

Challenges of Acoustics

AHS Transformative Vertical Flight Workshop

San Francisco

January 2018



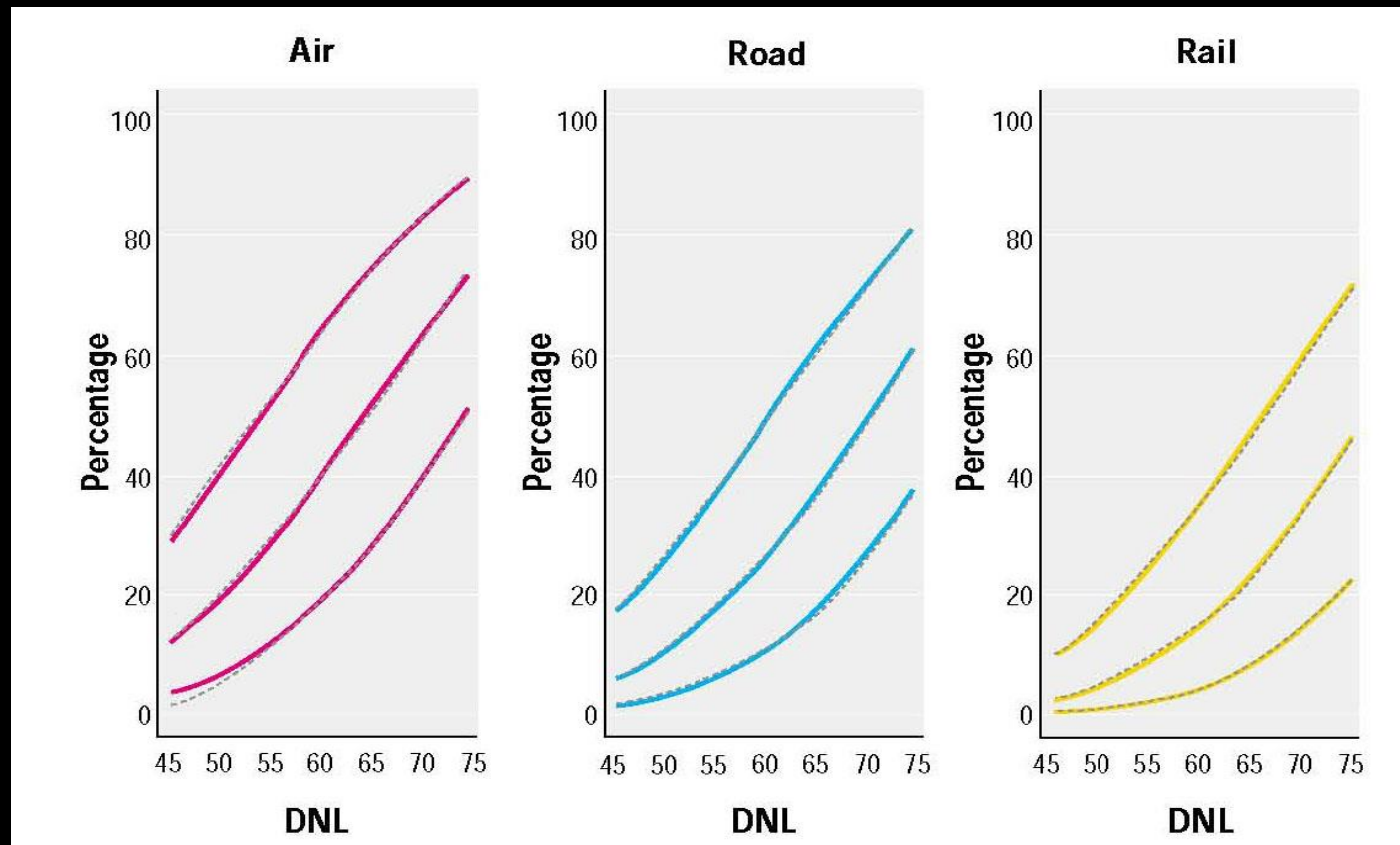
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UBER Elevate

Why are aircraft noisy?

- Actual noise – physics and physiology
- Subjective response - “virtual noise”

Long-term Annoyance



Miedema and Oudshoorn, TNO-PG, Leiden, The Netherlands (2001). *Annoyance from Transportation Noise: Relationships with Exposure Metrics DNL and DENL and Their Confidence Intervals* in *Environmental Health Perspectives*, 109:4

What can we measure?

- Sound pressure – physics
- Loudness – physiology

Loudness

- not subjective
- depends on frequency
- depends on time structure

Partial Loudness

- depends on background masking
- measure background spectrum
- calculate loudness in each ERB
- predict detectability radius

If you can't measure it,
you can't improve it

Be sure to measure
what you want to improve