

Applied Sampling, Section 0101
SURV 625
Spring, 2009

Class Sessions: 12:00pm – 3:00pm Wednesdays

Class Room: Lectures will be shared between the Census Bureau and BLS using a two-way video interactive system.

Classroom at the Census Bureau:

T10

The Census Bureau
4600 Silver Hill Road
Suitland, MD 20746
Metro Stop: Suitland

Classroom at the BLS:

BLS Conference Center
Washington DC
Metro Stop: Union Station

Instructor: Partha Lahiri
1218 LeFrak Hall
JPSM, University of Maryland
College Park, MD 20742
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Office Hours: By appointment

Text: I will follow an edited version of Lecture Notes by Professor J. Lepkowski, University of Michigan [can be downloaded from the class website]. The Lecture notes cover selected materials from the following book:

Kish, L. (1965) Survey Sampling. New York: John Wiley. [ISBN: 0-471-48900-X].

Reference Paper:

Kalton, G. (1983) "Introduction to Survey Sampling" Sage University Paper series on Quantitative Application in Social Sciences, 07-035. Beverly Hills and London: Sage Pubns. [ISBN: 0-8039-2126-8].

Supplementary Reading

- [1] Casady, R.J. and Lepkowski, J.M. (1999), "Telephone Sampling" Chapter 15 in *Sampling of Populations: Methods and Applications*, P. Levy and S. Lemeshow eds., New York: Wiley and Sons, Inc.
- [2] Rust, K. (1985), Variance estimation for complex estimators in sample surveys, *Journal of Official Statistics*, 1(4): 381-397.
- [3] Kish, L. and Frankel, M. (1974) Inference from complex samples, *Journal of the Royal Statistical Society, Series B*, 36: 1-37.
- [4] Kalton, G. and Kasprzyk, D. (1986) The treatment of missing survey data, *Survey Methodology*, 12: 1-16.

Class Web Site: <http://www.jpsm.umd.edu/surv625>

COURSE CONTENT

The main objective of this course is to provide basic ideas of survey sampling. We will not go through rigorous mathematical derivations. However, some algebra and good understanding of mathematical formulations and notation will be needed.

We expect to cover the following topics: different basic sampling techniques (e.g., simple random, stratified, cluster, multi-stage, systematic, probability proportional to size, etc.) and design issues (e.g., sampling frame, cost models, sample size determination), and nonresponse.

The lecture notes, homework assignments and their solutions will be posted on the class web site on a regular basis. Students are asked to print a copy of the notes before coming to the class. Students are strongly encouraged to ask questions during lectures. Class time will include lectures and discussions of homework assignments and examinations.

GRADES

The final course grade will be based on 3 mini-exams (30%) based on the assigned homework, one midterm exam (20%), a comprehensive final exam (30%) and a project (20%). All the exams are open-book and open-notes. You can use calculators in all the exams.

Examination Schedule:

Mini-Exam 1: February 11, 2009

Mid term Exam: March 11, 2009 [Take-home]

Mini-Exam 2: April 1, 2009 (Wednesday)

Mini-Exam 3: April 15, 2009 (Wednesday)

Final Exam: April 29, 2009 (Wednesday)

Final version of the project should be emailed to the instructor by 5PM on April 15.

SYLLABUS

The syllabus presents approximate dates of lecture topics and reading assignments. There will be no class during the University of Maryland Spring Break. Final Exam will be held on April 29, 2009 (Wednesday).

Week	Date	Topic	Reading ^a	Lecture Sites
1	Jan 14	Introduction	Kish 1.0-1.7	Census
2	Jan 21	Simple Random Sampling. Frames	Kish 2.0-2.7	Census
3	Jan 28	Cluster sampling. Subsampling.	Kish 5.1-5.4	Census
4	Feb 4	Optimum subsampling. Stratification	Kish 3.1-3.5, 3.6A,F,G,H,I,K, 4.5A ,4.6A	BLS
5	Feb 11	Allocation Project [2:30PM-3:00PM]	Kish 3.1-3.5, 3.6A,F,G,H,I,K, 4.5A ,4.6A	Census
6	Feb 18	Paired selection and other stratification topics Project [2:15-3:00PM]	Kish 3.1-3.5, 3.6A,F,G,H,I,K, 4.5A ,4.6A	Census
7	Feb 25	Systematic sampling. Unequal sized clusters.	Kish 4.1-4.4	BLS
8	Mar 4	Ratio estimation. Stratified cluster sampling. Project [2:15-3:00]	Kish 6.1-6.5	Census
9	March 11	PPS & PPES selection. Project [2:15-3:00]	Kish 7.1-7.5	Census
10	March 18	No Class (Maryland Spring Break)		
11	March 25	Area sampling. Project [2:15-3:00]	Kish 9.1-9.5	BLS
12	Apr 1	Variance Estimation. Project [2:15-3:00]	[2],[3]	Census
13	Apr 8	No Lecture Project [2:15-3:00]		
14	Apr15	Nonsampling errors: bias, nonresponse	[4]	BLS
15	Apr 22	Telephone sampling.	[1]	Census
16	April 29	FINAL EXAM		Census

^aReadings are from the textbooks by Kish or specified papers.