Research plan assignment

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RPOS 517

To facilitate your use of the methods learned in this course, you are composing a research plan that will help you write a publishable paper. This research plan is similar to the type of document you would submit to pre-register a study at a journal. See issue 1, volume 21 of *Political Analysis* and the call for proposals for a forthcoming issue of *Comparative Political Studies* for details on pre-registrations, and read a conversation in the *Washington Post* for a summary of arguments for pre-registration. The assignment has three specific objectives:

PA: http://goo.gl/Brb8mu
CPS: http://goo.gl/etbNGk
WP: http://goo.gl/SsiVTz

- formulate a clear and testable hypothesis *before* examining data
- specify clearly the implications of a hypothesis for a quantitative test
- know how to use a (quantitative) tool to help answer a research question

Components

Your research plan needs to follow the steps listed in the "research process" outline below. Your document needs to contain a summary of your research question, preliminary answer(s), research design, and a data analysis plan. You will submit this document (between 5 and 7 single-spaced pages) to me via Blackboard on May 6. I will then send the document to a randomly assigned colleague of yours for review, and you will receive feedback from me and a colleague.

Steps of this assignment

This assignment is to be submitted at once, but you should consult in the weeks before the due date with me and/or the TA about your project. Note that you do not need to conduct any data analysis for this assignment. However, this is a great opportunity for you to collect valuable feedback *before* you incur the cost of collecting and analyzing data. So I strongly recommend that you create a research plan for a project or idea that is close to your interest and that you are likely to pursue further after this course. If you *do* go beyond the requirement and conduct data analysis, I'll be happy to provide feedback at the end of the semester.

After completion: Review

You will receive feedback from me during and after completion of your research plan. In addition to my feedback, you will receive feedback from one colleague in the course and provide feedback yourself to another colleague. Reviewing others' work (e.g., journal articles, grants, or commissioned studies) will be an important part of your work as a scholar or professional. To prepare you for this and to practice your use of statistical methods, you will provide constructive feedback to a colleague's research plan. Between May 6 and May 13, you will produce a 2-page single-spaced review of a randomly assigned colleague's research plan. I will provide separate guidelines for this review. Your colleague will receive your anonymized review through me on May 14.

Examples

You can find examples for similar research plans at two sources:

- Issue 1, volume 21 of *Political Analysis*
- The list of registered designs at the EGAP (Experiments in Governance and Politics) project: http://egap.org/design-registration/registered-designs/.

Note that your research plan is somewhat different from each of these examples. But they give you an idea of how pre-registering a research plan looks like in practice.

The research process

This document outlines the typical steps in the research process, building on your experience in RPOS 517 so far. Steps A and B are required for your research plans (due on May 6). The guidelines in steps A and B will also be the foundation for the peer reviews you conduct between May 6 and May 13.

These steps are adapted from material by Sally Friedman and Markus Crepaz.

A. Motivation and Frontend

1. Project justification: Why is this an important topic? Why do this research? This can come in the form of a "puzzle". A puzzle can be:

   - an empirical observation that goes against, or is not readily explained by mainstream theory
   - a disagreement between two theories
   - a new phenomenon that is outside the scope of existing theory.

2. The Research Question: A "why" question asking why there is variation in your outcome variable or phenomenon. What explains different outcomes of interest?

3. Concept Definition: Define the major concept of your project. Usually this means defining your outcome variable. Be clear about this definition. Think about the extent of agreement there would be on your definition among scholars or experts. Think about possible alternative definitions and explain why yours is best. Citing that others use the same definition is one option, but the strongest case comes from a clear link between definition and research question and justification.

4. Theoretical Argument: This is YOUR take at the research question. YOU write in YOUR words. This is almost never the place for extensively referencing other work. You need to clarify how you arrive at an explanation for the variation you observe. If your theory builds on other work, you need to clearly lay out why this other work speaks to your question and what the contribution of your study is (e.g., an innovative test using new data, an improvement or clarification of existing arguments, etc.)

5. Hypotheses: What explanatory variables explain variation in your outcome variable? Be clear about the direction and type of hypothesis (positive/negative relationship, linear/nonlinear, etc.). Does your theory make any predictions about effect size? Does it make conditional predictions? What are the scope conditions?

6. Rival hypotheses: After you have completed steps 1 through 5, specify the most important alternative explanations, if any, for your outcome of interest that an expert reader would want to see addressed.

7. Keep things simple. Really understand the implications of your hypotheses before you move on.

8. Remember, this is a process and your thinking will evolve as you work through these steps and receive feedback.

B. Research Design

1. What type of research design is best suited for your project? Remember that qualitative and quantitative methods are not mutually exclusive. For this class, your project requires a quantitative test. But there is a variety of methods among quantitative tests that you've encountered: experiments, inferences from observational macro-data, inferences from survey data, etc.

2. Operationalization and measure of major concepts. Consider reliability, validity and level of measurement. Develop appropriate measures of concepts and justify why they are good measures.

- Here, you have to be **completely precise** about the measurement and sources of your variables.
- Generic terms such as "foreign aid" or "political information" are not sufficient.
- Explain precisely how the variable is measured (in what units, etc.) and where it comes from (publicly available data, your coding, etc.)

3. Sampling and temporal-spatial coverage of your data.

4. Other concerns that come up in designing your project.

5. Description of the appropriate/planned statistical test of your hypothesis/es. This section needs to clearly express the implications of your hypothesis for this specific statistical test. What size of the parameters of the statistical test would support your hypothesis? What parameter values would lead you to reject your hypothesis?

   - A difference-of-means test might be appropriate if rival hypotheses and confounders can be accounted for by randomization in an experiment.
   - Focusing on the central topics of this course, the most likely test to use is multiple regression.
   - Write out the mathematical expression of (a) your hypothesis/hypotheses and (b) the regression equation (if you use regression).

The research plan assignment ends here.

C. Data Analysis

1. Univariate/descriptive statistics, particularly on the outcome variable and discussion of what is learned from them. Raw data, frequencies, central tendency, dispersion, etc. Describe your outcome variable: here you show the reader the variance your study explains. You can also use a highlight of this section at the very beginning of the paper to illustrate the justification for this research. More can be learned from descriptive statistics than you think!

2. Appropriate statistical tests of your hypothesis/hypotheses and potential rival hypotheses.

   - A difference-of-means test might be appropriate if rival hypotheses and confounders can be accounted for by randomization in an experiment.
   - Focusing on the central topics of this course, the most likely test to use is multiple regression and the statistics associated with it.

3. Interpretation of statistical tests: What do these tests reveal about your hypotheses? In addition to statistical significance, what is the substantive relationship between your explanatory and outcome variables?

4. Diagnostics and robustness tests: Are there obvious concerns about the statistical tests you used? Do they meet any crucial assumptions, such as the OLS assumptions? Did you conduct appropriate diagnostics? Are your results robust to alternative model specifications? These tests should be briefly summarized and available in a separate appendix. Think of them not as a hurdle but as an opportunity to learn more about your data and about how your empirical model might be improved for another study.

D. Conclusions and Implications

1. Overall, what did your theory in conjunction with the data analysis contribute to answering the initial research question?
2. What are the implications of your findings for policy and for theoretical approaches to your research question or the broader research area?
3. What are the limitations of the methods you chose to answer this research question? Does your study suggest opportunities for future research?