



Stockholm
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Methods in Political Science
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Writing a quantitative thesis

Introduction and disclaimers

Bridging the gap between this and the thesis course

- Workshop: Covering data management.
- Lecture: How to think and write about methods in a thesis.

Introduction and disclaimers

The thesis course starts this fall (or next spring)

- I will only cover a small part of thesis writing.
- You are not expected to start before the semester.
- You will have a supervisor, a schedule, etc.

And ends in January

- The last course day is January 15.

Introduction and disclaimers

My advice will not be to your satisfaction

- There is no template for writing a good thesis.
 - Including relevant parts may be required for passing, but the quality of a thesis is determined by the quality of arguments.
 - Choosing what to include and discuss is part of the task.
 - You will use skills and knowledge you've acquired over years.
- Non-exhaustive and very general content.
- These are my views and experiences.

Introduction and disclaimers

Structure of the lecture

- Designing your study
 - Research problems.
 - The role of theory.
 - Different kinds of data.
 - Empirical contributions.
- Thesis contents
- Interpretation

Focus on empirics, but I will start from where you are now.

Designing your study

Method of topics

- I am asked: 'I want to write about...Is this topic a good idea?'
 - The US invasion of Iran
 - Government formation
 - Young people's environmental attitudes
- Sometimes you have already identified an empirical gap, otherwise it tends to be the next step.
- This is perfectly fine. It apparently works, and at this stage such topics are enough to find a matching thesis group.
- But a topic is not interesting in itself, or if it is void of theory and potential contributions.

Designing your study

Method of problems

- Problem-driven approaches focus on things which are puzzling or that we are curious about.
- Perhaps there is an inconsistency between existing knowledge and something we observe?
 - This can be a vague feeling.
 - Existing knowledge can be theory, discourse or a measure.
- Or a gap in our knowledge?
 - Something we do not understand, rather than a case we have not studied.
 - New cases are motivated if we should expect other results.

Designing your study

A pragmatic view

Much of the literature on problem-driven research is too focused on disruptive science. More general: what's your idea or USP?

- Can you describe a research problem?
 - What is puzzling or feeding your curiosity?
 - Why should we question existing knowledge?
- Do you have an idea for better (or different) identification?
- Do you have access to certain resources?

Use that 'idea' as your starting point.

Designing your study

Finding inspiration

- Search for problems and possible contributions when:
 - Reading previous research about your topic.
 - Thinking about designs others have used.
 - Evaluating your access to data and organisations.
- Always contrast what you read and hear with your perception of the dominant view in research.
- For inspiration, we will look at examples of:
 - Connecting theory and methods
 - Different kinds of data
 - Empirical contributions

Designing your study

Theory: Fundamentals

- Theory as abstraction.
 - Replace proper nouns with theoretical concepts.
 - This is the most important generalization.
 - Necessary for finding relevant research.
 - Necessary for problem-driven approach to RQ.
- Use theory to predict and understand results.
- Use theory to define key concept.

Designing your study

How theory relates to methods

- Strengthening internal validity: plausibility of causal mechanism and identifying alternative stories.
- Guiding mechanism analysis: designing treatments or determining heterogeneity analyses.
- External validity: when is this mechanism in place?
- Conceptual validity of measurements.
- Guiding model specifications: Decisions about dynamics, control variables, mediators, etc. are made in an interplay between theory and empirical results.

Designing your study

Different kinds of data

- Surveys (SOM, SNES, WVS, EVS, ESS)
- Country aggregates (QoG, ParlGov, EU/OECD/UN/WB)
- Swedish municipality aggregates (SCB, Kolada)
- Other (manifestos, news articles, debates, inquiries, etc.)

Larger collections of data

<https://github.com/erikgahner/PolData>

<https://www.demscore.se>

<https://researchdata.se>

Designing your study

Producing your own data

- Surveys
 - Online (GDPR & ethical approval, recruitment of participants)
 - Paper (social aspect, target group)
- Social media
- Coding new variables to merge with existing data
- Maybe you have access to unique data?

Designing your study

Asking researchers about their data

- Authors tend to publish their data:
 - Replication data often available in connection to publication.
 - Other datasets often found at author's homepage or similar.
 - You can e-mail authors but do not expect replication files.
- Unpublished data is more difficult.
 - I have a goldmine of data, but also user restrictions and ethical approval for specific research projects.

Designing your study

Empirical contribution: What do you add?

- A thesis contributes empirically when it helps us learn something we did not already know.
- We are not journalists. It is usually not enough to:
 - Report publicly available numbers.
 - Describe what experts know.
 - Summarize previous research.
- But large contributions can be made with only little processing of available data.

Designing your study

Common empirical contributions

- New explanation
- New empirical question
- Addressing a methodological weakness
- Heterogeneity
- New empirical case
- Better data
- New data

Designing your study

Different kinds of methods

- Do not focus too much on specific models or techniques.
- Instead of setting a label, ask what you want to show and how to handle the exogeneity assumption.
- Using other methods than what is standard within the field is a good idea that is rarely done.
- Method complexity should reflect the problem at hand (but there is a point in having *some* problems to deal with).

Designing your study

Different ways of combining methods

- Selecting cases relative to a statistical model
 - Identifying deviant observations (off-the-line)
 - In-depth study of cases on-the-line
 - Illustrative case-studies that fits the story
- Exploratory qualitative study, or informant interviews, that is generalized using quantitative methods
- Combining a statistical survey analysis with qualitative assessment of open-ended questions.
- Coding your own data for statistical analysis.

Designing your study

Different ways of combining methods

- Mixed methods usually refers to mixing qual. and quant., but combinations can include:
 - Observational with experimental.
 - First-person accounts with statistical relationships.
 - Using quant. tools when aggregating results from qual. study (e.g., confidence intervals).
- As always: do what is relevant!
- Variation in field more important than variation in study.

Content

Methodwise, you should present and discuss/motivate:

- Choice of method.
- Key variables and their validity (and perhaps reliability).
- What data you have used and the sample you study.
- Model specifications and control variables.
- Case choice, esp. in relation to internal and external validity.

Content

The quality of these discussions is important!

- Avoid uncalled-for repetitions and empty phrases (“The method was chosen because it suits my RQ”). Common when you do not know what to write.
- Apply your knowledge to your particular field/study and avoid overly general statements.
- A critical approach, towards your own and others’ work, is not about apologetic language or radical views.
- Connect with both methods and applied literature.
- Try to integrate theory with methodological discussions.

Content

Considerations regarding style and audience

- The reader is somewhat familiar with regression analysis.
- Textbook-phrasings can be correct but signal a shallow understanding (e.g., “a one-unit increase in female”).
- Choose your words with precision (address/solve, indicate/show, inadequacies/limitations, etc.).
- Emphasize your contributions but do not ignore the weaknesses.
- Structure your thesis and arguments instead of writing that you meet the grading criteria (e.g., “which means that the thesis has both academic and practical relevance”)?

Content

You can only present a selection of results

- I have two ways of conceptualizing selection and presentation:
 - The trade-off between bias and precision
 - The communicative and the exploratory layer (emphasizing intended take-aways plus providing full transparency)
- You have a great responsibility to present results that are representative.
- Use the appendix! And briefly comment in main text.

Content

Typical tables

- A table with descriptive statistics (or a balance test)
- A table with the main results (from simple to flexible)
 - Trade-off between bias and precision
 - Other trade-offs involved when choosing controls
- One or two tables with robustness, mediation or moderation

And then some in the appendix.

Content

You should add graphs, but which ones?

- Descriptive graphs (histograms, boxplots, etc.)
- A scatter plot or binscatter to illustrate a relationship
- I like line graphs for time-series data
- Bar charts and coefficient plots can give visual weight to your main results.
- Some graphs are mandatory for the method (DiD, RD)

I think most graphs should be either communicative (deliver your message) or exploratory (diagnostics and transparency).

What characterizes a nice table?

- Self-contained
 - Add rows with model info (FE, samples, etc.)
 - Informative note below table.
 - Informative variable labels that correspond to larger values
- At the top of the page and horizontally centered
- Decimal-centered columns
- Consistent and reasonable number of decimal points
- No vertical lines and only a few horizontal lines

Content

What characterizes a nice graph?

- Self-contained (informative labels and note)
- At the top of the page, horizontally centered
- Clear message or lots of information
- Aesthetically pleasing proportions and no unnecessary lines
- Variation in data should correspond to variation in display
- Consistent markers across graphs
- Vector format > high resolution > low resolution.

Create graphs and tables for the reader who browses your thesis

Interpreting your findings

- Most students find interpretation difficult. Plan accordingly.
- The second challenge is to be selective with regards to what you comment on:
 - The thesis is not a method course assignment/exam where you score points for each statistic you can interpret.
 - It is a skill to understand which statistics that are important for what you do.
 - Keep focused on your research question.

Interpreting your findings

What about statistical significance?

- Significant results are also estimates with bias and precision.
- Do not search too much for statistically significant results.
- Not significant does not equal zero.
- Results close to “zero” are interesting too, but primarily if precisely estimated.
- Confidence intervals are helpful.
- See the lecture on this!

Concluding

Remaining questions?