Crossmatrix Approach

Report of the subgroup to TF VS

July 10th, 2023

Situation and objectives

Situation

- Studies use different noise calculation models and different scenarios, so they are difficult to compare.

- Calculation models have different levels of detail regarding to real traffic situation.

- There is a big deviation of results caused by modelling and traffic scenarios.

Objectives

- Create an efficient way of presenting study results.

- Get a base for comparison of study results.

- Enable sensitivity analysis of studies regarding input parameters.

- Show related traffic situations for the impact of regulations

- Define a set of scenarios that covers worldwide traffic situations

Conclusion
Reference scenarios are needed with detailed description of all needed input parameters.
Define levels of detail to label the possible capability and comparability of the used calculation model.

Definition of Levels seems to be easy, but …

Model	submodel	Level 1	Level 2	Level 3	Szenarios	1st scenario city arterial @ 50 km/h	
Traffic	volume	constant per lane	dependend on lane and daytime (HTV)	dependend on lane and daytime (HTV) and weekday	Level 1-3	3	
	level of service	constant speed per lane	speed adjusted to volume per lane	speed adjusted to volume and level of interruption (LoI)	Level 1-3	2	
Road scenario	road (flat)	lanes (number, maximum speed and direction)	lanes and road surfaces	lanes and road surfaces and level of service	2 examples Level 1-3	1	standard surface
	observer distance	dependend on lane			Level 1	1	
	~~number of observers~~	~~constant~~	~~depending on daytime~~	~~depending on daytime and weekday~~	Level 1-3		
Fleet description	categories	LDV (M1 & N1), HDV (single and trailer), MCs	LDV (M1 & N1), HDV (single and trailer), MCs dependend on age	LDV (M1 & N1), HDV (single and trailer), MCs dependend on age and tampered and xEVs	Level 1-3	0,5	LDV, HDV
	cat. share	constant	dependend on daytime	dependend on daytime and weekday	Level 1-3	3	
	cat. noise	per speed	per speed and load	per speed per load and non "natural" systems (AVAS, RWS, start stopp, …)	Level 1-3	calculated by the model	1st output noise emission per lane and category
Result	noise level @observer	per year/day	per weekday	per weekday and per daytime (h)		output	2nd output

- Required input data difficult to gather:
  - Unclear situation in some studies
  - Not every level of detail available
- 1st scenario defined for getting feedback and to specify the next steps (data available)

Selected Scenarios for Test of Concept

Scenario	DTV veh/day	Lanes (both directions)	Flow Speed LDV [km/h]	Flow Speed HDV [km/h]	Fluidity (determines road load)	Spatial Factor (see remarks)	p%HDV M > 3.5 to
Residential Area 25 km/h	1.500	2	25	20	90%	2,0	0,5%
Main Street 30 km/h	15.000	2	30	25	80%	3,0	1,0%
Main Street 50 km/h	25.000	2	50	35	50%	4,0	1,0%
City Arterial 50 km/h	40.000	4	50	35	40%	2,0	2,0%
City Arterial 70 km/h	80.000	6	70	65	40%	2,5	5,0%
City Motorway 100 km/h	110.000	6	100	80	50%	2,5	10,0%
Motorway 120 km/h	45.000	4	120	85	50%	2,0	15,0%
Motorway 120 km/h	180.000	8	120	85	85%	2,0	15,0%

- Input data needed
- Possible level of detail?
- Who is able to deliver data?
- Who can calculate these scenarios?
- What different models will be used?

Summary

01
Initial situation

Result of studies are not directly comparable and lead to additional work and discussions.

02
Objectives

Enable a simple possibility for:
- Comparing studies
- Judge the impact of suggested regulation changes

03
Contents and methods

Subgroup defined:
- model levels of details
- standard scenarios

04
Next steps

- Answer questions of data acquisition and calculation work
- Test with 1st standard scenario