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# KPI Speed

Trendline General Assembly

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# Definition of the KPI

- The minimum requirement was to estimate  
the percentage of vehicles travelling within the speed limit
- Additional required measurements concerned
  - speed below which 85% of drivers are driving (V85)
  - average speed (including standard deviation)

# Composition of the Key Expert Group

Expert	Organisation	Country
Alexandra Laiou	NTUA	Greece
Anna Vadeby	VTI	Sweden
François Riguelle	AWSR	Belgium
Ingrid Van Schagen	SWOV	Netherlands
João Cardoso	LNEC	Portugal
Pawel Tutka	WUT	Poland
Davide Shingo Usami	CTL	Italy
Naomi Wardenier	VIAS	Belgium

# Summary of the minimum requirements

Aspect	Minimum methodological requirements
Road type	The indicator should cover motorways, rural non-motorway roads, and urban roads. Results should be presented separately for the three different road types.
Vehicle type	The indicator should include at least passenger vehicles (cars). Buses and goods vehicles (light [less than 3.5t] and heavy [more than 3.5t]) and powered two wheelers are optional in a first phase. Results should be presented separately for each vehicle type, if possible.
Location	Member States to decide on the locations of the measurements, but measurements should not take place near safety cameras whether fixed or mobile. The choice of locations should be based on random sampling if this is possible, and in any case made with the objective of ensuring a representative sample.
Time of day	All Member States should elaborate the indicator for day hours in free-flow traffic: the night indicator should be optional due to its higher cost. The results should be shown separately for day and night.
Day of the week	Measurements to be carried out on Tuesdays, Wednesdays or Thursdays. Weekend measurements also possible but optional and again should be shown separately if carried out.
Month	Measurements to be carried out preferably in late spring and/or early autumn.
Weather	Measurements should not be taken in bad weather conditions (e.g. heavy rain, snow, ice, strong winds or fog). Member States will define the exclusion criteria and report them together with the data.
Tolerance	No tolerance (beyond the error margin of the measuring device), i.e. the values recorded should be those measured by the instrument.

# Member States collecting KPI

Country	Status	Country	Status
Austria	received/final	Latvia	not received yet
Belgium	received/final	Lithuania	received/final
Bulgaria	received/final	Luxembourg	received/under qc
Croatia	received/final	Netherlands	received/final
Czech Republic	received/final	Poland	received/final
Denmark	received/under qc	Portugal	received/under qc
Finland	received/final	Slovakia	received/final
Greece	not received yet	Slovenia	received/under qc
Hungary	not received yet	Spain	not received yet
Ireland	received/final	Sweden	received/final
Italy	received/final	Switzerland	not received yet

- Results received from 17 MS
  - Results for 13 MS are final
  - 4 MS under quality check / processing
- Results from 5 MS are expected
- Results from 14 MS are presented

# KPI Speed - Metadata

Minimum requirements met by almost all Member States:

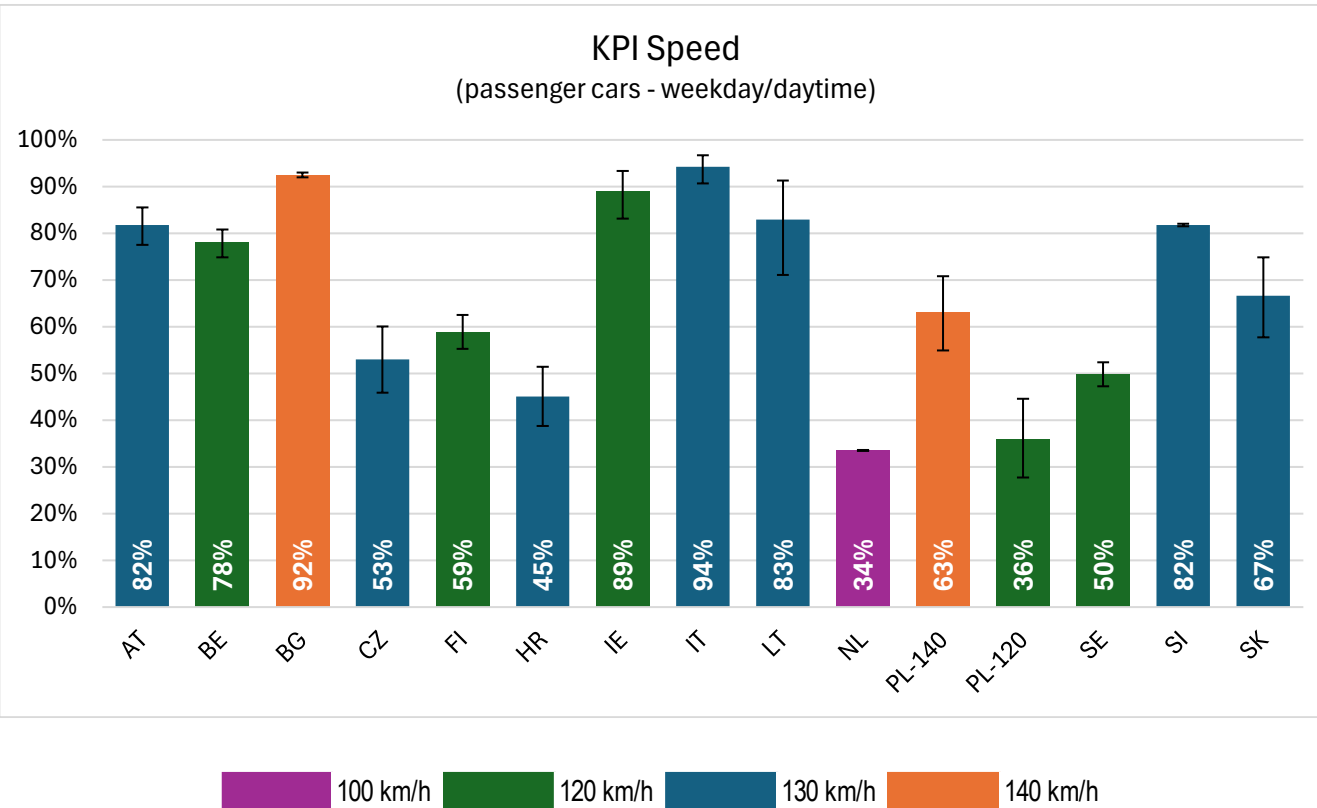
- free-flowing traffic (12 out of 14 MS)
- Data collection under good / no extreme weather conditions (9 MS, 5 MS all weather conditions)
- Mainly during spring / autumn (9 MS, 5 MS (also) during summer/winter)
- During weekday/daytime (14 MS); weekday/night-time (8 MS); weekend/daytime (9 MS); weekend/night-time (8 MS)
- 10+ locations per road type (12 MS, 2 MS fewer locations on specific road types/speed limits)
- 2000+ passenger cars and 500+ per road type (14 MS) ; Smaller samples for specific vehicle types or time periods for a few MS
- Confidence intervals provided in all cases

# KPI Speed - Comparability

- Minor methodological differences: all MS considered comparable for the minimum requested indicators
- Few MS have results for mixed speed limits (2) per road or different vehicle groups (3)
- Each MS observed passenger cars,
  - 9 MS also motorcycles and vans and light trucks,
  - 10 MS trucks/heavy goods vehicles
  - 3 MS buses
- All indicators provided by almost all MS:
  - percentage driving within speed limit (all MS)
  - average speed (all MS)
  - 85th percentile of speed (13 MS)
- Differences in speed limits per road type between MS make comparing more complex

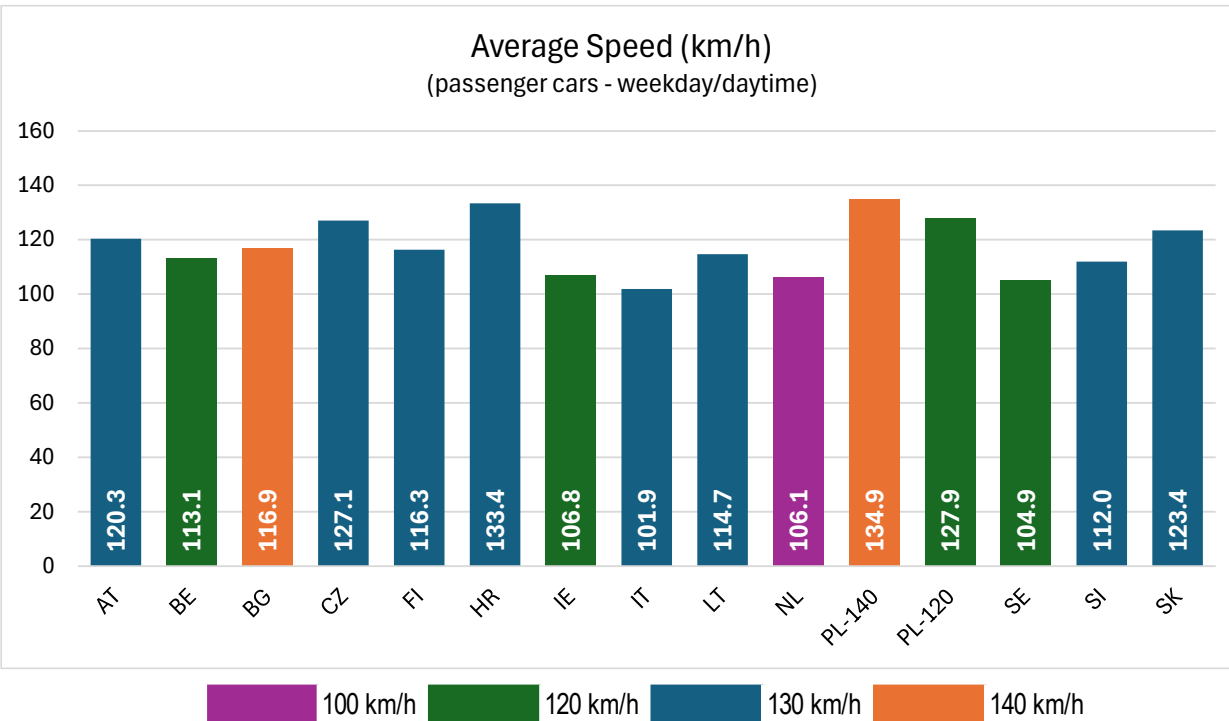


# Speed KPI - Motorways



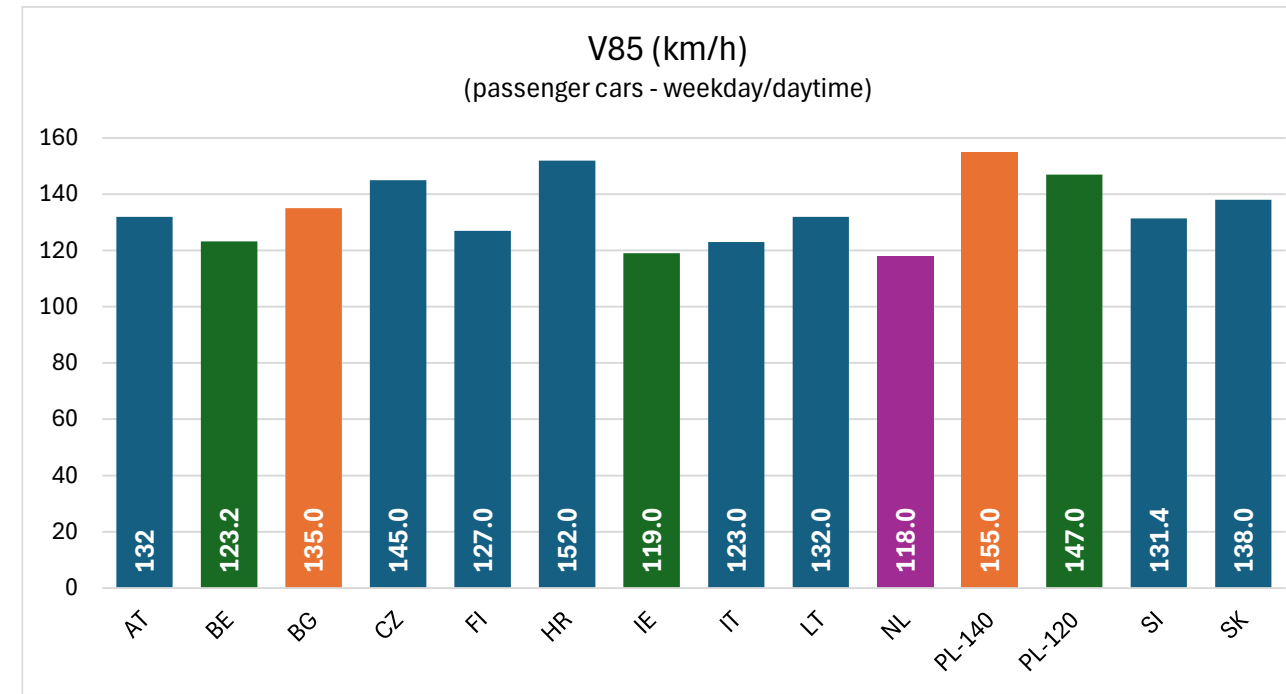
- KPI speed varies from 34% to 94%
- Among MS with speed limit 130km/h, KPI varies between 45% (Croatia and Slovakia) and 94% (Italy)
- Among MS with speed limit 120km/h, KPI varies between 36% (Poland) and 89% (Ireland)

# Speed Indicators - Motorways

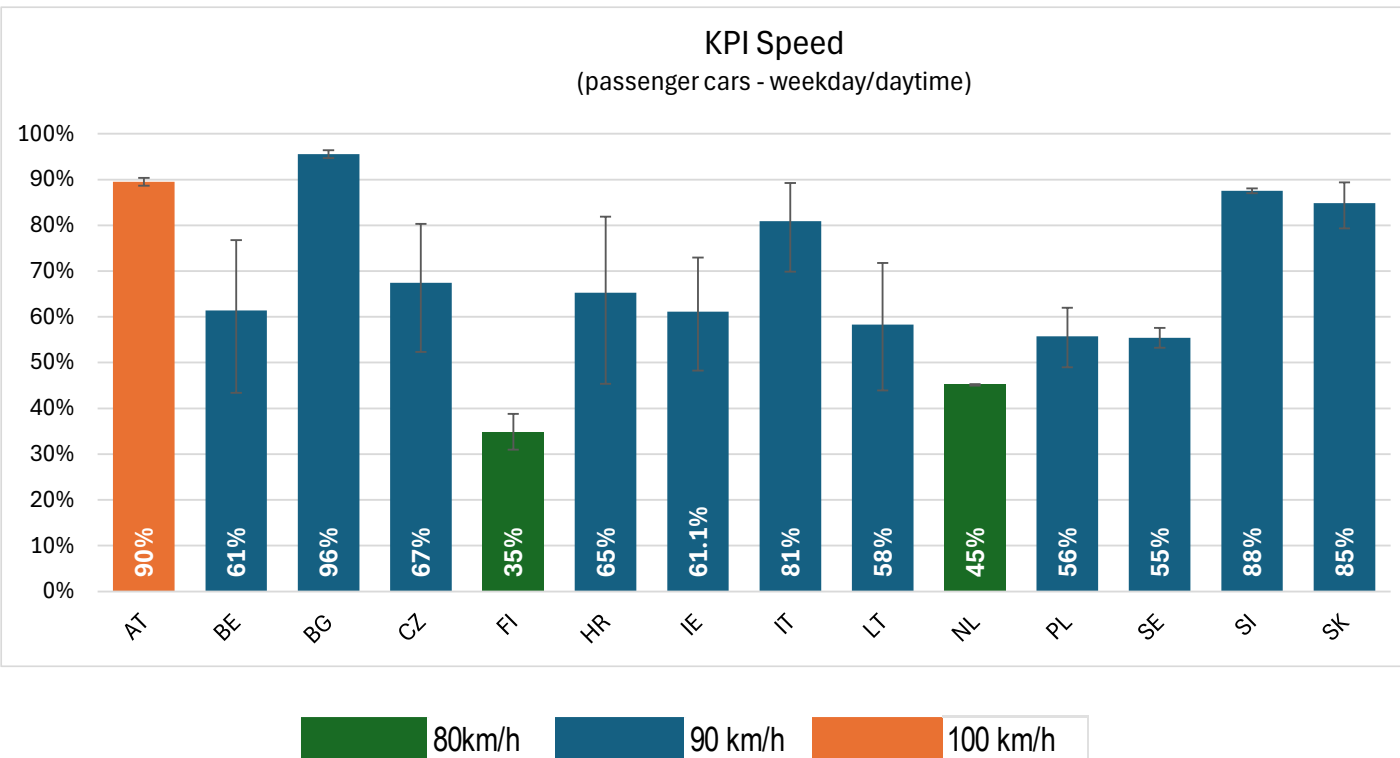


- V85 varies between 119 km/h and 155 km/h
- Among MS with speed limit 130km/h, V85 varies between 123 km/h (Italy) and 145 km/h (Czechia)
- V85 lies between 10 km/h to 21 km/h higher than the average speed

- Average speed varies between 102 km/h and 135 km/h
- Among MS with speed limit 130km/h, average speed varies between 102 km/h (Italy) and 127 km/h (Czechia)

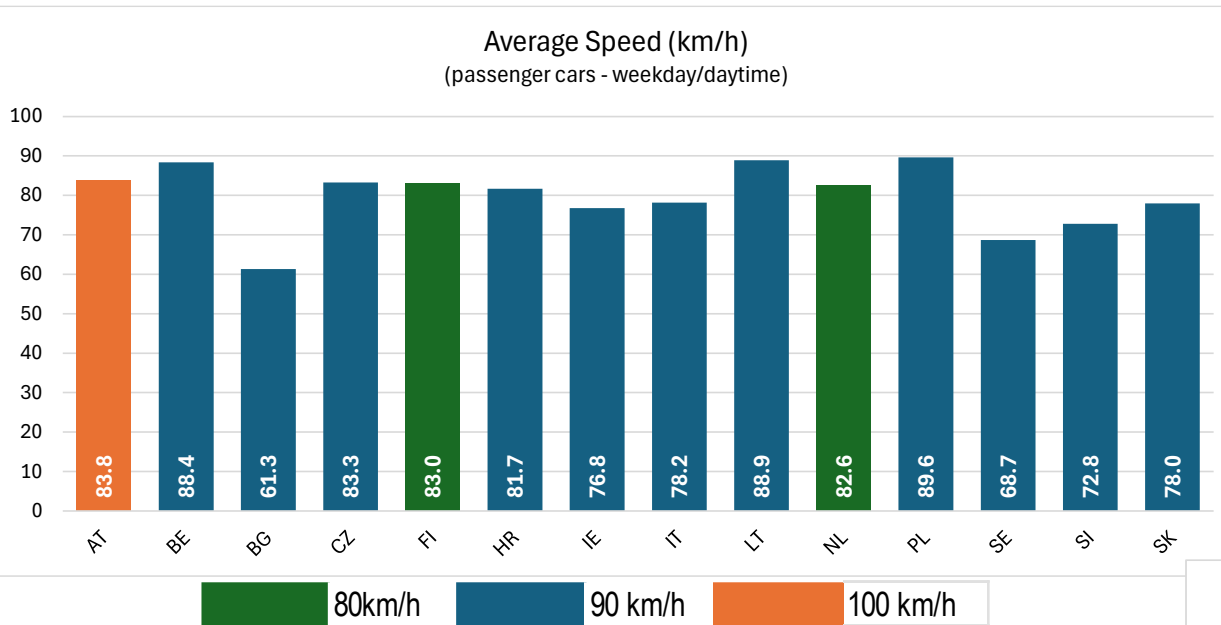


# Speed KPI – Rural Roads



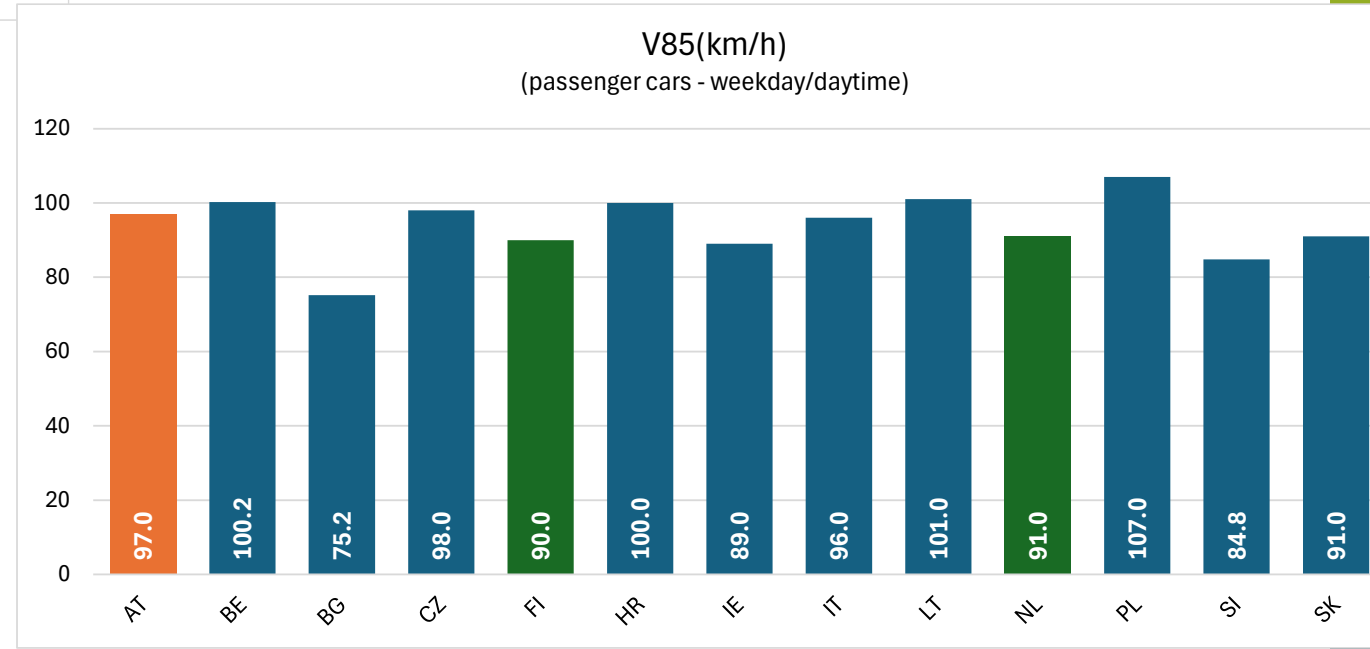
- KPI speed varies from 35% to 96%
- Among MS with speed limit 90km/h, KPI varies between 55% (Sweden) and 96% (Bulgaria)
- KPIs for the speed limit of 80km/h are lower

# Speed Indicators – Rural Roads

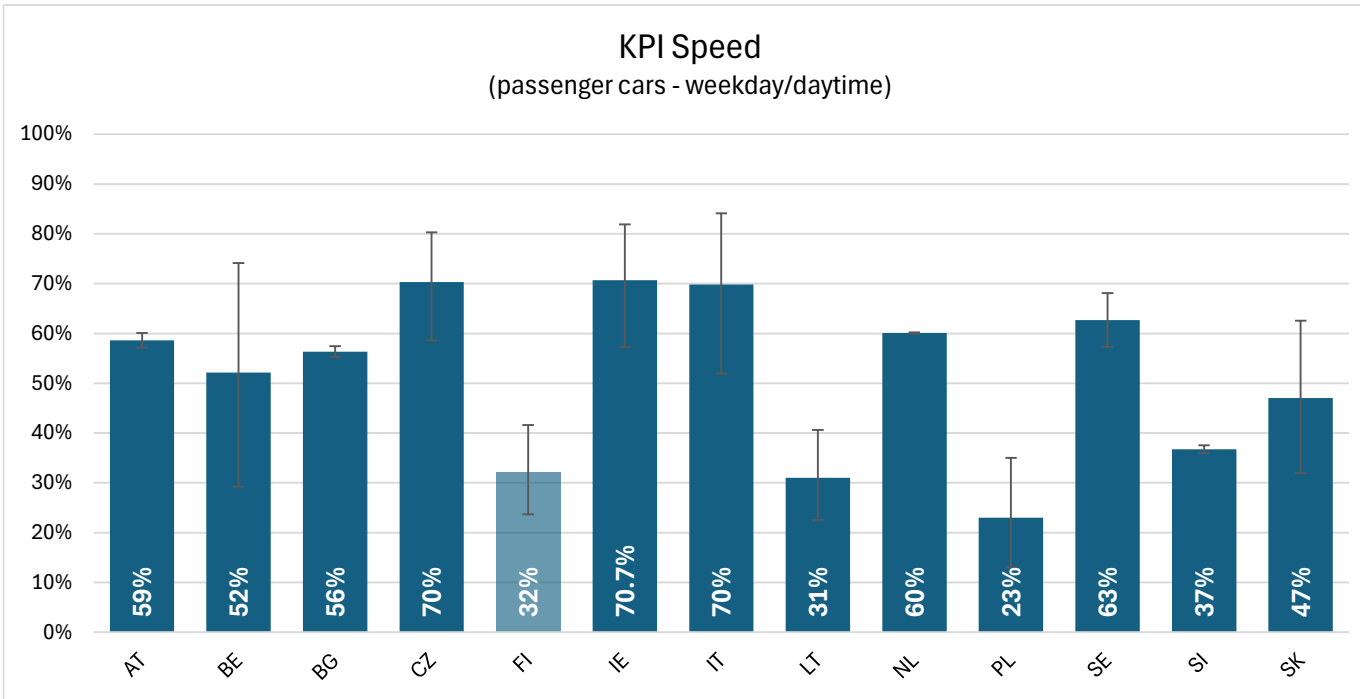


- Average speed varies between 61.3 km/h (Bulgaria) and 89.6 km/h (Poland)
- Average speed of MS with 80km/h speed limit is close to the that of remaining MS

- V85 varies between 75.2 km/h (Bulgaria) and 107 km/h (Poland)
- V85 of MS with 80km/h speed limit is close to the that of remaining MS
- V85 lies between 7 km/h to 17 km/h higher than the average speed



# Speed KPI – Urban Roads

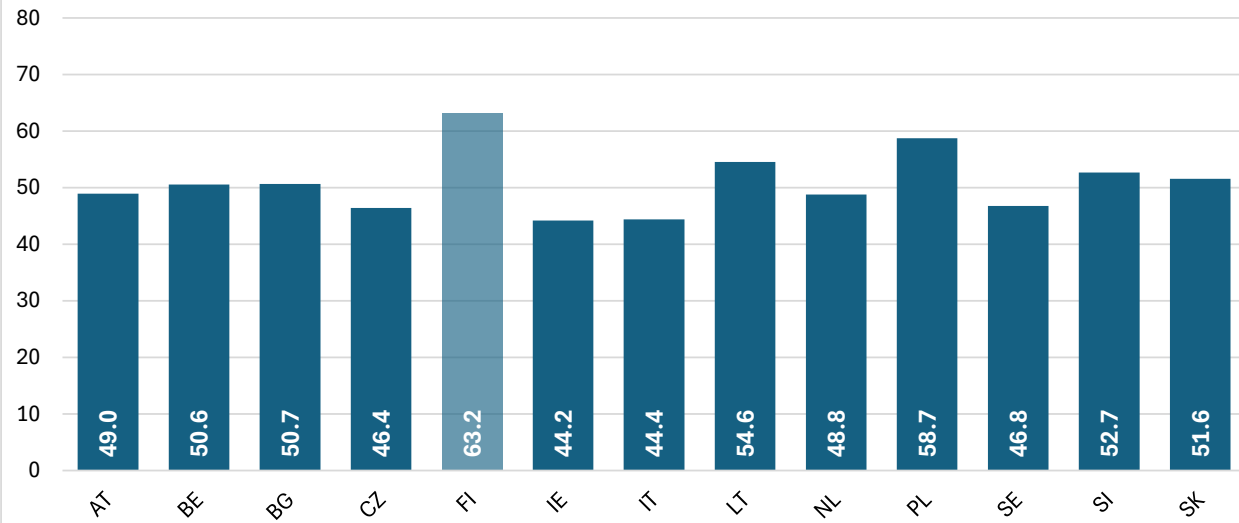


\* FI: Low number of locations

- Speed limit: 50km/h
- KPI speed varies from 23% (Poland) to 71% (Ireland)
- KPIs for urban roads are lower than the KPIs for the other road types for most MS

# Speed Indicators – Urban Roads

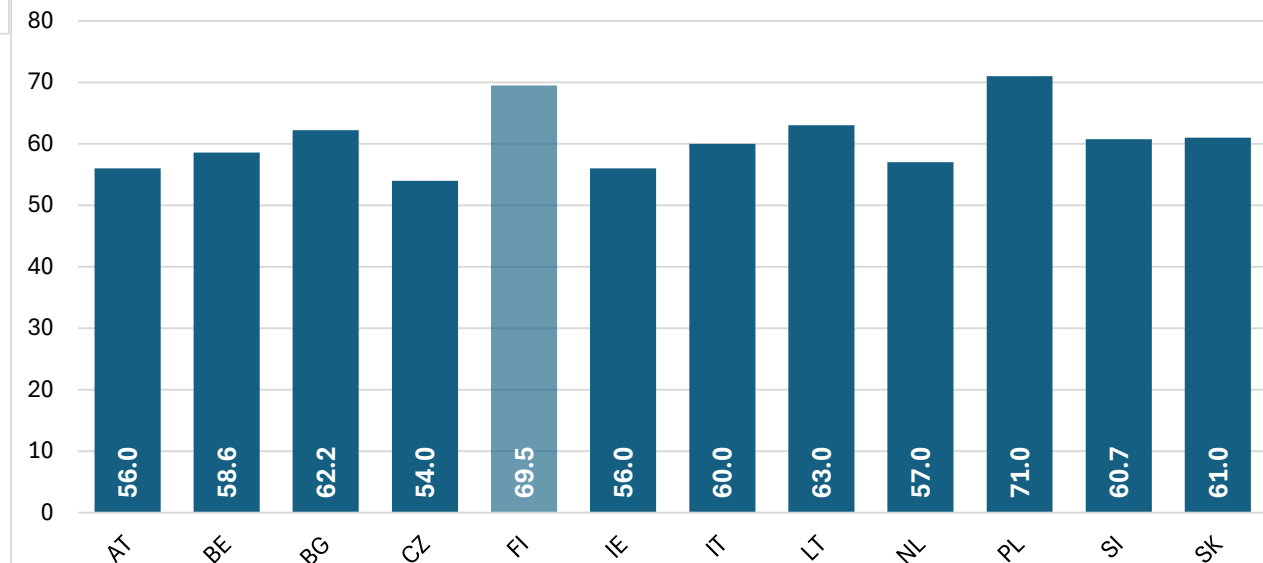
Average Speed (km/h)  
(passenger cars - weekday/daytime)



\* FI: Low number of locations

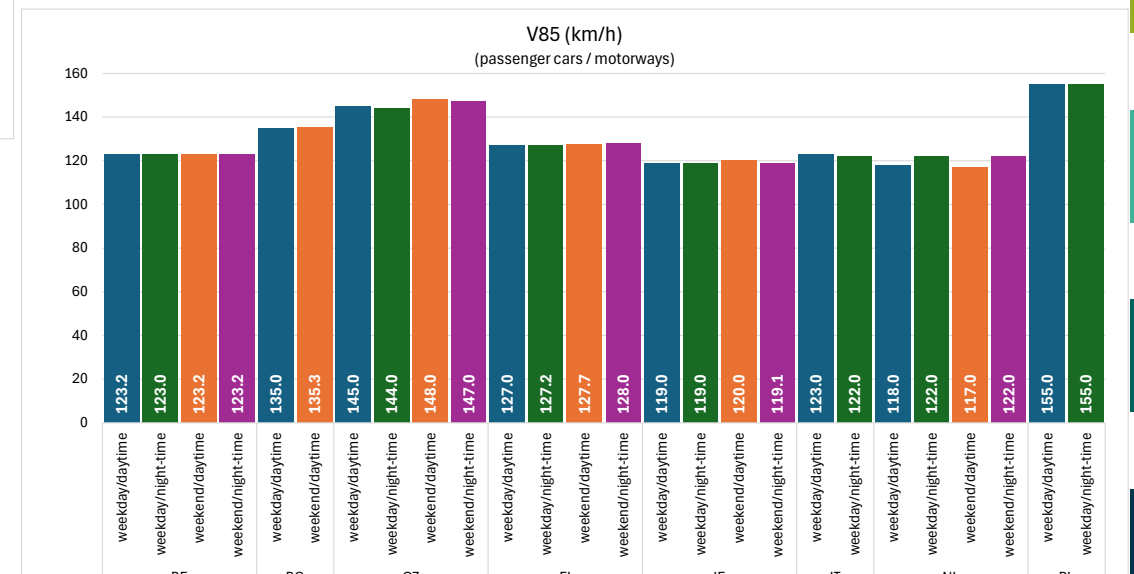
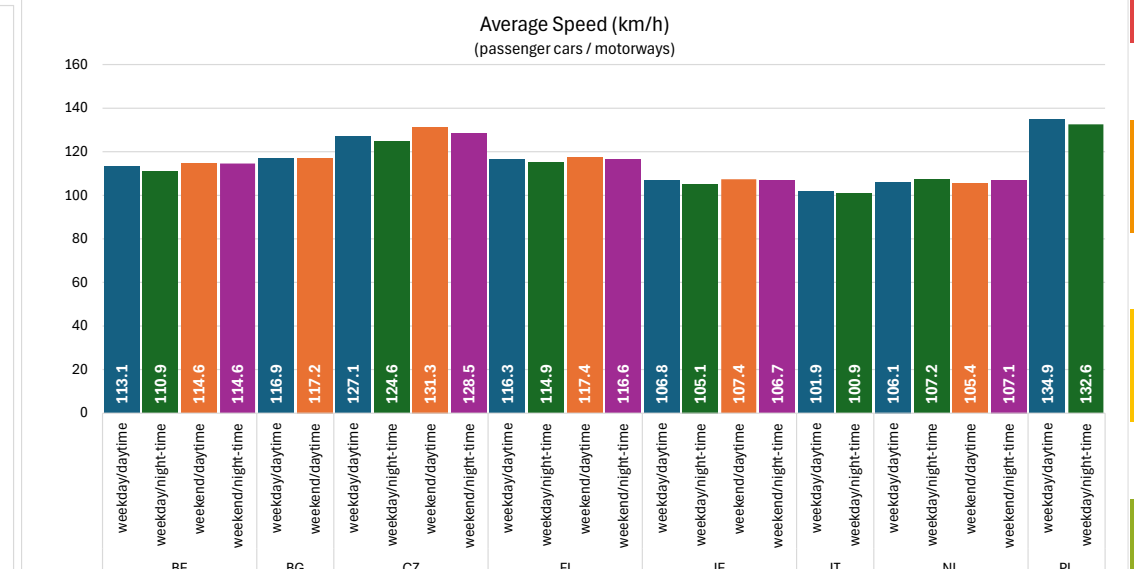
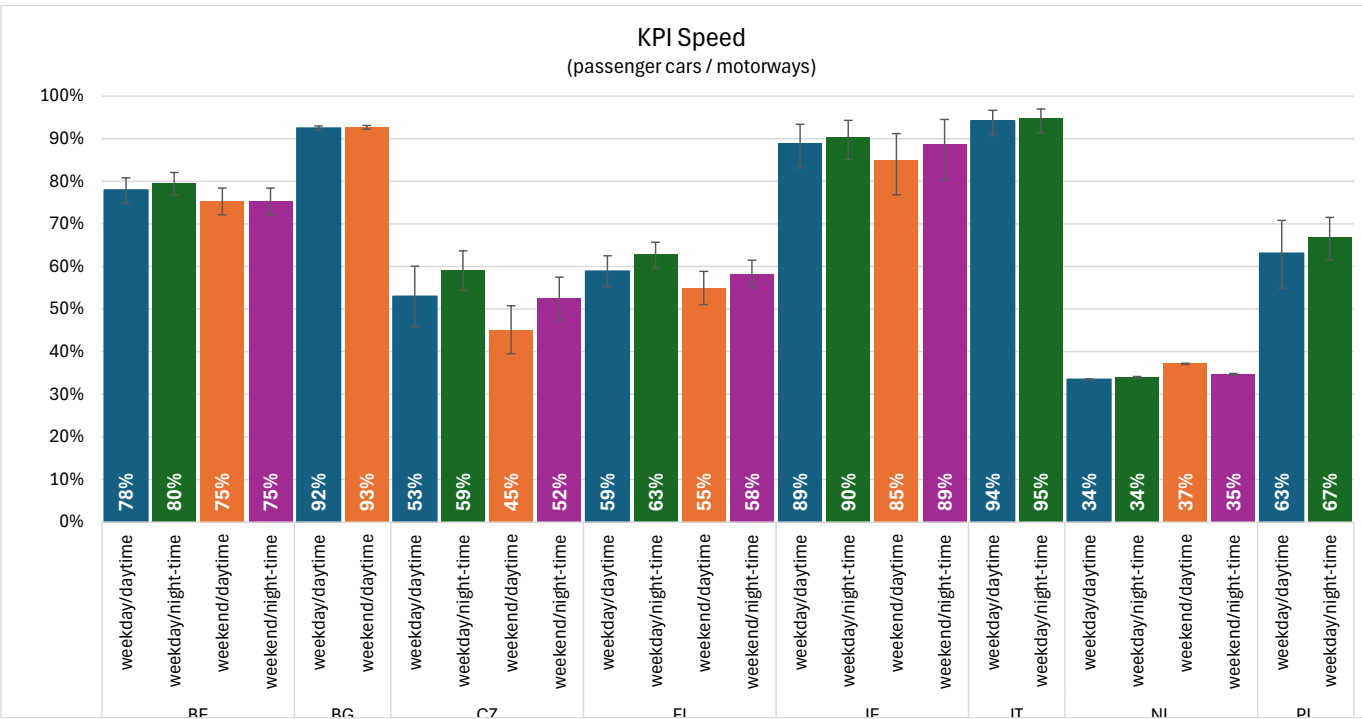
- Average speed varies between 44.2 km/h (Ireland) and 63.2 km/h (Finland)

V85 (km/h)  
(passenger cars - weekday/daytime)



- V85 varies between 54 km/h (Czechia) and 71 km/h (Poland)
- V85 lies between about 8 km/h to 16 km/h higher than the average speed

# Speed Indicators by time period - Motorways

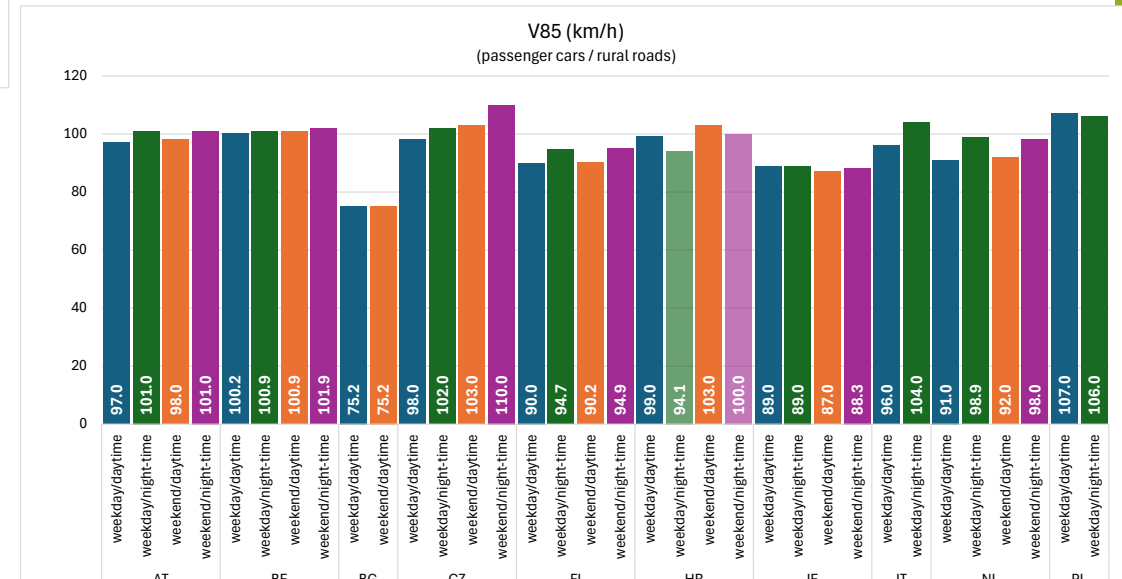
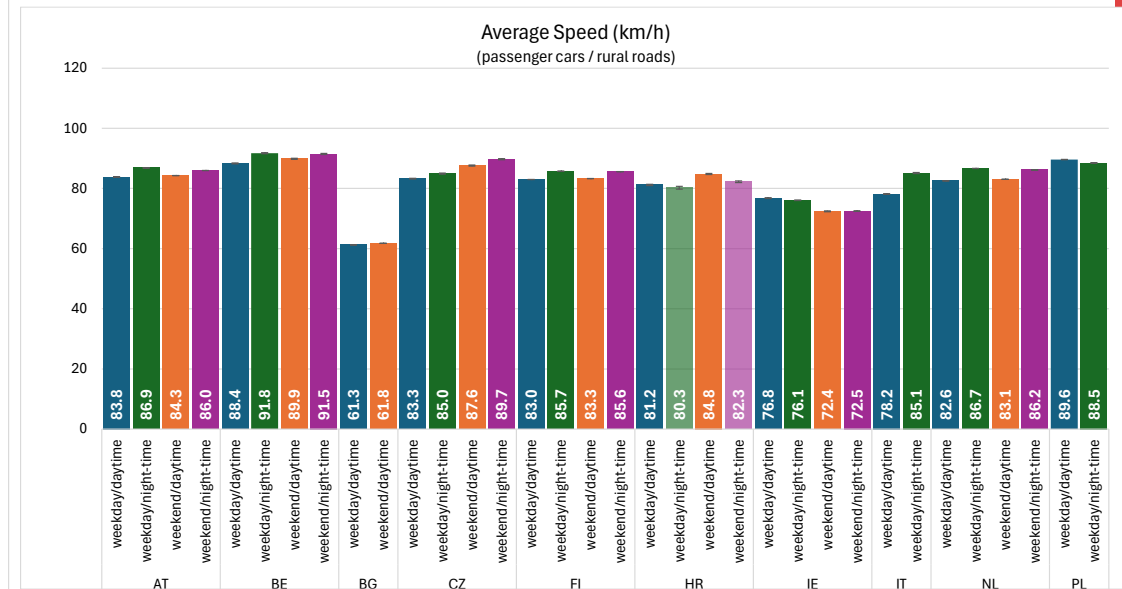
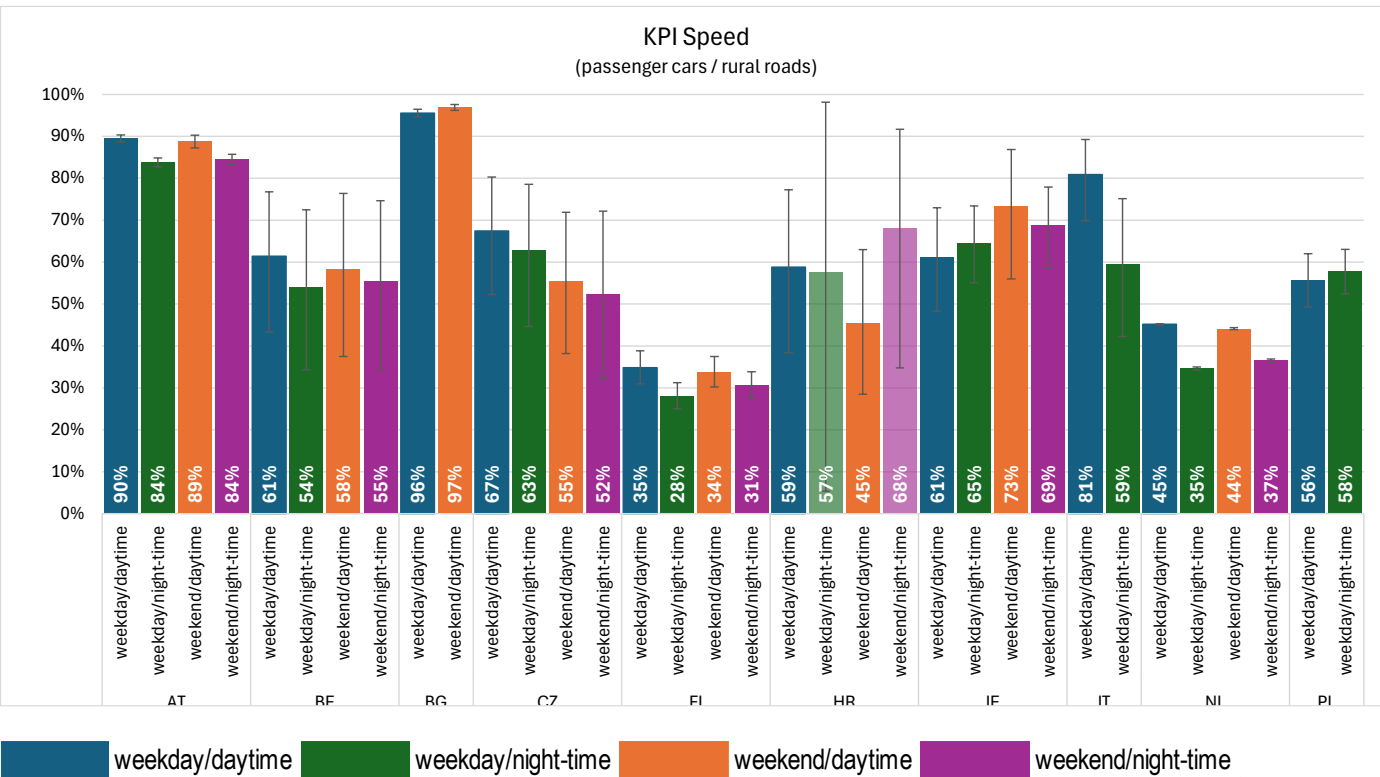


■ weekday/daytime ■ weekday/night-time ■ weekend/daytime ■ weekend/night-time

\* PL: Low number of locations for 140km/h speed limit

- KPIs on motorways do not differentiate significantly among different time periods for almost all MS
- The same applies for average speed and V85

# Speed Indicators by time period – Rural roads

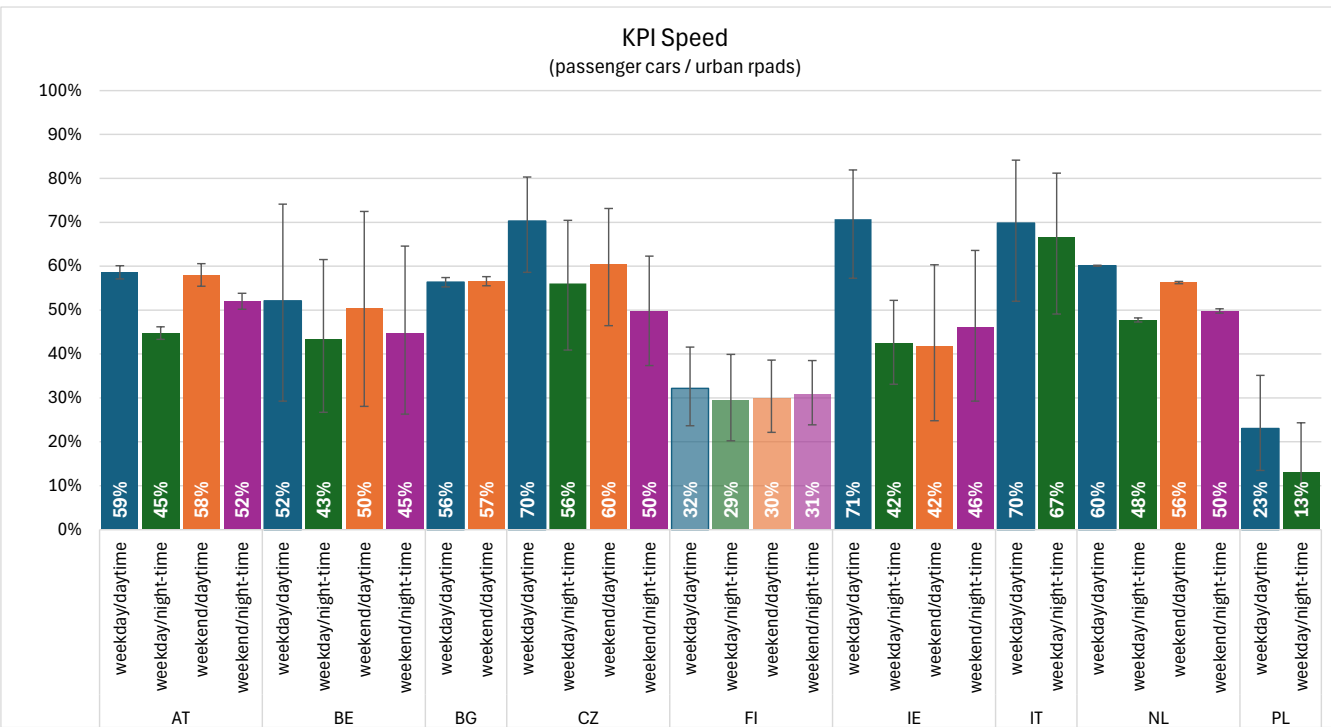


\* HR: Low number of locations during night-time

- KPIs on rural roads are lower during night-time (weekday/weekend); though not statistically significant differences in some MS
- Average speed and V85 do not differentiate significantly by time period; somehow higher during night-time in few MS



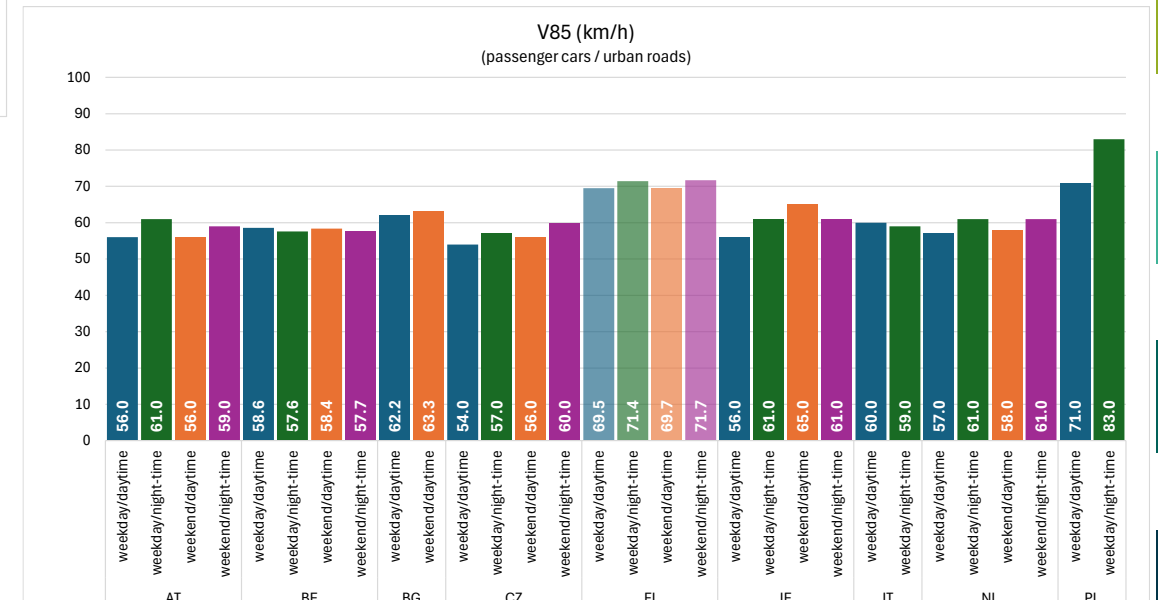
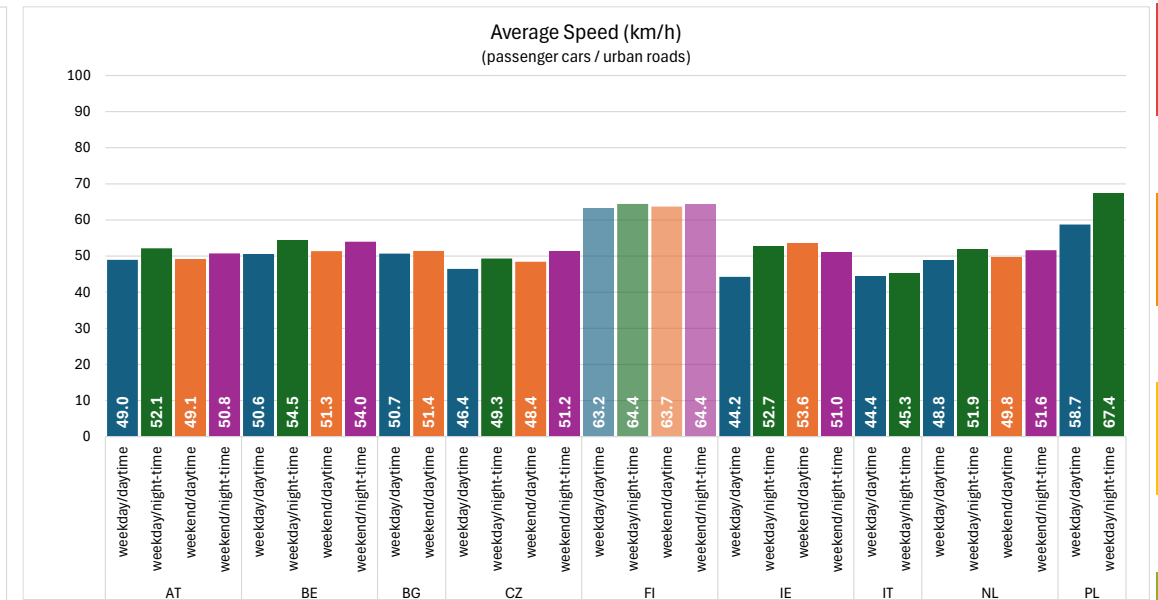
# Speed Indicators by time period – Urban roads



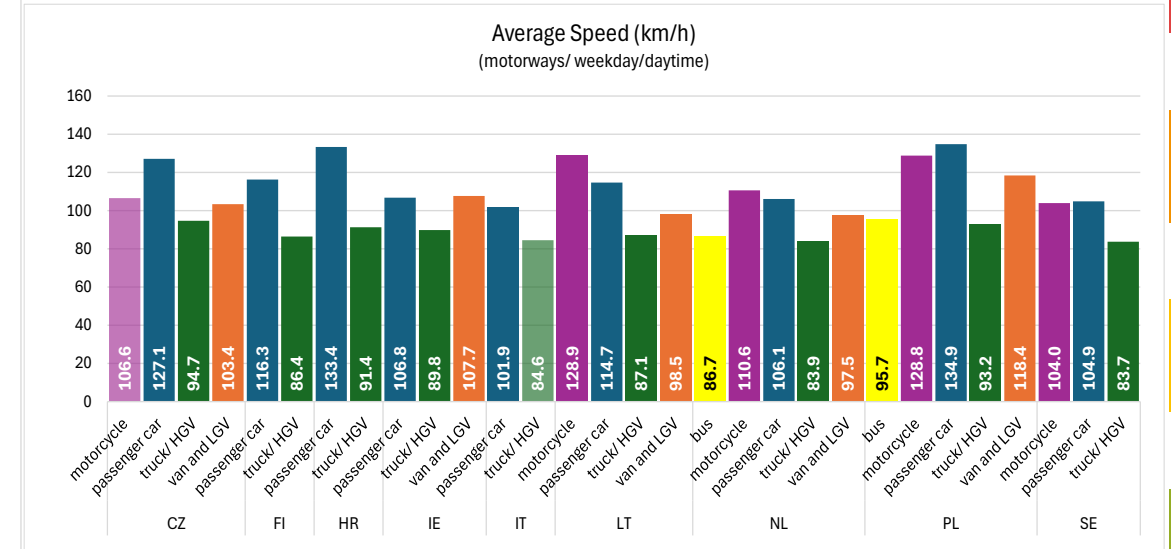
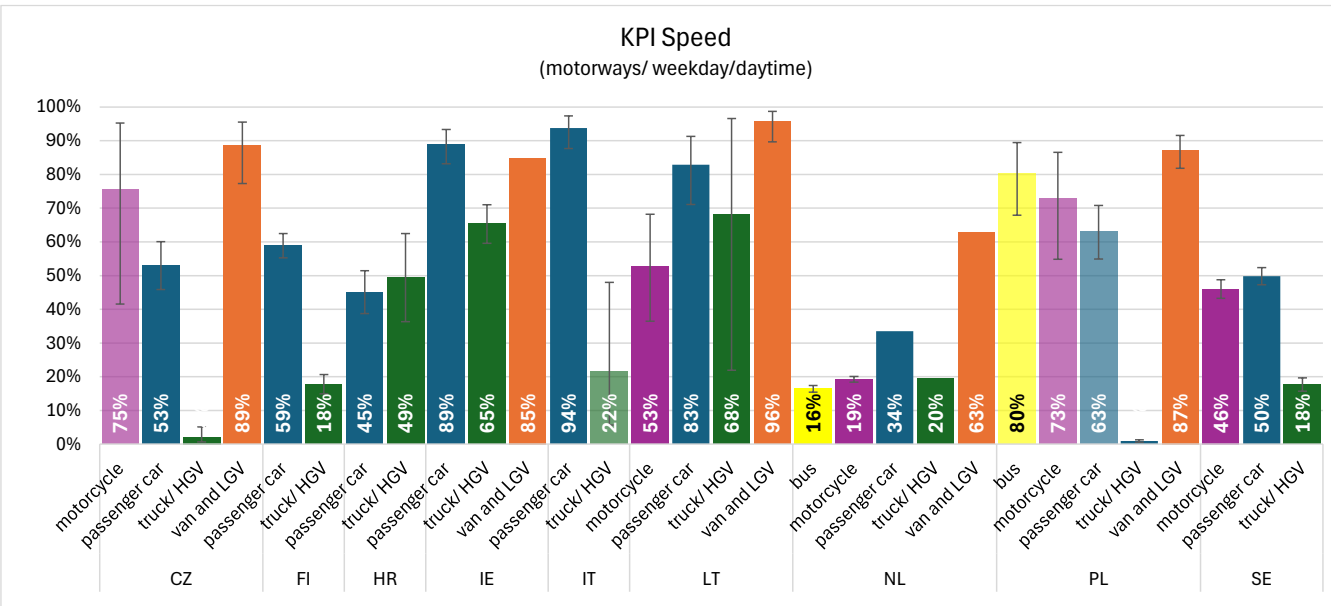
■ weekday/daytime 
 ■ weekday/night-time 
 ■ weekend/daytime 
 ■ weekend/night-time

\* FI: Low number of locations

- KPIs on urban roads are lower during night-time on weekdays in most MS; though not statistically significant differences for all MS
- Average speed and V85 do not differentiate significantly among time periods in almost all MS



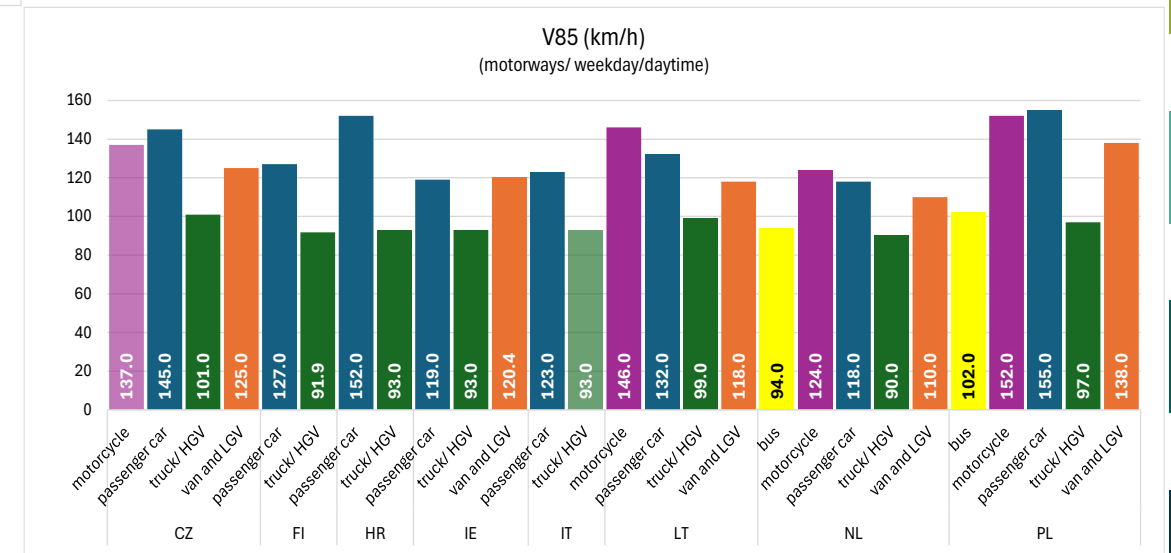
# Speed Indicators by vehicle type - Motorways



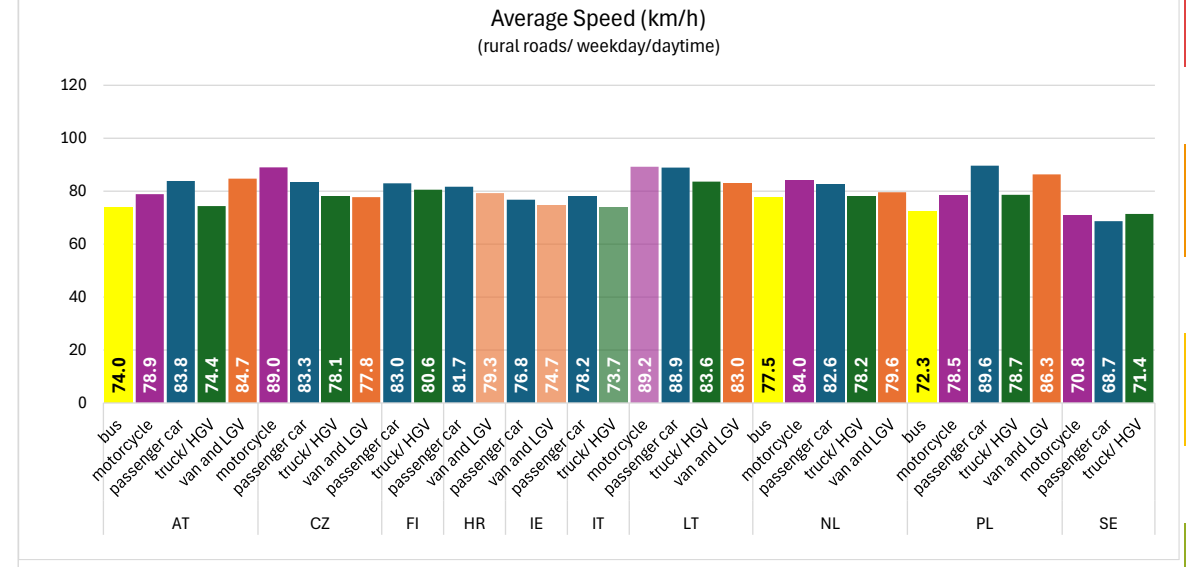
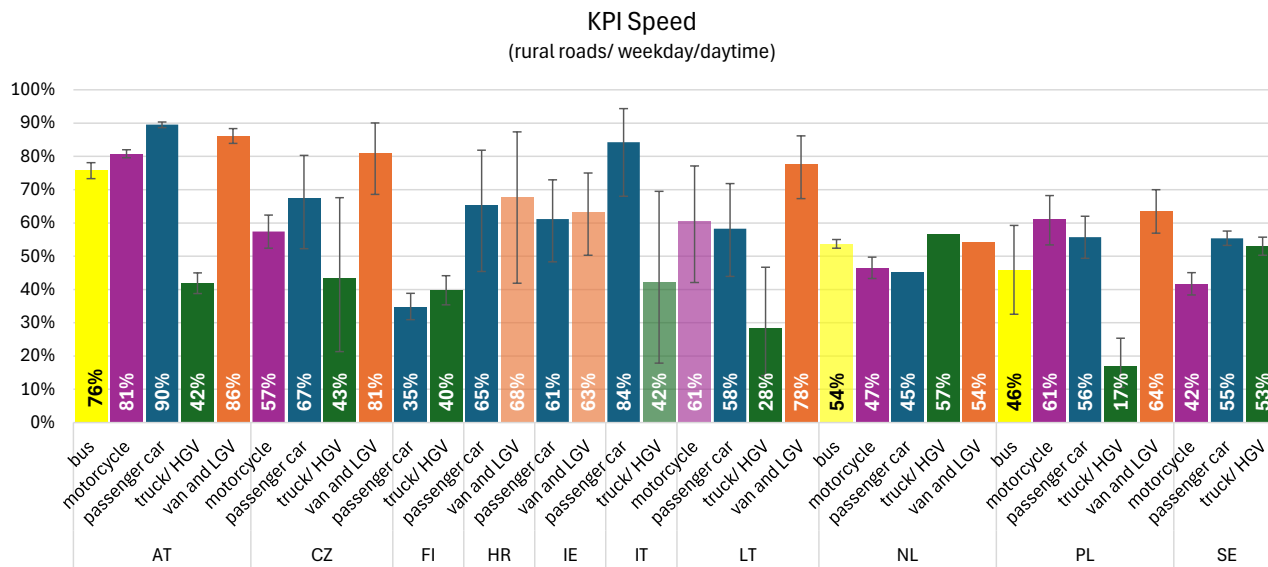
motorcycle passenger car truck/HGV van/LGV bus

\* CZ, PL (140km/h): Low number of locations; sample>500 in CZ; sample<500 for motorcycles in PL;  
IT: vans/trucks/buses included in truck/HGV group

- KPIs on motorways are lower for trucks and HGVs, followed by motorcycles in most MS
- Average speed of trucks and HGVs varies from 85km/h to 95km/h and V85 from 90km/h to 101km/h
- Average speed of motorcycles varies from 107km/h to 129km/h and V85 from 124km/h to 152km/h



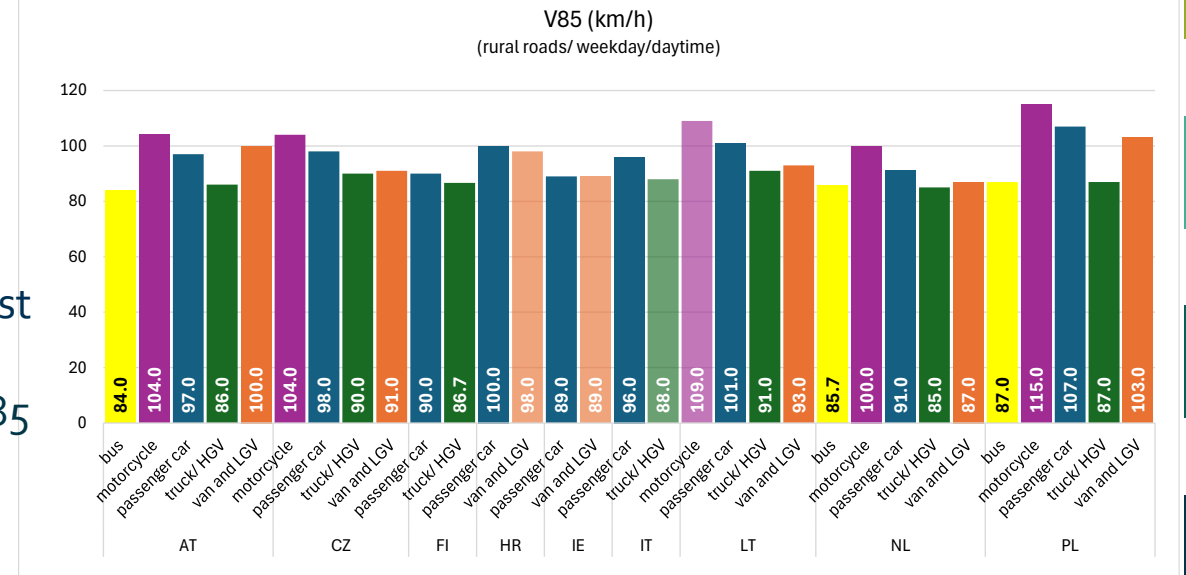
# Speed Indicators by vehicle type – Rural roads



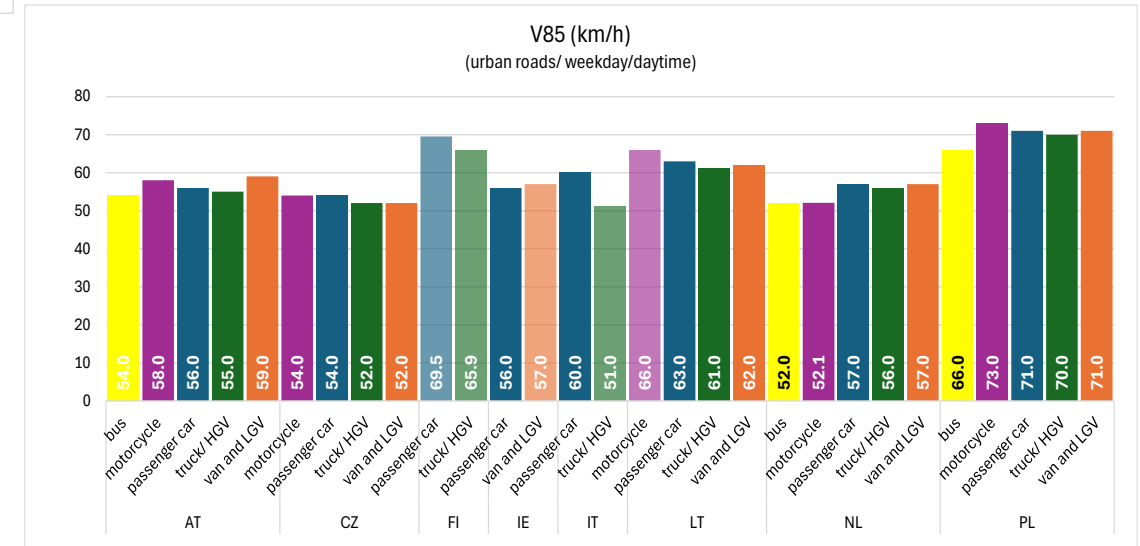
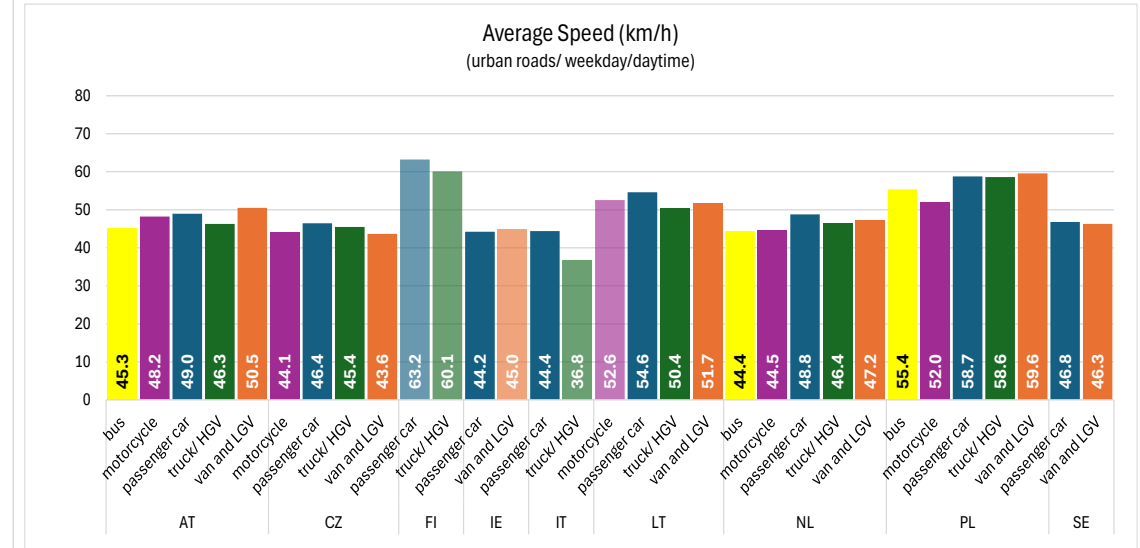
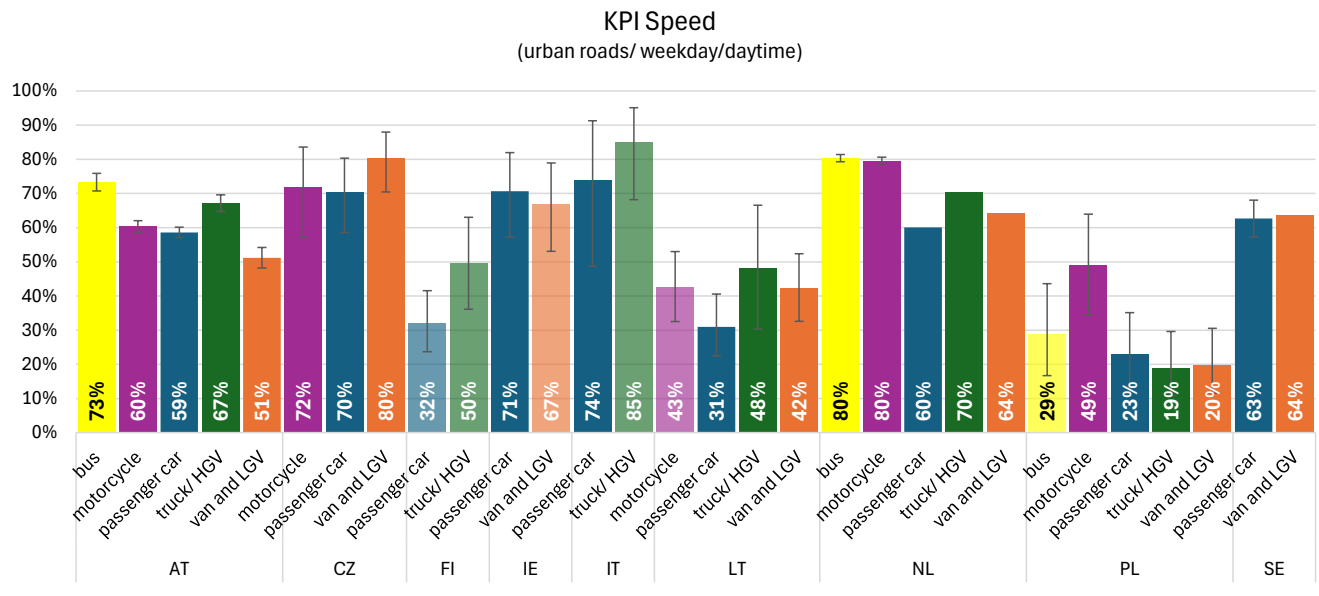
motorcycle passenger car truck/HGV van/LGV bus

CZ: Low number of locations for motorcycles; sample>500; sample<500 for motorcycles in LT;  
IT: vans/trucks/buses included in truck/HGV group; sample<500 for vans & LGV in HR, IE

- No common pattern among MS:
  - KPIs are lower for trucks and HGVs in most MS
  - KPIs for motorcycles are lower than KPIs for passenger cars in most MS
- Average speed of motorcycles varies from 71km/h to 89km/h and V85 from 100km/h to 115km/h
- Average speed of vans and LGVs varies from 78km/h to 86km/h and V85 from 87km/h to 103km/h



# Speed Indicators by vehicle type – Urban roads



\* FI: Low number of locations; LT: sample < 500 for motorcycles; IT: vans/trucks/buses included in truck/HGV group

- No common pattern among MS:
  - In most MS, KPIs for passenger cars are lower compared to the remaining transport modes; though not statistically differences are observed in all cases
- Average speed of motorcycles varies from 44km/h to 52km/h and V85 from 52km/h to 73km/h
- Average speed of vans and LGVs varies from 44km/h to 60km/h and V85 from 52km/h to 71km/h

# Speed Indicators by speed limit (1/2)

## Motorways

Country	Speed limit (km/h)	KPI (CIs)	Avg Speed (km/h)	V85 (km/h)
Finland	100	<b>36%</b> (31.2%-40.3%)	103	112
	120	<b>59%</b> (55.2%-62.5%)	116	127
Poland	120	<b>36%</b> (27.7%-44.6%)	128	147
	140	<b>49%</b> (45.5%-51.9%)	121	149

## Rural Roads

Country	Speed limit (km/h)	KPI (CIs)	Avg Speed (km/h)	V85 (km/h)
Austria	70	<b>58%</b> (55.7%-59.4%)	69	79
	80	<b>77%</b> (75.2%-77.9%)	74	84
	100	<b>90%</b> (88.7%-90.4%)	84	97
Belgium	70	<b>59%</b> (42.3%-73.3%)	68	77
	90	<b>61%</b> (43.4%-76.8%)	88	100
Finland	60	<b>25%</b> (16.2%-36.5%)	64	71
	80	<b>35%</b> (31.0%-38.8%)	83	90
	100	<b>62%</b> (59.5%-65.4%)	97	105
Ireland	80	<b>61%</b> (48.3%-72.9%)	77	89
	100	<b>70%</b> (56.9%-81.8%)	95	108

- Few MS recorded KPIs per speed limit by road type
- Lower KPIs are observed on roads with lower speed limits by road type in each MS

# Speed Indicators by speed limit (2/2)

## Urban Roads

Country	Speed limit (km/h)	KPI (C/s)	Avg Speed (km/h)	V85 (km/h)
Austria	30	<b>28%</b> (26.3%-29.0%)	34	41
	50	<b>59%</b> (57.1%-60.1%)	49	56
Belgium	30	<b>19%</b> (9.9%-33.4%)	39	49
	50	<b>52%</b> (29.2%-74.2%)	51	59
Ireland	30	<b>40%</b> (26.9%-55.1%)	32	40
	50	<b>71%</b> (57.2%-81.9%)	44	56
Italy	30	<b>45%</b> (25.9%-65.4%)	34	48
	50	<b>70%</b> (52.0%-84.2%)	44	60

- KPIs observed on roads with 30km/h are considerably lower than the KPIs on roads with 50 km/h speed limit

# Comparison with Baseline

## KPIs - Motorways

Country	Baseline	Trendline
AT	80.9%	81.8%
BE	56.4%	78.0%
BG	89.4%	92.5%
CZ	39.8%	53.0%
FI	54.5%	58.9%
IE	88.0%	89.0%
LT	76.8%	82.9%
PL-140	71.3%	63.1%
PL-120	43.7%	35.8%
SE	44.4%	49.8%

## KPIs - Rural Roads

Country	Baseline	Trendline
AT	88.9%	89.5%
BE	46.0%	61.4%
BG	93.4%	95.6%
CZ	54.5%	67.4%
FI	38.7%	34.8%
IE	80.0%	61.1%
LT	47.2%	58.3%
PL	51.9%	55.7%
SE	51.7%	55.4%

## KPIs - Urban Roads

Country	Baseline	Trendline
AT	57.4%	58.6%
BE	49.9%	52.1%
BG	44.7%	56.4%
CZ	57.3%	70.3%
FI	43.0%	32.2%
IE	25.0%	70.7%
LT	36.4%	31.0%
PL	20.5%	23.0%
SE	66.0%	62.7%

- 9 MS with both Baseline and Trendline data
  - CIs calculated differently
- KPIs on motorways and rural roads increased in 8 and 7 MS respectively
- KPIs on urban roads increased in 6 MS

# Discussion

- Speed indicators (KPI, Average speed, V85) available for **14 MS**
- **Minimum requirements met** by almost all MS, including sample design, number of locations per road type, minimum sample per road type, traffic and weather conditions
- **Weighted results** in all cases were provided:
  - Almost all MS applied one of the two recommended weighting options
  - CIs were calculated for all KPIs; for some MS these were large
- Breakdown **by speed limit** by road type is preferred for comparison among MS
- KPIs on **urban roads** are lower than those on the other road types for most MS
- Behaviour appears to **depend on speed limits by road type**, with lower KPIs observed on roads with lower speed limits (based on data of few MS)
- Behaviour appears to depend on time period, however, statistically significant differences observed in few MS
- **Average speed** and **85<sup>th</sup> percentile of speed** provide additional insight
- Improvement in speed behaviour perhaps is observed in most MS; further **comparison with Baseline** results will be attempted for the final report



# Latest news: city-wide 30km/h speed limits in Greece

The **new Greek Traffic Road Code**, voted today foresees:

- the mandatory **30 km/h speed limit in all urban streets** of one or two directions with one lane per direction – in force from January 1<sup>st</sup>, 2026
- a more **rational fines system**
  - linked to the offences' severity & magnitude
  - punishing drivers instead of vehicles
  - further punishing recidivists
- **two-wheelers** filtering & advance stopping zones
- a large number of speeding monitoring **cameras**
- a new **digital fines** management system

