



# JOINT PROGRAM IN SURVEY METHODOLOGY

## Introduction to Survey Sampling

**Monday, December 11 - Wednesday 13, 2023**

*An Online short course sponsored by the Joint Program in Survey Methodology*



### Instructors

**Colm O’Muircheartaigh** is Professor in the Irving B. Harris Graduate School of Public Policy Studies and Senior Fellow in the National Opinion Research Center, both at the University of Chicago. He was formerly at the London School of Economics and Political Science (LSE), where he had been a faculty member in the Department of Statistics since 1971. He was the first director of The Methodology Institute, the LSE center for research and training in social science methodology. He selected his first national sample in 1968 (a probability sample of manufacturing establishments in Ireland). Together with Vijay Verma and Christopher Scott, he was responsible for the sample designs for the World Fertility Survey (1976-84), and was a member of the Sampling Advisory Group for the UK Office of Population Censuses and Surveys. He was Sampling Coordinator for two cross-national studies by the International Association for Educational Assessment (IEA) (1988-94 and 1997-2001) and for the OECD Network C cross-national study (1994-6). Since joining NORC in 1998, he has been responsible for the re-design of the national sampling frame and the introduction and evaluation of list-based sampling for national and local probability samples of households. His research encompasses measurement errors in surveys, cognitive aspects of question wording, and latent variable models for nonresponse. He has served as a consultant to a wide range of public and commercial organizations, including the BBC World Service, AGB, British Household Panel Survey, and the U.S. Bureaus of Labor Statistics and the Census Bureau.

**James M. Lepkowski** is Professor and Research Professor Emeritus, University of Michigan. He directed the Michigan Program in Survey Methodology and has been a member of the faculty of the University of Michigan since 1982. Through his research activities he has designed and selected probability samples in the US and a number of other countries in Africa and Asia. His research encompasses telephone sampling design, analysis of complex sample survey data, methods for compensating for missing data in surveys, and the behavior of interviewers and respondents in survey interviews. He has served as a consultant for public and private organizations, including the U.S. Bureaus of Labor Statistics and the Census Bureau, the National Center for Health Statistics, the Bureau of Justice Statistics, and the National Center for Education Statistics.



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## Course Objectives

This is a foundation course in sample survey methods and principles. The instructors will present, in a non-technical manner, basic sampling techniques such as simple random sampling, systematic sampling, stratification, and cluster sampling. The instructors will provide opportunities to implement sampling techniques in a series of exercises that accompany each topic.

Group work is an integral part of the course. Participants will be allocated arbitrarily to four-person groups who will collaborate on the solution of course exercises. **All participants must have a calculator, laptop, phone, or pad device** that includes a square root function for calculation in order to complete group exercises.

Participants should not expect to obtain sufficient background in this course to master survey sampling. They can expect to become familiar with basic techniques well enough to converse with sampling statisticians more easily about sample design.



## Who Should Attend

Individuals in government, universities, business, and nonprofit organizations interested in understanding survey sampling methods and applying them in practice.

Introductory course work in statistical methods is strongly recommended. Participants should be familiar with descriptive statistics, the normal and binomial distributions, chance selection, expected values, standard error, and confidence intervals.

If you are uncertain whether you have adequate background, examine methods contained in *Statistics, 4th Edition*, by Freedman, Pisani, and Purves (W.W. Norton & Company, New York, 1991), Chapters 3-6 and 13-18. Those wishing to have a brief introduction to some of the material in the course will find it useful to read Chapters 1-8 in the monograph *Introduction to Survey Sampling*, by Graham Kalton (Sage Publications, California, 1987).



## Course Format

This course will be online live via Zoom. The instructors will share instruction throughout the three-day course.

Participants will receive a copy of the lecture notes that will be displayed during lecture sessions. In addition, participants will receive copies of in-class exercises that will be completed during “break-out” sessions embedded in lecture materials. Participants will be assigned to 3-5 person groups for “break-out” sessions. The instructors will, before participants are moved to their break-out group, review the sampling principles and the problem being addressed, and provide an overview of how to answer questions in the exercise. Instructors will visit each group to answer questions, and participants can “call” the instructor when they have a question. Groups will reconvene to compare solutions and discuss implications of the results.



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## Inquiries

JPSM Home Page: <http://www.jpsm.umd.edu>



## Schedule - Eastern Time (ET)

### Monday, December 11, 2023

9:45-10:00	Participants “admitted” to the meeting.
10:00-12:00	Survey sampling fundamentals. Simple random sampling. Exercise 1. A brief history of survey sampling. Element samples & the sampling distribution. Sampling variance. Sample size determination.
12:00 - 1:00	Lunch.
1:00-3:00	Exercise 2. Systematic sampling. Exercise 3. Cluster sampling. Design effects & intra-cluster homogeneity.
3:00	Adjourn.

### Tuesday, December 12, 2023

9:45-10:00	Participants “admitted” to the meeting.
10:00-12:00	Exercise 4. Two-stage sampling. Projecting sample size & confidence intervals.
12:00 - 1:00	Lunch.
1:00 - 3:00	Exercise 5. Probability proportionate to size sampling. Exercise 6. Address-based sampling.
3:00	Adjourn.

### Wednesday, December 13, 2023

9:45-10:00	Participants “admitted” to the meeting.
10:00-12:00	Address-based sampling continued. Stratification. Stratified sampling estimates. Sample allocation. Exercise 7.
12:00 - 1:00	Lunch
1:00 – 3:00	Weighting. Exercise 8. Variance estimation. Final exercises.
3:00	Adjourn.