

# Considering Lessons Learned from a Bridge Study for a Business Survey

Rachel E. Sloan, Kenneth M. Pick, Robyn Sirkis, Pamela D. McGovern  
National Agricultural Statistics Service

## 1. Background

### Farm Labor Survey

- The Farm Labor Survey provides the basis for employment and wage estimates for all workers directly hired by U.S. farms and ranches (excluding Alaska).
- The survey is fielded twice per year, collecting two quarters at each time. For this study, data were collected for the October and July reference periods.

### Measurement Error

- Order effects have been observed in cognitive testing, particularly in the computer assisted telephone interviewing (CATI) questionnaire. Worker categories were listed in the questionnaire as field worker, livestock worker, supervisor/manager, then all other workers.
- Respondents would often classify all of their workers as field workers because it was listed first, even though many of these workers should have been placed in other categories.
- During cognitive testing, many respondents mistakenly reported workers under multiple categories.

### Revised Farm Labor Survey Questionnaire

- After developing and conducting cognitive testing with a new CATI questionnaire based on these findings, we recommended launching a bridge study to investigate the effects (if any) that using the new CATI questionnaire would have on the Farm Labor estimates.

## 2. Bridge Study Design

- In the new CATI questionnaire, the worker categories were asked in the following order: supervisor, livestock worker, crop, nursery, and greenhouse (formerly field) worker, and all other workers.
- Subsamples of respondents located in NASS's Northwest Region (ID, OR, and WA) and Southern Region (AL, GA, FL, and SC) were selected to receive a bridge questionnaire if they chose to respond through CATI.

**3. H<sub>1</sub> :** Respondents will report more workers in the Supervisor, Livestock and Other Worker categories in the new CATI (Bridge) than in the original CATI questionnaire (Non-Bridge).

- Since the field worker category was moved from being listed first to being listed third in the bridge questionnaire, we expected more of the other three types of workers to be reported in the bridge version.
- While we did observe statistical significance, with more respondents reporting supervisors in the bridge version for the October reference period, the opposite is true for July. It is not clear why this occurred.
- The same pattern observed for supervisor workers was observed for all other workers. We can partially reject the null hypothesis.

1 or More Supervisor Workers	n= (October)	% (October)	n= (July)	% (July)
2017 CATI Bridge	40	8.75	30	7.13
2017 Original CATI	34	7.28	35	8.31
Test Statistic	$\chi^2(1)=45.43, p= 0.00$		$\chi^2(1)=23.16, p= 0.00$	

**4. H<sub>2</sub> :** Estimates will increase for the average number of workers in the Supervisor, Livestock, and Other Worker categories in the new CATI (Bridge) when compared to the original CATI questionnaire (Non-Bridge).

- The following table compares bridge and non-bridge records from the Northwest and Southern Regions. This comparison shows a higher average number of both field workers and livestock workers reported in the bridge questionnaire than in the original CATI questionnaire. Due to a small sample size for non-bridge CATI records, we did not conduct statistical significance testing for these comparisons.

Mode	Number of Respondents	Average Number of Field Workers	Average Number of Livestock Workers
2017 CATI Bridge (Oct)	110	14.17	1.9
2017 Original CATI (Oct)	25	3.88	1.2

- The following comparison includes records from the Northwest and Southern Regions, as well as some other NASS regions that did not participate in the bridge study. There are more field workers being reported in the bridge version than in the non-bridge version. However, it is difficult to draw conclusions between different regions. There is not enough information to accept or reject the null hypothesis. This requires further exploration.

Mode	Number of Respondents	Average Number of Field Workers
2017 CATI Bridge Questionnaire (Oct)	110	14.17
2017 Original CATI Questionnaire (Oct)	357	4.26

## 5. Conclusions

- There is some evidence that changing the order of the worker categories resulted in more workers being reported in the supervisor and other categories.
- We recommend using the bridge version questionnaire structure and question order for the next iteration of the Farm Labor Survey.
- We recommend conducting a behavior coding study to compare the bridge and non-bridge versions, and utilizing the results to determine what specific changes need to be made.

## 6. Study Limitations

- Small sample sizes.
- Unedited data as reported by respondents were unavailable.
- CATI enumerators administered both the bridge and non-bridge versions of the questionnaire, which could confound the results.
- Some CATI records in the bridge study were inadvertently assigned to in-person enumeration.
- Outliers from large operations may affect the average numbers of workers reported.

## 7. Future Research

- Access and analyze unedited Farm Labor Survey data.
- Repeat as a controlled experiment using the entire research sample.