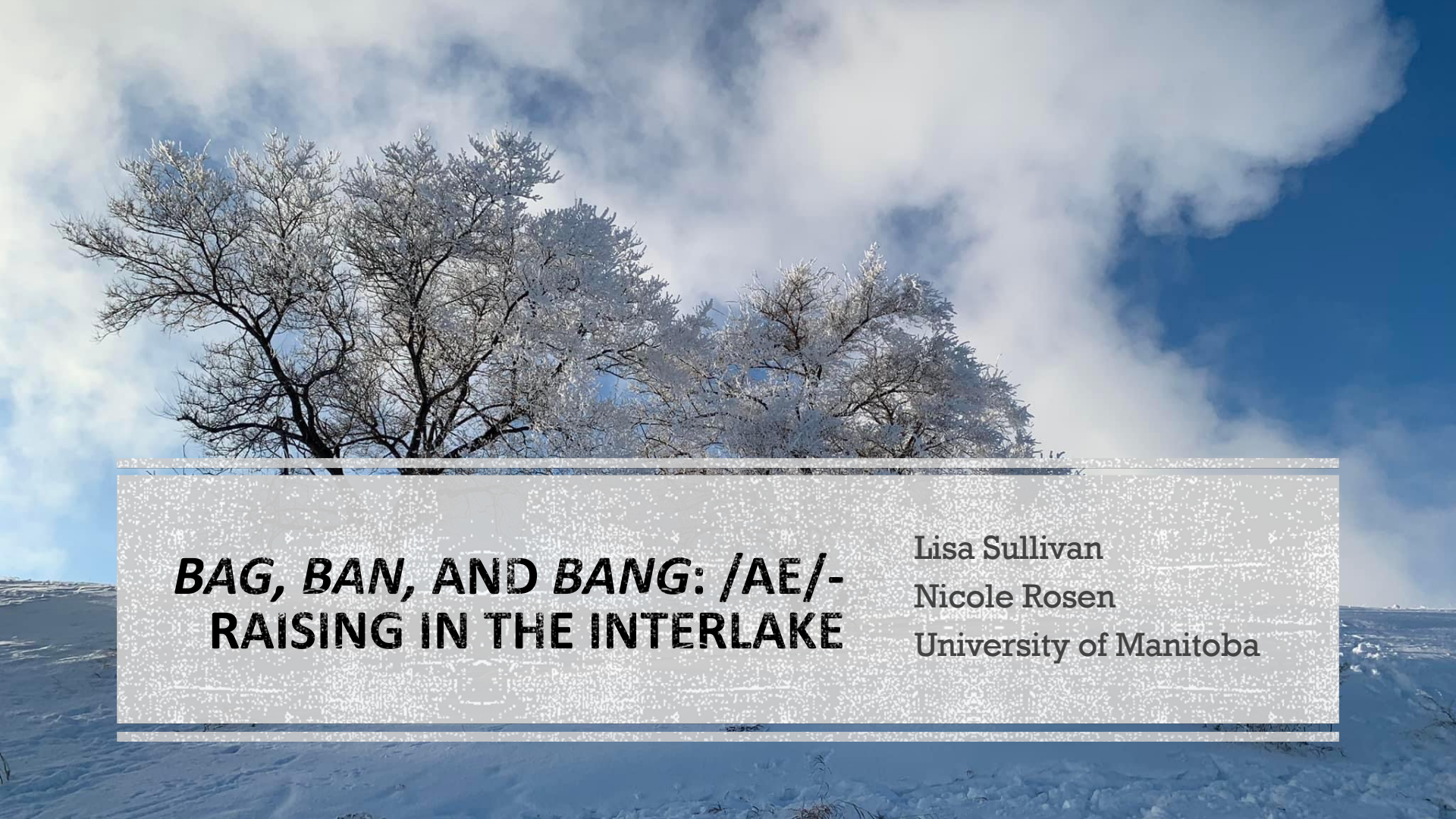

BAG, BAN, AND *BANG*: /AE/-RAISING IN THE INTERLAKE

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STUDYING THE CANADIAN PRAIRIES

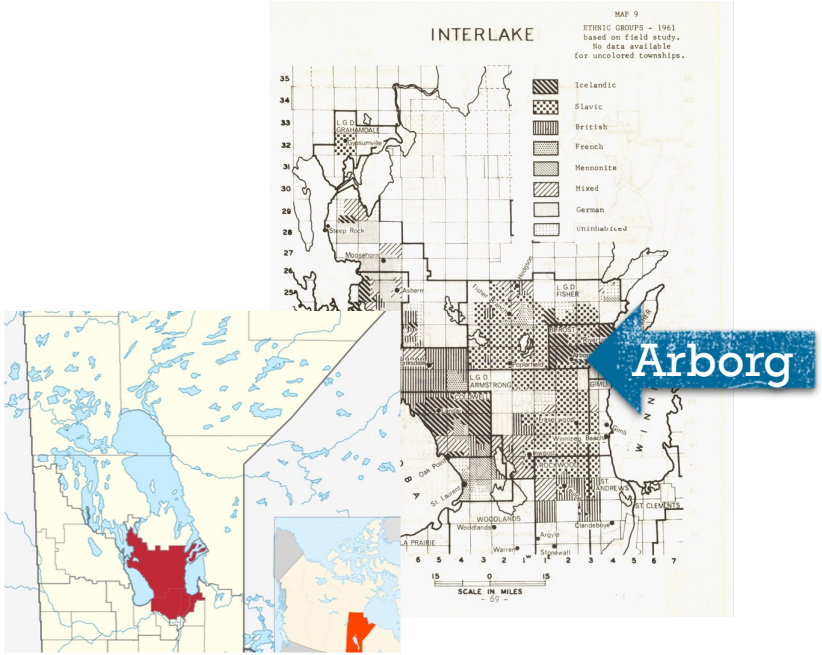
Sundogs in Manitoba's Interlake

- Assumption that Canadian English is generally homogenous, but
- Little work done on Canadian Prairies, and even less done in rural areas – how do we know this is the case?
- Why study the Prairies?

BLOC SETTLEMENT PATTERNS IN MANITOBA

- Eastern English Canada settled by British and Loyalist colonists
- The Canadian West opened to non-Anglophone European settlement after 1870s
- Settler population was primarily Eastern & Northern Europeans: Germans, Mennonites, Icelanders, Ukrainians, Poles, Jews, etc.
- Block settlement based on ethnicity/religion of origin throughout the Prairies (also called *reserves*)

INTERLAKE REGION



- Marginal agricultural lands settled after the 1880s, primarily by Ukrainians, Icelanders
- Much of population spoke Ukrainian as L1, until ~1950
- Sampling done primarily around Arborg (Pop. 1279) (2021 Census)

/æ/-RAISING

- /æ/ has been shown to raise (and front) before certain consonants
  - /_g/ (i.e. **/æg/-raising**, BAG-raising, pre-velar (/æ/-)raising)
  - /_[nasal]/ (i.e. **/æN/-raising**, BAN-raising, BANG-raising, **/æŋ/-raising**)
- **Acoustic Correlates of Raising**
  - **F1** (First Formant): Correlates with vowel height
    - Higher F1 means the vowel is lower
    - Lower F1 means the vowel is higher
  - **F2** (Second Formant): Correlates with the frontness or backness
    - Higher F2 means the vowel is more front
    - Lower F2 means the vowel is more back

/æg/-RAISING

- /æg/ raising has been documented acoustically across the Canadian provinces (Boberg, 2008), and in California (Esposito & Lake, 2021), Oregon (Becker et al., 2016), Washington (Freeman, 2021), Montana (Bar-El et al., 2017), Wisconsin (Zeller, 1997) and Minnesota (Koffi, 2013) in the US
- Mostly Canada & border states; corroborated by Stanley's (2022) self-report study
- /æg/ raising said to be greater in Western Canada in particular; a feature of Western Canada (Boberg 2008)
- Little is known outside these regions, though documentation in Nevada (Gunter et al., 2017;2018) and Colorado (Sullivan, 2022) shows it does not happen there

/æ[nasal]/-RAISING

- By contrast, /æN/-raising has been more broadly documented (Labov et al. 2006), including in Colorado (Holland & Brandenburg, 2017) and Nevada (Gunter et al. 2017;2018)
- In fact, Elango & Denis (2021) find that /æN/ is retracting in Multicultural Toronto English, which they suggest could be due to MTE speakers' desire to distance themselves from normative Canadian English
- Less is known about /æŋ/-raising, though Baker et al. (2008) note that /æg/-raising never occurs in the absence of /æŋ/-raising

/æ/-RAISING IN CANADA (BOBERG 2008)

- Investigates /æg/ and /æN/ raising (not /æŋ/) in the Canadian provinces
- /æ/-raising found across Canada: /æN/ > /æg/
- Relative degree of raising varies between the investigated regions investigated, though most regions raise /æN/ more than /æg/
  - /æN/ raising is less distinctive in Western Canada, more distinctive of Ontario English
  - Crucially, in the prairie region (AB, SK, MB, Northern ON), these two are raised the same amount, which contrasts with other regions

/æ/-RAISING IN MB (ONOSSON 2022)

- Investigates /æg/ and /æŋ/ raising in 3 Manitoba communities
  - Filipino Winnipeggers (Not discussed here)
  - European Winnipeggers
  - German Mennonites residing in the Steinbach and Morden-Winkler areas
- Women retract and lower /æ/ more
- Both groups raise /æg/ and /æŋ/ (no difference between groups)
- /æ/ is raised about the same amount before /g/ and /ŋ/

LOW BACK MERGER SHIFT (BECKER 2019)

- Retraction (and lowering) of /æ/, /ɛ/ and /ɪ/
- Pull chain: /æ/ shifts first, followed by /ɛ/, then /ɪ/
- This is moving /æ/ in the opposite direction of /æ/-raising
  - /æ/-raising moves /æ/ higher and more front
  - LBMS moves /æ/ more back (and lower)
- Raises the question about whether changes we see in "degree of raising" are due to lowering/backing from the LBMS or raising/fronting from /æ/-raising

THE CURRENT STUDY

1. How do Interlake speakers raise /æ/ before g, N, ŋ?
   - Does this vary by social factors (socioeconomic status, age, gender)?
2. How does this compare to other areas of Manitoba (i.e. those examined in Onosson 2022)?
   - How does this compare to Boberg's (2008) findings for the Prairies?
3. Do changes in /æ/ reflect more raising/fronting, or degree of participation in the LBMS?

LANGUAGES IN THE PRAIRIES PROJECT

Arborg Unitarian Church, built 1927

- Data for this study comes from the Interlake sub-corpus of the Languages in the Prairies Project (LIPP) corpus
- Sociolinguistic interviews (incl. word list, reading passage, interview) in 8 communities in MB and AB between 2009-2019
- Social info includes age, (binary) gender, ethnicity, socioeconomic status, rurality, first language

PARTICIPANTS

Age		Professional (F/M/All)	Non-Professional (F/M/All)	Total (F/M/All)
Older	1925-1956	3/1/4	4/3/7	7/4/**11**
Middle	1963-1971	1/1/2	3/3/6	4/4/**8**
Young	1990-2000	2/0/2	3/1/4	5/1/**6**
Total		6/2/**8**	10/7/**17**	16/9/**25**

STIMULI – WORD LIST DATA

- **Target Words (12)**
  - /æg/ words (3): *bag, tag, gag*
  - /æN/ words (7): *band, ham, sanity, stamp, tan, pajamas, panorama*
  - /æŋ/ words (2): *bang, hanger*
  - /æ/ words (4): *bad, had, sad, sat*
- **Vowel Space Words** (for normalization) (20)
  - _[-voice] (10): *hot, sat, set, hate, hit, hoot, boat, foot, heat, hut*
  - _[+voice] (10): *sod, had, head, stayed, hid, who'd, hode, hood, heed, hudd*
  - If one of these words was unusable, one of the following was substituted: cot, state, boots, coat, code, stood, seat, seed, stud

PROCEDURE

- Participants were interviewed in their homes using a Zoom H4N recorder with an external lapel microphone.
- Participants did the interview first, followed by the word list and reading passage
- The word list was done using a timed PowerPoint presentation
- Participants completed 1 repetition of the word list

ACOUSTIC ANALYSIS

- Word list data was force aligned using FAVE-align (Rosenfelder et al., 2004)
  - Alignments were checked and manually corrected in Praat (Boersma & Weenink, 2022)
- F1 and F2 measurements were extracted using by-participant formant values at the midpoint of each vowel
  - F1 and F2 values were plotted and visually inspected for formant tracking errors
  - Formant tracking errors were corrected, if possible; removed if not
- The midpoint F1 and F2 values of the vowel space tokens were used to calculate the mean and standard deviation for F1 and F2 for each participant. These values were then used to z-score normalize the data

TOKENS

Feature	Tokens
/æg/ (3 words)	74
/æŋ/ (2 words)	49
/æN/ (7 words)	173
/æC/ (4 words)	98
Total	**394**

St. Demetrius Ukrainian Catholic Church, built in 1921 by Ukrainian settlers in the Bjarmi area north of Arborg

STATISTICAL ANALYSIS

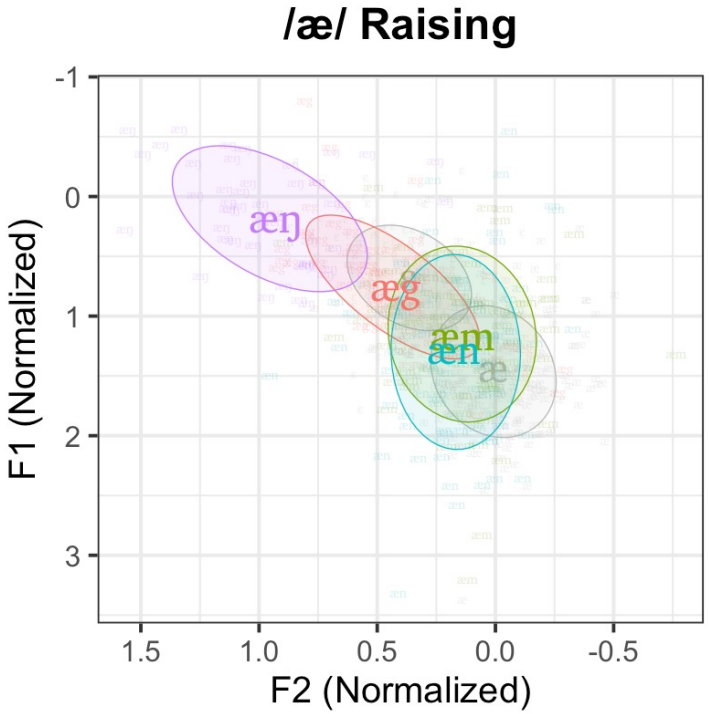
- Mixed effects linear regression models using the lmer() function from the lme4 package (Bates et al. 2015) in R (R Core Team, 2020)
  - **Response Variable**: F1 or F2
  - **Predictor Variables**: Context, Age, Gender, SES
  - **Interactions**: Context and each of the other 3 variables
  - **Random Intercepts**: Participant, Item
- **Command**: lmer(F1~Context*(Gender+Age+SES) + (1|word) + (1|participant))

RESULTS

Notes:

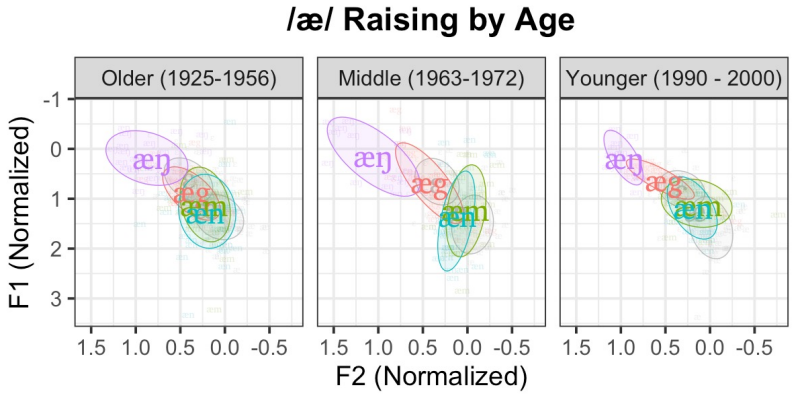
- Results reflect raising/ fronting relative to the position of /æ/ for a particular group of speakers
  - Raised = greater difference in F1 between /æX/ and /æ/ compared to the other group
  - Fronted = greater difference in F2 between /æX/ and /æ/ compared to the other group
- * indicates that the results are significant at the $p < 0.05$ level or above
- Other reported results are non-significant trends ($0.05 < p < 0.15$)

OVERALL RESULTS



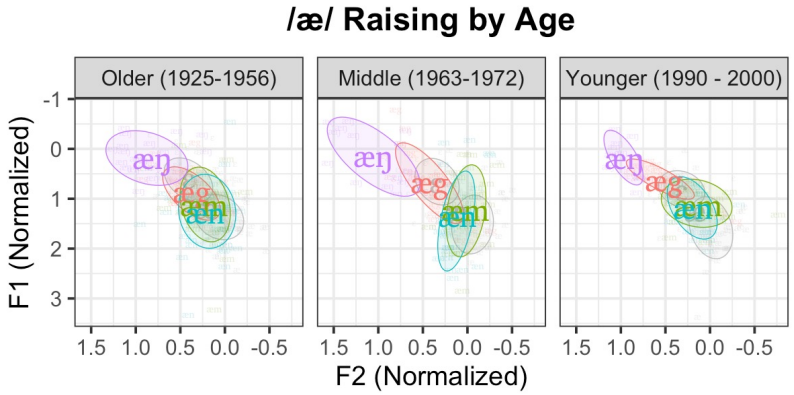
- */æ/ is raised before /g N ŋ/
- /æŋ/ > /æg/ > /æŋ/
- Perhaps /æŋ/ being raised more is an additive effect (velar + nasal)?

AGE RESULTS (1)



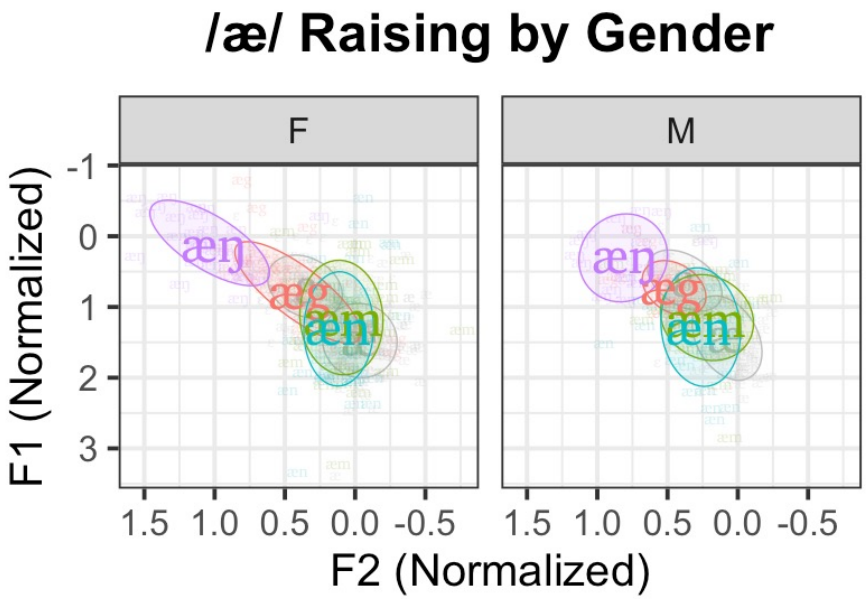
- Pattern is the same across age groups
- No effects for /æN/
- /æg/
  - *Middle & younger speakers raise /æg/ more than older speakers
  - *Younger speakers have front /æg/ more than older and middle speakers

AGE RESULTS (2)



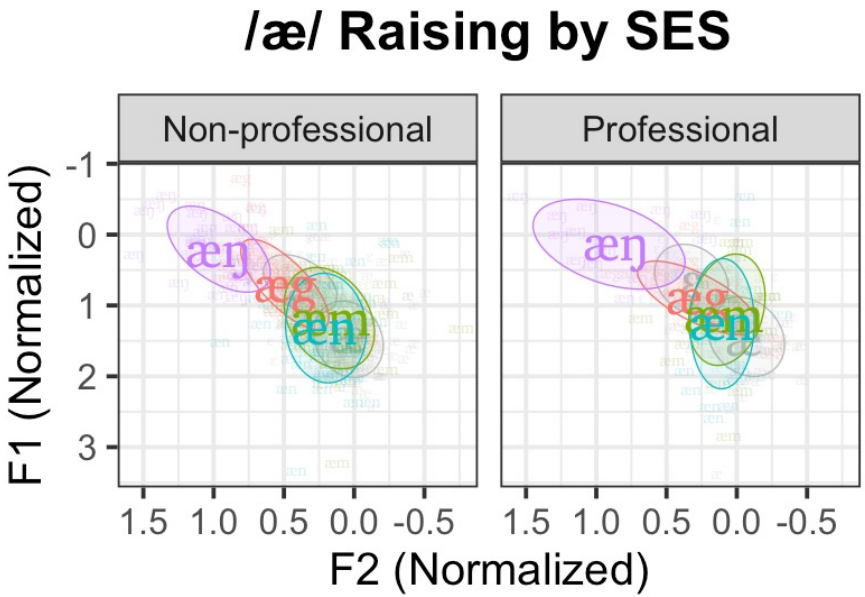
- /æŋ/
  - *Middle age speakers front /æŋ/ more than older speakers
  - *Younger speakers front /æŋ/ less than middle and older speakers

GENDER RESULTS



- Same pattern for both genders
- *Female speakers front /æŋ/ more than male speakers
- Female speakers raise /æŋ/ more than male speakers

SOCIOECONOMIC STATUS RESULTS



- Same pattern
- Non–professionals raise and front /æg/ more than professionals

SUMMARY (RQ1)

- **Overall Raising Pattern**
  - Interlake speakers raise /æ/ before /g N ŋ/
  - ŋ > g > N
- **Social Factor Effects**
  - Older speakers raise /æg/ and front /æŋ/ less more than middle age speakers
  - Younger speakers front /æg/ more and /æŋ/ less than middle age speakers
  - Female speakers raise and front /æŋ/ more than male speakers
  - Non-professionals raise and front /æg/ more than professionals

INTERLAKE VS OTHER MB AREAS (RQ2)

- Ononsson (2022) found that Winnipeggers and Mennonites in Steinbach/Morden-Winkler raise /æg/ and /æŋ/ to similar degrees
- The Interlake is different: /æŋ/-raises more than /æg/
- Perhaps velar + nasal is additive?

Tergesen's general store in Gimli, Mb, family-run since 1899 (oldest general store in Manitoba)

INTERLAKE VS PRAIRIES & CANADA (RQ2)

- Boberg found that in the prairies /æN/ and /æg/ raise a similar amount
- We found that this was not the case in our data: Interlake speakers raise /æg/ more than /æN/
- This also contrasts with the rest of Canada where Boberg found more /æN/ raising than /æg/ raising

Original Broad Valley school built 1916, photo c. 1986

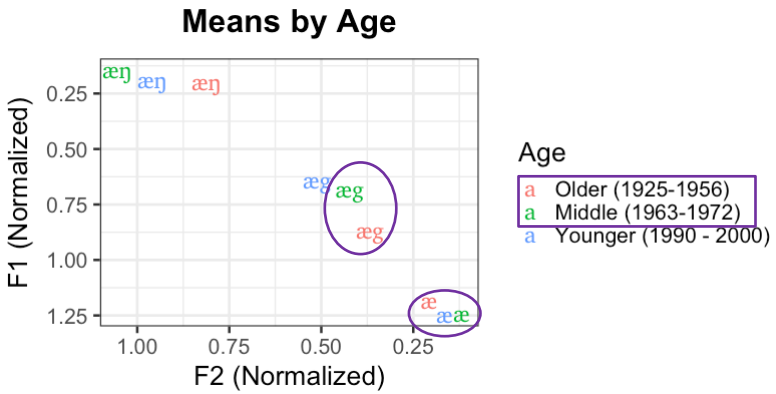
So… the Interlake behaves differently than other regions studied in Manitoba, the Canadian prairies, and the rest of Canada

Owl Carving in Bois-des-esprits, Winnipeg MB

/æ/-RAISING OR THE LBMS? (RQ3)

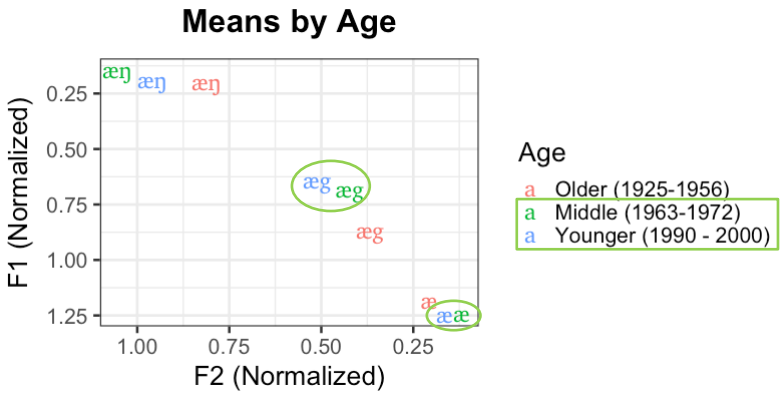
- Recall that both the LBMS and raising are operating on /æ/ & in opposite directions
  - The LBMS causes /æ/ to lower and retract
  - /æ/-raising causes /æ/ to raise before /g m n ŋ/
- Our stats reflect differences in the distance between /æ/ and /æ{N,ŋ,g}/
  - These differences may be caused by /æ/ retraction/lowering due to the LBMS, or raising/fronting due to the various /æ/-raising processes
  - If we look at how /æ/, /æg/ and /æŋ/ shift, between different social groups, we can get an idea of which process is causing these differences

/æ/-RAISING OR LBMS? AGE (RQ3)



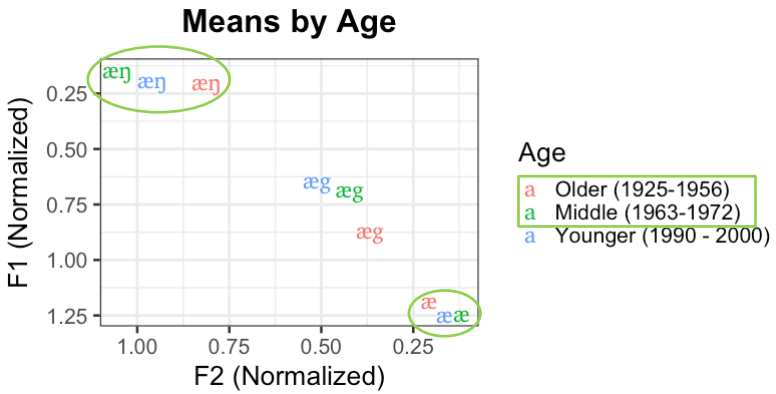
- /æg/
  - F1 (Older-Middle): Both (Mostly raising)
  - F2 (Middle- Younger): Raising

/æ/-RAISING OR LBMS? AGE (RQ3)



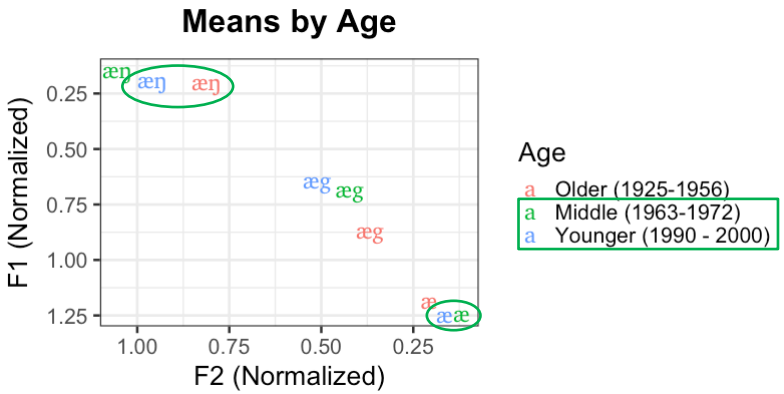
- /æg/
  - F1 (Older-Middle): Both (Mostly raising)
  - F2 (Middle- Younger): Raising

/æ/-RAISING OR LBMS? AGE (RQ3)



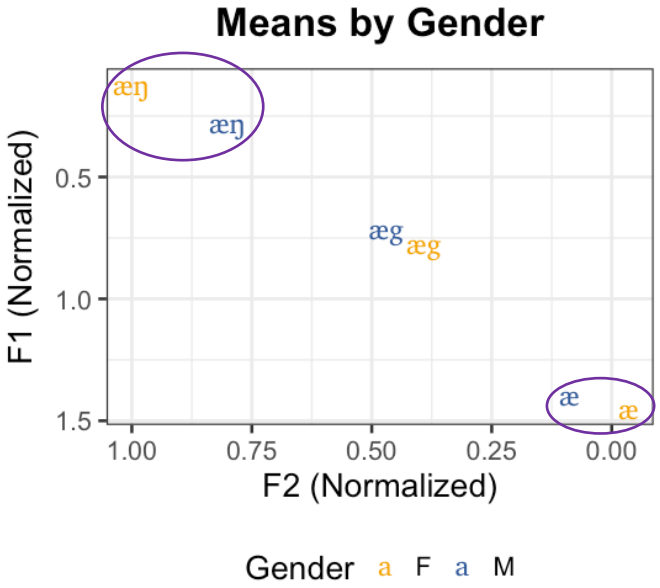
- /æŋ/
  - F2 (Older-Middle): Both
  - F2 (Middle- Younger): Both
  - Larger difference in fronting/backing of /æŋ/ in both cases

/æ/-RAISING OR LBMS? AGE (RQ3)



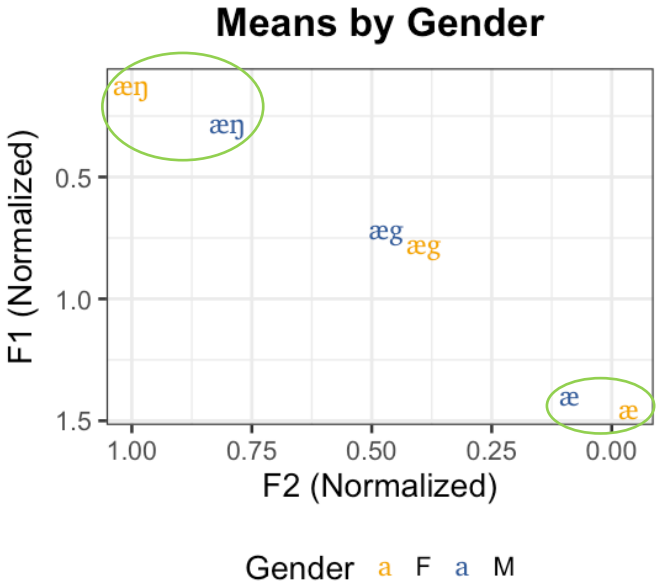
- /æŋ/
  - F2 (Older-Middle): Both
  - F2 (Middle- Younger): Both
  - Larger difference in fronting/backing of /æŋ/ in both cases

/æ/-RAISING OR LBMS? GENDER (RQ3)



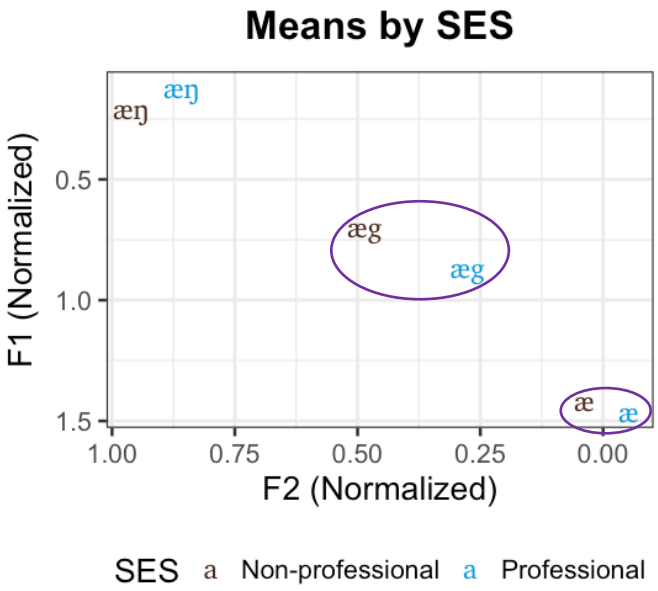
- /æŋ/
  - F1: Both (Mostly raising)
  - F2: Both (More fronting)

/æ/-RAISING OR LBMS? GENDER (RQ3)



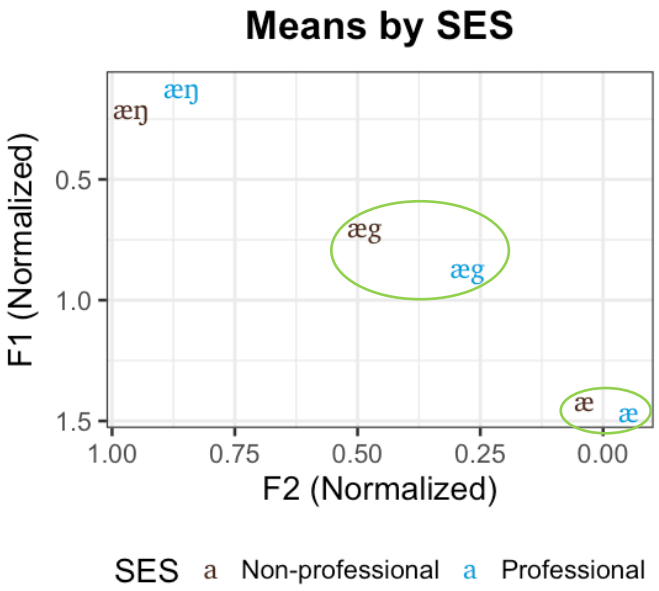
- /æŋ/
  - F1: Both (Mostly raising)
  - F2: Both (More fronting)

/æ/-RAISING OR LBMS? SES (RQ3)



- /æg/
  - F1: Raising
  - F2: Fronting

/æ/-RAISING OR LBMS? SES (RQ3)



- /æg/
  - F1: Raising
  - F2: Fronting

/æ/-RAISING OR LBMS? (RQ3)

- **Summary**:
  - Only (or mostly) Raising: SES, /æg/-raising for age, gender F2
  - Both (but more raising/fronting): /æŋ/-raising for age, gender F2
- **All effects are at least partially attributable to /æ/-raising**
  - This was more true for /æg/ (age, SES), where the differences seems to be entirely or mostly due to raising
  - Results for /æŋ/ show a larger contribution from the LBMS, particularly on the F2 dimension

CONCLUSION

1. **How do Interlake speakers raise /æ/ before g, N, ŋ? Does this vary by social factors (SES, age, gender)?**
   - They raise all 3 to different degrees ŋ > g > N
   - Social factors contribute, but only for /æg/ (Age, SES) & /æŋ/ (Age, Gender)
2. **How does this compare to other areas of Manitoba (i.e. Onosson 2022) and Boberg's (2008) findings for the Prairies?**
   - Interlake contrasts with previous studies, which find ŋ=g & g=N
3. **Do changes in /æ/ reflect more /æ/-raising, or degree of participation in the LBMS?**
   - Generally, changes reflect more /æ/-raising, though the LBMS contributes for /æŋ/

QUESTIONS & NEXT STEPS

- **Questions**
  - Why does the Interlake (appear) to behave differently than other regions investigated?
  - Who drives (what kinds of) change in rural communities, how does this differ from urban communities and why?
- **Next Steps**
  - Adding other regions to the study to get a greater social picture of language variation on the Prairies
  - Investigating the relative contributions of the LBMS and /æ/-raising in differences between social groups more closely

Petersfield sunset

THANK YOU!

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REFERENCES

Baker, A., Mielke, J., & Archangeli, D. (2008). More velar than /g/: Consonant coarticulation as a cause of diphthongization. In *Proceedings of the 26th west coast conference on formal linguistics* (pp. 60–68).

Bar-El, L., Rosulek, L. F., & Sprowls, L. (2017). Montana English and its place in the West. *Publication of the American Dialect Society*, *102*(1), 107–138.

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, *67*(1), 1–48. doi: 10.18637/jss.v067.i01

Becker, K., Aden, A., Best, K., & Jacobson, H. (2016). Variation in West Coast English: The case of Oregon. *Speech in the Western States*, *1*, 107-134.

Becker, K. (2019). The low-back-merger shift: Uniting the Canadian vowel shift, the California vowel shift, and short front vowel shifts across North America.

Boberg, C. (2008). Regional phonetic differentiation in Standard Canadian English. *Journal of English Linguistics* *36*(2), 129-154.

Boersma, P. & Weenink, D. (2022). Praat: doing phonetics by computer (Version 6.3.02). [Computer program]. http://www.praat.org

REFERENCES

Elango, V., & Denis, D. (2022). Fom and friends: Variable ban-laxing in Multicultural Toronto English. In *Proceedings of the 2021 meeting of the Canadian Linguistic Association. Article* (Vol. 4).

Esposito, L., & Lake, E. (2021). Complicating prevelar raising in the West. *American Speech*, 1-45.

Freeman, V. (2021). Vague eggs and tags: Prevelar merger in Seattle. *Language Variation and change*, *33*(1), 57-80.

Gunter, K., Clayton, I., & Fridland, V. (2017). Pre-velar raising and categorization in Nevada English. In *The third annual meeting of the northwest phonetics & phonology conference.* Vancouver, BC.

Gunter, K., Clayton, I., & Fridland, V. (2018). Pre-velar raising and categorization in Nevada. In *New Ways of Analyzing Variation 47.* New York City, NY.

Holland, C., & Brandenburg, T. (2017). Beyond the front range: The Coloradan vowel space. *Publication of the American Dialect Society*, *102*(1), 9–30.

Koffi, E. (2013). The acoustic vowel space of central Minnesota English: Focus on female vowels. *Linguistic Portfolios*, *2*(1), 2-16.

REFERENCES

Labov, W., Ash, S., and Boberg, C. (2006). *The Atlas of North American English: Phonetics, Phonology and Sound Change.*

Onosson, S. (2022). Prevelar vowel raising and merger in Manitoba English. *Journal of English Linguistics*, *50*(3), 247-280.

R Core Team. (2020). R: A language and environment for statistical computing [Computer software manual]. Vienna, Austria. Retrieved from https://www.R-project.org/

Rosenfelder, I., Fruehwald, J., Brickhouse, C., Evanini, K., Seyfarth, S., Gorman, K., Prichard, H., Yuan, J. (2022). FAVE (Forced Alignment and Vowel Extraction) Program Suite v2.0.0 */zenodo.*

Stanley, J. A. (2022). Regional patterns in prevelar raising. *American Speech*, *97*(3), 374-411.

Sullivan, L. (2022). *Pre-velar /æ/-raising in Ontario and Colorado English: Production, perception and metalinguistic awareness.* [Doctoral Dissertation, University of Toronto]. Dissertations & Theses @ University of Toronto.

Zeller, C. (1997). The Investigation of a Sound Change in Progress: /ae/ to/e/in Midwestern American English. *Journal of English linguistics*, *25*(2), 142-155.