

Quality of Life and Annoyance



The Quality of Life Study examined the connection between the objectively measurable noise level and the statements of people who hear the noise about their subjective experience.

It deals with this context from three angles:

- Over time: How does the annoyance develop when the noise changes, e.g. after development of an airport?
- By comparison between noise sources: How does aircraft noise act as compared to road or rail noise?
- By site comparison: Do people in the Rhine-Main area evaluate traffic noise differently from people in Cologne, Stuttgart or Berlin?

To answer these questions, the scientists questioned people in the area of the airports and then put their answers in relationships with the noise level in the respective place of residence. They used this to develop annoyance curves, and then used the position and pitch of these curves to derive statements on how people react to noise. For authorities, annoyance curves are an important basis to



evaluate noise protection measures.

The surveys covered:

- about 19,000 people in the Rhine-Main area
- about 10,000 people in the area of the airports Cologne/Bonn, Stuttgart and Berlin-Brandenburg

Time comparison: annoyance increased

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The NORAH team surveyed the people in the Rhine-Main area in 2011, 2012 and 2013 and then compared the annoyance curves. The respondents felt annoyed the strongest – at the same noise level – in 2012, i.e. the year after the new runway was opened. The scientists were able to document a change effect: respondents at whose place of residence the noise increased in 2012 felt more annoyed after the change than people where the comparable noise level had been present for years. Respondents where the noise level had not changed at all also felt more strongly annoyed in 2012 than before. The annoyance reduced slightly in 2013, but did not return to the level of 2011.

The degree of this change effect depended on three factors:

- the self-assessment of the participants of how well they could handle noise
- their attitude towards air traffic
- their expectation of how future flight operations would affect their residential situation

For example, those who expected that the noise at their places of residence would reduce felt less annoyed at the same level than those who expected the noise to increase.

The comparison with an older study from the Frankfurt area (“RDF Study”) also showed that the annoyance has increased in general since 2005. Accordingly, the residents are feeling much more annoyed at the same noise level today than in 2011. The comparison airports Cologne/Bonn and Stuttgart also have much higher annoyance values than would be expected according to the EU standard curves.

Site comparison

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The four airports in the area of which the NORAH team questioned residents differ considerably from each other – in their sizes, regarding the planned construction projects and also in terms of night aircraft traffic. It became clear that people in the Frankfurt area feel more strongly disturbed at the same long-term energy equivalent noise level than people near the other airports. The second



place is held by the airport Cologne/Bonn. People in the Stuttgart area feel least disturbed by aircraft noise.

Comparison of the noise sources

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In addition to aircraft noise, the NORAH Study also calculated the road and rail noise in the Rhine-Main area and asked the residents how badly they felt annoyed by which noise type. It became evident that aircraft noise annoyed people more strongly even at relatively low noise levels than much louder rail and road traffic noise.

Further information

For more information on the Quality of Life Study, see the "NORAH Knowledge" booklets no. 7 (Methods) and no. 13 (Results) or click here for [results in detail](https://www.laermstudie.de/en/results/results-of-the-quality-of-life-study/) (<https://www.laermstudie.de/en/results/results-of-the-quality-of-life-study/>).

- [NORAH Knowledge no. 7 PDF, 3 MB](https://www.laermstudie.de/media/download/norah_knowledge_07.pdf)
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Do you have any questions?

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