PO21Q-15 Replication in Quantitative Political Analysis

21/22

Department
Politics & International Studies
Level
Undergraduate Level 2
Module leader
Florian Reiche
Credit value
15
Assessment
100% coursework
Study location
University of Warwick main campus, Coventry

Description

Introductory description

Reproducibility is a corner-stone of any scientific enquiry. This module will introduce you to the idea of reproducibility and provide hands-on guidance on how to achieve reproducible results in quantitative political analysis through the software R.

The module is divided into four parts, the first of which covers the idea and principles of conducting reproducible research. From the second part onwards, we will follow the timeline of a real-word research project, and begin by exploring various techniques for data management. In the third part we will explore how to conduct and interpret one of the most frequently used methods in political science: logistic regression. The final part of the module is reserved for the professional presentation of results, both in the form of tables and beautiful-looking graphs.

The module is suitable as a sequel to PO11Q and PO12Q, but can also be taken as a stand-alone option with no pre- or post-requisites.

Module web page

Module aims

- Familiarise students with the software R
- Introduce students to the importance of reproducibility in quantitative political science

- Apply the concept of reproducibility to data analysis and management in R
- Develop data management skills in R
- Introduce students to the method of logistic regression
- Enable students to produce professional graphs and tables
- Introduce students to R Markdown

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

i. REPRODUCIBILITY

1. The Replication Crisis

ii. DATA MANAGEMENT

1. Joining, Sub-setting and Ordering Data
2. Manipulating Variables
3. Missing Data

iii. DATA ANALYSIS

1. Logistic Regression
2. (READING WEEK)
3. Interpreting Logistic Regression

iv. PROFESSIONAL PRESENTATION

1. Graphs: The Magic of ggplot
2. Introduction to R Markdown
3. Presenting Results

Learning outcomes

By the end of the module, students should be able to:

- Proficiency in the software R
- Apply the concept of reproducibility
- Apply methods of data management in R
- Conduct and interpret logistic regression
- Create professional graphs in R
- Design professional tables
- Introductory proficiency in R Markdown

Indicative reading list

- Brians, Craig L., Lars Wilnat, Jarol B. Manheim and Richard C. Rich. 2010. Empirical Political Analysis. Pearson

- Bryman, A. 2008. Social Research Methods, 4th ed., Oxford: Oxford University Press
- Dalgaard, P. (2008) Introductory Statistics with R (Statistics and Computing). Springer
- King, G. (1995). Replication, replication. PS: Political Science and Politics, 28(3):541–559.
- Field, A. et al. (2012) Discovering Statistics with R. Sage
- Fogarty, B. (2018) Quantitative Social Science Data with R: An Introduction. Sage
- Gayle, V. J. and Lambert, P. S. (2017). The workflow: A practical guide to producing accurate, efficient, transparent and reproducible social survey data analysis. NCRM Working Paper.
- Grolemund, G. and Wickham, H. (2016) R for Data Science. O'Reilly Media
- Reiche, Florian (forthcoming) Introduction to Quantitative Methods in the Social Sciences. Oxford: Oxford University Press
- Scott Long, J. (1997) Regression models for categorical and limited dependent variables. Sage
- Stimson, J. A. (n.d.). Professional Writing in Political Science: A Highly opinionated Essay
- Stinerock, R. (2018) Statistics with R. Sage

Research element

Research project as assessment

Interdisciplinary

Research questions for assessment stem from the social sciences more generally.

International

International data sets, such as the World Development Indicators and the Polity IV index will be used.

Subject specific skills

- Data Management Skills
- Data Analysis Skills
- Identifying missing data
- Proficiency in R
- Adherence to the Replication Standard in Political Science
- Conducting and Interpreting Logistic regression
- Professional presentation of graphs and tables

Transferable skills

- Data management skills in R
- Communication skills
- Lateral thinking skills
- Skills in the distillation and application of complex information and ideas
- Critical thinking

- Analytical skills
- Independent research skills
- Problem solving
- Time management
- Skills in academic practice
- Decision making

Study

Study time

Type	Required
Lectures	9 sessions of 2 hours (100%)
Total	18 hours

Private study description

Guided and independent reading, weekly homework from worksheets, preparation of assessments.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A

	Weighting	Study time
Annotated RScript for Reproducible Analysis	20%	

Students will apply data management skills to real-world data and submit an annotated RScript in week 7 of the module. The annotations will have a word limit of 750, so that students have guidance on how long / complex the script is supposed to be. Separate marking criteria for the module / quantitative modules with a coding component more generally have been created.

Research Project	80%	

Students will apply data management and analysis skills acquired on the module to produce an independent, reproducible research project with professional presentation of results.

Feedback on assessment

Detailed written feedback, as well as verbal feedback on request, will be provided for both assessments. Feedback on the formative assessment (weekly Moodle Quiz) is instantaneous.

Availability

Courses

This module is Optional for:

- Year 2 of UPOA-M100 Undergraduate Politics
- UPOA-M16A Undergraduate Politics and International Studies
    - Year 2 of M16A Politics and International Studies
    - Year 2 of M16A Politics and International Studies
    - Year 2 of M16A Politics and International Studies

This module is Option list A for:

- Year 2 of UPOA-ML13 Undergraduate Politics and Sociology
- UPOA-M163 Undergraduate Politics, International Studies and French
    - Year 2 of M163 Politics, International Studies and French
    - Year 3 of M163 Politics, International Studies and French

This module is Option list C for:

- UHIA-VM11 Undergraduate History and Politics
    - Year 2 of VM11 History and Politics
    - Year 2 of VM11 History and Politics
    - Year 2 of VM11 History and Politics