

# Word class and diphthong reduction in ‘ōlelo Hawai‘i

Thomas Kettig

University of York

NWAV50: San Jose, CA

October 14, 2022

# Lexicality and lemma variation

- Drager (2011): English *like* systematically varies in pronunciation
  - Not just frequency (Gahl 2008), but also lemma word class plays role in variation: /ai/ & /k/ reduced in quotative compared to lexical *like*
- Investigations of word class reduction in other languages
  - Dutch (van Bergem 1993), French (Meunier & Espesser 2011), Icelandic (Schäfer 2013), Scottish Gaelic (Nance 2015), Vietnamese (Nguyễn 2015), and Japanese (Shirai 2005) – **but still typologically narrow sample, and little investigation of lemma effects within “homophones”**

# ‘Ōlelo Hawai‘i

- Austronesian > Malayo-Polynesian > Oceanic > Polynesian
  - 7 consonant phonemes
  - 5 short mono, 5 long mono, 25 diphthongs (prob. not phonemic)
  - (C)V(V) syllable structure
- Actively revitalizing but still endangered
  - Cultural renaissance in 1970s (music, hula, navigation)
  - Language revitalization spearheaded by Larry Kimura with *Ka Leo Hawai‘i* radio show (1972–1988) and Pūnana Leo (language nests, 1982–)

# *Ka Leo Hawai'i*: Present source of data

- Radio show started by Larry Kimura in 1972
- One of the early catalysts for Hawaiian revitalization
- 625 hours of tape, mostly interviews with elderly native speakers
- Kani'āina project (UH Hilo) digitized all tapes, transcribed first 40 interviews
- Commonly used in classrooms

The screenshot shows the website for Kani'āina, featuring a search bar, navigation links for 'Huli Ma Ka Leo Hawai'i', 'Ho'okipapa', and 'Waihona Pono Koho 'ia', and a main article titled 'Ka Leo Hawai'i. He Waihona Leo Makamae. E Ho'olohe Mai.' with a small video player at the bottom right.

LUKAU  
Hawai'i English

Papa Kuhikuhi

Kani'āina / Ka Leo Hawai'i

**KANI'ĀINA**  
*Voices of the land*

HULI MA KA LEO HAWAI'I  
Huli ma ka 'ohina  
Huli Nowelo

HO'OKĪPAPA  
Papa Po'oinoa

WAIHONA PONO KOHO 'IA  
Ka Leo Hawai'i 180

KA LEO HAWAI'I. HE WAIHONA LEO MAKAMAE. E HO'OLOHE MAI.

He papahana no ka lehulehu 'o Ka Leo Hawai'i ma ka 'ōlelo Hawai'i i ho'olele lēkiō 'ia mai ka makahiki 1972 a i ka makahiki 1988 me ka hapanui o nā nīnauele 'ana me nā mānaleo kūpuna a mai ka hui kelepona 'ana o ke anaina lēkiō. He palapalaleo ko kekahi mau polokolamu lēkiō, akā ke ho'okoe 'ia nei kekahi mau palapalaleo 'ana no ka no'ono'o i nā kumu a'o a me nā haumāna e ho'oikaika nei i ke a'o 'ōlelo Hawai'i ma ka hana ha'awina palapalaleo 'ana. Ke kūkulu nei mākou i kekahi 'ōnaehana pai ho'okomo palapalaleo no kēia mua iho o Kani'āina nāna e 'ae i ke kaiaulu ho'ohana e ho'okomo palapalaleo hou e pāku'i ho'opili ai me kekahi mau 'aukiō Ka Leo Hawai'i. Aia ma 'ane'i he 'ikepili laulā hou aku. Ua hiki ke leka uila 'ia mai nā nīnau, mana'o, a me nā ho'oponopono 'ana e pili ana i kēia mau papahana, a me ke kahuapa'a paha, i 'ane'i.

# Current speaker sample

Name	Gender	‘Āina hānau	Episode	Recording date
Rachel Mahuiki	female	Wainiha, Kaua‘i	KLH #014	Nov. 9, 1972
Alfred Apaka Sr.	male	Hanalei, Kaua‘i	KLH #057	March 3, 1974
Ida Kapu‘ihilani Feary-Milton Nāone	female	Moanalua, O‘ahu	KLH #013	Nov. 1, 1972
Henry Hanalē Machado	male	Kapālama, O‘ahu	KLH #021	Feb. 6, 1973
Lilian Victor	female	Lāhaina, Maui	KLH #032	April 24, 1973
David Ka‘alakea	male	Kīpahulu, Maui	KLH #063	April 21, 1974
Sadie Kaluhi‘ōpiopio Beebe	female	Kahalu‘u, Hawai‘i	KLH #033	May 1, 1973
Joseph Maka‘ai	male	Ka‘ūpūlehu, Hawai‘i	KLH #016	Nov. 21, 1972

**Focus of present investigation:** trajectories of diphthongs in these speakers

All speakers, normalized: aV and āV trajectories, plus means of monophthongs

### Content/lexical words

Words measured for /āi/:

- 'āina (*land*)
- kama'āina (*familiar*)
- ho'okama'āina (*be acquainted*)

Words measured for /ae/:

- lae (*forehead, ridge*)
- pae (*cluster, disembark*)
- 'ōpae (*shrimp*), etc.

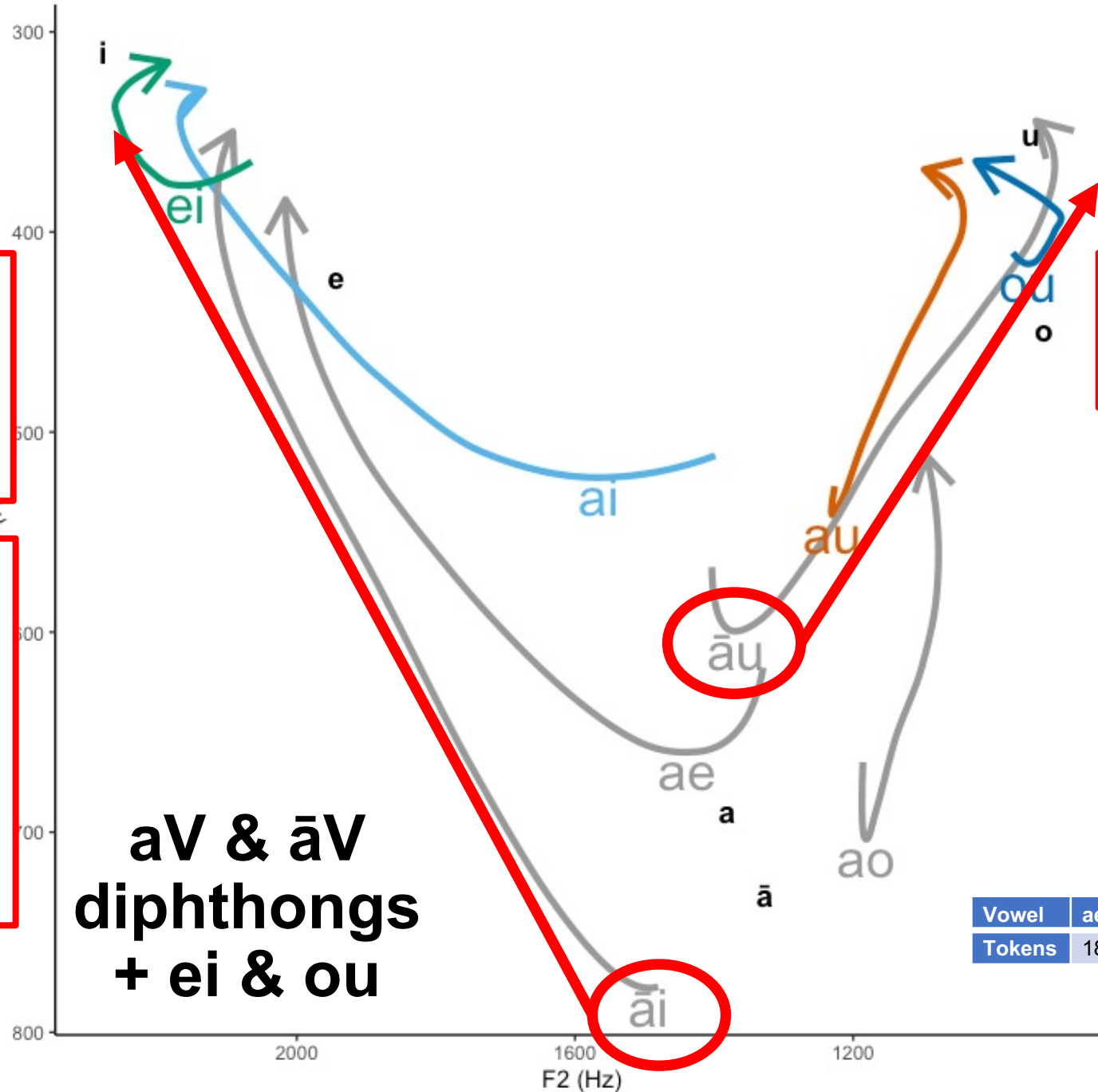
Words measured for /ao/:

- maoli (*true*)
- haole (*foreign*), etc.

### Pronouns

Words measured for /āu/:

- kāu (*your*)
- nāu (*your*)



**aV & āV  
diphthongs  
+ ei & ou**

Vowel	ae	ai	ao	au	ou	āi	āu
Tokens	186	758	117	504	400	130	8

All speakers, normalized: content vs. non-content words

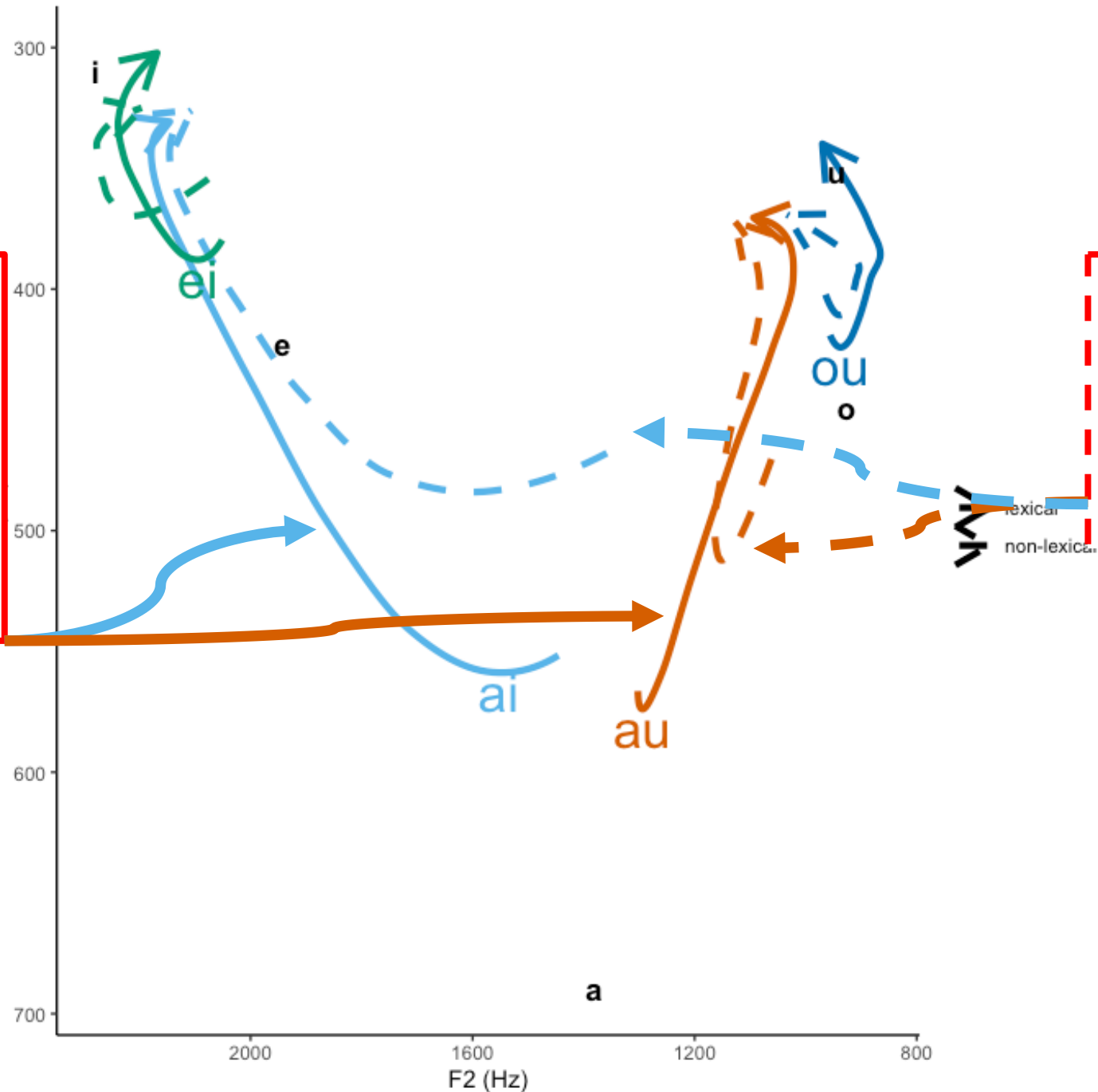
### Content/lexical words

Words measured for /ai/:

- akamai (*smart*)
- hālāwai (*meeting*)
- hānai (*raise, foster*)

Words measured for /au/:

- hānai (*born*)
- 'au (*swim*)



### Pronouns/Directionals

Words measured for /ai/:

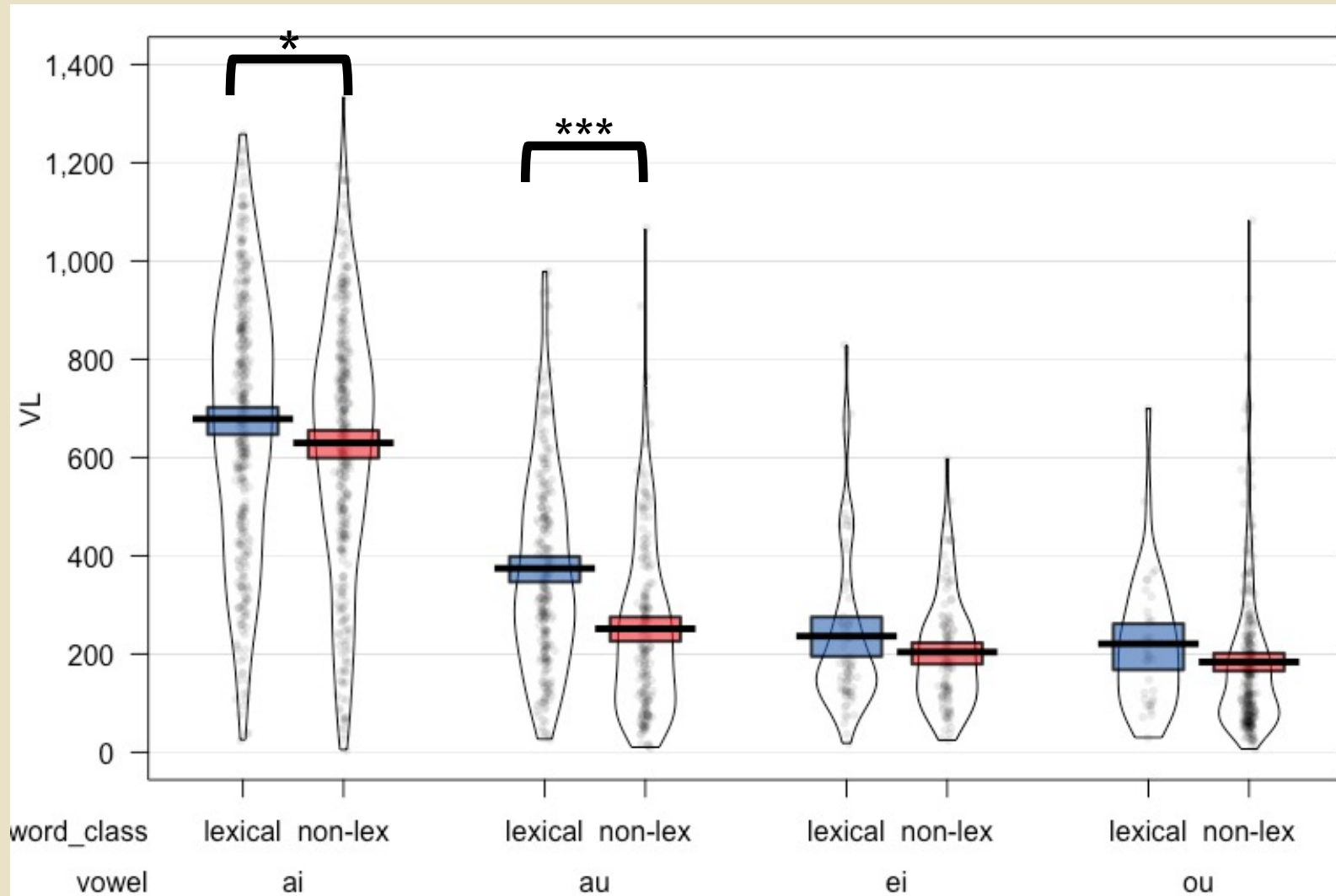
- mai (*toward, don't*)
- maila (*toward*)

Word measured for /au/:

- au, wau (*I*)

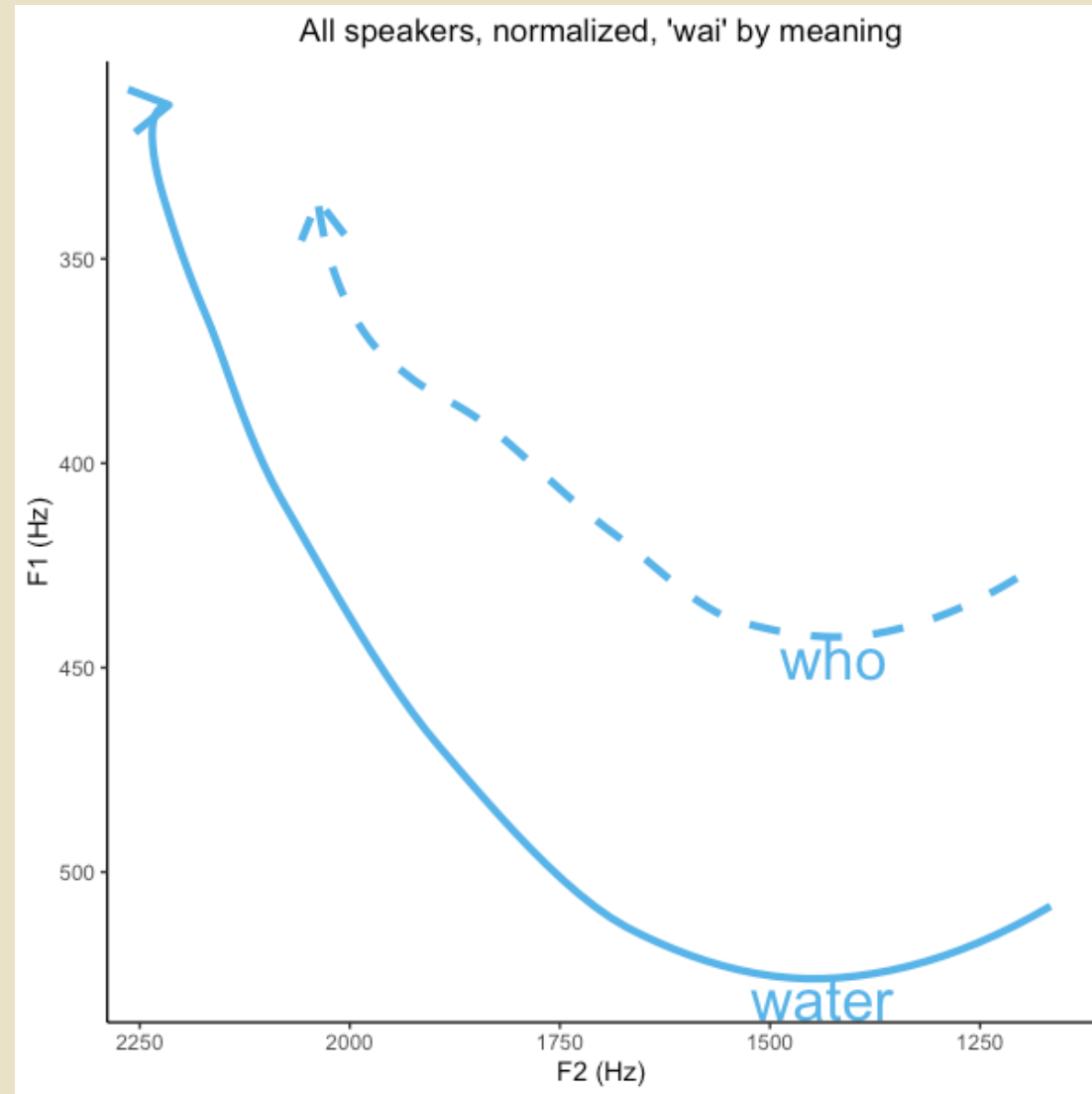
= shorter trajectories,  
more centralized starting  
points

# Vector length by vowel and class





Can also be observed within wordform *wai*

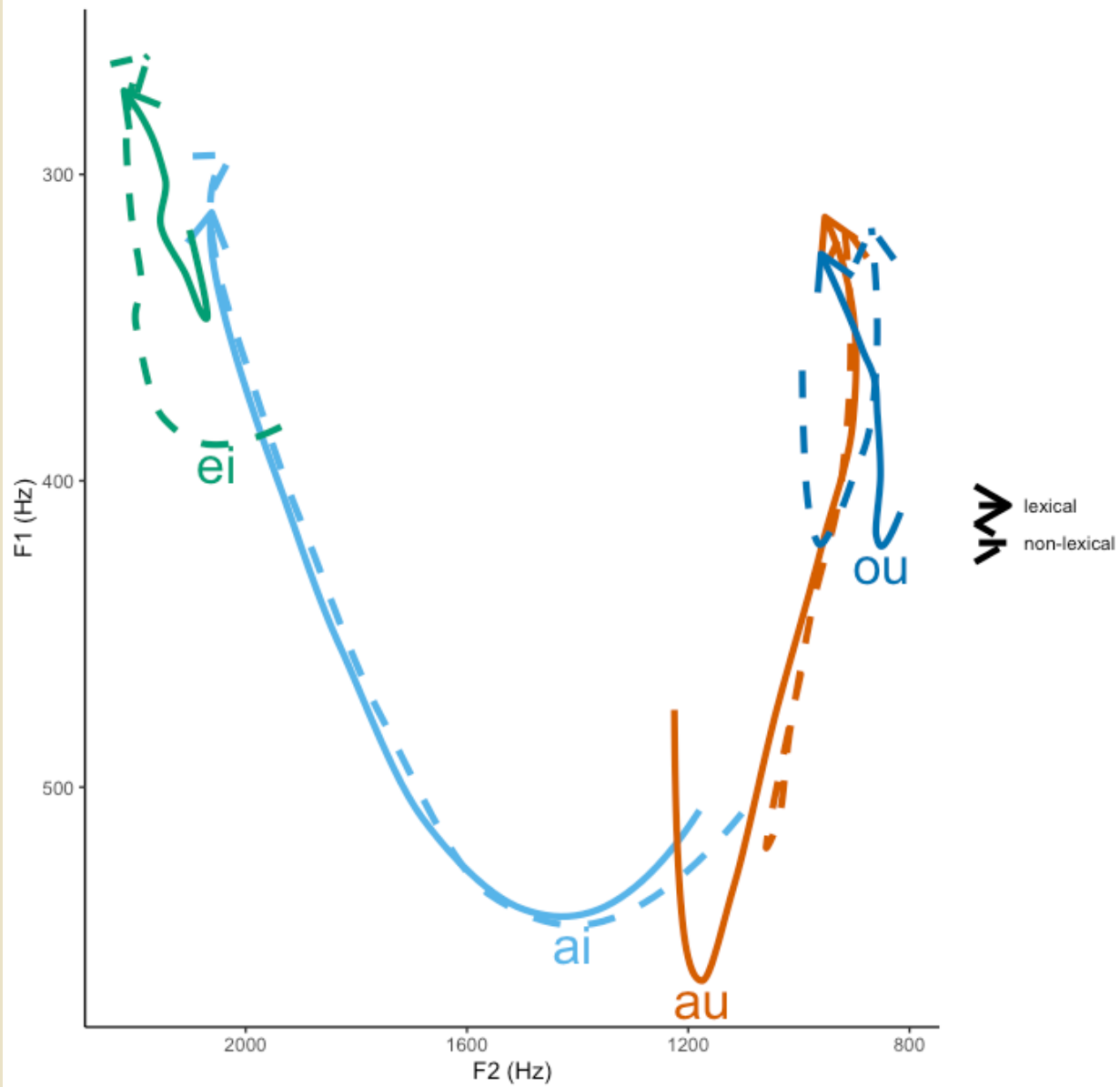


# Variation between and within speakers

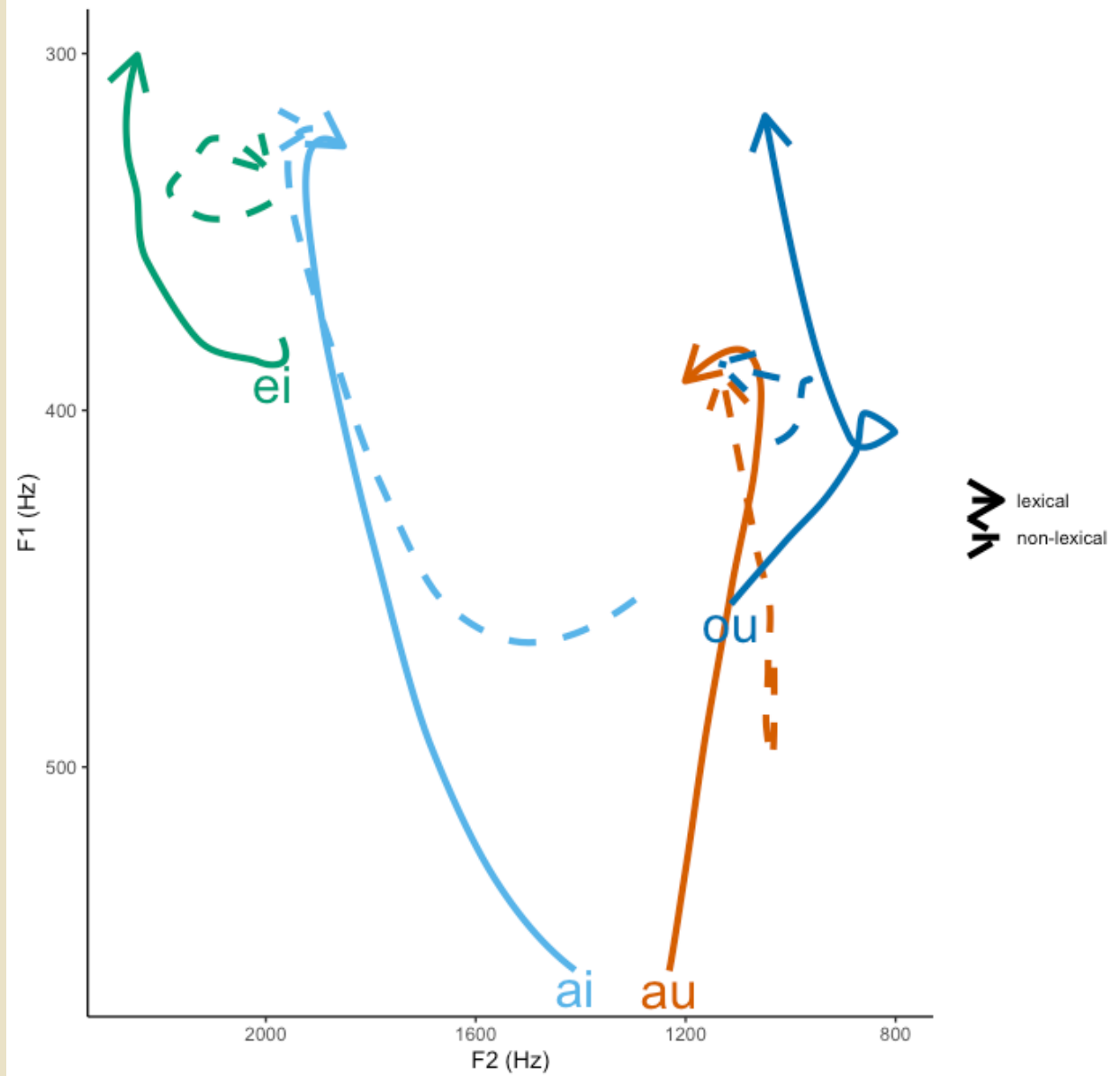
Name	Gender	'Āina hānau	Episode	Recording date
Rachel Mahuiki	female	Wainiha, Kaua'i	KLH #014	Nov. 9, 1972
Alfred Apaka Sr.	male	Hanalei, Kaua'i	KLH #057	March 3, 1974
Ida Kapu'ihilani Feary-Milton Nāone	female	Moanalua, O'ahu	KLH #013	Nov. 1, 1972
Henry Hanalē Machado	male	Kapālama, O'ahu	KLH #021	Feb. 6, 1973
Lilian Victor	female	Lāhaina, Maui	KLH #032	April 24, 1973
David Ka'alakea	male	Kīpahulu, Maui	KLH #063	April 21, 1974
Sadie Kaiulani opio Pio Beebe	female	Kahalu'u, Hawai'i	KLH #033	May 1, 1973
Joseph Maka'ai	male	Ka'ūpūlehu, Hawai'i	KLH #016	Nov. 21, 1972

Not all speakers reduce at the same rate

Just HM, normalized, lexical vs. non-lexical



Just DK, normalized, lexical vs. non-lexical



# Conclusions and future directions

- Hawaiian exhibits reduction by word class in line with our predictions based on other, unrelated languages
- Non-lexical lemma of diphthong in *wai* clearly centralized compared to lexical lemma
- Next steps
  - Look at duration – probably significantly shorter in non-lexical words
  - Investigate sources of speaker variability more closely (& more speakers)
  - Disentangle word class from prosodic variation
  - Integrate frequency measures

**Mahalo i ko 'oukou ho'olohe 'ana mai!**

Thank you for your attention!