

# THE TIMING OF ASL FINGERSPELLING

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# INTRODUCTION

# Goals of this talk

1. Describe the temporal properties of ASL fingerspelling
2. Show variation in the temporal properties of fingerspelling

## Timing properties

There has been relatively little phonetic work on ASL generally, and fingerspelling specifically.

Most studies of the temporal properties of fingerspelling have been limited because they

- measured rate as duration of word/number of letters
- analyzed data from manually coded English settings
- measured a small number of words with limited formational properties

# What we know

Reported fingerspelling rates have considerable variation (Quinto-Pozos, 2010; Bornstein, 1965; Hanson, 1981; Wilcox, 1992; Geer, 2010) :

- ▶ a lower bound of ~125 msec per letter
- ▶ an upper bound of ~300 msec per letter
  - ▶ ~100 msec for holds
  - ▶ ~200 msec for transitions

Reich and Bick (1977) are the only to use a segment based analysis which showed word medial letters are fingerspelled quicker than initials or finals. Although this was on manually coded English.

## Questions about fingerspelling timing

1. How long are segments on average?
2. Do they vary by position?
3. Do they vary by (letter) identity?
4. Do they vary by signer?

# METHODS

# Data collection

- ▶ 4 native signers, 1 early learner (4 coded so far) produced
- ▶ 600 unique words
- ▶ repeating each word twice
- ▶ being recorded by 2 or 3 video cameras
- ▶ recording at 60 FPS
- ▶ for a total of 21,453 letters



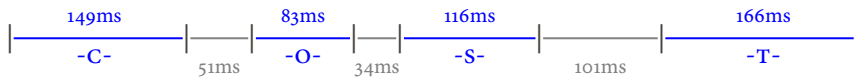
# C-O-S-T

# Holds and transitions

*Holds* the time periods where the entire hand configuration is stable

*Transitions* the time periods between holds

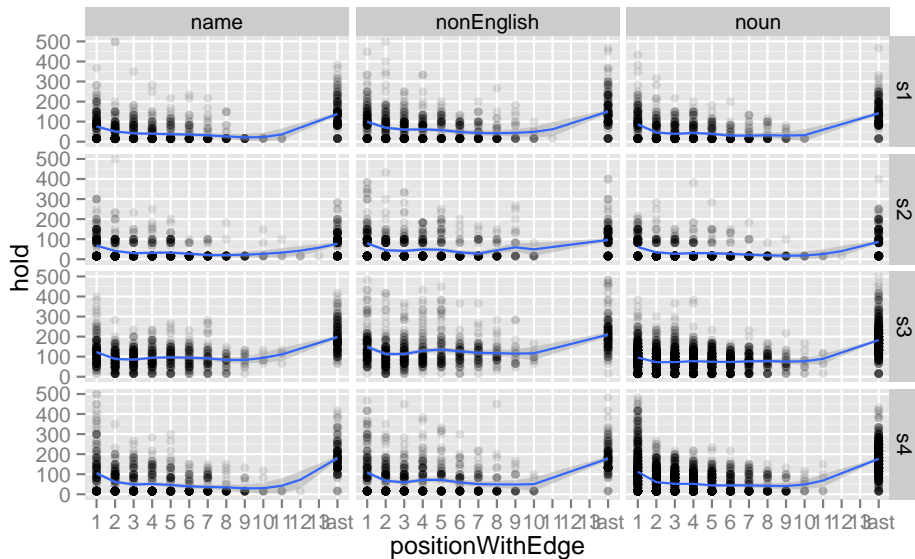
# Holds and transitions



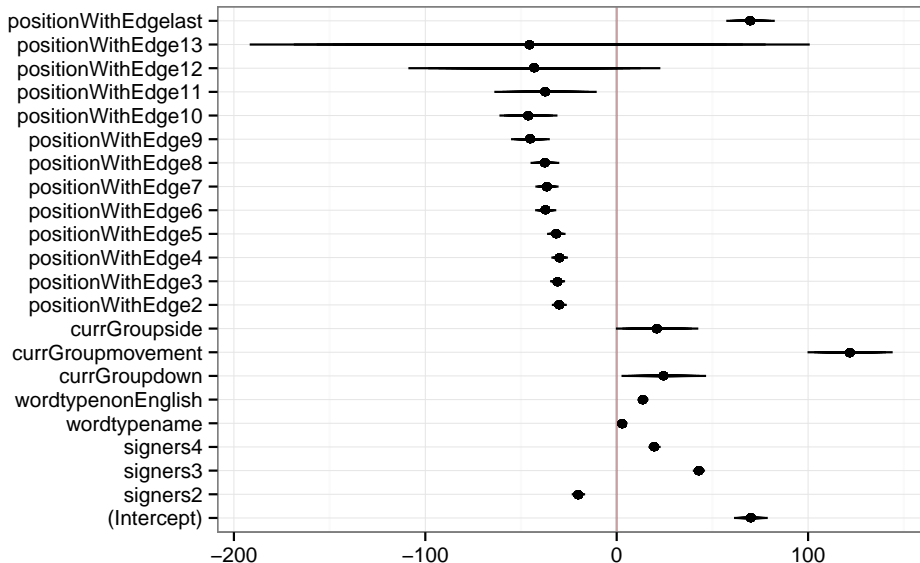
# C-O-S-T again

HOLDS

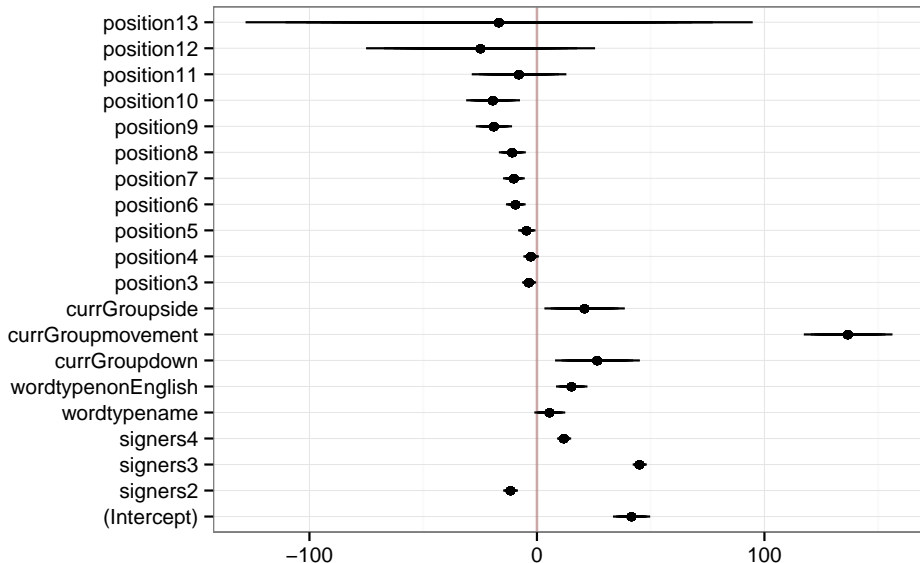
# Descriptive data



## All letters

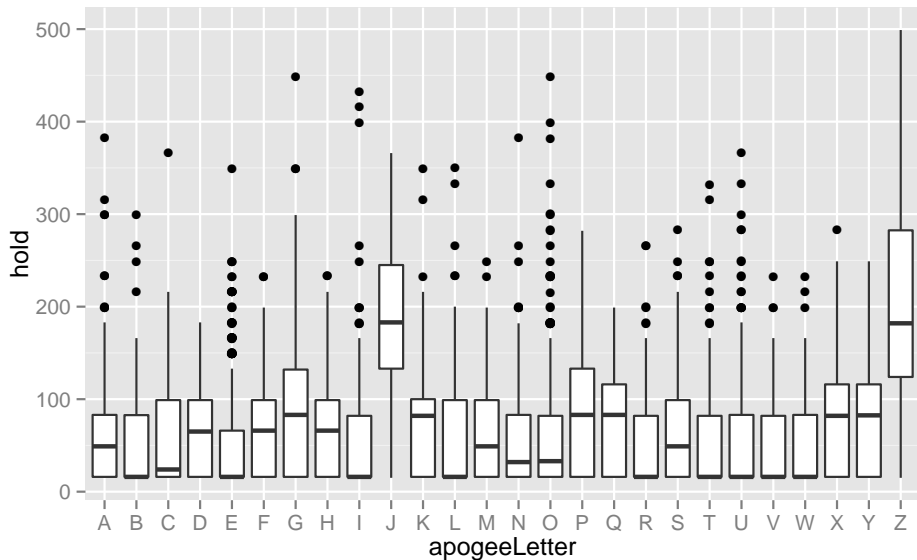


# Medial holds



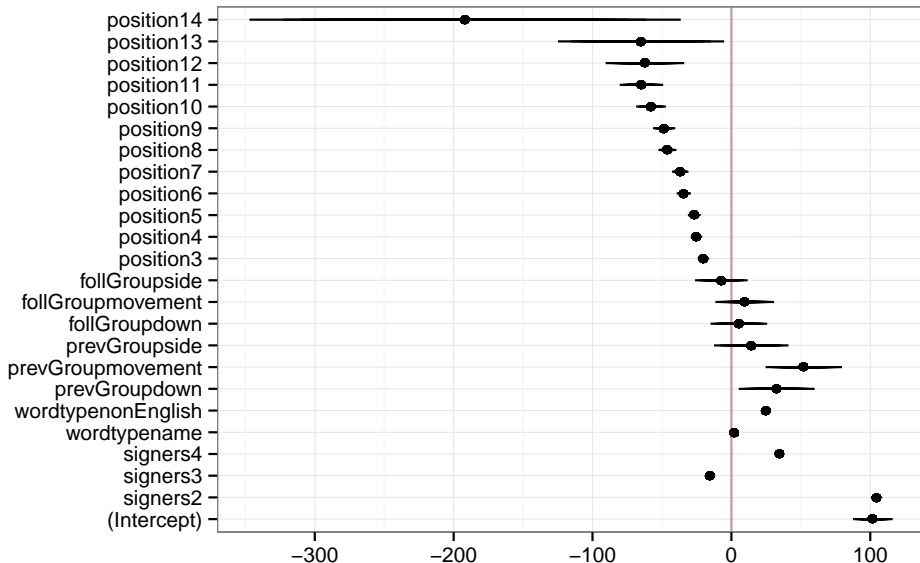


# Letter Based Variation

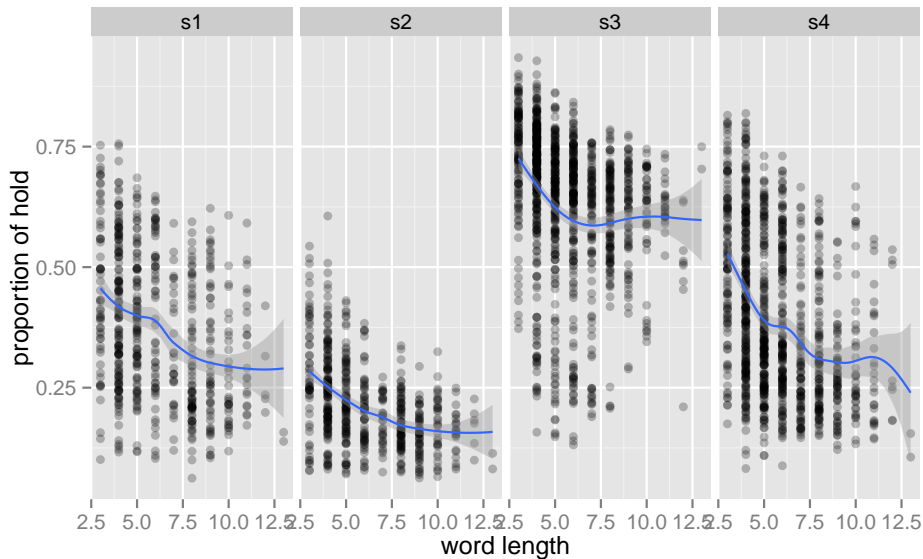


# TRANSITIONS

# All Transitions



# Hold/Transitions ratio



# CONCLUSIONS

# Conclusions

- ▶ holds are ~40msec
- ▶ transitions are ~100msec
- ▶ first and last letters are significantly longer
- ▶ for the medial letters, they tend to be held for less time in later positions in words
- ▶ letters with movement and orientation changes are held longer
- ▶ signers vary greatly

# Future implications

Timing information is important for

- Language learning and acquisition norms
- Perception studies
- Input into models of fingerspelling production

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