

# Conducting Experiments in Establishment Surveys: Obstacles and Opportunities

Jaki S. McCarthy

USDA, National Agricultural Statistics Service

Diane K. Willimack

US Census Bureau

Federal Committee on Statistical Methodology Conference

March 2018



# Long history of experiments in survey methodology

- All aspects of Total Survey Error have been examined experimentally
  - Measurement error
  - Coverage error
  - Sampling error
  - Nonresponse bias
- But most experiments focus on surveys of individuals or households

# BUT...establishment surveys differ from HH surveys in key ways

- Unit of analysis
- Statistical products
- Highly skewed or specialized target populations
- Unique sample designs
- Differences in response burden
- Complex constructs and availability of records
- Labor intensive reporting processes
- Often mandatory reporting if for official statistics
- Availability of auxiliary data

Important implications for running experiments in establishment surveys

# Unit of Analysis and Target Populations

- Respondents act as spokespersons for the establishment
- Information collected is typically objective and factual
- Many establishment surveys measure economic concepts
- Estimates are likely to be population totals
  - Total revenue
  - Total production
  - Total employment
- Estimates often part of ongoing time series

# Highly Skewed or Specialized Populations

- Establishment surveys often highly skewed
  - Small sets of very large establishments
  - Large estab's may account for much larger proportion of population estimates
- Some populations are very small
  - For example, 50 state governments or small numbers of producers of niche products

# Unique sample designs and response burden

- Many samples have certainty selection strata
- These establishments will be selected repeatedly even for cross sectional surveys
- Large enterprises in multiple sectors will be selected into numerous independent surveys
- Therefore, some establishments have high burden over time
- May also have established reporting routines
- Establishments may be assigned special handling for data collection

# Question Complexity

- Content is often:
  - repetitive,
  - technical,
  - includes precise definitions, jargon,
  - detailed instructions
- Questionnaires may include tables rather than questions
- Information may be retrieved from records but may not always match records
- Data may be distributed within organization and require multiple respondents

# Mandatory Reporting

- For official statistics, some reporting may be required by law
- For those not mandatory, important establishments may have competing mandatory requests for information

# Availability of Auxiliary Information

- Much more common to have auxiliary data than for HH surveys
  - Information from prior data collections
  - Business registers
  - Publicly available information
- Information may be available for both respondents and nonrespondents

# Prior Establishment Survey Experiments

- Most existing published examples manipulated:
  - Incentives
  - Reporting mode
  - Contact strategies
  - Questionnaire

# Strategies for conducting experiments in establishment surveys

- Embed experiment in production survey
- Conduct a separate experiment using non-sample cases in production survey
- Conduct separate standalone experiment using sample cases
- Exclude large establishments

# Embed Experiment in Production Survey

## Strengths

- Uses production conditions
- Less expensive than standalone experiment
- Minimize additional burden

## Weaknesses

- May adversely impact production statistics
- May add some costs
- May adversely impact important units needed in future
- New procedures may conflict with special handling
- Fear new procedures may not be sustainable

# Use Nonsample Cases Alongside Production

## Strengths

- No impact on official statistics
- Uses existing procedures
- Minimal additional cost

## Weaknesses

- Non-production cases may not be the same as sample cases
- Additional burden imposed
- Nonsample cases may be limited or not exist (e.g. take all strata)

# Conduct Standalone Experiment

## Strengths

- Does not jeopardize existing cooperation or statistics
- Not controlled by production schedules or constraints

## Weaknesses

- Costly
- May not mimic operational survey
- Additional burden
- Nonsample cases may be limited or not exist (e.g. take all strata)

# Exclude Large Establishments

## Strengths

- No impact on their critical responses/no additional burden for them
- Likely not representative of other establishments

## Weaknesses

- Cannot draw conclusions about them
- Experimental conclusions may not apply to large proportion of population estimates

# Experimenters should plan mitigation strategies

- Because of the issues with critical units and statistical outputs, researchers should consider potential mitigation strategies
- This may include choice of strategy or modifications during experiments

# For more information and examples:

This talk based on a chapter from forthcoming book on experiments in surveys

“Obstacles and Opportunities for Experiments in Establishment Surveys Supporting Official Statistics”

in Lavrakas, P. J., Traugott, M. W., Kennedy, C., de Leeuw, E. Holbrook, A. and B. West. (In press). *Experimental Methods in Survey Research: Techniques that Combine Random Sampling with Random Assignment*. Hoboken NJ: Wiley.

Now let's hear about some real examples of these issues.....

