

17.426: Empirical Models in International Relations

Spring 2019

Mondays, 11am-1pm

E53-485

Instructor: Rich Nielsen, rnielsen@mit.edu

Office hours: Mondays 1:15pm – 2:45pm (after class) or by appt. in E53-455.

Please sign up on my door beforehand to avoid lines.

Course Description

This course explores statistical methods as applied to international relations, with reference to similar applications in comparative politics and other fields. We will discuss statistical approaches to analyzing various types of data used by IR scholars. We will read both methodological and applied work, familiarizing students with an array of models and critically analyzing their strengths and weaknesses. It is not intended as a substitute for Quantitative Methods I, II, III, and IV, but as a complementary course. The goal of the course is to expose students to the range of quantitative models applied in international relations scholarship, assess the strengths and weaknesses of particular modeling choices, and to develop the ability to design empirical research projects of their own.

Prerequisites

I strongly recommend that students take Quantitative Methods I (or equivalent) prior to this course. Having Quant II and III would be very helpful, but you're welcome if don't have these. It will be more challenging, but you'll learn a lot and we'll work together to make it manageable.

Expectations

- Please **treat each other with respect**, listen attentively when others are speaking, and avoid personal attacks. At the same time, everyone should feel comfortable expressing their opinions, political or otherwise, as long as they do so in an appropriate manner.
- **Laptops, phones, and other electronic devices should be turned off and put away** during class unless I ask you to take them out. This requirement may seem old-fashioned, but in my experience, it is the best way to foster discussion and mutual engagement. If you need electronics, please come talk to me outside of class. I suggest taking notes on the papers as you read them and bringing those notes in class in lieu of skimming the pdfs on your laptop.
- **I do not tolerate plagiarism.** You should never take credit for words or ideas that are not your own, and you should give your readers enough information to evaluate the source and quality of your evidence. Self-plagiarism (reusing material you have written in another context) is also prohibited unless you receive prior permission from the instructor. For more information on academic integrity, consult <http://integrity.mit.edu/>.

Goals

- **Gain exposure to a variety of quantitative methods** used in International Relations research. We will cover too many methods for you to master each one. My goal is to give

you the intuition of each method so that you know where to turn if you need it in your own research.

- **Master the details of a several methods that interest you** well enough to use them in your own research now and teach them to others.
- **Learn to teach** by developing tutorials on particular methods and teaching them to the class.
- **Find inspiration for new research** that could serve as the basis for a 2nd year paper and/or publication.
- **Learn to give an APSA-style presentation** if you take the term paper option.

Grades: You should worry more about learning the material than about your grade, but I am required to give grades. Graduate school grades tend to be higher than what you may be used to. An A+/A/A- means “excellent/very good/ good” and a B+/B/B- means “adequate/fair/poor.” If I give you a C or lower, we need to talk.

Assignments

Two in-class tutorials (20%): Each of you will select or be assigned two weeks from the syllabus. You will prepare a 30-minute tutorial on the key method or issue covered in that week. You will present this tutorial to the class for the first 30 minutes of class. This should be an interactive lecture, as if you were teaching a department workshop on the topic (a common feature in many departments). Please send me any slides, notes, data, and code for your tutorial so I can post it to the class website for people to use. You should send it no more than 24 hours after your presentation. You may revise in light of what happens in class.

If you want people to be able to run code during your tutorial, then circulate the code and data beforehand. The easiest way is to send it all to me, cc'ing Eliza Riley (e_riley@mit.edu) in a zipped directory. One of us will post it, but this requires at least a few hours of lead time.

I will try to dole out weeks on the syllabus according to your interests. I will collect your preferences after the first class session. However, be aware that you may not get your top choices and I may assign you to a week you don't want. This is part of learning to teach – we all have to teach things we don't exactly want to.

Matching up the number of weeks in the class with the number of students is going to require some flexibility. I may double up or skip some as needed.

Class participation and feedback on in class tutorials (5%): I've heard from graduate students (and I remember from my own grad school days) that “reading” 200 pages per week for each of four classes makes it impossible to understand anything deeply. I'm trying something new. I've radically redesigned the course to cut the reading load to 50 pages of reading per week, on

average. In exchange for cutting more than half the syllabus, I expect you to read and re-read until you understand the material.

Please come to class with at least one question or issue related to the week's reading that you would like to discuss.

You will provide quick written feedback on each in class tutorial that is not your own.

Final written assignment (60%)

There are two options:

- 1) **Term Paper:** A final research paper (25-40 pages) on international relations or comparative politics with a large quantitative component. The parameters are left intentionally broad so that students can tailor the paper to their own research interests, but the topic should be agreed upon in consultation with the instructor. The research paper is due via the class website on **Tuesday May 21, 2019 by 5pm**. I will not accept late papers. *You should seek my feedback throughout the semester as you develop this paper.*
- 2) **4 Tutorials:** In lieu of a final paper, students may opt to prepare materials for four tutorials on four different empirical methods relevant to IR scholars. At least one of these must cover a model, method, or approach not included in the required readings on this syllabus. The remaining three may be models, methods, or approaches from the required readings, though they need not be. I encourage you to develop your in-class tutorials into final assignment tutorials. When selecting methods not on the syllabus, please confirm with me that the topic is appropriate.

The standard for these tutorial materials is higher than for the two in-class tutorials. These tutorials should include a conceptual overview of what the method is good for, mathematical details, intuition for the mathematical details, and a worked example (with annotations) in R. The materials should be detailed enough that you could teach a 50-minute lecture/tutorial from the materials. They should also be detailed enough that I can read them and understand the method – I will not see you present most of them. They are due as well-organized zipped directories via the class website (or some other means if the file size is too large) on **Tuesday May 21, 2019 by 5pm**. I will not accept late assignments. *You should run at least some the tutorials by me before turning them in to make sure they are of sufficient quality.*

Final Presentation (15%)

Final presentations happen on the last two class sessions, depending on the number of students. If you are writing a term paper, you will give a 15 minute APSA-style presentation of the paper followed by a 15 minute Q&A. If you are doing 4 tutorials, you will give a half hour tutorial on a method or topic not covered in class. Expect clarifying questions throughout.

Semester Overview

February 11	What is an empirical model?
February 19 [Tues]:	Measurement: Text as Data
February 25	Measurement: Images, Video, Audio
March 4	Measurement: Latent Variables
March 11	Measurement: Ideal Point Estimation
March 18	Measurement: Missing Data
<i>March 25 – MIT Spring Break</i>	
April 1	No class (I am out of town)
April 8	Causal Inference: Matching and Selection Models
<i>April 15 – MIT holiday (Patriots' Day)</i>	
April 22	Interdependence: TSCS data
April 29	Interdependence: Networks
May 6	Student presentations
May 13	Student presentations or no class

Readings

All readings should be available through MIT's electronic resources or through the course's Stellar website (<http://stellar.mit.edu/S/course/17/sp19/17.426/>)

1 February 11: What is an empirical model?

No required reading.

Additional Resources

Clarke, Kevin A., and David M. Primo. A model discipline: Political science and the logic of representations. Oxford University Press, 2012. (Especially Chapter 5)

2 February 19 [Tuesday]: Measurement – Text as Data

Required Reading (55 pages)

Grimmer, Justin, and Brandon M. Stewart. "Text as data: The promise and pitfalls of automatic content analysis methods for political texts." *Political analysis* 21.3 (2013): 267-297.

Nielsen, Richard A. *Deadly clerics: Blocked ambition and the paths to jihad*. Cambridge University Press, 2017. Chapter 5.

Additional Resources

Methods

Lucas, Christopher, Richard A. Nielsen, Margaret E. Roberts, Brandon M. Stewart, Alex Storer, and Dustin Tingley. "Computer-assisted text analysis for comparative politics." *Political Analysis* 23, no. 2 (2015): 254-277.

Applications

Spirling, Arthur. 2012. "U.S. Treaty Making with American Indians: Institutional Change and Relative Power, 1784–1911" *American Journal of Political Science* 56(1).

Mueller, Hannes, and Christopher Rauh. "Reading Between the Lines: Prediction of Political Violence Using Newspaper Text." *American Political Science Review* 112.2 (2018): 358-375.

O'Connor, Brendan, Brandon M. Stewart, and Noah A. Smith. "Learning to extract international relations from political context." *Proceedings of the 51st Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*. Vol. 1. 2013.

3 February 25: Measurement – Images, Video, Audio

Required Reading (61 pages)

Torres, Michelle. "Give me the full picture: Using computer vision to understand visual frames and political communication" Working Paper:

https://www.dropbox.com/s/o9hqecmhwnhck2/MT_Polmeth_VisualFraming.pdf?dl=0

Video (optional, but possibly helpful): <https://www.youtube.com/watch?v=rWQbK63B6PI>

Knox, Dean and Christopher Lucas. "A Dynamic Model of Speech for the Social Sciences" Working paper. <http://christopherlucas.org/files/PDFs/sam.pdf>

Video (optional, but possibly helpful): <https://www.youtube.com/watch?v=Hs8A9dwkMzI>

4 March 4: Measurement – Latent Variables

Required Reading (38 pages)

Fariss, Christopher J. "Respect for human rights has improved over time: Modeling the changing standard of accountability." *American Political Science Review* 108.2 (2014): 297-318.

Cingranelli, David, and Mikhail Filippov. "Are Human Rights Practices Improving?." *American Political Science Review* (2018): 1-7.

Cingranelli, David, and Mikhail Filippov. "Problems of Model Specification and Improper Data Extrapolation." *British Journal of Political Science* 48.1 (2018): 273-274.

Fariss, Christopher J. "Are Things Really Getting Better? How To Validate Latent Variable Models of Human Rights." *British Journal of Political Science* 48.1 (2018): 275-282.

Additional Resources

Treier, Shawn, and Simon Jackman. "Democracy as a latent variable." *American Journal of Political Science* 52.1 (2008): 201-217.

5 March 11: Measurement – Ideal Point Estimation

Required Reading (38 pages)

Voeten, Erik. "Resisting the lonely superpower: Responses of states in the United Nations to US dominance." *The Journal of Politics* 66.3 (2004): 729-754.

Lupu, Yonatan. "The informative power of treaty commitment: using the spatial model to address selection effects." *American Journal of Political Science* 57.4 (2013): 912-925.

Additional Resources

Clinton, Joshua, Simon Jackman, and Douglas Rivers. "The statistical analysis of roll call data." *American Political Science Review* 98.2 (2004): 355-370.

Martin, Andrew D., and Kevin M. Quinn. "Dynamic ideal point estimation via Markov chain Monte Carlo for the US Supreme Court, 1953–1999." *Political Analysis* 10.2 (2002): 134-153.

Barberá, Pablo. "Birds of the same feather tweet together: Bayesian ideal point estimation using Twitter data." *Political Analysis* 23.1 (2015): 76-91.

6 March 18: Measurement – Missing Data

Required Reading (51 pages)

King, Gary, James Honaker, Anne Joseph, and Kenneth Scheve. "Analyzing incomplete political science data: An alternative algorithm for multiple imputation." *American political science review* 95, no. 1 (2001): 49-69.

Lall, Ranjit. "How multiple imputation makes a difference." *Political Analysis* 24.4 (2016): 414-433.

Pepinsky, Thomas B. "A note on listwise deletion versus multiple imputation." *Political Analysis* 26.4 (2018): 480-488.

Arel-Bundock, Vincent, and Krzysztof J. Pelc. "When Can Multiple Imputation Improve Regression Estimates?" *Political Analysis* 26.2 (2018): 240-245.

Additional Resources

Honaker, James and Gary King. 2010. What to do about Missing Values in Time-Series Cross-Section Data. *American Journal of Political Science* 54 (2): 561-581.

Blackwell, Matthew, James Honaker, and Gary King. 2017. "A unified approach to measurement error and missing data: overview and applications." *Sociological Methods & Research* 46.3: 303-341.

7 March 25: MIT Spring Break

8 April 1: No class (I am out of town)

9 April 8: Causal Inference – Matching and Selection Models

Required Reading(57 pages)

Ho, Daniel E., Kosuke Imai, Gary King, and Elizabeth A. Stuart. "Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference." *Political analysis* 15, no. 3 (2007): 199-236.

Von Stein, Jana. "Do treaties constrain or screen? Selection bias and treaty compliance." *American Political Science Review* 99.4 (2005): 611-622.

Simmons, Beth A., and Daniel J. Hopkins. "The constraining power of international treaties: Theory and methods." *American Political Science Review* 99.4 (2005): 623-631.

Additional Resources

Chaudoin, Stephen, Jude Hays, and Raymond Hicks. "Do We Really Know the WTO Cures Cancer?." *British Journal of Political Science* (2016): 1-26.

Matching

Nielsen, Richard A., Michael G. Findley, Zachary S. Davis, Tara Candland, and Daniel L. Nielson. 2011. Foreign Aid Shocks as a Cause of Violent Armed Conflict. *American Journal of Political Science*.

Gilligan, Michael J. and Ernest J. Sargenti. 2008. Do UN Interventions Cause Peace? Using Matching to Improve Causal Inference. *Quarterly Journal of Political Science* 3: 89-122.

King, Gary, Christopher Lucas, and Richard A. Nielsen. "The balance-sample size frontier in matching methods for causal inference." *American Journal of Political Science* 61.2 (2017): 473-489.

King, Gary and Richard Nielsen. Forthcoming. "Why Propensity Scores Should Not Be Used for Matching," *Political Analysis*.

Lyall, Jason. February 2010. Are Co-Ethnics More Effective Counter-Insurgents? Evidence from the Second Chechen War. *American Political Science Review* 104 (1): 1-20.

Sekhon, Jasjeet S. 2009. Opiates for the Matches: Matching Methods for Causal Inference. *Annual Review of Political Science* 12: 487-508.

Lyall, Jason. June 2009. Does Indiscriminate Violence Incite Insurgent Attacks? Evidence from Chechnya. *Journal of Conflict Resolution* 53 (3): 331-362.

Lyall, Jason. Winter 2010. Do Democracies Make Inferior Counterinsurgents? Reassessing Democracy's Impact on War Outcomes and Duration. *International Organization* 64 (1): 167-92.

Selection Models

Colin Vance and Nolan Ritter. In Press. "Is peace a missing value or a zero? On selection models in political science" *Journal of Peace Research*.

Beardsley, Kyle, and Victor Asal. 2009. Winning with the Bomb. *Journal of Conflict Resolution* 53 (2): 278-301.

Brandt, Patrick T. and Christina J. Schneider. 2004. "So the Reviewer Told You to Use a Selection Model? Selection Models and the Study of International Relations."

Further Reading:

Sartori, Anne E. 2003. "An Estimator for Some Binary-Outcome Selection Models Without Exclusion Restrictions," *Political Analysis* 11, 111-138.

Smith, Alastair. 1996. To Intervene or Not to Intervene: A Biased Decision. *Journal of Conflict Resolution* 40(1):16-40.

Reed, William. 2000. A Unified Statistical Model of Conflict Onset and Escalation. *American Journal of Political Science* 44(1):84-93.

Lemke, Douglas, and William Reed. 2001. War and Rivalry Among Great Powers. *American Journal of Political Science* 45 (2):457-469.

Danilovic, Vesna. 2001. Conceptual and Selection Bias Issues in Deterrence. *Journal of Conflict Resolution* 45(1):97-125.

Fortna, Virginia Page. 2004. Does Peacekeeping Work? *International Studies Quarterly* 48 (2): 269-292.

10 April 15: MIT holiday – Patriots’ Day

11 April 22: Interdependence – TSCS data

Required Reading (84 pages)

Green, Donald P., Soo Yeon Kim, and David H. Yoon. 2001. Dirty pool. *International Organization* 55 (2):441-468.

Oneal, John R. and Bruce Russett. 2001. Clear and Clean: The Fixed Effects of the Liberal Peace. *International Organization* 55 (2): 469-485.

Beck, N., and Jonathan Katz. 2001. Throwing Out the Baby with the Bath Water: A Comment on Green, Kim, and Yoon. *International Organization* 55(2):487-495.

King, Gary. 2001. Proper Nouns and Methodological Propriety: Pooling Dyads in International Relations Data. *International Organization* 55(2):497-507

Ward, Michael D., Randolph M. Siverson, and Xun Cao. 2007. Disputes, Democracies, and Dependencies: A Reexamination of the Kantian Peace. *American Journal of Political Science* 51(3):583-601.

Additional Resources

Bell, Andrew, and Kelvyn Jones. "Explaining fixed effects: Random effects modeling of time-series cross-sectional and panel data." *Political Science Research and Methods* 3.1 (2015): 133-153.

Beck, N. and Jonathan Katz. 1995. What to Do (and what not to do) with Time-Series Cross-Section Data. *American Political Science Review* 89 (3): 634-647

Bischof, Jonathan. 2009. "A Bootstrap Approach to Time Invariance in Panel Data" http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1450057

Bell, Andrew, and Kelvyn Jones. 2015. "Explaining Fixed Effects: Random Effects Modeling of Time-Series, Cross-Sectional and Panel Data." *Political Science Research and Methods*. 3(1): 133-153.

Cranmer, Skyler J., Douglas R. Rice, and Randolph M. Siverson. "What to do about atheoretic lags." *Political Science Research and Methods* 5.4 (2017): 641-665.

Esarey, Justin. POLS 509: The Linear Model - Lecture 9 - Panel Data
<https://www.youtube.com/watch?v=6uL3Rh05U-g>

Beck, Nathaniel, Jonathan N. Katz and Richard Tucker. 1998. Taking Time Seriously: Time-Series-Cross-Section Analysis with a Binary Dependent Variable. *American Journal of Political Science* 42(4):1260-1288.

Carter, David B. and Curtis Signorino. 2010. Back to the Future: Modeling Time Dependence in Binary Data. *Political Analysis* 18(3): 271-292.

Williams, Laron K. "Temporal Dependence and the Sensitivity of Quantities of Interest: A Solution for a Common Problem." *International Studies Quarterly*

Poast, Paul. 2010. "(Mis)Using Dyadic Data to Analyze Multilateral Events." *Political Analysis*, 18(4): 403-425.

Neumayer, Eric and Thomas Plümper. Spatial Effects in Dyadic Data. 2010. *International Organization* 64 (1): 145-166.

Ward, Michael D., and Kristian Skrede Gleditsch. 2002. Location, Location, Location: An MCMC Approach to Modeling the Spatial Context of War and Peace. *Political Analysis* 10(3):244-260.

Gleditsch, Kristian Skrede, and Michael D. Ward. 2006. Diffusion and the International Context of Democratization. *International Organization* 60(4):911-933.

12 April 29: Interdependence – Networks

Tutorial presenter(s):

Required Reading (25 pages)

Zhukov, Yuri, and Brandon Stewart. 2013. "Choosing Your Neighbors: Networks of Diffusion in International Relations." *International Studies Quarterly* 57(2):271-287.

Li, Weihua, Aisha E. Bradshaw, Caitlin B. Clary, and Skyler J. Cranmer. "A three-degree horizon of peace in the military alliance network." *Science advances* 3, no. 3 (2017): e1601895.

13 May 6: Student presentations

14 May 13: Student presentations

Topics not covered in the syllabus for final project tutorials (not exhaustive)

Interaction terms – interpretation and pitfalls

Brambor, Thomas, William R. Clark, and Matt Golder. 2006. Understanding Interaction Models: Improving Empirical Analyses. *Political Analysis* 14: 63-82

Braumoeller, Bear F. 2004. Hypothesis Testing and Multiplicative Interaction Terms. *International Organization* 58 (4):807-820.

Braumoeller, Bear F. 2003. Causal Complexity and the Study of Politics. *Political Analysis* 11 (3):209-233.

Xu, Jens Hainmueller Jonathan Mummolo Yiqing. "How Much Should We Trust Estimates from Multiplicative Interaction Models? Simple Tools to Improve Empirical Practice." *Political Analysis* (2018).

Esarey, Justin, and Jane Lawrence Sumner. "Marginal effects in interaction models: Determining and controlling the false positive rate." *Comparative Political Studies* (2017): 0010414017730080.

Experiments in IR

Findley, Michael G., Daniel L. Nielson, and J.C. Sharman. 2013. "Using Field Experiments in International Relations: A Randomized Study of Anonymous Incorporation." *International Organization*, 67(4). 657-693.

Press, Daryl G., Scott D. Sagan, and Benjamin A. Valentino. 2013. "Atomic Aversion: Experimental Evidence on Taboos, Traditions, and the Non-Use of Nuclear Weapons." *American Political Science Review* 107(1): 188-206.

Tingley, Dustin and Barbara Walter. 2011. "Reputation Building in International Relations: An Experimental Approach." *International Organization*, 65, 343-365.

Further Reading

Hyde, Susan D. 2015. "Experiments in International Relations: Lab, Survey, and Field" *Annual Review of Political Science*.

Duration/Event History Models

Alt, James, Gary King, and Curtis Signorino. 2001. "Aggregation Among Binary, Count, and Duration Models: Estimating the Same Quantities from Different Levels of Data" *Political Analysis* 9(1).

Box-Steffensmeier, Janet M., Dan Reiter, and Christopher Zorn. 2003. Nonproportional Hazards and Event History Analysis in International Relations. *Journal of Conflict Resolution* 47(1):33-53.

Fearon, James D. 2004. Why do Some Civil Wars Last Much Longer than Others? *Journal of Peace Research* 41 (3): 275-301.

Elkins, Zachary, Andrew T. Guzman, and Beth A. Simmons. 2006. Competing for capital: The diffusion of bilateral investment treaties, 1960-2000. *International Organization* 60(4): 811-846

King, Gary. 1989. Event Count Models for International Relations: Generalizations and Applications. *International Studies Quarterly* 33 (2):123-147.

Collier, Paul, Anke Hoeffler, Mans Söderbom. 2004. On the Duration of Civil War. *Journal of Peace Research* 41 (3): 253-273.

Bennett, D. Scott , and Allan C Stam III. 1996. The Duration of Interstate Wars, 1816-1985. *American Political Science Review* 90 (2):239-257.

Fortna, Virginia Page. 2003. Scraps of Paper? Agreements and the Durability of Peace. *International Organization* 57(2): 337-372.

Howell, William G, and Jon C Pevehouse. 2005. Presidents, Congress, and the Use of Force. *International Organization* 59 (1):209-232.

Kropko, Jonathan, and Jeffrey J. Harden. "Beyond the hazard ratio: Generating expected durations from the cox proportional hazards model." *British Journal of Political Science* (2017): 1-18.

Strategic Models

Smith, Alastair. 1999. Testing Theories of Strategic Choice: The Example of Crisis Escalation. *American Journal of Political Science* 43(4):1254-1283.

Signorino, Curtis S. 1999. Strategic Interaction and the Statistical Analysis of International Conflict. *American Political Science Review* 93(2):279-297

Signorino, Curtis S., and Ahmer Tarar. 2006. A Unified Theory and Test of Extended Immediate Deterrence. *American Journal of Political Science* 50(3):586-605.

Bas, Muhammet, Curtis S. Signorino, and Robert W. Walker. 2008. Statistical Backwards Induction: A Simple Method for Estimating Recursive Strategic Models. *Political Analysis* 16(1):21-40.

Fearon, James D. 1994. Signaling versus the Balance of Power and Interests: An Empirical Test of a Crisis Bargaining Model. *The Journal of Conflict Resolution*, 38(2):236-269.

Carrubba, Clifford J., Amy Yuen, and Christopher Zorn. 2007. In Defense of Comparative Statics: Specifying Empirical Tests of Models of Strategic Interaction. *Political Analysis* 15(4): 465-482.

Signorino, Curtis S. 2007. On Formal Theory and Statistical Methods: A Response to Carrubba, Yuen, & Zorn. *Political Analysis* 15(4):483-504.

Web-scraping

Jackman, Simon. "Data from the Web into R" *The Political Methodologist*, 14(2).

Nielsen, Richard A. and Beth A. Simmons. 2015. Rewards for Ratification: Payoffs for Participating in the International Human Rights Regime?" *International Studies Quarterly*. *Focus on measurement of "intangible rewards" from EU and US.*

Variables Truncated at Zero/Too Many Zeroes

Sigelman, Lee, and Langche Zeng. "Analyzing censored and sample-selected data with Tobit and Heckit models." *Political analysis* 8.2 (1999): 167-182.

Lauderdale, Benjamin E. "Compound Poisson—Gamma Regression Models for Dollar Outcomes That Are Sometimes Zero." *Political Analysis* 20.3 (2012): 387-399.

Bagozzi, Benjamin E., Daniel W. Hill Jr, Will H. Moore, and Bumba Mukherjee. "Modeling two types of peace: The zero-inflated ordered probit (ZiOP) model in conflict research." *Journal of Conflict Resolution* 59, no. 4 (2015): 728-752.

Zorn, Christopher JW. "An analytic and empirical examination of zero-inflated and hurdle Poisson specifications." *Sociological Methods & Research* 26.3 (1998): 368-400.

Instrumental Variables

Sovey, Allison J., and Donald P. Green. "Instrumental variables estimation in political science: A readers' guide." *American Journal of Political Science* 55.1 (2011): 188-200.

Allison Carnegie and Nikolay Marinov. 2016. "The Effects of Foreign Aid on Rights and Governance: Evidence from a Natural Experiment." *American Journal of Political Science*. 61(2). 671-683.

Angrist, Joshua D., Guido W. Imbens, and Donald B. Rubin. "Identification of causal effects using instrumental variables." *Journal of the American statistical Association* 91.434 (1996): 444-455.

Miguel, Edward, Shanker Satyanath and Ernest Sergenti. 2004. Economic Shocks and Civil Conflict: An Instrumental Variables Approach. *Journal of Political Economy*. 112(4).

Stephen Kosack and Jennifer Tobin. 2006. Funding self-sustaining development: The role of aid, FDI and government in economic success. *International Organization*. 60(1).

Betz, Timm, Scott J. Cook, and Florian M. Hollenbach. "On the use and abuse of spatial instruments." *Political Analysis*(2018): 1-6.