

Networks and Politics, Spring 2019

Professor Larson

Tuesdays and Thursdays 9:35a-10:50a

Commons Center 320

Office Hours: Tuesdays 1:00p-2:00p

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Overview

Are segregated neighborhoods always the result of discrimination? If a revolution is brewing, how many people must the revolutionaries personally recruit in order to incite widespread revolution? How debilitating will a snowed-in BNA Airport be to national air travel? Why are all actors separated from Kevin Bacon by 6 degrees or fewer? Why did Blu-Ray dominate HD DVD and Kindle dominate the Nook?

In a game of telephone in which a message is whispered from person to person, how many people must a message pass through to be distorted beyond recognition? How short must a message be to make it through five people intact? If each person heard the message from two different people instead of just one, how much clearer would the final message be?

The budding new field of Network Analysis offers the tools to answer questions like these. Network analysis is a recent import into the social sciences, and has been developed in a diverse set of fields, from physics to computer science to sociology. Recognizing that objects of study (people, genes, web pages, virus hosts, etc.) are often influenced by “neighboring” objects of study, these fields have created a paradigm and a set of tools that political scientists can use to study segregation, public opinion, learning, institutional design, the adoption of new technologies, epidemics, migration, trade, war, rebellion, protests, and various other phenomena that involve a group of people interacting.

Because network analysis has such diverse origins, mastering it requires a willingness to learn about a variety of applications, many of which are in fields outside of political science, and the creativity to bring techniques and approaches used outside of political science into the field. The blend of networks and political science covered in this course will reveal a wealth of untapped research opportunities and chances to make real contributions to the field of political science.

Since network analysis is a relatively new field, we will not be using a textbook. Instead, we will be working through a collection of papers (the bulk of which were published in the last five years) to learn the methods and range of applications. This course assumes no background in social network analysis: we will begin with the basics and progress from there. Some of the readings can be quite technical, and some relatively short pieces may take considerable time to read through. Each week has relatively few pages of reading so that you may devote time to carefully reading the assigned pieces. That being said, I do not expect you to be able to reproduce, or even fully understand, the intricate math in some of the articles. One of the skills this course will help you

to hone is the ability to extract meaning from an academic article, even if the level of technical proficiency assumed in the article is well above your own. (**Read: some articles are hard. You can get a lot out of them anyway.**)

By the end of the course, you will have the skills necessary to explain or make predictions about real world political phenomena using network techniques. As we encounter various network models throughout the course that seek to describe or explain the world, we will focus on understanding, replicating, and improving upon the models, and on applying the models to other phenomena in political science not yet explored with a networks approach. We will also discuss strategies for empirically verifying the explanations or predictions offered by the models. Throughout the course, you will have the opportunity to explore network analysis through discussions, brief lectures, activities, short assignments, an empirical exercise, and a final research project.

Attendance, preparation and thoughtful participation are expected and are crucial to making class a valuable experience for everyone.

Requirements and their weight in the final grade

Attendance and Participation: 10%

Attendance is mandatory and thoughtful participation is expected in discussions and activities. Constructive questions count as participation.

Short Assignments: 25%

Short assignments are intended to clarify course material, offer practice in applying course concepts, and facilitate discussion. The assignment grade will include two problem sets and three discussion papers, all to be submitted electronically through the course website. One discussion paper can be written for any class day that has readings between and including 1/24/19 and 3/26/19. **Note that all but one of the eligible days are before spring break.** For a discussion paper, craft two questions that could be posed to the class to kick off an interesting discussion related to at least one of the readings for that day. For each question, offer one potential answer. Keep the length of each discussion paper to 2 pages or less, double-spaced. You may submit up to 4; I will record the best 3 grades.

Presentation: 10%

A short in-class presentation on 2/12/19. Instructions will be given in class.

Empirical exercise: 15%

A memo (up to 6 pages, double spaced) detailing an empirical research design, due electronically through the course website by 11:59pm on 2/28/19. Instructions will be given in class.

Prospectus: 5%

A memo (up to 4 pages, double spaced) proposing the topic and plan for the final research project, due by email to the class by 11:59pm on 3/31/19. Classes on 4/2/19–4/4/19 will be devoted to short presentations and feedback on project plans.

Final research project: 35%

A research paper (up to 12 pages, double spaced). Instructions will be given in class. Due electronically through the course website 11:59pm, 4/25/19.

Late policy: Because discussion papers are meant to facilitate discussion, no late discussion papers will be accepted. Papers (the empirical exercise, the prospectus, and the final research project) submitted after the due date and time will be penalized half a letter grade for each 24 hours past the due date. Exceptions for personal emergencies will be assessed on a case-by-case basis. Papers will receive a zero 120 hours past the due date. A paper is considered late if it is submitted past the due date and time, or if it submitted in an improper format.

Academic honesty: Many of the activities will be collaborative, and I encourage you to work with one another on assignments and projects. The assignment descriptions will make clear when groups can submit work together, and when students need to write up work individually. This course will strictly adhere to Vanderbilt's academic honesty policy. See the student handbook for details, and feel free to ask me when in doubt. Two good rules of thumb: (1) when in doubt, cite, and (2) when in doubt, write up group work in your own words.

Additional course information will be announced in class or distributed via the email list or the course website.

Schedule of Readings and Assignments (subject to change)

Week 1: Logistics and Introduction

What is network analysis? What political topics can be studied with networks? What advantages and disadvantages does network analysis have compared to other tools and paradigms available to political scientists? What do abstract network characteristics have to do with real world phenomena like epidemics, internet searches, financial markets, and scientific collaboration?

Tuesday 1/8/19

No Readings

Thursday 1/10/19

Nicholas A. Christakis and James H. Fowler. Chapter 1, in the thick of it. In *Connected: The Surprising Power of Our Social Networks and How They Shape Our Lives*, pages 3–32. Little, Brown, 2009.

Week 2: Representing the World with Networks

What can a simple network model tell us about residential segregation and discrimination? Does segregation imply discriminatory preferences? How can this inform policy? How can networks be described precisely? How can we describe individuals' positions within networks?

Tuesday 1/15/19

Thomas C. Schelling. Sorting and mixing: Race and sex. In *Micromotives and Macrobehavior*, pages 137–166. WW Norton, 2006.

Thursday 1/17/19

Matthew O. Jackson. Chapter 2: Representing and measuring networks. In *Social and economic networks*, pages 20–51. Princeton University Press, 2010.

Week 3: Do Social Networks Matter?

Does the fact that a person is connected to others in a social network affect his or her behavior? Do people make important decisions about their health and financial wellbeing independently of one another?

Tuesday 1/22/19

Mark Newman. Who is the best connected scientist? a study of scientific coauthorship networks. *Complex networks*, pages 337–370, 2004.

Thursday 1/24/19

Esther Duflo and Emmanuel Saez. The role of information and social interactions in retirement plan decisions: Evidence from a randomized experiment. *The Quarterly Journal of Economics*, 118(3):815–842, 2003.

Neel Rao, Markus Mobius, and Tanya Rosenblat. Social networks and vaccination decisions. *Working Paper*, 2007.

Week 4: How Do Social Networks Matter?

How does a person's social network affect behavior? Why does one's position in a social network have consequences for whether that person is employed, behaves cooperatively, or becomes a criminal? What role do social networks play in bank runs? Financial crises? Political campaigns? How problematic would it be to ignore the role of social networks when studying these kinds of topics?

Tuesday 1/29/19

Nicholas A. Christakis and James H. Fowler. Chapter 5, the buck starts here. In *Connected: The Surprising Power of Our Social Networks and How They Shape Our Lives*, pages 135–171. Little, Brown, 2009.

Mark S. Granovetter. The strength of weak ties. *American Journal of Sociology*, pages 1360–1380, 1973.

Antoni Calvo-Armengol and Matthew O Jackson. The effects of social networks on employment and inequality. *The American Economic Review*, 94(3):426–454, 2004.

1/29/19 (Tues): Problem Set 1 due electronically by 11:59pm.

Thursday 1/31/19

James H. Fowler and Nicholas A. Christakis. Cooperative behavior cascades in human social networks. *Proceedings of the National Academy of Sciences*, 107(12):5334–5338, 2010.

Edward L. Glaeser and Bruce Sacerdote. Crime and social interactions. *Quarterly Journal of Economics*, 111(2):507–548, 1996.

Week 5: How Do Things Spread through Networks?

Exactly how do ideas and behavior spread along the links in a social network? When people are trying to learn something new, do they make use of their peers, and if so, how? Are groups that are diverse as good at spreading new information as homogeneous groups? Does information spread differently in online social media than in in-person interactions? What determines how widely information spreads? Why do some networks have very different shapes than others?

Tuesday 2/5/19

M. Mobius, T. Phan, and A. Szeidl. Treasure hunt: Social learning in the field. *Working Paper*, NBER, 2015.

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

William J. Brady, Julian A. Willis, John J. Jost, Joshua A. Tucker, and Jay J. Van Bavel. Emotion shapes the diffusion of moralized content in social networks. *Proceedings of the National Academy of Sciences*, 114(28):7313–7318, 2017.

Thursday 2/7/19

Albert-Laszlo Barabasi. Chapters 4-7. In *Linked*, pages 41–92. Plume, 2003.

M. Fafchamps and F. Gubert. Risk sharing and network formation. *The American economic review*, 97(2):75–79, 2007.

Week 6: Applying and Extending What We’ve Learned So Far

What other topics could be represented with a network model similar to those we’ve seen so far? Take the example of collection action: How do protests depend on the social networks among potential participants? When will groups with grievances experience protests? How can this be studied? What impact does social media have on protests, and how do protests grow?

Tuesday 2/12/19

Presentations

Thursday 2/14/19

M.S.Y. Chwe. Communication and coordination in social networks. *The Review of Economic Studies*, 67(1):1–16, 2000.

S. González-Bailón and N. Wang. Networked discontent: The anatomy of protest campaigns in social media. *Social Networks*, 44:95–104, 2016.

Week 7: The Importance of the Shape of Networks

Does the shape of a network matter? If someone is better connected in a network, does she have a different incentive to behave cooperatively, or a different likelihood of success as a politician? What does the network of romantic and sexual encounters of adolescents imply for the possibility of disease spread?

Tuesday 2/19/19

Jennifer M Larson. Why the west became wild: Informal governance with incomplete networks. *World Politics*, 69(4):713–749, 2017.

Cesi Cruz, Julien Labonne, and Pablo Querubín. Politician family networks and electoral outcomes: Evidence from the philippines. *American Economic Review*, 107(10):3006–37, 2017.

Thursday 2/21/19

Peter S Bearman, James Moody, and Katherine Stovel. Chains of affection: The structure of adolescent romantic and sexual networks. *American journal of sociology*, 110(1):44–91, 2004.

S. Judd, M. Kearns, and Y. Vorobeychik. Behavioral dynamics and influence in networked coloring and consensus. *Proceedings of the National Academy of Sciences*, 107(34):14978–14982, 2010.

Week 8: How Do Network Links Facilitate Learning?

How do network links help nodes learn from one another? Will everyone in a social network wind up holding the same opinion or having the same information as each other? If we learn what our social ties are doing, will we always do the same, and what does this mean for the future of online shopping, advertising, cultural markets, etc.? Can we design programs, for instance school programs, in a way that makes the best use of social networks?

Tuesday 2/26/19

M.H. DeGroot. Reaching a consensus. *Journal of the American Statistical Association*, 69(345):118–121, 1974.

M. J. Salganik, P. S. Dodds, and D. J. Watts. Experimental study of inequality and unpredictability in an artificial cultural market. *Science*, 311(854), 2006.

Thursday 2/28/19

Thomas W Valente, Beth R Hoffman, Annamara Ritt-Olson, Kara Lichtman, and C Anderson Johnson. Effects of a social-network method for group assignment strategies on peer-led tobacco prevention programs in schools. *American journal of public health*, 93(11):1837–1843, 2003.

2/28/19 (Thurs): Empirical Exercise due electronically by 11:59p

Week 9: Spring Break

Tuesday 3/5/19

NO CLASS

Thursday 3/7/19

NO CLASS

Week 10: Visualizing Networks

Demo of software that can be used to create custom pictures of networks.

Tuesday 3/12/19

NO CLASS

Thursday 3/14/19

M. Grandjean. Gephi: Introduction to network analysis and visualization. martingrandjean.ch/gephi-introduction/, 2015.

Software demo

Week 11: Working with Network Data

How would we go about collecting and storing information about a network we want to study? Once we've stored the network, how do we analyze it?

Tuesday 3/19/19

Network data tutorial

Thursday 3/21/19

Network data tutorial

3/21/19 (Thurs): Problem Set 2 due electronically by 11:59pm

Week 12: Homophily v. Influence

Why do friends tend to be similar to one another? Can forced friendships change people's attitudes toward race or policies such as affirmative action?

Tuesday 3/26/19

J.M. McPherson and L. Smith-Lovin. Homophily in voluntary organizations: Status distance and the composition of face-to-face groups. *American sociological review*, pages 370–379, 1987.

Greg J Duncan, Michael Kremer, Dan M Levy, and Jacque Eccles. Empathy or antipathy? the impact of diversity. *The American economic review*, 96(5):1890–1905, 2006.

Thursday 3/28/19

Flex day, readings TBD

3/31/19 (Sun): Prospectus due by email to class 11:59pm

Week 13: Your Contributions to the Field

Tuesday 4/2/19

Prospectus Presentations

Thursday 4/4/19

Prospectus Presentations

Week 14

Tuesday 4/9/19

NO CLASS

Thursday 4/11/19

NO CLASS

Week 15: Final Paper Workshop

Tuesday 4/16/19

Final Paper Workshop

Thursday 4/18/19

Final Paper Workshop

4/25/19 (Thurs): PDF of Final Project due electronically by 11:59pm