

Assessing the environmental burden of disease due to road traffic noise in Hesse, Germany





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International Journal of
*Environmental Research
and Public Health*

Article

The Burden of Disease Due to Road Traffic Noise in Hesse, Germany

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Dr. Matthias Lochmann

Dez. I4 “Lärm, Erschütterungen, Abfall, Luftreinhaltung: Anlagen”

„Noise, Vibration, Waste, Air Quality Management: plants“

Why we assess BoD attributable to road noise?

DIRECTIVE 2002/49/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 25 June 2002
relating to the assessment and management of environmental noise

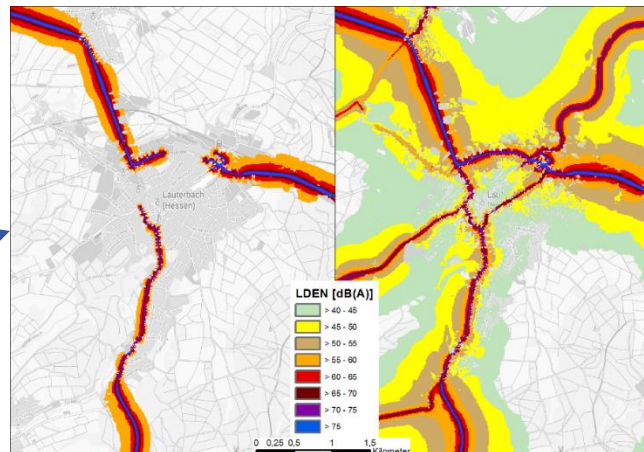
Article 1 Objectives

...

(a) the determination of exposure to environmental noise, through noise mapping, by methods of assessment common to the Member States;

(b) ensuring that information on environmental noise and its effects is made available to the public;

(c) adoption of action plans by the Member States, based upon noise-mapping results, with a view to preventing and reducing environmental noise where necessary and particularly where exposure levels can induce harmful effects on human health and to preserving environmental noise quality where it is good.



e.g. environmental burden of disease/
counterfactual thinking

Informed decisions e.g. based on
environmental burden of disease/
scenario comparison



Which health?

Definition from the constitution of the World Health Organization:

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

→ include e.g. the endpoint „high annoyance“ with a disability weight of 2%. [1]



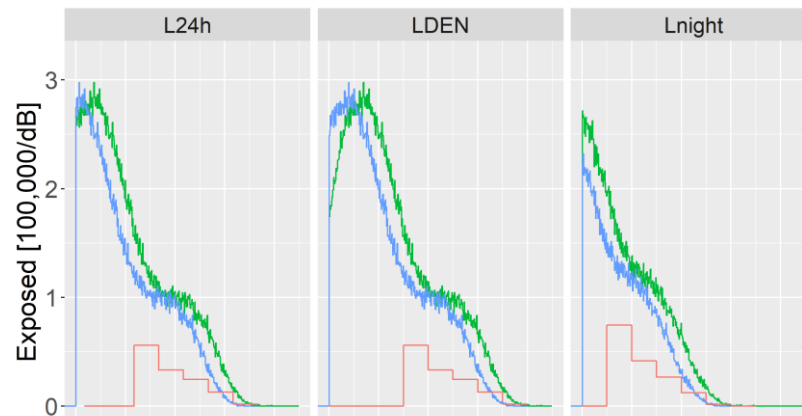
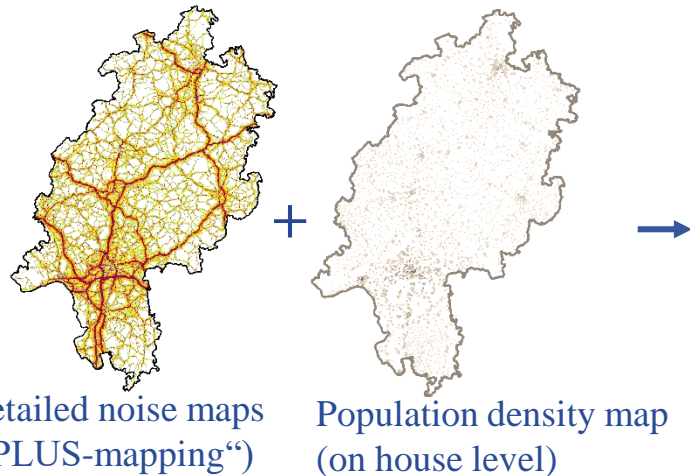
World Health Organization

Umwelt Bundesamt



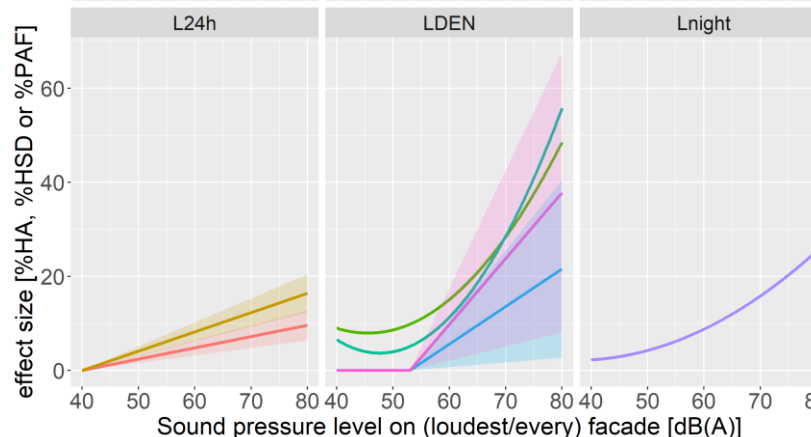
[1] M. Tobollik *et al.* Burden of Disease Due to Traffic Noise in Germany, *Int. J. Environ. Res. Public Health*. 16 (2019) 2304. doi:10.3390/ijerph16132304.

Calculating the burden of street noise in Hesse

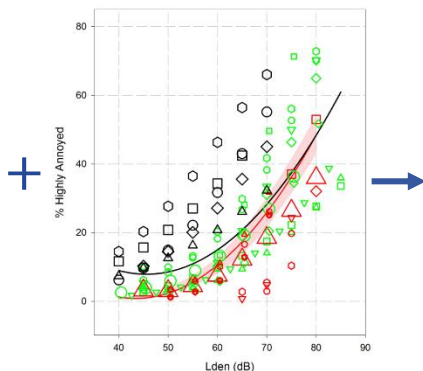
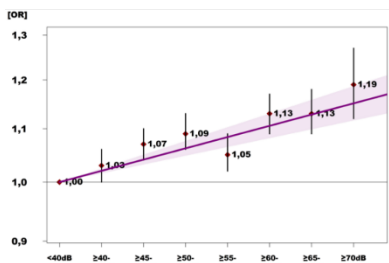


3 different noise metrics!

Data Source
 END
 PLUS
 PLUS - 3 dB



Endpoint
 Norah CVD
 Norah depression
 WHO annoyance full
 WHO annoyance selected
 WHO ischemic
 WHO sleep
 WHO stroke



- Bevölkerungsdichte: Karte erstellt auf Basis von Bevölkerungsdaten des Statistischen Bundesamtes, Wiesbaden 2015 zum Stichtag 9.5.2011
 - Depression Graph entnommen aus Seidler, A. et al.(2015). Band 6: Sekundärdatenbasierte Fallkontrollstudie mit vertiefender Befragung. In NORAH (Noise related annoyance cognition and health): Verkehrslärmwirkungen im Flughafenumfeld. Gemeinnützige Umwelthaus GmbH.
 - Belästigungsgraph entnommen aus Guski, R., et al. (2017). WHO Environmental Noise Guidelines for the European Region: A Systematic Review on Environmental Noise and Annoyance. *International Journal of Environmental Research and Public Health*, 14(12), 1539.

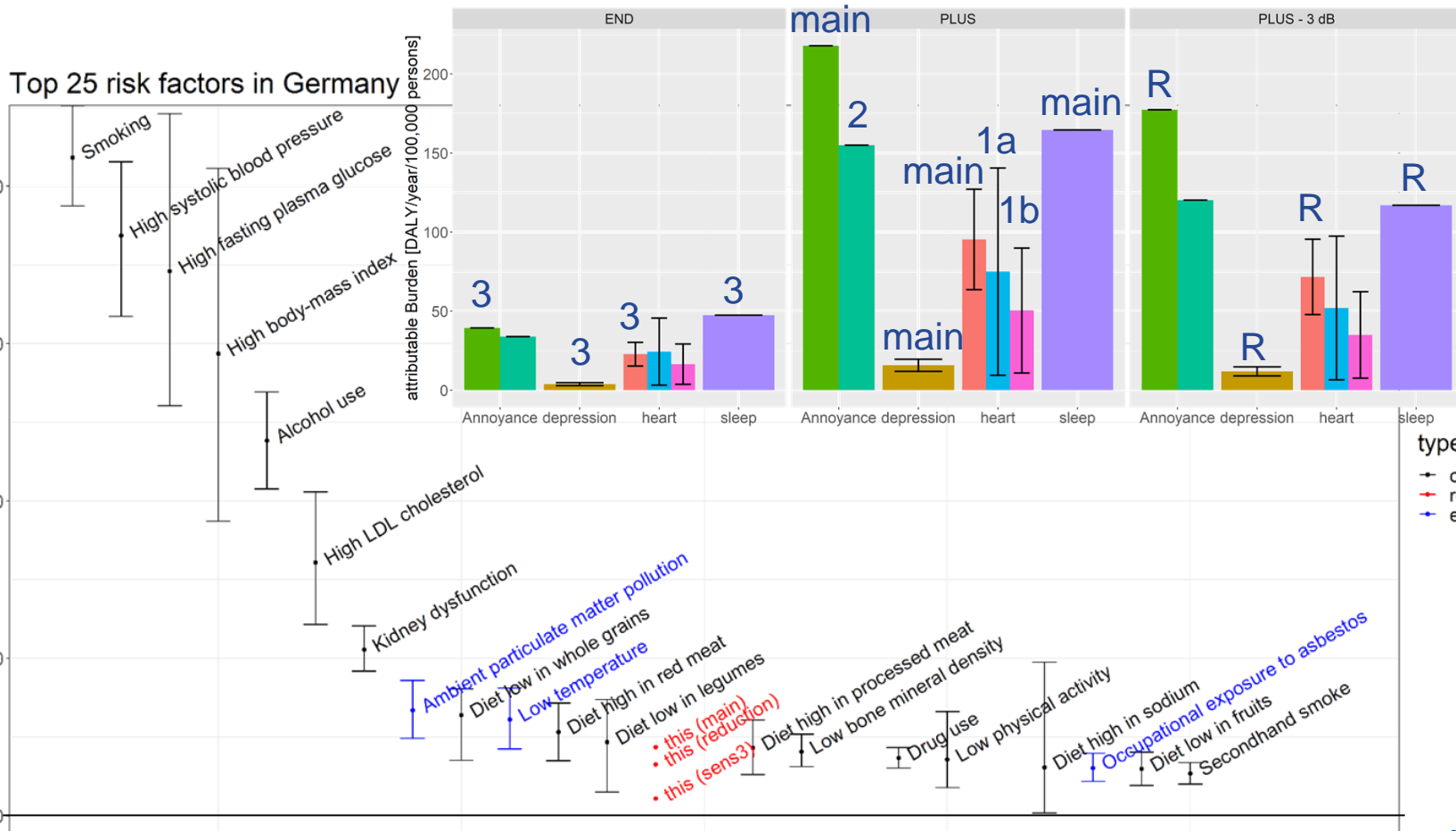
Comparison of risk factors

Road traffic noise [this work]

3 different exposure data and different sensitivity analysis

Endpoint
 Norah CVD
 Norah depression
 WHO annoyance full
 WHO annoyance selected
 WHO ischemic
 WHO sleep
 WHO stroke

type
 other
 road noise
 environment



Environmental risk factors – your feedback is welcome

Go to www.menti.com and
use the code 70 82 52 7



1. What is missing to establish traffic noise as a BoD risk factor?
2. What are arguments for/against burden estimation for local environmental scenarios (e.g. in an airport neighborhood)?



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