



Driver behaviour and noise

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- Individual driving behaviour influences the noise emission of a vehicle.
- The influence is twofold: aggressive driving behaviour leads to
 1. higher maximum vehicle speed values and thus to higher tyre/road noise emissions, (mostly cars)
 2. higher engine speed values and thus to higher propulsion noise emissions (mostly motorbikes).
- Economic driving behaviour leads to lower emissions

- The possibility or the variation range for different driving behaviour depends on the difference between the power that is available and the power that is necessary for a given driving condition.
- The higher this difference, the higher the variation range of possible driving behaviour.
- Since the driving resistance power for constant speed v increases with v^3 , the variation range of driving behaviour is highest for urban (low vehicle speed) driving and lowest for motorway driving.
- For urban driving the driving behaviour is highly influenced by the acceleration behaviour.

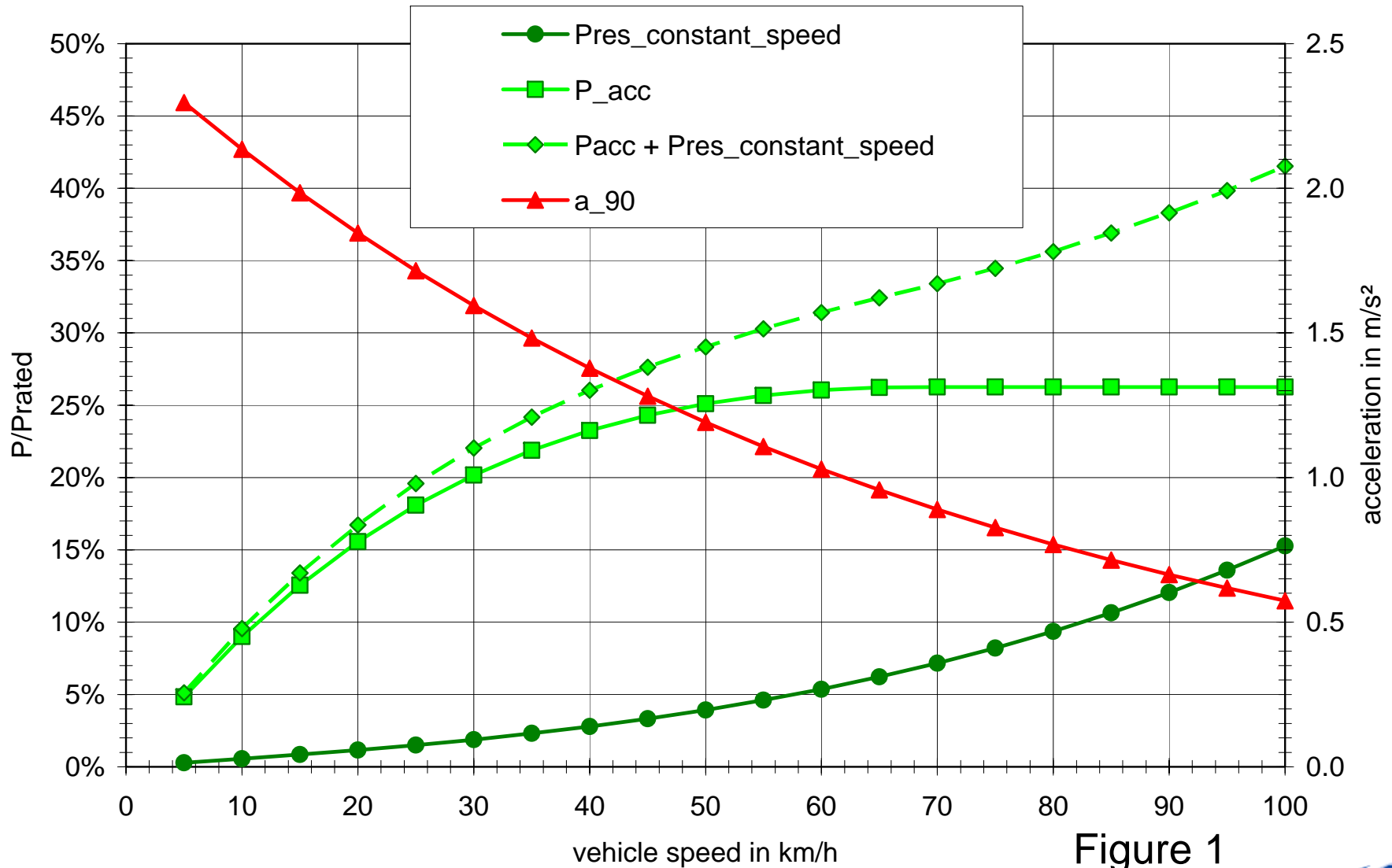


Figure 1



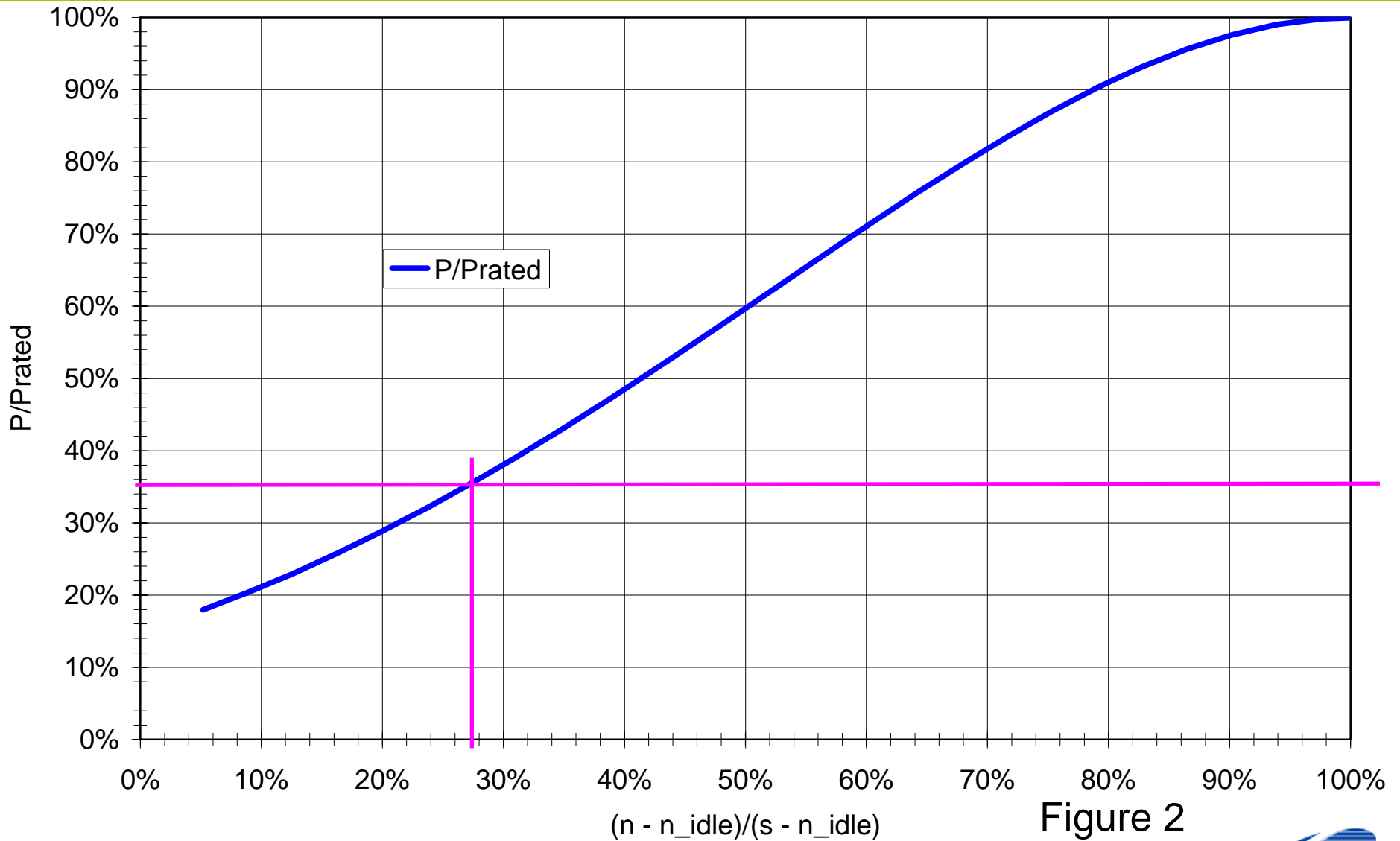


Figure 2

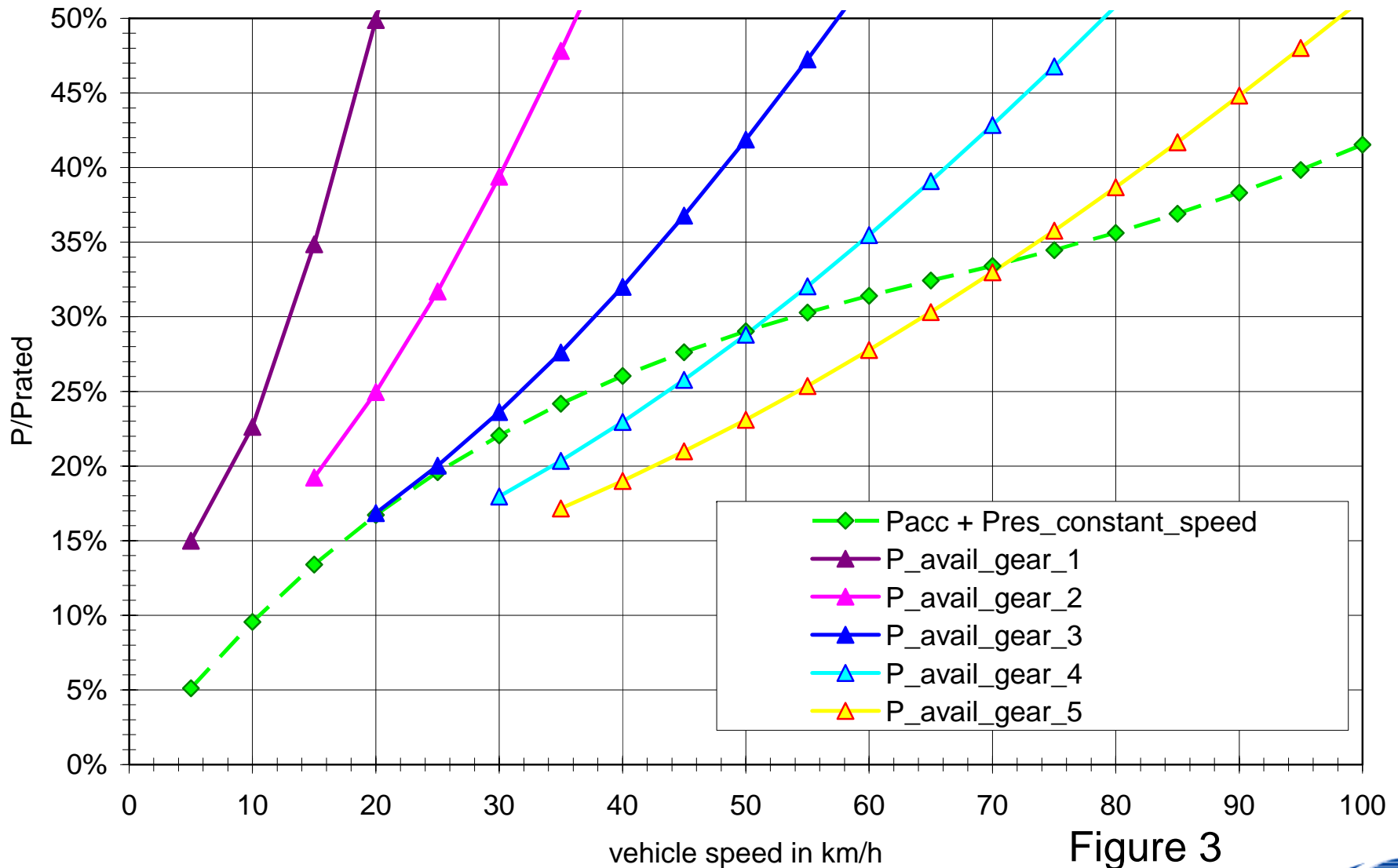


Figure 3



Low noise driving behaviour instructions

This results in the following instructions for low noise and low fuel consumption driving behaviour:

- Make upshifts to a higher gear during acceleration modes as early (at as low vehicle speeds) as possible.
- Avoid unnecessary acceleration modes and unnecessary vehicle speed peaks.



Results from TUEV investigations

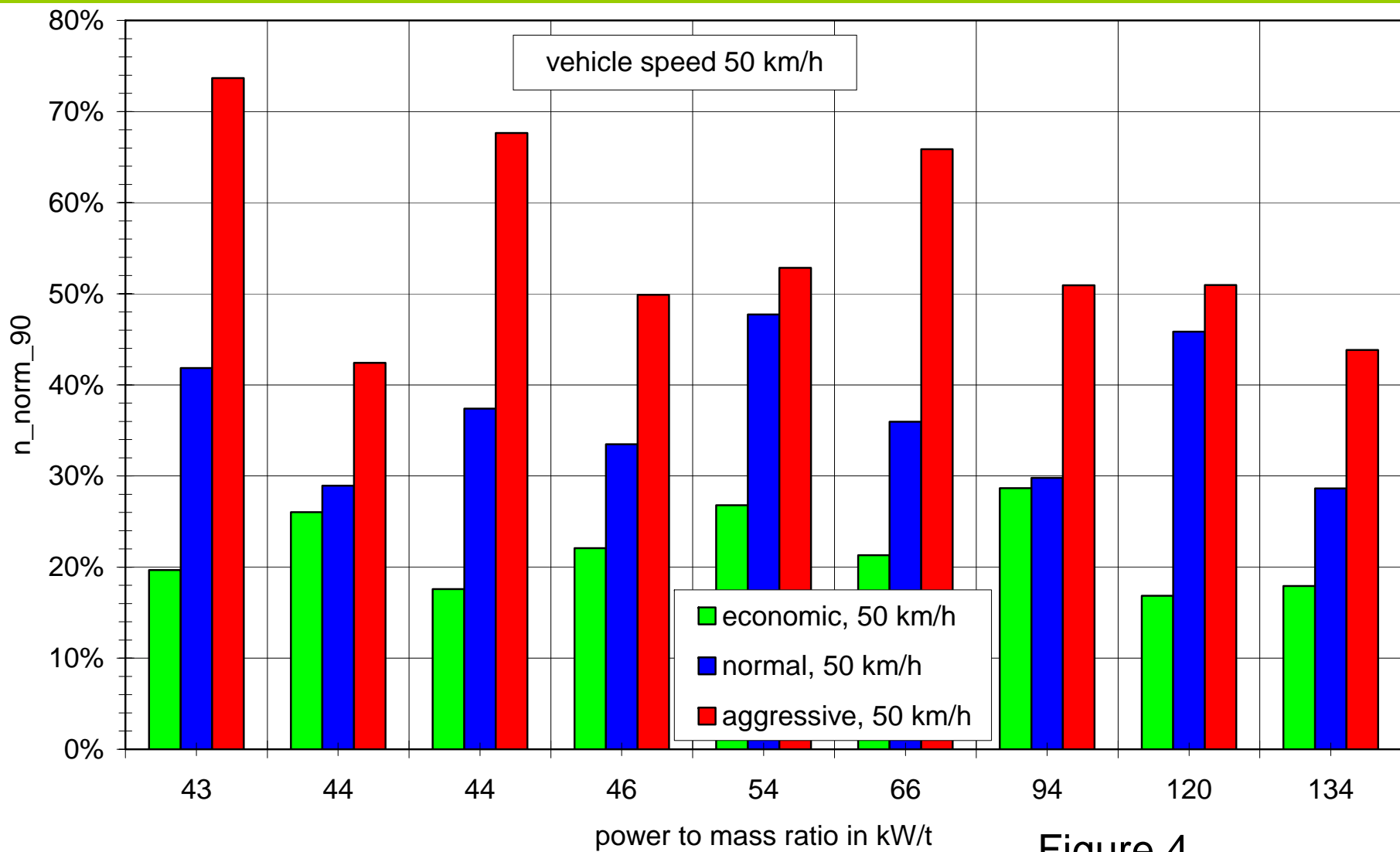


Figure 4

Results from WP H2 investigations

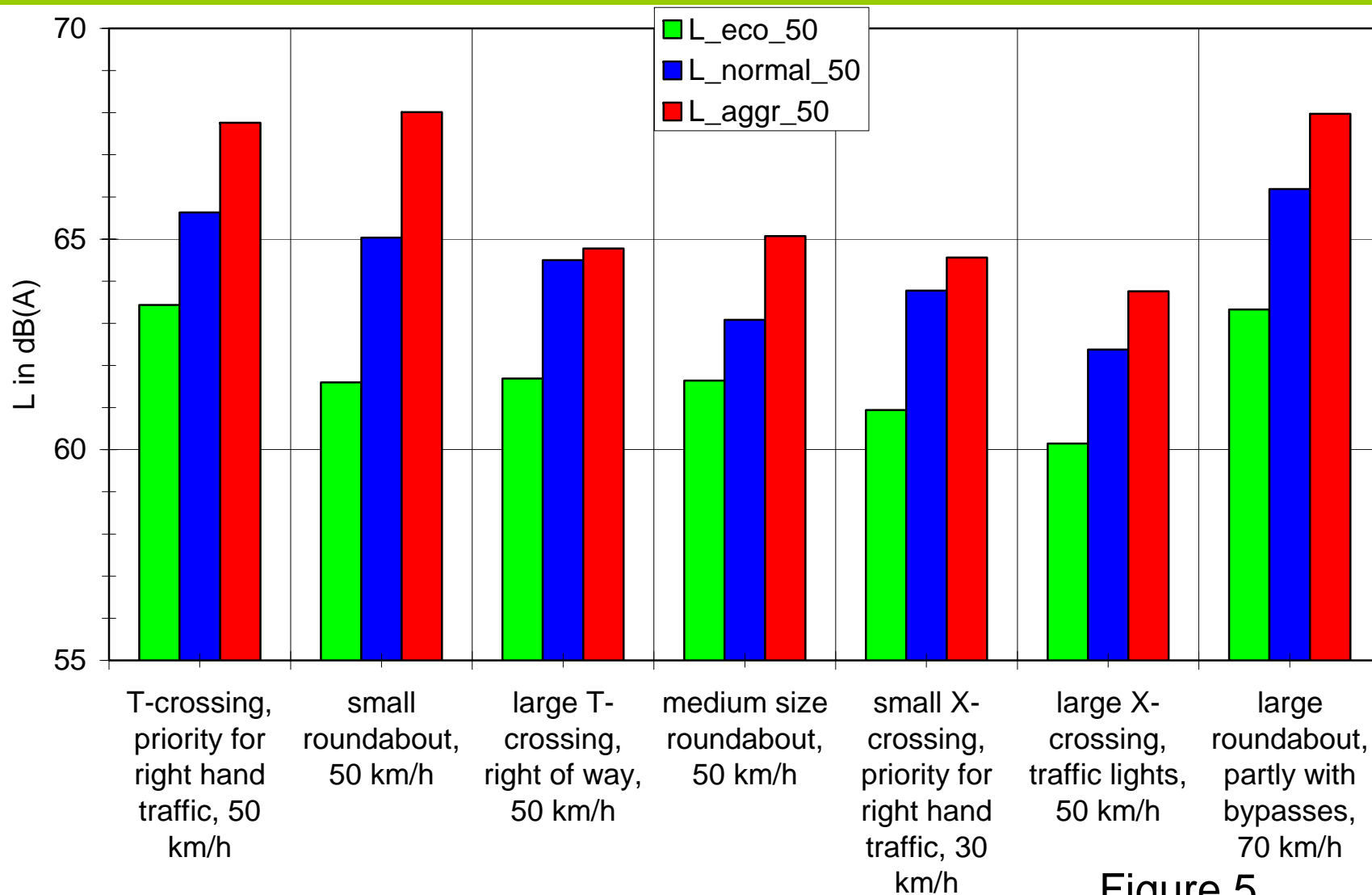


Figure 5

- The results shown before demonstrate also quite clearly the high noise increase potential of aggressive driving behaviour especially for single events.
- This is very important for nighttime driving because it could cause wake-up reactions. This is an important health issue and is not necessarily correlated with the Leq level.
- In built engine speed limiter that are activated in sensitive areas and time periods can help to reduce the number of such events or even prevent them totally.
- Currently “City-Maut” concepts are under discussion. An electronic infrastructure for the automatic Maut-registration could also be used to activate/deactivate those speed limiters.



Final remarks and outlook

Than you for your attention

