the Swedish data

No data collected. Would appreciate information about what is done in other countries.

2.5.2. Comments

This indicator is not used in Sweden and we need to collect data.

The following specific requirements are specified by EU.

- Random sample during daylight.
- Direct observations or automatic detection – to be decided by member states.
- The indicator should cover motorways, rural non-motorway roads and urban areas. The results MAY be presented separately for this three different road types.
- Vehicle types: Cars, light goods vehicles, buses/coaches as a minimum.

2.5.3. Conclusion

This indicator is not used in Sweden and we need to collect data. We are interested to see how other countries collect data and find a reasonable level for data collection annually.

2.6. Vehicle safety

Definition EU	Definition Sweden
Percentage of new passenger cars with a EuroNCAP safety rating equal or above a predefined threshold*	Share of traffic volume for passenger cars with highest Euro NCAP rating

2.6.1. Summary of the Swedish data

Sales figures for each car model are published annually by the car industry (BilSweden). By merging these data with the Euro NCAP test results for each car model, it is possible to calculate the percentage of new passenger cars with a safety rating above a certain threshold that were sold each year.

2.6.2. Comments

The details of this KPI are not decided yet. It is therefore difficult to have any comments.

2.6.3. Conclusion

Sweden could most probably provide the data. However, we need to wait for the final definition before we know what is required.

2.7. Infrastructure

Definition EU	Definition Sweden
Percentage of distance driven over roads with a safety rating above an agreed threshold (still to be defined). OR (in the meantime) Percentage of distance driven over roads either with opposite traffic separation (by barrier or area) or with a speed limit equal to or lower than xx km/h (limit left to the discretion of MS) in relation to total distance travelled.	Share of traffic volume with median barriers on national roads with speed limit above 80 km/h

2.7.1. Summary of the Swedish data

In Sweden we today use a rather simple KPI; the proportion of traffic on roads over 80 km/h on divided roads. Data collected from the National road data base. Represents all state roads in Sweden.

Further we have a simple and robust model for road classification designed in Sweden using a combination of road characteristics, speed limit and operational speed. The result is classification of a road section, an intersection or a pedestrian crossing at a poor, medium, good or very good safety level. The model is used on all major national roads on the state network which is more than the proposed extension of the revised RISM directive but not all rural roads. These classifications could be used as future KPIs.”

2.7.2. Comments

The indicator used in Sweden meet the requirements of the second definition.

The following specific requirements are specified by EU.

- Rating methodology to the choice of Member States until an agreement on the threshold is reached.
- This indicator is technically challenging since many Member States do not yet have the data available for distance travelled, so as a first (and necessary) step it is proposed to gather data for the % of network length that is above the agreed safety rating threshold. For state roads in Sweden, we can provide data both based on distance travelled and network length.
- Work with experts will continue in the CARE expert group or in another appropriate set-up to define the data collection procedures and the rating methodology. Or will it be the Baseline project?
- Urban roads in next step. Note that SE do not have reliable exposure data on urban roads.

2.7.3. Conclusion

The present Swedish indicator can be used for now. The model we use for classification of roads could be used as future KPIs.

2.8. Post-crash care

Definition EU	Definition Sweden
Time elapsed in minutes and seconds between the emergency call following a collision resulting in personal injury and the arrival at the scene of the collision of the emergency services	No data

2.8.1. Summary of the Swedish data

No data collected since 2011. During 2009-2011 the data were provided from SOS Alarm (the company that is responsible for handling the emergency calls, 112, in Sweden). Time from emergency call to rescue/care was measured. We believe that time to rescue/care is the same as arrival at the scene.

2.8.2. Comments

This indicator is not used in Sweden and we need to collect data. Data is probably available through SOS Alarm.

The following specific requirements are specified by EU.

- Coverage of all roads: yes, all roads should be included, but could probably not be presented separately
- Crashes that involves any vehicle and resulting in personal injury: The definition used by SOS alarm must be used. We haven't contacted them yet.
- Random sample: probably full coverage

2.8.3. Conclusion

This indicator is not used in Sweden today, but can probably be provided by SOS Alarm.

3. Baseline – Swedish KPIs

In relation to the new road safety targets for 2030, the Commission calls on all EU Member States to report similar road safety indicators (KPIs for road safety).

The following document gives an overview of the KPI's to be delivered from Sweden. Sweden has grant within Baseline for two KPIs: Distraction and Post-crash care. For these KPIs we plan to start a new data collection that meets at least the minimal requirements specified in the methodological guidelines.

Sweden will also deliver other KPIs. For these KPI's Sweden already collect data almost every year (and have long data series used for national follow-up). Therefore, there are some deviations from the minimal requirements. These deviations are specified in section 3.2.

3.1. KPI's with grant from Baseline

3.1.1. Distraction

Definition EU	Definition Sweden
Percentage of drivers NOT using a handheld mobile device.	No data

Summary of the Swedish data

No data collected yet.

Minimal requirements

- The selection of locations should be as random as possible, covering the geographical area of the country.
- Sampling of drivers (of the relevant vehicle categories) should be random. Target drivers should always be randomly selected from all the possible drivers at the location where the observation is done.
- Most of the observed drivers will be car drivers as this is the most frequent vehicle type in motorized traffic. While there are generally fewer light goods vehicles and buses/coaches, the observer should give no specific priority to them in the measurement. Only if the first next passing vehicle in the observation lane is a LGV or a bus/coach this driver should be coded.
- Observations should be made in flowing traffic only, so of drivers while driving, since distraction behaviour is different when stationary, e.g. waiting at traffic lights. No observation should be made of stationary drivers.
- Vehicle types:
 - passenger cars
 - light goods vehicles (LGV; often from companies)
 - buses/coaches (including mini-buses and public transport buses).
- The data collection should include a variable “vehicle type” with these three categories. The minimum requirement is to provide aggregated results for these three different vehicle types ‘together’. This means that the data from the three vehicle types can be combined to provide the KPI. No separate KPI per vehicle type is required.
- Minimum 2,000 observations overall (for the three minimally required vehicle types together) is required with at least 500 observations for each category of road type, thus:
 - minimum 500 drivers on urban roads
 - minimum 500 drivers on rural roads
 - minimum 500 drivers on motorways.

- Minimum of 10 different locations per road type should be selected in to ensure representative results for the entire road network:
 - minimum 10 locations on urban roads
 - minimum 10 locations on rural roads
 - minimum 10 locations (or sections) on motorways
- Minimum of 67 observations per location, if 30 locations are chosen.

Conclusion

This indicator is not used in Sweden yet, but we will start collecting data that meet at least the minimal requirements.

Swedish guideline for data collection will be developed by VTI.

3.1.2. Post-crash care

Definition EU	Definition Sweden
Time elapsed in minutes and seconds between the emergency call following a road crash resulting in personal injury and the arrival at the scene of the road crash of the emergency services (to the value of the 95 th percentile)	No data

Summary of the Swedish data

No data collected since 2011. During 2009-2011 the data were provided from SOS Alarm (the company that is responsible for handling the emergency calls, 112, in Sweden). Time from emergency call to rescue/care was measured. We believe that time to rescue/care is the same as arrival at the scene.

Minimal requirements

- The minimum requirement is to provide the 95th percentile of the time elapsed between the emergency call and the arrival of the emergency services at the crash scene.
- The unit of measurement should be minutes and seconds.
- Coverage of all roads crashes in the country resulting in personal injury.

Conclusion

This indicator is not used in Sweden today, but can be provided by SOS Alarm. We will have a meeting with them 8 June.

3.2. KPIs with no grant from Baseline

3.2.1. Speed

Definition EU	Definition Sweden
Percentage of vehicles travelling within the speed limit	Percentage of vehicles travelling within the speed limit

Minimal requirements

	Minimal requirement	Optional	Comment Sweden – Deviation from minimal requirements
KPI	Percentage of drivers within speed limit Free-flow traffic	Average speed (+ Standard Deviation and Standard Error/Confidence Interval) V85 Non free flow traffic data	Rural + MV: Not free flow traffic, however, many Swedish roads are roads with low traffic volumes (meaning mostly no major differences due to this). Mean speed ok. Urban: Free flow traffic, ok for minimal requirement. Mean speed ok.
Location	Random selection Representative of entire national road network Measurements should not take place near speed cameras, either fixed or mobile A minimum traffic flow of at least 10 vehicles passing per hour is required	Stratification by Regions	Rural + MV: Ok, 1500 measurement spots randomly distributed across Sweden Urban: Ok. The measurements take place at 69 different locations distributed over 23 cities across the country. The spots are not strictly randomized, but chosen to represent the urban roads environment at roads with speed limits 40 – 70 km/h.
Road type	Motorways Rural roads (defined as roads outside built-up areas, but no motorways) Urban roads (defined as roads inside built-up areas)	Differentiate between single and dual lane roads for rural and urban roads • Differentiate between speed limits within rural and urban roads	Rural + MV: Ok. Also between speed limits. Urban: Ok. Also between speed limits.
Vehicle type	Passenger cars	Motorcycles Vans and light trucks Heavy trucks Buses	Rural + MV: Ok. Also MC, trucks with trailers (almost HGVs). Urban: Ok. Also vans/light trucks and trucks with trailers (almost HGVs).
Time period	Weekdays Daylight hours Spring/autumn	Weekend Night-time hours	Rural + MV: Measurements during May – September (ok). Data from all days of the

			<p>week, both day-light and night-time.</p> <p>Urban: Measurements during September (ok). Data from all days of the week, both day-light and night-time.</p>
Weather	Good conditions		<p>Ok, for all road types (not extreme weather during April -. September)</p>
Sample size	<p>Min 2000 observations</p> <p>Min 500 observations / road type</p> <p>Min 10 locations / road type</p> <p>The proportion of observations at each of the three road types should be at a minimum 20%</p>		<p>Rural + MV: Ok.</p> <p>Urban: Ok.</p>

Summary of the Swedish data

Rural roads: Data is collected by pneumatic tubes on the roads. The measurements take place at about 1500 randomly selected spots so that the results can be generalized for the whole country. The measurements are done every 4th year. Measurements are done on all road types, all days of the week and about 24 hours at each spot. Measurements take place during May – September and in total speed of 8.5 million vehicles are collected. Cars, trucks with trailers and MC can be reported separately.

Urban roads: Speed data is collected by radars at the side of the roads. The measurements take place at 69 different locations distributed over 23 cities across the country. The spots are not strictly randomized, but chosen to represent the urban roads environment at roads with speed limits 40 – 70 km/h. In total, speeds of 1.5 million vehicles are collected during September each year. At each spot, speeds are measured for one week. Cars, trucks with trailers and MC/mopeds can be reported separately.

Conclusion

Ok to use at an aggregated level, both for urban, MV and rural roads, though some deviations from minimal requirements. Recommend adding this KPI.

3.2.2. Safety belt

Definition EU	Definition Sweden
Percentage of vehicle occupants using the safety belt or child restraint system correctly	Seat belt use in the front seat of passenger cars

Minimal requirements

	Minimal requirement	Optional	Comment Sweden – deviation from minimal requirements
KPI	Percentage of vehicle occupants using the safety belt or child restraint system correctly		No observation of CRS. Only use or no use of seat belt. Correct use and misuse are not separated.
Observation method	Direct observations preferable alongside the road. In-vehicle inspections of CRS.	Direct observations can be replaced by cameras	Direct observations are used. No in-vehicle inspections.
Location	As random as possible.		Not randomly selected locations, instead chosen to represent different types of traffic. In 2019, there were 13 locations in 8 different cities.
Road type	Motorways, rural non-motorway roads, and urban roads. Results should be presented separately for these three road types, and also aggregated.		The observations in Sweden are conducted at larger roundabouts where traffic from urban and rural areas often are mixed. Separate results for different road types could not be obtained.
Vehicle type	Front and rear occupants of at least passenger cars.	Preferable also good vehicles (light and heavy).	This is fulfilled, the observations include passenger cars, light goods vehicles, heavy goods vehicles and taxis (small sample), separate estimates can be provided.
Time period	<ol style="list-style-type: none"> 1. Late spring or early autumn 2. Weekdays and weekends, observed and presented separately 		1, 3 and 4 are fulfilled. Observations are conducted Monday through Saturday (at one site 2019). No separate estimates can be

	3. Daylight, observations should cover the whole daytime 4. Reasonably good weather		provided for weekdays and weekends.
Sample size	Minimum 2000 observed vehicles for seat belt use, a minimum of 500 per road type.		Almost 30,000 vehicles observed in 2019. However, road types can not be separated.

Summary of the Swedish data

An observational study is conducted annually at 13 sites in 8 different cities. In 2019, 29 449 passenger cars, 577 taxis, and 10 952 other types of cars were observed. Each measurement site is a larger roundabout placed in the outskirts of a city or in semi-central areas. The selected roundabouts have heavy traffic and a mix of several types of traffic, local traffic, long-distance traffic, rush hour traffic and everyday traffic. The main aim of the Swedish indicator is to follow the overall trend, not to provide a representative level.

Conclusion

This data is probably ok to use for seat belts, although results for different road types and weekdays/weekends can not be provided. Note also that misuse is not included, only use and non-use are observed. Child restraint systems are not included in the observations.

This indicator might not be one of the five that we report to the EU.

3.2.3. Protective Equipment

Definition EU	Definition Sweden
Percentage of riders of powered two-wheelers and bicycles wearing a protective helmet.	Percentage of cyclists and moped drivers wearing a protective helmet

Minimal requirements

	Minimal requirement	Optional	Comment Sweden – Deviation from minimal requirements
KPI	Percentage of riders (and passengers separately for PTW,s) of powered two-wheelers and bicycles wearing a protective helmet. For cyclists, data for children (0-14 years old) should be shown separately.	Note: In some countries, the number of passenger observations is expected to be very low. Countries facing this limitation will not be included in the results on helmet use among passengers.	Cyclists ok (only riders) No data of PTWs (only mopeds and only drivers)
Location	as random as possible, covering the geographical area of the country		Ok for cyclists and mopeds. Not a strict random sample, but observations

			at 21 cities. In 2019, almost 43 000 cyclists and 1000 moped drivers were observed at 160 different locations.
Road type	Motorways (not mopeds and cyclists) Rural non-motorway roads Urban areas		Cyclists and mopeds – only urban areas
Vehicle type	Bicyclists PTW's	For PTWs: distinction between "moped" and "motorcycle"; for bicycles, distinction between "bicycle" (non-electric) and "electric bike / e-bike".	Only bicyclists and mopeds
Time period	weekday / weekend day end of spring or at the beginning of autumn. During daylight		Not separate weekdays/weekends. For weekends, we have only limited data on Saturdays before lunch (not separate reported) Beginning of autumn ok. Daylight ok
Sample size	Min 2,000 observations for each of the two KPIs on helmet use (e.g., 2,000 PTWs and 2,000 bikes). 10 locations for each of the 3 road types 10 locations for each of the two periods (week/weekend)) at least 2 locations for each stratification combination (e.g., 3 road types X 2 periods = 6 combinations and a minimum of 2 locations in each combination. at least 10 relevant vehicles per hour		

Summary of the Swedish data

Observational study in 21 cities across the country. In 2019, almost 43 000 cyclists and 1000 moped drivers were observed at 160 different locations. The locations are not strictly randomized but chosen to represent the urban road environment where cyclists are common. Only moped drivers and cyclists.

Data collected on Monday – Saturday, but too limited data on Saturdays to report weekends separately. Observations are done at daytime in early autumn.

Conclusion

Ok to use at an aggregate level for mopeds and cyclists. Data for motorcyclists are missing and only moped drivers are observed. The use of motorcycles in Sweden differ from many other countries and motorcycles are mainly used for recreational purposes. The helmet use is rather high according to previous studies. Based on in-depth-analyses, lack of helmet use is not seen as a main problem related to motorcycle use in Sweden. It might therefore be considered if it is sufficient to use questionnaire data to follow this indicator.

This indicator might not be one of the five that we report to the EU.

3.2.4. Alcohol

Definition EU	Definition Sweden
Percentage of drivers driving within the legal limit for blood alcohol content (BAC)	Share of traffic volume with sober drivers

Minimal requirements

	Minimal requirement	Optional	Comment Sweden – Deviation from minimal requirements
KPI	Three different methods are allowed (in preferred order): <ol style="list-style-type: none"> 1. Roadside breath testing of randomly selected drivers 2. Breath testing results from enforcement actions (even if not random) 3. Self-reported behaviour through anonymous surveys 		Previously, the Swedish indicator has been based on breath testing results from enforcement actions. However, this will not be possible for 2020 or 2021 because of the pandemic. Therefore, the third option is considered. Data will be retrieved from an annual road safety survey.
Type of measure		Period prevalence or trip-based prevalence can be used.	Period prevalence is used in the road safety survey.
Sample size	Minimum 1000 respondents.		Fulfilled, about 3300 respondents in 2019.
Sampling method	Random sampling is required. Random sampling from available online research panels is allowed (e.g. from market research agencies like iVOX, GfK).		Fulfilled

Survey methods	Surveying can be self-administered (on paper, online) or with an interviewer (face-to-face, telephone).		Ok, combination of online questionnaire, paper questionnaire and telephone interviews.
Questions		It is highly recommended to use the method and questions on drink driving used in the ESRA survey series.	The question in the Swedish road safety survey is similar to the ones in ESRA. The period is 12 months.

Summary of the Swedish data

The Swedish indicator has previously been based on breath testing results from enforcement actions, but this will not be possible for 2020 and 2021 due to changes in enforcement because of the pandemic. Self-reported behavior is available through an annual traffic safety survey, and we propose to use this data source instead.

Regarding the previous indicator, data from all breath tests conducted in Sweden were analyzed and tests that were taken at police controls with the aim of prevention (random breath tests) was selected for the indicator. In 2019, the indicator was based on almost 390 000 breath tests.

Conclusion

We propose to use self-reported behaviour to estimate period prevalence (over a period of 12 month). We recommend providing this KPI.

3.2.5. Vehicle safety

Definition EU	Definition Sweden
Percentage of new passenger cars with a EuroNCAP safety rating equal or above a predefined threshold	Share of traffic volume for passenger cars with highest Euro NCAP rating

Minimal requirements

Not specified yet.

Summary of the Swedish data

Sales figures for each car model are published annually by the car industry (BilSweden). By merging these data with the Euro NCAP test results for each car model, it is possible to calculate the percentage of new passenger cars with a safety rating above a certain threshold that were sold each year.

Deviations from minimal requirement

The details of this KPI are not decided yet. It is therefore difficult to have any comments.

Conclusion

Sweden could most probably provide the data. However, we need to wait for the final definition before we know what is required.

3.2.6. Infrastructure

Definition EU	Definition Sweden
Percentage of distance driven over roads with a safety rating above an agreed threshold (still to be defined). OR (in the meantime) Percentage of distance driven over roads either with opposite traffic separation (by barrier or area) or with a speed limit equal to or lower than xx km/h (limit left to the discretion of MS) in relation to total distance travelled.	Share of traffic volume with median barriers on national roads with speed limit above 80 km/h

3.2.7. Minimal requirements

Not specified yet in detail.

Summary of the Swedish data

In Sweden we today use a rather simple KPI; the proportion of traffic on roads over 80 km/h on divided roads. Data collected from the National road data base. Represents all state roads in Sweden.

Further we have a simple and robust model for road classification designed in Sweden using a combination of road characteristics, speed limit and operational speed. The result is classification of a road section, an intersection or a pedestrian crossing at a poor, medium, good or very good safety level. The model is used on all major national roads on the state network which is more than the proposed extension of the revised RISM directive but not all rural roads. These classifications could be used as future KPIs.”

Deviations from minimal requirement

The indicator used in Sweden meet the requirements of the second definition.

The following specific requirements are specified by EU.

- Rating methodology to the choice of Member States until an agreement on the threshold is reached.
- This indicator is technically challenging since many Member States do not yet have the data available for distance travelled, so as a first (and necessary) step it is proposed to gather data for the % of network length that is above the agreed safety rating threshold. For state roads in Sweden, we can provide data both based on distance travelled and network length.
- Work with experts will continue in the CARE expert group or in another appropriate set-up to define the data collection procedures and the rating methodology. Or will it be the Baseline project?
- Urban roads in next step. Note that SE do not have reliable exposure data on urban roads.

Conclusion

The present Swedish indicator can be used for now. The model we use for classification of roads could be used as future KPIs.

4. Short comments of KPIs to be delivered from Sweden

Below follow short comments regarding the data that can be delivered from Sweden based on present nation measurements and new data collection regarding KPI distraction and KPI post care.

4.1. KPI Speeding (SE no funding from Baseline)

Minimal level

KPI and optional indicators may be provided by type of road and at national level (all roads).

- Vehicle type: passenger cars **OK**
- Road type: all options (motorways, rural roads, urban roads). **OK**
- Time period: weekdays. **Deviation SE: 24/7, Monday – Sunday and 00 – 24.**

Results from national estimates are for all vehicles (not only free flow), but for many roads this is not a big issue in Sweden due to rather low volume roads. National estimates already weighted to reflect the random selection of points.

KPI and optional indicators may be provided by type of road and at national level (all roads).

4.2. KPI Safety belts and Child restraint systems (SE no funding from Baseline)

Minimal level

KPIs and respective CIs can be provided by type of road (referring to all periods), time period (referring to all roads) and at national level (all periods and all roads).

- Gender: both genders. **OK**
- Age group: all ages **OK**
- Vehicle type: passenger car -Total **OK**
- Time period: all options. **Only total**
- Road type: all options **Only total**

Child restraint systems are not included in the observations.

4.3. KPI Child restraint systems (in-vehicle inspections) (SE no funding from Baseline)

No data from SE

4.4. KPI Helmet use among Cyclists (SE no funding from Baseline)

Minimal level

KPIs and respective CIs can be provided by type of road (referring to all periods), time period (referring to all roads) and at national level (all periods and all roads).

- Gender: both genders **OK**
- Age group: all ages **OK**
- Vehicle type: Cycles-Total **OK**
- Time period: all options **Only total**
- Road type: all options **Only urban areas**

4.5. KPI Helmet use among Powered two-wheelers (SE no funding from Baseline)

Minimal level

- Gender: both genders **Ok**
- Age group: all ages **OK**
- Vehicle type: Motorcycle, Motorcycle-Total, PTWs-Total, Cycles-Total **Only cycles and mopeds**
- Time period: all options **Only total**
- Road type: all options **Only urban areas**

Data for motorcyclists are missing and only moped drivers are observed.

4.6. KPI Driving under the Influence of Alcohol (SE no funding from Baseline)

Minimal level

KPIs and respective CIs can be provided by type of road and time period, as well as the aggregated KPI. Time period (4 levels)

- Road type (3 levels) **Only total**
- Vehicle type (passenger cars) **OK**

The Swedish indicator has previously been based on breath testing results from enforcement actions, but this will not be possible for 2020 and 2021 due to changes in enforcement because of the pandemic. We propose to use self-reported behaviour to estimate period prevalence in 2021 (over a period of 12 month). Hopefully, we can proceed with roadside observations when the Pandemic is over.

4.7. KPI Distraction (Funding from Baseline)

Minimal level

KPIs and respective CIs can be provided by type of road (referring to all periods) and at national level (all periods and all roads).

- Age group: all ages **Ok**
- Gender: both genders **Ok**
- Vehicle type: all modes **Ok**
- Time period: all periods **Ok**

New data will be collected fulfilling the minimal requirements.

4.8. KPI Vehicle Safety (SE no funding from Baseline)

Not seen final methodological guidelines. Probably ok for Sweden

4.9. KPI Infrastructure (SE no funding from Baseline)

Not seen final methodological guidelines. Probably ok for Sweden

4.10. KPI Post crash care (Funding from Baseline)

Minimal level

The 95th percentile of response times between the emergency calls following a road crash resulting in personal injury and the arrival of the emergency services at the scene of the crash for the whole country for 2019 and if possible a breakdown by road type.

- E-call warning: all options **Ok**
- Hour: all hours **Ok**
- Day of week: all days **OK**
- Month: all months **OK**
- Year: 2019 **Ok**

New data will be collected fulfilling the minimal requirements.

OM VTI

VTI, Statens väg- och transportforskningsinstitut, är ett oberoende och internationellt framstående forskningsinstitut inom transportsektorn. Vår huvuduppgift är att bedriva forskning och utveckling kring infrastruktur, trafik och transporter. Vi arbetar för att kunskapen om transportsektorn kontinuerligt ska förbättras och är på så sätt med och bidrar till att uppnå Sveriges transportpolitiska mål.

Verksamheten omfattar samtliga transportslag och områdena väg- och banteknik, drift och underhåll, fordonsteknik, trafiksäkerhet, trafikanalys, människan i transportsystemet, miljö, planerings- och beslutsprocesser, transportekonomi samt transportsystem. Kunskapen från institutet ger beslutsunderlag till aktörer inom transportsektorn och får i många fall direkta tillämpningar i såväl nationell som internationell transportpolitik.

VTI utför forskning på uppdrag i en tvärvetenskaplig organisation. Medarbetarna arbetar också med utredning, rådgivning och utför olika typer av tjänster inom mätning och provning. På institutet finns tekniskt avancerad forskningsutrustning av olika slag och körsimulatorer i världsklass. Dessutom finns ett laboratorium för vägmateriäl och ett krocksäkerhetslaboratorium.

I Sverige samverkar VTI med universitet och högskolor som bedriver närliggande forskning och utbildning. Vi medverkar även kontinuerligt i internationella forskningsprojekt, framförallt i Europa, och deltar aktivt i internationella nätverk och allianser.

VTI är en uppdragsmyndighet som lyder under regeringen och hör till Infrastrukturdepartementets verksamhets-/ansvarsområde. Vårt kvalitetsledningssystem är certifierat enligt ISO 9001 och vårt miljöledningssystem är certifierat enligt ISO 14001. Vissa provningsmetoder vid våra laboratorier för krocksäkerhetsprovning och vägmateriälprovning är dessutom ackrediterade av Swedac.

