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cross-dialectal analysis of English pitch register and its influence on perceived speech friendliness

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Previously

- study on Birmingham English intonation (Malarski 2013)
- study on pitch range in English, Dutch and Polish (Jekiel and Malarski 2013)

Introduction

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- intonation meaningful for pragmatic and semantic judgments of speech (Grabe et al. 2003)
- pitch range as an important parameter (Chen 2001)
- pitch range as potentially different across dialects of English (Cruttenden 1994, Malarski 2013)

Pitch range (Ohala 1983)

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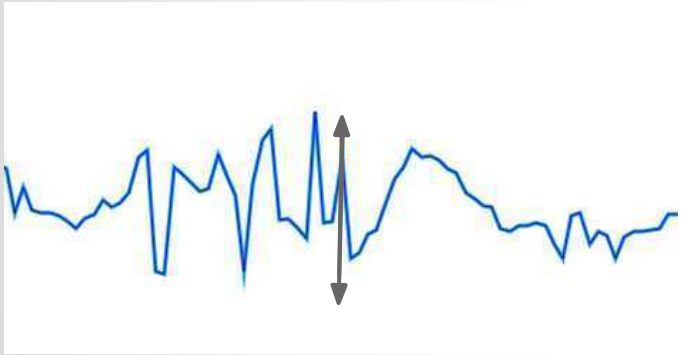
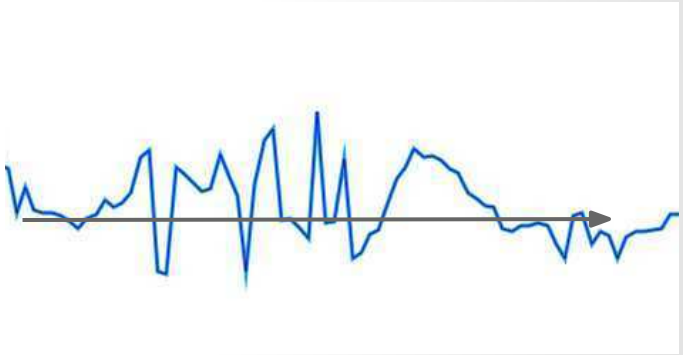


pitch span



pitch register

The study

- compare pitch register for different accents of English
- measure the effects of pitch register on speech perception
  - friendliness
  - attractiveness
  - prestige
  - self-confidence

Speakers

- 10 male speakers
- 2 middle-aged speakers per accent
- 8 speakers recorded in Poznań
- 2 speakers recorded from online interviews

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American New Jersey

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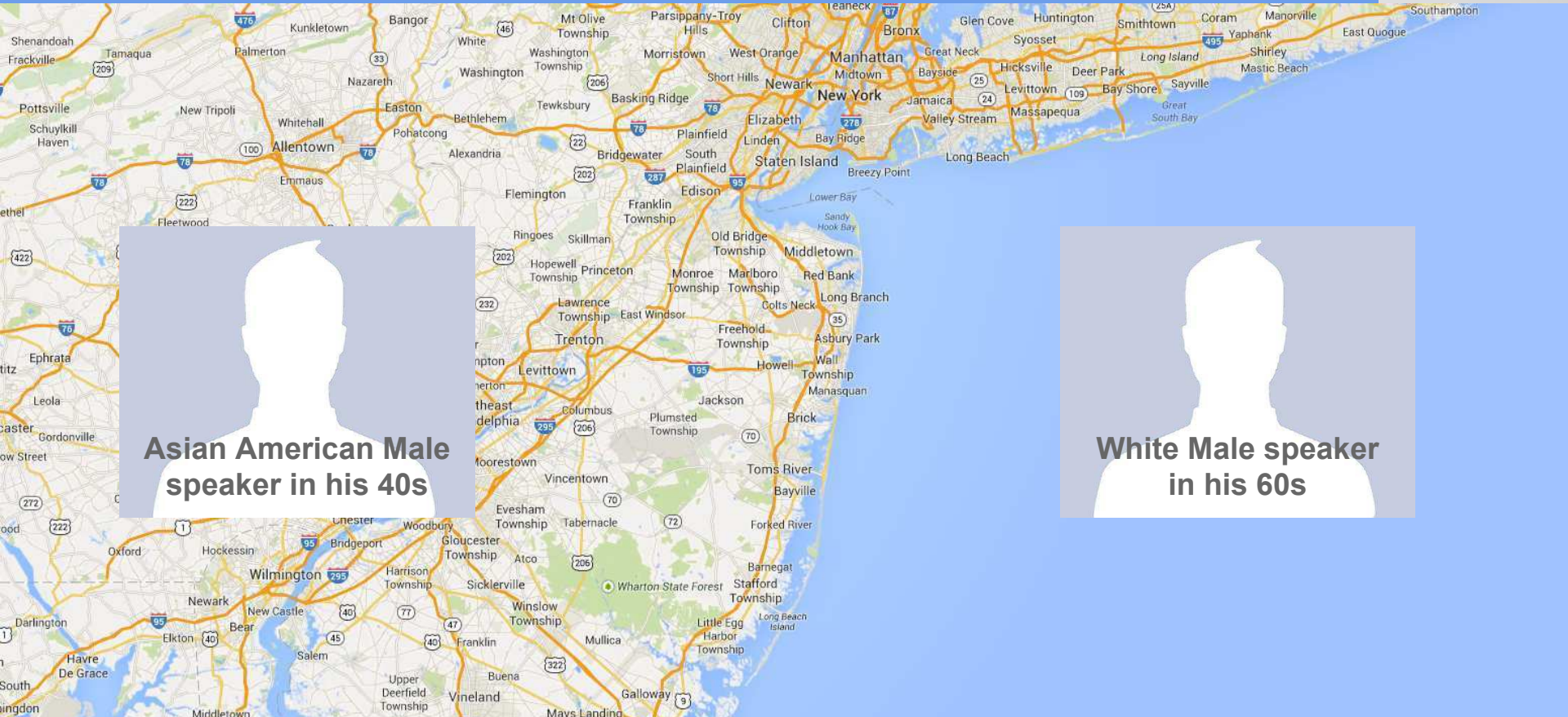

Australian Perth

Canadian Edmonton

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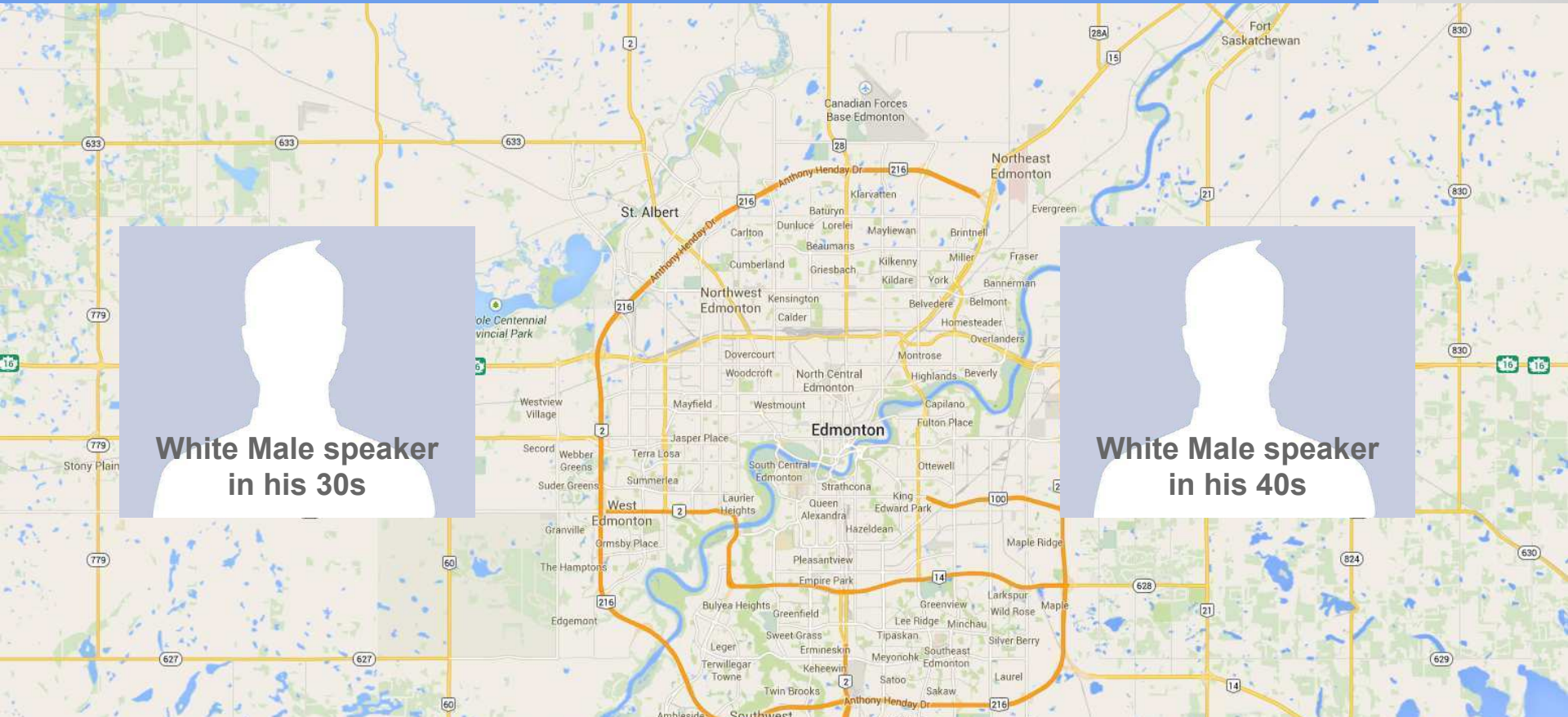

Manchester

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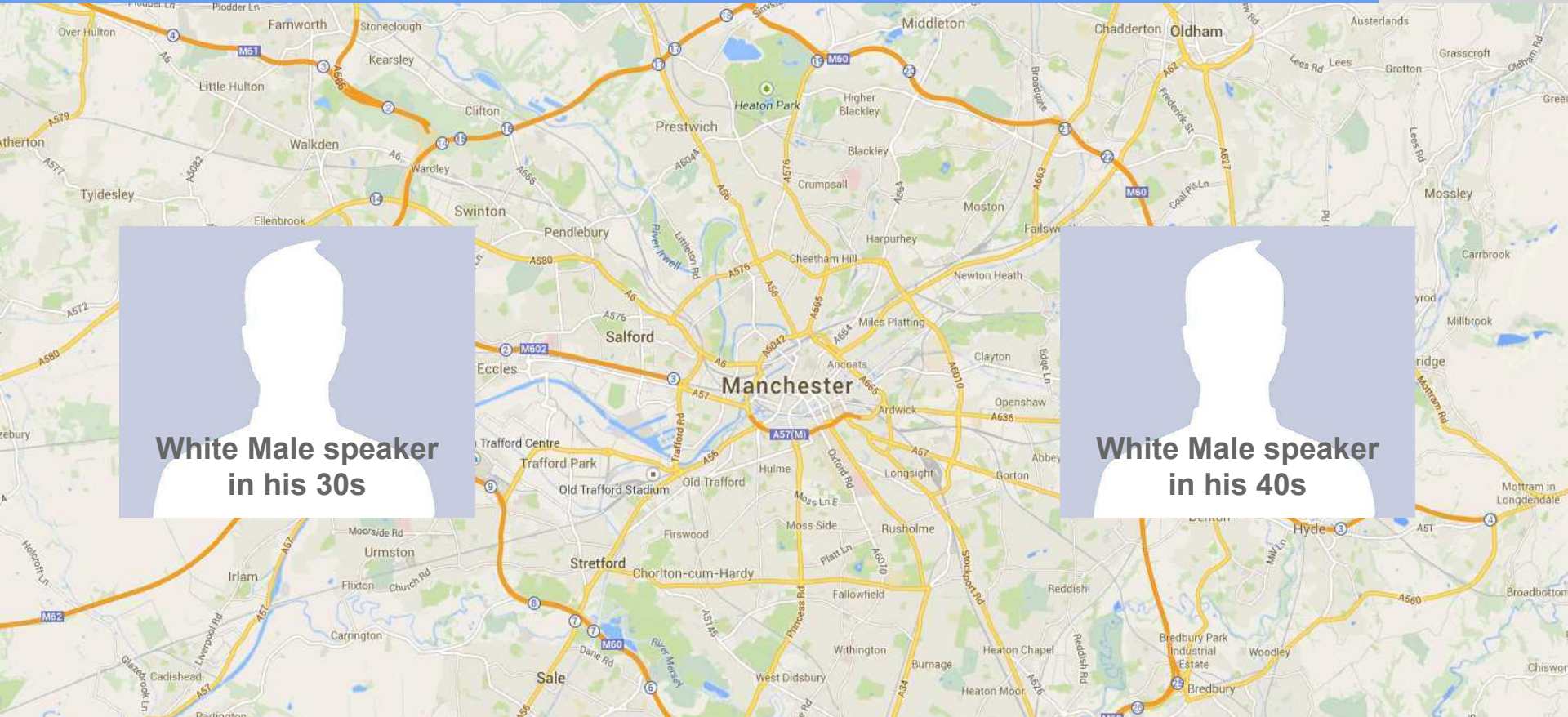

Southern British Brighton

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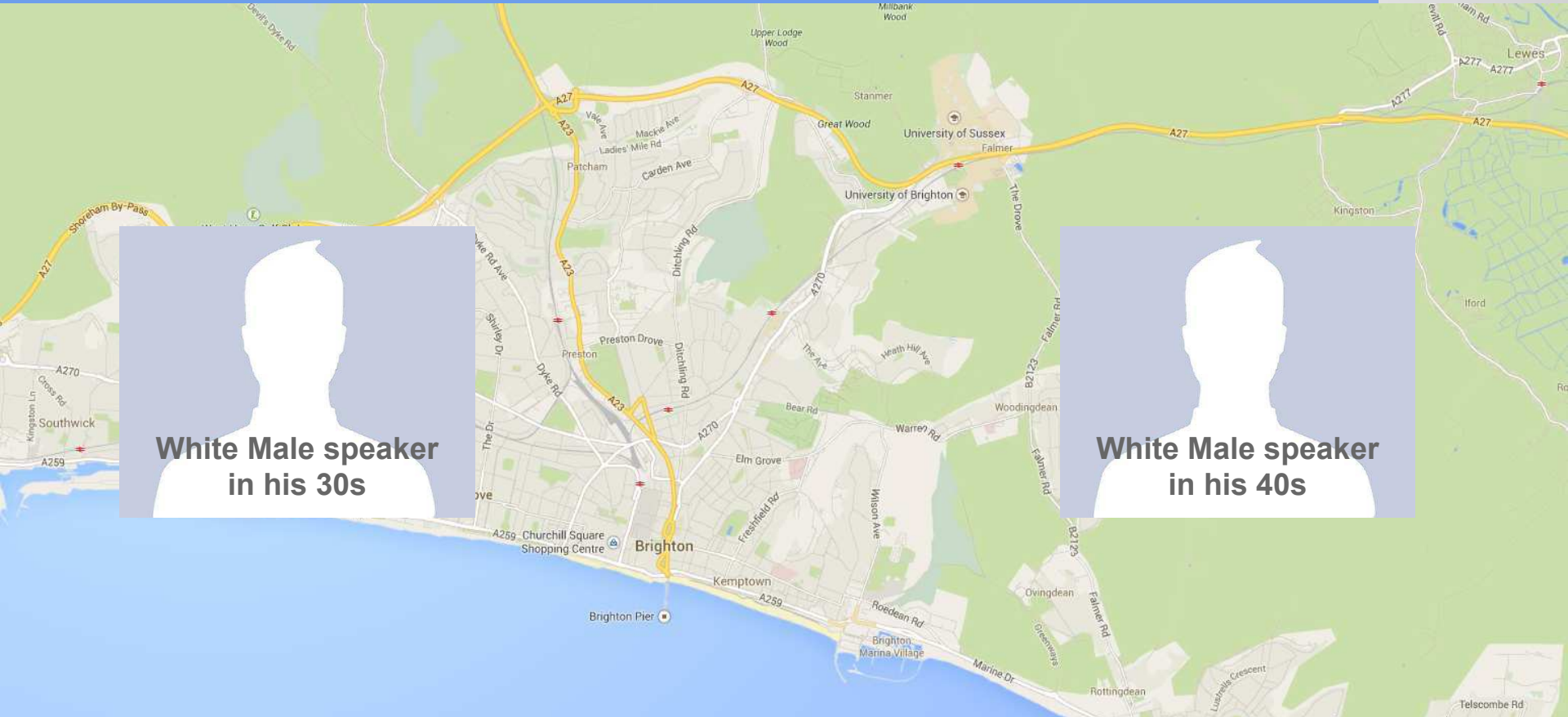

Recordings unmodified

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- spontaneous speech
- circa 15 minutes each
- pitch register measurements made in Praat
- selection of 2 samples from each recording
- a total of 20 5-10 sec wave files per speaker

Recordings modified

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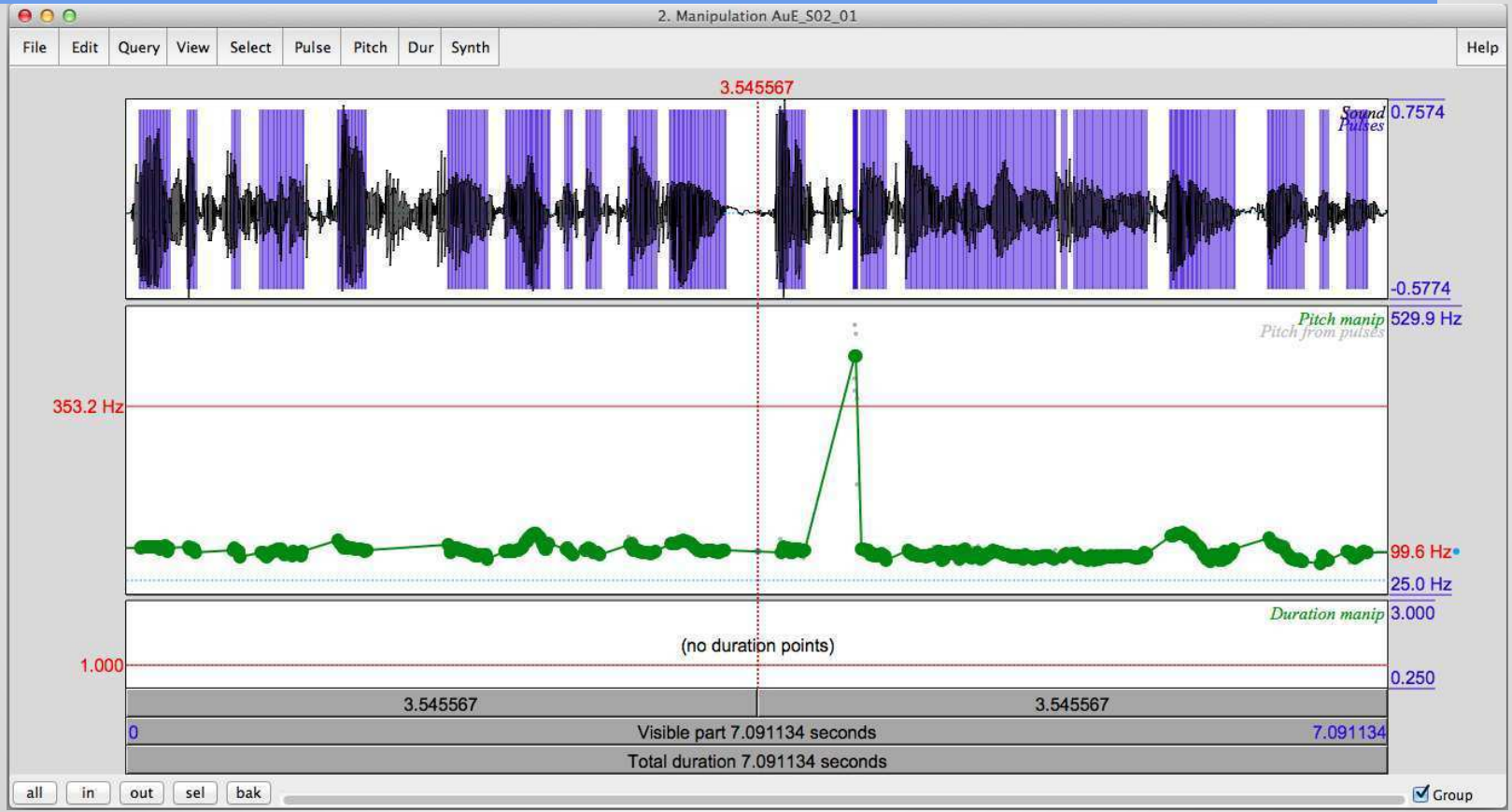
- +5 Hz and +15 Hz variants of previous unmodified recordings prepared in Praat
- a total of 20 modified recordings

Praat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Online survey

- Personal information
- Part A
  - 20 unmodified audio files in random order
- Part B
  - 20 modified recordings in random order
    - +5 Hz and +15 Hz variants of Part A recordings

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Online survey

Online survey preview

Participants

- 58 UAM students / graduates of English
  - 26 male (45%), 32 female (55%)
  - 20 – 26 years old
  - English as second language
  - phonetic training

Hypotheses

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- speakers with naturally higher pitch register should score better in friendliness than speakers with naturally lower pitch register
- recordings with raised pitch register should score better in friendliness than with unmodified pitch register
- speakers with similar pitch register qualities should get similar results

Pitch range accents

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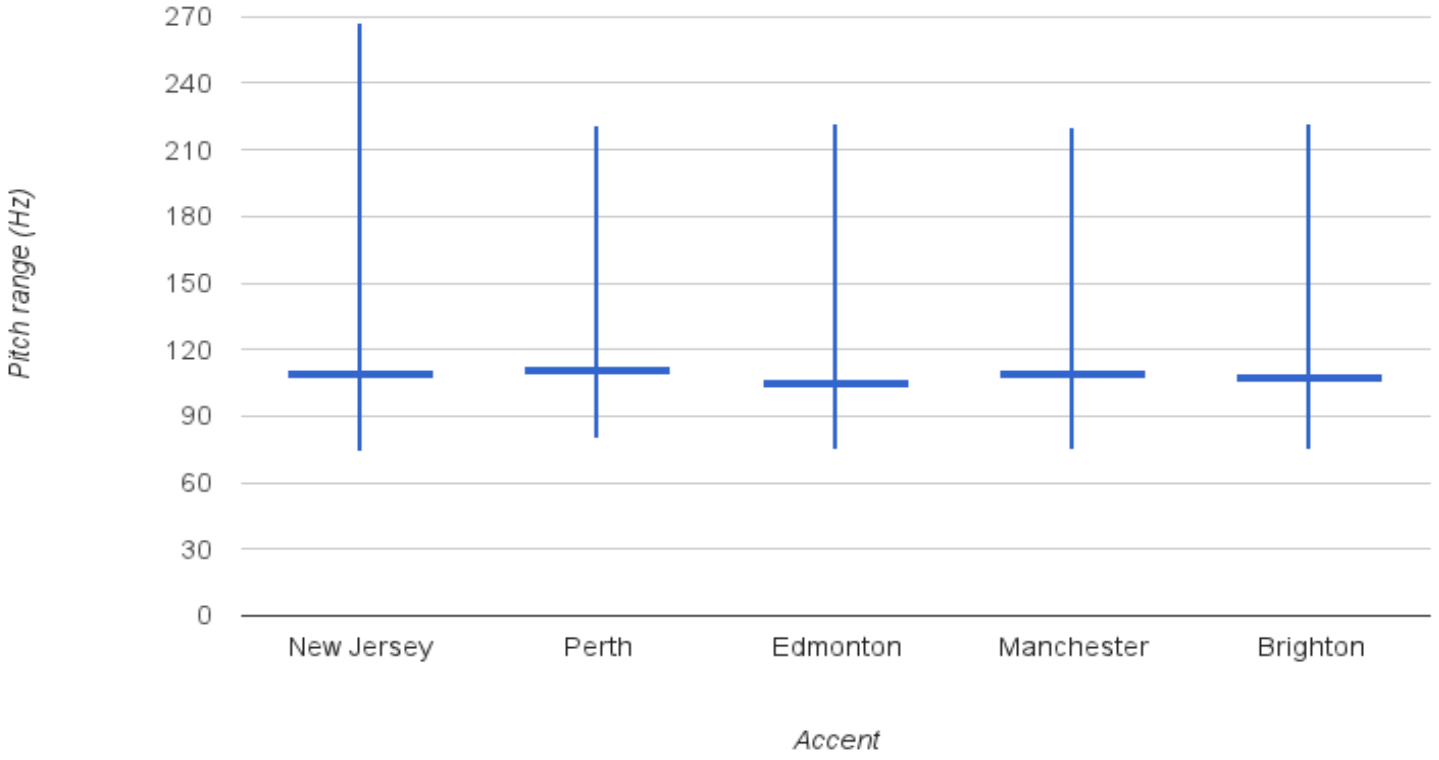

Pitch range speakers

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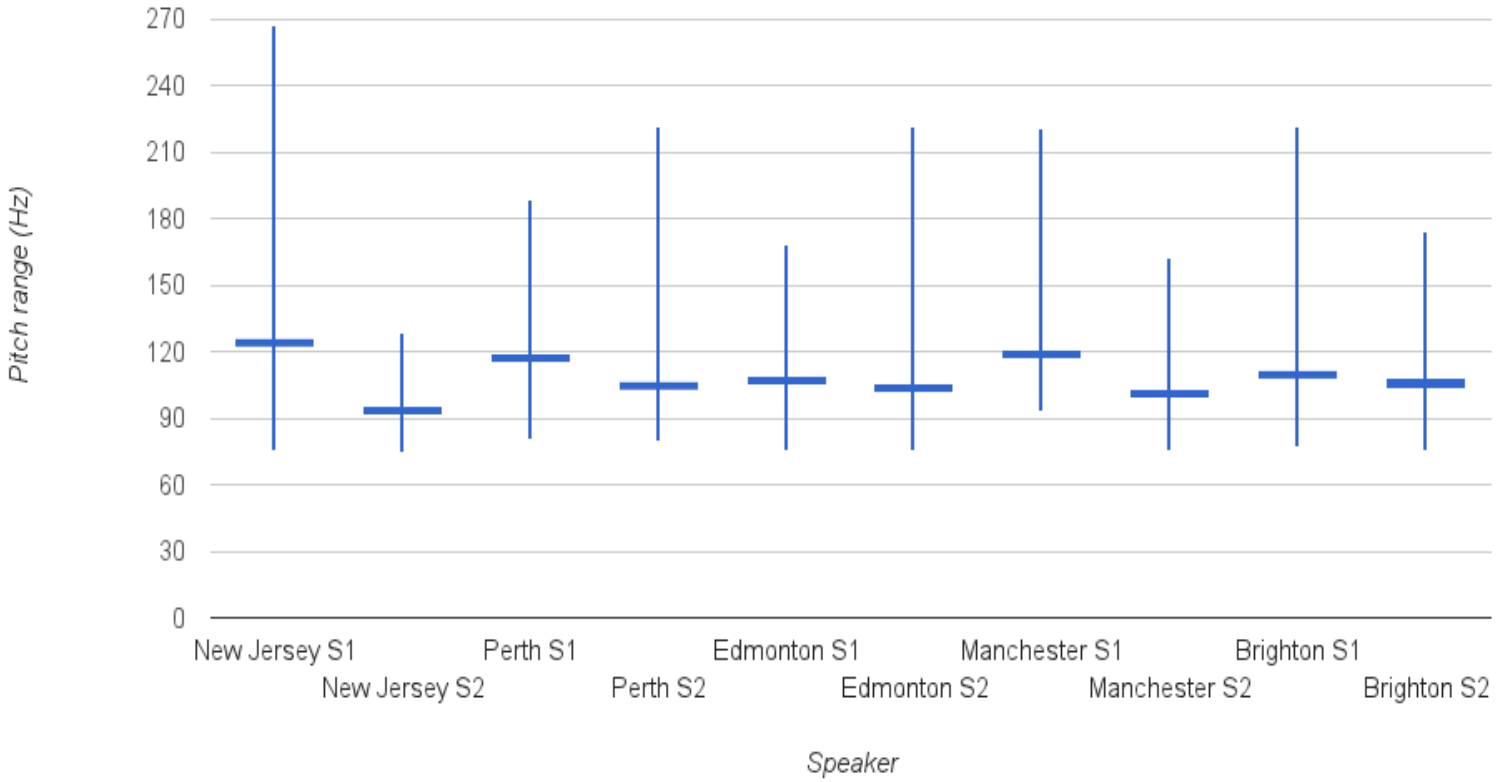
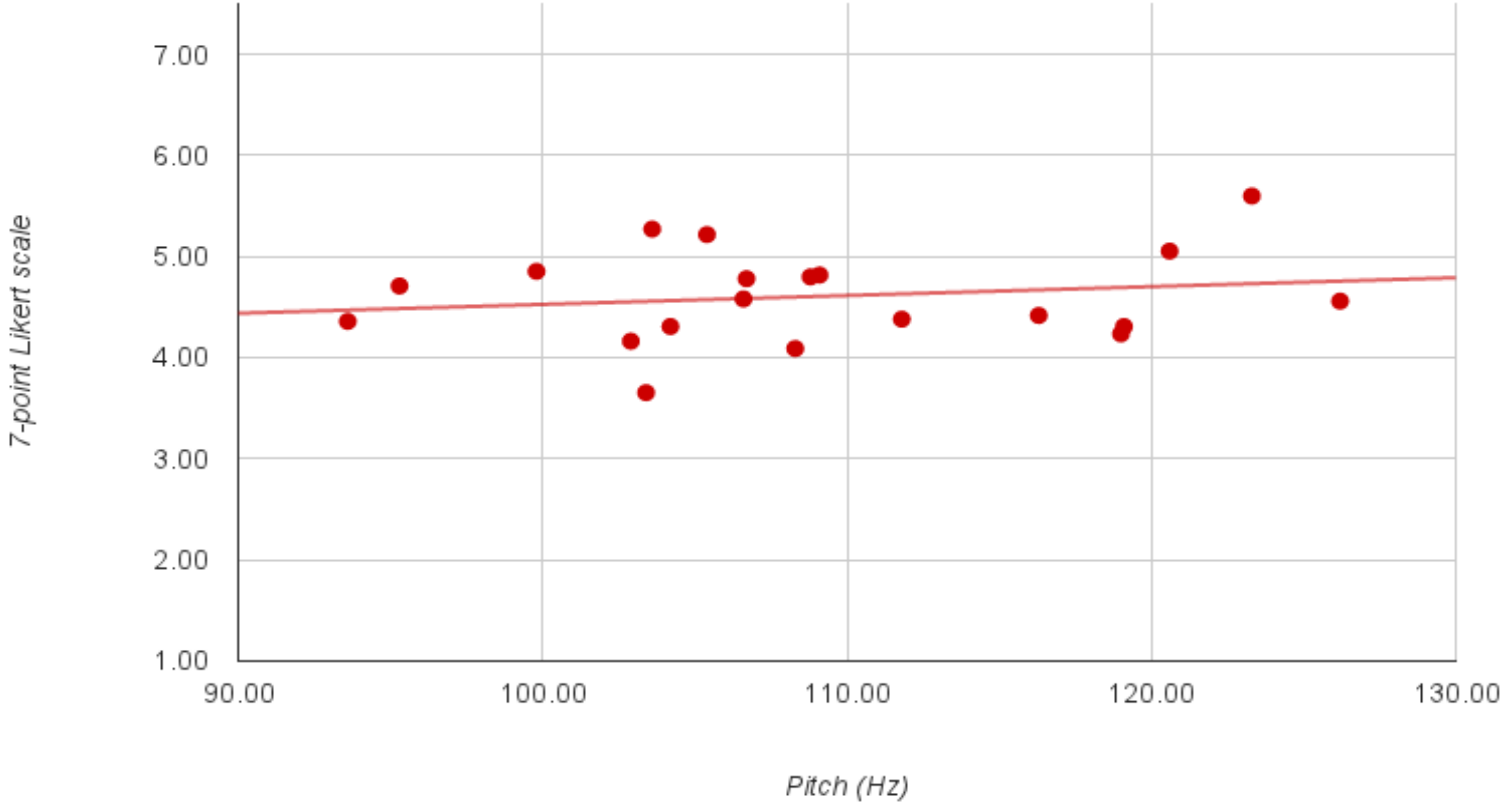


Results unmodified recordings – friendliness



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Results unmodified recordings – attractiveness

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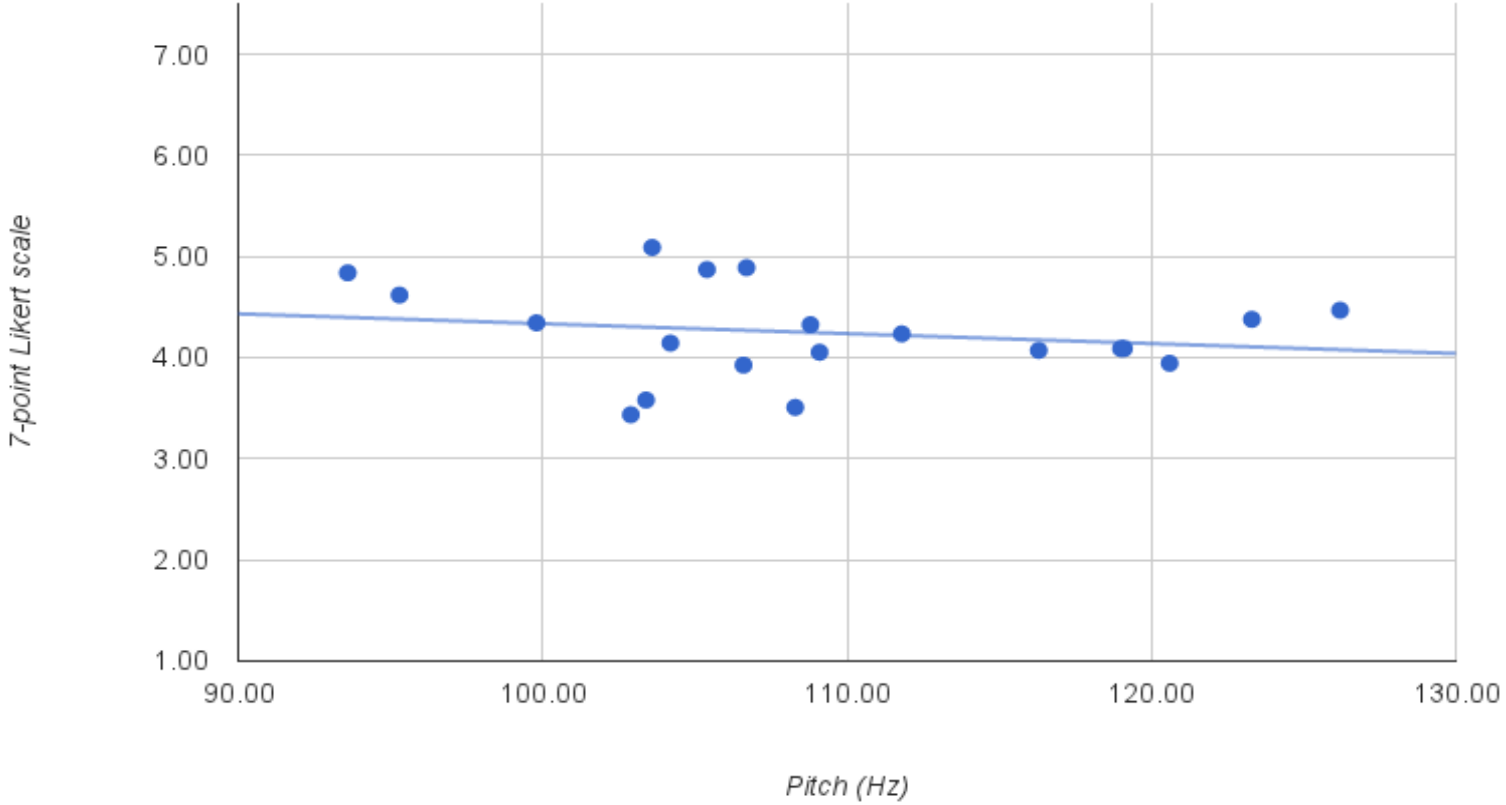
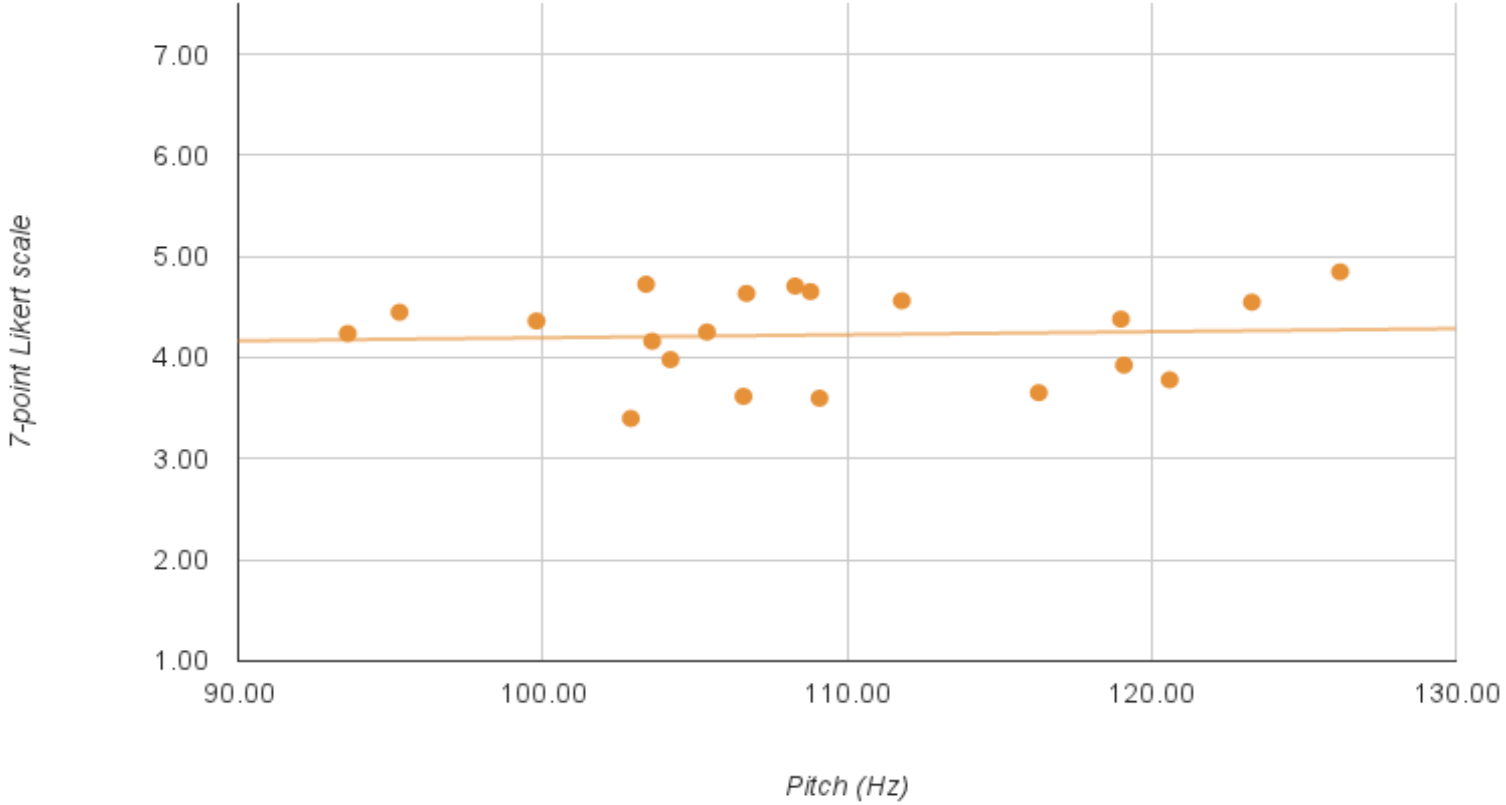


Results unmodified recordings – prestige



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Results unmodified recordings – self-confidence

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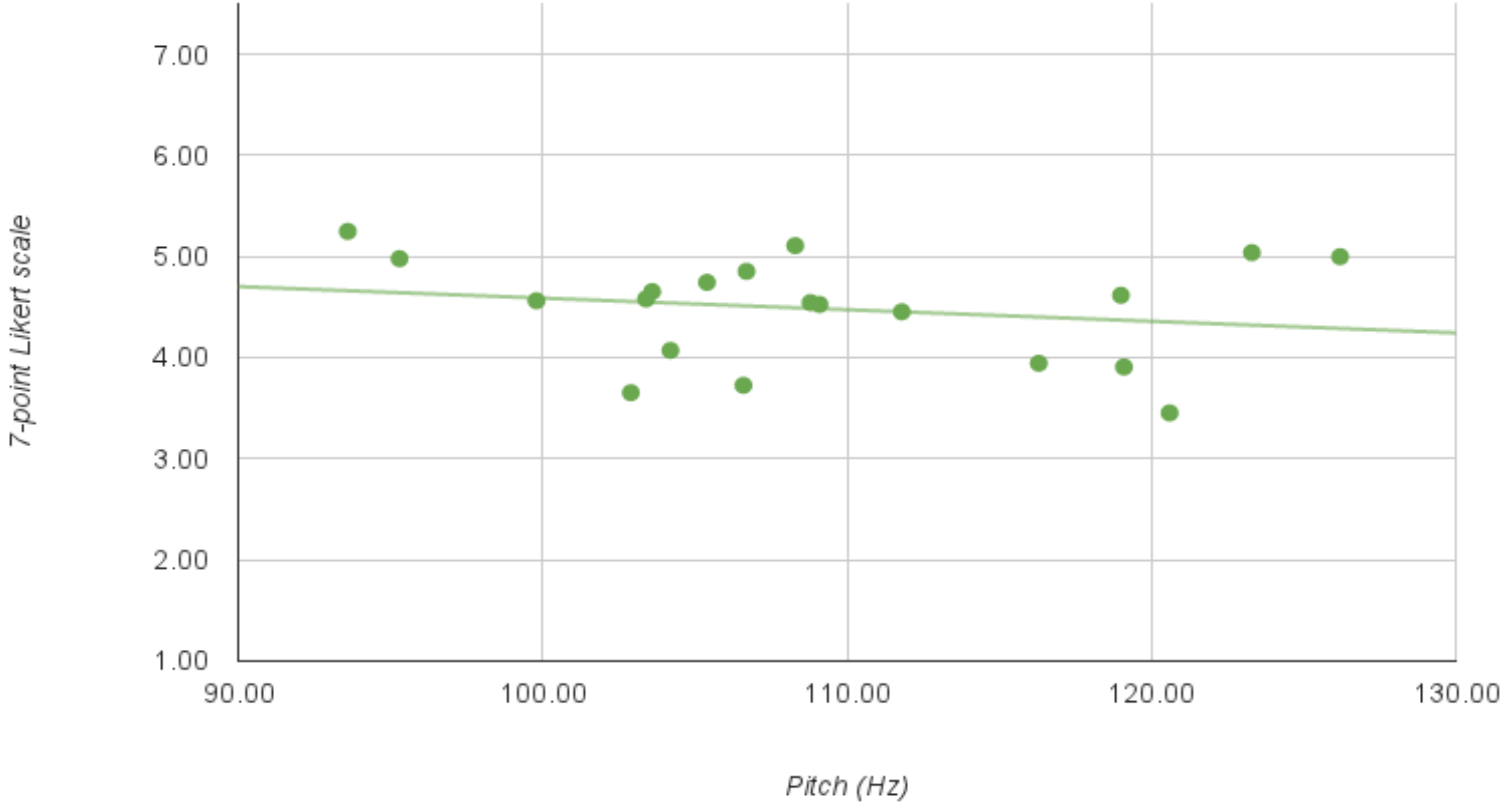
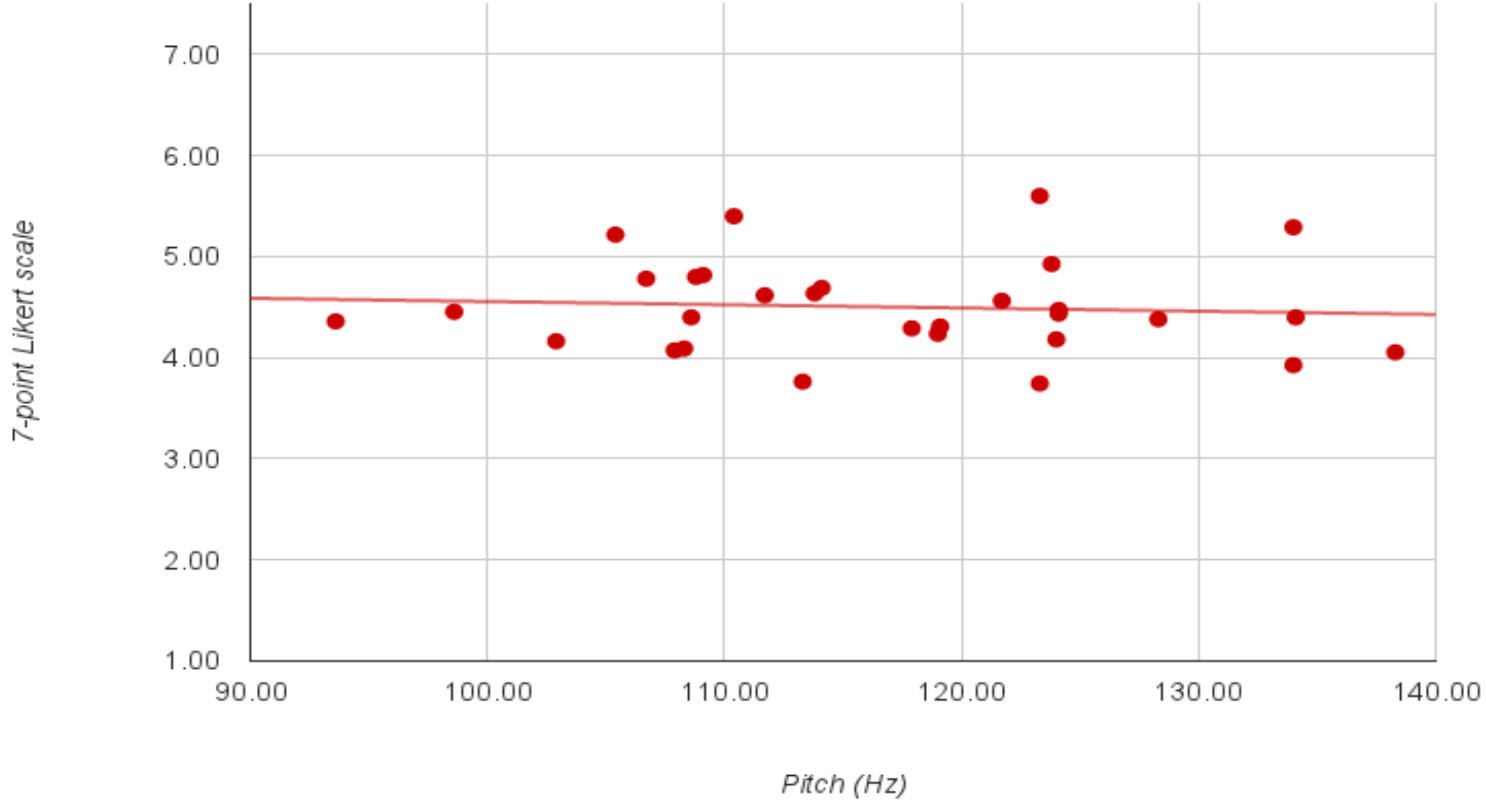


Results all recordings – friendliness



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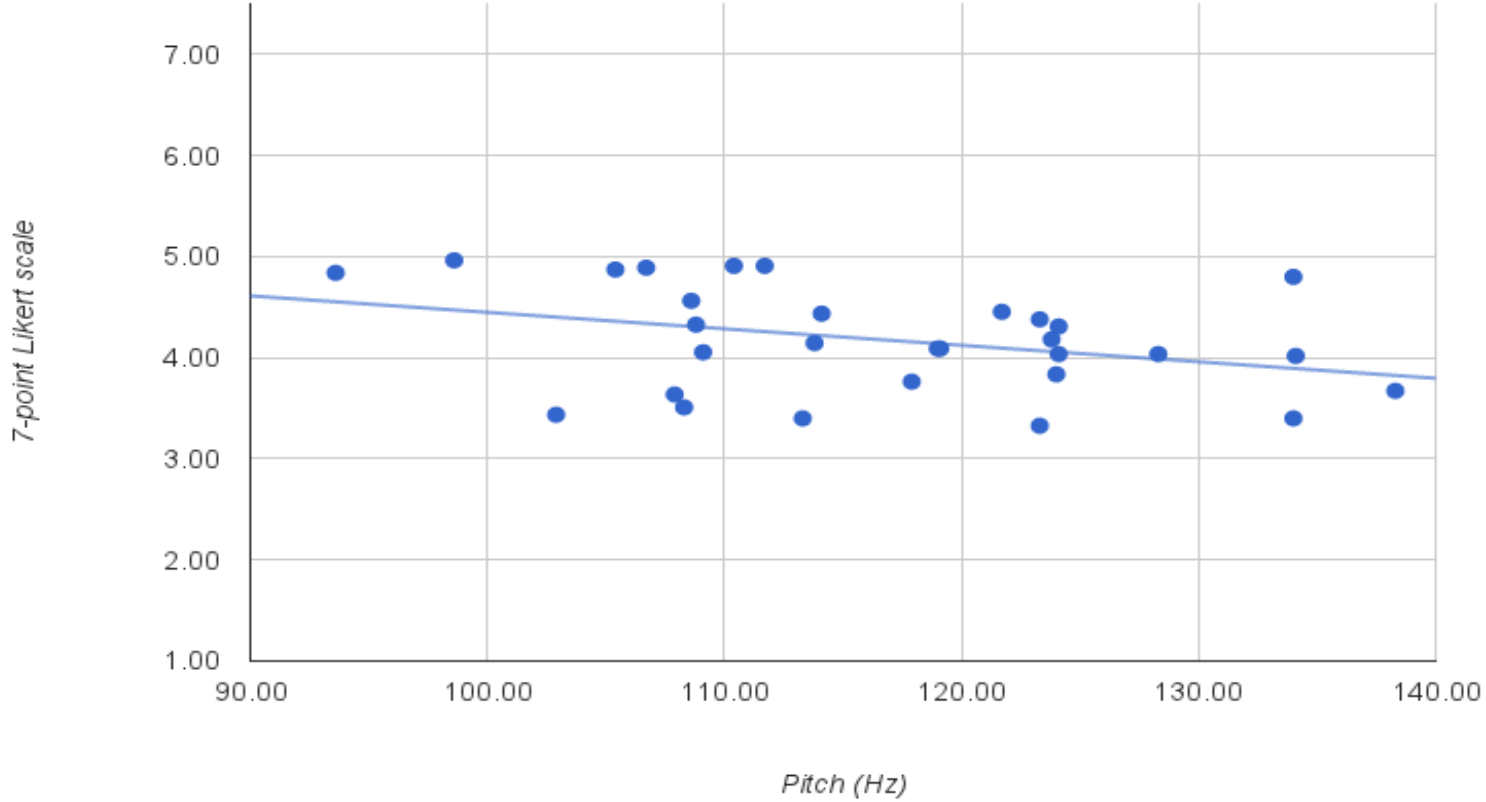
Results all recordings – attractiveness



Results all recordings – prestige

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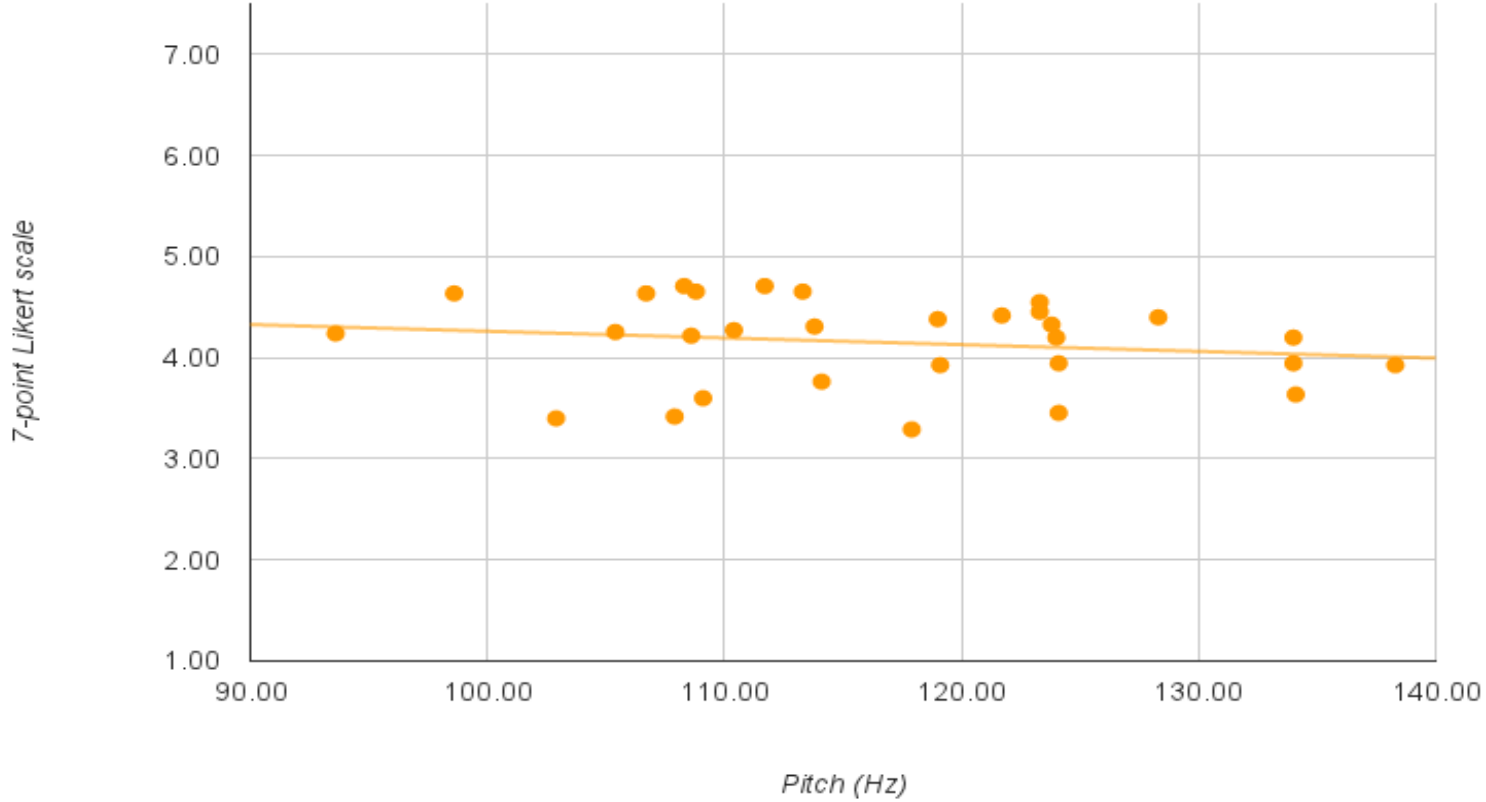
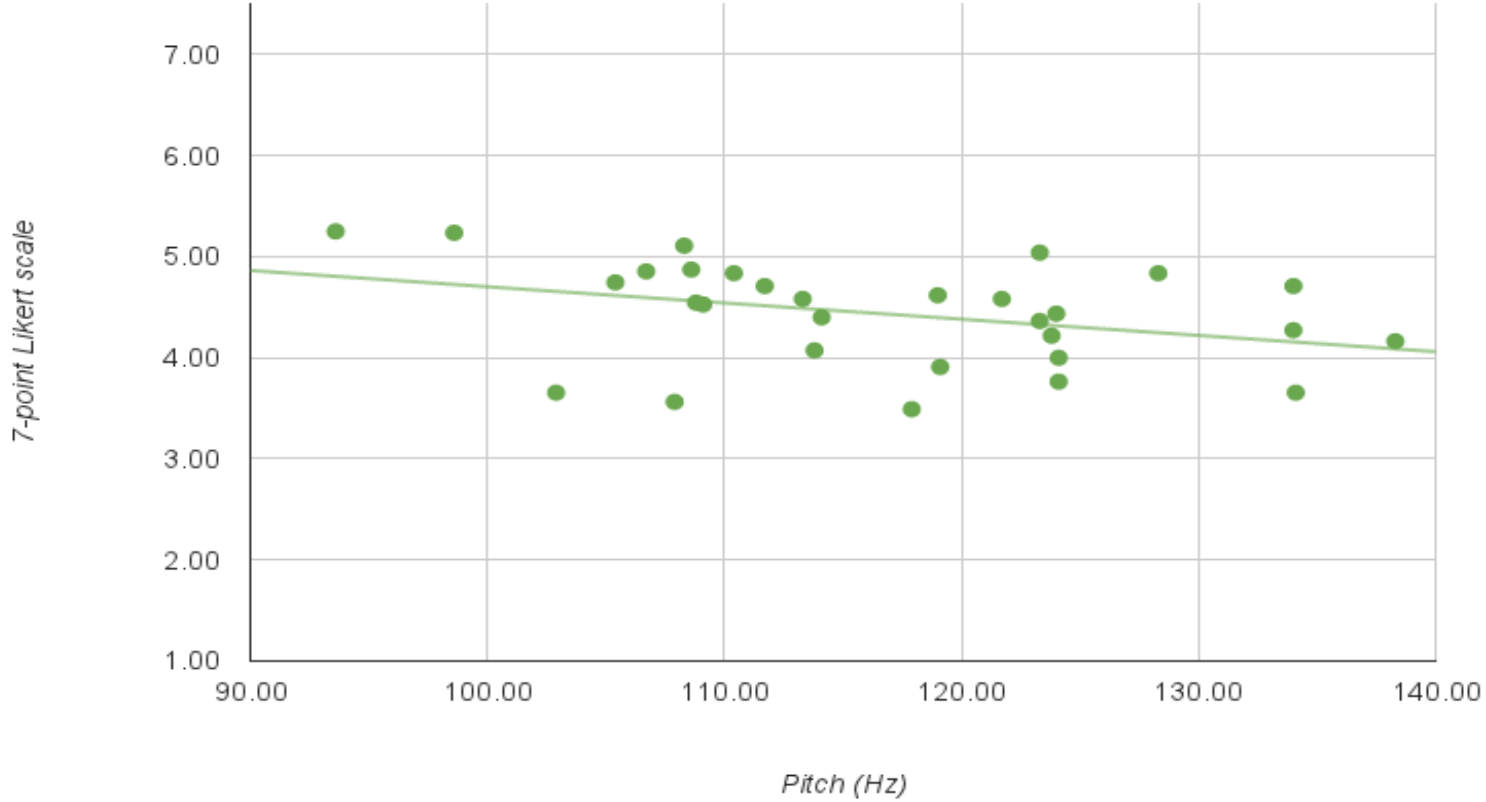


Results all recordings – self-confidence



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Results unmodified recordings

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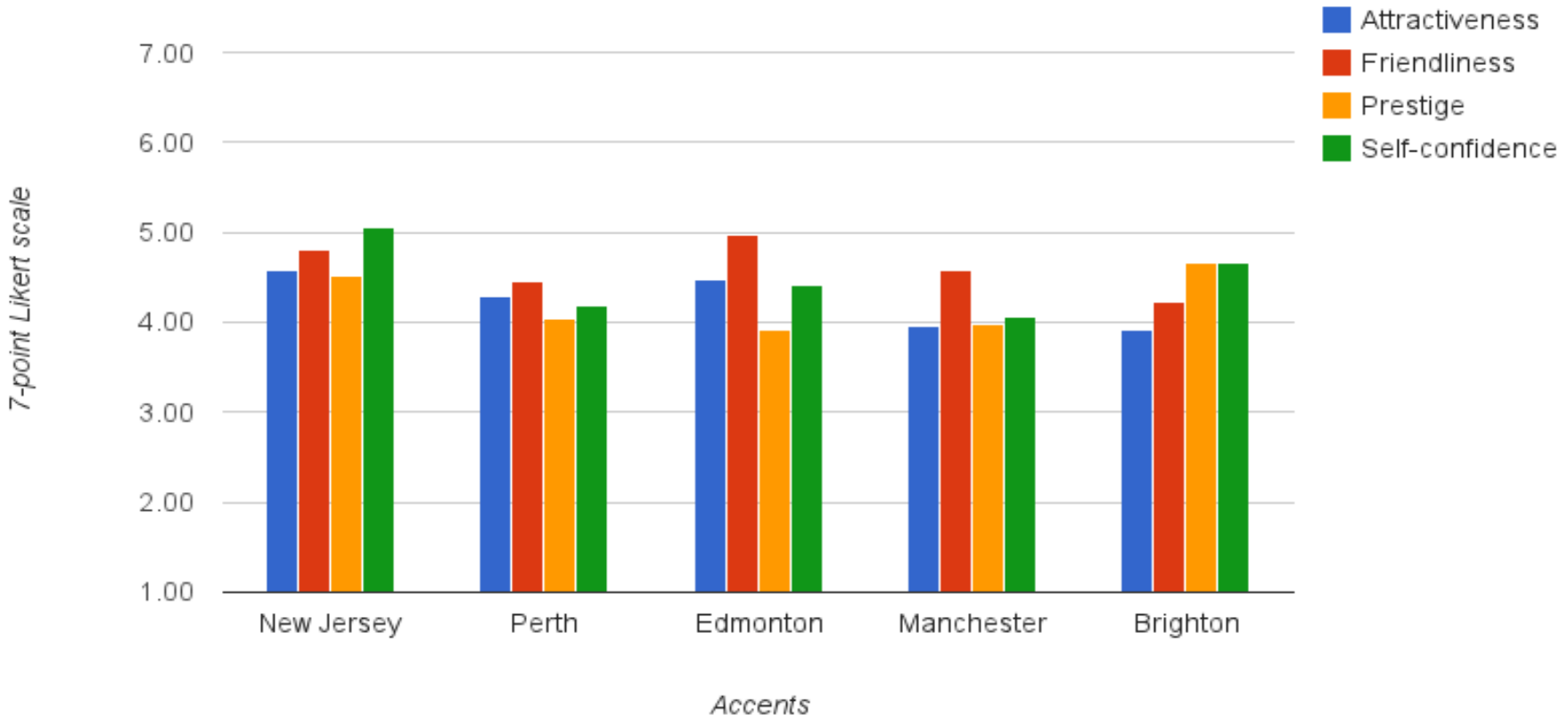

Results modified recordings

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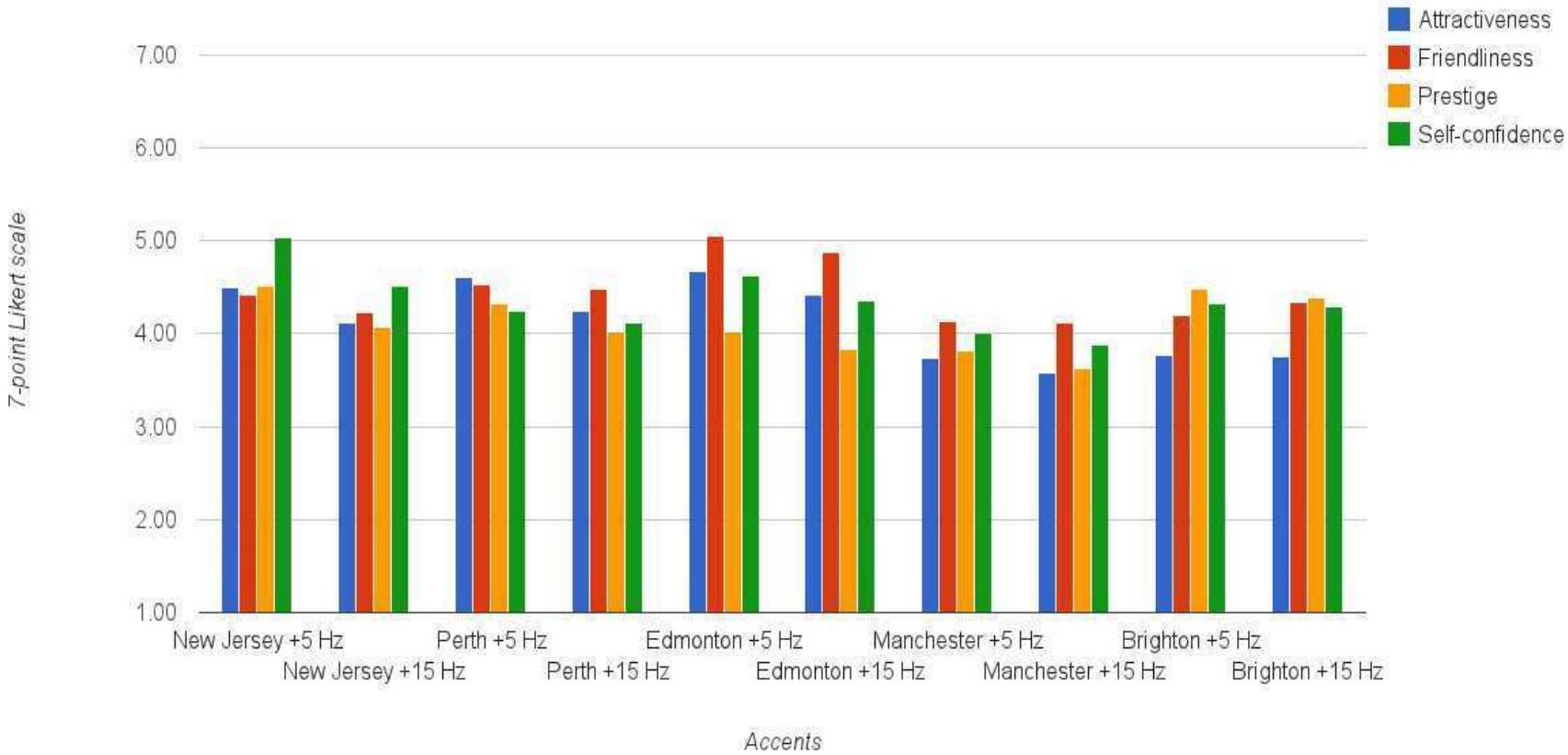

Results pitch range and speech friendliness

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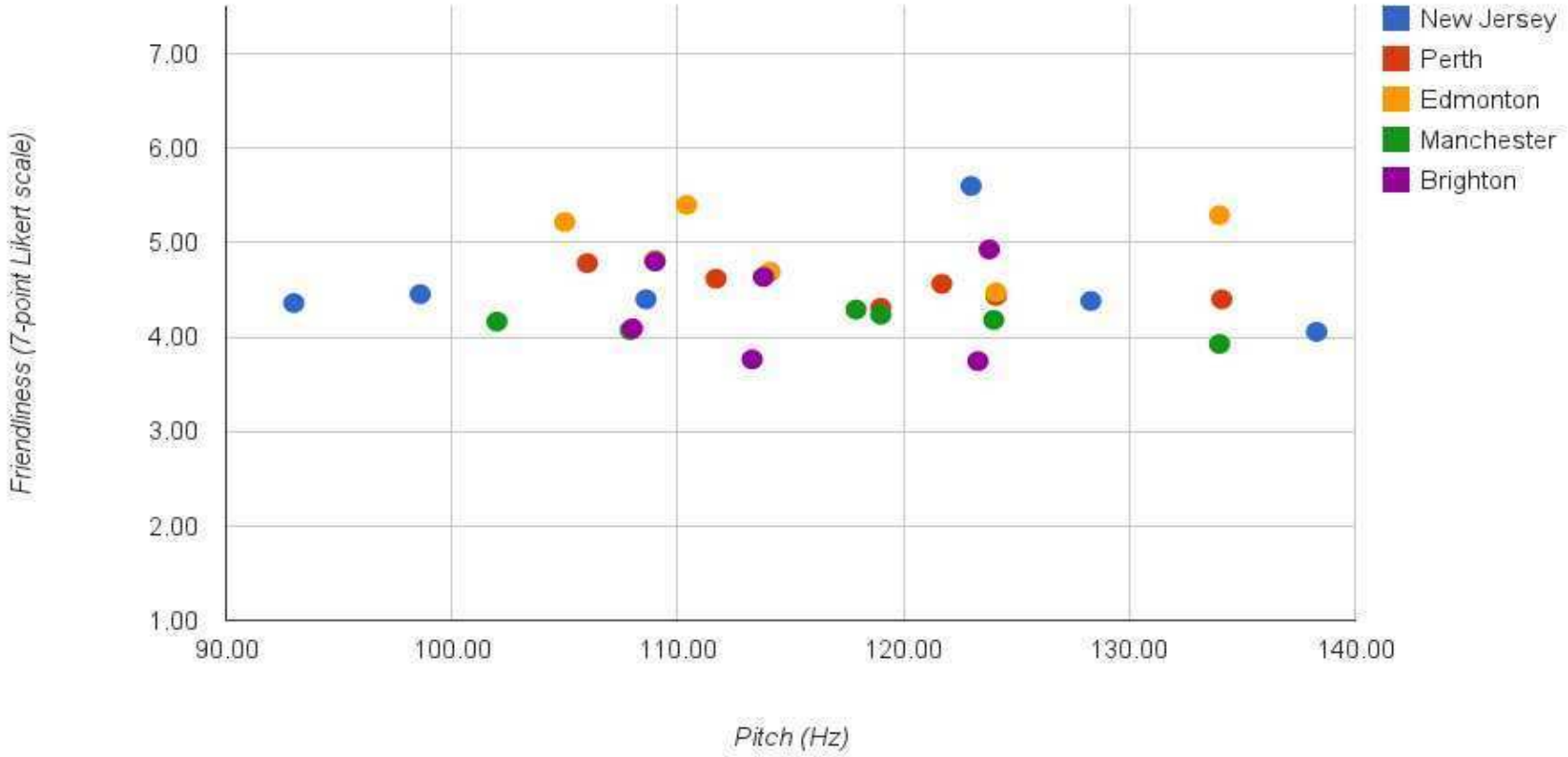

Results New Jersey

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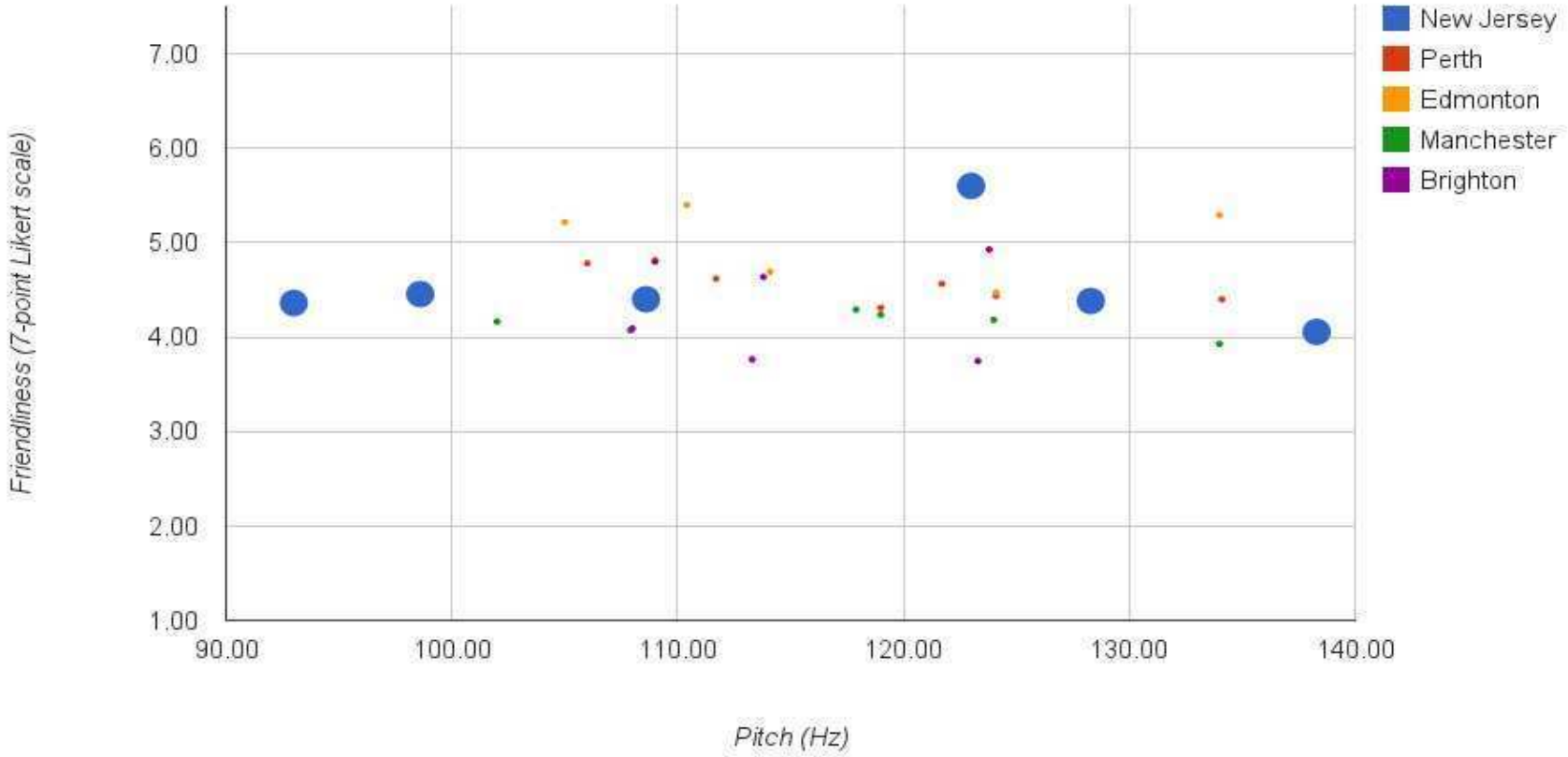

Results Perth

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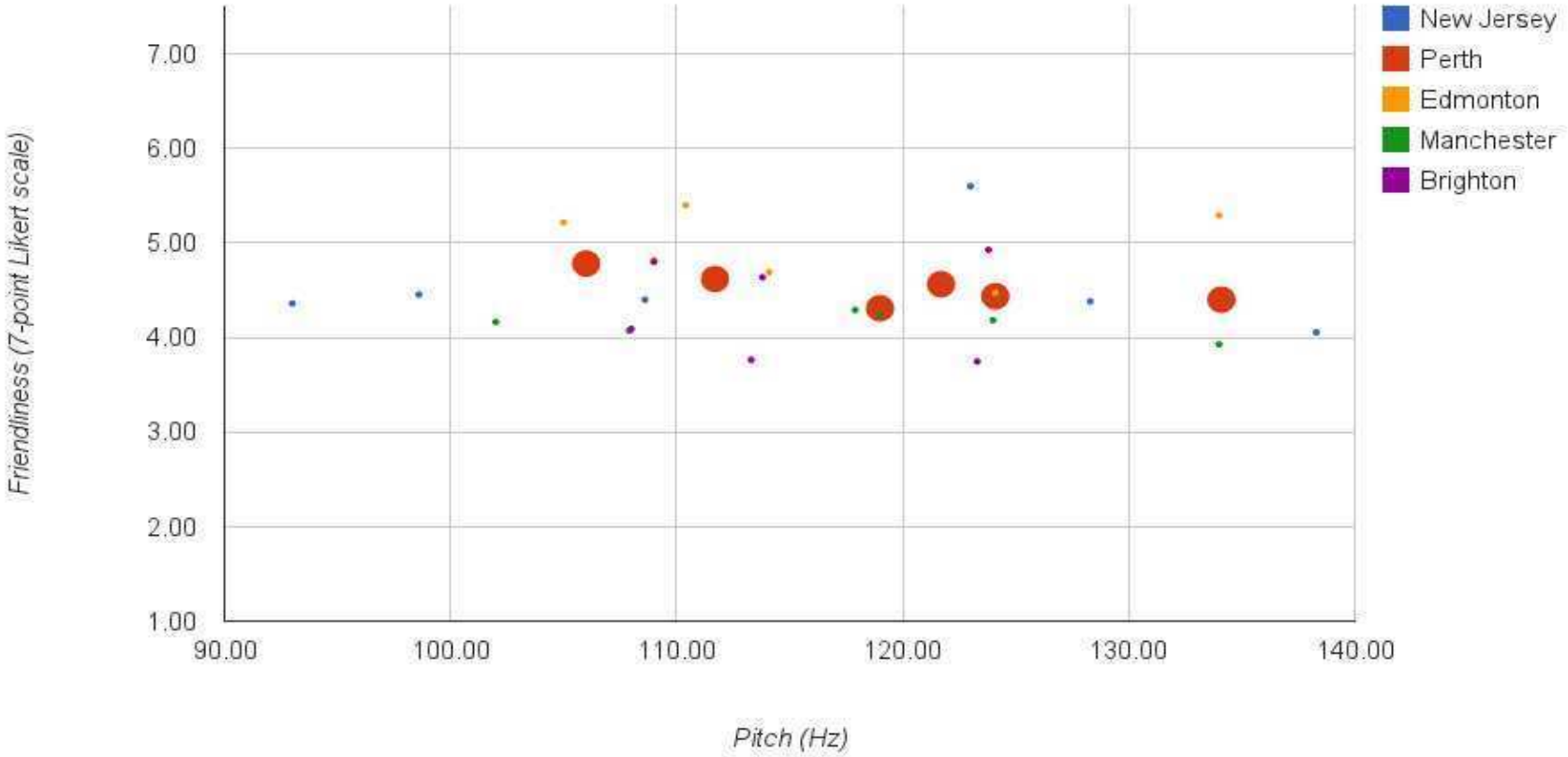

Results Manchester

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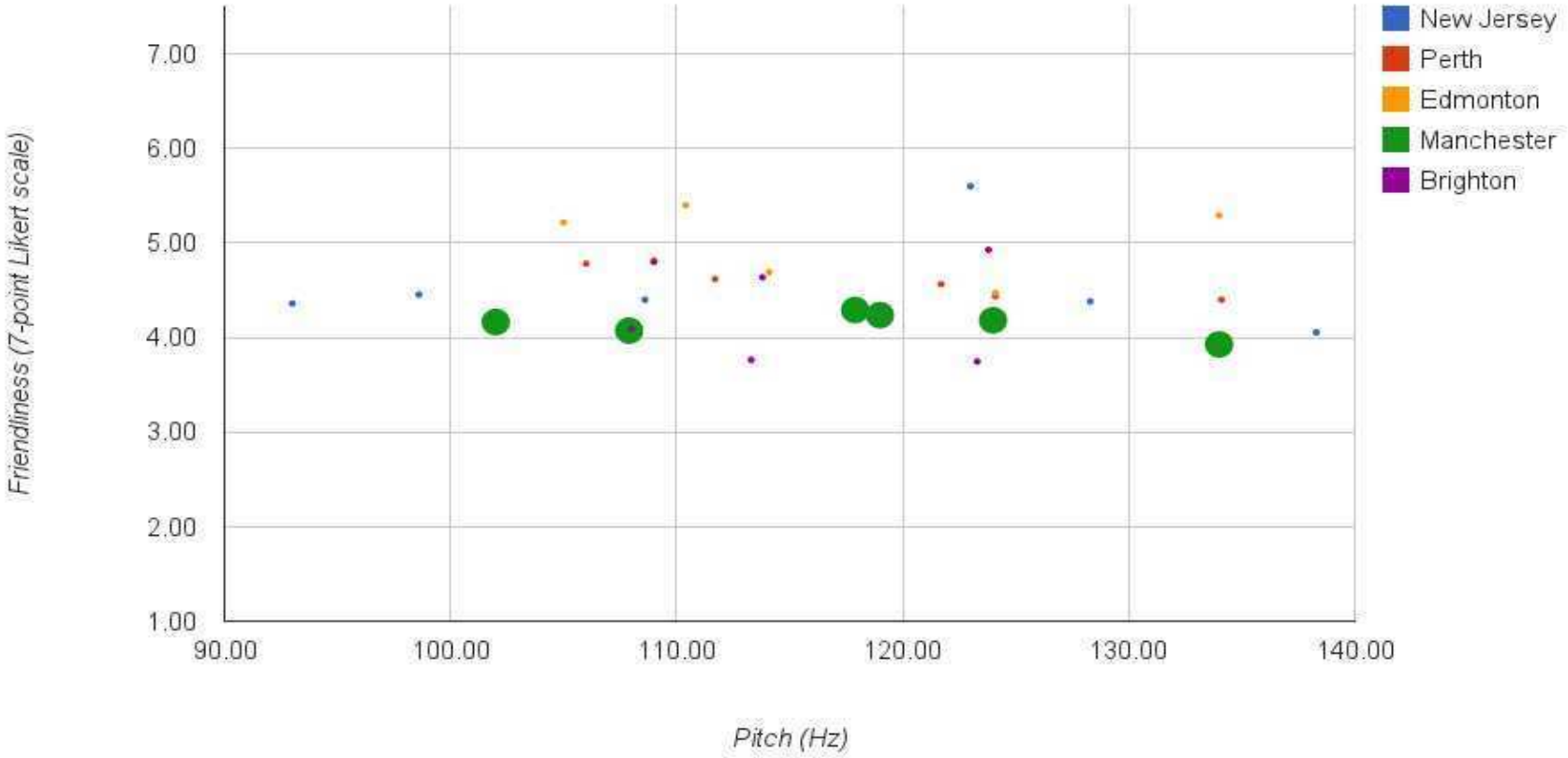
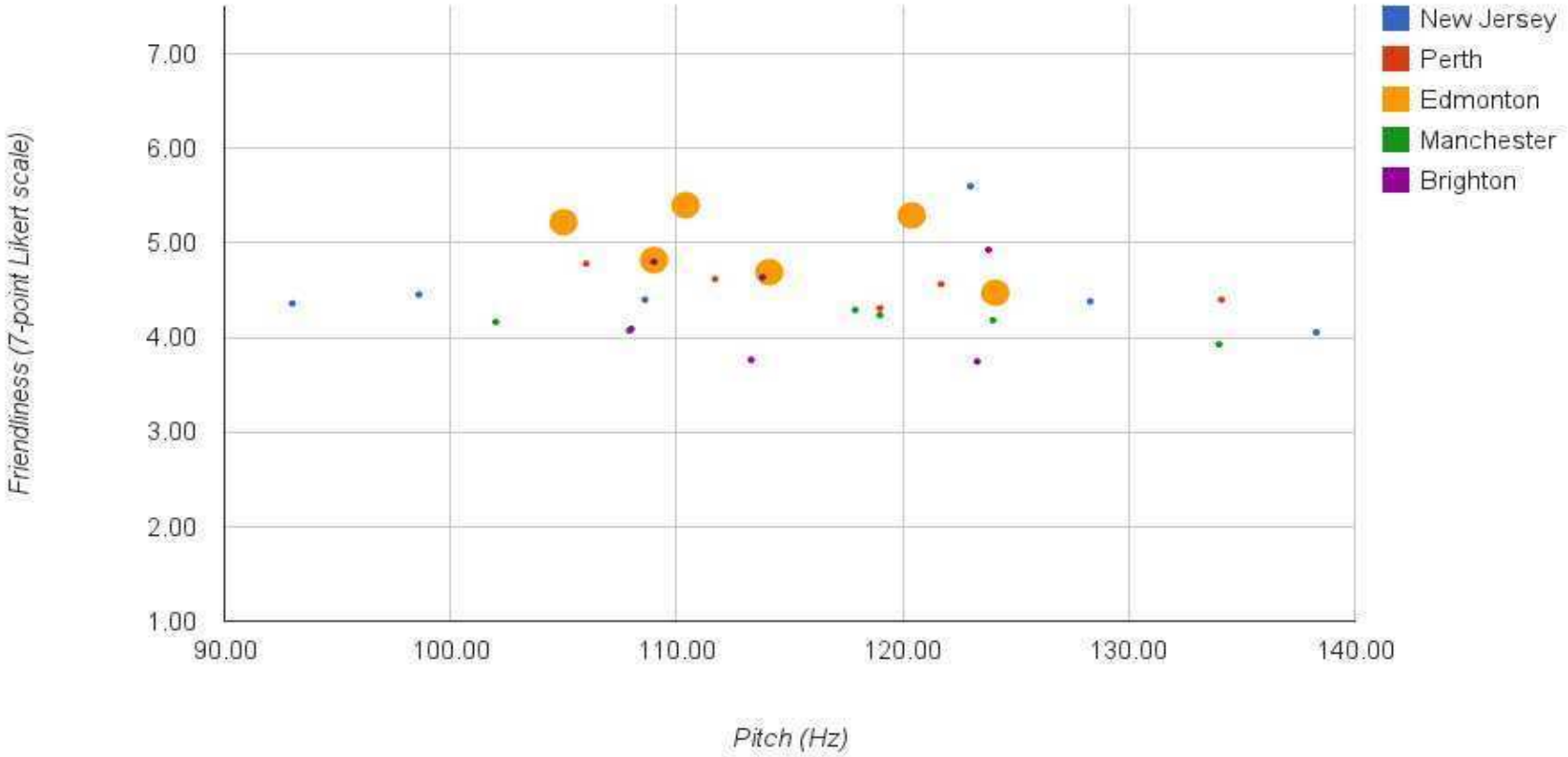


Results Edmonton



Results Brighton

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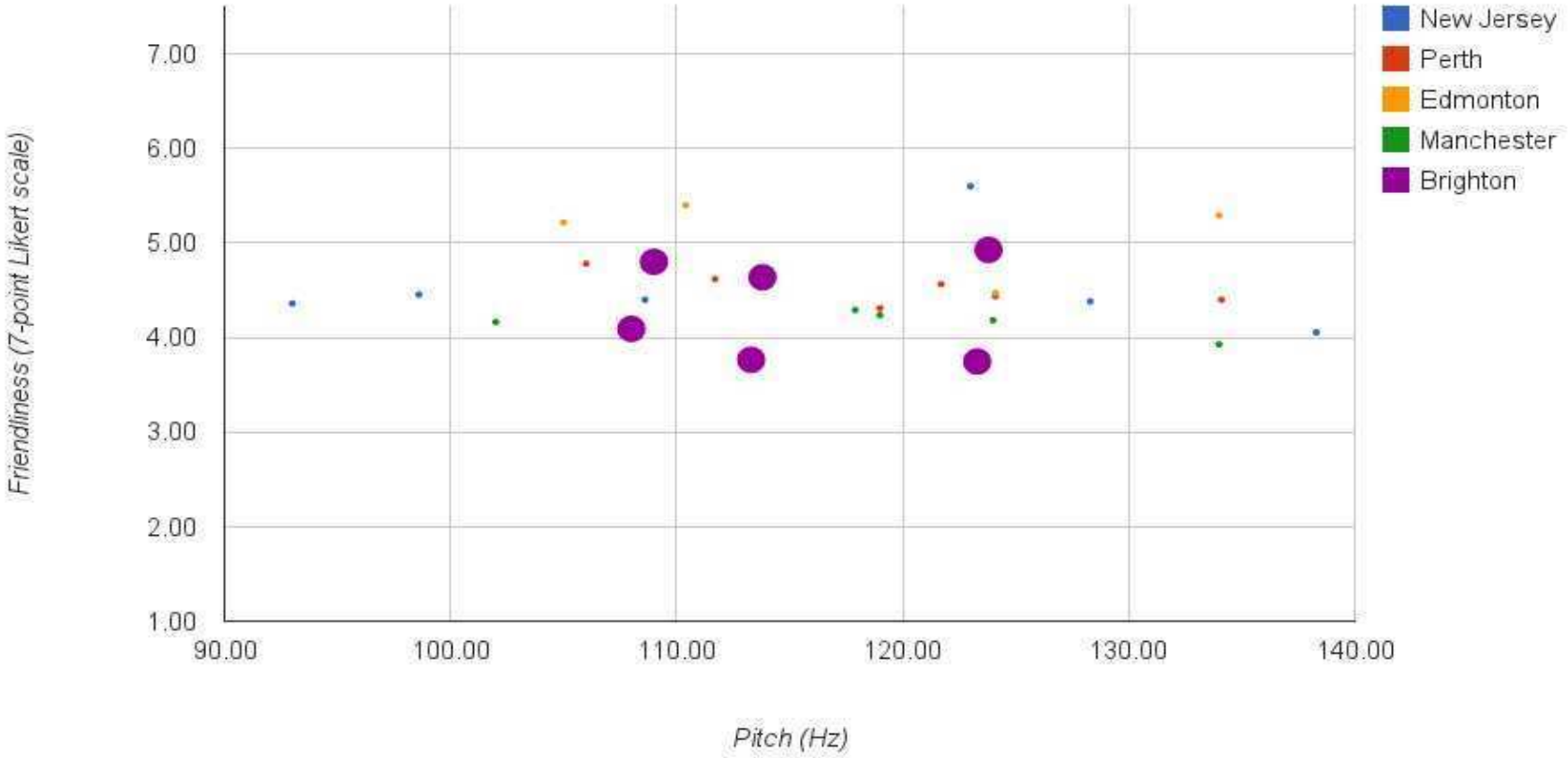

Pitch span all recordings and friendliness

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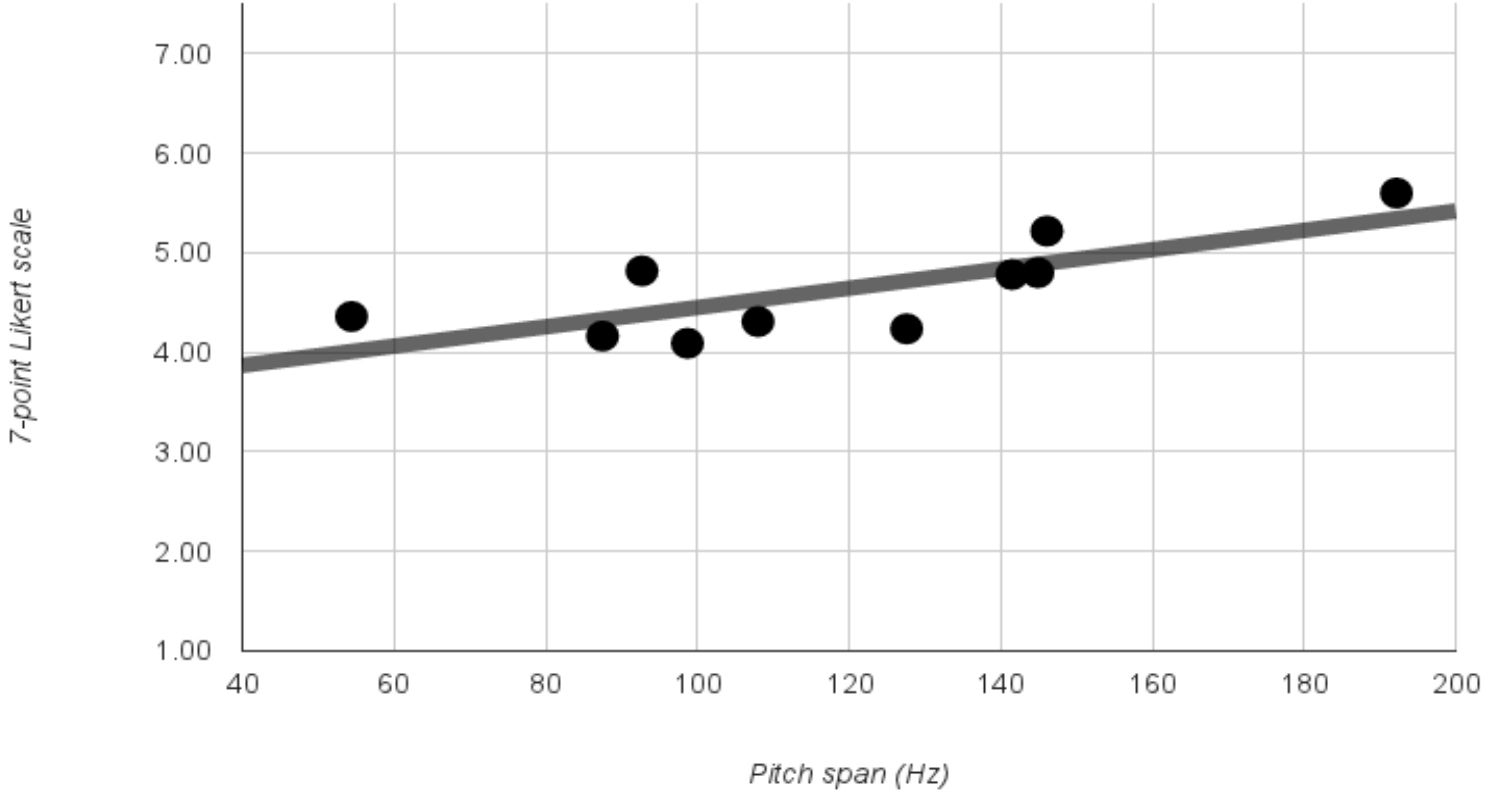

Pitch span accents and friendliness

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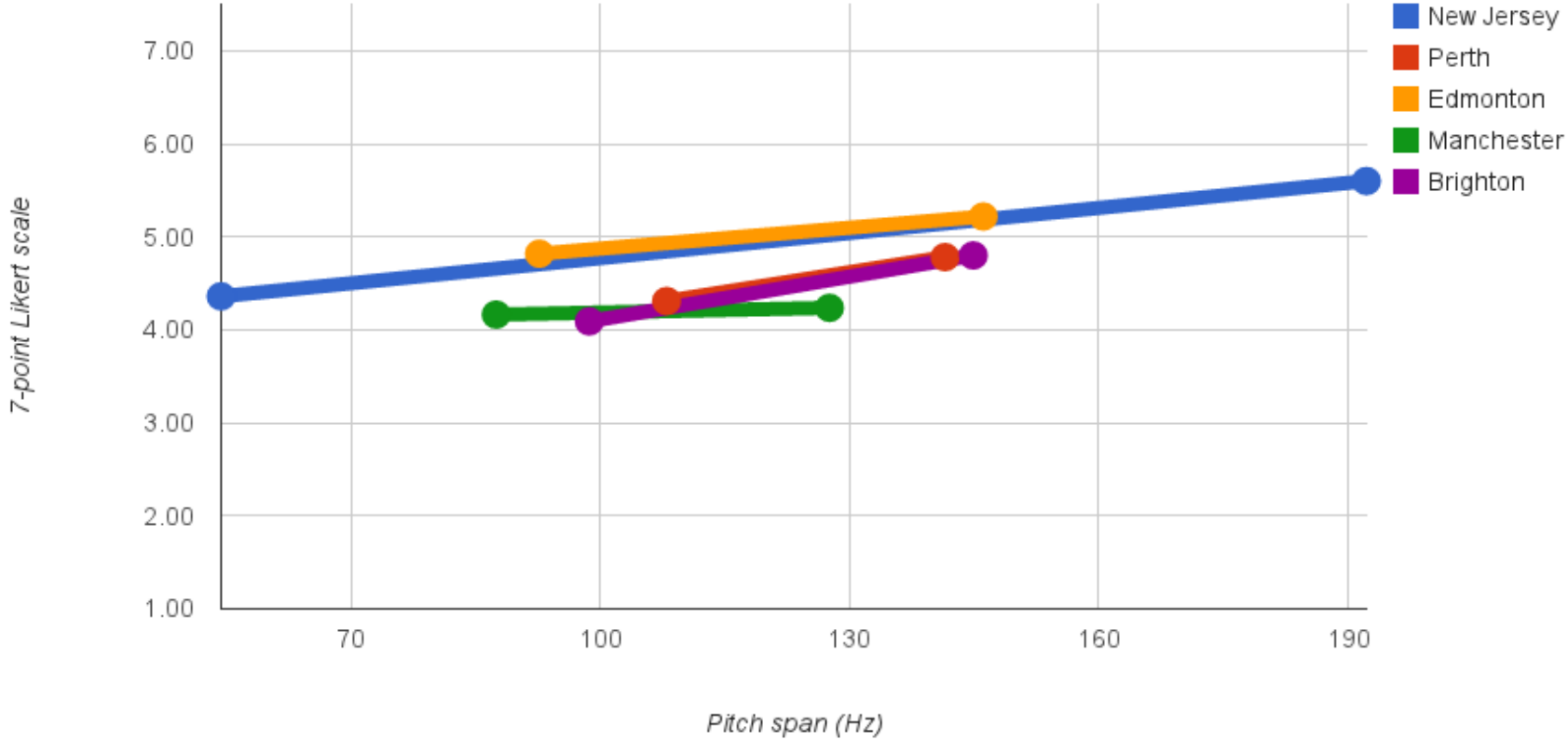

Statistics Pearson's R

- some results marginally significant:
  - pitch range – attractiveness: **r(30) = -.349, p = 0.59** – marginal
  - pitch range – self-confidence: **r(30) = -.356, p = 0.54** – marginal
  - pitch range – friendliness: r(30) = -.076, p = .689 – no correlation
  - pitch range – prestige: r(30) = -.169, p = .371 – no correlation

Statistics Pearson's R

- male participants:
  - pitch range – attractiveness: **r(30) = -.445, p = 0.14** – strong correlation
  - pitch range – self-confidence: **r(30) = -.436, p = 0.16** – strong correlation
  - pitch range – friendliness: r(30) = -.200, p = .288 – no correlation
  - pitch range – prestige: r(30) = -.197 p = .296 – no correlation

Statistics Pearson's R

- female participants:
  - pitch range – attractiveness: r(30) = -.268, p = .152 – no correlation
  - pitch range – self-confidence: r(30) = .-082, p = .666 – no correlation
  - pitch range – friendliness: r(30) = .-141, p = .458 – no correlation
  - pitch range – prestige: r(30) = -.237, p = .147 – no correlation

Conclusions

- pitch register does not play a very significant role in pragmatic judgments of speech
- pitch register does not vary significantly between the researched accents

Conclusions

- male listeners evaluate speech significantly differently than female speakers in terms of attractiveness and self-confidence
- pitch span may be a more powerful cue for the listeners

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Future projects

- perform this survey on a different group of participants
- test pitch span as a cue in speech evaluation
- separate suprasegmental from segmental features as factors in speech evaluation

Selected references

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Thanks!

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