Trends in annoyance by aircraft noise

Sabine Anne Janssen[1*], H. Vos[1], E.E.M.M. van Kempen[2], O.R.P. Breugelmans[2], H.M.E. Miedema[1]

1   TNO Department of Environment and Health, P.O. Box 49, 2600 AA Delft, Netherlands

2   National Institute for Public Health and the Environment, P.O. Box 1, 3720 BA Bilthoven, Netherlands

*   corresponding author: e-mail: sabine.janssen@tno.nl

Annoyance due to transportation noise has been recognized by policy makers as a harmful effect that should be prevented or reduced. On the basis of combined data from field studies, exposure-response relationships were established earlier to enable the prediction by policy makers of the annoyance response given a certain level of noise exposure. Recently, the validity of exposure-response curves based on data from several decades ago was questioned, especially for aircraft noise, for which annoyance appeared to have increased over the years. One explanation put forward concerns the changing noise exposure situations around airports.

The objective of the present study was to verify the hypothesized trend and to identify its possible causes. To this end, the large database used to establish earlier exposure-response relationships was updated with original data from several recent cross-sectional surveys. Multilevel grouped regression was used to determine the effect estimates of the relationship between exposure and annoyance, after which meta-regression was used to investigate whether characteristics of the study can explain the heterogeneity in effect estimates between airports. While the main factor of interest is year of the study, the possible mediating role of differences in study methods (type of contact, type of annoyance scale), individual characteristics (age, noise sensitivity, fear) and acoustical characteristics (insulation, number of overflights) was also investigated. The results are important with regard to the applicability of generalized exposure-response relations in the prediction of the annoyance response.

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