



100 Years of Speech in Georgia

Joseph A. Stanley

Brigham Young University

Margaret E. L. Renwick

University of Georgia



New Ways of Analyzing Variation 49
October 2021



Vowel dynamics are important

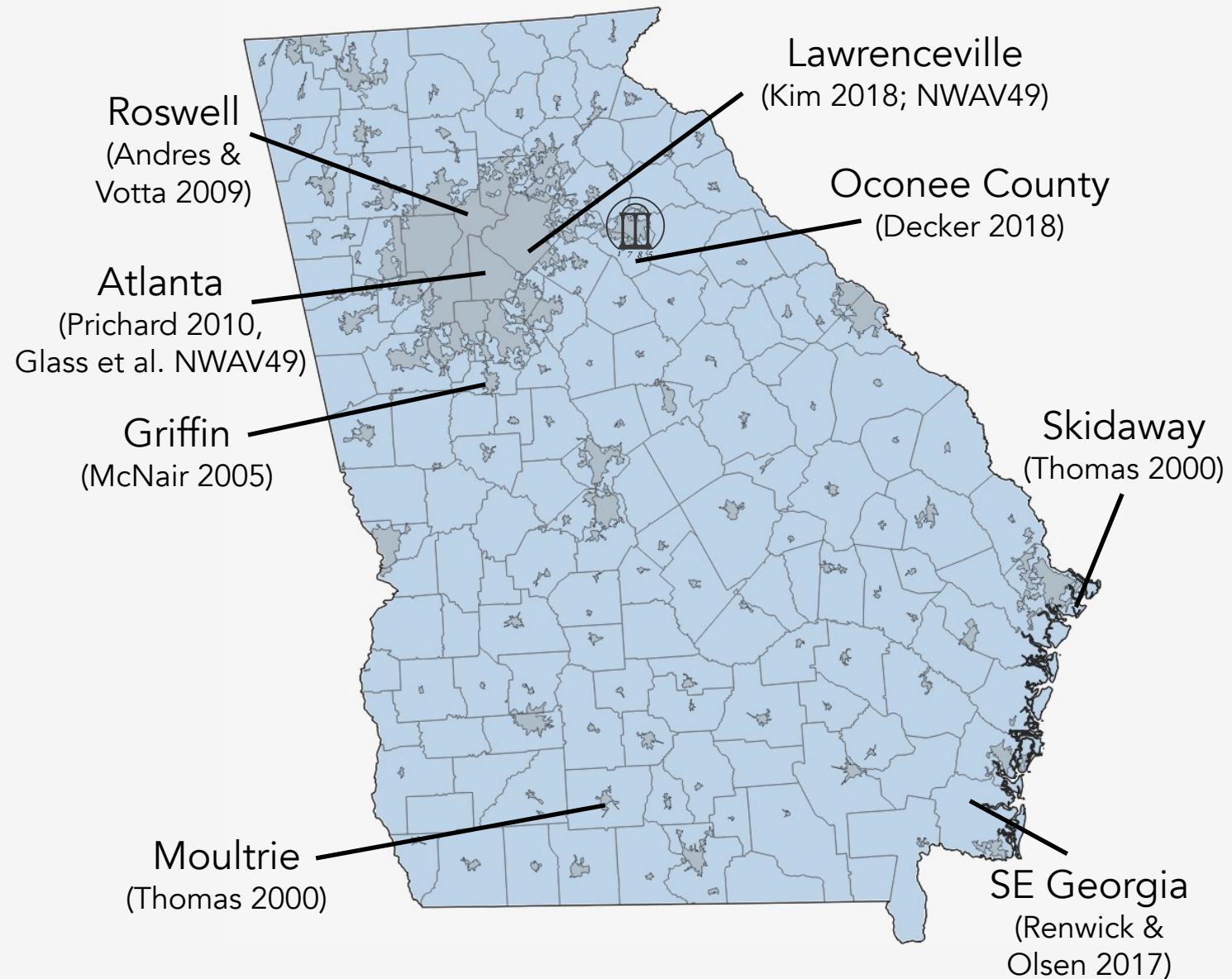
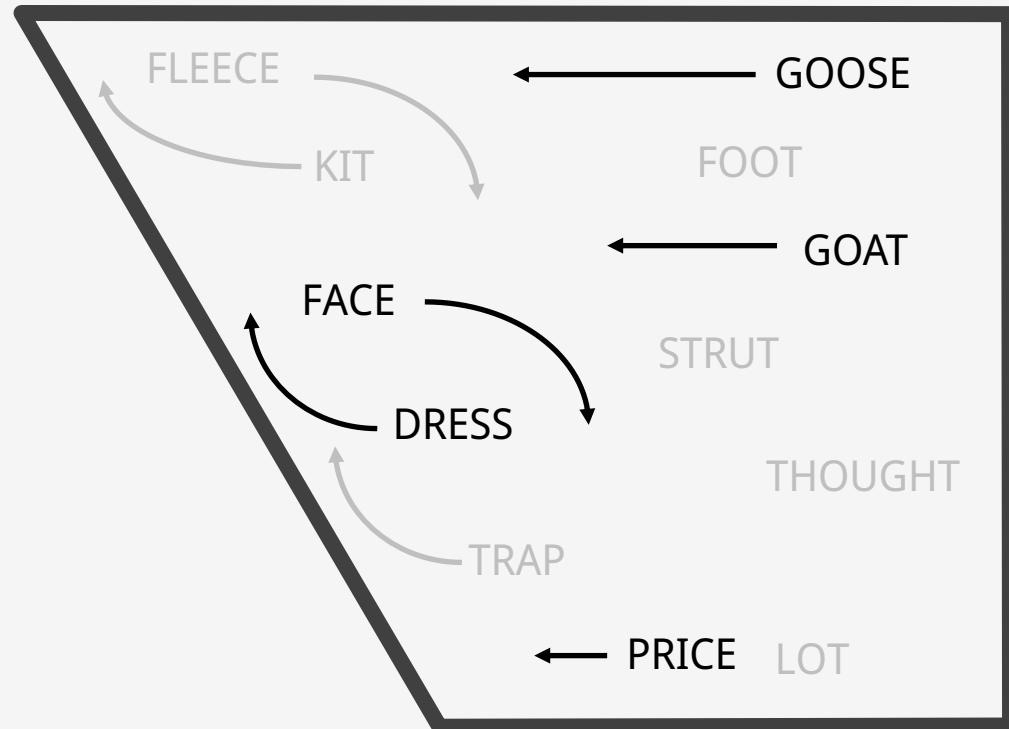
Traditional descriptions of English vowel systems focus on single-point x,y coordinates

- The relative placement of vowels indicates a speaker's shift, or vowel system

But many varieties of English include changes in *vowel dynamics*

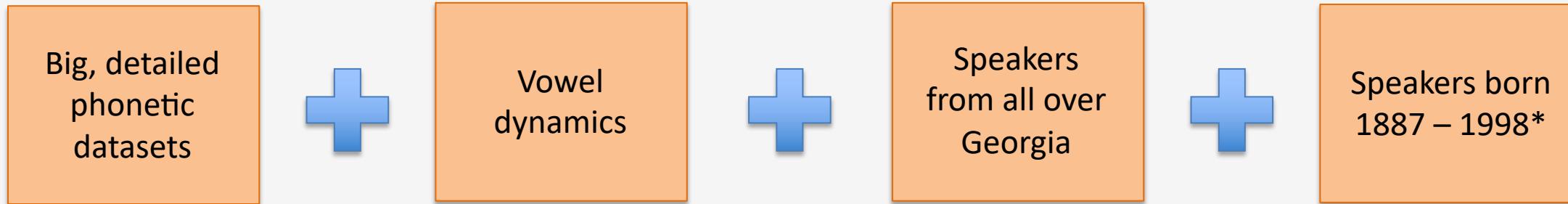
- Speakers and listeners don't depend on a single acoustic target (e.g., Strange et al. 1983)
- Southern speech: [aɪ] → [a:], [ɪ] → [iə], [æ] → [eə], etc.
- "spectral change over time may be part of a package of acoustic distinctions that signals both dialect and vowel category information" (Fridland et al. 2014, p. 348)
- "very little linguistic work on Southern speech has focused on dynamics" (Farrington et al. 2018:187; cf. e.g. Risdal & Kohn 2014)

Vowels in Georgia



100 Years of Speech in Georgia

"How has American English speech changed in Georgia, over the last 100 years?"



*111 years of speech in Georgia?

Data & Methods

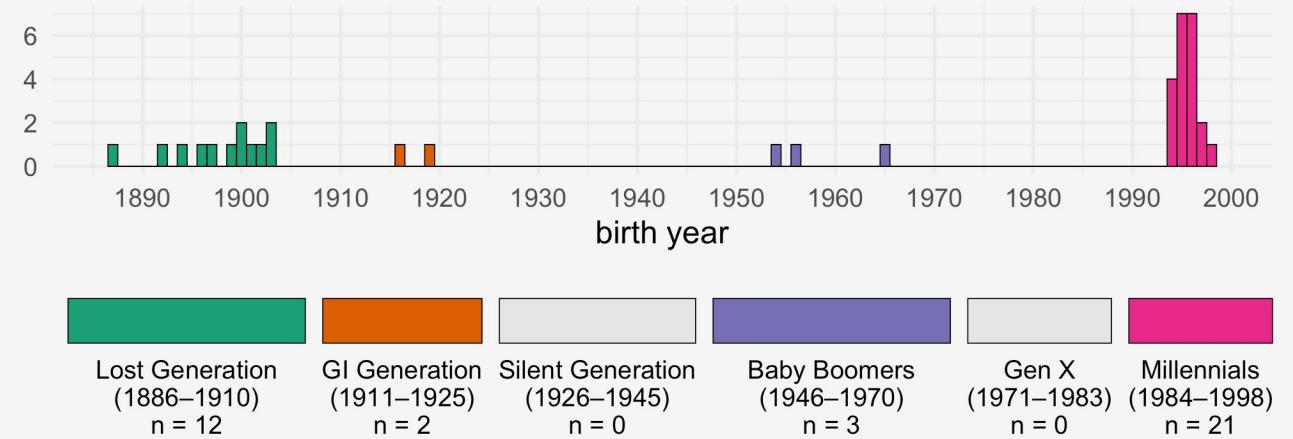
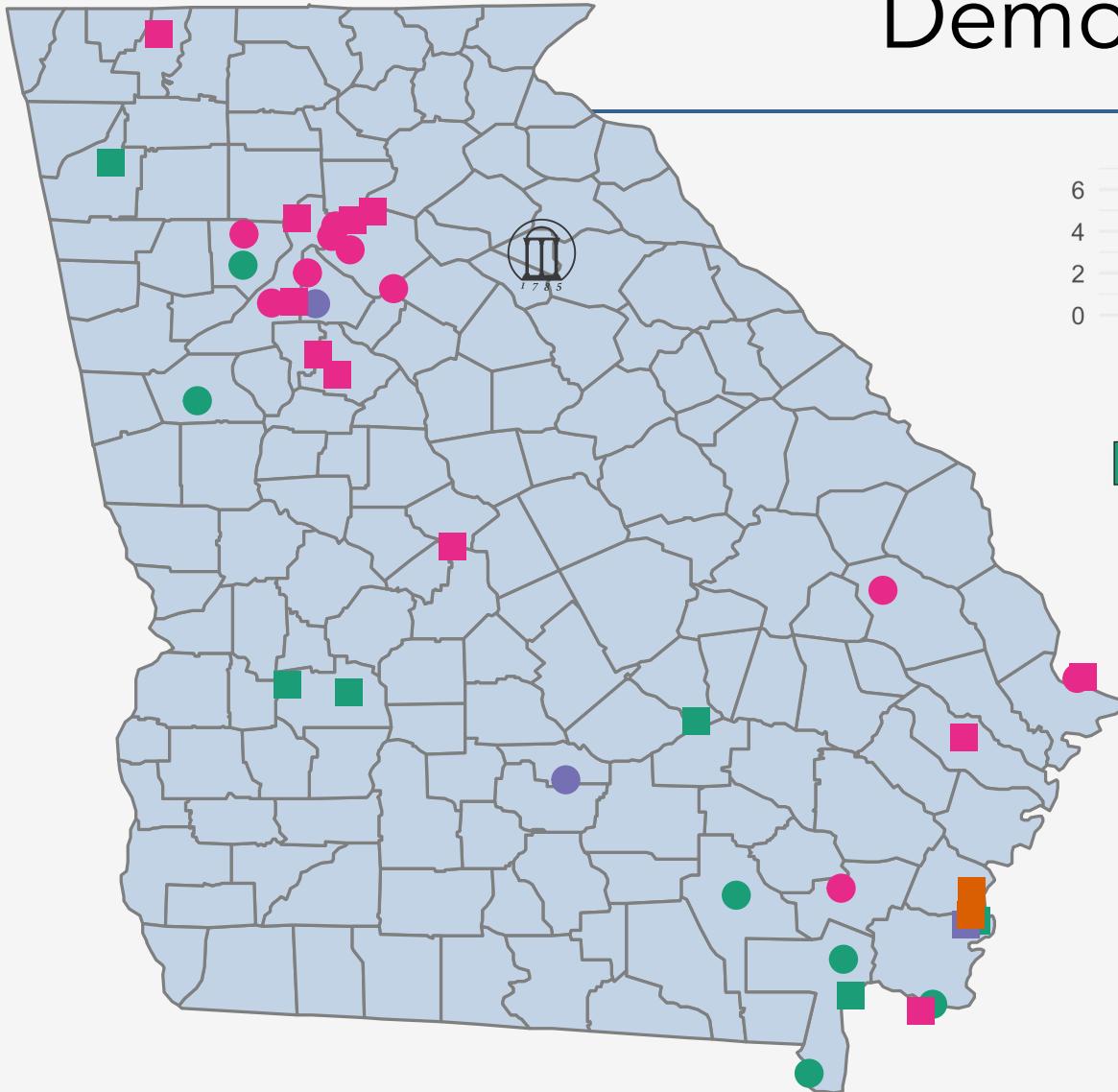
Data Collection

	Linguistic Atlas of the Gulf States (Pedersen et al. 1986)	Contemporary Speakers
When	1968–1983	2017
Method	Linguistic Atlas interviews	300 read sentences
Format	Reel-to-reel; digitized	WAV
Speakers	19, of 241 interviewed in GA	21, mostly from metro-Atlanta
Audio	72.24 hours	12.5 hours
Vowel tokens	291,672	84,847



Listen to audio
clips here!

Demographics



Ethnicity

- Legacy data retains the Black (4) vs. Non-Black (13) distinction from original coding.
- Contemporary data includes 3 Asian, 1 Black, 1 Latino, 1 Mixed, 15 White Americans.

Data Analysis

Transcription manual (Olsen et al. 2017)

Forced-Alignment Montreal Forced-Aligner (McAuliffe et al. 2017)

Formant Extraction FAVE (Rosenfelder et al. 2014) at 20%, 35%, 50%, 65%, 80% into vowels' durations

Exclusions stopwords, pre-liquids, pre-nasals, non-primary lexical stress

Outlier detection Mahalanobis Distance (Mahalanobis 1936); furthest 5% removed

Transformation Barks (Zwicker 1961, Traunmüller 1990)

Statistics generalized additive mixed-effects models (Wood 2017; cf. Sóskuthy 2017, Gahl & Baayen 2019, Renwick & Stanley 2020)

Modeling Five separate models: /aɪ/, /eɪ/, /ɛ/, /u/, /oʊ/

Software R (R Core Team 2018), tidyverse (Wickham 2018); mgcv (Wood 2011); itsadug (van Rij et al. 2020)

Visuals ggplot2 (Wickham 2015)

Model Specification

```
mgcv::bam(bark_raw ~  
  
    formant_allophone_gender_generation +  
    s(percent, by = formant_allophone_gender_generation, k = 4) +  
  
    log_dur * formant_allophone_gender_generation +  
  
    s(speaker, allophone, formant, bs = "re") +  
    s(speaker, allophone, formant, percent, bs = "re") +  
  
    s(word, formant, allophone bs = "re"),  
  
    data = vowel.data)
```

Dependent variable: Bark-transformed, raw values

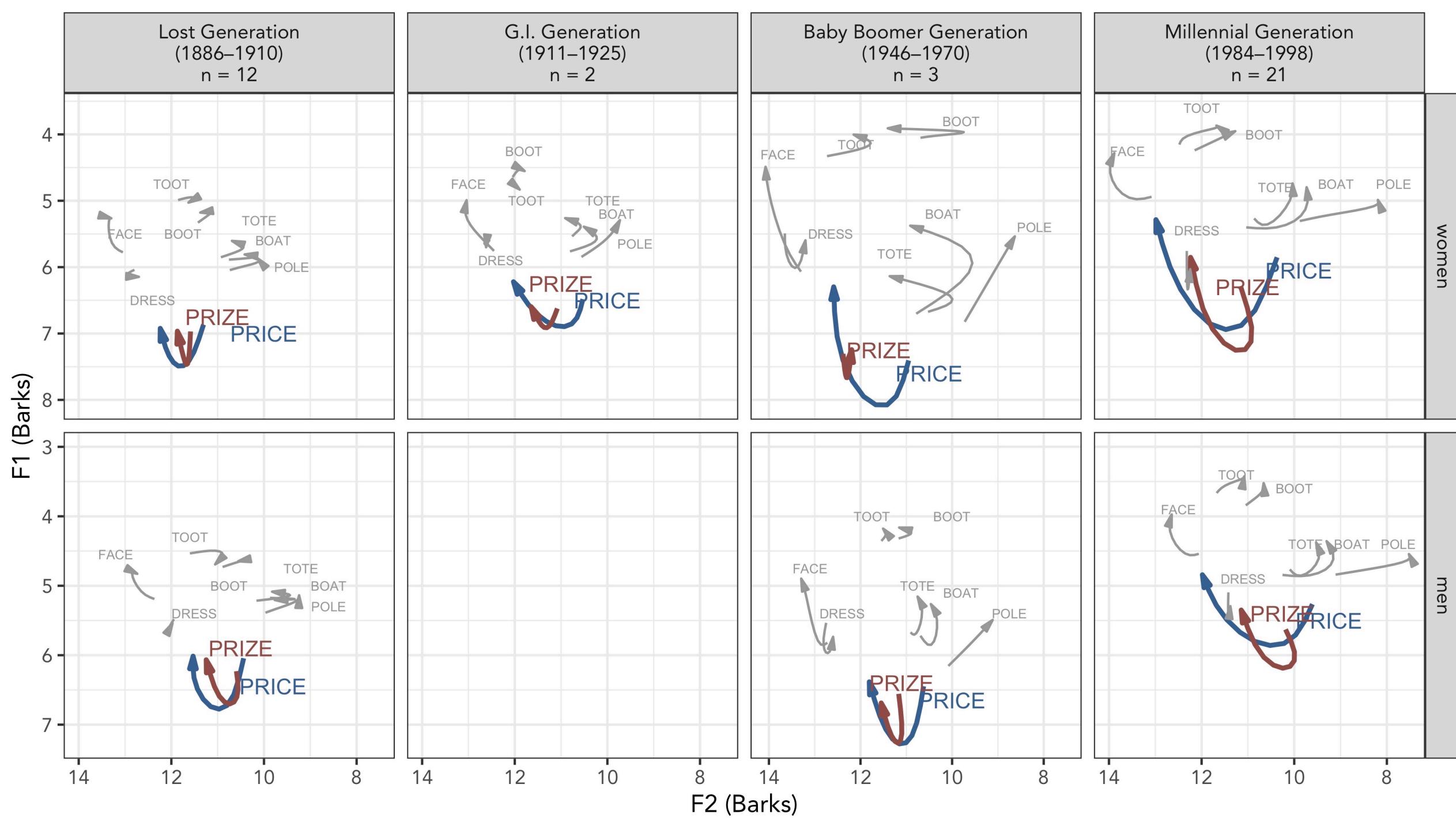
Fits different smooths for each combination of formant, gender, allophone, and generation

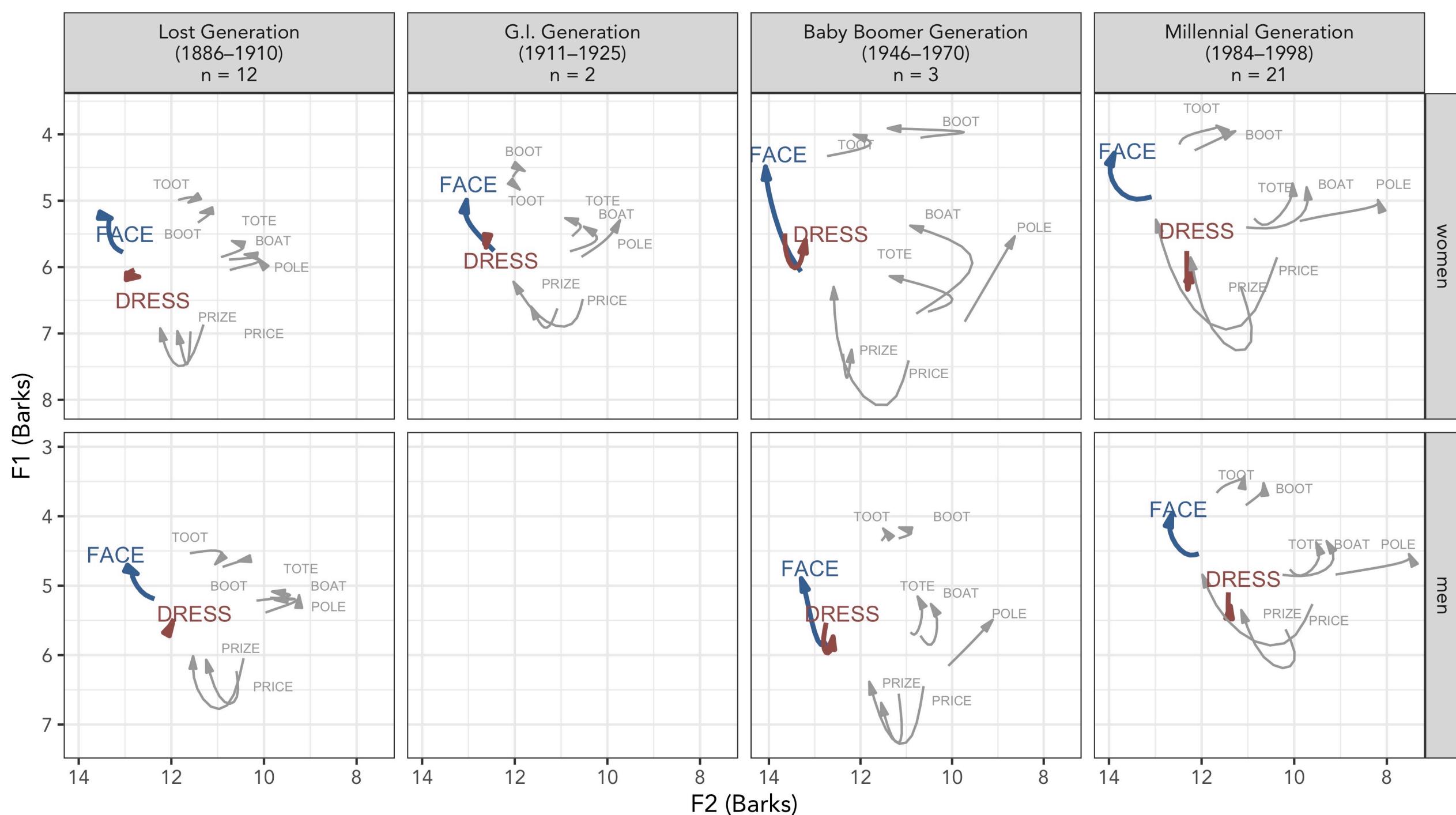
Controlled for duration

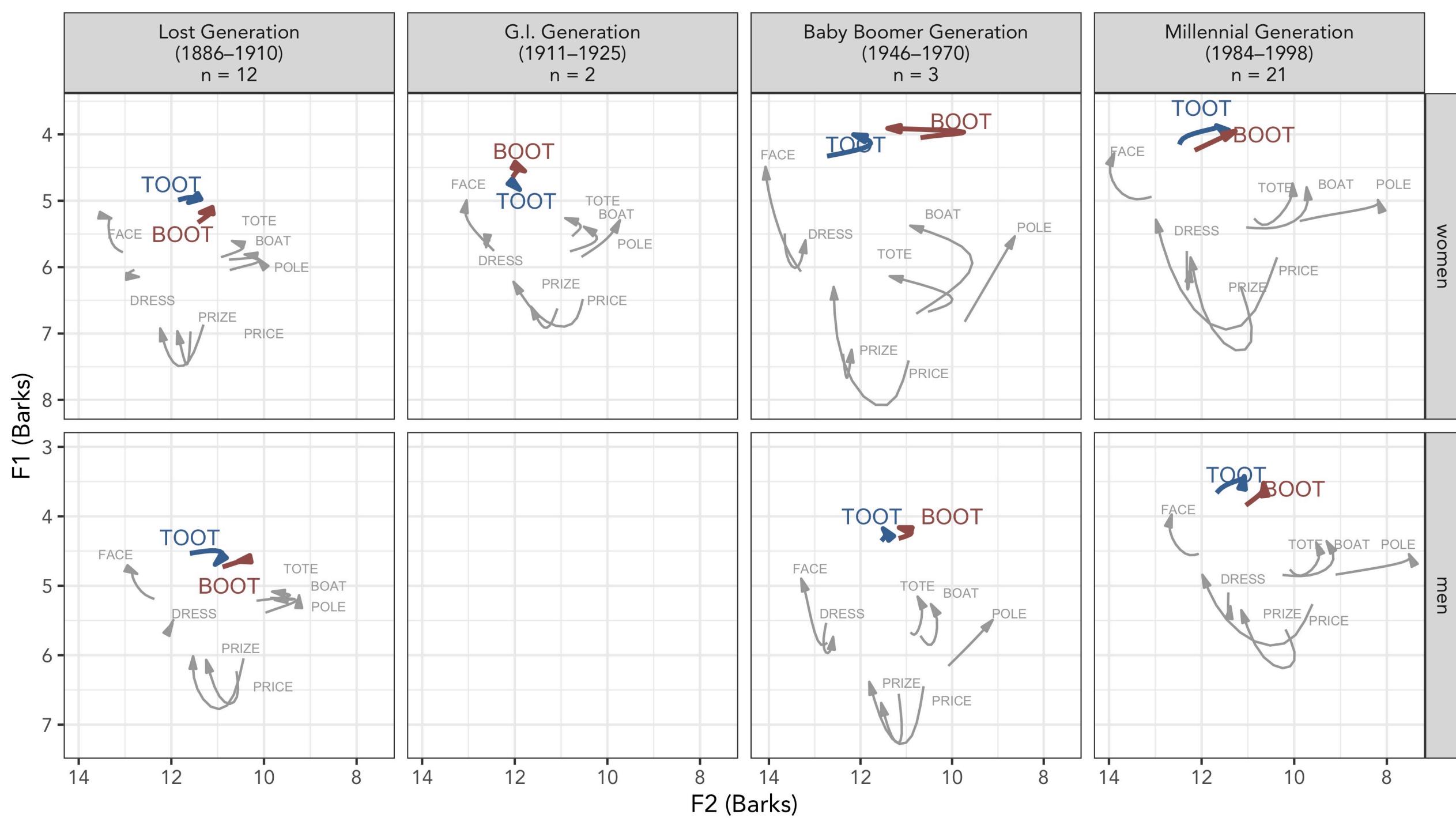
Random intercept and slope for speaker, interacting with allophone and formant.

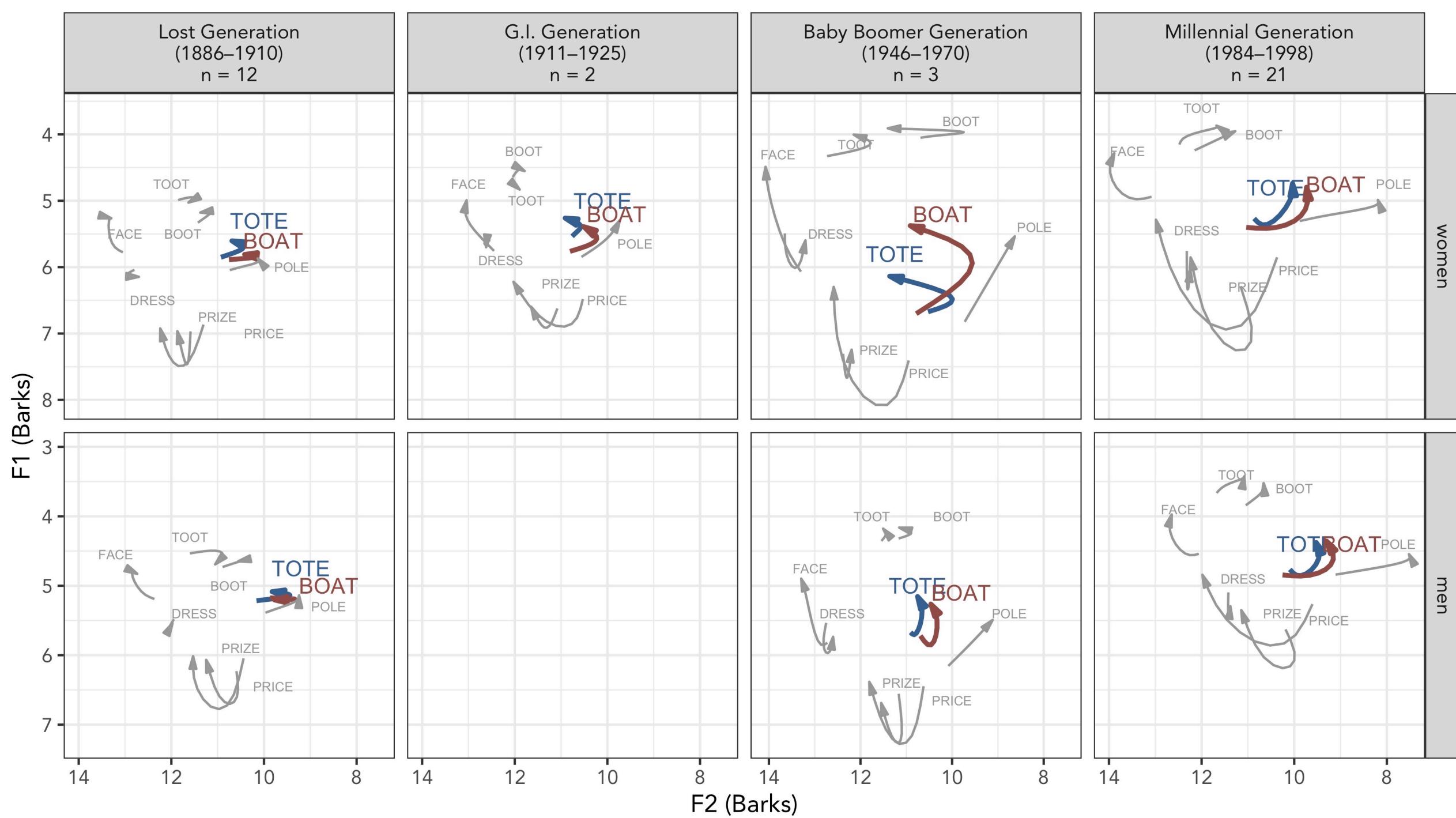
Random intercepts for word, by formant and allophone

Results









Discussion

Georgia English: Then and Now

	Oldest speakers	Youngest speakers
PRICE	Less diphthongal (esp. PRIZE)	More diphthongal
FACE-DRESS	Similar onset positions, no overlap	FACE has raised, DRESS has lowered
GOOSE	Onset fronted toward [ɯ] (TOOT > BOOT), largely monophthongal	Onset fronted toward [ɥ] or [y] (TOOT > BOOT), more diphthongal
GOAT	All allophones are backed	TOTE, BOAT are fronted, POLE remains backed and diphthongal

The Direction of Change

In cities like Raleigh, the Southern vernacular is “receding.” (Dodsworth & Kohn 2012)

- Is that happening in metro-Atlanta? If so, what is replacing Southern speech?

Our interpretation: Young Georgians are adopting the Low-Back Merger Shift

- The cot-caught merger is (nearly) complete (Andres & Votta 2009, Stanley 2020)
- The front lax vowels /æ, ε, ɪ/ are lower, and more centralized
- Regionally distinctive pronunciations are lessened (like PRIZE-monophthongization)
- It's happened in Oregon (Becker et al 2016), Washington (Stanley 2020), Colorado (Holland & Brandenburg), Ohio (Durian 2012), Massachusetts (Stanford et al. 2019), and Michigan (Mason 2018).
- Why not **Georgia** too?
 - Regional “flavors” include the PRIZE/PRICE distinction, and heavily fronted back vowels

Conclusions and Next Steps

How has Georgia English changed since the 1890s?

All vowels have changed, in relative position and trajectory shape.

What is the direction of that change?

In the same direction as many other urban areas in North America.

What's next?

Collect, transcribe and analyze more **legacy data** and more **contemporary data**,
for greater coverage of racial patterns, generational changes, and subregional patterns

Collaborative efforts are underway with Lelia Glass and Jon Forrest:

Stay tuned for new analyses including over 100 Georgia speakers!

References

- Bigott, Bailey, and Margaret E. L. Renwick. "Diving into DASS: A Multimedia Exploration of Southern Speech." presented at the The 6th Annual Linguistics Conference at UGA (LCUGA6), Athens, Georgia, October 4, 2019.
- Davies, Mark. (2008-) *The Corpus of Contemporary American English (COCA): One billion words, 1990-2019*. Available online at <https://www.english-corpora.org/coca/>.
- Dekker, Ryan. "Income Effects on a Speech Community: Oconee County Within Northeastern Georgia." presented at the UGA Linguistics Colloquium, Athens, Georgia, February 23, 2018.
- Dodsworth, Robin & Mary Kohn. 2012. Urban rejection of the vernacular: The SVS undone. *Language Variation and Change* 24(02). 221–245. <https://doi.org/10.1017/S0954394512000105>.
- Farrington, Charlie, Tyler Kendall & Valerie Fridland. 2018. Vowel Dynamics in the Southern Vowel Shift. *American Speech* 93(2). 186–222. <https://doi.org/10.1215/00031283-6926157>.
- Fridland, Valerie, Tyler Kendall & Charlie Farrington. 2014. Durational and spectral differences in American English vowels: Dialect variation within and across regions. *Journal of the Acoustical Society of America* 136(1). 341–349. <https://doi.org/10.1121/1.4883599>.
- Gahl, Susanne, and R. Harald Baayen. 2019. "Twenty-Eight Years of Vowels: Tracking Phonetic Variation through Young to Middle Age Adulthood." *Journal of Phonetics* 74: 42–54. <https://doi.org/10.1016/j.wocn.2019.02.001>.
- Gorman, Kyle, Jonathan Howell, and Michael Wagner. 2011. "Prosodylab-Aligner: A Tool for Forced Alignment of Laboratory Speech." *Canadian Acoustics* 39, no. 3: 192–193.
- Glass, Lelia, Jon Forrest, and Madison Liotta. "Vowel Systems in Georgia Shaped by Ethnicity and Politics." Presented at NWA 49, University of Texas at Austin, October 2021.
- Johnson, Keith. 2005. Speaker Normalization in Speech Perception. In David B. Pisoni & Robert E. Remez (eds.), *The Handbook of Speech Perception*, 364–389. Malden, MA: Blackwell.
- Kim, Dot-Eum (Rachel). "Korean American English in the South: Language, Culture, and the Making of a New Dialect." presented at the UGA Linguistics Colloquium, Athens, Georgia, April 13, 2018.
- Kim, Dot-Eum (Rachel). "Korean American English in GA: [+back] on the B/OW/T." Presented at NWA 49, University of Texas at Austin, October 2021.
- Kretzschmar Jr., William A., Paulina Bounds, Jacqueline Hettel, Lee Pederson, Ilkka Jusso, Lisa Lena Opas-Hänninen, and Tapio Seppänen. 2013. "The Digital Archive of Southern Speech (DASS)." *Southern Journal of Linguistics* 27, no. 2: 17–38.
- Kretzschmar, William A. Jr., Margaret E. L. Renwick, Lisa M. Lipani, Michael L. Olsen, Rachel M. Olsen, Yuanming Shi & Joseph A. Stanley. 2019. Transcriptions of the Digital Archive of Southern Speech. <http://www.lap.uqa.edu/Projects/DASS2019/>.
- Labov, William, Sharon Ash, and Charles Boberg. 2006. *The Atlas of North American English: Phonetics, Phonology and Sound Change*. Berlin: Walter de Gruyter.
- Ladefoged, Peter. 1989. A note on "Information conveyed by vowels." *The Journal of the Acoustical Society of America* 85(5). 2223–2224. <https://doi.org/10.1121/1.397821>.
- Ladefoged, Peter & D. E. Broadbent. 1957. Information Conveyed by Vowels. *The Journal of the Acoustical Society of America* 29(1). 98–104. <https://doi.org/10.1121/1.1908694>.
- McAuliffe, Michael, Michaela Socolof, Sarah Mihuc, Michael Wagner, and Morgan Sonderegger. 2017. "Montreal Forced Aligner: Trainable Text-Speech Alignment Using Kaldi." *Proceedings of the 18th Conference of the International Speech Communication Association*.
- Olsen, Rachel M., Michael L. Olsen & Margaret E. L. Renwick. 2018. The impact of sub-region on /ai/ weakening in the U.S. South. *Proceedings of Meetings on Acoustics* 31(1). 060005. <https://doi.org/10.1121/2.0000879>.
- Olsen, Rachel M., Michael L. Olsen, Joseph A. Stanley, Margaret E. L. Renwick & William Kretzschmar. 2017. Methods for transcription and forced alignment of a legacy speech corpus. *Proceedings of Meetings on Acoustics* 30(1). 060001. <https://doi.org/10.1121/2.0000559>.
- Peterson, G. E. & H. L. Barney. 1952. Control methods in a study of the vowels. *Journal of the Acoustical Society of America* 24. 175–184.
- Reddy, Sravana, and James N. Stanford. 2015. "Toward Completely Automated Vowel Extraction: Introducing DARLA." *Linguistics Vanguard*. <https://doi.org/10.1515/lingvan-2015-0002>.
- Renwick, Margaret E. L. & Joseph A. Stanley. 2020. Modeling dynamic trajectories of front vowels in the American South. *Journal of the Acoustical Society of America* 147(1). 579–595. <https://doi.org/10.1121/10.0000549>.
- Risdal, Megan & Mary Kohn. 2014. Ethnolectal and generational differences in vowel trajectories: Evidence from African American English and the Southern Vowel System. *University of Pennsylvania Working Papers in Linguistics* 20(2). 139–148.
- Rosenfelder, Ingrid, Josef Fruehwald, Keelan Evanini, Scott Seyfarth, Kyle Gorman, Hilary Prichard, and Jiahong Yuan. 2014. FAVE (Forced Alignment and Vowel Extraction) Program Suite v1.2.2 (version v1.2.2 10.5281/zenodo.22281).
- Stanley, Joseph A. 2020. "Vowel Dynamics of the Elsewhere Shift: A Sociophonetic Analysis of English in Cowlitz County, Washington." Ph.D. Dissertation. Athens, Georgia.
- Stanley, Joseph A. In press. A comparison of turn-of-the-century and turn-of-the-millennium speech in Georgia. *Proceedings of the 6th Annual Linguistics Conference at UGA*. https://joeystanley.com/downloads/200801-proc_lcuqa6.pdf.
- Stanley, Joseph A., and Margaret E. L. Renwick. "Back Vowel Distinctions and Dynamics in Southern US English." presented at the The 94th Annual Meeting of the Linguistic Society of America, New Orleans, LA, January 4, 2020.
- Strange, W., J.J. Jenkins & T.L. Johnson. 1983. Dynamic specification of coarticulated vowels. *Journal of the Acoustical Society of America* 74(3). 695–705.
- Wood, Simon N. 2017. *Generalized Additive Models: An Introduction with R*. 2nd ed. Chapman and Hall/CRC. <https://doi.org/10.1201/9781420010404>.