

In use engine speeds of M1 vehicles
at “maximum-normal” use

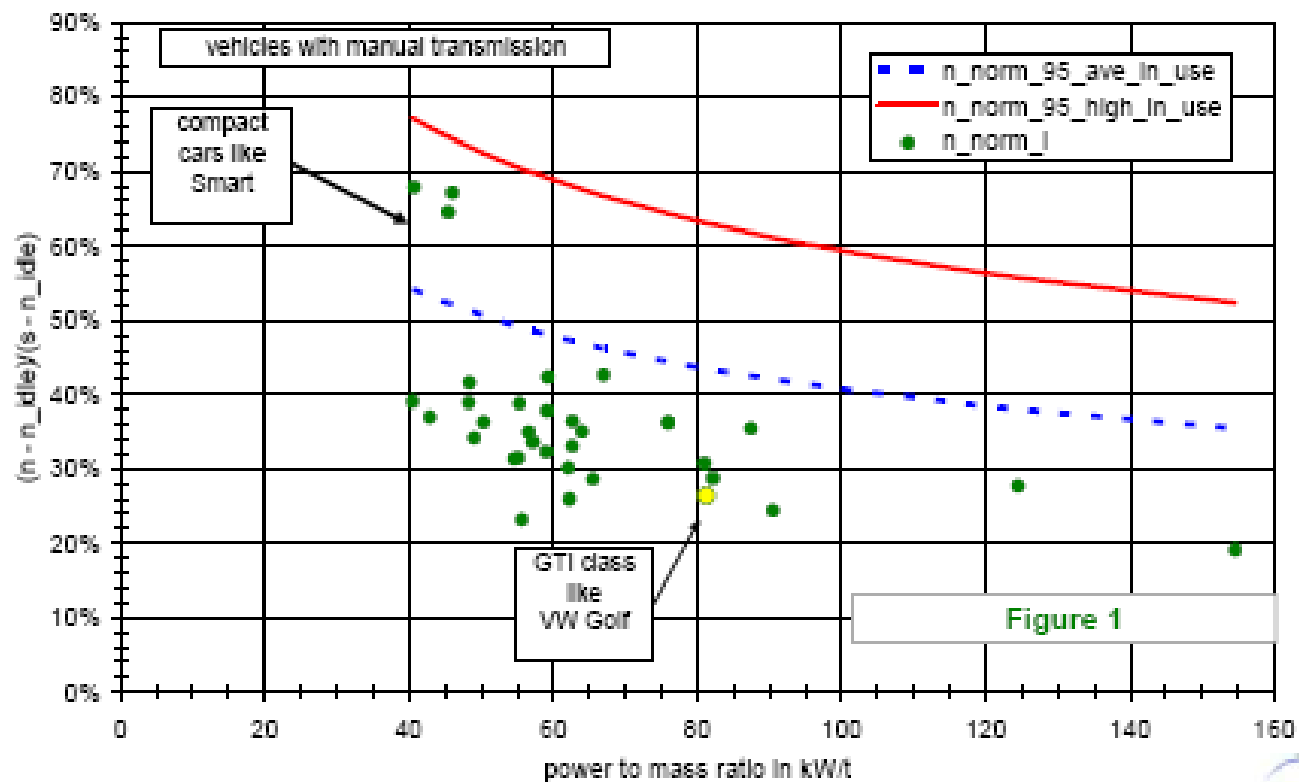
Additional information to facilitate
the discussion on the “red line” of
Annex 10

Annex 10 proposals

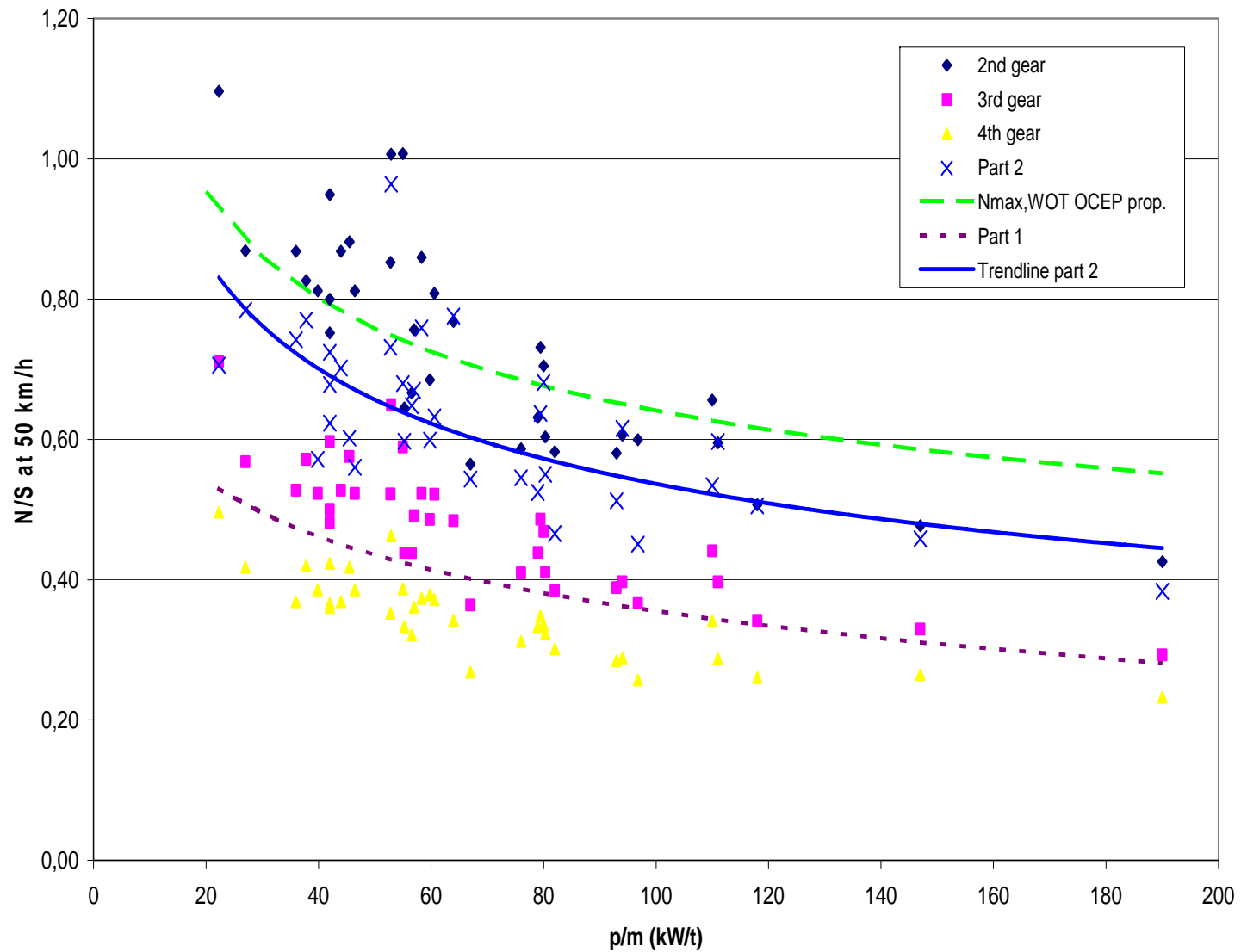
- German and NL proposals are in line with each other about maximum to cover engine speeds
- Maximum to cover engine speeds decrease with increasing PMR
- $n/S_{\max} =$
 - Circa 80% at 50 kW/t
 - Circa 60% at 100 kW/t
- French proposal will be clarified

German proposal

Norm. engine test speeds vs. in-use peak values



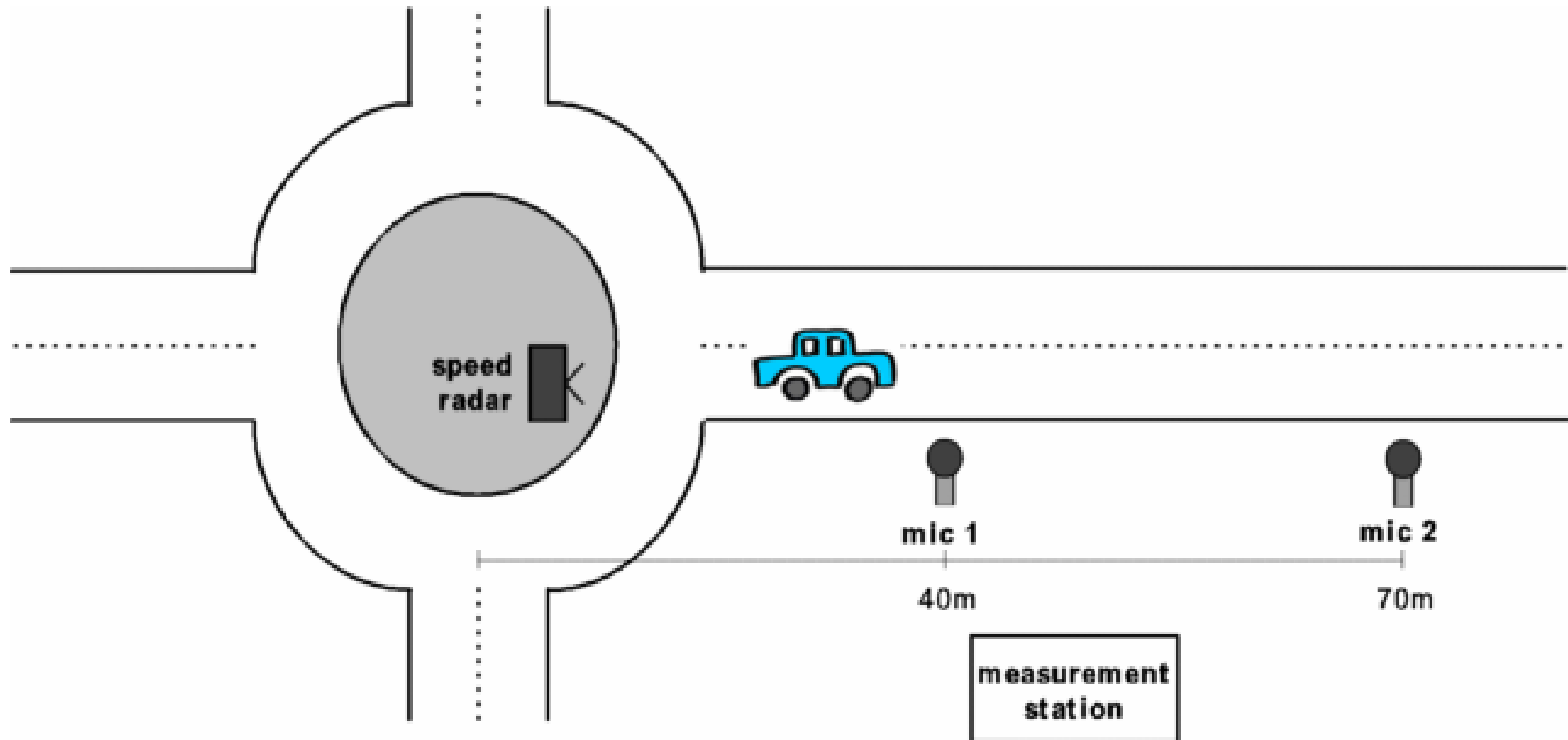
NL proposal for Annex 10



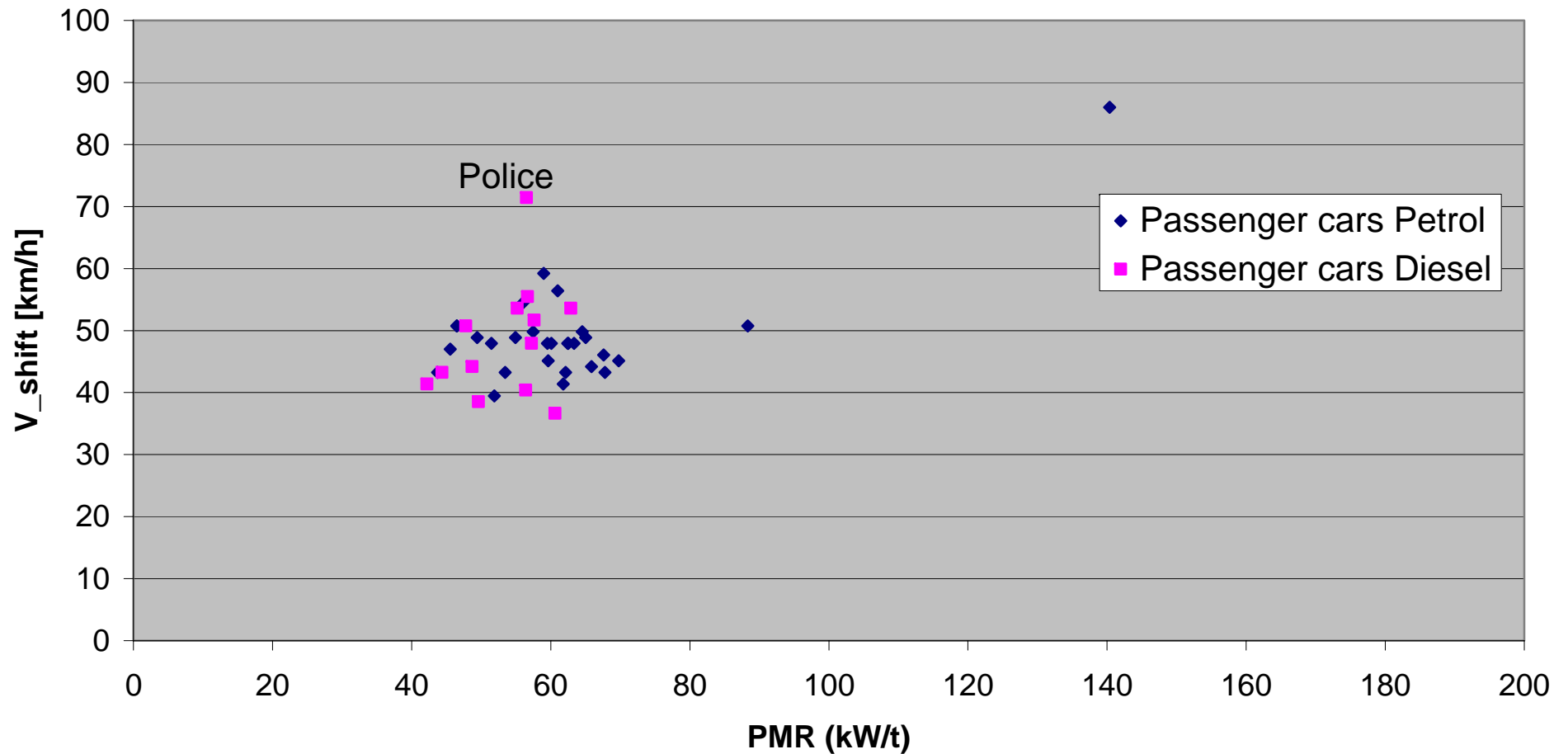
In use data on engine speed

- Three sources of data
 - Radar measurements at roundabout
 - Data logging in urban drive cycle
 - Press

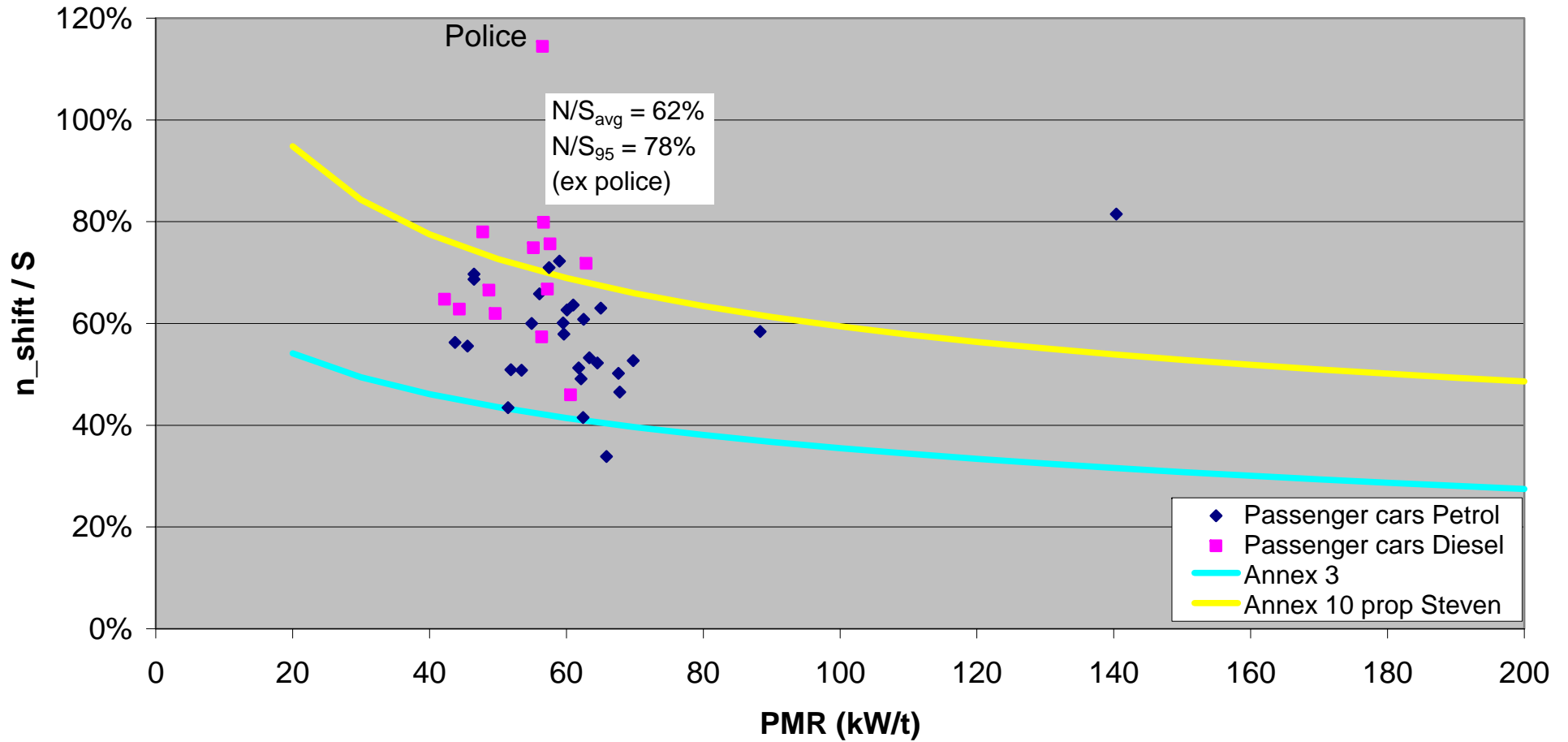
Radar measurements round about



**Vehicle speed just before shifting
during acceleration from roundabout (max speed: 100 km/h)
derived from radar and noise measurements along road side**



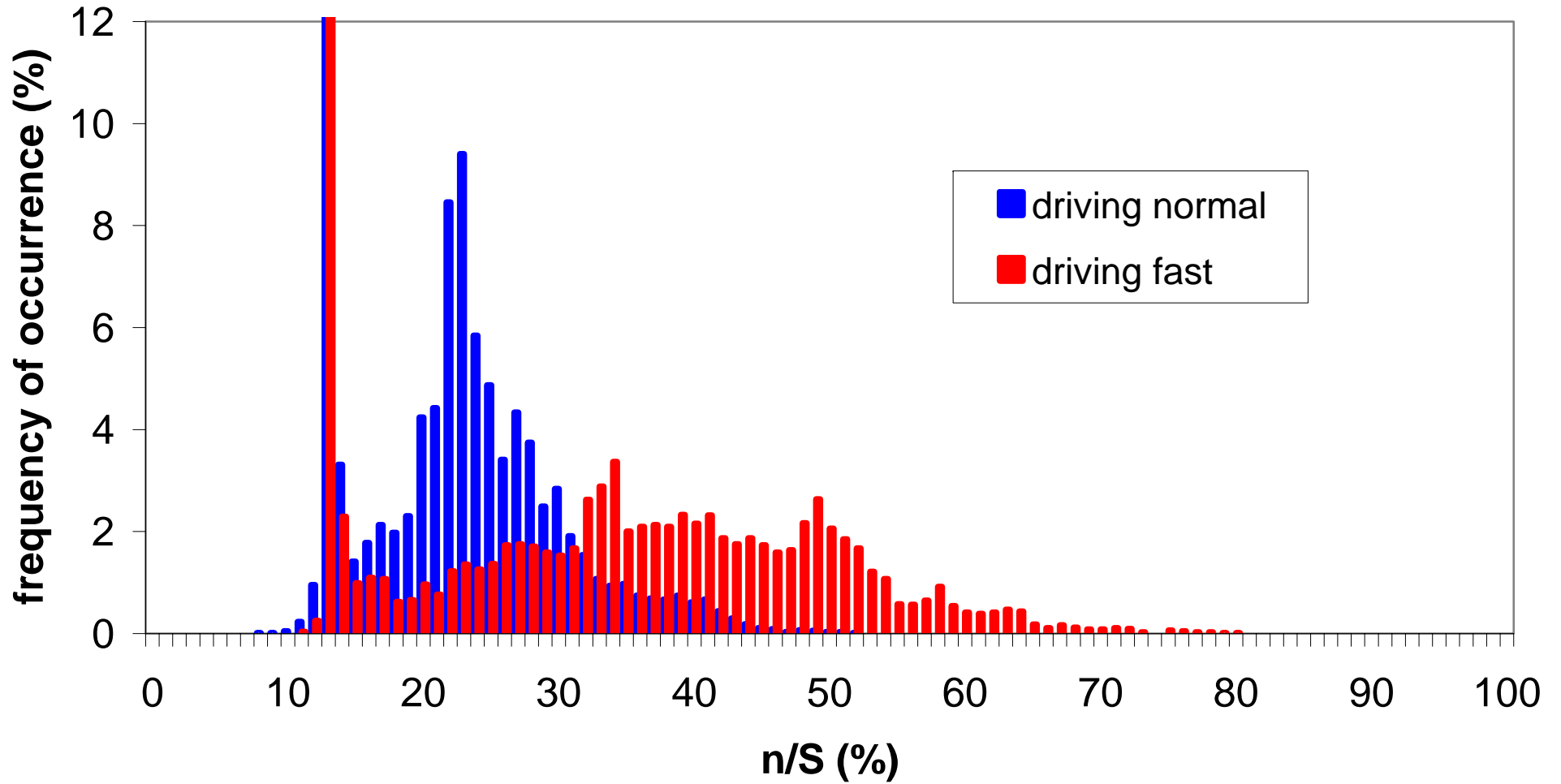
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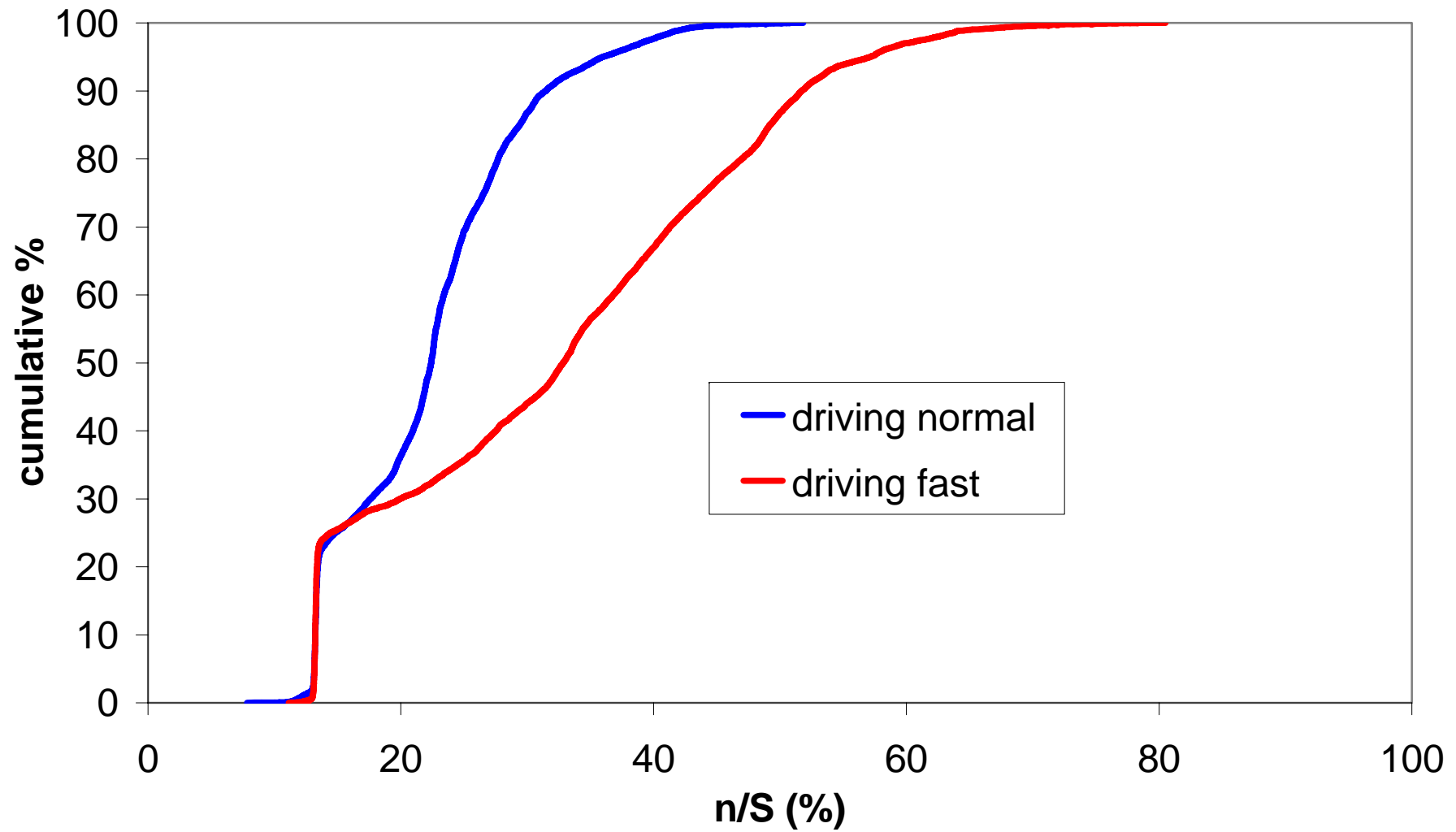
Data logging in urban drive cycle



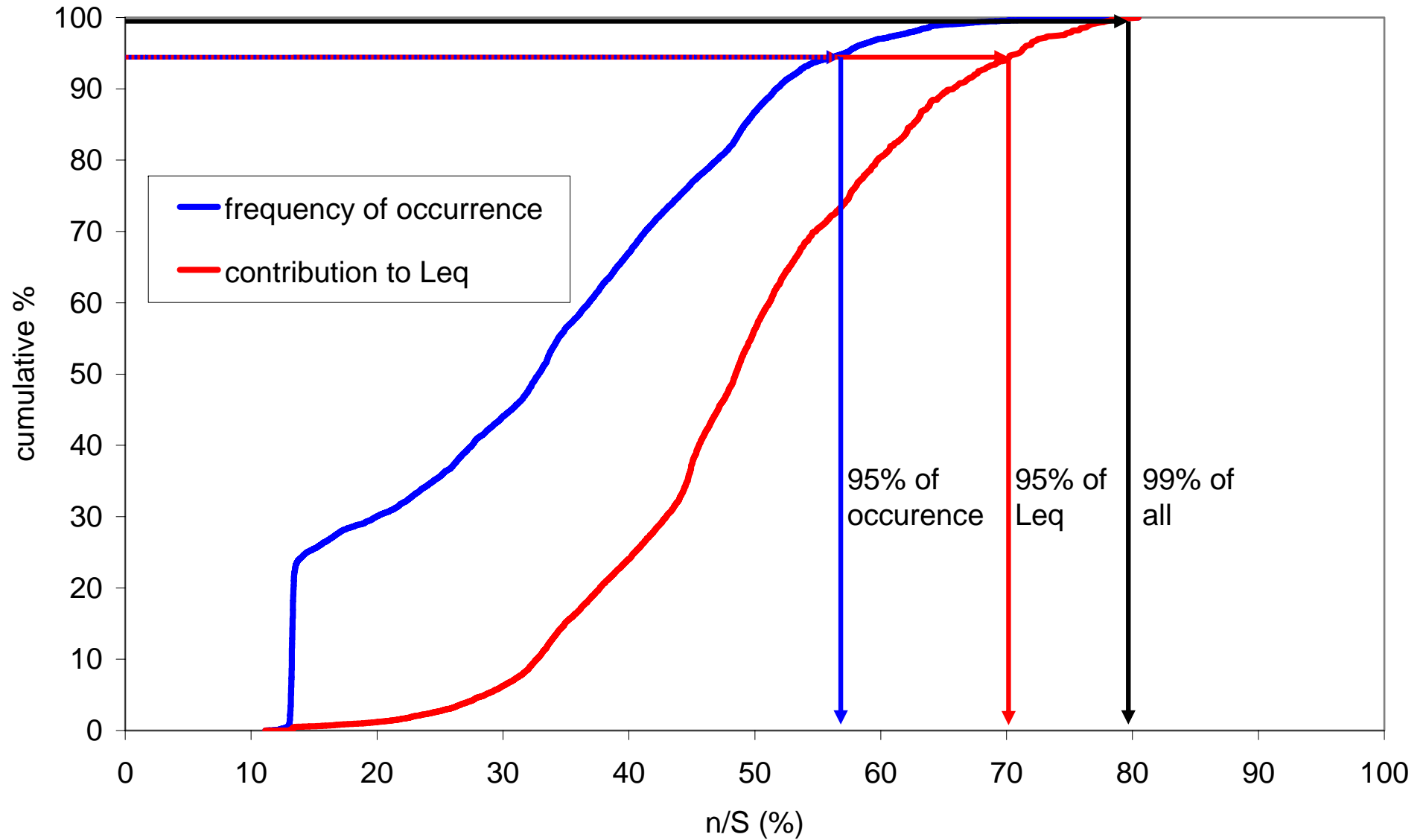
distribution of engine speed
passenger car 113 kW/t
rated engine speed 6000 1/min



cumulative distribution of engine speed
passenger car 113 kW/t
rated engine speed 6000 1/min



cumulative distribution of engine speed
passenger car 113 kW/t, driving fast
rated engine speed 6000 1/min



Press: example on new sports car

- The **sport mode** is still an "automatic" mode until you click one of the paddles. However it is very aggressive as it always tries to keep the car on boil between 4000 RPM and redline
- The engineers have included a **launch control** feature - put the transmission in "S" mode, turn off the Electronic Stability Program (ESP), hold the brake pedal down with your left foot and floor the gas. The revs will rise to 3,200 RPM and then quickly remove your foot from the brake pedal and the car will chirp the tires and launch HARD as if you revved a manual transmission and dropped the clutch. Pretty darn cool and a sure fire way to nail those stoplight launches.

Annex 10 data on this vehicle

- PMR = 121 kW/t
- S= 6300 1/min
- Nstart,launch-control = 51% = 3200 1/min
- Nmin sportmode = 63% = 4000 1/min
- Nmax Annex 10 = circa 60% = 3800 1/min

Discussion points on annex 10 proposals

- mass production vehicles (50-70 kW/t)
- emergency driving
- high performance vehicles?