



METHODOLOGY OF POLITICAL SCIENCE

SPS/04 - 6 CFU - 1° semestre

Docente titolare dell'insegnamento

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Orario ricevimento: Lunedì 10.00-12.00

OBIETTIVI FORMATIVI

1. Knowledge and understanding. By the end of the course, students will be able to identify theories, hypotheses, and methods used in empirical political science research. They will understand how big data and data science can contribute to the understanding of political and social problems and dynamics.
2. Applying knowledge and understanding. By the end of the course, students will apply different methods to political science research questions. They will be able to design and carry out a research project that uses innovative (big) data for understanding, describing, real-time monitoring and/or forecasting of political and social behaviour.
3. Making judgements. By the end of the course, students will analyze data to measure concepts, make comparisons, and draw inferences. They will be able to understand suitable and appropriate methodologies and designs for political and social science research.
4. Communication skills. By the end of the course, students will learn how to communicate political science concepts, theories, and methods in writing. They will also be able to present their research projects, findings and implications in front of an audience.
5. Learning skills. By the end of the course, students will learn how to recognise the most suitable method(s) for addressing research questions with the use of big data and data science methods.

MODALITÀ DI SVOLGIMENTO DELL'INSEGNAMENTO

Seminars will typically include presentations by the lecturer as well as by students.

Normally, at each seminar we will first discuss topics in general terms. We may call these sections lectures, although I will make an effort to make them as interactive as possible.

We will then discuss one or two real pieces of research – research in focus – that employed big data/data science/computational social science methods. The discussion of research in focus will concentrate both on substantive elements (the question or problem that the study addresses and its main findings) and

research design aspects (the data and design used). In this way, we will improve our capacity to understand and evaluate research while we will also learn how innovative data and methods are used in real computational social science.

While most or all seminars will include one or two student presentations, three seminars will be based entirely on the presentation and discussion of students' research design proposals (see method of assessment). We will call these student workshops – more details in the next section.

Students should not be intimidated by the amount of readings! Before each seminar, you will normally be expected to read one chapter on the 'general' topic under discussion. One additional reading will normally be a piece of research (see research in focus below) that we will use to make sense of how 'general' questions are addressed 'in practice' in applied research.

NOTE that, should teaching be carried out in mixed mode or remotely, it may be necessary to introduce changes with respect to previous statements, in line with the programme planned and outlined in the syllabus.

PREREQUISITI RICHIESTI

We will start from the basics of research design and methods, so the course does not assume any prior knowledge of political/social science. However, basic notions of data science will be needed to carry out your own research project, which will be a basic requirement for evaluation.

FREQUENZA LEZIONI

Not compulsory but strongly encouraged.

CONTENUTI DEL CORSO

AIM AND SCOPE

The large-scale, high-frequency and real-timeliness of Big Data (BD) provide unprecedented opportunities for understanding, monitoring and forecasting social and political phenomena. Just to provide some examples, real-time tweets can be used to monitor moods and opinions as well as to forecast election results; online polls and surveys can be used to measure political preferences; political speeches can be used to trace the relevance of policy issues over time and space; geotagged event data can be used for monitoring and early warning of social uprisings or conflicts. Similarly, the potential of BD for the evaluation of policy programmes is enormous. Big Data, and the Data Science (DS) needed to analyse them, represent the largest transformation of social -science for decades – so much so that a 'new' field of studies emerged that is referred to as Computational Social Science.

This course focuses on the methods for designing political (and social) science research, with a special emphasis on innovative (big) data sources and DS methods. We will discuss how to design a political science research project, from asking good research questions to selecting data sources, formulating and testing hypotheses, and evaluating findings. Throughout, we will highlight the key differences between designing research for exploring problems, for developing theories, and for making forecasts – and we will attempt to build bridges between them.

While you will be expected to pick up your topic and develop your own research project throughout the course, this is not a primarily technical course. Rather than on analytical techniques or statistical modelling, the emphasis will be on developing the ability to design, carry out and evaluate research that exploits the potential of big data and data science to understand political and social problems.

NOTA BENE: Students should not be intimidated by the amount of readings! Before each seminar, you will normally be expected to read one chapter on the 'general' topic under discussion. One additional reading will normally be a piece of research (see research in focus below) that we will use to make sense of how 'general' questions are addressed 'in practice' in applied research.

In addition to the single topics enumerated below, we will also have 'research in focus' sessions to discuss particular applications of computational political science.

RESEARCH IN FOCUS

Computational political science: applications of big data science to political science research/I.

- Big data in surveys for the study of elections, public opinion and representation (Warshaw in Alvarez 2016).
- Political event real time data (Beieler et al in Alvarez 2016).
- Network analysis (Sinclair in Alvarez 2016).
- Social media and protests (Tucker et al in Alvarez 2016).
- Social marketing for smart government (Griepentrog in Alvarez 2016).
- Machine learning algorithms for election fraud detection (Levin et al in Alvarez 2016).
- Social media for nowcasting and forecasting elections (Ceron/Curini/Iacus 2017).

Computational political science: applications of big data science to political science research/II.

- International Trade with Big Data C. A. Hidalgo, B. Klinger, A.-L. Barabási, R. Hausmann. "The Product Space Conditions the Development of Nations." *Science* 317.5837 (2007): 482-487
- Lobbying and Campaign Contribution. In Song Kim. "Political Cleavages within Industry: Firm-level Lobbying for Trade Liberalization." *American Political Science Review*, 111.1: 1-20.
- Stephen Ansolabehere, John M. de Figueiredo, and James M. Snyder. "Why is There so Little Money in U.S. Politics?" *Journal of Economic Perspectives*, 17.1 (2003): 105-130

Identifying Behavioral Patterns using Massive Data Reading

- Gary King, Jennifer Pan, and Margaret E Roberts. "How Censorship in China Allows Government Criticism but Silences Collective Expression." *American Political Science Review*, 107.2: 326-343.
- Pierson, E., Simoiu, C., Overgoor, J., Corbett-Davies, S., Ramachandran, V., Phillips, C., and Goel, S. (2017). "A large-scale Analysis of Racial Disparities in Police Stops across the United States." arXiv preprint arXiv:1706.05678.

Measuring Ideological and Political Preferences using Social Network Data

- Robert Bond and Solomon Messing. "Quantifying Social Media's Political Space: Estimating Ideology from Publicly Revealed Preferences on Facebook." *American Political Science Review* 109.1 (2015): 62-78.
- Pablo Barbera "Birds of the Same Feather Tweet Together: Bayesian Ideal Point Estimation Using Twitter Data." *Political Analysis* 23.1 (2014): 76-91

What do Politicians Do?

- Justin Grimmer, Solomon Messing, and Sean Westwood. "How Words and Money Cultivate a Personal

Vote: The Effect of Legislator Credit Claiming on Constituent Credit Allocation." American Political Science Review, 106.4 (2012), 703-719

Big Administrative Data: Promises and Pitfalls

• Connelly, R., Playford, C.J., Gayle, V., Dibben, C., 2016. "The Role of Administrative Data in the Big Data Revolution in Social Science Research." Social Science Research, Special issue on Big Data in the Social Sciences 59, 112

• Kopczuk, W., Saez, E., Song, J., 2010. "Earnings Inequality and Mobility in the United States: Evidence from Social Security Data Since 1937." The Quarterly Journal of Economics 125, 911-28.

• Machine Learning Algorithms in Society. Kleinberg, Jon, Himabindu Lakkaraju, Jure Leskovec, Jens Ludwig, and Sendhil Mullainathan. 2018. "Human Decisions and Machine Predictions." The Quarterly Journal of Economics 133 (1):237-93

TESTI DI RIFERIMENTO

COURSE MATERIALS

Core texts

• Alvarez, R.M. (2016). Computational Social Science: Discovery and Prediction. New York, NY: Cambridge University Press.

• Kellstedt, P.M. & Whitten, G.D. (2018). The Fundamentals of Political Science Research. Cambridge Core.

• Toshkov, D. (2016). Research Design in Political Science. London New York, NY: Palgrave.

Supplementary readings

• Ceron, A., Curini, L. & Iacus, S.M. (2017). Politics and Big Data: Nowcasting and Forecasting Elections with Social Media. London ; New York, NY: Routledge.

• Cioffi-Revilla, C. (2017). Introduction to Computational Social Science: Principles and Applications (2 edition.). New York, NY: Springer-Verlag

• Gerring, J. (2012). Social Science Methodology: A Unified Framework (2 edition). New York: Cambridge University Press.

• Jungherr, A. (2015). Analyzing Political Communication with Digital Trace Data: The Role of Twitter Messages in Social Science Research. Cham: Springer Verlag.

• Lowndes, V., Marsh, D. & Stoker, G. (2017). Theory and Methods in Political Science (4 edition). Basingstoke: Palgrave MacMillan.

ALTRO MATERIALE DIDATTICO

Additional teaching materials will be provided during the course.

PROGRAMMAZIONE DEL CORSO

Argomenti

Riferimenti testi

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| 1 | 1. Introduction to the scientific study of politics (and to the course). What does political (or social) science mean. Approaching politics scientifically. Contents and structure of the course. | Kellstedt and Whitten 2018 chapter 1; King in Alvarez 2016; Toshkov 2016 chapter 1. |
| 2 | 2. Asking good research questions. Why bother with research questions. Types of research questions. Why good research questions are so important to good science, and how to formulate good research questions. | Kellstedt and Whitten 2018 chapter 2; Toshkov 2016 chapter 2. |
| 3 | FIRST STUDENT WORKSHOP. Presentation of research topics/questions for research design proposal. | -- |
| 4 | 3. Literature review. Finding, selecting, assessing, organising and presenting science - 'without getting buried in it'! | Slides + selected readings to be analysed and discussed in class. |
| 5 | 4. Theory. The function of theory in social science - and the difference with theories in natural science. Paradigms, frameworks, theories and models. Developing theories. Assessing theories. | Kellstedt and Whitten 2018 chapter 2; Toshkov 2016 chapter 3. |
| 6 | 5. Concepts and operationalisation. The role of concepts in social science, and the challenge of concept definition. Operationalising concepts to make them measurable. | Gerring 2012 chapter 5; Toshkov 2016 chapter 4. |
| 7 | 6. Measuring and describing variables. Measurement strategies and descriptive inference. | Gerring 2012 chapter 7; Kellstedt and Whitten 2018 chapter 5; Toshkov 2016 chapter 5. |
| 8 | ** SECOND STUDENT WORKSHOP. Presentation of literature reviews and hypotheses for research design proposal. | -- |
| 9 | 7. Explanation and causal relations. Types of explanation: laws, probabilistic, functional, intentional and mechanistic explanations. Notions of causality and causal inference. | Kellstedt and Whitten 2018 chapter 3; Toshkov 2016 chapter 6. |
| 10 | 8. 'Standard' research designs/I. Case studies: selecting evidence to observe; conducting case studies research; use and limitations. Comparative designs: logic and types of small-n comparative research, most similar/most different designs; qualitative comparative analysis; use and limitations. | Toshkov 2016 chapters 9, 10. |
| 11 | 9. 'Standard' research designs/II. Mixed and nested designs: selecting and using cases in mixed and nested designs; use and limitations. Experimental designs: the basics of experiments, randomised controlled trials and quasi-experiments; goals, logic and validity; design; analysis; limitations. | Toshkov 2016 chapters 7, 11. |

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| 12 | 10. 'Big data' research designs/I. Large-N designs: logic and pitfalls. Conditions and strategies for causal inference: natural experiments, instrumental variables, mediation analysis, conditioning. Common designs for causal inference: time series, cross-sectional, panel, multilevel designs. Estimating causal effects: varieties and size of association; uncertainty and statistical significance; linearity and beyond; limited outcomes. Design: variable and case selection; levels of analysis and observation: m | Toshkov 2016 chapter 8. |
| 13 | 11. 'Big data' research designs/II. Social networks: understanding and analysing social interactions; statics and dynamics. Social complexity: origins, laws, theories. Simulations. | Cioffi-Revilla 2017 chapters 4-5. |
| 14 | ** THIRD STUDENT WORKSHOP. Presentation of data sources and preliminary design for research design proposal. | -- |

VERIFICA DELL'APPRENDIMENTO

MODALITÀ DI VERIFICA DELL'APPRENDIMENTO

Assessment is based on class participation, presentations (30%), final paper (40%), and final exam (30%).

The final paper is a 3000-word original research design proposal carried out by applying course materials. The research design proposal should include the basic elements of an original research project, namely a research question, theoretical contribution, testable hypotheses, and a description of the proposed data collection and analysis. This paper should focus narrowly on a topic of the student's choice and display a greater depth of understanding of a smaller set of ideas raised in the course.

Students should work on the research design proposal over the full term. Indeed three of the course seminars - the student workshops - will include students' presentations of 1) possible research topics/questions (tentatively in the third week of the course); 2) literature review and hypotheses (around the seventh week); 3) data and preliminary design (around the end of the course).

The final exam focuses largely on an oral discussion of the research design proposal, that will (also) be used as a basis for discussing the key topics of the course.

NOTA BENE: Learning assessment may also be carried out on line, should the conditions require so.

ESEMPI DI DOMANDE E/O ESERCIZI FREQUENTI

Illustrate the distinctive features of your research design proposal.

Motivate the choice of your research design.

Explain how you operationalise the concepts in proposals.

If you are going to propose and test a theory, discuss it. Otherwise explain why you will not design your own theory of the problem at hand.

Explain the logic behind case selection in your proposal.
