

THEORIES AND METHODOLOGIES OF THE SOCIAL SCIENCES

COLUMBIA UNIVERSITY  
QMSS 4010, FALL 2016  
TUE 6:10PM-8:00PM  
302 FAYERWEATHER BUILDING

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*“ ‘. In that Empire, the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province. In time, those Unconscionable Maps no longer satisfied, and the Cartographers Guilds struck a Map of the Empire whose size was that of the Empire, and which coincided point for point with it. The following Generations, who were not so fond of the Study of Cartography as their Forebears had been, saw that that vast map was Useless, and not without some Pitilessness was it, that they delivered it up to the Inclemencies of Sun and Winters. In the Deserts of the West, still today, there are Tattered Ruins of that Map, inhabited by Animals and Beggars; in all the Land there is no other Relic of the Disciplines of Geography.’*

Suárez Miranda, *Travels of Prudent Men*,  
Book Four, Ch. XLV, Lérida, 1658”  
Jorge Luis Borges, *On Exactitude in Science* (1946)

## I. Overview

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This course, one of the two foundational courses in the QMSS program, is designed as an in-depth introduction to the social sciences and its methodologies. It is intended to give a broad overview so students can intelligently combine ideas in solving real-world problems.

We will focus on the logic and design of social research, beginning with some concepts and topics common to research across the social sciences. We will later move on to understanding the principles behind an array of methodologies used in the social sciences – experimentation, observational studies, formal models, surveys, and applied machine learning techniques. We will then analyse their application using research cases drawn from the literature. The focus of this course is not on the techniques themselves – you will have ample opportunity to do that in other courses – but in understanding the logic behind the use of these tools to extract meaningful answers from their applications.

**Prerequisites:** it is assumed that you have had at least one semester of graduate-level statistics involving linear regression and analysis of variance. Some basic mathematics and algebra will also be assumed.

## II. Course Materials

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There are three required texts for this course. The first (*Approaches to Social Research*) will be used each week as preparation for class. The other two are required reading occasionally and are designed to be resources for your thesis process.

- Singleton, Royce A. & Bruce C. Straits. 2010. *Approaches to Social Research*. 5<sup>th</sup> Edition. New York, NY: Oxford University Press.
- Booth, Wayne C et al. 2008. *The Craft of Research*. 3<sup>rd</sup> Edition. Chicago, IL: University of Chicago Press.
- Weston, Anthony. 2009. *A Rulebook for Arguments*. 4<sup>th</sup> Edition. Indianapolis, IN: Hackett Publishing Company.

The majority of the other course readings are available through the University's electronic journals.

## III. Course Requirements

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Attendance is expected and reading assignments are to be completed before each class session. All written work must be original and produced exclusively for this class. You are expected to follow the University's guidelines for the submission of written work.

The class will be a combination of lectures and focussed discussion. Before each class, you should have *read, thought about* and be prepared to *discuss* all **required readings**. We will discuss readings under **topics** to study applied theories and methods, primarily by asking a few pertinent questions: What is the research question? Why was a particular method chosen? What inferences can be drawn from its results? What are its limitations?

**Complementary readings** are intended to serve as further (and future) references if you ever want to delve deeper on a particular topic, but *are not a requirement to this class*.

The final grade of the course will be based on your successful completion of each of the following requirements:

**Assignments (30%):** Throughout the semester, you will be required to complete a series of assignments that focus on the readings and topics of discussion from the course.

**Research proposal (30%):** Throughout the course, you will work on a research proposal. This 12-15 page paper will be turned in at the end of the semester.

**Class participation (20%):** Students are expected to have read all the **required readings** before class and actively participate in class discussion. This course is designed to be a mixed lecture/discussion class.

**Class Presentation (10%):** Students will be assigned to present an overview of "special topics" reading in class.

**Proposal presentation (10%):** Each student will present their research proposal to the class and receive feedback.

#### IV. Course Outline

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[Readings may be adapted throughout the course. Check regularly for updates]

[September 6]

##### **Week 1: The “Science of Social Science” and the Role of Statistical Models**

*Introduction. What this course is (and what it is not). Course overview. What is so unique about quantitative methods applied to the social sciences? Why do we need models to understand the world? Why is it useful to have statistical models in the social sciences?*

##### **Required readings**

- *Approaches to Social Research*, Ch. 1-4
- Elster, Jon. 2007. *Explaining Social Behavior. More Nuts and Bolts for the Social Sciences*. Cambridge, MA: Cambridge University Press. (Ch. 1-2)
- Freeman, David A. 1991. “Statistical models and shoe leather” *Sociological Methodology* 21: 291-312.

##### **Thesis reading**

- *The Craft of Research*, Ch 3.

##### **Complementary readings**

- King, Gary, Robert O. Keohane & Sidney Verba. 1995. *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton NJ: Princeton University Press.
- Feynman, Richard P. 1997. *Surely you’re joking Mr Feynman!* New York, NY: Norton & Co.
- Merton, Robert. 1993. *On the Shoulders of Giants: A Shandean Postscript*. Chicago IL: University of Chicago Press.

[September 13 / 20]

##### **Weeks 2 / 3: Causality and Causal Inference (I & II)**

*Causes of effects or effects of causes? The search for causes: from Aristotle to Fisher. The fundamental problem of causal inference. The Neyman-Rubin model. Graph models of causal inference. Some complications for causal inference: path dependence, endogeneity.*

**Required readings**

- Holland, Paul W. 1980. "Statistics and Causal Inference" *Journal of the American Statistical Association* 81(396):945-960.
- Rubin, Donald B. 2005. "Causal Inference Using Potential Outcomes: Design, Modelling, Decisions" *Journal of the American Statistical Association* 100(469):322-331.
- Morgan, Stephen L. & Christopher Winship. 2007. *Counterfactuals and Causal Inference: Methods and Principles for Social Research*. Cambridge, MA: Cambridge University Press. Ch. 3
- Page, Scott E. 2006. "Path Dependence" *Quarterly Journal of Political Science* 1: 87-115.

**Thesis reading**

- *The Craft of Research*, Ch 9-11.
- *A Rulebook of Arguments*, pp 31-61

**Complementary readings**

- Mill, John Stuart. 1995. "Two Methods of Comparison". In A System of Logic, reprinted in Amitai Etzioni and F. Dubow (eds.), *Comparative Perspective: theories and Methods*: 205-213.
- Sekhon, Jasjeet S. 2004. "Quality Meets Quantity: Case Studies, Conditional Probability, and Counterfactuals" *Perspectives on Politics* 2(2):281-293.
- Imbens, Guido & Donald B. Rubin. 2015. *Causal Inference for Statistics, Social and Biomedical Sciences: An Introduction*. Cambridge, MA: Cambridge University Press.
- Pearl, Judea. 2009. *Causality: Models, Reasoning and Inference. Second Ed.* Cambridge, MA: Cambridge University Press.
- Dawid, A.P. 2000. "Causal Inference without Counterfactuals" *Journal of the American Statistical Association* 95(450):407-448.

**[September 27 / October 4]**

**Weeks 4 / 5: Experiments and Randomization (I & II)**

*Theoretical Foundations of Experiments. Statistical foundations of experiments. Taxonomy of randomized experiments. Randomized experiments as the golden standard for causal inference. Inference from randomized experiments.*

**Required readings**

- *Approaches to Social Research*, Ch. 7-8
- Green, Donald & Alan Gerber. 2003. "The under provision of experiments in Political Science" *Annals of the American Academy of Political and Social Science* 589:94-112.

- Morton, Rebecca & Kenneth Williams. 2010. *Experimental Political Science and the Study of Causality*. Cambridge, MA: Cambridge University Press. Ch. 11-13, 15

(IRB discussion)

**Topic: Racial Discrimination**

- Steele, Claude M. 1977. "A threat in the air: How Stereotypes Shape Intellectual identity and Performance" *American Psychologist* 52:613-629.
- Pager, Devah, Bruce Western & Bart Bonikowski. 2009. "Discrimination in a Low-Wage Labor Market: A Field Experiment" *American Sociological Review* 74:777-799.

**Topic: Political Clientelism**

- De la O, Ana. 2013. "Do Conditional Cash Transfers affect Electoral Behavior? Evidence from a Randomized Experiment in Mexico" *American Journal of Political Science* 57(1): 1-14.
- Wantchekon, Leonard. 2003. "Clientelism and Voting Behavior: Evidence from a Field Experiment in Benin" *World Politics* 55(3):399-422.

**Topic: Voter Turnout**

- Gerber, Alan S. & Donald Green. 2000. "The Effects of Canvassing, telephone Calls and Direct Mail on Voter Turnout: A Field experiment" *American Political Science Review* 94(3):653-663.
- Imai, Kosuke. 2005. "Do Get-Out-The-Vote Calls Reduce Turnout? The Importance of Statistical Methods for Field Experiments." *American Political Science Review* 99(2):283-300.

Thesis reading

- *The Craft of Research*, Ch 12.
- *A Rulebook of Arguments*, pp 49-72.

Complementary readings

- Martel García, Fernando & Leonard Wantchekon. 2010. "Theory, External Validity, and Experimental Inference: Some Conjectures" *Annals of the American Academy of Political and Social Science* 628:132-147.
- Angrist, Joshua D. & Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton, NJ: Princeton University Press.
- Imbens, Guido & Donad B. Rubin. 2015. *Causal Inference for Statistics, Social and Biomedical Sciences: An Introduction*. Cambridge, MA: Cambridge University Press.

[October 11]

## Week 6: Observational Studies

*How are they different from experiments? Understanding their limitations for causal inference. Statistical tools to cope with effects of non-random assignment of treatments. Inference from observational studies.*

### Required readings

- *Approaches to Social Research*, Ch. 11
- Rubin, Donald B. 2008. "For Objective Casual Inference, Design Trumps Analysis" *Annals of Applied Statistics* 2(3):808-840.
- Przeworski, Adam. 2007. "Is the Science of Comparative Politics Possible?" In Carles Boix & Susan C. Stokes (ed) *Oxford Handbook of Comparative Politics*. New York, NY: Oxford University Press.

### **Topic: Selected statistical applications to observational studies**

- Abadie, Alberto, Alexis Diamond & Jens Heinmuller. 2010. "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program" *Journal of the American Statistical Association* 105(490): 493-505.
- Erikson, Robert & Rocío Titiunik. 2015. "Using Regression Discontinuity to Uncover the Personal Incumbency Advantage" *Quarterly Journal of Political Science* 10:101-119.
- Espinosa, Valeria & Donald B. Rubin. 2015. "Did the Military Interventions in the Mexican Drug War Increase Violence?" *The American Statistician* 69(1):17-27.

### Thesis reading

- *The Craft of Research*, Ch 15.

### Complementary readings

- Cochran, William G. 2015 [1972]. "Observational Studies" *Observational Studies* 1:126-136.
- Imai, Kosuke, Gary King & Elizabeth Stuart. 2008. "Misunderstandings among Experimentalists and Observationalists about Causal Inference." *Journal of the Royal Statistical Society, Series A* 171, part 2 (2008): 481-502.
- Winship, Christopher & Stephen L. Morgan. 1999. "The Estimation of Causal Effects from Observational Data" *Annual Review of Sociology* 25:659-707.
- Sekhon, Jasjeet S & Rocío Titiunik. 2012. "When Natural Experiments Are Neither Natural nor Experiments" *American Political Science Review* 106(1):1-23.
- Rubin, Donald B. 2006. *Matched Sampling for Causal Effects*. Cambridge, MA: Cambridge University Press.
- Angrist, Joshua D. & Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton, NJ: Princeton University Press.

- Angrist, Joshua D. & Jörn-Steffen Pischke. 2015. *Mastering 'Metrics: The Path from Cause to Effect*. Princeton, NJ: Princeton University Press.

❖ **October 11: Assignment 1 due**

[October 18 / 25]

**Weeks 7 | 8: Survey research and survey methodology (I & II)**

*What is wrong (and what is right) with polls? The Total Survey Error Paradigm. Respondent Selection Issues. Response Accuracy Issues. Survey Administration Issues.*

**Required readings**

- *Approaches to Social Research*, Ch. 6, 9-10
- Bautista, René. 2012. "An overlooked approach in Survey Research. Total Survey Error." In Gideon (ed). *Handbook of Survey Methodology for the Social Sciences*. New York, NY: Springer.
- Deane, Claudia et al. 2016. *Flashpoints in Polling*. Pew Research Center (Mimeo).

**Topic: Total Survey Error, some basic facts**

- Lundmark, Sebastian, Mikael Gilljam & Stephan Dahlberg. 2016. "Measuring Generalized Trust: An Examination of Question Wording and the Number of Scale Points", *Public Opinion Quarterly* 80(1):26-43.
- Oberski, Daniel L. 2012. "Comparability of Survey Measurements" In Gideon (ed). *Handbook of Survey Methodology for the Social Sciences*. New York, NY: Springer.
- Freitag, Marcus & Paul C. Bauer. 2013. "Testing for Measurement Equivalence in Surveys: Dimensions of Social Trust across Cultural Contexts" *Public Opinion Quarterly* 77:24-44.
- Lohr, Sharon. 2008. "Coverage and Sampling" In de Leeuw, Edith D., Joop J. Hox & Don A. Dillman. *International Handbook of Survey Methodology* New York, NY: Routledge.

**Topic: Total Survey Error, recent empirical findings**

- Fricker, Scott & Roger Tourangeau. 2010. "Examining the Relationship Between Nonresponse Propensity and Data Quality in Two National Household Surveys" *Public Opinion Quarterly* 74(5): 934-955.
- Sakshaug, Joseph W., Ting Yan & Roger Tourangeau. 2010. "Nonresponse Error, Measurement Error, And Mode Of Data Collection: Tradeoffs in a Multi-mode Survey of Sensitive and Non-sensitive Items" *Public Opinion Quarterly* 74(5): 907-933.

- Yeager, David S. et al. 2011. "Comparing the Accuracy of RDD Telephone Surveys and Internet Surveys Conducted with Probability and Non-Probability Samples" *Public Opinion Quarterly* 75(4):709-747.

Thesis reading

- *The Craft of Research*, Ch. 13-14, 16.

Complementary readings

- Weisberg, Herbert F. 2005. *The Total Survey Error Approach: A Guide to the New Science of Survey Research*. Chicago, IL: University of Chicago Press.
- Tourangeau, Roger et al. 2000. *The Psychology of Survey Response*. Cambridge, MA: Cambridge University Press.

❖ **October 25: Thesis topic proposal due**

**[November 1]**

**Week 9: Concepts, Measurement and Measurement Error**

Research design and the research question. Measurements as a function of concepts. Theoretical consequences of measurement error. Statistical consequences of measurement error.

Required readings

- *Approaches to Social Research*, Ch. 5
- Geddes, Barbara. 1990. "How the Cases You Choose Affect the Answers You Get: Selection Bias in Comparative Politics" *Political Analysis* 2:131-52.
- Hausman, Jerry. 2001. "Mismeasured Variables in Econometric Analysis: Problems from the Right and Problems from the Left" *Journal of Economic Perspectives* 15(4): 57-67.

**Topic: Economic Perceptions**

- Michelitch, Kristin, Marco A. Morales, Josh Tucker & Andrew Owen. 2012. "Looking to the Future: Prospective Economic Voting in 2008 Presidential Elections" *Electoral Studies* 31(4): 838-851.
- [and discussion on on-going experiments]

Thesis reading

- *The Craft of Research*, Ch 4,7-8.



Complementary readings

- Alvin, Duane F. 2007. *Margins of Error: A Study in Reliability in Survey Measurement*. Hoboken, NJ: John Wiley & Sons.
- Little, Roderick J. A. 1992. "Regression with Missing X's: A Review" *Journal of the American Statistical Association* 87(420):1227-1237.
- Rubin, Donald B. 1976. "Inference and Missing Data" *Biometrika* 63(3):581-592.

❖ **November 9: Assignment 2 due**

[November 8]

**Week 10: Academic Holiday**

[November 15 / 22]

**Week 11 | 12: Rational Choice and Formal Models**

*The rational choice paradigm. What is rationality? What are its limitations? Can rational choice help explain collective action? Game theory and formal models of social behavior.*

Required readings

- Shepsle, Kenneth. 2010. *Analyzing Politics* 2nd Ed. New York, Norton. (Cap. 2)
- Shapiro, Michael J. 1969 "Rational Political Man: A Synthesis of Economic and Social-Psychological Perspectives," *American Political Science Review* 63: 1106-1119.
- Riker, William H. 1995. "The Political Psychology of Rational Choice Theory." *Political Psychology* 16 (March): 23–44.
- Arrow, Kenneth. 1994. "Methodological Individualism and Social Knowledge" *American Economic Review* 84:1-9.
- Chwe, Michael. 2013. *Jane Austen: Game Theorist*. Princeton, NJ: Princeton University Press, Ch 2.

**Topic: Institutionalism**

- Przeworski, Adam. 2005. "Democracy as an Equilibrium." *Public Choice* 123: 253-273.

**Topic: Partisanship and the transmission of partisan attachments**

- Achen, Christopher. 2002. "Parental Socialization and Rational Party Identification" *Political Behavior* 24(2):151-170.

- Bartels, Larry. 2002. "Beyond the Running Tally: Partisan Bias in Political Perceptions" *Political Behavior* 24(2):117-150.

**Topic: Rational Choice and its critics**

- Green, Donald & Ian Shapiro. 1994. *Pathologies of Rational Choice Theory: a Critique of Applications in Political Science*. New Haven: Yale University Press. (Cap. 1 y 2).
- Kahneman, Daniel & Amos Tversky. 1979. "Prospect Theory: An Analysis of Decision under Risk" *Econometrica* 47(2):263-292.

Thesis reading

- *The Craft of Research*, Ch 5-6.

Complementary reading

- Friedman, Milton. 2008. "The Methodology of Positive Economics" In Hausman, Daniel J. (Ed) *The Philosophy of Economics. Third Edition*. Cambridge, MA: Cambridge University Press.
- Becker, Gary. 1976. *The Economic Approach to Human Behavior*. Chicago, IL: University of Chicago Press.
- Sen, Amartya. 1999. "The Possibility of Social Choice" *American Economic Review* 89(3): 349-378.
- Morton, Rebecca B. 1999. *Methods and Models: A Guide to the Empirical Analysis of Formal Models in Political Science*. Cambridge, MA: Cambridge University Press.
- Osborne, Martin J. 2009. *An Introduction to Game Theory*. New York, NY: Oxford University Press.
- Kahneman, Daniel. 2013. *Thinking Fast and Slow*. New York: Farrar, Straus and Giroux.

❖ **November 22: Rough draft of full proposal due**

**[November 29]**

**Week 13: Proposal Presentations**

[December 6]

**Week 14: Text as Data**

*Archival research. Text beyond archives. Statistical and algorithmic analysis of data. Big Data, Machine Learning and Causal Inference.*

**Required readings**

- *Approaches to Social Research*, Ch. 12
- Grimmer, Justin & Brandon Stewart. 2013. "Text as Data: The Promise and Pitfalls of Automatic Content Analysis Methods for Political Documents" *Political Analysis* 21(3):267-297.
- Benoit, Kenneth, Michael Laver & Slava Mikhaylov. 2009. "Treating words as data with error: Uncertainty in text statements of policy positions." *American Journal of Political Science* 53(2):495–513.

**Topic: Estimating ideology from texts**

- Clinton, Joshua, Simon Jackman & Doug Rivers. 2004. "The Statistical Analysis of Roll Call Data". *American Political Science Review* 98(2):355-370.
- Laver, Michael, Kenneth Benoit, & John Garry. 2003. "Extracting Policy Positions from Political Texts Using Words as Data". *American Political Science Review* 97(2):311-331.
- Bonica, Adam. 2014. "Mapping the Ideological Marketplace" *American Journal of Political Science* 58(2):367-386.
- Barberá, Pablo. 2015. "Birds of the Same Feather Tweet Together. Bayesian Ideal Point Estimation Using Twitter Data." *Political Analysis* 23(1):76-91.

❖ **December 6: Drafts returned and final revision due December 15**