

Research Design and Methods for Public Policy I

Fall 2018

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Course Description

This course will introduce students to common quantitative research design and methods used for public policy analysis. Students will learn how to formulate practical research questions, find and construct appropriate datasets used for policy analysis, and use a variety of statistical tools to provide insight to important policy issues. Students will also learn how to use statistical software to manage and analyze various types of data. The course will culminate in a research paper utilizing concepts learned in the course to provide an analysis of an important policy question of the student's choosing. No prior knowledge is needed of statistics.

Learning Outcomes

By the end of the course students should be proficient in:

- ✓ Identifying answerable research questions with direct policy implications
- ✓ Use Excel and Stata to construct datasets and generate basic descriptive statistics
- ✓ Determine and execute appropriate statistical analyses to answer a variety of questions, and
- ✓ Present research findings in a readable and professional manner that is accessible to policy-makers.

Assessment

Grades will have two components:

- (1) Homework sets (60%): Homework will focus on practicing quantitative techniques learned in class. There will be 5 homework sets each worth 12%.
- (2) Research paper (40%): Students will develop and evaluate a pertinent policy question of their choosing, using techniques learned in class. Results must be presented in a professional manner

with the question and results clearly stated. Papers should be between 2000-2200 words excluding references and tables.

PLEASE NOTE: Due to the large size of the class, there will be NO extensions granted for any of the homework sets. If you are ill and can provide medical documentation, the grade for the assessment missed will be incorporated into the weighting for the research paper.

Course Readings

Mandatory

1. *Essentials of Statistics for Business and Economics* (2015) by Anderson, Sweeney, Williams, Camm and Cochran (ASWCC).

Note: Students are welcome to purchase earlier editions of the above book, but must note that the material may differ slightly from what is presented in class.

Optional

Students, particularly those without a strong background in statistics or econometrics, are strongly encouraged to read the following:

1. *Naked Statistics: Stripping the Dread from the Data* (2014) by Charles Wheelan.
An introduction to statistics with lots of intuition and examples. An easy-to-understand book that helps the reader learn how research questions are formulated and answered.
2. *Statistics Unplugged, 4th edition* (2013) by Sally Caldwell.
A great companion to ASWCC for students who prefer more intuition.
3. *Introductory Econometrics: A modern approach, 6th edition* (2015) by Jeffery M. Wooldridge.
An excellent resource for those who want more detail on regression analysis. One of the books that an empirical researcher or policy-maker should have on hand at all times.
4. *Mastering 'Metrics: The Path from Cause to Effect* (2014) by Joshua Angrist and Jörn-Steffen Pischke.
Angrist and Pischke are infamous for their econometrics books that put intuition and causal analysis front and center. Loaded with real-world examples to highlight the concepts presented, this book is aimed at students with some knowledge of math and statistics.

Schedule

Please note that this schedule is approximate and is subject to change.

Some advice: Your success in this course will depend on keeping up with the material as it is presented. I strongly urge you not to fall behind because the material in the course is intensely cumulative. You will also benefit much more from the lectures if you read the assigned material before the class sessions.

No.	Date	Topic
1	17-18 Sept	<p>Introduction Introduction to course: course aims; basic concepts such as theories, variables, hypotheses; quantitative vs. qualitative research; Types of data</p> <p><u>Readings:</u> de Vaus Research Design in Social Research Ch. 1 and 2 ASWCC Ch. 1 Levitt, S. D. (2004). Understanding Why Crime Fell in the 1990s: Four Factors that Explain the Decline and Six that Do Not. <i>Journal of Economic Perspectives</i> 18(1): 163-190. Clemens, M. A., and Demombynes G. (2010). “When Does Rigorous Impact Evaluation Make a Difference? The Case of the Millennium Villages.” CGD Working Paper 174. Washington, D.C.: Center for Global Development.</p>
2	24-25 Sept	<p>Descriptive Statistics Sample vs. population; measures of central tendency; measures of dispersion; describing distributions.</p> <p><u>Readings:</u> ASWCC Ch. 2 & Ch. 3. Krueger, A. B. (2008). What Makes a Homegrown Terrorist? Huma Capital and Participation in Domestic Islamic Terrorist Groups in the U.S.A. Working Paper #533 Princeton University. Allcott, H., and Gentzkow, M. (2017). Social Media and Fake News in the 2016 Election. <i>Journal of Economic Perspectives</i> 31(2): 211-236.</p>
3	1-2 Oct	<p>Introduction to Probability and Probability Distributions Basic probability: events, complements, conditional probability, Bayes’ theorem; expectations; discrete distributions.</p> <p><u>Readings:</u> ASWCC Ch.4 and Ch. 5 Brown, C., Ravallion, M., and van de Walle, D. (2018). Most of Africa’s Nutritionally Deprived Women and Children are Not Found in Poor Households. <i>Review of Economics and Statistics</i>, forthcoming.</p>
4	8-9 Oct	<p>Continuous Probability Distributions Continuous probability distributions: uniform distribution, normal distribution</p> <p><u>Readings:</u> ASWCC Ch. 6 Malmendier, U., and Tate, G. (2009). Superstar CEOs. <i>The Quarterly Journal of Economics</i> 124(4): 1593-1638.</p>
5	15-16 Oct	<p>Sampling Distributions and Interval Estimation Sampling; point estimation; sampling distributions; confidence intervals.</p> <p><u>Readings:</u> ASWCC Ch. 7, Ch. 8 Jacob, B., and Levitt, S. D. (2003). Rotten Apples: An Investigation of the Prevalence and Predictors of Teacher Cheating. <i>The Quarterly Journal of Economics</i> 118(3): 843-877.</p>
6	22-23 Oct	<p>Reading week – no class Work on research paper. See the guides posted online for a basic overview on how to write an empirical paper.</p>
7	29-30 Oct	<p>Hypothesis Testing Null vs. alternate hypotheses; type I and type II errors; one vs. two tailed tests.</p> <p><u>Readings:</u> ASWCC Ch.9 Donohue, J. J., and Levitt, S. D. (2001). The Impact of Legalized Abortion on Crime. <i>Quarterly Journal of Economics</i> 116(2): 379–420. Joyce, T. (2004). Did Legalized Abortion Lower Crime? <i>Journal of Human Resources</i> 39(1): 1–28.</p>

8	5-6 Nov	<p>Comparison with Means and ANOVA Comparisons of group means, one and two sample t-tests with equal and unequal variance; analysis of variance (ANOVA) <u>Readings:</u> ASWCC Ch.10 Fearon, J. D., and Laitin, D. D. (2003). Ethnicity, Insurgency, and Civil War. <i>American Political Science Review</i> 97(1): 75-90.</p>
9	12-13 Nov	<p>Introduction to Regression and Correlation Correlation; simple regression model; model assumptions; significance testing. <u>Readings:</u> ASWCC Ch. 12 Alsan, M. (2015). The Effect of the TseTse Fly on African Development. <i>The American Economic Review</i> 105(1): 382-410.</p>
10	19-20 Nov	<p>Multiple Regression Basics Multiple regression mode; interpreting coefficients; significance testing. <u>Readings:</u> ASWCC Ch. 13 Duggan, M. (2001). More Guns, More Crime. <i>Journal of Political Economy</i> 109(5): 1086–1114.</p>
11	26-27 Nov	<p>Further Issues with Multiple Regression Functional form: using logs, quadratics, interaction terms; goodness of fit: r-squared, adjusted r-squared; predictions. <u>Readings:</u> Wooldridge Ch. 6 and Ch.7 (notes to be provided) Brown, C., Ravallion, M., and van de Walle, D. (2018). A Poor Means Test? Econometric Targeting in sub-Saharan Africa. <i>Journal of Development Economics</i>.</p>
12	3-4 Dec	<p>Inference with Multiple Regression Using proxy variables; measurement error: dependent and independent variables, missing data, nonrandom samples, outliers. <u>Readings:</u> Wooldridge Ch. 9 (notes to be provided)</p>