

**Survey Methodology PhD Seminar
Spring, 2012**

**Survey Methodology 829 (UMd)
Survey Methodology 890 (UMi)
Wednesday, 10:00-12:30 (with some changes over weeks)
Fred Conrad and Partha Lahiri**

1. Introduction

This is a two-semester course required of all PhD students. All PhD students are welcome to participate in the class, whether or not they are taking the class for credit.

The class has been designed to help prepare PhD students for their scientific career as survey methodologists. Such a career is successful to the extent that the following tasks are done thoroughly, creatively, and quickly:

- a identification of key research findings in a subfield;
Whether we should spend time doing this as part of the seminar will depend on an assessment of skills in quick assembly of research findings.
- b synthesis of results and identification of gaps and unanswered questions;
This is a skill that we need to exercise repeatedly, teaching ourselves to read each research product increasingly carefully, probing for weaknesses.
- c invention/elaboration of a theoretical framework to address the gaps;
This is a key skill that we will exercise repeatedly.
- d proposal for a research project to test key hypotheses relating to the gaps
This is a skill that we will exercise through repeated assignments.

You have chosen a career where your success will be judged by your rate of discovery and invention of new theory and practices in surveys. This class should make you better able to recognize promising avenues of research as well as unproductive paths.

At this point in your studies and for the purposes of this class much of the learning will come from critique and interchange about research ideas, not through lectures or directed action by the faculty members involved.

2. Some of Our Beliefs About Survey Methodology

Survey methodology is the study of an information gathering and knowledge generation device called a 'survey.' Since the products of surveys are statistics, quantification is inherent in all of survey methodology. Although qualitative methods are key tools to understand some of the human behaviors involved in surveys, the understanding has value to surveys only when links to the statistical error properties of surveys are made.

The scientific progress of the field has been retarded by an artificial separation of statistical and non-statistical aspects of surveys. Your generation of PhD's must destroy this separation, for the field to advance. (This means that you must be broader than the faculty who teach you.) The faculty can point out gaps they see, but only through cross-disciplinary collaborations are they successful in filling the gaps. Your collaborations should occur within your own mind.

Based on this logic, the PhD seminar will fly over the terrain of the total survey error paradigm, looking for weakness in the literature on two fronts:

- a joint influences on multiple error sources or influences that reduce one error source while increasing another;
- b statistical error properties of survey statistics that have uncharted behavioral underpinnings.

This won't be easy, but these are two areas that will be ripe for important new dissertation work. If you find them, you can make important discoveries.

3. How the Course Will Proceed

There will be one overriding rule guiding our behavior in the class – we're searching for insight, understanding, and pushing the edges of the field. This will require us to have a free and open exchange of insights, some of which will be contradictory. If we do not surface disagreements and opposing perspectives in the class, then we aren't succeeding. Above all, this means that you as students need to feel free to disagree with faculty members and probe their arguments.

We will spend the first few classes getting a sense of each other, then we specify readings and assignments for the term and issue a revised syllabus.

4. The Role of First-Year Students and Second-Year Students

The first year students will act as reviewers of the first mini-proposal. The first year students will be full participants in the second mini-proposal. The second year students will be full participants in the first mini-proposal but be reviewers of the second mini-proposal.

5. The "Full Proposal" Problem for Second-Year Students

In past years, the second year students have found it useful to use the seminar to assess a research problem that might be a candidate for their dissertation. We have labeled this the "full proposal." This proposal topic is to be chosen by the student.

Tentative Class Schedule

January 25

Overview of class

Review of first problem

Suggested readings on multiple frame surveys

Bankier, M.D. (1986), Estimators Based on Several Stratified Samples With Applications to Multiple Frame Surveys, *Journal of the American Statistical Association*, 81, pp. 1074-1079.

Battaglia, M.P., Eisenhower, D., Immerwahr, S., Konty, K. (2010), Dual-Frame Weighting Of RDD And Cell Phone Interviews At The Local Level, In: 2010 roceedings of the Annual Meeting of the American Statistical Association [CD-ROM]. Alexandria, VA: American Statistical Association; 2010:5816–5821.

Brick, M., Dipko, S., Presser, S., Tucker, C., and Yuan, Y. (2006), Nonresponse bias in a dual frame sample of cell and landline numbers, *Public Opinion Quarterly*, 70, 780-793.

Hartley, H.O. (1962), “Multiple Frame Surveys,” *Proceedings of the Social Statistics Section, American Statistical Association*, pp. 203-206.

Haines, D.E. and Pollock, K.H. (1998), Combining Multiple Frames to Estimate Population Size and Totals, *Survey Methodology*, Vol 24, No. 1, 79-88.

Hartley, H.O. (1974), Multiple Frame Methodology and Selected Applications, *Sankhya*, Series C, 36, 99-118.

Hu, S.S., Balluz, L., Battaglia, M.P., and Frankel, M.R. (2011), Improving Public Health Surveillance Using a Dual-Frame Survey of Landline and Cell Phone Numbers, *American Journal of Epidemiology*, 173, 703-711.

Kalton, G. and Anderson, D.A. (1986), Sampling Rare Populations, 149, 65-82.

Keeter, S., Dimock, M, Kennedy, C., Best, J., Horrigan, J. (2008), Costs and benefits of full dual-frame telephone survey, Prepared for the annual meeting of the American Association for Public Opinion Research New Orleans, Louisiana May 15-18, 2008

Kennedy, C. (2007), Evaluating the effects of screening for telephone service in dual frame RDD surveys, *Public Opinion Quarterly*, Vol. 71, No. 5 2007, pp. 750–771

Kott, P.J. and Vogel, F.A. (1995), Multiple-Frame Business Surveys, in *Business Survey Methods* (Cox B.G et al. eds.), 185-203.

Kott, P.S., Amrhein and Hicks, S.D. (1998), Sampling and Estimation from Multiple List Frames, *Survey Methodology*, Vol 24, No. 1, 3-9.

Lohr, S. (2009), Multiple frame surveys, in *Handbook of Statistics*, Vol 29A (Pfeffermann, D. and Rao, C.R. eds.), 71-88.

Lepkowski, J. M and Groves, R.M. (1986), "A Mean Squared Error Model for Dual Frame, Mixed Mode Survey Design," *Journal of the American Statistical Association*, 81, pp. 930-937.

Mecatti, F. (2007), A single frame multiplicity estimator for multiple frame surveys, *Survey Methodology*, 33, 151-157.

Peytchev, A., Carley-Baxter, L., and Black, M.L. (2008), Multiple Sources of Nonobservation Error in Telephone Surveys: Coverage and Nonresponse, presented at the Second International Total Survey Error Workshop, Research Triangle Park, NC, June 2-4, 2008.

Skinner, C.J. and Rao, J.N.K. (1996), Estimation in dual frame surveys with complex designs, *Journal of the American Statistical Association*, 91, pp. 349-937-356.

Skinner, C.J., Holmes, D.J. and Holt, D. (1994), Multiple frame sampling for multivariate stratification, *International Statistical Review*, 62, 3, 333-347.

Vogel, F.A. (1975), Surveys with Overlapping Frames - Problems in Application, *Proceedings of the Social Statistics Section, American Statistical Association*, pp. 694-699.

Iachan, R. and Dennis, M., "A Multiple Frame Approach to Sampling the Homeless and Transient Population," *Journal of Official Statistics*, 9:4, 1993, pp. 747-764.

Traugott, M., Groves, R., and Lepkowski, J. (1987) "Using Dual Frame Designs to Reduce Nonresponse in Telephone Surveys," *The Public Opinion Quarterly*, Vol. 51, No. 4. (Winter, 1987), pp. 522-539

Fecso, R., Tortora, R., and Vogel, F. (1986) "Sampling Frames for Agriculture in the United States," *Journal of Official Statistics*, 2, pp 279-292.

February 1

Discussion of assigned readings.

February 8

Discussion of assigned readings.

Come prepared to identify gaps in the literature.

February 15

Continued discussion of readings.

Discussion of long proposal.

Prepare half-page descriptions of three research ideas you are interested in pursuing within the topic. Send your ideas to the entire class by Monday evening, February 20.

February 22

Discuss research ideas. The class will help you elaborate the proposal.

Your first written mini-proposal will be due on Monday, March 3. This proposal will be at most 3 pages, 12 pitch font, 1" margins. It should follow the model sections of an NIH or NSF grant proposal. Send the proposal via email to everyone involved in the class. The class will critique the proposals and find ways to improve them.

February 29 – Michigan Spring Break

March 7

Discuss first draft of your mini-proposal. The class will critique the proposals.

Final draft of mini-proposal: Send via email to all involved in the class by Monday, March 12.

March 14

Present the proposal using powerpoint, with no more than 10 slides describing the project.

Discussion of long proposal

March 21 – Maryland Spring Break

March 28 - Discussion of assigned readings on second topic.

April 4 – Continued discussion of readings.

April 11 – Two ideas for miniproposals

April 18 – Discussion of long proposal

April 25 – First Draft Miniproposal

May 2 – Final Draft Miniproposal and Presentation

May 9 – Presentation of long proposal