

# Vowels Across Varieties of English



## Aaliyah Bullen '25

Cognitive Science (Linguistics) and Computer Science  
Swarthmore College | [abullen1@swarthmore.edu](mailto:abullen1@swarthmore.edu)

**Overview:** This investigation of vowel formants in English presents an overview of English vowels produced by bilingual speakers of Southeast Asian languages. With this work, we are able to draw connections about vowels across this demographic and differences from standard English vowel categorization. This diversifies our understanding of the English vowel space and serves as a basis for research into the categorical perception of vowels.

### introduction

Vowels are a series of unobstructed phonemes differing by the tongue's position during production.

English has ~20 vowels (12 monophthongs and ~8 diphthongs) (Singh & Woods 1971). Speakers' production of vowels vary, but listeners are able to resolve these differences during processing (Goslin et al, 2012).

Vowel variation in English is not clearly defined, but a better definition could answer language processing questions.

Speaker region and language background is a known source of language variation (Kendall & Fridland 2017), and could account for variation in vowel productions

### formant extraction

Vowels' tongue position can be defined by formants (F1 for tongue height and F2 for tongue backness).

For this experiment, formants were extracted from recordings of bilingual speakers of eight Southeast Asian languages in the Speech Accent Archive.

Formant analysis of 13 vowels were done using Praat analysis software.

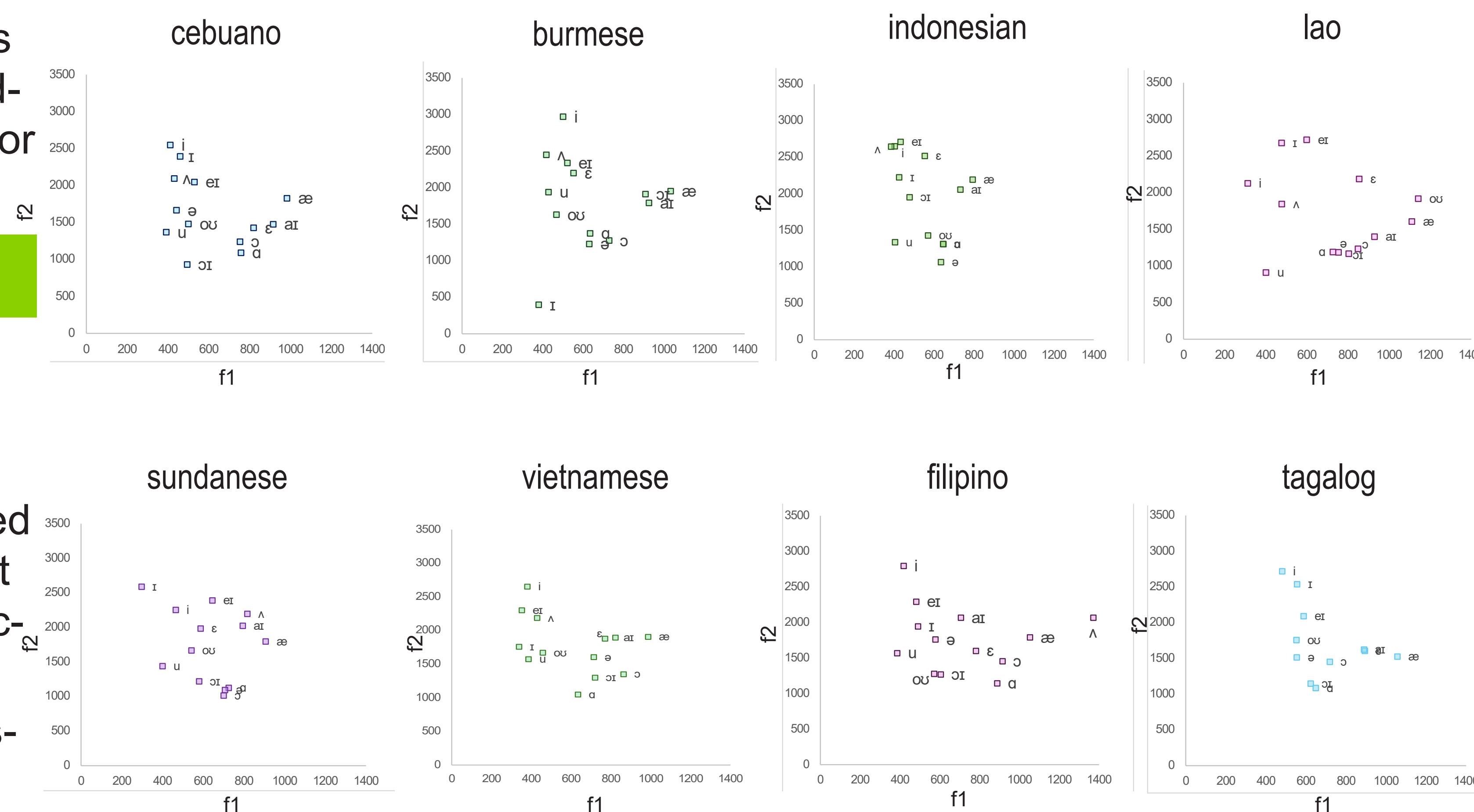
Analyzed vowels:

i, ɑ, ɛ, æ, I,  
ə, aɪ, u, ʊ,  
ɔɪ, ɔ, eɪ, ʌ

### vowel chart comparison

Elicitation Paragraph: **Please call Stella.**

**Ask** her to **bring** these things with her from the store: Six spoons **of** fresh snow peas, **five** thick slabs of **blue** cheese, and maybe a snack for her brother Bob. We **also** need a small plastic snake and a big **toy frog** for the kids. She can scoop these things into three red bags, and we will go meet her Wednesday at the **train station**.



### conclusion

In conclusion, we were able to produce an overview of English as it exists in speakers of eight Southeast Asian languages

There is no clear pattern of vowel categorization across these varieties of English, but they are clearly distinct from the standard chart of English vowels.

### future work

Future research could work further within the realm of defining the vowel spaces across varieties of English

- Replicating this for other varieties of English
- Extending within the Southeast Asian varieties with more subjects and more vowel instances.

Future work could also include the perception of regional varieties of vowel phonemes.

### more information

Interested in speech accents?  
Want to see more charts? Check out this Github Repo:



### references

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