



Survey & Sampling Techniques

QM-660

Basic Information

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| Program | MS Applied Statistics |
| Semester | Fall– 2019 |
| Credit Hours | 3 |
| Duration | 15 sessions of 3:00 hours each |
| Pre requisites (if any) | BS(H)/M.Sc |
| Resource Person | Dr. Muhammad Moeen |
| Counselling Hours Hall #3n3 | Monday & Thursday : 10.00 am – 11.30 am Tuesday, Friday & Sat. : On Appointment |
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Survey is one of the basic tools in the research process. It is the procedure to provide information. A survey may focus on opinions or factual information depending on its purpose. Statistical surveys are used to collect quantitative information about items in a population. A sample survey examines only a portion of the total group in which one is interested, and from it, inferring information about the group as a whole. Sampling in conjunction with survey research is the most popular approach for data collection in the social sciences.

The aim of this course is to learn when a technique is appropriate and what it can achieve. The emphasis throughout the course is on concepts and reasoning rather than technical details. A researcher must acquire some basic data analysis skills but most importantly, become a more informed and critical producer and end user of sampling techniques.

1. Learning Objectives

Purpose of the course is to provide the participants with survey sampling tools useful for researchers. Hence they may use these statistical tools in planning, executing and evaluating their market needs. Upon successfully completing this course, the participants will be able to identify and apply the survey sampling techniques appropriately.

2. Learning Methodology

Following instructional tools and methodologies would be used during the course.

Lectures: 15 sessions, of three hours each, in total .

Each of these lectures is accompanied by detailed description of the technique, pertinent examples from the research world.

Computing Software: Microsoft Excel/SPSS/Minitab/R language

3. Suggested Readings

- a- Designing Household Survey Samples: Practical Guidelines. Copyright @ United Nations 2005.
- b- Kish, L. (1995), Reprint 2014-“Survey Sampling”. John Wiley & Sons Publishers.
- c- Zahoor A., Shahbaz, M.Q. and Hanif, M. (2013). “Two Phase Sampling”. Cambridge Scholars Publishing 12 Back Chapman Street, Newcastle upon Tyne, NE6 2XX, UK.
- d- Shahbaz, M.Q.¹, Hanif, M.² and Munir, A.³, (2013). “Advanced Survey Sampling”: Unpublished Manuscript Seen By the Courtesy of the Authors [1-King Abdul Aziz University, Jeddah, Saudi Arabia (2-Vice Rector and 3-Rector ,NCBA&E)].
- e- Rao P.S.R.S. (2000). “ Sampling Methodologies with applications”. Chapman & Hall/CRC Boca Raton London New York Washington, D.C.
- f- Survey Sampling and Measurement Edited by N. Krishnan Namboodiri Department Of Sociology University Of North Carolina Chapel Hill, North Carolina Academic Press New York San Francisco London 1978
- g- Designing Household Survey Samples: Practical Guidelines. Copyright @ United Nations 2005
- h- Multiple Indicator Cluster Survey (MICS). <http://bos.gop.pk/mics>
- i- Multiple Indicator Cluster Surveys. <http://mics.unicef.org/>
- j- Cochran, W.G. (1977), “Sampling Techniques”, 3rd edition, John Wiley and Sons, New York
- k- More than seventy Research Papers and other relevant material have been uploaded on Google drive and shared with all students.

4. Evaluation Rubrics

Assignments/Presentations/Quizzes— 30%

Every assignment would be a week long exercise, which would be available through Moodle and has to be submitted through Moodle.

Presentations & Discussion — 10%

Every class session would have 45 minutes exclusive for such discussion. The class would be splitted in three groups; the presenters, the critiques and the observers.

Mid Term --- 20%

Term Paper— 40%

The primary purpose of this exercise is to prepare the students to write a standard research proposal and hence the final thesis.

A term paper is a research paper written by students over an academic term. These are generally intended to describe an event, a concept, or argue a point. A term paper is a written original work discussing a topic in detail, usually several typed pages in length. Typically, a term paper is composed of following sections;

- i- Introduction (5%)** section introduces the topic with respect to its definitions, existing concepts and taxonomy. It reasons your attempt on the topic.
- ii- Literature Review (5%)** which scans the available academic literature on the topic to provide theoretical base for the analysis and identify research gap, if there exist any. This research gap would help in carving objectives and research questions for the study while the theoretical base steer the analysis.
- iii- Objective of the work**
- iv- Methodology section consists of**
 - Hypotheses Construction : 15%
 - Choice of Analysis along with its rationale : 15%
 - Application of the Analysis : 15%
 - Fulfillment of corresponding assumptions, if there exist any : 15%
 - Inferring Conclusion : 15%
 - Discussion Over the Results (15%) which translates the results obtained in the previous section into everyday language.

5. Cheating & Plagiarism

Participants are expected to do their own work in their Assignments, quizzes and exams. They are always encouraged to discuss with each other but the Assignments, quizzes and exams should be their own work reflecting their own effort and intellect. The School of Business & Economics is VERY STRICT against any action of plagiarism, copying and cheating. So don't put yourself in any embarrassing position that may mar your career. In summary, any or all of these actions may be taken against you in case of cheating.

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(MS – Applied Statistics)

COURSE CONTENTS

| Week | Topics(To be covered from above mentioned books) |
|---|---|
| 1 & 2 | Basic concepts: Bias, Sampling and non-sampling errors, Selection and Estimation procedures, Planning and conducting of census and sample surveys, Sample size determination under different conditions. |
| 3 | Research Paper of sample survey to be presented by the students |
| Use of Sampling Strategies and Estimation Procedures: Ratio/Regression/Product/Exponential Estimators under Equal Probability sampling | |
| 4. | Simple Random Sampling |
| 5 | Stratified Random Sampling |
| 6 & 7 | Cluster/Two stage and Multi Stage Sampling |
| MIDTERM | |
| Estimation of Mean under the Problem of Non Response | |
| 8 | Construction and Use of Sample Weights |
| 9 | Two phase Sampling |
| 10 | Stratified Two phase sampling |
| 11. | Multi-stage Two phase sampling |
| Estimation of Sampling Errors for Survey Data | |
| 12. | Introduction & Overview and Sample Variance under Simple Random Sampling |
| 13. | Under Stratified Random Sampling & Two stage and Multi Stage Sampling |
| Unequal Probability sampling | |
| 14. | Basic concepts and application in Sample Selection and Estimation |
| 15. | Simple mean estimation and Ratio estimation |