Changing individuals, changing language

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Sound Change in Interacting Human Systems

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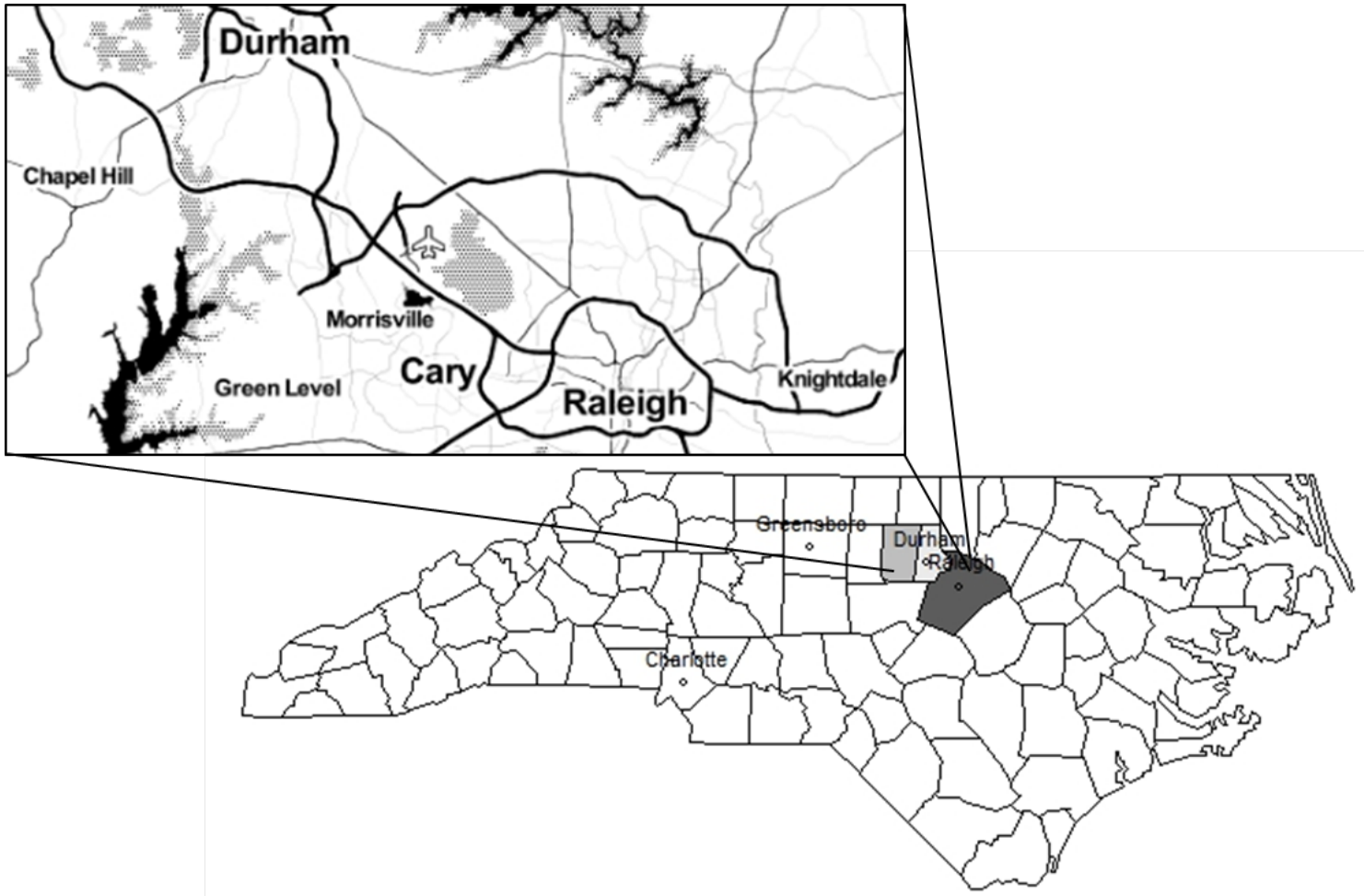
Sound Change & Stable Variation

- Today we're going to focus on…
  - A large longitudinal dataset spanning childhood and adolescence
  - Front lax vowels
    - Socially salient
    - Stable over time
  - Offer a baseline against which to evaluate individual level dynamics of sound changes

The longitudinal study: Frank Porter Graham

- Initiated in 1990 by Frank Porter Graham Child Development Institute (Chapel Hill, NC)
- Recruited 88 African American children from 6-12 months (mean 8.1 months) from Piedmont region in North Carolina; 71% below poverty level at start of study
- 2012: 67 continue in study

Frank Porter Graham



Frank Porter Graham

- Large scale longitudinal database of over 2500 audio recordings at 15 time points from 24 months through 20 years old
- Batteries of standardized and nonstandardized tests, including progressively collected language samples annually or bi-annually; all school records
- Language samples at ages **4**, 6, **10**, 11, **14**, **16**, **20**

Emerging analyses

- Previous analyses look at trajectories of change in in early childhood and adolescence with morphosyntactic constructions (Van Hofwegen and Wolfram 2010)
- The development of style in the early lifespan (Renn 2010)
- The social, academic and personal effects of AAE use in the early lifespan (Van Hofwegen *forthcoming*)
- Change and stability in the vowel system during childhood and adolescence (Kohn 2013; Kohn & Farrington 2013)

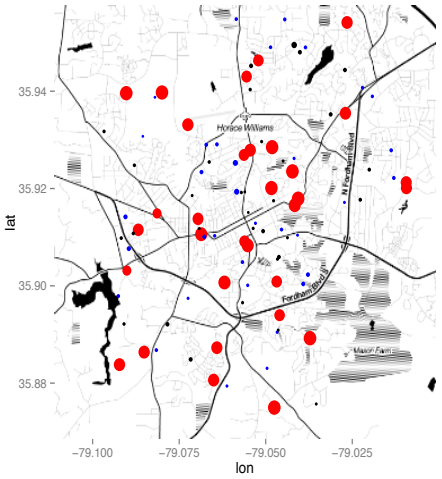
Approaching Sound Change

- What can a unique longitudinal database, which has tracked individuals from childhood through early adulthood, bring to the study of sound change?
  - Build awareness of the relationship of individual trajectories to group linguistic patterns
  - Provide potential insight into the propagation of sound change

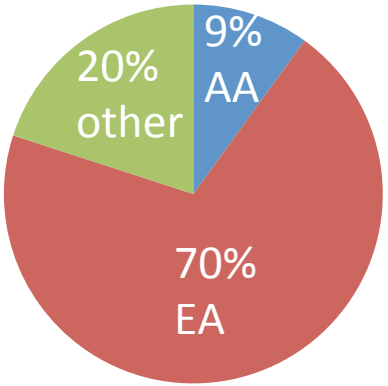
Regional variation and stability

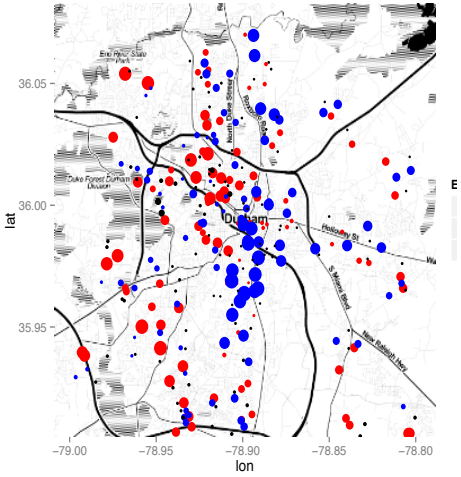
- Speakers come from Durham, Chapel Hill, and outlying communities, we'll briefly look at community demographics and how they relate to vowel systems

Field Sites

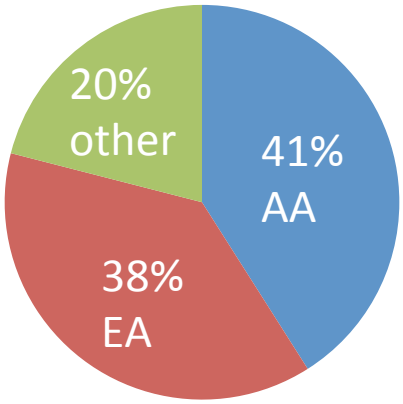


Chapel Hill



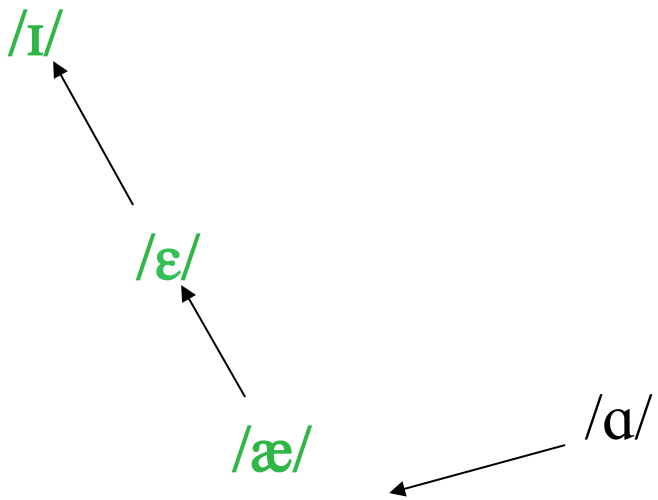


Durham



Although participants come from the same region, their communities have different demographics, potentially affecting participation in sound systems

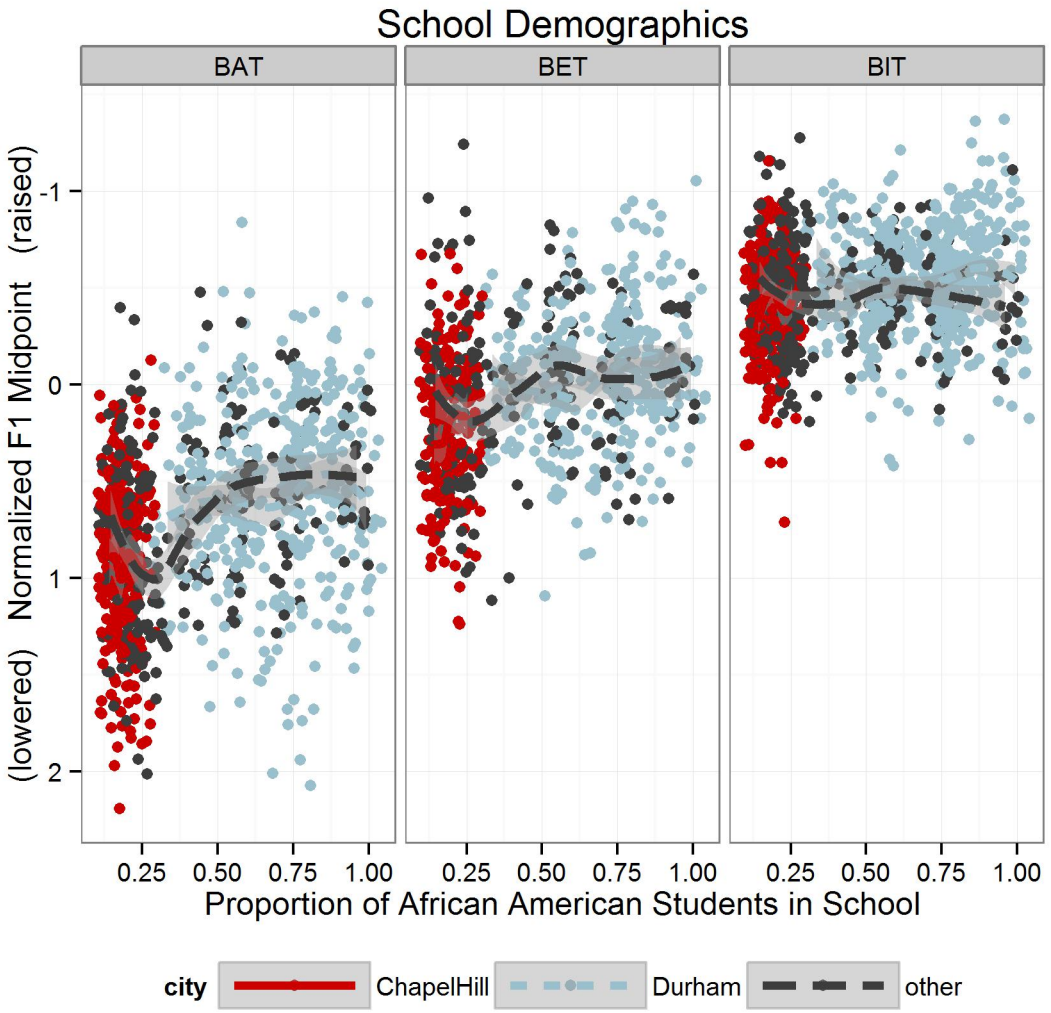
African American Front Vowels



Based on Thomas (2007)

And schools…

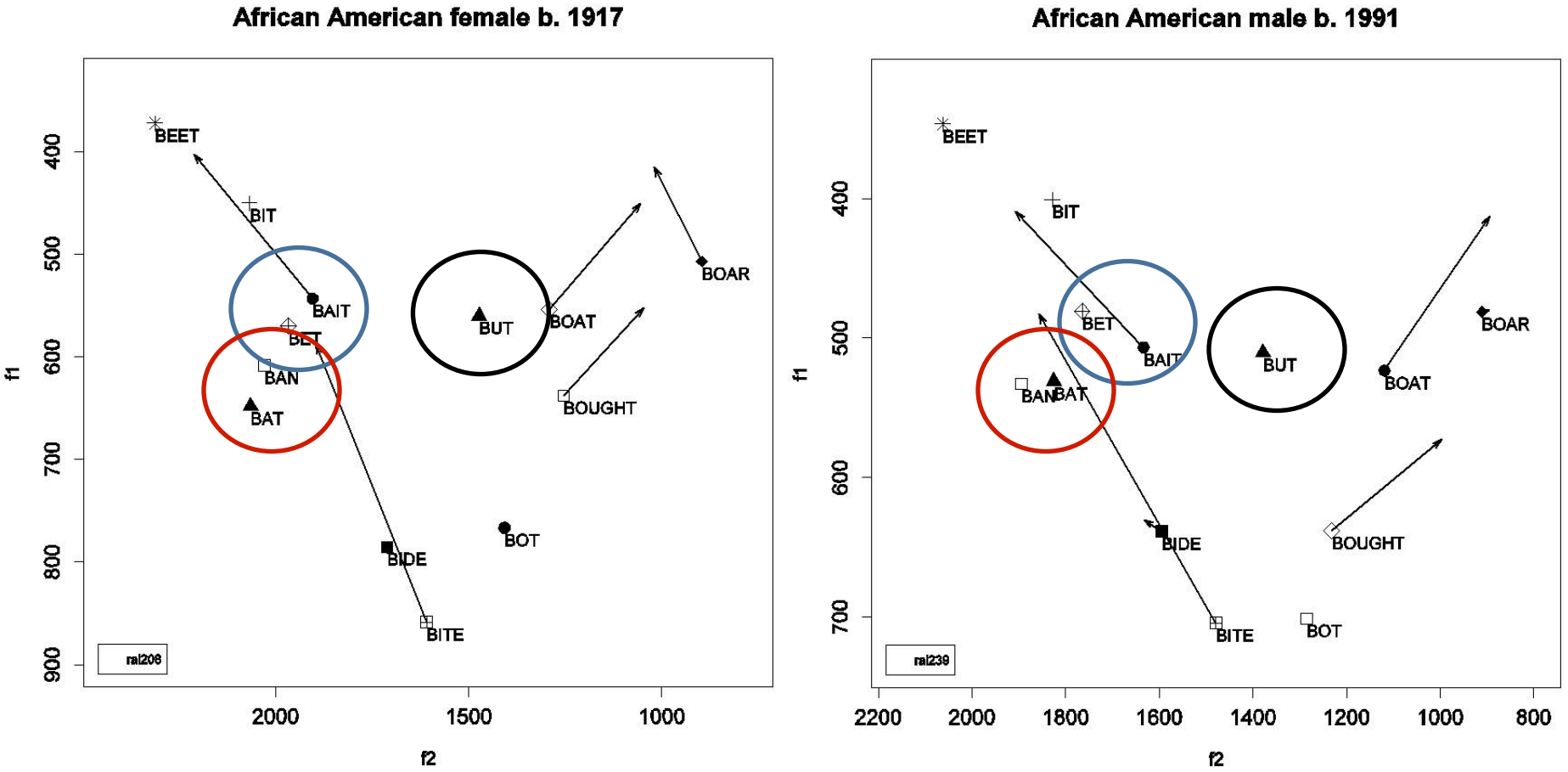
- In addition to individuals patterning with field site, we also see an effect for the percentage of African Americans in the school
- More densely populated African American schools exhibit more raised front lax vowels



Students in Schools

- In North Carolina, student mobility reached 33% in 2004 (Xu et al. 2009)
  - i.e. 33% of students made non-promotional schools changes in the previous year
- FPG speakers change schools frequently, but often within the same school district (Kohn & Farrington 2013)

AAE Stability

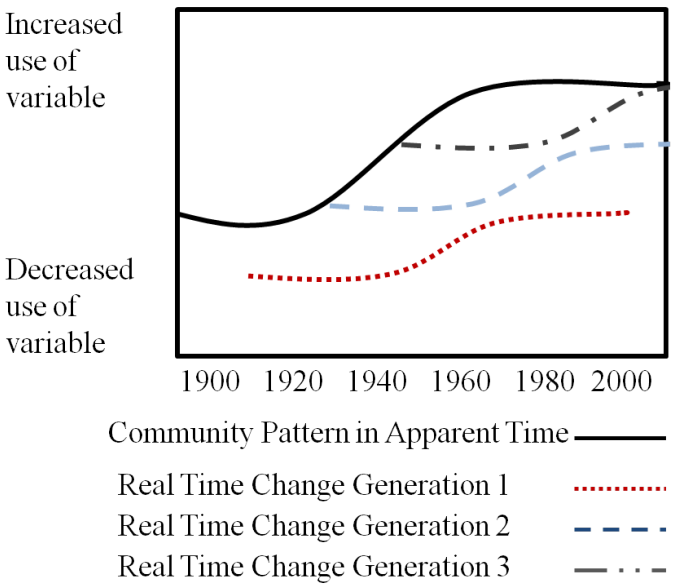


Kohn 2013 found variability with stability for 20 African Americans in Raleigh, NC, a pattern that aligns with similar regional patterns identified by Thomas (2001)

- Because AAE vowels are stable within the region, this analysis explores the extent to which life-stage variation influences linguistic subsystems without the confound of a change in progress

Sound Change

- Over time, generational change is represented by S-shaped incrementation (Labov et al. 2013)
- Individuals may also change between early childhood and late adolescence (adopting the new form in real time)



Individual Change

- Age grading – The association of certain linguistic usages with a particular life cycle stage (Wolfram & Schilling-Estes 2006)
- Adolescent Peak Hypothesis (specific type of age grading) – In communities where there is a change in progress, teens often lead in the use of the new variant (Labov 2001; Eckert 2000)

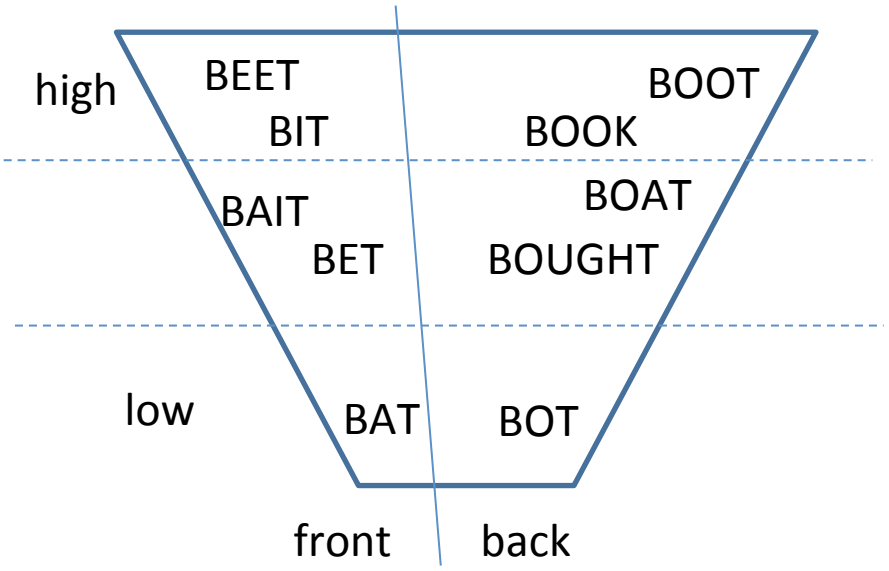
Individual (Adult) Change

- Previous longitudinal analyses of adults show different patterns depending on the status of the variable (undergoing change or stability)
  - Changes in progress, speakers show incremental change over time in the direction of the new variant (Harrington et al. 2000)
  - Variants below the level of consciousness (MacKenzie & Sankoff 2009) and stable variants show erratic behavior (Bowie 2010)

Communities and Individuals

- There is evidence that more vernacular mostly stable AAE morphosyntactic features are age-graded (Van Hofwegen & Wolfram 2010)
- What do vocalic variables at the individual level look like with respect to community stability?
  - Since AAE in the region is stable, we might expect stable or variable (erratic) trajectories of vocalic variants
  - Or, stable community variables may correspond to age-graded patterns in which individuals use more advanced variants only to shed them at a later time point

Vowels analyzed



- Vowels were normalized using Lobanov's (1971) method (see Kohn & Farrington 2012 for analysis of normalization techniques with longitudinal data)

Methods

- Longitudinal data require a different type of regression (Singer & Willett 2003)
  - Requires special treatment of "time" and "speaker" to recognize the non-independent nature of within-speaker measures across time intervals
  - Including "age" as a fixed and random effect allows for identification of group trends beyond individual trajectories

Growth curve analysis

Individual growth curves
- **Speaker (random factor)**
- **Age (random slope)**

Variables of interest
- **Age**
- **Percent African American in school**
- Sex
- **City**
- Sex*Age
- City*Age

Control Variables
- Phonological environment
- Duration
- Formality

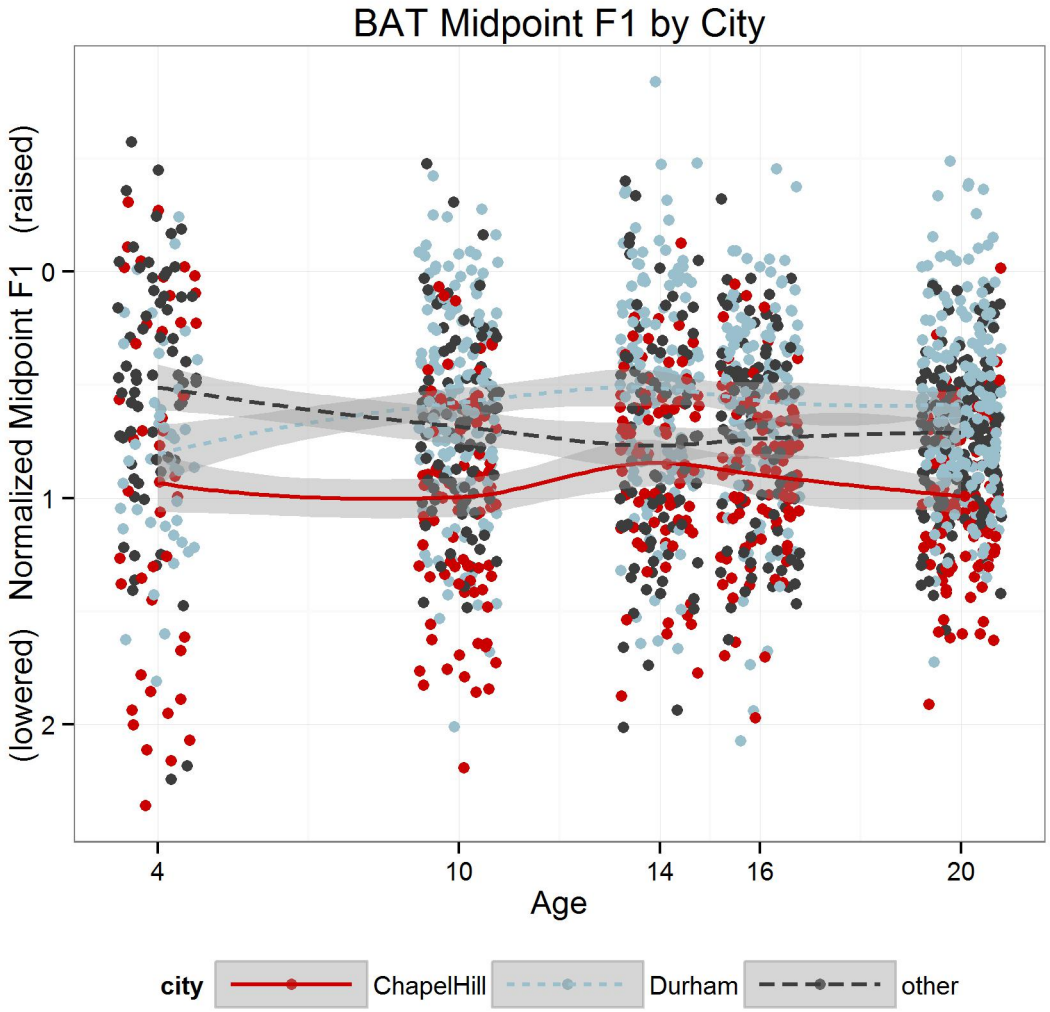
- Longitudinal analysis requires special treatment of "time" and "speaker" to recognize the non-independent nature of within-speaker measures across time intervals
- Including "age" as a fixed and random effect allows for identification of group trends beyond individual trajectories

Group pattern: stability

- The vowels at ages 14 and 16 are not significantly different from age 10 for the group
- Phonetic factors are highly significant for all vowels, adolescent time points are only statistically significant for BOOK (though a weak effect)

Typical pattern

Adolescent time points by city do not stand out as different from other time points

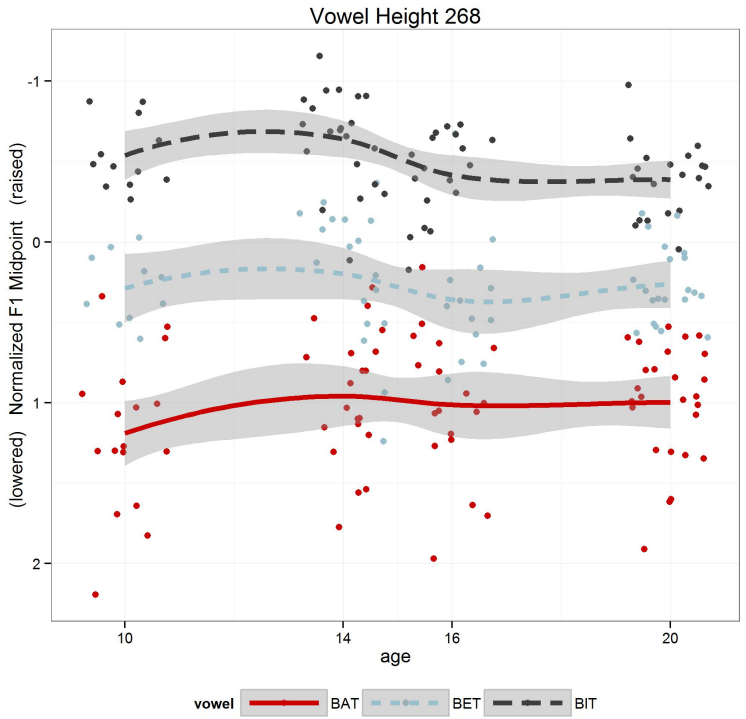


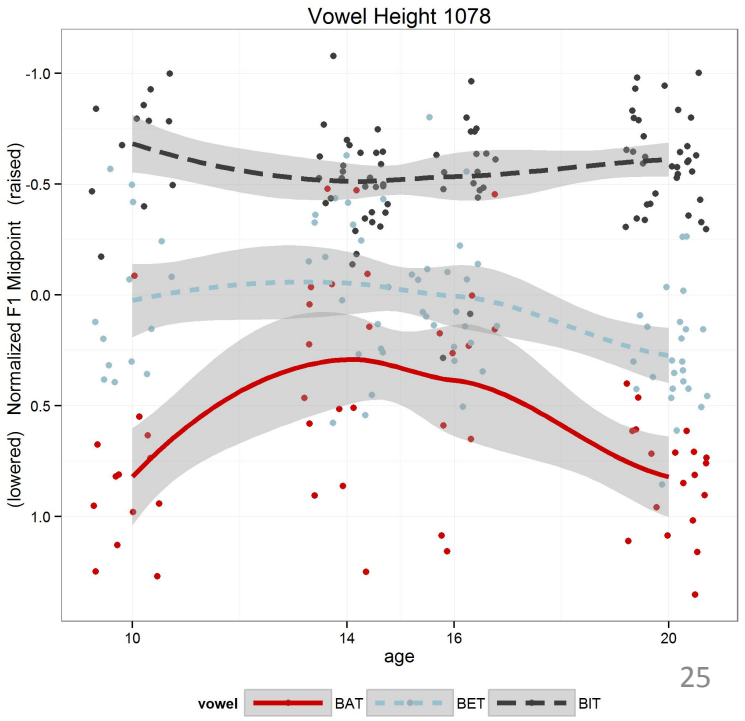
Individual dynamicity

- Within these communities where AAE vowels are stable, we aren't seeing an aggregate level age graded change
- There are still claims about "adolescent linguistic extremism" (Chambers 2009: 197)
- Do any FPG speakers use different variants in adolescence?

Individual dynamicity

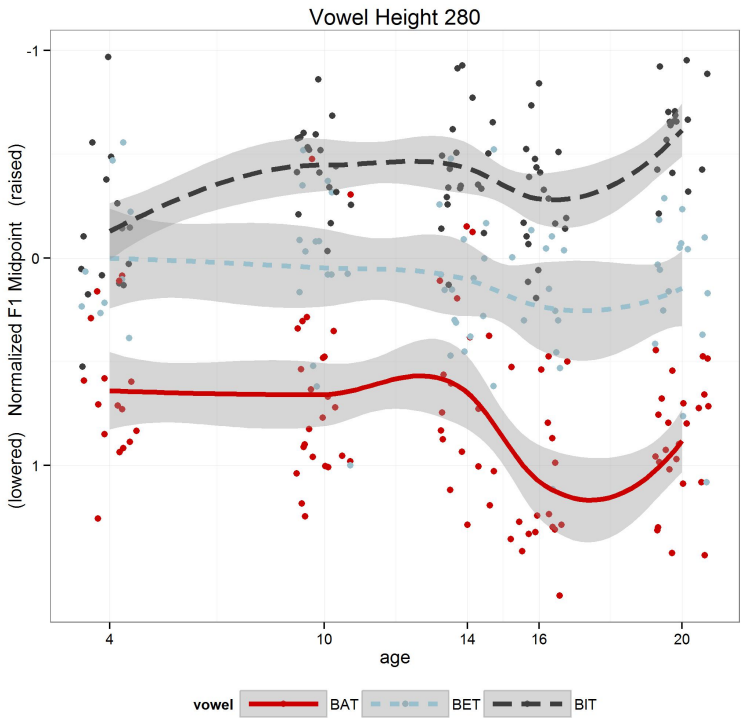
- 268 is a stable speaker
- 1078 a female from Durham does have significantly different front lax vowels at age 14 and 16

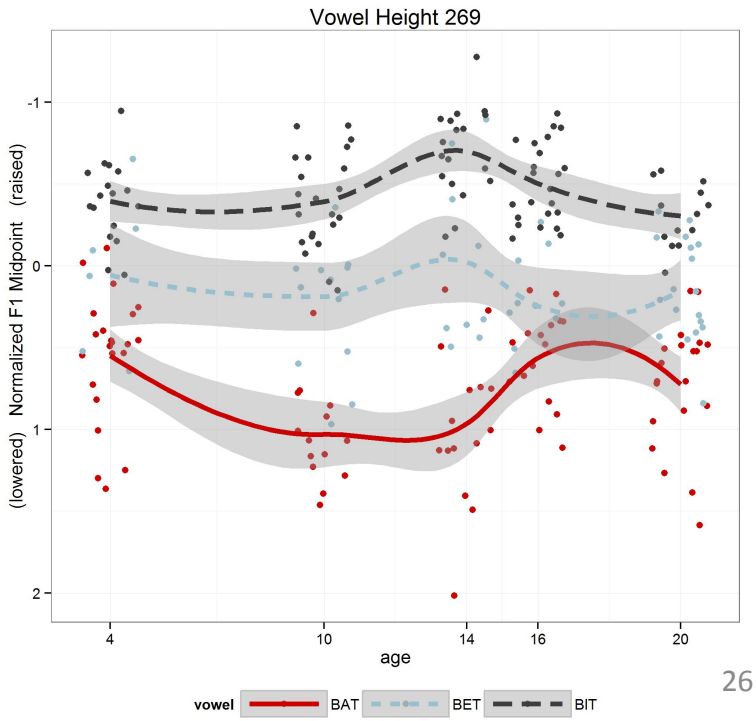




Individual dynamicity

- The majority of speakers are dynamic, but not in consistent patterns. Certain vowels appear more dynamic than others, such as the BAT class.





Sound change

- If we think more broadly about sound change (Weinreich et al. 1968), any of these speakers could lead to the propagation of sound change in the community
- What would this entail?

Spread

- What physiological or social conditions lead to a speaker's use of a variant?
  - Individual differences
  - Social networks (propagating the change) (Granovetter 1973)
    - Non-promotional school changes potentially reinforce community stability while allowing for individual variability
- Does instability correlate with shifting orientation towards the community? (Prichard and Tamminga 2012)

- With a pattern of overall stability and individuals exhibiting variable trajectories, the data reflect similar findings to MacKenzie & Sankoff (2009) and Bowie (2010), where speakers are erratic over time
- In contrast to Harrington et al.'s (2000) finding of incremental change and Van Hofwegen & Wolfram's (2010) finding of age grading

Conclusion

- These data allow us to think more closely about the relationship between individuals and groups, revealing the variability masked by group stability
- In a community where the vowel system is stable, individual factors still produce variability
- We typically assume this kind of variability leads to shifts in community behavior, yet while it may be a resource for change, such change is not inevitable

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Appendix: Statistical Results

Table 5.9: Individual regression results for lax vowel midpoints

	Main Effects			Significant interactions					
	8th	10th	PHS	BET	BIT	BOOK	BUT	(+/-) AAVS	
1062	*-.60****	*-.37***	*-0.12*	*8**,10**	*8*,10**	*8**,10***		-	*peak*
1078	-.54***	-.41**	-0.01	8**,10*	8***, 10***	8***,10***, 14*	8*,10**	+	peak
269	**-0.08**	**-.47*****	**-.32****	**10***	**10*, 14***	**10*, 14***		+	**peak**
274	*-.45****	*-.42****	*-.25***	*8***,10***, 14**	*8**,10****	*8***,10***,14****	*10**	+	*peak*
1001	*-0.04*	*-.44****	*-.26***	*10**, 14****		*10**	*10*,14***	-	*peak*
1035	.24*	.44***	0.13					+	peak
280	**0.01**	**.40*****	**.23***		**14****	**10*, 14***		+	**peak**
256	*.2**	*.33****	*.38****		*14**	*10*,14**		-	*slope*
1085	0.15	.37***	.24***			10**		-	peak
1075	**0.21**	**.34****	**.37****	**10*****	**8**,10**,14****	**10***		-	**slope**
1003	.27*	0.18	.29**					-	erratic
1070	-.27*	0.1	.19*		10**, 14*		10*	+	peak
275	**0.06**	**-.26***	**-0.05**				**14****	+	**peak**
1015	-0.11	-.26*	0.11	8**,10**	8*,10***,14*	10***,14*	8*,10***,14*	+	peak
1058	0.17	-.25*	-.24*		8*	10*,14*		-	peak
268	*-.23**	*-0.17*	*-.23**		*14**		*10*, 14**	+	*erratic*
1061	**0.17**	**.22***	**-0.02**				**10****	+	**peak**
1025	-0.19*	0.15	0.1	10**	8**		10*	+	peak
1057	**0.09**	**0.12**	**.16***	**8****	**14***			-	**slope**
1072	-0.04	-0.09	-0.13	8**		8**		+	stable