



2-International literature survey on noise annoyance

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Moderator search and qualification

An international literature search and study

Sources:

- The SINTEF world wide database on annoyance surveys
- The FORCE literature database
- Relevant international journals
- Conference proceedings:
 - The Inter.noise conferences
 - The Euronoise conferences
 - The ICBEN conferences
- Personal contact to key researchers



The outcome

- More than 142 studies found
- Relevant results and data extracted
- Analysed using:
 - CTL – The Community Tolerance Level

$$\%HA = 100 * e^{-\left(\frac{1}{10^{0.1(L_{den}-L_{ct}+4.7\text{ dB})}}\right)^{0.3}}$$

- Logistic fit

$$A = \frac{u}{1 + e^{-s(E-f)}}$$

- Some highlights in the following

Sato, T.; Yano, T.; Yamashita, T.; Kawai, K.; Rylander, R.; Björkman, M.; Ohlström, E. Cross cultural comparison of community responses to road traffic noise in Gothenburg, Sweden and Kumamoto, Japan. In Proceedings of the 7th Congress Noise as a Public Health Problem, Sydney, Australia, 22–26 November 1998; pp. 561–564.

Schomer, P.; Mestre, V.; Fidell, S.; Berry, B.; Gjestland, T.; Vallet, M.; Reid, T. Role of community tolerance level (CTL) in predicting the prevalence of the annoyance of road and rail noise. *J. Acoust. Soc. Am.* **2012**, 131, 2772–2786. [[CrossRef](#)]

Schuemer-Kohrs, A.; Vallet, M. Guidelines for reporting core information from community noise reaction surveys. *J. Sound Vib.* **1997**, 206, 685–695. [[CrossRef](#)]

Schultz, T.J. Synthesis of social surveys on noise annoyance. *J. Acoust. Soc. Am.* **1978**, 64, 377–405. [[CrossRef](#)]

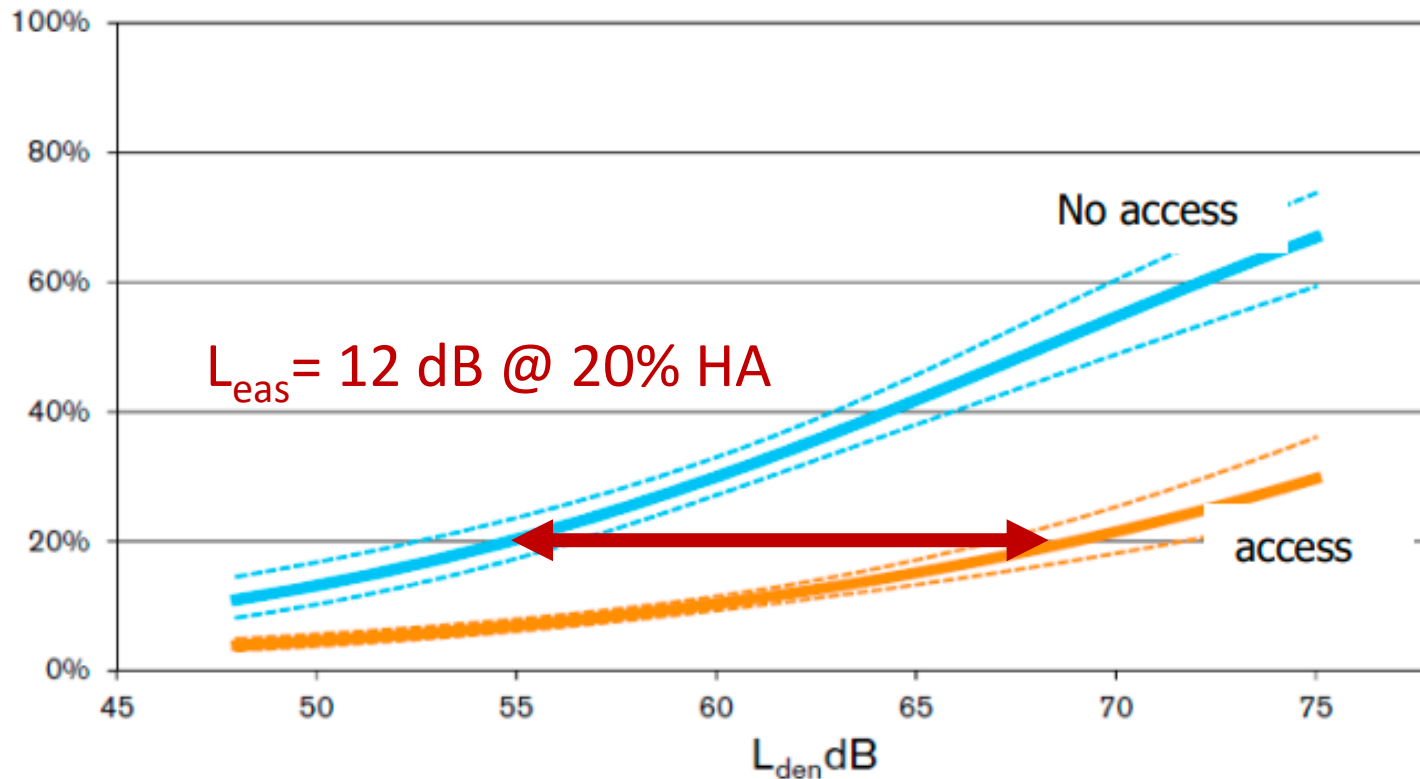
Shimoyama, K.; Nguyen, T.L.; Yano, T.; Morihara, T. Social Surveys on Community Response to Road Traffic in Five Cities in Vietnam; Proc. Internoise-14: Melbourne, Australia, 2014.

Socio-Acoustic Survey Data Archive. Available online: http://www.ince-j.or.jp/old/04/04_page/04_doc/bunkakai/shachodata/?page_id=972 (accessed on 15 December 2019).

T. B. Björner. "Combining socio-acoustic and contingent valuation surveys to value noise reduction". Transportation research part D, pp341-356, 2004 online www.sciencedirect.com

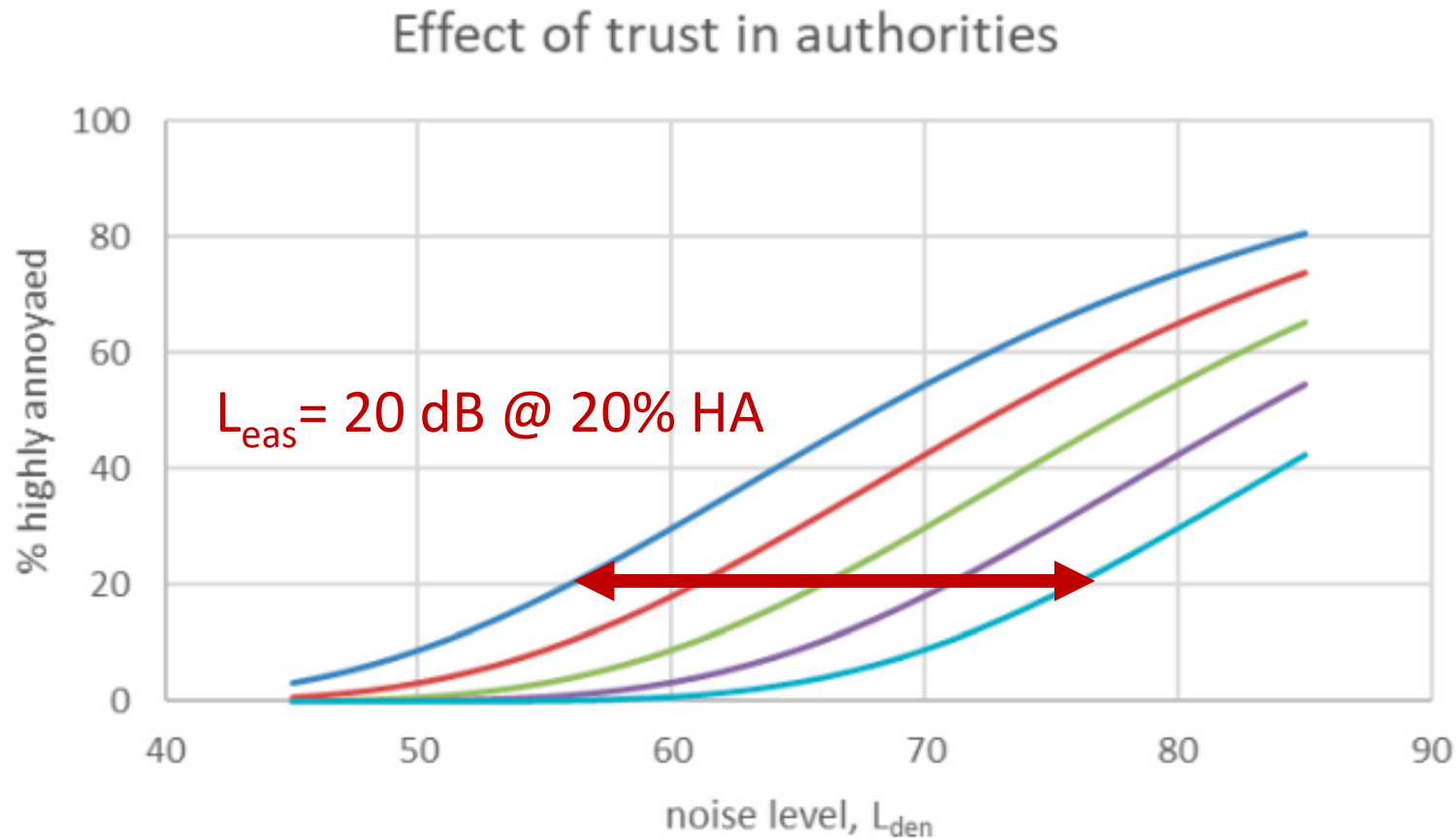
T. Gjestland and F. B. Gelderblom. "Prevalence of Noise Induced Annoyance and Its Dependency on Number of Aircraft Movements," Acta Acustica united with Acustica, vol. 103, pp. 2833–2017

Moderator: Access to quiet facade



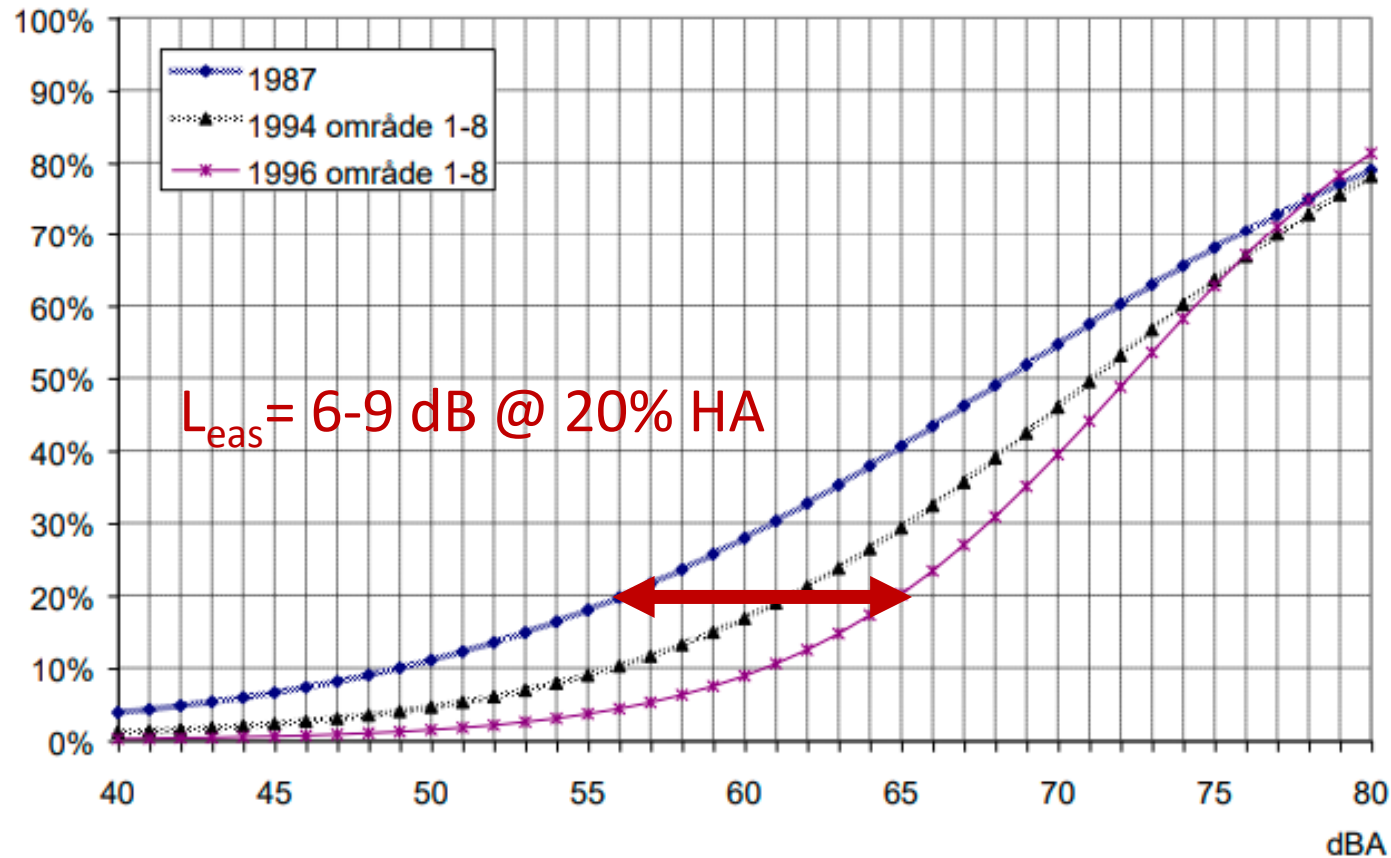
- Residents having no quiet side (blue)
- Residents having a quiet side (orange)
- Danish study

Moderator: Trust in the authorities



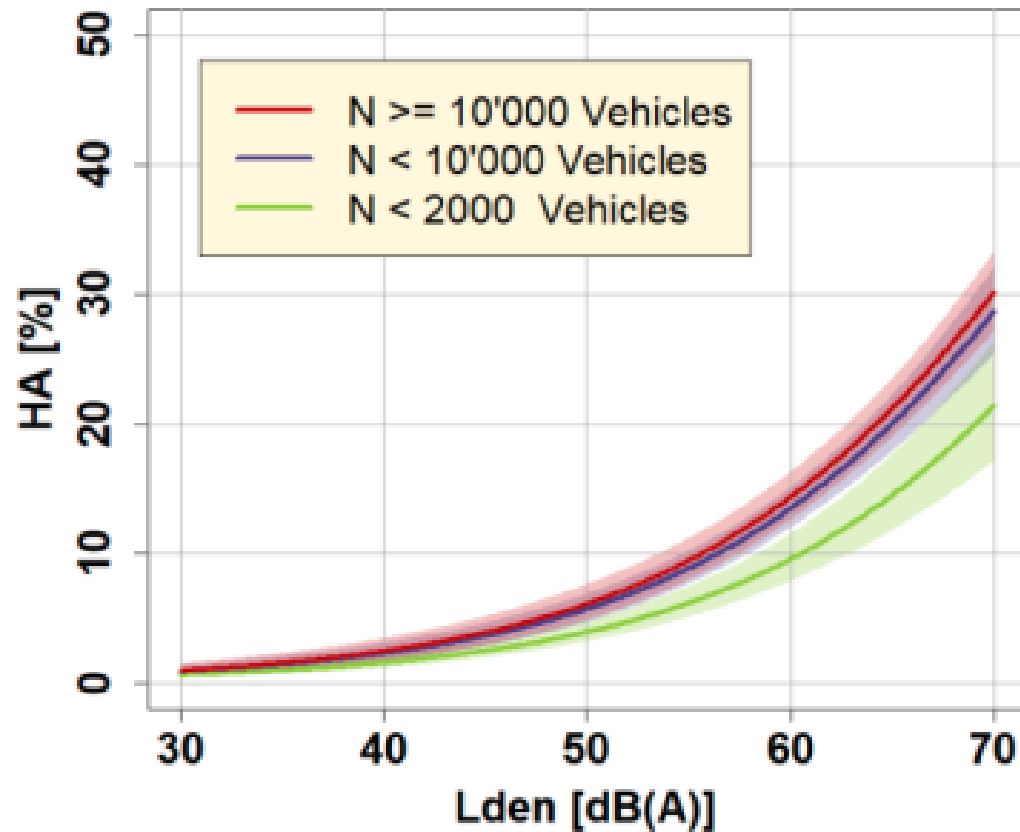
- The top blue curve represents “no trust” in authorities
- Bottom green/blue curve represents “very much trust” in authorities.
- Calculated based on data from the NORAH study

Moderator: Neighbourhood soundscape



- From 1987 to 1996 the traffic situation in the community was vastly improved and the general neighbourhood
- Noise was reduced substantially
- Norwegian study

Moderator: Traffic volume



- Data on annoyance depending on number of vehicles
- The SIRENE project (Switzerland)

Conclusions from literature study

The results from surveys on annoyance indicate:

- The annoyance response is affected by a set of non-acoustic factors
- The magnitude of the effect, varies
- Different studies find different sizes of the effects
- The feasibility and practicality of manipulating these factors depends on local circumstances
- FAMOS should focus on factors having a large potential for annoyance reduction, and are easily implemented



Prioritising criteria

Prioritising the different modifiers, the following criteria have been considered:

- To which degree is this modifier controllable by the road authority?
- What is the potential for shift in the annoyance response?
- What is the quality of existing data that support the conclusions?



Prioritised moderators from literature study

Preliminary list of modifying factors for further studies :

- Visual appearance of the road and its immediate surroundings, e.g., visibility of traffic
- Greenery and the type and visual appearance of mitigation measures
- Orientation of dwelling, access to a quiet side of the dwelling
- Attitudes and relations between the community and the road authorities
- Neighbourhood soundscape
- Perceived traffic safety



Consultation

Results were discussed with key European researchers:

- Generally confirmed the tendencies found in the literature study
- Provided new extra data



Time for comments, questions and discussion!

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