



Vernacular speech styles [1] appear in informal environments which are often too noisy to obtain the high quality audio needed for acoustic phonetic analysis. As a result sociolinguistic interviews are rarely conducted in "natural environments". This poses a problem for the analysis of vernacular speech. Studies show the effects of noise on voice quality properties [2] but are noisy environments actually detrimental to analysis of formant frequencies? Does noise affect all formants equally? What types of noise should be avoided?

#### Method

- Speech from 1 male/1 female; early 20's; NL, Canada
- iPad2; iSLR Field Recorder [3]; 16 bit, 44.1 kHz WAV
- Carrier phrase "The man said X again" x 260
- 3 noise conditions: 60Hz Hum, White Noise, Overlapping Speech
- Noise (dB) scaled [4] to +0, +10 and +20 dB of avg. intensity of "clean" recordings [2]
- Mixed with "clean" recordings; FFMPEG [5]
- Vowel temporal boundaries aligned using Prosody-lab Aligner [6]
- F1, F2 at temporal midpoint: MAN, SAID, "X", AGAIN; automatically (Praat)



Figure 1: "OWN" mixed with OLSp and with no noise added

# The Recorder's Paradox: high fidelity audio from natural environments Paul De Decker

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# +0 SNR Res



Figure 2: Noise Effects on Male S



Figure 3: Noise Effects on Female Speaker Vowel Space

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### Main Findings

noises produced measurement error ost detrimental noise: White Noise vowels were affected, except FACE (male) d STRUT (female) frequencies altered more often than F1

#### Conclusion

signal level = noise level automatic measureof F1 and F2 are significantly affected under noise condition. White Noise has the largest mental effect, probably due to its broad band quencies, followed by OLSp and the 60Hz Hum. formants and vowel categories are affected often than others. Interaction between Gennd noise - different noises yield different types or, depending on speaker gender.

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