Sociology 400, Fall 2017

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Schedule: Mondays 9:30a-12:20p, University Hall 121
Office Hours: Tuesdays 2-4pm
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Discussion Th 2-2:50 University Lib B182 ; OH TBD

Course Overview

This course provides the opportunity to develop skills to empirically evaluate questions about the world. As social scientists, we seek to understand the world around us and our research often involves the analysis of data. During this quarter, we will work to develop the ability to summarize and analyze this data while exploring the pitfalls that can occur in careless research.

Topics include probability theory, experimental and theoretical derivation of sampling distributions, hypothesis testing, and analysis of variance. Some familiarity with algebra and calculus will prove helpful and familiarity with the concepts from the department’s math prefresher course will be presumed. Please have a decent calculator (nothing too fancy but your phone calculator will likely be insufficient) and plan to bring it regularly to class with you. If you’re looking for a specific recommendation, something like the TI-30XS would be helpful (price: $15). We’ll often do calculations in class and on the exams.

Assignments

The course will feature regular problem sets, a midterm, and a final exam. The problem sets are to encourage you to keep going. The midterm and final to provide the incentive to get there and a check on what you’ve learned. Due dates will vary based on the assignment given but we will have approximately one assignment per week.

Grading  Assignment grading will be on a check, check plus, check minus system.
Problem Sets (40%)
Midterm (15%)
Final (35%)
Participation and In-class questions (10%)

Textbook and Readings
The primary textbook for this course will be “Statistical Methods for the Social Sciences” by Alan Agresti. I’ll be using the 5th edition (ISBN 0-13-450710-X), but you are welcome to use the 4th edition if you can find it cheaper. There have been multiple changes to previous editions, so you’re best off with editions 4 or 5. I’ve requested to have a copy on reserve for the class. I’ll provide supplemental material through Canvas when relevant.

Additional Resources
These books aren’t required, but are good resources to have around:

- **Moore and Siegel - A Mathematics Course for Political and Social Researchers:**
  This text is a great intuitive introduction to a lot of the math you'll need, with political science examples. (used in math prefresher)

- Other stats text books – sometimes it can be useful to see the same explanation in different words. Try: Social Statistics for a diverse society, Statistics by Freedman, Purves and Purvis, or any of the textbooks by David Moore. You can find these books at the library or used online.

Student Accommodations
Any student requesting accommodations related to a disability or other condition is required to register with AccessibleNU (accessiblenu@northwestern.edu; 847-467-5530) and provide professors with an accommodation notification from AccessibleNU, preferably within the first two weeks of class. All information will remain confidential.

Academic Honesty
All assignments should be your own work but collaboration with other students is welcome and encouraged. Try the assignments (and practice problems!) on your own first. Study groups can be very beneficial for helping with assignments but the final document you submit should be your own work. It will pay off later for you to complete as much of the assignments on your own as you can. Please put the name of other students you worked with on your homework.

Course Schedule
**Week 1: 9/25** Introduction, Sampling and Measurement
- Variables
- Sampling
  - Agresti Ch 1 & 2

**Week 2: 10/2** Descriptive Statistics
- Tables
- Graphs
- Bivariate Tables
  - Agresti Ch 3
Week 3: 10/9  Probability Distributions  Probability · Normal Distribution · Sampling Distributions  
  – Agresti Ch 4
Week 4: 10/16  Statistical Inference: Estimation  Point Estimation · Confidence Intervals  
  – Agresti Ch 5
Week 5: 10/23  Statistical Inference: Significance Tests  Significance Tests · Type I/II Error  
  – Agresti Ch 6
Week 6: 10/30  Comparison of Two Groups  Categorical Data · Quantitative Data  
  – Agresti Ch 7
Week 7: 11/6  Analyzing Association Between Categorical Variables  Contingency Tables · Chi-Square  
  – Agresti Ch 8
Week 8: 11/13  Correlation, Intro to ANOVA  
  – TBD  
  – Agresti Ch 12.1-12.3
Week 9: 11/20  ANOVA, cont’d  
  – Agresti Ch 12.5-12.7  
  – TBD
Week 10: 11/20  Review  
  – TBD