Adaptive Designs in Practice

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Context

- The problem:
  1. Decline in response rates for all survey methods
     - 1.1 Higher likelihood of bias
     - 1.2 Increased cost of data collection
  2. Competition from non-probability methods

- Potential solutions:
  - Adapt protocol during the field period
  - Be responsive to individual response propensities
- Minimal effects in the literature

Our approach

- Motivation:
    - Previous implementations did not account for travel cost
    - Compliance in operations management

- What we did:
    - Full implementation of Tourangeau et al. (2017)
    - For each respondent, calculate $B_i = \hat{\rho}_i \theta_i$
    - Calculate shortest route with highest expected value
    - Send suggested route to interviewers

Our study

- The Health Assessment of the Population
- 509 respondents in longitudinal design
  1. Adult and youth respondents
  2. Two waves of interviews
  3. Interview and reinterview
- Fixed θ_i based on study necessities
- Within-subject randomization
  - Treatment: Detailed instructions
  - Control: "Follow your best judgment"

Treatment condition

Thank you for working on the HAP study. Today is one of the days you selected to work on the study. Below is a list of cases in the order we would like you to follow for working these cases. We recognize that things may come up that prevent you from following our advice, but we would like you to follow our recommendations if at all possible. Please, verify any appointment times shown against your own records, thank you.

Have a productive day!

Roger Tourangeau
Principal Investigator

Treatment condition

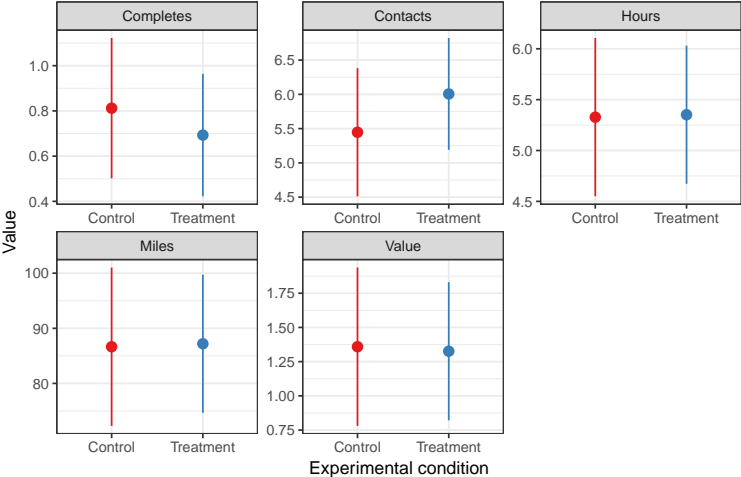|	DUID	Address	Tasks
1	DU12	123 Main St, Middletown, MD	Adult Round 1
2	DU23	456 Walnut St, Springfield, MD	Youth Round 2
3	DU34	789 Madison Rd, Lincoln, VA	Adult Round 2
4	Office		

The compliance issue

- Similarity between observed and suggested sequences
- Calculated for treatment and control days

Treatment	Levenshtein	Jaccard
Control	0.41	0.52
Treatment	0.53	0.62

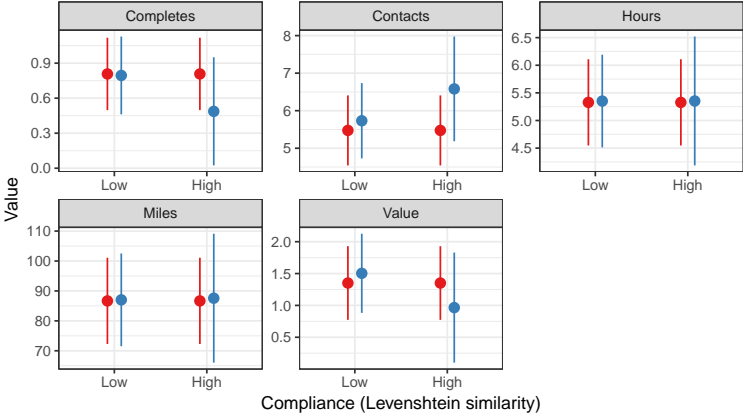- Our suggestions approximate interviewers' targets
- Low compliance

Intent-to-treat effect

Predicted values of the average effect

Compliance adjustment

Predicted values of the average effect

Conclusions

1. Two debriefing sessions
   1.1 Interviewers optimize over geography
   1.2 Systematic omitted variables
   1.3 Value positively receiving prioritization
   1.4 Useful for inexperienced interviewers

2. Plan to replicate in larger study
3. Need to better understand determinants of compliance