# Response Likelihood to a Simple Establishment Survey following a Complex Establishment Survey

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# Outline

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# Introduction

- Survey participation is impacted by various survey features
- Features that negatively impact survey participation and response deserve attention
- For example, response burden and rest periods
  - e.g., the time elapsed between the invitation to participate in the 1st survey and the invitation to participate in the 2nd survey.

# Motivation

- Recent research on household surveys showed that complex questionnaires improved response likelihood to subsequent surveys (Sinibaldi & Karlsson, 2016)
  - Interesting findings, contrary to conventional wisdom on response burden
  - Do the findings hold in an establishment survey setting?

# Motivation

- **Why is an investigation of this phenomenon in establishment surveys warranted?**
  - Response process is different between surveys of individuals and surveys of establishments
    - e.g., gatekeepers, multiple people involved in completing the survey, information disclosure policies

# Previous Research on Response

- **Rest Period**
  - Arose from concerns in the 1970's about over-surveying
    - Sharp & Frankel (1983)
  - Longer rest period positively associated with response
    - Sinibaldi & Karlsson (2016)
  - Response declines when 2nd survey immediately follows 1st
    - Porter, Whitcomb, and Weitzer (2004)
  - Rest period has no systematic impact on response
    - McCarthy, Beckler, and Qualey (2006)

# Previous Research on Response

- **Mandatory Status**
  - Response to mandatory surveys hovers around 84%
    - Paxson, Dillman, and Tarnai (1995)
  - Mandatory establishment surveys response about 20% higher than voluntary establishment surveys
    - Worden & Hoy, (1992)
  - Mandatory surveys impact on response to subsequent surveys not understood

# Previous Research on Response

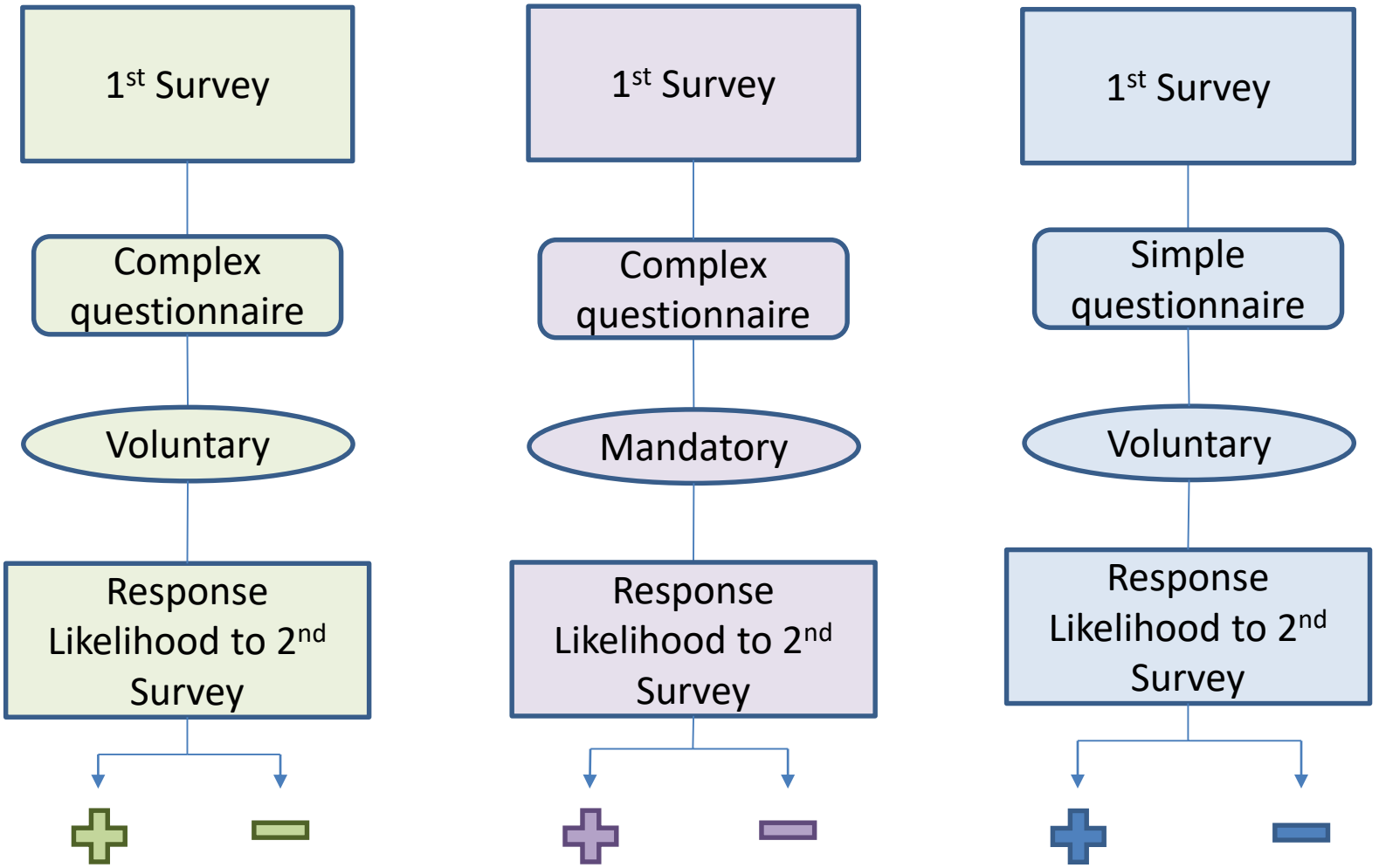
- **Establishment Size**
  - Larger establishments are less likely to respond than smaller establishments
    - Tomaskovic-Devey, et al. (1994)

- **Mode of Data Collection**
  - Survey response is effected by the mode of data collection.
  - In household panel studies, mode of the 1st wave shown to influence response behavior in the 2nd wave.
    - Groves (1989)

# Primary Research Question

- Holding covariates related to response constant, do establishment surveys with complex questionnaires increase response likelihood to subsequent simpler establishment surveys?

# Illustration



# Data

- Data comes from three cross-sectional establishment surveys conducted by NASS.
  - Agricultural Resource Management Survey, Phase III (ARMS III)
  - March Agricultural Survey
  - June Agricultural Survey
- Surveys are conducted annually
    - Allows an analysis of response patterns with different years and samples of establishments

# Method

- To model the likelihood of response to a subsequent survey, a multivariate logistic regression model was used,

$$\ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_k x_k$$

- where $p_i$ represents the probability of responding to the second survey for which case $i$ was sampled, and $x_1$ through $x_p$ are covariates correlated with response *(Sinibaldi and Karlsson, 2016).*

# Method

- Covariates $(x_p)$ correlated with response
  - $x_1$: Questionnaire Complexity
  - $x_2$: Mandatory Status of Prior Survey
  - $x_3$: Rest Period
  - $x_4$: Establishment size
  - $x_5$: Number of Operators
  - $x_{6.}$: Operator Change Survey-to-Survey
  - $x_7$: Mode of second survey
  - $x_8$: Mode of first survey

# Results

| Dataset | n | n from complex | n from simple |
|---|---|---|---|
| Final June Ag dataset for analysis | 28,554 | 1,029 | 27,525 |
| Percent Response to final June Ag dataset | 56.73 | 70.85* | 56.21* |

# Key Findings

- Receiving complex questionnaire first increases odds of response by 44.6% relative to simple questionnaire first.
- No difference in response likelihood to 2nd survey by mandatory/voluntary status.
- Rest Period results were inconclusive, further examination is needed.
- Holding survey mode constant improved the model fit, but further examination is needed.
- Agricultural business size matters
  - Larger less likely to respond than smaller (OR = 0.79, p <.0001)
  - Interaction between farm size and questionnaire complexity not significant
- Most important variable in the model was the number of operators present at the time of data collection
  - Specifically, the interaction between the number of operators present in the 1st survey vs. the number of operators present in the 2nd survey.

# Conclusion

- Complex questionnaires increase the odds of response to the next simple survey.
  - Why, and what explains the difference between respondents and nonrespondents?
    - Hardcore responders vs. reciprocal concessions?
- Mandatory and voluntary surveys result in similar likelihood of response to the 2nd survey.
- Response likelihood is higher when there are multiple people in the establishment with the authority or capacity to respond survey to survey.
  - Response burden diluted?
- Larger establishments less likely to respond than smaller establishments
  - Confirms findings in previous literature
  - Further analysis should interact number of operators with establishment size
- Further research should examine the role of perennially cooperative vs. uncooperative respondents

# Limitations

- Study of a specific population – caution should be used in generalizing the findings.
- When rest periods are relatively short, difficult to separate effect due to rest period vs. the effect due to respondent cooperativeness.
- A larger examination of different cross-sectional surveys that occur at different times of the year is warranted.
- More demographic variables are needed (e.g., farm tenure).
- So far have largely looked at marginal effects, and further interactions should be explored.
- Nonetheless, this study represents an earnest attempt at investigating several hypotheses relating to response likelihood to subsequent surveys.
- Results suggest there is a fruitful line of inquiry worthy of investigation to improve response likelihood in establishment surveys.

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