

Speech in rooms

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Speech in rooms





3 acoustic problems

- Clean speech



- Background noise



- Reverberation



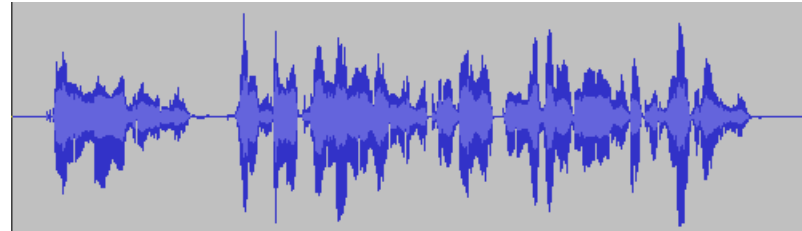
- Distance



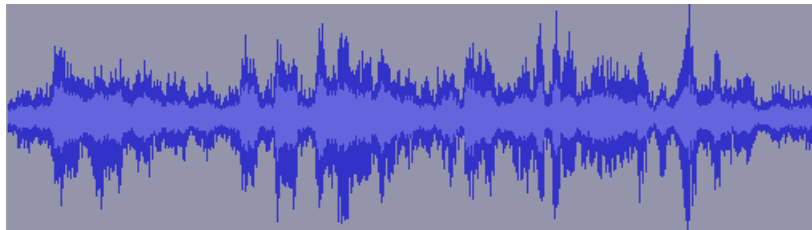


Filling in the dips

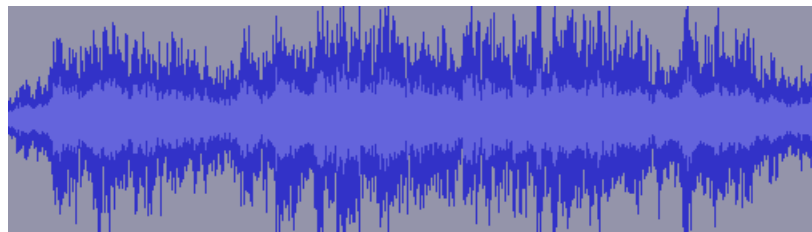
- Clean speech



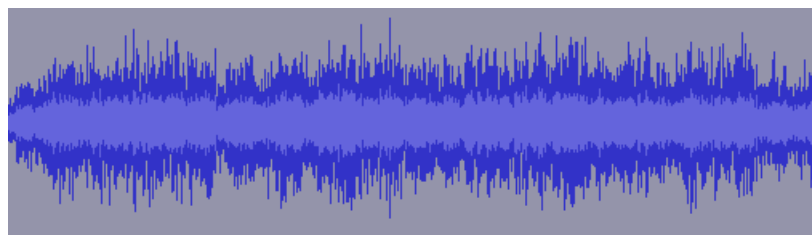
- + noise



- + reverberation



- + distance





Noise level

- WHO¹ recommend: $L_{Aeq, 8 \text{ hrs}} = 35 \text{ dB}$
- DOH² recommend: $L_{Aeq, 1 \text{ hr}} = 50 \text{ dB}$
- Typical measurement: $L_{Aeq} = 69 \text{ dB}$
- This room?




¹Berglund B, Lindvall T, eds. (1999). "Guidelines for community noise," (World Health Organization, Geneva).

²Department of Health (2013). "Health Technical Memorandum 08-01: Acoustics," (HMSO, London).



Reverberation

- No guidelines!
- Reverberation time = time for sound level to fall by 60 dB

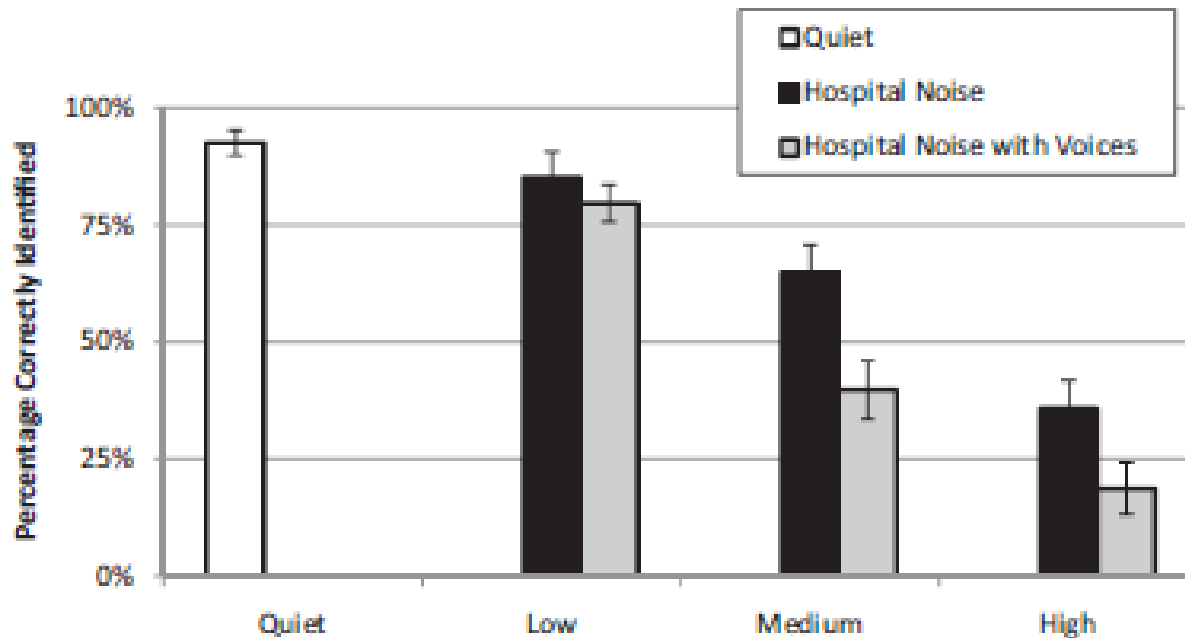
RT (seconds)	Space	
0	Countryside	
0.5	Living room	
2.0	Concert hall	

- RT in this room?



A little evidence

- Pope et al (2013)
 - Intelligibility measured with SPeECH In Noise test
 - Recorded hospital noise (59, 64, 69 L_{Aeq})



Pope, D. S., Gallun, F. J., and Kampel, S. (2013). "Effect of hospital noise on patients' ability to hear, understand, and recall speech," *Research in nursing & health* **36**, 228-241.



Thanks for listening

www.acoustics.salford.ac.uk