Testing for Measurement Error in a Recreational Fishing Mail Survey

FY 2014 Proposal

Rob Andrews
Created: 05/13/2015

1. Overview

1.1. Sponsor
Rob Andrews

1.2. Focus Group
Survey Design and Evaluation

1.3. Background
In response to recommendations provided by the National Research Council (NRC), as well as mandates included in the Magnuson-Steven's Reauthorization Act (MSRA), MRIP is developing fishing effort surveys that sample from databases of licensed or registered saltwater anglers. To date, these efforts have focused on designing dual-frame surveys that integrate angler license frames with residential address frames (address-based sampling or ABS). Specifically, MRIP has completed three pilot studies to test the feasibility of dual-frame mail survey designs and is currently testing a mail survey design (the MRIP Fishing Effort Survey – FES) that augments residential address samples with information from state license databases. Without exception, the inclusion of address-based sampling in the dual-frame approach provides greater coverage than the Coastal Household Telephone Survey (CHTS) or single-frame surveys that sample exclusively from databases of licensed anglers. Furthermore, mail survey designs have resulted in higher response rates than comparable telephone surveys, are not susceptible to coverage bias resulting from the increasing penetration of cell-only households, may be less susceptible to recall error than telephone interviews, and are capable of generating preliminary estimates in a timeframe comparable to that of current recreational fishing telephone surveys (Andrews et al. 2010, Brick et al. 2012, Andrews et al. in review). MRIP pilot studies testing alternative effort survey designs have explicitly examined several different sources of survey error, including coverage error, nonresponse error and sampling error. Measurement error, which occurs when respondents provide inaccurate answers to survey questions, has been suggested as a source of differences between telephone and mail survey estimates in previous MRIP pilot studies (Brick et al. 2012, Andrews et al. in review) but has not been rigorously examined in an experimental design. Measurement error occurs when survey respondents misinterpret survey questions, fail to recall past events or behaviors, or knowingly misreport. Recreational fishing effort surveys assume that respondents provide accurate responses to survey questions. Testing this assumption will help ensure that recreational fishing estimates are accurate and may help explain differences between telephone survey estimates and estimates generated through alternative data collection designs. Initially, we had proposed two components for the project; a validation study to confirm information reported through the mail survey, and a study testing the impact of recall period on survey estimates. We have since determined that we could not get OMB approval in time to complete the recall study. As a result, we have modified the design to include only the validation study.

1.4. Project Description
The FES is a self-administered mail survey that collects recreational fishing effort data from samples of residential addresses. The survey, which is being tested in MA, NY, NC and FL, asks household residents to report recreational fishing activity the occurred during a two-month reference wave. The Validation Follow-up Study will include follow-up telephone interviews with FES respondents to ensure that reported information is accurate and that respondents fully understand the survey questions and instructions. Specifically, the validation study will confirm the number of household residents that fished during the reference wave, the number of trips by fishing mode taken by each household resident, and confirm that reported trips are within the scope of the survey (e.g. saltwater fishing trips within the study state). Results from the Validation Study will identify potential measurement error in the FES by quantifying the extent to which FES respondents provide accurate responses. This information may be used to adjust FES estimates to account for measurement error and help identify potential improvements to the FES questionnaire and instructions.The study will support the further development and improvement of alternative designs for collecting recreational fishing effort data, which has been a top MRIP priority for the past several years. We anticipate that the results of the study will help identify and quantify potential sources of survey error in the dual-frame mail survey design.

1.5. Public Description

1.6. Objectives
Assess the potential for bias resulting from measurement error in the MRIP Fishing Effort Survey.

1.7. References
Andrews, W.R., J.M. Brick, N.M. Mathiowetz, and L. Stokes. 2010. Pilot test of a dual frame two-phase mail survey of anglers in North Carolina. Retrieved from http://www.countmyfish.noaa.gov/projects/downloads/Final_Report%20NC%202009%20Dual%20Frame%20Two%20Phase%20Experiment.pdf. Andrews, W.R., J.M. Brick, N.M. Mathiowetz. 2013. Brick. J.M., W.R. Andrews, and N.M. Mathiowetz. 2012. A Comparison of recreational fishing effort survey designs. Retrieved from https://www.st.nmfs.noaa.gov/mdms/doc/08A_Comparison_of_Fishing_Effort_Surveys_Report_FINAL.pdf.

2. Methodology

2.1. Methodology

The Validation Follow-up Study will coincide with the wave 2 and wave 3, 2014 North Carolina FES. For each wave, FES respondents that reported fishing during the wave will be re-interviewed through a telephone survey to confirm that information reported in the FES is accurate. Specifically, the validation study will confirm the number of household residents that fished during the reference wave, the number of trips by fishing mode taken by each household resident, and confirm that reported trips are within the scope of the survey (e.g. saltwater fishing trips within the study state). Based upon previous FES results, we expect to sample approximately 230 households for the Validation Study each wave. Results from the study will identify potential reporting error in the FES and quantify the extent to which provide accurate responses.

2.2. Region

South Atlantic

2.3. Geographic Coverage

North Carolina

2.4. Temporal Coverage

March-June

2.5. Frequency

Monthly

2.6. Unit of Analysis

2.7. Collection Mode

Mail, telephone

3. Communication

3.1. Internal Communication

ST staff will conduct weekly conference calls with the data collection contractor to ensure that data collection is proceeding as scheduled.The project team will conduct conference calls as needed to discuss project results

3.2. External Communication

The project leader will submit monthly project reports via MDMS.The project team will work with the MRIP Communications Team to develop materials describing the project.

4. Assumptions/Constraints

4.1. New Data Collection

Y

4.2. Is funding needed for this project?

Y

4.3. Funding Vehicle

Existing NMFS ST1 data collection contract

4.4. Data Resources

Angler license databases for March, April, May and June, 2014 sampling

4.5. Other Resources

4.6. Regulations

4.7. Other

5. Final Deliverables

5.1. Additional Reports

Contractor will delivery final data collection reports

5.2. New Data Set(s)

Survey datasets

5.3. New System(s)

6. Project Leadership

6.1. Project Leader and Members

First Name	Last Name	Title	Role	Organization	Email	Phone 1	Phone 2
Rob	Andrews		Team Leader	NMFS/ST1	rob.andrews@noaa.gov		
Mike	Brick		Team Member				
John	Foster		Team Member	NMFS/ST1			
Anjel	Lewis		Team Member	NMFS/ST1			
Nancy	Mathiowetz		Team Member				

7. Project Estimates

7.1. Project Schedule

Task #	Schedule Description	Prerequisite	Schedule Start Date	Schedule Finish Date	Milestone
1	Award data collection contract		02/14/2014	02/14/2014	Y
2	Finalize Validation Study instrument		04/18/2014	04/18/2014	Y
3	Initiate Validation Study data collection		05/01/2014	05/01/2014	Y
5	Validation study final report		12/31/2014	12/31/2014	Y
4	Receive Validation Study final deliverables		10/31/2014	10/31/2014	Y

7.2. Cost Estimates

Cost Name	Cost Description	Cost Amount	Date Needed
Telephone Charges (Validation Study)		$2931.00	

Cost Name	Cost Description	Cost Amount	Date Needed
Labor (Validation Study)	Project management, programming, telephone interviewers, supervisors, etc.	$62847.00	
TOTAL COST		$65778.00	

8. Risk

8.1. Project Risk

Risk Description	Risk Impact	Risk Probability	Risk Mitigation Approach
Delay in procuring data collection services	Study would be delayed, minimizing overall sample sizes.	Low	Initiate procurement process as early as possible

9. Supporting Documents