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Seminar time and location: Mon, 12:00-13:45; C5 3, Room 0.23
Consultation hours: Tuesday 14:00 – 16:00

Research Seminar

Quantitative Research in Political Science

"How to Apply the Classical Toolbox"
&
"How to Analyse Digital Content for Political Science Research"

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General information

Module: The aim of the entire module is to prepare students for their Bachelor's thesis. In this respect, students will:

- learn to critically discuss current research contributions,
- deepen their methodological skills by critically evaluating current research literature,
- learn to develop a research question and draft a suitable research design;
- practise how to carry out and write up their own empirical work in an exemplary manner.

Aim: The project seminar aims to help students in (i) developing their own questions on European politics research, and (ii) a suitable design for addressing said questions, (iii) analysing relevant data with proper methods, (iv) effectively communicating their results, and (v) drawing substantive conclusions from their empirical analyses.

Seminar: The seminar provides students with a comprehensive overview of the main quantitative tools used in empirical political science and aims to enhance their ability to develop scientifically rigorous research designs. The course will begin by enhancing students' knowledge of the R programming language and classical statistical methods. The course then will move to methods for the quantitative analysis of text. Students will be guided in developing their own research designs, with particular emphasis on translating concepts into measures, moving from research questions to empirically testable hypotheses, and selecting appropriate analytical tools to examine their data.

Related seminar: This seminar is closely linked with the seminar taught by Prof. Dr. Daniela Braun's 'Current Developments in Political Science Research on Europe: "Legitimacy Problems and Polarisation in European Societies"'.[2] In particular, students will replicate a selection of studies addressed in the above mentioned seminar.

Literature: We will only make the literature used in the seminar available to you via Teams if

we don't have access to it through the UdS libraries. Since the library now offers sufficient access to political science journals and books, I assume that you have researched the literature. In case of any problems accessing specific texts, please let us know as soon as possible (i.e. not the night before the deadline).

Consultation: In case of consultation/coordination, you are welcome to come to our office hours after making an appointment via email.

Examination: The examination for this course is a graded term paper, based on the presentation prepared for the course taught by Prof. Dr. Braun Current Developments in Political Science Research on Europe: "Legitimacy Problems and Polarisation in European Societies"'.

The term paper should include the following elements:[1] [^2]

1. Introduction: Why is the theme exciting and important? What is the social and scientific relevance?
2. Research question(s): What is the specific question addressed by the paper?
3. State of the art: What knowledge do we have already about this topic and/or research questions?
4. Research design: How are the research questions going to be investigated?
    a. Concepts – i.e., What's your analytical model?
    b. Case selection – i.e., Country selection, time period analysed. Why is the case relevant for your research questions?
    c. Data – i.e., Why are the chosen data useful for addressing your research questions? What are the main characteristics of the data?
    d. Operationalization/Measurements– i.e., which variables and how are you going to manipulate them?
    e. Methods – i.e., what's your statistical model?

5. Results: What are the estimates of your models and how they can be interpreted? Do your results align with your expectations or not?
6. Discussion of the results and conclusions: What are the implications of the results for the topic under investigation?

[1] See also: Gschwend, Thomas & Schimmelfennig, Frank (2007): Introduction: Designing research in political science - a dialogue between theory and data. In: Gschwend, Thomas & Frank Schimmelfennig (eds.): Research design in political science: how to practice what they preach (pp. 1-18). Houndmills: Palgrave Macmillan. https://nbn-resolving.org/urn:nbn:de:0168-ssoar-258302.

Session overview

Pt. I - How to Apply the Classical Toolbox

Class 1 [07.04] – Intro: Motivation, materials, aims, requirements

Content:

Presentation of seminar rules and the two-part structure of the course (first classical quantitative methods in R, then digital content analysis). Overview of the curriculum, course objectives. Core concepts such as models, populations vs. samples, observations/variables, and correlation versus causation are defined. Three assignment: refreshing R skills, completing key readings, and beginning to specify a research model (in particular, the dependent variable).

Literature:

- Bueno de Mesquita & Fowler (2021), Chapters 2,3,4
- King (1998) Chapter 1

Other sources:

- A platform to practice R without installation: https://adp-cvk.quarto.pub/r-for-social-science-data-analysis/
- Some basic statistics with R: https://statsandr.com/blog/descriptive-statistics-in-r/

Class 2 [14.04] – The first bricks: Data structures, statistical concepts, Git R basics

Content:

Quick review of R and basic programming notions (creating R projects, folder structures, and Git/GitHub version control) alongside univariate statistical concepts, then hands-on practice and assignments. Outlined coding best practices (KIS, DRY), revisited key ideas—populations vs. samples, observations, variables, correlation—then introduced descriptive statistics: measures of central tendency (mean, median, mode), dispersion (variance, standard deviation, standard error), and the Central Limit Theorem. The session's practical component was dedicated to Git and GitHub Desktop installation, R project creation repository locally, and pushing it to GitHub.

Literature:

- Agresti & Finlay (2009), Chapters 1, 2, 3

Other sources:

- Git and Github for beginners: https://product.hubspot.com/blog/git-and-github-tutorial-for-beginners

Class 3 [28.04] – Going multivariate! Generalised linear models, and the bread and butter of multivariate methods (i.e., the linear model)

Content: tbd

Literature: tbd

Other sources: tbd

Class 4 [05.05] – Make your analyses understandable! Quantities of interest and how

to visualize them

Content: tbd

Literature: tbd

Other sources: tbd

Class 5 [12.05] – How to deal with categories and counts: Probit, Logit, & friends

Content: tbd

Literature: tbd

Other sources: tbd

Class 6 [19.05] – Outro: Review/How to apply these methods to your research questions

Content: tbd

Literature: tbd

Other sources: tbd

Pt. II - How to Analyse Digital Content for Political Science Research

Class 7 [26.05] – Introduction: course details, technical set up, where to find content

Content: tbd

Literature: tbd

Other sources: tbd

Class 8 [02.06] – Getting an Overview: import, clean, and measure quantities at scale

Content: tbd

Literature: tbd

Other sources: tbd

Class 9 [16.06] – Going Deeper: using word embeddings to measure political attitudes

Content: tbd

Literature: tbd

Other sources: tbd

Class 10 [23.06] – New Developments: analysing text with Large Language Models

Content: tbd

Literature: tbd

Other sources: tbd

Class 11 [30.06] – Other content: images, video, and the future of online content analysis

Content: tbd

Literature: tbd

Other sources: tbd

Class 12 [07.07] – Review/ Applying Text Analysis to your own research questions

Content: tbd

Literature: tbd

Other sources: tbd

Class 13 [14.07] – Presentation of Research Plans and Initial Findings

Content: tbd

Literature: tbd

Other sources: tbd

References

Required readings

Agresti, A., & Finlay, B. (2014). *Statistical methods for the social sciences* (4. ed., Pearson new internat. ed). Pearson.

Bueno de Mesquita, E., & Fowler, A. (2021). *Thinking clearly with data: A guide to quantitative reasoning and analysis.* Princeton University Press.

King, G. (1998). *Unifying Political Methodology: The Likelihood Theory of Statistical Inference*. University of Michigan Press.

Optional readings

Brambor, T., Clark, W. R., & Golder, M. (2005). Understanding interaction models: improving empirical analyses. *Political Analysis*, *14*(1), 63–82. https://doi.org/10.1093/pan/mpi014

Cinelli, C., Forney, A., & Pearl, J. (2022). A crash course in good and bad controls. *Sociological Methods & Research*, 53(3), 1071–1104. https://doi.org/10.1177/00491241221099552

Gschwend, T., & Schimmelfennig, F. (Eds.). (2007). *Research design in political science: How to practice what they preach*. Palgrave Macmillan.

Heiss, A. (2022, May 20). Marginalia: A guide to figuring out what the heck marginal effects, marginal slopes, average marginal effects, marginal effects at the mean, and all these other marginal things are. *andrewheiss.com*. https://doi.org/10.59350/40xaj-4e562

King, G. (1998). *Unifying political methodology*. https://doi.org/10.3998/mpub.23784

Long, J. S. (1997). *Regression models for categorical and limited dependent variables*. SAGE.

Lundberg, I., Johnson, R., & Stewart, B. M. (2021). What is your estimand? Defining the target quantity connects statistical evidence to theory. *American Sociological Review*, *86*(3), 532–565. https://doi.org/10.1177/00031224211004187