TOTAL SURVEY ERROR
Survey Methodology (SURV 723/SURV METH 627)

Wednesday, 6:00 – 8:40 pm
Instructor: Roger E. Tourangeau

University of Maryland
0111 Tydings Hall
University of Michigan
SMP Workroom

Instructor’s Office:
1218W Lefrak Hall, 301 314-0935
Fax: 301 314-7984
RTOURANGEAU@SURVEY.UMD.EDU

A. Overview of the Course

This course concerns the different sources of errors in estimates derived from survey data. It does not cover random sampling error or estimation, but focuses on the other major sources of survey errors. More specifically, it concerns:

1) **Coverage error**, which results from the failure to give some members of the population any chance of selection into the sample;

2) **Nonresponse error**, which results from the failure to collect data on all members of the sample;

3) **Measurement error**, which results from the failure of the recorded responses to reflect the true characteristics of the respondents; and

4) **Editing and processing errors**, which result from the failure to convert responses accurately into an analysis file.

The goal of survey design is to minimize the size of these and other errors (e.g., through interviewer training, sample design, efforts at persuading sample persons to cooperate) subject to the cost constraints on any survey. One difficulty in finding the best design reflects the fact that there are often tradeoffs between different sources of error. Each design feature also carries with cost implications for the survey. In addition, several of these errors can be linked to one another in practice - attempting to decrease one may merely increase another (e.g., reducing nonresponse by aggressively persuading sample persons to cooperate may result in larger measurement errors in the survey data).

The course reviews research on these topics. It examines the interplay of errors and costs in survey designs. After introducing the language of survey errors, we will examine the different sources of survey error one by one. Although much of the survey methodology literature deals with one error source in isolation of others, we will try to integrate different works to explore relationships among errors. Whenever possible we will present cost
implications of error reduction for the different sources. This course presents research work which attempts to examine the causes of survey errors. The course assumes that the students already know the basic steps of a survey research project. It is not a practicum in survey research, but instead covers many of the considerations on which survey design decisions should be based. This is not a "how-to" course, but rather investigates the basic principles, derived from the empirical literature, that might apply to diverse types of surveys.

The methods literature on survey error has two major strands, one exploring how to reduce survey errors and the other how to measure them. For each of the error sources, there will be readings on efforts to reduce the error and additional readings on how to measure them. (The lectures will focus more on measurement than on reduction.) In addition, we will also review theoretical perspectives on causes of errors. In short, for each error source we will address three questions:

1) What is the cause of the error?

2) What techniques can be used to reduce the error in practice?

3) What statistical models can be used to measure the error source?
B. Grading and Course Assignments

Grades will be based on a research paper and a final exam. The paper will be an empirical investigation of some nonsampling error in survey data. The paper will receive a weight of 60% in the final grade and the exam 40%. Participation in class discussions will be play a less formal role in the grades; class participation will be used to resolve unclear cases falling between two grades.

Because of the importance of the paper, there will be a series of assignments culminating in the final version of the paper. The schedule for these assignments will be as follows:

Jan. 7: Submit one paragraph summaries of two or three possible research ideas
Jan. 12: Based on feedback from me, select final topic and identify relevant data sets
Jan. 19: Submit two-page prospectus describing proposed project
Jan. 26: Submit a preliminary list of research articles (identified through computer searches, etc.)
Feb. 2: Class presentation of initial runs
Feb. 9: First draft of the introduction and methods sections of paper due (covering motivation, literature, hypotheses, and design)
Feb. 16: Final analysis plan
Feb 23: In-class progress report (5 minutes)
March 9: In-class progress report (5 minutes)
March 30: Second draft of the introduction and methods sections of paper due
April 6: First draft due of whole paper; comments by RT and classmates
April 20: Final version of paper

The final exam will be given during the regular class time on April 20. The exam will be an in-class examination covering the material in the readings and will last at least an hour.
C. Office Hours

I want to meet with each student on a regular basis. I will set up a schedule to meet with each of you every few weeks. A signup sheet will be passed out on the first day of class to schedule these meetings. Whenever any individual student has a question of broader interest, the question and answer will be sent to all students enrolled in the course.

D. Course Readings

There is one required text (Groves, *Survey Errors and Survey Costs*, Wiley, 1989) and two recommended texts (Fuller, *Measurement Error Models*, Wiley, 1989; Lessler and Kalsbeek, *Nonsampling Error in Surveys*, 1992). The University Book Center in the Stamp Student Union sells the books. Other course readings will be distributed via a Web site at the University of Maryland.

E. Lecture Topics, Readings, and Schedule

JANUARY 5 -- OVERVIEW; INTRODUCTION TO COURSE

By January 7 (two days after the first class), e-mail me (RTourang@Survey.UMD.Edu) a summary of two or three paper ideas; the summary should total one or two pages. Please indicate an order of preference among the ideas.

JANUARY 12 -- INTRODUCTION TO SURVEY ERRORS

Select final topic for paper and identify data sets.

Required Readings:


Recommended Readings:


JANUARY 19 – COVERAGE OF THE TARGET POPULATION

Submit two-page prospectus.

Required Readings:

Groves, Chapter 3, Section 3.1-3.5


Recommended Readings:


Lessler and Kalsbeek, Chapters 3 and 4.

JANUARY 26 - REPAIRS FOR UNDERCOVERAGE

Submit preliminary list of research papers.

Required Readings:

Groves, Chapter 3, Section 3.6-3.8


Lessler and Kalsbeek, Chapter 5

FEBRUARY 2 - NONRESPONSE RATES AND NONRESPONSE ERROR; STUDENT PRESENTATIONS

Present initial runs in class.

Required Readings:


Groves, Chapter 4, 4.1-4.3


Recommended Readings:


FEBRUARY 9 – STATISTICAL MODELS FOR NONRESPONSE

Submit first drafts of introduction and methods section of paper.

Required Readings:


Lessler and Kalsbeek, Chapter 8, Section 8.0 - 8.1.6
Recommended Readings:


**FEBRUARY 16 – IMPUTATION AND WEIGHTING SCHEMES**

Submit final analysis plan.

Required Readings:


Recommended Readings:


FEBRUARY 23 - OVERVIEW OF SURVEY MEASUREMENT ERROR; CLASS PRESENTATIONS

Present progress report in class.

Required Readings:

Groves, Chapter 7


Fuller, W., Measurement Error Models, Wiley, 1987, Chapter 1, Section 1.1.

Recommended Readings:


Fuller, W., Measurement Error Models, Wiley, 1987, Chapter 1.


Lessler and Kalsbeek, Chapter 10


MARCH 2 - UNIVERSITY OF MICHIGAN WINTER BREAK

MARCH 9 - ESTIMATING MEASUREMENT ERROR; CLASS PRESENTATIONS

Present progress report in class.

Required Readings:


Recommended Readings:


MARCH 16 - MEASUREMENT ERROR: THE INTERVIEWER

Required Readings:

Groves, Chapter 8


Recommended Readings:


MARCH 23 - UNIVERSITY OF MARYLAND SPRING BREAK

MARCH 30 - MEASUREMENT ERROR: THE RESPONDENT AND THE QUESTIONNAIRE

Submit second draft of introduction and methods section.

Required Readings:

Groves, Chapter 9


Recommended Readings:


Marquis, K., Response Effects in Sensitive Topics Surveys, Rand Corporation, 1981, Chapters III-VII.


April 6 - Processing Issues in Surveys

Submit first draft of entire paper.

Required Readings:


Recommended Readings:


**APRIL 13 – REVIEW FOR FINAL EXAMINATION**

Required Readings:


**APRIL 20 – FINAL EXAMINATION**

Final version of paper due.