Revisiting the Inland North Fringe

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Revisiting Upstate New York data set from Dinkin (2009) with new questions:
1. Do differences in **vowel normalization** change identification of dialect regions?
2. How does **style-shifting** affect Northern Cities Shift TRAP-raising here?

1. Lobanov vs. log-mean normalization and dialect regions.

ANAE (Labov et al. 2006) is benchmark mapping of North American dialect regions; vowel formants normalized using log-mean method based on Nearey (1978).
More recently, mainstream in sociophonetics has shifted to Lobanov (1971) method: it's rated by Adank et al. (2004) as the best normalization method for sociophonetics, and is the default normalization used by FAVE suite (Rosenfelder et al. 2011).
About 75% of NWAV 44–46 abstracts that describe their normalization use Lobanov.

Lobanov normalization:
- normalizes F1 and F2 separately
- doesn't preserve overall shape of vowel space
- measures formants as standard deviations from mean (*z*-scores)
- FAVE rescales *z*-scores to F1/F2 values, giving every speaker the same mean/s.d.: mean F1 = 650 Hz, s.d. 150 Hz; mean F2 = 1700 Hz, s.d. 420 Hz.

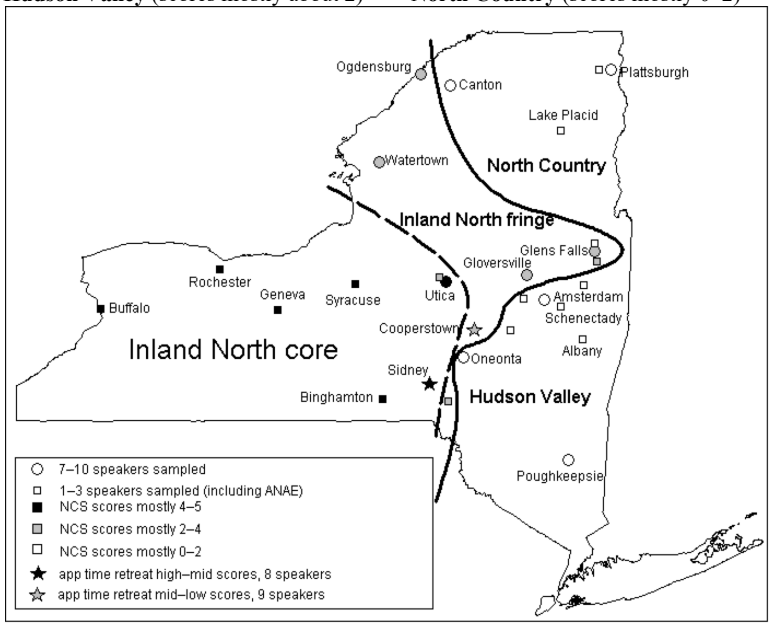
***ANAE* log-mean normalization**:
- normalizes F1 and F2 by the same scaling factor
- does preserve shape of vowel space
- gives everyone the same **geometric mean** of all F1/F2 (989 Hz)

These two systems **don't consistently maintain** inter-speaker comparisons: two normalizations may **disagree** on which of two speakers has e.g., higher TRAP.
Lobanov normalization **doesn't preserve shape** of vowel space; D'Onofrio et al. (2017) suggest **vowel space shape** can be a dialect feature!
Important sanity-check for the field: **do these two normalization methods produce the same dialect regions**?

Following Labov (2007), Dinkin (2009) identified NCS participation by 5 criteria; the number of criteria a speaker satisfies is their **score**:
- **AE1**: F1(TRAP) < 700 Hz
- **ED**: F2(DRESS) – F2(LOT) < 375 Hz
- **EQ**: F1(TRAP) < F1(DRESS)
- **O2**: F2(LOT) > 1500 Hz
- **UD**: F2(LOT) > F2(STRUT)

Means are calculated excluding tokens before sonorants or after /j/, /w/, or stop+liquid clusters.

Four dialect regions defined on the basis of locals' NCS scores (Dinkin 2009):
- **Inland North core** (scores mostly 4–5)
- **Inland North fringe** (scores mostly 2–4)
- **Hudson Valley** (scores mostly about 2)
- **North Country** (scores mostly 0–2)



Dialect regions of Upstate New York (Dinkin 2009)

Will the **same ranges of scores** appear in the **same regions** with Lobanov normalization?

AE1, O2, ED criteria **need to be adapted** to be compatible with Lobanov normalization: **specific values** of 700 Hz, 1500 Hz, 375 Hz are defined in *ANAE* terms, and don't necessary have the same meaning in a different normalization.
Translate those into *z*-scores, in terms of (log-mean normalized) **overall mean** and st.dev. of **107 speakers** interviewed in fieldwork sites (Dinkin 2009):
F1: mean 652 Hz, st.dev. 136 Hz F2: mean 1582 Hz, st.dev. 392 Hz
This suggests FAVE's choice to set rescaled F2 mean at 1700 Hz may be about 1500 Hz off target!

Lobanov-normalized criteria:
- **AE1**: F1(TRAP) < 0.35σ
- **O2**: F2(LOT) > –0.21σ
- **ED**: F2(DRESS) – F2(LOT) < 0.96σ

FAVE-rescaled criteria:
- **AE1**: F1(TRAP) < 702 Hz
- **O2**: F2(LOT) > 1612 Hz
- **ED**: F2(DRESS) – F2(LOT) < 402 Hz

Compare NCS scores under 2 normalizations for communities with 7 or more interviews:

region	community	log-mean scores[1]	Lobanov scores
Inland North core	Utica	5 5 3 4 4 3 4	5 5 3 4 5 3 5
Inland North fringe	Gloversville	4 4 3 4 3 2 4 2 4	3 3 2 4 3 2 4 2 4
	Glens Falls	4 3 2 4 4 3 2	2 2 2 3 5 3 2
	Watertown	5 2 2 4 2 4 2 2 2 4	4 4 2 5 2 3 2 2 2 4
	Ogdensburg	1 3 2 3 4 2 3 4 4	1 3 2 2 4 2 5 4 4
transitional	Sidney	2 3 5 4 5 2 2 2	3 3 5 3 5 2 2 2
	Cooperstown	4 2 3 2 2 2 0 1 0	3 2 4 2 2 2 0 1 0
Hudson Valley	Amsterdam	2 2 3 2 2 2 1	2 2 2 2 2 2 0
	Oneonta	3 2 2 2 1 2 1 2 2	2 2 2 2 0 2 1 2 2
	Poughkeepsie	2 4 2 1 2 1 1	2 2 2 2 2 1 0
North Country	Plattsburgh	2 2 1 1 1 0 1	2 2 0 1 0 0 1
	Canton	1 2 2 0 1 2 0 0 1	2 1 2 1 2 2 0 0 0

Result: Communities have **roughly the same distributions** of scores in both systems—
i.e., Lobanov and log-mean normalization **define the same dialect regions**.
Inland North fringe–Hudson Valley boundary **seems sharper** under Lobanov:
HV more focused on 2 and not higher; IN fringe more likely to range up to 5.
Also, Sidney seems **more typical** of Inland North fringe under Lobanov than log-mean.
Conclusion: Lobanov-normalized data **are** comparable to benchmarks defined in *ANAE*,
(provided they're translated in a way that's coherent for Lobanov normalization);
Lobanov may even be **more effective** at defining regions.

2. **Style-shifting** in Inland North core and fringe.

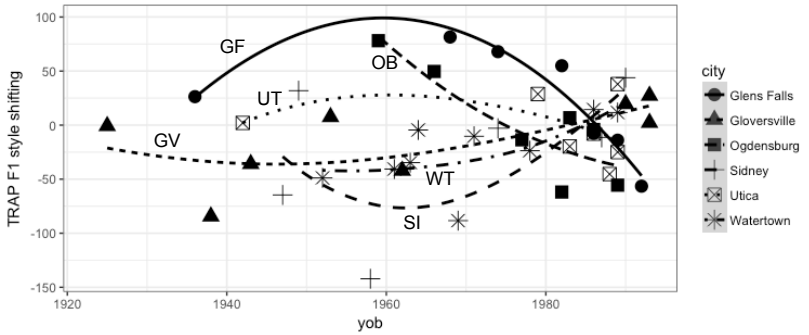
Thiel & Dinkin (2017) found **change in style shifting** in TRAP-raising in Ogdensburg:
older speakers have TRAP higher in wordlist style; younger speakers have it lower.
Possible **precursor** to loss of TRAP-raising seen in several Inland North communities
(e.g., Driscoll & Lape 2015, Wagner et al. 2016).
Is this style-shifting change found in **other NCS communities** in Dinkin (2009) data?

Apparently not—
not a lot of data to work with, but no overall apparent-time trend in style-shifting.
Mixed-effects regression finds significant city × age × style interaction ($p \approx 0.0005$),
suggesting **communities differ** in how/whether style-shifting of TRAP F1 is changing.

Ogdensburg: –3.60	Utica: –0.05	Sidney: +1.83
Glens Falls: –0.96	Gloversville: +0.77	Watertown: +2.02

Mixed-effects regression coefficients for city × age × wordlist style interaction. Regression also includes gender as a fixed effect and speaker and lexical item as random effects.

[1] Some scores here are different than reported in Dinkin (2009) because some coding errors were corrected in recompiling data for this paper.



Style/age trend for **Glens Falls** resembles Ogdensburg, especially excluding old outlier;
these cities are both at the **extreme eastern edge** of the NCS region.
Gouverneur, 25 mi south of Ogdensburg, has slope in same direction
(even though all subjects already have wordlist TRAP lower than spontaneous speech)—
Dinkin (2017) suggests it's an Inland North village that **already lost** TRAP-raising.
Perhaps this style slope indicates **how** loss of NCS enters rural Inland North:
communities at **edge** of region acquire negative evaluation from nearby areas?

Overall, this is a **negative result**—didn't find expected regional trend—but that's okay!

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