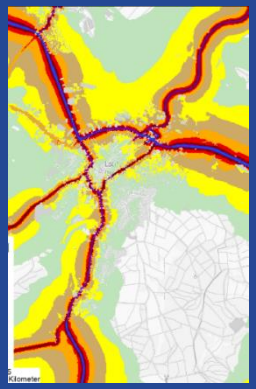
Hessisches Landesamt für Naturschutz, Umwelt und Geologie
(Hessian Agency for Nature Conservation, Environment and Geology)

HLNUG
Für eine lebenswerte Zukunft
HESSEN

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



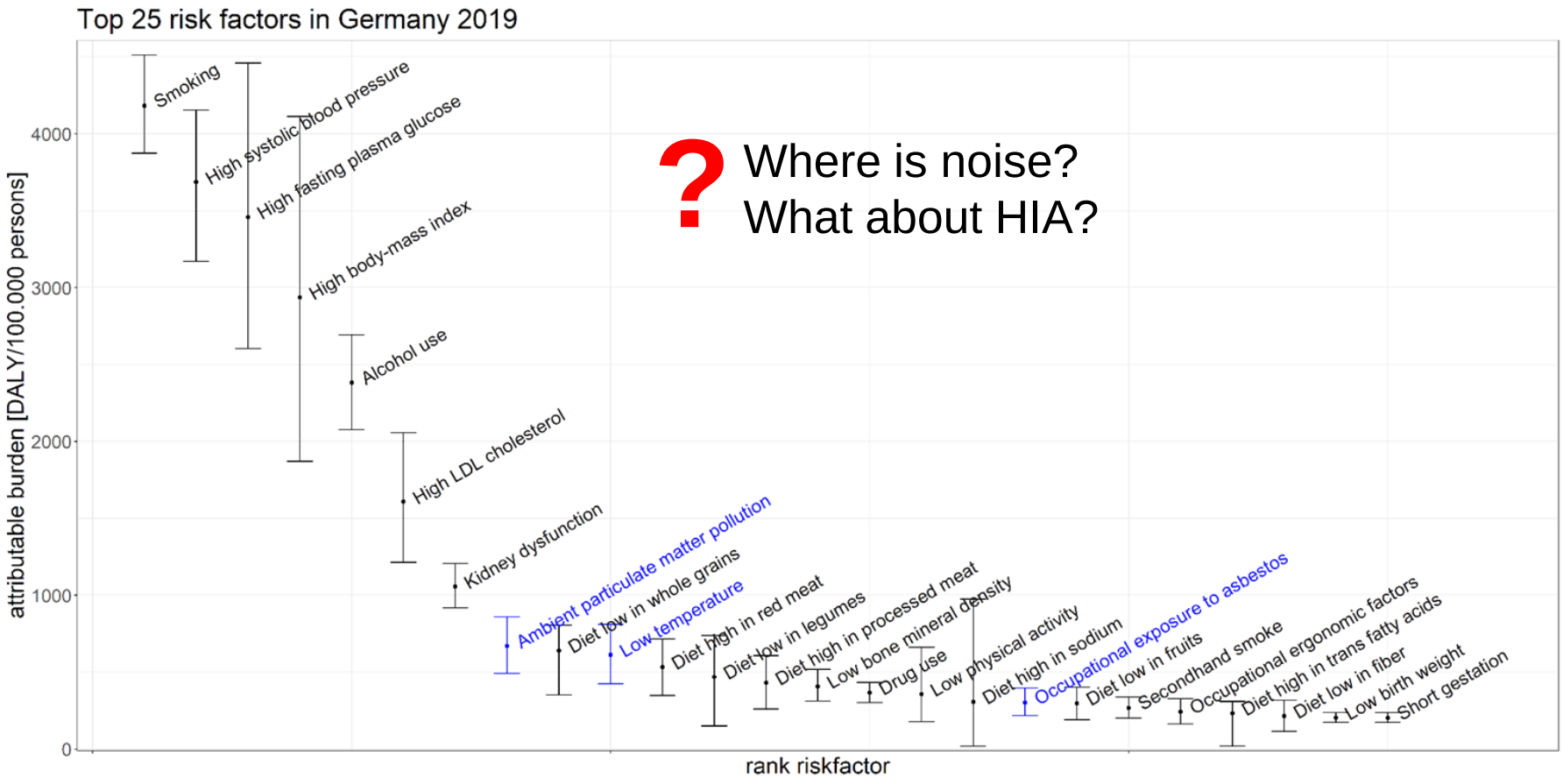
Dr. Matthias Lochmann

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

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

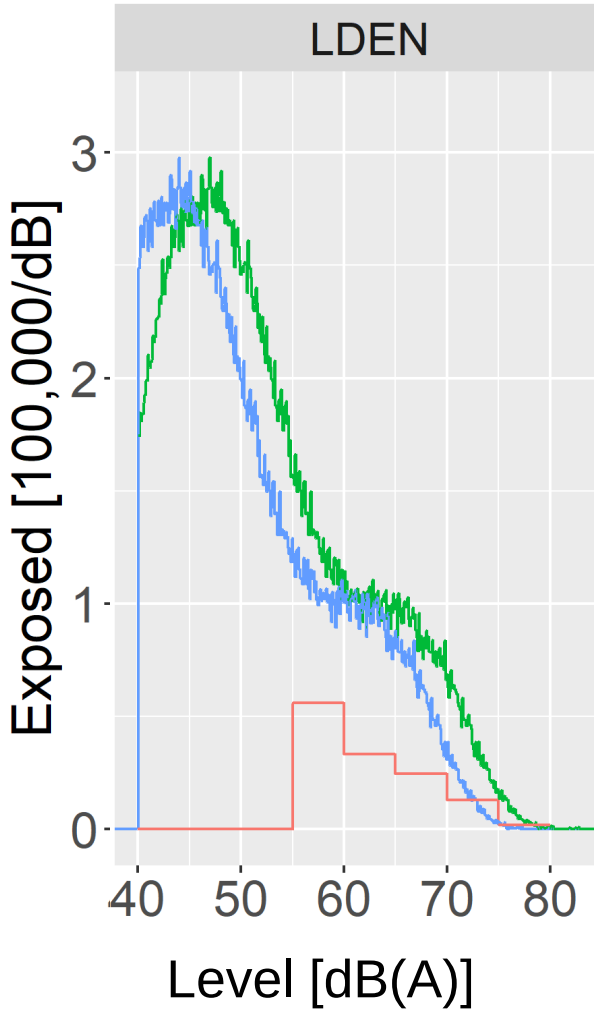
IBDC Belgrade, 15.-16.9.2022

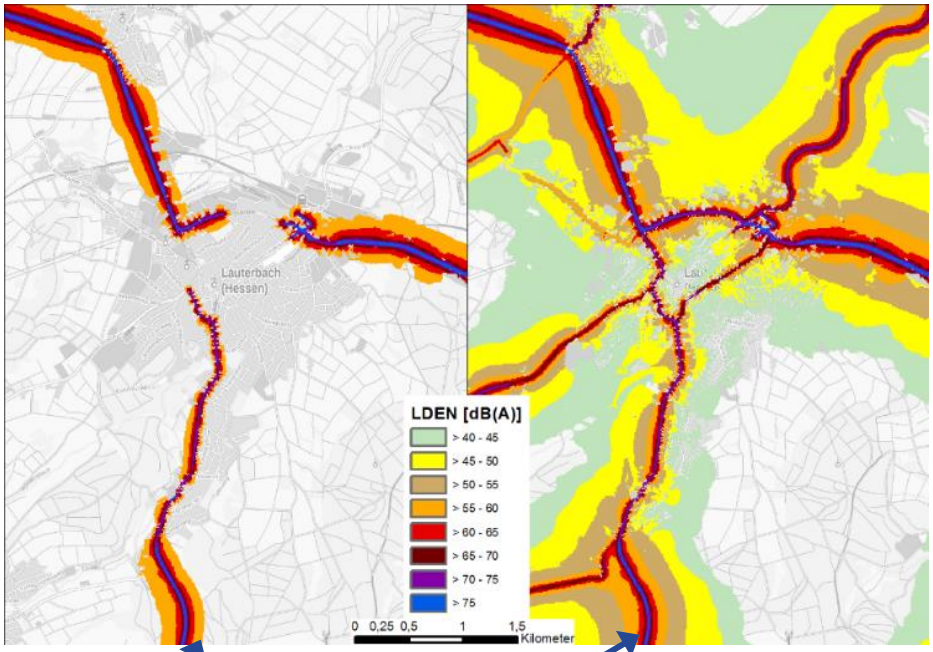
IHME comparison of risk factors



Data Sources: Global Burden of Disease Study 2019 (GBD 2019) Results. Seattle, United States:
Institute for Health Metrics and Evaluation (IHME), 2020. Available from http://ghdx.healthdata.org/gbd-results-tool.

Noise exposure data





Data Source

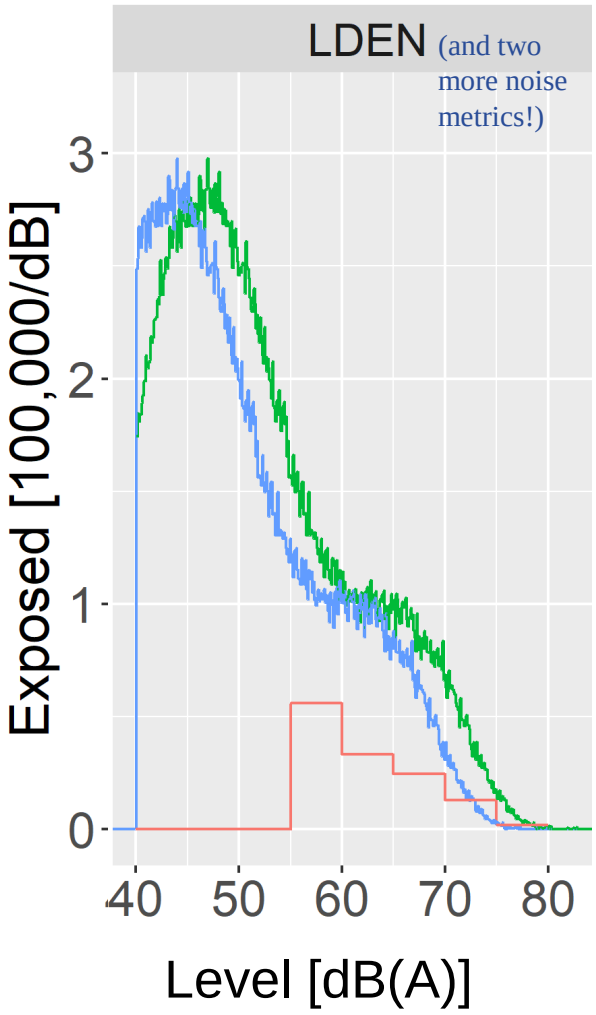
END

PLUS

PLUS - 3 dB

Exposure data

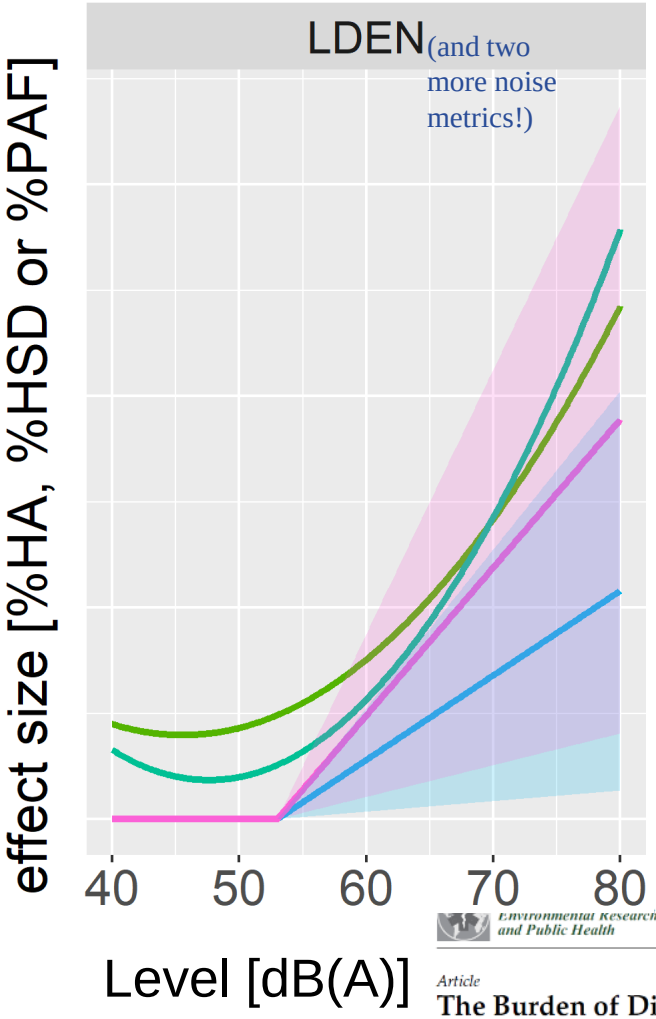
noise mapping + population data



+

ERF

literature review (and meta analysis)



Endpoint

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

→ doi.org/10.3390/ijerph18179337

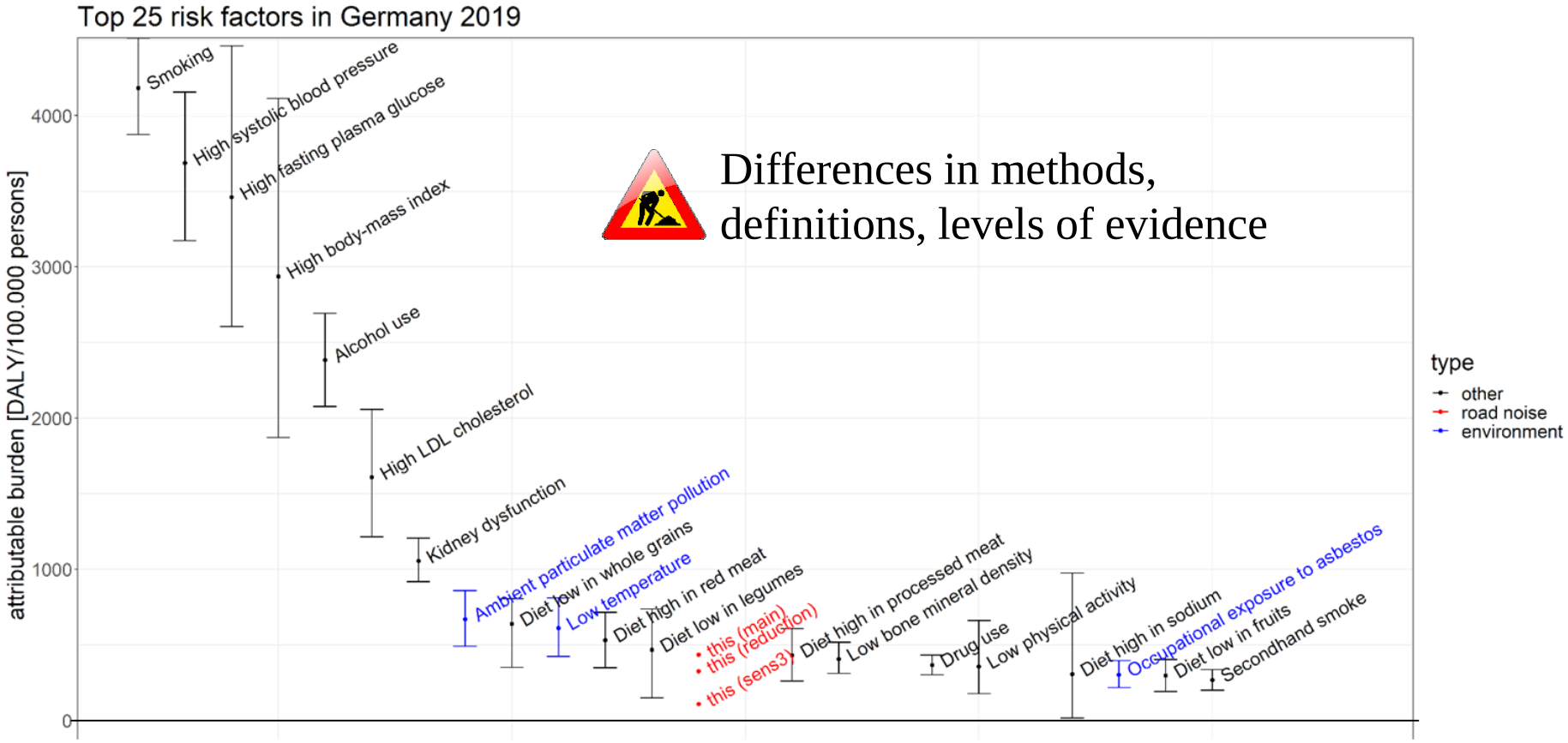
International Journal of Environmental Research and Public Health

Article

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

Janice Hegewald [1,2], Melanie Schubert [1], Matthias Lochmann [3] and Andreas Seidler [1,*]

Comparison of risk factors?



Data Sources: Global Burden of Disease Study 2019 (GBD 2019) Results. Seattle, United States:
Institute for Health Metrics and Evaluation (IHME), 2020. Available from http://ghdx.healthdata.org/gbd-results-tool. + our work for road noise

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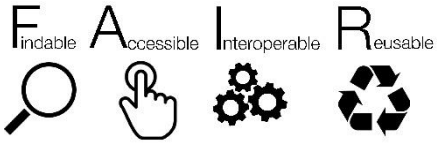
GitHub



https://en.wikipedia.org/wiki/FAIR_data
https://doi.org/10.1038%2FSDATA.2016.18

My R-project:
https://github.com/Ma-Loma/StreetNoiseBurden.git

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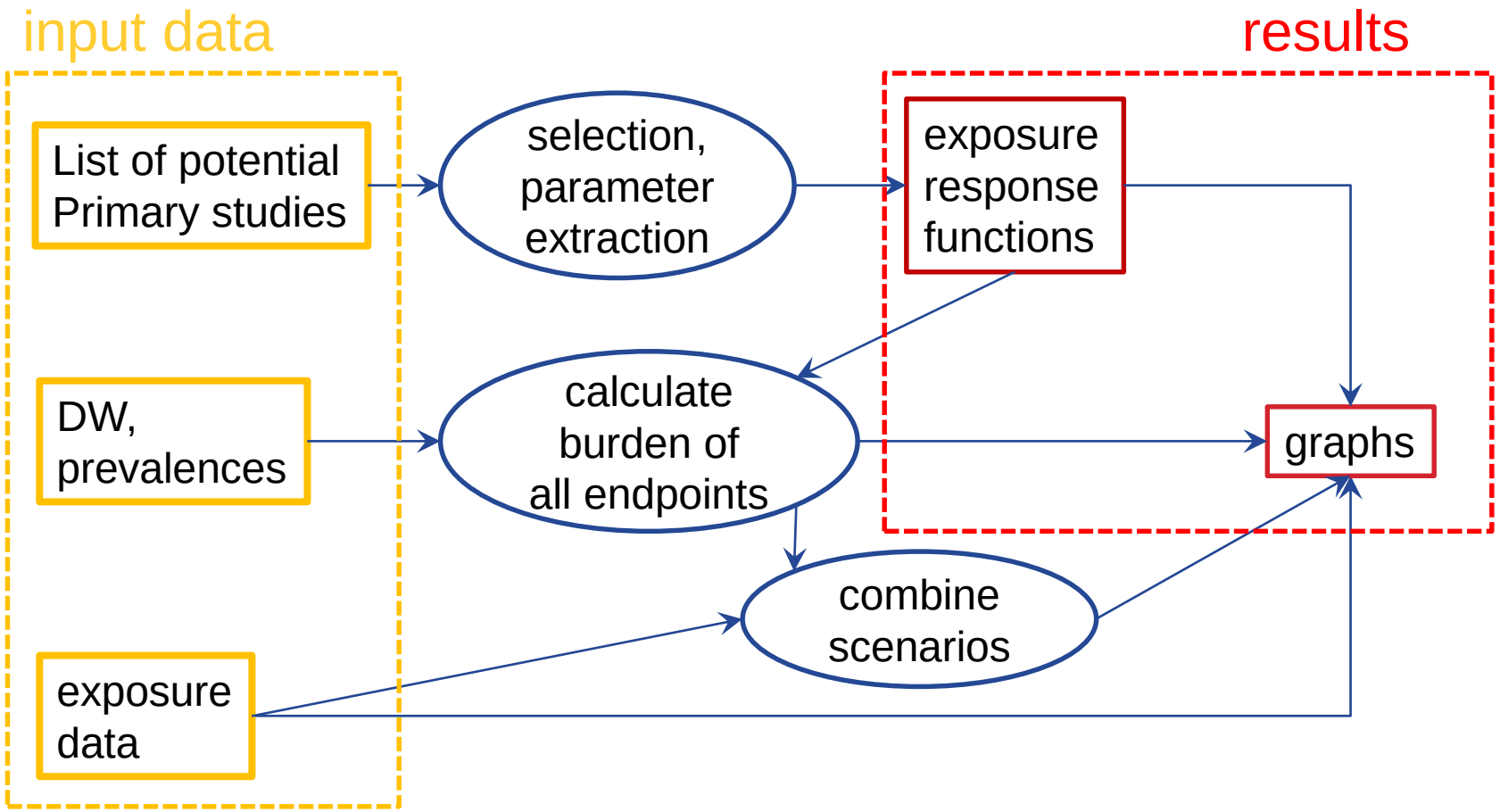
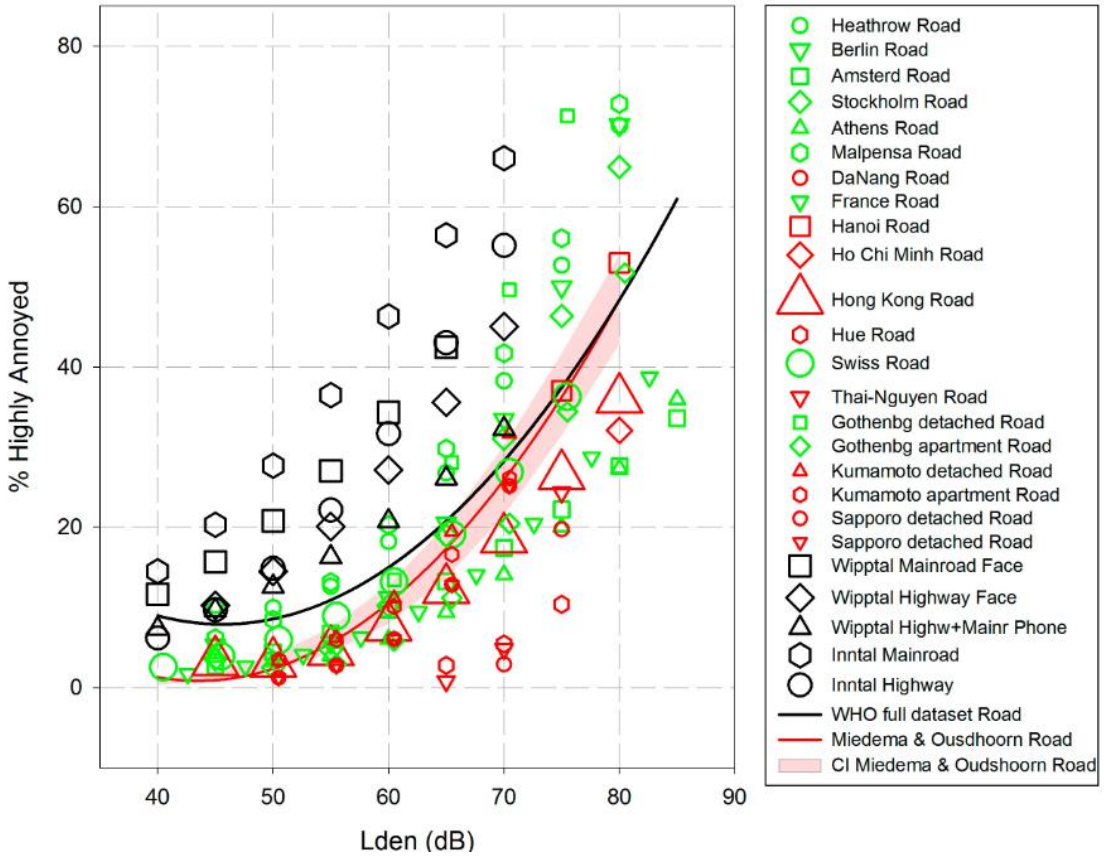
Data, workflow, results – go „FAIR“

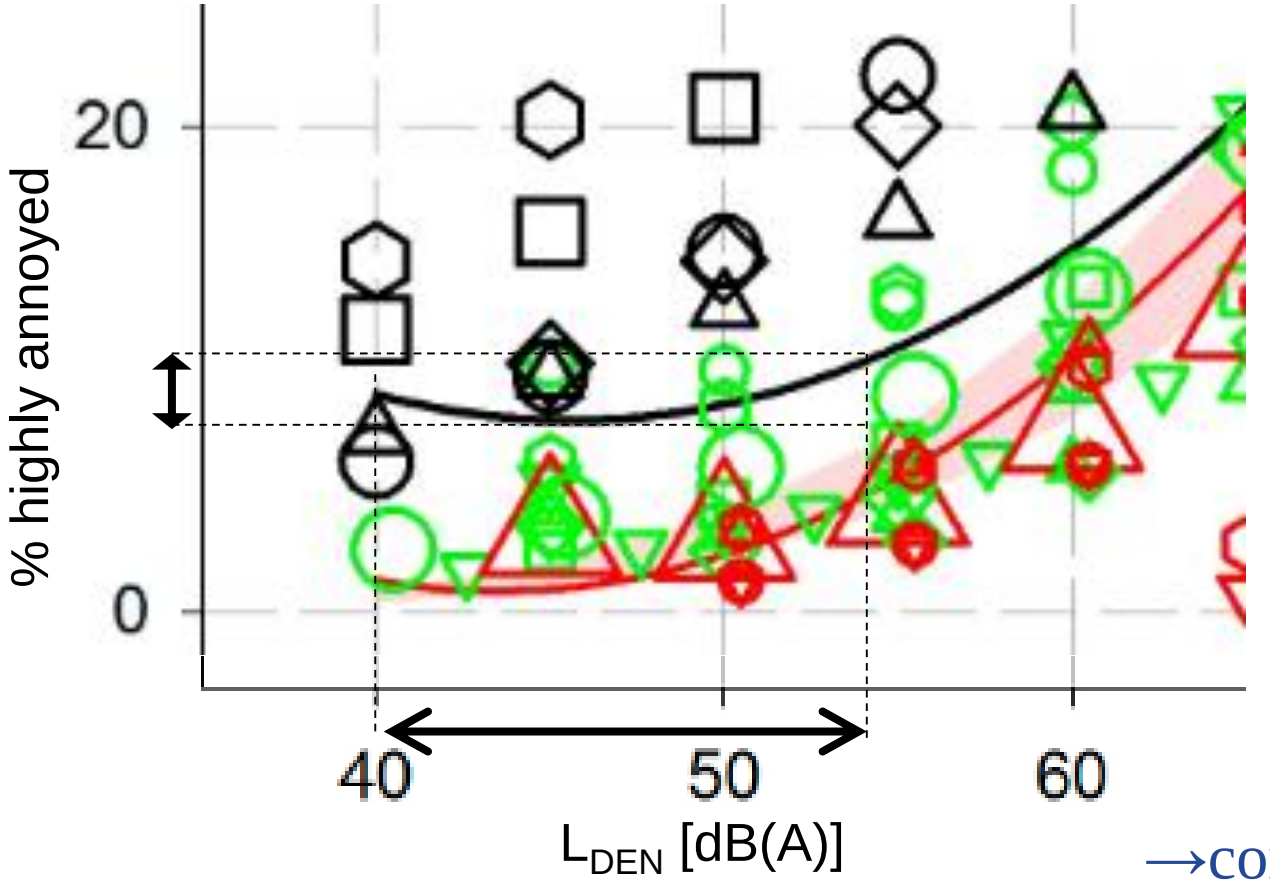


WHO Metaanalysis annoyance - road



R. Guski, D. Schreckenberg, and R. Schuemer, "WHO Environmental Noise Guidelines for the European Region: A Systematic Review on Environmental Noise and Annoyance," International Journal of Environmental Research and Public Health, vol. 14, no. 12, p. 1539, 2017.

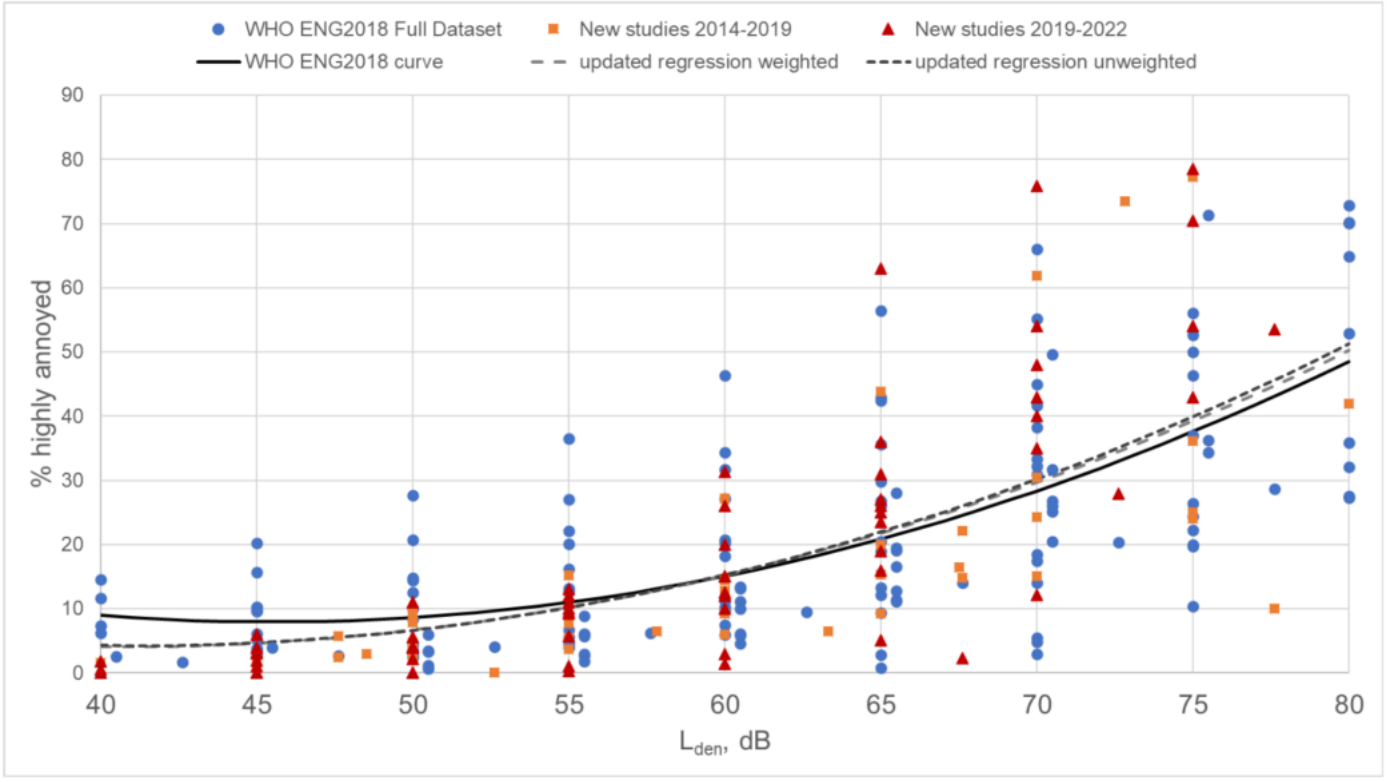
WHO Metaanalysis annoyance - road



→correction needed?

R. Guski, D. Schreckenberg, and R. Schuemer, "WHO Environmental Noise Guidelines for the European Region: A Systematic Review on Environmental Noise and Annoyance," International Journal of Environmental Research and Public Health, vol. 14, no. 12, p. 1539, 2017.

Quadratic regression with new data: problem solved?



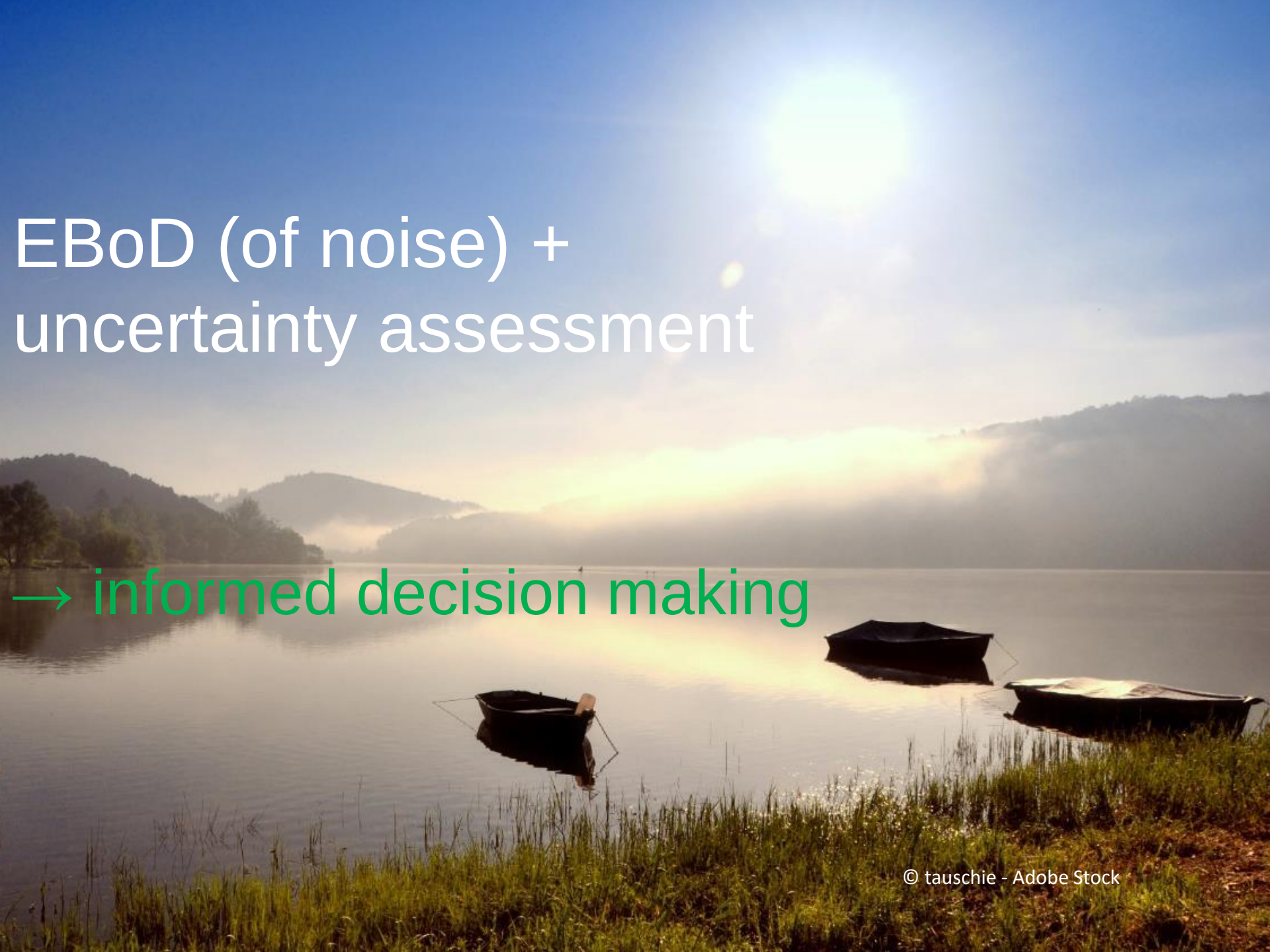
What about
-confounders?
-hierarchical (regional) fitting?
-confidence bands?
- …?

B. Fenech, S. Clark, and G. Rodgers, An update to the WHO 2018 Environmental Noise Guidelines exposure response relationships for annoyance from road and railway noise, Internoise proceedings 2022.

„FAIR“ data still missing…

GitHub

My second R(Markdown) project:
https://github.com/Ma-Loma/RefitAnnoyanceFunctions.git


EBoD (of noise) +
uncertainty assessment
→ informed decision making
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