Stat 472/572: Sampling Theory and Practice, Spring 2024

Instructor: Dr. Yan Lu, `yanlu@unm.edu`

Teaching Assistant: Jared DiDomenico, `jdidomen@unm.edu`

Class website: `https://canvasinfo.unm.edu`

Time and Location: 5:00pm-6:15pm MW face to face, DSH334

Office hours: MW 3:00pm-4:30pm SMLC 356 in person or by zoom

`https://unm.zoom.us/j/92221536376`

Meeting ID: 922 2153 6376

Passcode: 123

or by email and appointment

Textbook:

Lohr, Sharon. Sampling: Design and Analysis 3rd edition. Boca Raton, FL: CRC Press. (**required**).

Lu, Yan and Lohr, Sharon: R Companion for *Sampling: Design and Analysis, 3rd Edition*, 1st Edition. Boca Raton, FL: CRC Press (**Electronic version is available on canvas**)

Datasets are available from R package `SDAResources` or you can download from `https://www.sharonlohr.com/sampling-design-and-analysis-3e`
Electronic version of the R companion book can also be downloaded from the above website

Prerequisites: Stat 345 and ADA1: Stat 427/527 Advanced Analysis 1. Stat 461 (probability) is a helpful course but is not required.

Topics: In classical finite population sampling, probability sampling is used to select a sample from a directory or map of units, often called a sampling frame. Sample surveys play a crucial role in gathering information about finite populations of interest in various fields such as education, public health, sociology, ecology, agriculture, genetics, quality improvement, marketing, and accounting. This course focuses on designing effective surveys and analyzing data from sample surveys. Topics covered include simple random sampling, stratified and cluster sampling, ratio estimation, addressing nonresponse, vari-

ance estimation, as well as regression analyses and chi-square tests tailored specifically for survey data.

Computing:

R and Rstudio will be used in this class. They can be downloaded for free

R:

`http://cran.r-project.org`

Rstudio:

`https://www.rstudio.com/products/rstudio/download`

To see how to install R and Rstudio in windows, visit

`https://www.youtube.com/watch?v=eD07NznguA4`

for Mac

`https://www.youtube.com/watch?v=GFImMj1lMRI`

Latex:

`https://ctan.org/starter`

Grading: Homework assignments will be distributed approximately every two weeks, totaling 7-8 assignments throughout the course. The grading breakdown is as follows: Homework 30%, Midterm Exam 30%, and Final Project 40%. Please note that the grading criteria for graduate students and undergraduates will be assessed separately.

	Stat 572	Stat 472
A+	96%-100%	93%-100%
A	90%-95%	85%-92%
B	75%-89%	70%-84%
C	65%-74%	55%-69%
D	under 65%	under 55%

Final Project: Your project in this class will encompass either a theoretical or applied aspect of sampling. You have the option to work independently or collaborate with your classmates, with group sizes limited to a maximum of three individuals.Examples include: analyzing data from a complex sample survey from public website or from your research area; creating a sampling design for a long-term research project; or investigating some theoretical sampling problems. More detailed information will be given in class later.