Quantitative Methods in the Study of Political Behavior

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Class Room: Bergheimer Str. 58, Room 02.023   Class Hours: Tuesdays, 18:15-19:45

Description

This seminar provides a hands-on approach to learning quantitative techniques in the analysis of political behaviour, with a focus on the use of R and RStudio. Participants will engage in practical exercises and data analysis to gain skills in using quantitative methods to study individual-level attitudes, behavior, party competition and the dynamic of protest events. Topics covered range from data management and descriptive visualisation to advanced modelling techniques.

The seminar is divided into four parts. The first part focuses on introducing the language of quantitative research, formulating research questions, finding the appropriate research design, operationalization, and measurement. The second part focuses on data management and descriptive statistics, providing a foundation for handling and summarising data. The third part covers bivariate and multivariate data analysis and visualisation, equipping participants with the skills to interpret and present their results. The fourth part covers more advanced topics tailored to students' interests. Students will have the opportunity to learn more about one or two of the following topics: categorical data analysis, time series data analysis, conjoint experiments, factor analysis, latent class analysis, multilevel data analysis, panel data analysis, and constructing survey weights. The class will decide together which of these topics we will cover. Students will have the opportunity to work with an original survey dataset covering political attitudes, voting and protesting behaviour, and party affiliation. This dataset was collected in 2023 in Austria, Germany, Hungary, and Italy.

Course Objectives

The seminar, designed for both BA and MA students. It assumes no previous knowledge of quantitative methods. By the end of the seminar, students will have created, presented, and received feedback on their empirical analysis. In the process, students will achieve several key learning outcomes:

1. They will be able to understand and evaluate quantitative research in political behaviour.

2. They will learn to conduct their own studies by applying basic quantitative techniques.

3. They will develop the ability to address research questions in political behaviour using appropriate designs and quantitative methods.

4. They will be able to effectively work with R and RStudio.

5. They will improve their presentation skills, as well as their ability to work collaboratively by providing feedback to their peers.

Course Requirements

Weekly attendance is mandatory. If you cannot attend, please email me before the respective session. In addition, active participation includes reading the assigned texts, engaging with in-class discussions, asking questions, contributing to debates, and providing constructive peer feedback. **Reading the texts is imperative for the success of the seminar**; without having read the readings, the seminar will be very difficult to follow, and over time, the material will become overwhelming.

The seminar works best if students have their own laptops and can follow along in R & R-Studio. This becomes important starting from session 5.

The requirements vary depending on the context in which you take the seminar. Specifically, only MA students may take the seminar for 4 credits. For 8 credits, BA students need to write a 5,000-word term paper, while for MA students the requirement is 6,000 words.

2 credit points	4 credit points (MA)	2 + 6 credit points
• Active participation in class	• Active participation in class	• Active participation in class
• Reading the literature	• Reading the literature	• Reading the literature
• **In-class presentation (10 mins)**	• **In-class presentation (10 mins)**	• **In-class presentation (10 mins)**
	• **Reading notes for 4 sessions (max. 600 words each)**	• **Term paper: 5,000 words (BA)/6,000 words (MA)**

Office Hours

Office hours are by appointment. Please email me if you would like to meet.

We can meet on-site, in room 03.033 (Bergheimer Str. 58, 69115 Heidelberg) or online, using the heiCONF link: https://heiconf.uni-heidelberg.de/tgad-fzyq-7j9g-zcdh

Online Learning

I provide the course literature in advance via Moodle (https://moodle.uni-heidelberg.de/) and also use the platform for general course information. Please contact me with any questions regarding the course literature, technical problems with Moodle, or other organizational issues.

Student Presentations, Reading Notes, and Final Paper

Presentations

Every student receiving credit points for the seminar must present in class. For this, each student is required to **formulate a research question and individually conduct empirical analysis** using the techniques we learned in class. In addition, **each student is required to discuss the presentation of one of their peers**.

The presentation should be **no longer than 10 minutes**. **You are required to email me your slides a week before the presentation, by Monday noon**. This allows the discussants to have a week to prepare their feedback. The presentations will also be uploaded to Moodle and made available to all students in the class.

A successful presentation has 4-5 slides, with the following structure:

1. What is the research question? What is the main thesis/theoretical expectation? What data is being used? How are the main concepts operationalized? (1-2 slides)

2. What are the key results? Include figures rather than tables (e.g., a coefficient plot instead of a regression table). (1-2 slides)

3. What are the main conclusions that we can draw from the analysis? How does that relate to the research question and theoretical expectation? What were some of the challenges in conducting the empirical analysis? (1 slide)

Following this structure helps ensure the presentation is concise and covers all essential elements. However, it needs to be adapted to each presentation. Focus on the most relevant aspects, but ensure that your presentation provides a comprehensive overview that showcases the empirical analysis you have conducted.

As a discussant, you are required to critically evaluate the strengths and weaknesses of the analysis, suggest ideas for refinement and further development, and ask at least one question. The question would ideally relate to the empirical analysis presented. **Discussants do not need slides, and are expected to talk for 2-3 minutes.**

Reading Notes

Reading notes critically discuss the readings for the respective week and raise questions about unclear points. They should follow a **two- or three-paragraph structure** and **must not exceed 600 words.** Please note, that **I will not accept reading notes written for sessions 1, 5, 7, 13, 14, 15. I strongly recommend preparing most of the reading notes in the first block of the seminar**, when the readings are less practically oriented (sessions 2-4).

You are required to email me your note the week before the respective session, by Friday at 1 PM, so I can integrate your points into the seminar discussion. **If you submit your note late, it will not count toward your final grade**, but you will have the opportunity to submit one for a subsequent session. Each reading note represents 25% of the final grade and is evaluated separately. You are not allowed to submit two reading notes for the same week, so make sure you submit your notes on time.

The reading note should focus on critically evaluating the texts strengths and weaknesses, and focus on the themes that should be further developed in class. As a suggestion, a reading note might address some of the questions below:

1. What is the text's central theme and how does it relate to the research you want to conduct? To what extent does the text convince you? What are its strengths and weaknesses? What are your key takeaways? (one or two paragraphs)

2. What are the questions you would like to raise in class? (one paragraph)

Term Paper

A term paper should be 5,000 words (BA) or 6,000 words (MA), including references and footnotes. The deadline for this paper is the end of the winter term, **31st March 2025**. The paper is the final 'product' of the seminar, allowing you to showcase what you have learned throughout the semester. **You are strongly encouraged to write the term paper on the same topic on which you have presented**.

The term paper should present a clear research question and answer it based on original empirical analysis. This is the critical requirement for assessment. A successful term paper follows a clear structure, where the research question is introduced, the analysis is positioned in the relevant debates, theoretical expectations are formulated, the data source, the key measures, and the method are discussed, the results are presented, and conclusions are drawn with a view towards the research question and expectations. The empirical analysis should include a descriptive account of the phenomenon being studied (dependent variable), as well as a correlational analysis where (some of) its predictors are explored. It is not required to identify causal relationships in the term paper. The topic of the term paper should relate to the field of political behaviour.

Academic Writing and Reading

I strongly recommend taking part in the academic writing course offered by Heidelberg University (Institute for German as a Foreign Language Philology). For more information, see: https://www.uni-heidelberg.de/en/study/advisory-services/service-and-events-of-the-international-relations-office/academic-writing-english-spoken-offer

On writing research papers:

Minkoff, Scott L. 2012. "A Guide to Developing and Writing Research Papers in Political Science," https://kevinlyles.digital.uic.edu/wp-content/uploads/2021/08/minkoff_researchpaper_guide_v4.pdf.

On writing a good abstract:

Gilardi, Fabrizio. 2021. "Good Abstracts: A Template," https://www.fabriziogilardi.org/resources/papers/good-abstracts.pdf.

Templates for writing:

Graff, Gerald, and Cathy Birkenstein. 2018. *They Say, I Say: The Moves That Matter in Academic Writing.* Fourth edition. New York: W. W. Norton. ISBN: 0-393-63167-2. https://tinyurl.com/bdec4eex.

On reading efficiently:

Pacheco-Vega, Raul. 2020. "Reading Strategies," http://www.raulpacheco.org/resources/reading-strategies.

Note: Raul Pacheco-Vega's blog is a valuable resource for academic writing in general!

Software Recommendation:

I use Google Scholar and Zotero (both freely available) for literature search. For note-taking, I use Obsidian (also freely available). I recommend that you learn how to use these software tools (or their alternatives), as the investment pays off later during your studies. YouTube has many tutorial videos, and I am also happy to help if you have questions.

Academic Integrity and Mental Health

Plagiarism

Students must comply with the university policy on academic integrity found at https://www.ub.uni-heidelberg.de/en/service/detecting-plagiarism. In addition, please also familiarize yourself with the Study Guide https://www.uni-heidelberg.de/politikwissenschaften/master_recht.html. Not knowing the rules is no excuse for plagiarism!

Use of AI

If you use AI (ChatGPT, Claude, etc.) to write your term paper, you are required to be transparent about it. More specifically, list the prompts and answers in a separate appendix at the end of the term paper. This appendix does not count towards the word count. You do not need to list the use of AI for grammar corrections (e.g., DeepL Write, Grammarly, etc.). You are also allowed to use AI for coding, data analysis, and programming, but remember to critically evaluate AI-generated content and use it as a supportive tool rather than as a primary author. Please remember always to respect the rules of academic integrity and honesty.

Mental Health

Many students feel overwhelmed by the tasks and responsibilities during their studies, especially if they are new to Germany and Heidelberg. This is normal! If you feel that you are not able to cope alone, please consider approaching the psychosocial counselling service offered free of charge by the student services at https://www.uni-heidelberg.de/en/study/advisory-services/psychosocial-counselling-for-students-pcs. If you are having difficulties, e.g., with the term paper, please do not hesitate to approach me.

Schedule and Readings

Block I: Introduction

Session 1, 15.10.2024 - Introducing the seminar

- Introduce the syllabus

- Clarify expectations

- Divide up the presentations

Session 2, 22.10.2024 - Establishing a common language

- What is the difference between correlation and causation?

- Open debate on the merits of studying causality

Required:

De Mesquita, Ethan Bueno, and Anthony Fowler. 2021a. "Correlation: What Is It and What Is It Good For?" In *Thinking Clearly With Data: A Guide to Quantitative Reasoning and Analysis,* 13–36. Princeton: Princeton University Press. ISBN: 978-0-691-21435-1.

———. 2021b. "Causation: What Is It and What Is It Good For?" In *Thinking Clearly With Data: A Guide to Quantitative Reasoning and Analysis,* 37–52. Princeton: Princeton University Press. ISBN: 978-0-691-21435-1.

Session 3, 29.10.2024 - Research questions and theory building

- How to specify answerable research questions in quantitative research?

- How to build theories and formulate testable expectations?

Required:

Kellstedt, Paul M., and Guy D. Whitten. 2018a. "The Art of Theory Building." In *The Fundamentals of Political Science Research,* 25–55. Cambridge: Cambridge University Press.

———. 2018b. "Evaluating Causal Relationships." In *The Fundamentals of Political Science Research,* 56–76. Cambridge: Cambridge University Press.

Session 4, 05.11.2024 - Research design and measurement

- What is the difference between observational and experimental research designs?

- What are validity and reliability, and how can we assess them in the measurement of theoretical concepts?

Required:

Kellstedt, Paul M., and Guy D. Whitten. 2018a. "Research Design." In *The Fundamentals of Political Science Research,* 77–103. Cambridge: Cambridge University Press.

———. 2018b. "Measuring Concepts of Interest." In *The Fundamentals of Political Science Research,* 104–124. Cambridge: Cambridge University Press.

Block II: Data management and descriptive statistics

Session 5, 12.11.2024 - Data sources and distributions

- What are the main alternative data sources for studying individual-level attitudes, party competition, and protest dynamics?

- How do I import datasets into R using R-Studio?

Required:

Wickham, Hadley, Mine Çetinkaya-Rundel, and Garrett Grolemund. 2023a. "Introduction." In *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data.* Beijing Boston Farnham Sebastopol Tokyo: OReilly Media. ISBN: 978-1-4920-9740-2. https://r4ds.hadley.nz/intro.

———. 2023b. "Chapter 7: Data Import." In *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data.* Beijing Boston Farnham Sebastopol Tokyo: OReilly Media. ISBN: 978-1-4920-9740-2. https://r4ds.hadley.nz/data-import.

- Review the list of datasets available at https://github.com/erikgahner/PolData

- Review the questionnaire of the *Party-Movements survey*

Session 6, 19.11.2024 - Types of variables

- What types of variables exist?

- How can we characterize distributions?

Required:

Kellstedt, Paul M., and Guy D. Whitten. 2018a. "Getting to Know Your Data." In *The Fundamentals of Political Science Research,* 125–142. Cambridge: Cambridge University Press.

―――. 2018b. "Probability and Statistical Inference." In *The Fundamentals of Political Science Research,* 143–160. Cambridge: Cambridge University Press.

Session 7, 26.11.2024 - Data transformation

- How do I filter rows, select columns, and mutate values?

- What is the long and wide data format, and how do I move between them?

Required:

Wickham, Hadley, Mine Çetinkaya-Rundel, and Garrett Grolemund. 2023a. "Chapter 3: Data Transformation." In *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data.* Beijing Boston Farnham Sebastopol Tokyo: OReilly Media. ISBN: 978-1-4920-9740-2. https://r4ds.hadley.nz/data-transform.

―――. 2023b. "Chapter 5: Data tidying." In *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data.* Beijing Boston Farnham Sebastopol Tokyo: OReilly Media. ISBN: 978-1-4920-9740-2. https://r4ds.hadley.nz/data-tidy.

Block III: Data modelling and visualization

Session 8, 03.12.2024 - Bivariate hypothesis testing

- What are t-tests, p-values, and r-values?

- How to conduct a bivariate regression?

Required:

Kellstedt, Paul M., and Guy D. Whitten. 2018a. "Bivariate Hypothesis Testing." In *The Fundamentals of Political Science Research,* 161–187. Cambridge: Cambridge University Press.

―――. 2018b. "Two-Variable Regression Models." In *The Fundamentals of Political Science Research,* 188–214. Cambridge: Cambridge University Press.

Session 9, 10.12.2024 - Data visualization

- How do I plot the distribution of various types of variables?

- How do I visualize the relationship between two (or more) variables?

Required:

Wickham, Hadley, Mine Çetinkaya-Rundel, and Garrett Grolemund. 2023. "Chapter 1: Data Visualization." In *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data.* Beijing Boston Farnham Sebastopol Tokyo: OReilly Media. ISBN: 978-1-4920-9740-2. https://r4ds.hadley.nz/data-visualize.

Tufte, Edward R. 2001. "Graphical Excellence." In *The Visual Display of Quantitative Information,* 13–52. Cheshire, Connecticut: Graphics Pr. ISBN: 978-1-930824-13-3.

Session 10, 17.12.2024 - Multivariate OLS regression

- How can we extend the bivariate framework to a multivariate setting?

- How do we estimate a multivariate OLS model using R and present the results?

Required:

Kellstedt, Paul M., and Guy D. Whitten. 2018. "Multiple Regression: the Basics." In *The Fundamentals of Political Science Research,* 215–245. Cambridge: Cambridge University Press.

Block IV: Advanced topics and in-class presentations

Session 11, 07.01.2025 - Interactions in multivariate OLS regression

- How do we specify a multivariate OLS model with interactions?

- How do we plot the results of interactions?

Required:

Kellstedt, Paul M., and Guy D. Whitten. 2018. "Multiple Regression Model Specification." In *The Fundamentals of Political Science Research,* 246–272. Cambridge: Cambridge University Press.

Session 12, 14.01.2025 - Advanced topic of choice - Suggestion: dichotomous and autocorrelated dependent variables

- How to model variation in dichotomous dependent variables?

- How to model time series data?

Required:

Kellstedt, Paul M., and Guy D. Whitten. 2018. "Limited Dependent Variables and Time-Series Data." In *The Fundamentals of Political Science Research,* 273–298. Cambridge: Cambridge University Press.

Session 13, 21.01.2025 - In-class presentations

- Student presentations

Session 14, 28.01.2025 - In-class presentations

- Student presentations

Session 15, 04.02.2025 - In-class presentations, on AI in coding & concluding roundtable

- Student presentations

- Short presentation on integrating GitHub Copilot & ChatGPT in data analysis.

- Feedback session on the content and organization of the seminar, with an open discussion on what you liked, disliked, or learned from the seminar.