Week 1: Introduction

POP88162 Introduction to Quantitative Research Methods

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Overview

- Module objectives
- Prerequisites and software
- Module components
- Materials and books
- Assessment and plagiarism
- Research ethics
- Weekly schedule

About me

- Assistant Professor in Political Science and Data Science, Trinity College Dublin
  - Before: Postdoctoral Fellow, New York University
  - PhD in Social Research Methods, London School of Economics and Political Science
- My research:
  - Political communication, social media, interest groups
  - Computational methods, text analysis, machine learning
- Contact
  - tom.paskhalis@tcd.ie
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Teaching Assistants

Hannah Frank

- PhD student, Trinity College Dublin
- PaCE – Patterns of Conflict Emergence
- Research interests:
  - causes of armed conflict
  - machine learning
- Contact
  - frankh@tcd.ie
  - LabConflict

Lucas Da Silva

- PhD student, Trinity College Dublin
- Research interests:
  - Ideologies, political media, business political activity, polarisation, and voting behaviour
  - Experiments, quasi-experiments, quantitative text analysis, and machine learning
- Contact
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Module Objectives

- Introduce the fundamentals of quantitative research
- Get familiar with conducting data analysis in R
- Develop understanding of core statistical principles
- Learn essential statistical models
- Practice these concepts using political science examples

Prerequisites and Software

- Introductory module - no formal prerequisites
- Laptop with Windows/Mac/Linux OS
- Software:
  - **R** (version 4+) - statistical programming language
  - **RStudio** - feature-rich R editor

Module Components

- Lectures:
  - Tuesday 09:00-11:00 in 2043 Arts Building
- Workshops:
  - Tuesday 13:00-14:00 in M20 Museum Building
- Tutorials:
  - Group 1 - Thursday 09:00-11:00 in 1014 Arts Building
  - Group 2 - Thursday 16:00-18:00 in AP0.12 Aras an Phiarsaigh
- Office Hours:
  - Thursday 11:00-13:00 in-person or online
- + Readings
- + Assignments

Readings

- Core books:
  - Alan Agresti. 2018. *Statistical Methods for the Social Sciences*. 5th ed
  - Ethan Bueno de Mesquita and Anthony Fowler. 2021. *Thinking Clearly with Data: A Guide to Quantitative Reasoning and Analysis*
- Very good additional texts:
  - Andrew Gelman, Jennifer Hill and Aki Vehtari. 2020. *Regression and Other Stories*
  - Kosuke Imai. 2017. *Quantitative Social Science: An Introduction*
- More choices and week-by-week reading list in the syllabus.

Module Assessment

- Participation (10%)
  - Tutorial attendance, RQ presentation
- 3 R assignments (5% each)
- Research design (15%)
  - Approximately 1-2 pages and no more than 500 words
- Research paper (60%)
  - Must set up, perform, and interpret at least one test of statistical significance
  - Approximately 10 pages and no more than 5,000 words
  - Due by *23:59 Tuesday, 22 April 2025*
- Submission via Blackboard

Plagiarism

- All submitted coursework must be **individual** and **original**.
- Reference any literature you use in the correct manner
  - You can use Chicago Manual of Style or APSA Style Guide (its derivative) for citing correctly.
- Check College's avoiding plagiarism guide: https://libguides.tcd.ie/plagiarism/.

Research Ethics

- If you are carrying out research on human subjects (interviews, surveys, experiments, etc.),
- Then you must first receive ethical approval from TCD!
- More information is available here: https://www.tcd.ie/ssp/research/ethics/

Module Outline

Week	Date	Lecture Topic	Workshop Topic	Tutorial Topic	Assignment Due
1	21 January	Introduction	R Overview	Getting Started with R	
2	28 January	Descriptive Statistics	Data Structures	Data & Variables	
3	4 February	Probability Theory	Probability Distributions	Distributions & Sampling	1 R Assignment
4	11 February	Hypothesis Testing	Data Frames	Data Frames & Plotting	
5	18 February	Analysis of Proportions & Means	Factor Variables	Cross Tabulation	
6	25 February	Correlation	Visualisations	Correlation	2 R Assignment
7	4 March	-	-	-	-
8	11 March	Linear Regression I	RQ Presentations I	Linear Regression I	
9	18 March	Linear Regression II	RQ Presentations II	Linear Regression II	
10	25 March	Linear Regression III	RQ Presentations III	Linear Regression III	3 R Assignment
11	1 April	Causation	RQ Presentations IV	Causation	
12	8 April	Logistic Regression	RQ Presentations V	Logistic Regression	Research Design

Next

- What is quantitative research?