

Community response to mixed traffic noise sources: assessing the overall effects of a soundscape

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ABSTRACT

Sufficient data refer to the public health relevance of mixed traffic sound exposure. Furthermore, the consideration of combined sound exposure is required in legal procedures (e.g. environmental health impact assessments). Nevertheless, current practice still uses single exposure response functions. It is silently assumed that standard exposure-response curves accommodate also for mixed exposures - although some evidence from experimental and field studies casts doubt on this assumption.

In this paper we use own data to apply several approaches to study deviations from standard exposure-response curves and its determinants in the case of mixed traffic exposure.

The results show several limitations of the current approaches. Even facing the two inherent methodological limitations (energy equivalent summation of sound, rating of overall annoyance) the consideration of main contextual factors jointly occurring with the sources (such as vibration, air pollution) or the coping options (associated with building structure, topography) increase the variance explanation considerably. However, the additional contributions vary significantly depending on the source combination. Especially in the case of a three source exposure situation the overall annoyance is already high at lower levels.