Listeners do not need an F1/F2 target to perceive vowel quality *or* regional accentedness

Kevin B. McGowan, Stella Takvoryan
Department of Linguistics, University of Kentucky

College of Arts and Sciences
Department of Linguistics

uk phonetics lab

Background

Silent centers (SC): listeners can identify vowel quality in a CVC syllable even with 65% of tense vowels and 50% of lax vowels removed (Strange & Jenkins, 2013). However, listeners may still require vowel centers to hear social information. Three complementary ideas in the literature suggest that social information in vowel centers may be *essential*:

1. **Primacy of F1/F2 at the vowel midpoint**, sometimes taken along with duration, e.g., sociophonetics, sound change, second language acquisition, etc. (Kelley & Tucker, 2020; Labov et al., 1972; Nycz & Hall-Lew, 2013; Thomas, 2014)

2. **Hybrid silent centers** (Rakerd & Verbrugge, 1987; Verbrugge & Rakerd, 1986): pairing SC syllable edges from different talkers does not undermine vowel perception so argue vowel edges do not carry social information

3. **Vowel normalization** (Johnson, 2005; Johnson & Sjerps, 2021) assumes that variation is problematic for listeners so models typically operate on vowel centers where contextual variation is least (Barreda & Jaeger, 2025) XXX cite Joe here too

Methodology

- **Talkers**: Three non-Southern talkers from the Wildcat corpus (Van Engen et al., 2010) and two Southern talkers recorded in Kentucky

- **Stimuli**: BVT syllables with [i, ɪ, e, ɛ, æ, u, ʊ, o, ʌ, ɔ, a]; **middle 50% for lax vowels** & **middle 65% for tense vowels** (Strange et al., 1983) excised with a custom Praat script (see Figure 3)

- **Procedure**: 2AFC; listeners heard a CVC word and answered either "what did you hear?" with a pair of words or "who did you hear?" and the maps in Figure 1. "What?" trials displayed a map congruent with the talker; "Who?" task trials displayed the word that was being spoken.
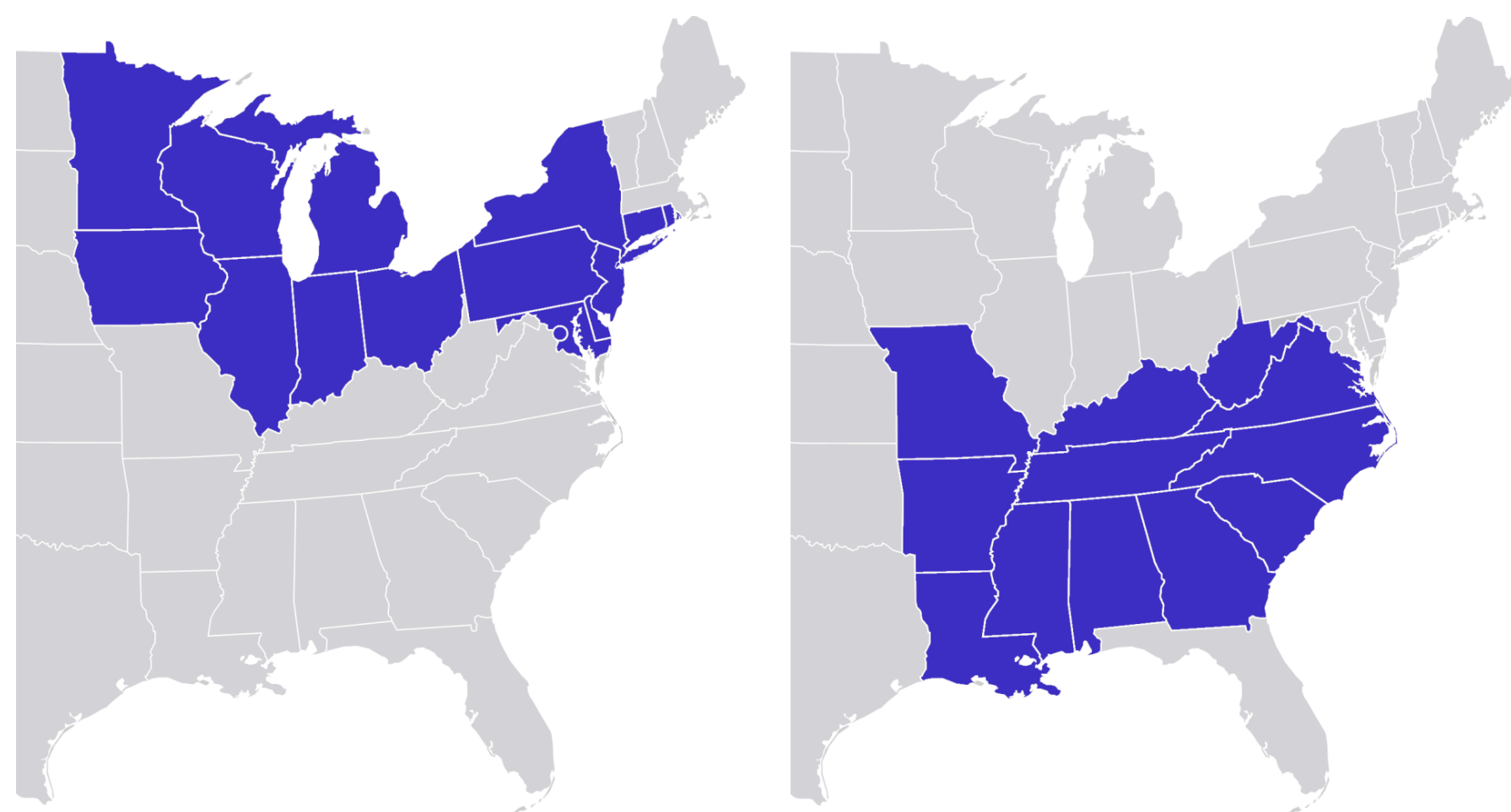

Figure 1: "Non-Southern" and "Southern" stimuli

- **Participants**: 60 US participants recruited via Prolific

- **Analysis**: BRMS (Bürkner, 2017) logistic regression in R, NHST with bayestestR (Makowski et al., 2019)

- While it is clear that listeners do not need vowel centers to perceive vowel quality accurately, it is not yet known whether listeners can perceive, for example, regional accent without the vowel center.

- However, many studies have found that listeners perform poorly when asked to label regional accents (Campbell-Kibler, 2025; Clopper & Pisoni, 2004; Milroy & McClenaghan, 1977). Our simplified maps are intended to represent Clopper & Pisoni's "dialect clusters".

Predictions

Figure 2: Predictions under two assumptions about social information
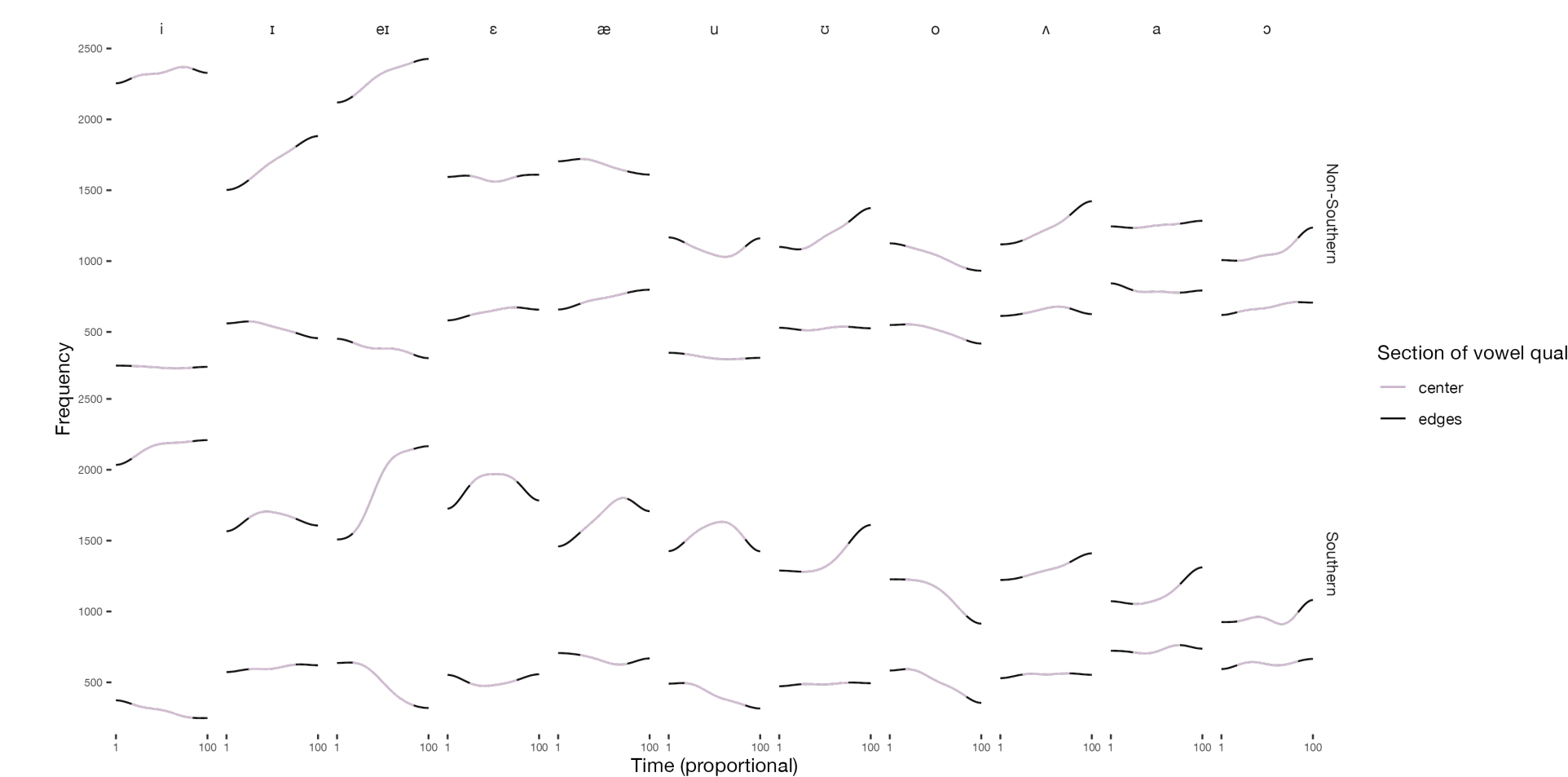
Silent Centers Stimuli

Figure 3: Vowel stimuli with excised portions indicated

Results

We will place a figure or image below using markdown syntax. We can specify the caption and specifying height or width (or both). The figures are numbered automatically.
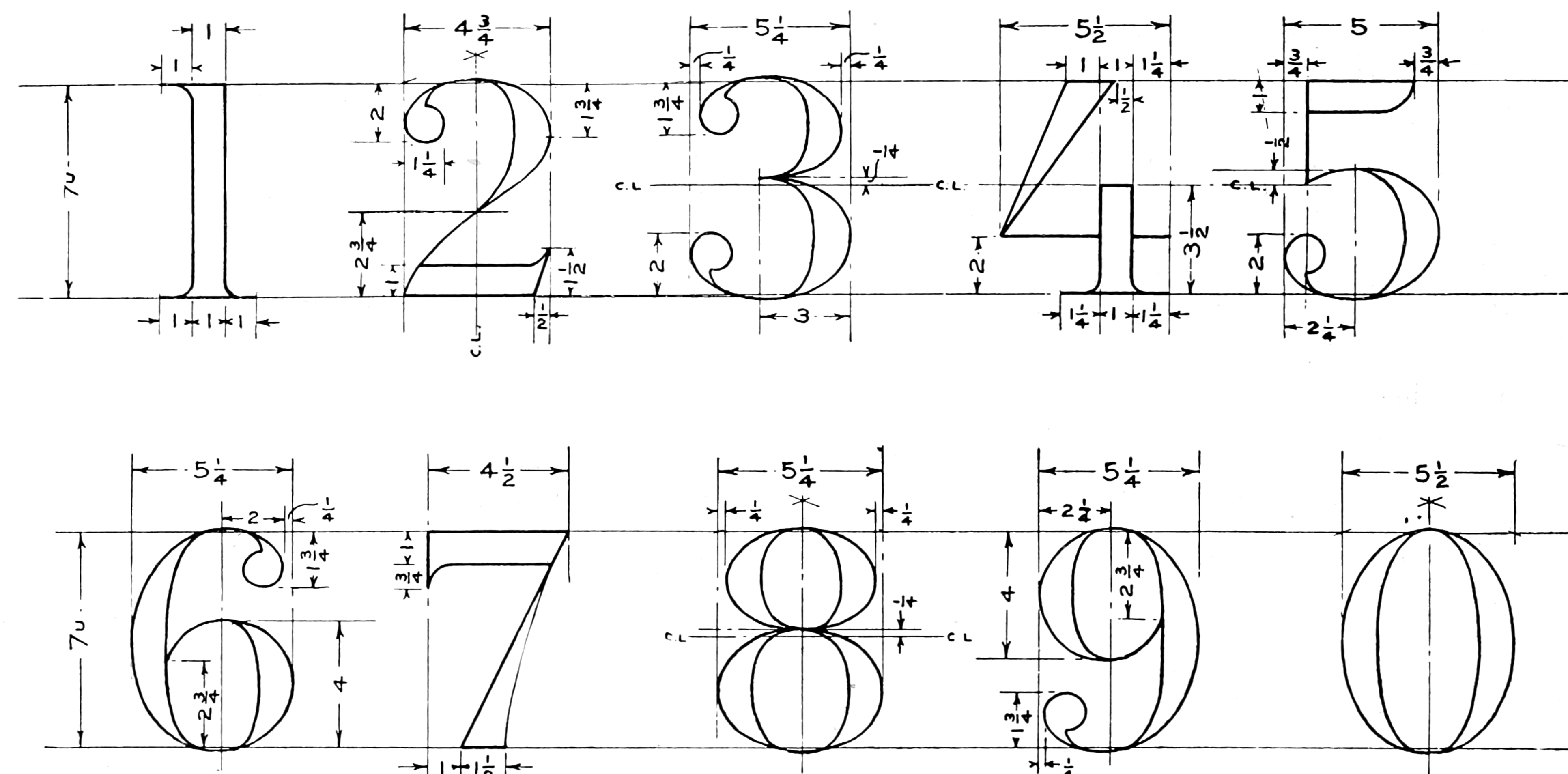

Figure 4: The details of a specific serif font.

We can use backslashes to create line breaks in the markdown text. This is a very useful feature for making the text more readable.

Discussion

Stimuli

References