FLS-6183
Quantitative Methods II
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FLP0468 - Métodos Quantitativos de Pesquisa na Ciência Política IV

2º semestre / 2019

This course will be taught in English

Thursday, 14:00-18:00

Lorena G. Barberia

This course is the second course in a three-course sequence, following Quantitative Methods I/FLP0406/FLS5028 (Introductory Statistics). This course is intended to provide students with the tools necessary to conduct empirical research and to critically read the empirical research of others in the fields of political science, public policy and social sciences more generally. A significant share of the course is dedicated on the effective interpretation and presentation of statistical results, and on understanding already-published analyses. The course assumes students have a background in algebra and basic statistical analysis and based on this background introduces students to modern econometrics. The course emphasizes innovative tools for learning quantitative methods and most classes are taught as a flipped classroom. Students will learn to use Stata for the purposes of statistical analysis, and will learn to work with observational and simulated data. For the final assignment, students will replicate a recent published study in a prominent journal in the field.

Teaching Fellows: Ana Beatriz Dutra, Maria Leticia Claro and Luiz Guilherme Roth Cantarelli

Required Texts and Other Readings

Barberia, Lorena G. 2019. *Desenho de Pesquisa em Política Comparada*. Brasília: Coleção Metodologias de Pesquisa for Escola Nacional de Administração Pública (ENAP).

Gill, Jeff. *Essential Mathematics for Political and Social Research*. New York: Cambridge University Press.

Greene, William H. 2017. *Econometric Analysis*, 8th edition. New York: Pearson.

Kellstedt, Paul M., and Guy D. Whitten. 2013. *The Fundamentals of Political Science Research*. 2nd ed. Cambridge; New York: Cambridge University Press. (Também disponível em português: Kellstedt, Paul M., and Guy D. Whitten. 2015. *Fundamentos da Pesquisa em Ciência Política* (Lorena Barberia, Gilmar Masiero and Patrick Cunha Silva, Translators). São Paulo, Brazil: Editora Blucher.

Neumayer, Eric and Thomas Plümper. 2017. *Robustness Tests for Quantitative Research* (Methodological Tools in the Social Sciences). Cambridge; New York: Cambridge University Press.

Stock, James and Mark Watson. 2018. *Introduction to Econometrics*, 4th edition. Boston: Addison Wesley.

STATA Tutorials

Baum, Christopher F. 2006. *An Introduction to Modern Econometrics Using Stata*. Stata Press.

Cameron, Colin and Pravin Trivedi. 2010. *Microeconometrics Using Stata*. 2nd ed. Stata Press.

Rodríguez, Germán. 2011. Stata Tutorial. See: http://data.princeton.edu/stata/.

UCLA Academic Technology Services. Resources to help you learn and use Stata. See: http://www.ats.ucla.edu/stat/stata/default.htm.

Grades

1. Problem Sets (40%)
2. Midterm Exam (30%)
3. Final Replication Assignment (30%)

Topics

1.   Introduction

Kellstedt and Whitten, Chapters 1-4

Neumayer and Plümper, Chapters 1-2

Barberia, Chapter 1-2

Stock and Watson, Chapters 2-3

2.   The Bivariate Regression Model

Stock and Watson, Chapters 4-5

Beck, Nathaniel. 2010. Making Regression and Related Output More Helpful to Users. *The Political Methodologist* 18(1): 4-9.

Lab: Hypothesis Testing Revisited (Difference between Means and the Bivariate Regression Model)

3.   From the Bivariate Regression to the Multivariate Regression Model

Stock and Watson, Chapters 6-7

Gelman, Andrew, and Hal Stern. 2006. The Difference Between "Significant" and "Not Significant" is not Itself Statistically Significant. *The American Statistician* 60 (4): 328-331.

Lab: A First Exercise in Simulation

4.   The Multivariate Regression Model in Matrix Notation

Gill, Jeff. *Essential Mathematics for Political and Social Research*. New York: Cambridge University Press. Ch. 3 and 4.

Stock and Watson, Chapter 19

Lab: Derivation of OLS using Matrix Algebra

5.   Multicollinearity

Stock and Watson, Chapter 6.

Lab: Multicollinearity Simulation

6.   Omitted Variable Bias

Neumayer and Plümper, Chapter 9

Lab: Omitted Variable Bias

7.   Multivariate Regression with Dummy Variables and Interactions

Stock and Watson, Chapter 8

Braumoeller, Bear. 2004. "Hypothesis Testing and Multiplicative Interaction Terms," *International Organization* (Fall): 807-20.

Brambor, Thomas, William Roberts Clark, and Matt Golder. 2006. Understanding Interaction Models: Improving Empirical Analyses. *Political Analysis* 14 (1): 63-82.

Clark, William, Michael Gilligan & Matt Golder. 2006. A Simple Multivariate Test for Asymmetric Hypotheses. *Political Analysis* 14: 311-331.

Kellstedt and Whitten. Capítulo 11, Multiple Regression Models II: Crucial Extensions, pp. 202-220.

Lab: Revisting Duverger´s Theory with Interaction Models

8.   Multivariate Regression with Non-Linear Interactions

Hainmueller, J., Mummolo, J., & Xu, Y. (2019). How Much Should We Trust Estimates from Multiplicative Interaction Models? Simple Tools to Improve Empirical Practice. *Political Analysis*, 27(2), 163-192.

Lab: Nonlinear Interactions

9.   Robustness Tests

Stock and Watson, Chapter 9

Neumayer and Plümper, Chapters 3-6

Lab: Four Approaches to Robustness Testing

10. Making the Most of Statistical Inference

King, Gary, Michael Tomz, and Jason Wittenberg. "Making the Most of Statistical Analyses: Improving Interpretation and Presentation." American Journal of Political Science 44 (2000): 341-355.

Tomz, Michael, Jason Wittenberg, and Gary King. 2003. "Clarify: Software for Interpreting and Presenting Statistical Results." Journal of Statistical Software. Copy at http://j.mp/k3k0rx

Software: Clarify. http://gking.harvard.edu/publications/clarify-software-interpreting-and-presenting-statistical-results

Lab: Clarify

11. Multiple Regression and Causal Inference

Keele, L., Stevenson, R., & Elwert, F. (n.d.). The causal interpretation of estimated associations in regression models. *Political Science Research and Methods*, 1-13. doi:10.1017/psrm.2019.31.

Lab: Concept Maps and Directed Acyclic Graphs (DAGs)

12. The Basics of Time Series Analyses: Unit Root Tests & Model Specification

Barberia, Chapters 3-5

Stock and Watson, Chapter 15 & 16

Lab: Economic Voting with Time Series

13. Presentations of Replication Exercise

*The replication article assignment will be announced during the semester.

King, Gary. "The Future of Replication," *International Studies Perspectives*, Vol. 4, No. 1 (February, 2003): Pp. 100–105. [in "Symposium on Replication in International Studies Research].

King, Gary, "Replication, Replication" *PS: Political Science and Politics*, Vol. XXVIII, No. 3 (September, 1995): Pp. 443–499.