

## F0 Statistics for Spontaneous British English

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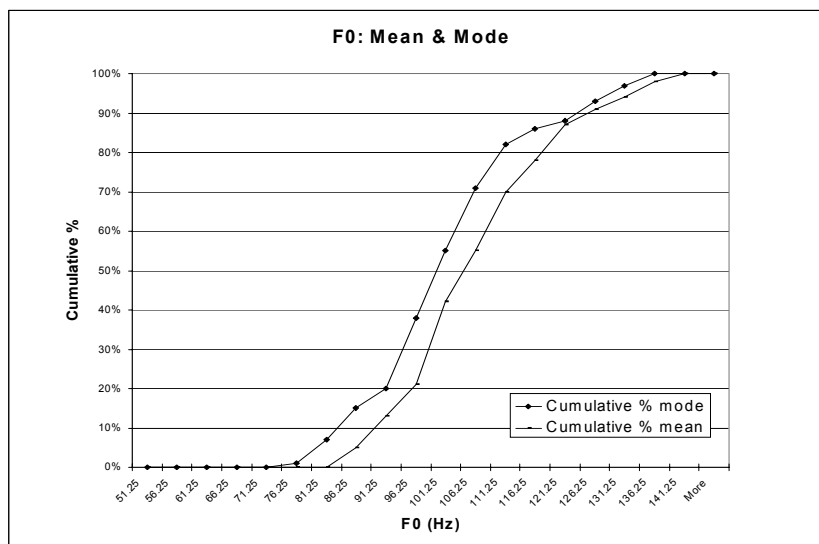
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This paper presents descriptive statistical data for F0 of the 100 young male speakers of Standard Southern British English in the newly created 'Dynamic Variability in Speech' (DyViS) database [UK ESRC award number RES-000-23-1248]. All speech samples are taken from simulated police interviews where the participants were required to produce spontaneous speech under cognitive stress. The material for each speaker is an extraction of the last 3-5 minutes of his side of the interview. The wave files were passed through a long-term pitch analysis *Praat* script which generated the F0 mean, median and standard deviation for each speaker. A mode was obtained from the distribution of F0 in 2.5 Hz bins within a 50-300 Hz range to give an indication of central tendency unaffected by a 'tapering off' at higher frequencies of an individual speaker's range. F0 is a frequently cited variable in forensic casework since it has a degree of robustness (Braun 1995). The distribution of F0 in a large homogenous group can be used to assess the weight of importance which should be given to this variable, and the forensic nature of the DyViS database renders these statistics the more useful. Our study shows an average mode of 102.2 Hz, mean of 106 Hz and median of 105 Hz, with a near-normal distribution. For the majority of the speech group, viz. 60% (20-80% in Figure 1) which fell within a narrow window of approximately 20 Hz, the discriminatory power of F0 is very limited. For the remaining 40% of our population (20% under 94 Hz and 20% over 113 Hz) F0 is of greater significance. The DyViS data are compared with other significant studies of F0 in sample populations to date (e.g. Künzel 1989) and, where these are divergent from our findings, we present possible reasons for the disparity.



**Figure 1.** Cumulative percentages of mean and mode F0 for 100 male speakers of SSBE aged 18-25 years, using 3-5 minutes of spontaneous speech per speaker from the DyViS database.

### References

- Braun, A. (1995). Fundamental frequency - how speaker-specific is it? In A. Braun & J.-P. Köster (Eds.), *Studies in Forensic Phonetics: Beiträge zur Phonetik und Linguistik*, Vol: 4, 9-23.
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