Australian National University

Foundations of Statistical Analysis in Political Science

Instructor

Dr. Charles Miller is a senior lecturer in international relations at the ANU. He received his PhD in political science at Duke University in 2013 and has been at the ANU ever since. His work has been published in outlets such as World Politics, the Journal of Conflict Resolution and the Journal of Peace Research

Course Outline

Statistics can often seem daunting to the uninitiated - and political science methods are quickly becoming more complicated over time.

This course attempts to simplify (and solidify) the principles of casual inference and statistical analysis so that the student can think about the fundamentals of statistical analysis for their own research project and begin to use R to apply these principles to their own data.

The course will be focused on understanding the following concepts: understanding types of data and how to treat them; the basics of data visualisation using the ggplot2 package In R; a brief introduction to thinking about causality in politics with reference to directed acyclic graphs (DAGs); bivariate statistical methods such as difference of means, crosstabulation, correlation and simple linear regression and finally an introduction to multiple regression with reference to confounders and interations.

Learning outcomes

Upon the successful completion of this course, students will have the knowledge and skills to:

- Understand and distinguish casual from correlational research in published political science research.
- Design political research using a casual framework.
- Understand the uses for different forms of data.
- Understand the basics of statistical programming using R.
- Apply bivariate and multivariate methods to real data.

Readings

- Wickham, H., & Grolemund, G. (2016). 'R for data science: Import, tidy, transform, visualize and model data'. O'reilly Media, Inc. DOI: https://r4ds.had.co.nz/

- Judea, P. & Mackenzie, D. (2018). 'The Book of Why: The New Science of Cause and Effect'. New York Basic Book.

Recommended - pre-requisite understanding.

This course Is aimed at the graduate interested in quantitative analysis - perhaps the first time (or for those with some limited training in other software packages such as Stata or SPSS).

This course covers some algebra but does not require students to derive or solve equations.