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[J Acoust Soc Am](#). 2011 Apr;129(4):1953-62. doi: 10.1121/1.3533739.

Trends in aircraft noise annoyance: the role of study and sample characteristics

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PMID: 21476651 DOI: [10.1121/1.3533739](#)

Abstract

Recently, it has been suggested that the annoyance of residents at a given aircraft noise exposure level increases over the years. 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 on aircraft noise was updated with original data from several recent surveys, yielding a database with data from 34 separate airports. Multilevel grouped regression was used to determine the annoyance response per airport, after which meta-regression was used to investigate whether study characteristics could explain the heterogeneity in annoyance response between airports. A significant increase over the years was observed in annoyance at a given level of aircraft noise exposure. Furthermore, the type of annoyance scale, the type of contact, and the response percentage were found to be sources of heterogeneity. Of these, only the scale factor could statistically account for the trend, although other findings rule it out as a satisfactory explanation. No evidence was found for increased self-reported noise sensitivity. The results are of importance to the applicability of current exposure-annoyance relationships for aircraft noise and provide a basis for decisions on whether these need to be updated.

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