# PO12Q-15 Introduction to Quantitative Political Analysis II

## 24/25

**Department**
> Politics & International Studies

**Level**
> Undergraduate Level 1

**Module leader**
> Florian Reiche

**Credit value**
> 15

**Module duration**
> 10 weeks

**Assessment**
> 10% coursework, 90% exam

**Study location**
> University of Warwick main campus, Coventry

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# Description

## Introductory description

This module builds on PO11Q which is essential for taking this module. PO12Q will concentrate on the tasks of "analysis" and "interpretation" of the quantitative methods typology, and provide students with a toolbox to analyse the relationship between two or more variables. The module will start by looking at two-sample t-tests and cross-tabulations, before moving to its main focus: regression analysis. This method is one of the standard tools of political science researchers and cannot only demonstrate whether relationships between variables exist, but also quantify the magnitude and direction of such a relationship. We will progress in small steps, starting with only one independent variable to explore the intuition, assumptions, and interpretation of results. The module will close by discussing the basics of multiple regression.

## Module aims

- To provide an introduction into basic bivariate methods of analysis

- To provide an introduction to bivariate and multiple linear regression analysis

- To build on the skills acquired in R on PO11Q

- Further data analysis skills for employability in relation to PO11Q

## 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.

1. Cross-tabulation and Chi-Squared
2. Two-Sample Test for Proportions and Two Sample t-Tests
3. Linear Regression: The Intuition
4. Two-Variable Regression Analysis
5. The Mathematical Properties of OLS Estimators and Goodness of Fit
6. READING WEEK
7. Two-Variable Regression - Interval Estimation and Hypothesis Testing
8. Conducting and Interpreting Multiple Regression Analysis
9. Transformation of Variables and Model Specification
10. Making Your Regression BLUE

## Learning outcomes

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

- Understand basic methods of bivariate analysis (two-sample t-tests and cross-tabulations)
- Understand and apply the method of linear regression (ordinary least squares)
- Conduct basic bivariate and multivariate analysis in R
- Begin to critically engage with quantitative findings in political science journal articles.

## Indicative reading list

- Agresti, A. (2018). Statistical Methods for the Social Sciences (Fifth ed.). Harlow: Pearson.

- Beck, N. (2001). OLS in Matrix Form. available online at https://web.stanford.edu/~mrosenfe/soc_meth_proj3/matrix_OLS_2_Beck_UCSD.pdf.

- Clark, T.; Foster, L.; Bryman, A. (2019). How to do your Social Research Project or Dissertation. Oxford: Oxford University Press.

- GOV.UK. (2013). National Statistics: Income and tax by Parliamentary constituency. available online at https://www.gov.uk/government/statistics/income-and-tax-by-parliamentary-constituency-2010-to-2011.

- Gujarati, D. N., & Porter, D. C. (2009). Basic Econometrics (Fifth International Edition ed.). New York: McGraw-Hill.

- House of Commons Library. (n.d.). Data Dashboard. available online at https://commonslibrary.parliament.uk/type/data-dashboard/.

- King, G. (1995). Replication, replication. PS: Political Science and Politics, 28(3), 541-559.

- Kutner, M. H., Nachtsheim, C. J., Neter, J., & Li, W. (2005). Applied Linear Statistical Models. New York: McGraw-Hill Irwin.

- London Data Store. (2010). London Parliamentary Constituency Profiles 2010. available online at https://data.london.gov.uk/dataset/london-parliamentary-constituency-profiles.

- London Data Store. (2013). Ward Profiles and Atlas. available online at https://data.london.gov.uk/dataset/ward-profiles-and-atlas.

- Marshall, M. G., & Gurr, T. R. (2020). Polity V Project: Political Regime Characteristics and Transitions, 1800-2018. available online at http://www.systemicpeace.org/inscrdata.html.

- Reiche, F. (in press). Introduction to Quantitative Methods for the Social Sciences. Oxford: Oxford University Press.

- Rosenfeld, M. (n.d.). OLS in Matrix Form. available online at https://web.stanford.edu/~mrosenfe/soc_meth_proj3/matrix_OLS_NYU_notes.pdf.

- University of Manchester, Cathie Marsh Institute for Social Research (CMIST), UK Data Service, Office for National Statistics. (2019). Crime Survey for England and Wales, 2013-2014: Unrestricted Access Teaching Dataset. available online at https://doi.org/10.5255/UKDA-SN-8011-1.

- Vanderbilt University Department of Biostatistics. (n.d.). Vanderbilt Biostatistics Datasets. available online at https://hbiostat.org/data//.

- World Bank. (2020). World Development Indicators. available online at https://datacatalog.worldbank.org/dataset/world-development -indicators.

- Walliman, N. (2020). Your Research Project - Designing, Planning, and Getting Started. Fourth Edition. London: Sage.

[View reading list on Talis Aspire](#)

## Research element

Exploration of research questions using real-world data in seminars.

## International

Data from around the world is used.

## Subject specific skills

- Analysis of bivariate relationships,
- Application of bivariate and multiple regression analysis to empirical problems,
- Increased proficiency in statistical software (in comparison to prerequisite module "Introduction to Quantitative Political Analysis I").

## Transferable skills

Written communication skills,
Oral communication skills,
Problem-solving skills,
Skills in the use of information technology,
Skills of interpretation and the critical analysis of primary and secondary sources,
The ability to digest, retain and apply complex information and ideas,
Ability to conduct research and reference your work appropriately,
Time management skills and the ability to meet deadlines,
The ability to reflect critically on the extent and limitations of how and what you have learned,
discovered and understood.

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# Study

## Study time

| Type | Required |
| --- | --- |
| Lectures | 9 sessions of 1 hour (6%) |
| Seminars | 9 sessions of 2 hours (12%) |
| Private study | 123 hours (82%) |
| Total | 150 hours |

### Private study description

Guided reading through reading list, completion of research project and homework in preparation
of seminars.

## Costs

No further costs have been identified for this module.

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# Assessment

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

## Assessment group D1

| | Weighting | Study time |
| --- | --- | --- |
| In-Class Test | 10% | |
| A 30-minute in-class test covering Weeks 1-5. | | |
| Exam | 90% | |

| | Weighting | Study time |
|---|---|---|
| 2-hour examination | | |
| ~Platforms - WAS | | |

- Online examination: No Answerbook required

## Feedback on assessment

Detailed and regular feedback will be provided throughout the module.

FORMATIVE
A weekly quiz on Moodle for which instant feedback is provided.

SUMMATIVE
A solutions key will be uploaded after the in-class test and the exam have taken place, respectively.

Past exam papers for PO12Q

# Availability

## Pre-requisites

To take this module, you must have passed:

- All of

  - PO11Q-15 Introduction to Quantitative Political Analysis I

# Courses

This module is Core for:

- Year 1 of UPOA-M162 Undergraduate Politics, International Studies and Quantitative Methods

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 Unusual option for:

- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
  - Year 1 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 1 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 1 of V7ML Philosophy, Politics and Economics (Tripartite)

This module is Option list A for:

- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
  - Year 1 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 1 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 1 of V7ML Philosophy, Politics and Economics (Tripartite)
- Year 1 of UPOA-M100 Undergraduate Politics
- UPOA-M16A Undergraduate Politics and International Studies
  - Year 1 of M16A Politics and International Studies
  - Year 1 of M16A Politics and International Studies
  - Year 1 of M16A Politics and International Studies
- Year 2 of UPOA-ML13 Undergraduate Politics and Sociology
- Year 2 of UPOA-M163 Undergraduate Politics, International Studies and French