

# SOCIAL NETWORKS AND POLITICAL INTERDEPENDENCE

David A. Siegel

## Course information:

Course Number: POLSCI.634.01.Sp23  
Time: M 8:30 AM–11:00 AM  
Place: Gross 111  
Course website: Sakai

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## Course Description

This course is a collective enterprise in building a repertoire of knowledge and skills relating to understanding the influence of social networks on political behavior and using this repertoire to answer novel network-related questions of interest. To elaborate, the course is designed to do three things: (1) impart an understanding of the myriad ways in which social networks influence political behavior; (2) impart a set of skills, largely computational in nature, designed to analyze the role of social networks in political behavior; and (3) help develop and address an original research question involving social networks and political behavior.

We will spend the first two weeks of the course briefly discussing the state of the substantive literature on the role of social networks in political behavior, with a focus on relatively recent scholarship. We will then spend the next five weeks developing an empirical toolkit intended to help us answer our own questions on the topic. Equal time will be spent on: (i) developing a solid theoretical understanding of the data and theoretical constructs and measures that comprise network analysis; and (ii) learning to work with each of these within the R programming language. Following those seven weeks, we will take a week to workshop initial ideas for original research. This will include a discussion of the relevant data, constructs, and measures that are needed for those ideas.

Subsequently, we will turn to the topic of computational (simulation) modeling, a technique that can be useful in general for theoretical development, and particularly so when it comes to modeling the complex interdependencies inherent in networks. Again, we will split time between theoretical development and practical skills. Specifically, we'll discuss: (i) the basics of programming simulations, with particular application to networks; and (ii) computational modeling varieties and best practices, with concrete in-class examples. At the end of those three weeks we will take a week to workshop ideas for simple computational models intended to produce, either directly or indirectly, hypotheses related to our research ideas. Those models should make use of the constructs and measures identified at the end of the class's empirical section.

Finally, having built up both substantive and methodological knowledge, we will take one week to workshop each overall research project, putting together all the pieces we worked on earlier. This will provide one last opportunity for feedback before the final research project is completed. Sixty percent of the class grade will come from this project. The rest will be distributed between active participation over the course of the semester and two assignments.

There are no strict prerequisites for the course, as all necessary skills will developed during it. However, students who possess an introductory (or better) level of understanding of statistics and/or programming might find the corresponding topics easier.

## Readings

All readings for the class are listed in the tentative schedule below in the order in which they will be used. Any book chapters or articles not available through Duke's library or on the Internet will be posted to Sakai. Required readings are to be done before class in all cases. Students, particularly those lacking specific methodological training, should focus on the substantive contributions of the readings; we will discuss all methods in class. Required readings were chosen as a sample of important research and to illustrate points I desire to make in class. Additional recommended readings are listed below each topic on the schedule as well. These are included as a preliminary (and completely non-exhaustive) guide for further reading on the topic for those who are interested. Despite the breadth of the topic and the manner in which it spans academic disciplines, I have primarily included readings from political science sources. A more comprehensive overview of the literature in political networks may be found in *The Oxford Handbook of Political Networks*, which is available online (within Duke's network) at <http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780190228217.001.0001/oxfordhb-9780190228217>.

This disciplinary focus is not a statement of the relative worth of political science sources as compared to others, just a nod to the focus of the course. There are longstanding traditions of network study within sociology, anthropology, and mathematics that deserve attention, as well as equally valuable, if newer, literatures in diverse fields such as economics, computer science, and physics. A few bits of work from sociology and economics do make it into the recommended readings, but for the most part you will have to seek other sources for overviews of work outside of political science.

## Course Requirements

- Participation (20%): For the weeks we will discuss the substantive literature, everyone should be prepared to discuss the readings during class. I expect you to provide evidence that you have done the readings in a thoughtful and careful manner. For the weeks we will discuss methods, all students are expected to come to class with questions from the readings and/or the assignments. Most of all, for the weeks we will work on improving research projects, students are expected to participate actively in improving each other's research ideas.
- Assignments (20%): There will be two assignments covering methodological topics over the course of the semester. Students will generally have two weeks to complete each. One will cover quantitative methods, the other computational modeling/computer programming. Students are welcome to work together on these, but each person's work must be written up (on a computer, not by hand) independently, and all work must represent an understanding of all problems in the assignment. You will submit each assignment to Sakai by its due date; no late assignments will be accepted. Solutions will be made available at that time. After this point students will have a week to figure out, with the help of the solutions, where they might have gone wrong, and why. Each student will then provide detailed comments (also by computer, in the form of comments on a text document or pdf) that identify any incorrect points and explain how each problem should have been done, and why that is the case. Students will not assign any grades, however. Students will turn in those commented problem sets at the end of the week. Students' grades on the assignments will consider both their original performance and their self-assessment. Do not put assignments off to the last minute! The earlier you start, the more help you can expect.

- Final Research Project (60%): The entire course builds to the production of a piece of original research that is on its way to being publishable. The feedback you will receive at multiple occasions during the semester is intended to strengthen this work. Each project must satisfy two requirements. The first is that the project must address interdependent behavior as captured in a network. The second is that it must contain *both* a computational model used for theory development (which may be simple, if it matches the research question) *and* an empirical test of at least one of the hypotheses derived from the model. That is, students are required to perform research in the style of EITM: empirical implications of theoretical models. Beyond those two requirements, you may tackle any topic they desire. Because it is difficult to produce publishable work in one semester, I want you to focus on the research and not on the eventual paper. Thus, you will turn in your research for this assignment, with minimal writing. Specifically, you will turn in the following: i) a one page summary of your research question and the literature to which it contributes; ii) your computational modeling code; iii) simulation output from that code (figures are preferred and you should name variables clearly); iv) a bulleted list of hypotheses drawn from that output; v) 1-3 pages of description of a data source and associated measures you will use to test those hypotheses, along with the model you will use to do so; vi) R code for your statistical analysis; and vii) results of that analysis (tables or figures are both fine; just name the variables clearly). You have until Wed, April 26th, at noon, to turn all this in to Sakai. You may upload it all to Sakai, or just upload a link to an online source (e.g., Box, Dropbox, Github). Do not under any circumstances e-mail it to me. Joint projects are allowed with prior permission, but I will hold the research to a higher standard in grading. I will provide feedback on the research, with the goal of helping move it toward publication.

### **Tentative Schedule of Readings (Subject to Change with Advance Notice):**

#### THE INFLUENCE OF SOCIAL NETWORKS ON POLITICAL BEHAVIOR

##### **Mass Behavior** (1 week)

###### REQUIRED READING:

Beck, P.A., R.J. Dalton, S. Greene, and R. Huckfeldt. 2002. "The social calculus of voting: Interpersonal, media, and organizational influences on presidential choices." *American Political Science Review* 96(01): 57–73.

Levitan, Lindsey Clark and Visser, Penny S. 2009. "Social Network Composition and Attitude Strength: Exploring the Dynamics within Newly Formed Social Networks." *Journal of Experimental Social Psychology* 45: 1057–1067.

Leighley, Jan E. 1990. "Social Interaction and Contextual Influences On Political Participation." *American Politics Research* 18(4): 459–475.

Mutz, Diana C. 2002. "The Consequences of Cross-Cutting Networks for Political Participation." *American Journal of Political Science* 46(4): 838–55.

Nickerson, David W. 2008. "Is Voting Contagious? Evidence from Two Field Experiments." *American Political Science Review* 102(1): 49–57.

Ryan, John Barry. 2011. "Social Networks as a Shortcut to Correct Voting." *American Journal of Political Science*, 55(4): 753–766.

Lazer, David, Katya Ognyanova, William Minozzi, and Michael Neblo. "The social control of political participation: Conflict and contagion as processes (de)mobilizing voting." *Working Paper*.

###### RECOMMENDED READINGS:

*Opinion Formation*

- Ahn, T.K., Robert Huckfeldt, and John Barry Ryan. 2010. "Communication, influence, and informational asymmetries among voters." *Political Psychology* 31(5):763–787.
- Aral, Sinan, Lev Muchnik, and Arun Sundararajan. 2009. "Distinguishing influence-based contagion from homophily-driven diffusion in dynamic networks." *PNAS* 106: 21544–21549.
- Baker, A., B. Ames, and L.R. Renno. 2006. "Social Context and Campaign Volatility in New Democracies: Networks and Neighborhoods in Brazil's 2002 Elections." *American Journal of Political Science*. 50(2): 382–399.
- Bello, Jason and Meredith Rolfe. 2014. "Is influence mightier than selection? forging agreement in political discussion networks during a campaign." *Social Networks* 36: 134–146.
- Berelson, Bernard R., Paul F. Lazarsfeld and William N. McPhee. 1954. *Voting: A Study of Opinion Formation in a Presidential Campaign*. Chicago: University of Chicago Press.
- Centola, Damon. 2010. "The Spread of Behavior in an Online Social Network Experiment" *Science* 2010: 1194–1197.
- Druckman, James N. and Kjersten R. Nelson. 2003. "Framing and deliberation: How citizens' conversations limit elite influence." *American Journal of Political Science* 47(4): 729–745.
- Durrett, Rick. 2010. "Some features of the spread of epidemics and information on a random graph." *PNAS* 107: 4491–4498.
- Finifter, Ada W. 1974. "The Friendship Group as a Protective Environment for Political Deviants." *American Political Science Review* 68(2): 607–625.
- Friedkin, Noah E. and Eugene C. Johnsen. 1999. "Social Influence Networks and Opinion Change." *Advances in Group Processes* 16: 1–29.
- Huckfeldt, Robert. 2001. "The Social Communication of Political Expertise." *American Journal of Political Science* 45(2): 425–438.
- Huckfeldt, R., P. Johnson, and J. Sprague. 2004. *Political Disagreement: The Survival of Diverse Opinions within Communication Networks*. New York: Cambridge University Press.
- Huckfeldt, Robert, Jeffrey Levine, William Morgan and John Sprague. 1998. "Election Campaigns, Social Communication, and the Accessibility of Perceived Discussant Preference." *Political Behavior* 20(4): 263–294.
- Huckfeldt, Robert and John Sprague. 1995. *Citizens, Politics, and Social Communication: Information and Influence in an Election Campaign*. New York: Cambridge University Press.
- Jackman, Simon and Paul M. Sniderman. 2006. "The Limits of Deliberative Discussion: A Model of Everyday Political Arguments." *The Journal of Politics* 68 (2): 272–283.
- Kenny, Christopher. 1998. "The Behavioral Consequences of Political Discussion: Another Look at Discussant Effects on Vote Choice." *The Journal of Politics* 60(1):231–244.
- Klofstad, C. A., Sokhey, A. E. and McClurg, S. D. 2013. "Disagreeing about Disagreement: How Conflict in Social Networks Affects Political Behavior." *American Journal of Political Science* 57: 120–134.
- Lazer, David, Brian Rubineau, Carol Chetkovich, Nancy Katz, and Michael Neblo. 2010. "The Coevolution of Networks and Political Attitudes." *Political Communication* 27: 248–274.
- McClurg, S.D., W. Wade, and M. Wright-Phillips. 2013. "He Said, She Said: Gender, Social Networks, and Voting Behavior." *American Politics Research* 41(6): 1102–123.
- Mondak, Jerrey J. 1995a. "Media exposure and political discussion in US elections." *Journal of Politics* 57(1): 62–85.
- Richey, Sean. 2008. "The Autoregressive Influence of Social Network Political Knowledge on Voting Behaviour." *British Journal of Political Science* 38 (3): 527–542.

Ryan, John Barry. 2011. "Accuracy and Bias in Perceptions of Political Knowledge." *Political Behavior* 33(2): 335–356.

Sinclair, Betsy. 2012. *The Social Citizen: Peer Networks and Political Behavior* Chicago University Press: Chicago Studies in American Politics).

Sokhey, A.E. and S. McClurg. 2012. "Social Networks and Correct Voting." *Journal of Politics* 74(3): 751–764.

#### *Political Participation*

Bearman, P. and K. Everett. 1993. "The Structure of Social Protest." *Social Networks* 15: 171–200.

Gerber, Alan S., Donald P. Green, and Christopher W. Larimer. 2008. "Social Pressure and Voter Turnout: Evidence from a Large-scale Field Experiment." *American Political Science Review* 102(1): 33–48.

Gould, Roger V. 1991. "Multiple Networks and Mobilization in the Paris Commune." *American Sociological Review* 56: 716–29.

Gould, Roger V. 1993. "Collective Action and Network Structure." *American Sociological Review* 58(2): 182–96.

Granovetter, Mark S. 1978. "Threshold Models of Collective Behavior." *American Journal Of Sociology* 83(6): 1420–43.

Granovetter, Mark S. and Roland Soong. 1983. "Threshold Models of Diffusion and Collective Behavior." *Journal of Mathematical Sociology* 9(3): 165–79.

Heaney, Michael T. and Fabio Rojas. 2008. "Coalition Dissolution, Mobilization, and Network Dynamics in the U.S. Antiwar Movement." *Research in Social Movements, Conflicts and Change* 28: 39–82.

Kenny, Christopher B. 1992. "Political Participation and Effects from the Social Environment." *American Journal of Political Science* 36(1): 259–67.

Kim, Hyojoung J. and Peter S. Bearman. 1997. "The Structure and Dynamics of Movement Participation." *American Sociological Review* 62(1): 70–93.

Klofstad, Casey A. 2007. "Talk Leads to Recruitment: How Discussions about Politics and Current Events Increase Civic Participation." *Political Research Quarterly* 60(2): 180.

Kuran, Timur. 1991. "Now Out of Never: The Element of Surprise in the East European Revolution of 1989." *World Politics* 44(1): 7–48.

Kuran, Timur. 1995. *Private Truths, Public Lies : The Social Consequences of Preference Falsification*. Cambridge, MA: Harvard University Press.

Lake, Ronald La Due and Robert Huckfeldt. 1998. "Social Capital, Social Networks, and Political Participation." *Political Psychology* 19(3): 567–84.

Marwell, Gerald and Pamela E. Oliver. 1993. *The Critical Mass in Collective Action : A Micro-Social Theory*. Studies in Rationality and Social Change. Cambridge: Cambridge University Press.

McAdam, Doug. 1986. "Recruitment to High-Risk Activism—The Case of Freedom Summer." *American Journal Of Sociology* 92(1): 64–90.

McAdam, Doug, and Ronnelle Paulsen. 1993. "Specifying the Relationship between Social Ties and Activism." *American Journal Of Sociology* 99(3): 640–67.

McClurg, Scott D. 2003. "Social Networks and Political Participation: The Role of Social Interaction in Explaining Political Participation." *Political Research Quarterly* 56(4): 449–64.

McClurg, Scott D. 2006. "The Electoral Relevance of Political Talk: Examining the Effect of Disagreement and Expertise in Social Networks on Political Participation." *American Journal of Political Science* 50(3): 737–54.

Mutz, Diana C. 2006. *Hearing the Other Side: Deliberative Versus Participatory Democracy*. New York: Cambridge University Press.

Opp, Karl-Dieter and Christiane Gern. 1993. "Dissident Groups, Personal Networks, and Spontaneous Cooperation: The East German Revolution of 1989." *American Sociological Review* 58(5): 659–680.

Petersen, Roger Dale. 2001. *Resistance and Rebellion: Lessons from Eastern Europe*. Cambridge, MA: Cambridge University Press.

Rolfe, Meredith. 2012. *Voter turnout: a social theory of political participation*. Political economy of institutions and decisions. Cambridge University Press, Cambridge, UK.

Sinclair, Betsy, Margaret A. McConnell, and Melissa R. Michelson. 2012. "Local Canvassing and Social Pressure: The Efficacy of Grassroots Voter Mobilization." *Political Communication* 30 (1): 42–57.

Steinert-Threlkeld, Zachary C. 2017. "Spontaneous Collective Action: Peripheral Mobilization During the Arab Spring." *American Political Science Review* 111 (2): 379–403.

Yin, Chien-Chung. 1998. "Equilibria of Collective Action in Different Distributions of Protest Thresholds." *Public Choice* 97(4): 535–67.

### **A Selection of Other Topics (1 week)**

#### REQUIRED READING:

Berardo, Ramiro, and John T. Scholz. 2010. "Self-Organizing Policy Networks: Risk, Partner Selection, and Cooperation in Estuaries." *American Journal of Political Science* 54(3): 632–649.

Nils Ringe, Jennifer Nicoll Victor, and Justin H. Gross. 2013. "Keeping your friends close and your enemies closer? Information networks in legislative politics." *British Journal of Political Science* 43(3): 601–628

Hafner-Burton, Emilie M., Miles Kahler, and Alexander H. Montgomery. 2009. "Network Analysis for International Relations." *International Organization* 63(3): 559–592.

Ward, M. D., Ahlquist, J. S., and Rozenas, A. 2013. "Gravity's rainbow: a dynamic latent space model for the world trade network." *Network Science* 1(01): 95–118.

Beardsley, Kyle, Howard Liu, Peter Mucha, David A. Siegel, and Juan Tellez. 2020. "Hierarchy and the Provision of Order in International Politics." *Journal of Politics* 82 (2): 731–746.

Eubank, Nicholas 2019. "Social Networks and the Political Salience of Ethnicity," *Quarterly Journal of Political Science* 14 (1): 1–39. <http://dx.doi.org/10.1561/100.00017044>

Larson, Jennifer M. and Janet I. Lewis. 2017. "Ethnic networks." *American Journal of Political Science* 61(2): 350–364.

#### RECOMMENDED READINGS:

The Symposium on political networks in 2011's *PS: Political Science & Politics* 44(1): 39–75.

Ahn, TK, Justin Esarey, and John Scholz. 2009. "Reputation and Cooperation in Voluntary Exchanges: Comparing Local and Central Institutions." *Journal of Politics* 71(2): 398–413.

Baybeck, Brady and Robert Huckfeldt. 2002. "Urban Contexts, Spatially Dispersed Networks, and the Diffusion of Political Information." *Political Geography* 21(2): 195–220.

Cranmer, Skyler J., Bruce A. Desmarais, and Elizabeth J. Menninga. 2012. "Complex Dependencies in the Alliance Network." *Conflict Management and Peace Science* 29(3): 279–313.

Enemark, Daniel, Mathew D. McCubbins, and Nicholas Weller. 2014. "Knowledge and networks: An experimental test of how network knowledge affects coordination." *Social Networks* 36: 122–133.

Eveland Jr, W.P., A.F. Hayes, D.V. Shah, and N. Kwak. 2005. "Understanding the relationship between communication and political knowledge: A model comparison approach using panel data."

*Political Communication* 22(4): 423–446.

Eveland, William P. and Steven B. Kleinman. 2013. “Comparing General and Political Discussion Networks Within Voluntary Organizations Using Social Network Analysis.” *Political Behavior* 35: 65–87.

Eveland Jr., William P. and Fei Shen. 2021. “Cross-national variation in political network size, distribution, and prediction.” *Social Networks* 66: 100–113.

Fowler, James H. 2006. “Legislative Cosponsorship Networks in the U.S. House and Senate.” *Social Networks* 28(4): 454–465.

Fowler, James H. and Nicholas A. Christakis. 2010. “Cooperative behavior cascades in human social networks.” *PNAS* 107(12): 5334–5338.

Fowler, J.H., T.R. Johnson, J.F. Spriggs, S. Jeon, and P.J. Wahlbeck. 2007. “Network Analysis and the Law: Measuring the Legal Importance of Supreme Court Precedence.” *Political Analysis* 15(3): 324–46.

Franzese, R. and J. Hays. 2008. “Interdependence in Comparative Politics: Substance, Theory, Empirics, Substance.” *Comparative Political Studies* 41: 742–80.

Granovetter, Mark S. 1973. “The Strength of Weak Ties.” *American Journal of Sociology* 78(6): 1360–1380.

Heaney, M. 2006. “Brokering Health Policy: Coalitions, Parties, and Interest Group Influence.” *Journal of Health Policy, Policy, and Law*. 31(5): 887–944.

Koger, Gregory, Seth Masket, and Hans Noel. 2009. “Partisan Webs: Information Exchange and Party Networks.” *British Journal of Political Science* 39: 633–653.

Larson, Jennifer M. and Janet I. Lewis. 2018. “Rumors, kinship networks, and rebel group formation.” *International Organization* 72(4): 871–903.

Larson, Jennifer M., Janet I. Lewis, and Pedro L. Rodriguez. 2022. “From Chatter to Action: How Social Networks Inform and Motivate in Rural Uganda.” *British Journal of Political Science* 52 (4): 1769–1789.

Maoz, Zeev. 2009. “The Effects of Strategic and Economic Interdependence on International Conflict across Levels of Analysis.” *American Journal of Political Science* 53(1): 223–240.

Maoz, Zeev 2011. *Networks of Nations: The Evolution, Structure, and Impact of International Networks, 1816-2001*. New York: Cambridge University Press.

Maoz, Zeev, Ranan D. Kuperman, Lesley G. Terris, and Ilan Talmud. 2006. “Structural Equivalence and International Conflict: A Social Networks Analysis.” *Journal of Conflict Resolution* 50(5): 664–689.

Montoya, Celeste. 2008. “The European Union, Capacity Building, and Transnational Networks: Combating Violence against Women through the Daphne Program.” *International Organization* 62: 359–372.

Moody, James and Pamela Paxton. 2009. “Building Bridges: Linking Social Capital and Social Networks to Improve Theory and Research.” *American Behavioral Scientist* 52: 1491–1506.

Padgett, John F. and Christopher Ansell. 1993. “Robust Action and the Rise of the Medici, 1400–1434.” *American Journal of Sociology* 98: 1259–1319.

Pedhzur, A. and A. Perlinger. 2006. “The Changing Nature of Suicide Attacks: A Social Network Perspective.” *Social Forces* 84(4): 1987–2008.

Porter, Mason A., Peter J. Mucha, M.E.J. Newman, A.J. Friend. 2007. “Community Structure in the United States House of Representatives.” *Physica A* 386(1): 414–438.

Schneider, M., J. Scholz, M. Lubell, D. Mindruta, and M. Edwardsen. 2003. “Building Consensual Institutions: Networks and the National Estuary Program.” *American Journal of Political Science* 47(1): 143–158.

Scholz, J.T., R. Berardo, and B. Kile. 2008. "Do Networks Solve Collective Action Problems? Credibility, Search and Collaboration." *The Journal of Politics* 70(2): 393–406.

Siegel, David A. 2011. "Social Networks in Comparative Perspective." *PS: Political Science & Politics* 44 (1): 51–54.

Thurner, P.W. and M. Binder. 2008. "European Union Transgovernment Networks: The Emergence of A New Political Space Beyond the Nation-State." *European Journal of Political Research* 48(1): 80–106.

Victor, J.N. and N. Ringe. 2009. "The Social Utility of Informal Institutions: Caucuses as Networks in the 110th U.S. House of Representatives." *American Politics Research* 37(5): 742–66.

Ward, W., R. Siverson, and X. Cao. 2007. "Disputes, Democracies, and Dependencies: A Reexamination of the Kantian Peace." *American Journal of Political Science* 51(3): 583–601.

Ward, Michael D., Katherine Stovel and Audrey Sacks. 2011. "Network Analysis and Political Science." *Annual Review of Political Science* 14(1): 245–264.

Zhang, Yan, A.J. Friend, Amanda L. Traud, Mason A. Porter, James H. Fowler and Peter J. Mucha. 2008. "Community Structure in Congressional Cosponsorship Networks." *Physica A* 387(7): 1705–1712.

## NETWORK METHODOLOGY

**Empirically Assessing Networks** (5 weeks: basics, measurement; concerns, approaches; two weeks of hands-on work in R; replications)

REQUIRED READING:

*Week 1:*

Bisbee, James and Jennifer M. Larson. "Testing Social Science Network Theories with Online Network Data: An Evaluation of External Validity." 2017. *American Political Science Review* 111(3), 502-521.

Borgatti, Stephen P., Ajay Mehra, Daniel J. Brass, and Giuseppe Labianca. 2009. "Network Analysis in the Social Sciences." *Science* 323: 892–895.

Butts, Carter T. 2009. "Revisiting the Foundations of Network Analysis." *Science* 325: 414–416.

Dorff, Cassy and Michael D. Ward. 2013. *Networks, Dyads, and the Social Relations Model. Political Science Research and Methods* 1: 159–178.

Jackson, Matthew O. 2008. *Social and Economic Networks*. Princeton: Princeton University Press. Sections 2.1, 2.2 13.1, 13.2, 20–43, 434-457.

Klofstad, Casey A., Scott McClurg, and Meredith Rolfe. 2009. "Measurement of Political Discussion Networks: A Comparison of Two 'Name Generator' Procedures." *Public Opinion Quarterly* 73: 462–483.

Marsden, Peter V. 1990. "Network Data and Measurement." *Annual Review of Sociology* 16: 435–463.

Smith, Jeff and James Moody. 2013. "Network Measurement Error and Sampling Coverage I: Nodes missing at random." *Social Networks* 35: 652-668.

*Week 2:*

Cranmer, Skyler J. and Bruce A. Desmarais. 2011. "Inferential Network Analysis with Exponential Random Graph Models." *Political Analysis* 19(1): 66–86.

Fowler, James H., Michael T. Heaney, David W. Nickerson, John F. Padgett, and Betsy Sinclair. 2011. "Causality in Political Networks." *American Politics Research* 39(2): 437–480.



Hoff, Peter D., Adrian E. Raftery, and Mark S. Handcock. 2002. "Latent Space Approaches to Social Network Analysis." *Journal of the American Statistical Association* 97: 1090–1098.

Hoff, P. D. and Ward, M. D. 2004. "Modeling dependencies in international relations networks." *Political Analysis* 12(2), 160–175.

Leicht, Elizabeth and Mark E.J. Newman. 2008. "Community Structure in Directed Networks." *Physical Review Letters* 100(118703): 1–4.

McPherson, Miller, Lynn Smith-Lovin, and James M. Cook. 2001. "Birds of a Feather: Homophily in Social Networks." *Annual Review of Sociology* 27: 415–444.

Rogowski, Jon and Betsy Sinclair. 2012. "Estimating the Causal Effects of Social Interaction with Endogenous Networks." *Political Analysis* 20(3).

*Weeks 3 and 4:*

Class Notes on Sakai

*Week 5:*

Eubank, Nicholas, Guy Grossman, Melina R. Platas and Jonathan Rodden. 2021. "Viral Voting: Social Networks and Political Participation," *Quarterly Journal of Political Science* 16 (3): 265–284.

Eubank, Nicholas and Dorothy Kronick. 2021. "Friends Don't Let Friends Free Ride," *Quarterly Journal of Political Science* 16 (4): 5330–557.

Also acquire the replication data at <https://www-nowpublishers-com.proxy.lib.duke.edu/article/Details/QJPS-19092> and <http://dx.doi.org.proxy.lib.duke.edu/10.1561/100.00020143> prior to class.

RECOMMENDED READINGS:

Bonacich, Phillip. 1987. "Power and Centrality: A Family of Measures." *American Journal of Sociology* 92(5): 1170–1182.

Borgatti, S. P. 2005. "Centrality and network flow." *Social Networks* 27(1): 55–71.

Borgatti, Stephen and Martin Everett. 1992. "Notions of Position in Social Network Analysis." *Sociological Methodology* 22: 1-35.

Bothner, Matthew S., Edward Bishop Smith, and Harrison C. White. 2010. "A model of Robust Positions in Social Networks." *American Journal of Sociology* 116: 943–992.

Carrington, Peter J., John Scott, and Stanley Wasserman (eds.). 2005. *Models and Methods in Social Networks Analysis*. New York: Cambridge University Press.

Cranmer, Skyler J., Bruce A. Desmarais, and Jason W. Morgan. 2020. *Inferential Network Analysis*. Analytical Methods for Social Research. Cambridge University Press.

Falzon, Lucia. 2000. "Determining Groups from the Clique Structure in Large Social Networks." *Social Networks* 22(2): 159–172.

Faust, Katherine and John Skvoretz. 2002. "Comparing Networks across Space and Time, Size and Species." *Sociological Methodology* 8(2): 267–299.

Friedkin, Noah. 1991. "Theoretical Foundations for Centrality Measures." *American Journal of Sociology* 96(6): 1478–1504.

Huckfeldt, Robert. 2009. "Interdependence, Density Dependence, and Networks in Politics." *American Politics Research* 37: 921-950.

Huisman, Mark and Tom A. B. Snijders. 2002. "Statistical Analysis of Longitudinal Network Data with Changing Composition." *Sociological Methods and Research* 32(2): 253–287.

Jackson, Matthew O. 2008. *Social and Economic Networks*. Princeton, NJ: Princeton University Press.

Kossinets, Gueorgi. 2006. "Effects of Missing Data in Social Networks." *Social Networks* 28(3): 247–268.

Lusher, Dean, Johan Koskinen, and Garry Robins. 2012. *Exponential Random Graph Models for Social Networks*. New York, NY: Cambridge University Press.

Makse, T., S. Minkoff and A.E. Sokhey. Forthcoming. "Networks, Context, and the use of Spatially-Weighted Survey Metrics." *Political Geography*.

Marsden, Peter V. and Karen E. Campbell. 1984. "Measuring Tie Strength." *Social Forces*, 63(2): 482–501.

Newman, M.E.J. 2010. *Networks*. New York, NY: Oxford University Press.

Noel, Hans and Brendan Nyhan. 2011. "The 'Unfriending' Problem: The Consequences of Homophily in Friendship Retention for Causal Estimates of Social Influence." *Social Networks* 33(3): 211–218.

K. Ognyanova. 2016. "Network visualization with r." [kateto.net/network-visualization](http://kateto.net/network-visualization).

Robins, Pattison, Kalish, and Lusher. 2007. "An Introduction to Exponential Random Graph (p\*) Models for Social Networks." *Social Networks* 29(2): 173–191.

Scott, John. 2000. *Social Network Analysis: A Handbook*. 2nd Edition. Thousand Oaks, CA: Sage Publications.

Sinclair, Betsy, Margaret McConnell and Donald P. Green. 2012. "Detecting Spillover in Social Networks: Design and Analysis of Multi-level Experiments." *American Journal of Political Science* 56(4): 1055–1069.

Sokhey, A.E. and P. Djupe. 2014. "Name Generation in Interpersonal Political Network Data: Results from a Series of Experiments." *Social Networks* 36: 147–161.

Steinert-Threlkeld, Zachary C. 2017. "Longitudinal Network Centrality Using Incomplete Data." *Political Analysis* 25(3): 308–328.

Wasserman, Stanley and Katherine Faust. 1997. *Social Networks Analysis: Methods and Applications*. New York: Cambridge University Press

Watts, Duncan J. 1999. *Small Worlds : The Dynamics of Networks between Order and Randomness*. Princeton, NJ: Princeton University Press.

White, Harrison C., Scott A. Boorman and Ronald L. Breiger. 1976. "Social Structure from Multiple Networks I. Blockmodels of Roles and Positions." *American Journal of Sociology* 81: 730–80.

<https://www.jessesadler.com/post/network-analysis-with-r/>

<http://faculty.ucr.edu/~hanneman/nettext/>

[http://www.kateto.net/wp-content/uploads/2016/01/NetSciX\\_2016\\_Workshop.pdf](http://www.kateto.net/wp-content/uploads/2016/01/NetSciX_2016_Workshop.pdf)

<https://link.springer.com/book/10.1007%2F978-1-4939-0983-4>

<http://barabasi.com/f/623.pdf>

### **Workshop Week 1: Ideas, Data Sources, Measures, Network Constructs (1 week)**

No readings. Come to class with ideas of your own to discuss.

**Computationally Modeling Networks** (3 weeks: basic coding; procedures and practices; hands-on examples from the literature)

REQUIRED READING:

*Week 1:*

Class notes on Sakai.

*Week 2:*

Siegel, David A. 2018. "Analyzing Computational Models." *American Journal of Political Science* 62 (3): 745–759 with appendix at [http://people.duke.edu/~das76/Research/Siegel\\_](http://people.duke.edu/~das76/Research/Siegel_)

Analysis\_AJPS\_Appendix.pdf and code at <http://people.duke.edu/~das76/Research/SiegelAJPSAnalysis.zip>.

*Week 3:*

Class notes on Sakai, with examples drawn from the literature.

Siegel, David A. 2013. "Social Networks and the Mass Media." *American Political Science Review* 107 (4): 786–805 with appendix at [http://people.duke.edu/~das76/Research/Siegel\\_APSR2013\\_appendix.pdf](http://people.duke.edu/~das76/Research/Siegel_APSR2013_appendix.pdf).

Siegel, David A. 2011. "When Does Repression Work?: Collective Action and Social Networks." *Journal of Politics* 73 (4): 993–1010 with appendix at [http://people.duke.edu/~das76/Research/Siegel\\_Repression\\_JOP\\_2011\\_Appendix.pdf](http://people.duke.edu/~das76/Research/Siegel_Repression_JOP_2011_Appendix.pdf). 4

Siegel, David A. 2011. "Non-Disruptive Tactics of Suppression Are Superior in Countering Terrorism, Insurgency, and Financial Panics." *PLoS ONE* 6(4):e18545.

Siegel, David A. 2009. "Social Networks and Collective Action." *American Journal of Political Science* 53 (1): 122–138 with appendix at [http://people.duke.edu/~das76/Research/Siegel\\_network\\_model\\_AJPS\\_appendix\\_final.pdf](http://people.duke.edu/~das76/Research/Siegel_network_model_AJPS_appendix_final.pdf).

RECOMMENDED READINGS:

Baldassarri, Delia and Peter Bearman. 2007. "Dynamics of Political Polarization." *American Sociological Review* 72: 784–811.

Centola, Damon and Michael Macy. 2007. "Complex Contagions and the Weakness of Long Ties." *American Journal of Sociology* 113(3): 702–34.

De Marchi, Scott. 2005. *Computational and Mathematical Modeling in the Social Sciences*. Cambridge University Press.

Fowler, James H. 2005. "Turnout in a Small World." In *Social Logic of Politics*, ed. Alan Zuckerman. Philadelphia: Temple University Press, 269–87.

Miller, John H. and Scott E. Page. 2007. *Complex adaptive systems: an introduction to computational models of social life*. Princeton, New Jersey: Princeton University Press.

Schelling, Thomas C. 1978. *Micromotives and Macrobehavior*. New York: Norton.

*Recommended Reading on Game Theory and Networks*

Bramouille, Y. and R. Kranton. 2007. "Public Goods in Networks." *Journal of Economic Theory* 135 (1): 478–494.

Chwe, Michael S.Y. 2000. "Communication and Coordination in Social Networks." *Review of Economic Studies* 76 (1): 1–16.

Galeotti, Andrea, Sanjeev Goyal, Matthew O. Jackson, Fernando Vega-Redondo, and Leat Yariv. 2010. "Network Games." *Review of Economic Studies* 77 (1): 218–244.

Gomez, Daniel, Enrique Gonzalez-Aranguena, Conrado Manuel, Guillermo Owen, Monica del Pozo, and Juan Tejada. 2003. "Centrality and Power in Social Networks: A Game Theoretic Approach." *Mathematical Social Science* 46(1): 27–54.

Jackson, Matthew O. 2008. *Social and Economic Networks*. Princeton: Princeton University Press.

Jackson, Matthew O. and Alison Watts. 2010. "Social Games: Matching and the Play of Finitely Repeated Games." *Games and Economic Behavior* 70 (1): 170–191.

Jackson, Matthew O. And Yves Zenou. Forthcoming. "Games on Networks." in the *Handbook of Game Theory*, Vol 4. <http://papers.ssrn.com/abstract=2136179>

Larson, Jennifer M. "Why the West Became Wild: Informal Governance with Incomplete Networks." 2017. *World Politics*. DOI10.1017/S0043887117000181.

Lohmann, Susanne. 1994. "The Dynamics of Informational Cascades - The Monday Demonstrations in Leipzig, East-Germany, 1989-91." *World Politics* 47(1): 42-101.

Morris, Stephen. 2000. "Contagion." *Review of Economic Studies* 67(1): 57-78.

Patty, John W. and Elizabeth Maggie Penn. 2014. "Sequential Decision-Making and Information Aggregation in Small Networks." *Political Science Research and Methods* 2 (2), 243-271.

**Workshop Week 2: Theory and Hypothesis Development** (1 week)

No readings. Come to class with ideas for a theory and related computational model. Simple is good.

**Workshop 3: Overall Project** (1 week)

No readings. One more opportunity for feedback from the class.