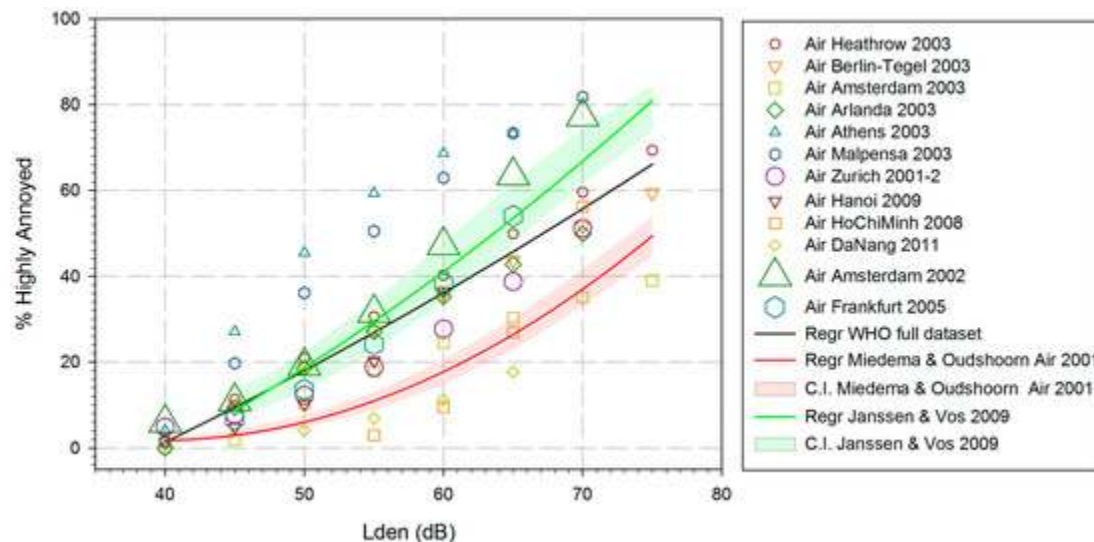


Exploring the WHO noise guidelines

Are people more annoyed by aircraft noise than 20 years ago?

The chart below, taken from the recent WHO publication setting out its new recommended noise guidelines (http://www.euro.who.int/_data/assets/pdf_file/0008/383921/noise-guidelines-eng.pdf?ua=1) seems to suggest we are more highly annoyed by aircraft noise than we were 20 years ago.

This short paper sets out to discover whether that is actually the case and, if it is so, what the reasons are for it.



The chart shows the percentage of people highly annoyed by aircraft noise.

The **red line** is from the study done by Miedema & Oudshoorn in **2001**

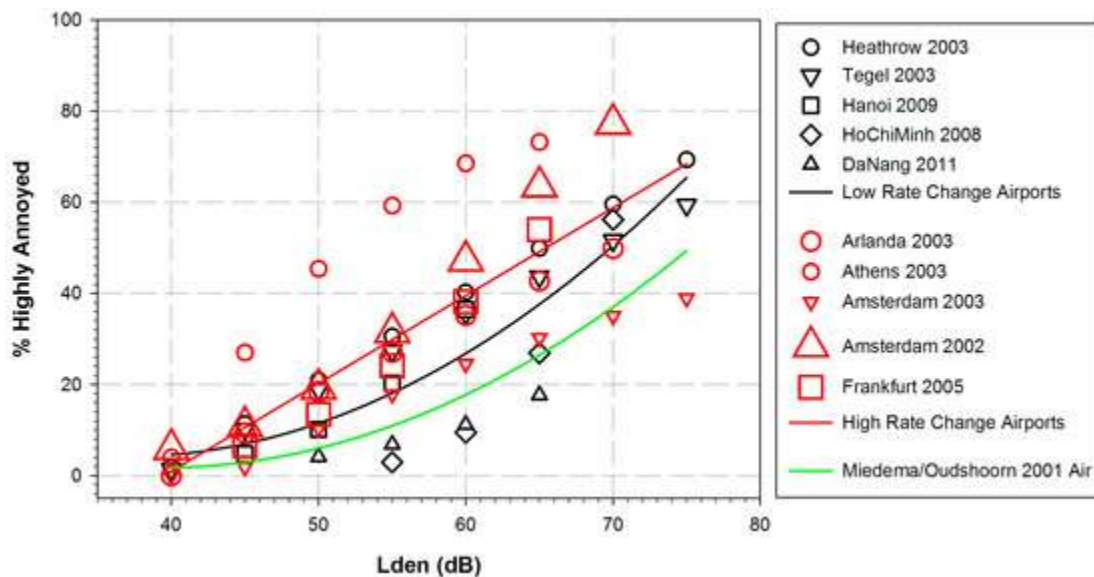
The **green line** is from the study by Janssen & Vos on **2009**

The **black line** is from the WHO report in **2018**

On the next page I explore why the studies differ so noticeably.

More people are highly annoyed when changes take place at airport

Where recent changes have taken place (new airport; new runway; flight paths changes), more people are highly annoyed by aircraft noise.



The **red symbols** indicate the airports where change has taken place, the ‘high-rate change’ airports. The **black symbols** indicate ‘low-rate change’ airports.

This explains why the Janssen & Vos study (the green line in the first chart) found a higher percentage of highly annoyed people. Four of the seven airports they studied are high-rate change airports. The high-rate change curve in the second diagram overlaps considerably with the Janssen and Vos curve.

Of 12 studies looked at by WHO, five covered low-rate change airports: Heathrow 2003, Tegel 2003, Hanoi 2009, Ho Chi Minh 2008, and Da Nang 2011; and another five high-rate change airports: Arlanda 2003, Athens 2003, Amsterdam 2002, Amsterdam 2003, and Frankfurt 2005.

More information on this can be found in the WHO review of aircraft noise studies it carried out to inform its report. The review was done by Guski, Schreckenber and Schuemer: <https://www.mdpi.com/1660-4601/14/12/1539/htm>

But recent changes at an airport do not provide the full explanation why annoyance has increased

Recent changes don’t altogether explain the difference between the 2018 WHO curve and the Miedema & Oudshoorn curve produced in 2001.

The Guski review says: “The gap between the two curves may be seen as an indication of the annoyance trend, i.e. an increase in the percentage of highly annoyed persons in more recent studies as compared to earlier studies, *even in low-rate change situations* (my emphasis).

This was highlighted in the recent German NORAH Study (Noise-Related Annoyance, Cognition, and Health). It confirmed the percentage of highly annoyed people are not only higher at high-rate change airports (Frankfurt, Berlin-Brandenburg), but also in the vicinity of low-rate change airports (Cologne/Bonn, Stuttgart) compared to the curve published by Miedema and Oudshoorn.

But the Guski review urges some caution. It concludes that the growth over the past 20 years or so in the number of people highly annoyed at low-rate change airports may be ‘slight’: “our present review supports the idea of a slight general aircraft noise annoyance trend even at low-rate change airports and a considerably higher increase of aircraft noise annoyance at high-rate change airports”.

What are the other reasons for growth in annoyance?

Socio-economic factors?

The Guski review said not enough data had been collected on the socioeconomic status, education, income, home ownership or the percentage of immigrants impacted by aircraft noise to draw firm conclusions. It did acknowledge, though, “it is conceivable—and sometimes empirically shown—that low socio-economic status is associated with higher noise levels, and there are indications that house ownership is slightly associated with increased noise annoyance”.

Rising annoyance matches rising living standards?

WHO doesn’t tackle the widely-expressed view that people become more vocal about the state of their environment as they become better-off. When I researched my book *Why Noise Matters* (published by Earthscan in 2011), I concluded that, while this may be the case with some ‘green’ issues, there was no conclusive evidence to suggest it was true in the case of noise.

Why Noise Matters found that, as a society, we are not only more tolerant of noise, and of loud noise, than we were 50 years ago but in many respects we have embraced it as we see some noise sources – loud music, iPods, gadgets in our homes – as adding to rather than detracting from the quality of our lives.

I understand that doesn’t prove that at least some people may become more concerned about noise as their income rises. But the evidence seems to be lacking to suggest that people as a whole become more annoyed by noise when they have a higher quality of life.

The Civil Aviation Authority in its report *Managing Aviation Noise* (2014) also pointed to this lack of evidence: “Historically, as GDP and living standards have increased, so has people’s desire for a quiet, relaxed home environment, and a tranquil setting out of doors. This may have contributed to changes in attitudes to aircraft noise in some countries, **although there is no robust evidence for this in the UK**” (my emphasis).

<https://publicapps.caa.co.uk/docs/33/CAP%201165%20Managing%20Aviation%20Noise%202.pdf>

Of course better-off communities may complain more about aircraft noise but that is different from saying that, as we become wealthier, we become more highly-annoyed by it.

Increased flight numbers?

Detailed studies have not been done into the link between increasing flight numbers and increasing annoyance. But the period of increased annoyance revealed in the tables – the last 20 years or so – does coincide with a growth in movement numbers at most airports. And anecdotal evidence points strongly to a link between aircraft numbers and annoyance. There seem to be trigger points (different for each individual) when people start to notice the aircraft overhead and start to get annoyed by them.

Conclusions

- The main reason for people becoming highly annoyed by aircraft noise is when they experience change: new airport, extra runway, changed flight paths.
- The second – and connected – reason seems to be an increase in the number of planes passing overhead. This is a change from their previous situation.
- There is no robust evidence to suggest a link between the growth in annoyance and growing living standards.
- There is not enough evidence to draw firm conclusions between annoyance and socioeconomic status, education, income, home ownership or the percentage of immigrants impacted.

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