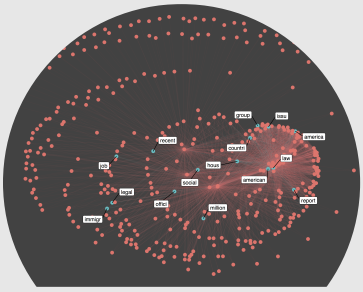

Text Analysis for Social Science

SOC/MDSC 43919

Instructor Info

Marshall A. Taylor

Office Hrs: Tue & Thurs 2-3p

JNH 4046

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Course Info

Prereq: None

Mon, Wed & Fri

12:50p-1:40p

JNH B071 (MW); DeBartolo 228 (F)

Overview

Screens are all around us. From TVs to smartphones and e-books, the ubiquity of screens and the fact that we use them to communicate with one another means that virtually all of us create some form of "text data" every day.

Further, the proliferation of mass communication technologies over the past couple of decades—including the rise of social media, the emphasis on document digitization in archives, libraries, and organizations, and increasing access to these data—has opened the door to new questions for social scientists and to new data and methods for answering these questions. For example, do anti-immigration laws shape how people tweet about immigration? Does war shape how U.S. presidents frame the role of governance in society, as reflected in State of the Union addresses? What accounts for the gender gap in net neutrality activism? Did national news media or activist social media matter more for sparking #BlackLivesMatter? Can Twitter sentiment predict stock market activity?

This course will introduce students to some of the methods that social scientists use to answer these types of questions. The focus will be on understanding and developing some of the fundamentals for designing and conducting text analysis projects from a social science perspective. We will also touch on some of the more advanced topics in this rapidly growing field. Hands-on analysis in the R statistical computing environment will be integral to the course, though no prior coding experience is required.

Material

There are no required texts for this class. All readings and other materials are either free online or I will make them available via Sakai.

Note that this syllabus is a living document, so I reserve the right to make changes or updates as the semester progresses.

Grading Scheme

20%	Participation
30%	Lab Assignments
20%	Research Paper Proposal
30%	Final Research Paper and Presentation

Grades will follow the standard scale: A = 93-100; A- = 92-90; B+ = 87-89; B = 83-86; B- = 80-82; C+ = 77-79; C = 73-76; D = 66-69; F = <65.

Learning Objectives

You should finish the course with the ability to interpret, question, and discuss text analysis methods accurately and with an understanding of which type of method is appropriate for different kinds of research questions. You should also finish the course with basic programming and data analysis skills in the R statistical computing environment.

FAQs

Does this course require any coding experience?

No! We will learn what we need to know about the R statistical computing environment as the course unfolds. That said, having computing experience—especially in R—will certainly give you a leg up.

Do I need to be a stats or math wiz?

No. While this course is focused on *computational* text analysis, most of the material will be cast at the conceptual level.

Is this class hard?

Difficulty is in the eye of the beholder. But I think you'll be surprised at how reasonable (and fun!) these methods are to learn.

Do employers value these skill sets?

People with text analysis skills—and data science skills more generally—are increasingly sought after by tech, nonprofit, business, health, and government employers. Just take a look at Facebook's data science job listing to see what I mean: `https://www.facebook.com/careers/areas-of-work/data/?teams[0]=Data%20%26%20Analytics&sub_teams[0]=Core%20Data%20Science&sub_teams[1]=Analytics#openpositions`

Course Requirements

Participation

Attendance and participation is mandatory. Your participation will be calculated on a scale from 0 to 100 at the end of the semester to reflect the extent to which you participated in in-class discussions, showed that you engaged in the reading material for that day, and turned in class exercises. I will e-mail regular updates on your evolving participation grade as the class unfolds.

Lab Assignments

Learning these methods requires practice. To that end, most Fridays will revolve around short lab assignments designed to help you understand the course material. Each lab (10 total) will be graded on a 0 to 100 scale, and you will have one full week to complete each assignment (i.e., the following Friday at 10:00a). All labs should be turned in as Word, Pages, or LaTeX documents. Acceptable fonts are Computer Modern, Arial, Helvetica, Garamond, and Times New Roman. You will also turn in your R scripts and RData files.

Research Paper Proposal

Your research proposal will be due around the mid-semester mark. This 3-5 page proposal will serve as an opportunity for you to think about what you will do for your final paper and get feedback from me. The proposal should be turned in as a Word, Pages, or LaTeX document that is double-spaced with 11-12 point font and 1-inch margins. Acceptable fonts are Computer Modern, Arial, Helvetica, Garamond, and Times New Roman. You will also turn in your R scripts and RData files, if applicable.

Final Research Paper and Presentation

The final research paper should be between 8-15 pages (exclusive of references, tables, and figures) and show your ability to use these methods to pose, research, and present findings from a research question of your own design. Your paper should have all of the standard sections of a research paper: i.e., an introduction, literature review, data/methods section, results, and a conclusion. We will discuss the final paper in more detail as we get into the course. The paper should be turned in as a Word, Pages, or LaTeX document that is double-spaced with 11-12 point font and 1-inch margins. Acceptable fonts are Computer Modern, Arial, Helvetica, Garamond, and Times New Roman. You will also turn in your R scripts and RData files. Part of your paper grade will be based on a 10 minute presentation at the end of the course. Of the 30% of your final grade that the paper/presentation accounts for, 20% will be determined by the paper and 10% by the presentation.

Honor Code

You are expected to abide by the University of Notre Dame Undergraduate Code of Honor at all times. Failures to do so will be addressed according to official university policy. Familiarize yourself with the honor code at `https://honorcode.nd.edu`.

Accommodations

If you require classroom accommodations, please meet with me as soon as possible so that we may communicate with the appropriate offices to ensure that your needs are met. If you think you may need accommodations, you can contact the Sara Bea Disability Services office and set up a confidential consultation either in person or by phone (at 574-631-7157). More information can be found at the office website: `https://sarabeadisabilityservices.nd.edu`.

Basic Needs

If you find yourself in a position where you cannot afford regular access to food and/or lack stable housing accommodations, please contact the Division of Student Affairs at 574-631-5550 or `https://studentaffairs.nd.edu/`. If you are comfortable doing so, please also let me know so that I can assist you in finding the resources that you need.

Course Schedule

Readings are to be completed by the date with which the reading is associated. Remember to check the updated syllabus on Sakai frequently, as it is is *very likely* that this schedule will be updated as we figure out which material requires more instructional time. For academic articles, you can just skim the front end; focus your attention on the methods and results sections.

UNIT 1: Getting Data, Using Dictionaries & NLP

Week 1

1-16 Welcome!

Required: Underwood, Ted. 2012. "Where to Start with Text Mining." *The Stone and the Shell*. (https://tedunderwood.com/2012/08/14/where-to-start-with-text-mining/).

Recommended: O'Connor, Brendan, David Bamman & Noah A. Smith. 2011. "Computational Text Analysis for Social Science: Model Assumptions and Complexity." *Second Workshop on Computational Social Science and Wisdom of the Crowds*:1-8. (http://www.cs.cmu.edu/~nasmith/papers/oconnor+bamman+smith.nips-ws11.pdf).; Ignatow, Gabe & Rada Mihalcea. 2017. "Social Science and the Digital Text Revolution." Pp. 2-15 in *Text Mining: A Guidebook for the Social Sciences*. Thousand Oaks, CA: SAGE. (Sakai).; Golder, Scott A. & Michael W. Macy. 2014. "Digital Footprints: Opportunities and Challenges for Online Social Research." *Annual Review of Sociology* 40:129-52. (http://syi.hu/pdf/digitalfootprints.pdf).; Evans, James A. & Pedro Aceves. 2016. "Machine Translation: Mining Text for Social Theory." *Annual Review of Sociology* 42:21-50. (https://www.annualreviews.org/doi/pdf/10.1146/annurev-soc-081715-074206).; Tucker, Joshua. 2016. "Here's How Text Analysis is Transforming Social Science Research." *The Washington Post*. (Sakai).

1-18 Getting Ready with R

Required: Monash Bioinformatics Platform. 2018. "Introduction to R, Version 2." (https://monashdatafluency.github.io/r-intro-2/r-intro-2.pdf).

Recommended: Cornelissen, Jonathan. "Introduction to R" free course from DataCamp (https://www.datacamp.com/courses/free-introduction-to-r); Wickham, Hadley & Garrett Grolemund. 2017. "Introduction." In *R for Data Science*. Sebastopol, CA: O'Reilly Media. (https://r4ds.had.co.nz/explore-intro.html).

Week 2

1-21 No class; MLK Day

1-23 Web Scraping, Pt. I

Required: Ignatow, Gabe & Rada Mihalcea. 2017. "Web Crawling and Scraping." Pp. 34-41 in *Text Mining: A Guidebook for the Social Sciences*. Thousand Oaks, CA: SAGE. (Sakai).; Gazarov, Petr. 2016. "What is an API? In English, Please." *freeCodeCamp*. (https://medium.freecodecamp.org/what-is-an-api-in-english-please-b880a3214a82). Kearney, Michael W. 2018. "rtweet." (https://rtweet.info/).

Recommended: Watts, Ryan. 2017. "How to Scrape Tweets using R for Journalists." *Interhacktives*. (http://www.interhacktives.com/2017/01/25/scrape-tweets-r-journalists/).

1-25	Web Scraping, Pt. II	Required: Hillebrand, Julian. 2016. "Analyzing Facebook with R." *ThinkToStart*. (http://thinktostart.com/analyzing-facebook-with-r/).; Fitzgerald, Jonathan D. 2018. "Working with *The New York Times* API in R." *Storybench*. (http://www.storybench.org/working-with-the-new-york-times-api-in-r/). Start: Lab #1.
Week 3		
1-28	Corpora, Text Preprocessing & Matrices	Required: Larson, Ben. "R: Text Mining (Term Document Matrix)." *Analytics4All*. (https://analytics4all.org/2016/12/21/r-text-mining/).; Larson, Ben. "R: Text Mining (Pre-Processing). *Analytics4All*. (https://analytics4all.org/2016/12/22/r-text-mining-pre-processing/). Recommended: Porter, M.F. 1980. "An Algorithm for Suffix Stripping." *Program* 14(3):130-37. (http://stp.lingfil.uu.se/~marie/undervisning/textanalys16/porter.pdf).; Feinerer, Ingo. 2018. "Introduction to the tm Package: Text Mining in R." (https://cran.r-project.org/web/packages/tm/vignettes/tm.pdf).; DataCamp. 2016. "R Tutorial: Cleaning and Preprocessing Text." (https://www.youtube.com/watch?v=3putwMZpt1E).
1-30	Term Frequencies	Required: Awati, Kailash. 2015. "A Gentle Introduction to Text Mining Using R." *Eight to Late*. (https://eight2late.wordpress.com/2015/05/27/a-gentle-introduction-to-text-mining-using-r/).; Seale, Clive & Jonathan Charteris-Black. 2008. "The Interaction of Class and Gender in Illness Narratives." *Sociology* 42(3):453-69. (Sakai). Recommended: Gill, Donna Louise & Sonia Jane Dickinson. 2008. "Communicating Sustainability: A Web Content Analysis of North African, Asian, and European Firms." *Journal of Communication Management* 12(3):243-62. (Sakai).; Lee, Monica & John Levi Martin. 2015. "Coding, Counting, and Cultural Cartography." *American Journal of Cultural Sociology* 3(1):1-33. (Sakai).
2-1	Lab	Start: Lab #2. Due: Lab #1, by 10:00a.
Week 4		
2-4	Dictionary-Based Methods	Required: Lizardo, Omar, Dustin S. Stoltz, Marshall A. Taylor & Michael Lee Wood. 2018. "Visualizing Bring-Backs." *Socius* 4:1-3. (https://journals.sagepub.com/doi/pdf/10.1177/2378023118805362).; Bonikowski, Bart & Noam Gidron. 2016. "The Populist Style in American Politics: Presidential Campaign Discourse, 1952-1996." *Social Forces* 94(4):1593-1621. (Sakai). Recommended: Tausczik, Yla R. & James W. Pennebaker. 2010. "The Psychological Meaning of Words: LIWC and Computerized Text Analysis Methods." *Journal of Language and Social Psychology* 29(1):24-54. (Sakai).

2-6	Sentiment Analysis	Required: Robinson, David. 2016. "Text Analysis of Trump's Tweets Confirms He Writes Only the (Angrier) Android Half." *Variance Explained*. (http://varianceexplained.org/r/trump-tweets/); Tatman, Rachael. 2017. "Data Science 101: Sentiment Analysis in R Tutorial." *No Free Hunch*. (http://blog.kaggle.com/2017/10/05/data-science-101-sentiment-analysis-in-r-tutorial/). Recommended: Bollen, Johan, Huina Mao & Xiaojun Zeng. 2011. "Twitter Mood Predicts the Stock Market." *Journal of Computational Science* 2:1-8. (Sakai).; Stoltz, Dustin S. & Marshall A. Taylor. 2017. "Paying with Change: The Purposeful Enunciation of Material Culture." *Poetics* 64:26-39. (Sakai).; Flores, René D. 2017. "Do Anti-Immigrant Laws Shape Public Sentiment? A Study of Arizona's SB 1070 Using Twitter Data." *American Journal of Sociology* 123(2):333-84. (Sakai).
2-8	Lab	Start: Lab #3. Due: Lab #2, by 10:00a.

Week 5

2-11	Natural Language Processing	Required: Hirschberg, Julia & Christopher D. Manning. 2015. "Advances in Natural Language Processing." *Science* 349(6245):261-66. (Sakai). Recommended: Geitgey, Adam. 2018. "Natural Language Processing is Fun!" *Medium*. (https://medium.com/@ageitgey/natural-language-processing-is-fun-9a0bff37854e).; Nadkarni, Prakash, Lucila Ohno-Machado & Wendy W. Chapman. 2011. "Natural Language Processing: An Introduction." *Journal of the American Medical Informatics Association* 18:544-51. (Sakai).
2-13	POS Tagging & Named-Entity Recognition	Required: Mohr, John W., Robin Wagner-Pacifici, Ronald L. Breiger & Petko Bogdanov. 2013. "Graphing the Grammar of Motives in Natural Security Strategies: Cultural Interpretation, Automated Text Analysis and the Drama of Global Politics." *Poetics* 41:670-700. (Sakai). Recommended: Mullen, Lincoln. 2013. "Natural Language Processing." (https://rpubs.com/lmullen/nlp-chapter).; van de Rijt, Arnout, Eran Shor, Charles Ward & Steven Skiena. 2013. "Only 15 Minutes? The Social Stratification of Fame in Printed Media." *American Sociological Review* 78(2):266-89. (Sakai).; Martin, Andrew W., Patrick Rafail & John D. McCarthy. 2017. "What a Story?" *Social Forces* 96(2):779-802. (Sakai).; Stoltz, Dustin S. & Marshall A. Taylor. 2017. "Paying with Change: The Purposeful Enunciation of Material Culture." *Poetics* 64:26-39. (Sakai).
2-15	Lab	Start: Lab #4. Due: Lab #3, by 10:00a.

UNIT 2: Machine Learning with Texts

Week 6

2-18	Supervised Learning: Classification	Required: Ignatow, Gabe & Rada Mihalcea. 2017. "Text Classification." Pp. 116-29 in *Text Mining: A Guidebook for the Social Sciences*. Thousand Oaks, CA: SAGE. (Sakai).; Karmanov, Fedor. 2017. "Machine Learning with R: A Tutorial on Building Text Classifiers." *Springboard*. (https://www.springboard.com/blog/machine-learning-with-r/). Recommended: King, Gary, Jennifer Pan & Margaret E. Roberts. 2013. "How Censorship in China Allows Government Criticism but Silences Collective Expression." *American Political Science Review* 107(2):326-43. (Sakai).; Bhave, Kumudini. 2016. "Reuters Document Classification." (https://rpubs.com/DataDrivenMSDA/ReutersDocumentClassification).; Bronshtein, Adi. 2017. "A Quick Introduction to K-Nearest Neighbors Algorithm." *Medium*. (Sakai).
2-20	Unsupervised Learning: Clustering	Required: Jones, Thomas W.. "Document Clustering." (https://cran.r-project.org/web/packages/textmineR/vignettes/b_document_clustering.html). Recommended: Baron, Justine. 2018. "Text Clustering with R: An Introduction for Data Scientists." *Recast.AI*. (Sakai).; Aggarwal, Charu C. & ChengXiang Zhai. 2012. "A Survey of Text Clustering Algorithms." Pp. 77-128 in *Mining Text Data*, edited by C. C. Aggarwal & C. Zhai. New York: London. (Sakai).; Awati, Kailash. 2015. "A Gentle Introduction to Cluster Analysis Using R." *Eight to Late*. (https://eight2late.wordpress.com/2015/07/22/a-gentle-introduction-to-cluster-analysis-using-r/).; Grimmer, Justin & Gary King. 2011. "General Purpose Computer-Assisted Clustering and Conceptualization." *Proceedings of the National Academy of Sciences* 108(7):2643-50. (Sakai).
2-22	Lab	Start: Lab #5. Due: Lab #4, by 10:00a.

Week 7

2-25	Topic Modeling, Pt. I	Required: Bail, Chris. 2018. "Topic Modeling." Read from "What is Topic Modeling?" through "Running Your First Topic Model." (https://cbail.github.io/SICSS_Topic_Modeling.html). Recommended: Mohr, John W. & Petko Bogdanov. 2013. "Introduction—Topic Models: What Are They and Why They Matter." *Poetics* 41(6):545-69. (Sakai).; Underwood, Ted. 2012. "Topic Modeling Made Just Simple Enough." *The Stone and the Shell*. (https://tedunderwood.com/2012/04/07/topic-modeling-made-just-simple-enough/).; van Kessel, Patrick. 2018. "Making Sense of Topic Models." *Medium*. (https://medium.com/pew-research-center-decoded/making-sense-of-topic-models-953a5e42854e).
2-27	Topic Modeling, Pt. II	Required: Bail, Chris. 2018. "Topic Modeling." Read from "What is Topic Modeling?" through "Running Your First Topic Model." (https://cbail.github.io/SICSS_Topic_Modeling.html).

		Recommended: DiMaggio, Paul, Manish Nag & David Blei. 2013. "Exploiting Affinities Between Topic Modeling and the Sociological Perspective on Culture: Application to Newspaper Coverage of U.S. Government Arts Funding." *Poetics* 41(6):570-606. (Sakai).; Koltsova, Olessia & Sergei Koltcov. 2013. "Mapping the Public Agenda with Topic Modeling: The Case of the Russian LiveJournal." *Policy and Internet* 5(2):207-27. (Sakai).; Required: Mohr, John W., Robin Wagner-Pacifici, Ronald L. Breiger & Petko Bogdanov. 2013. "Graphing the Grammar of Motives in Natural Security Strategies: Cultural Interpretation, Automated Text Analysis and the Drama of Global Politics." *Poetics* 41:670-700. (Sakai).; Fligstein, Neil, Jonah Stuart Brundage & Michael Schultz. 2017. "Seeing Like the Fed: Culture, Cognition, and Framing in the Failure to Anticipate the Financial Crisis of 2008." *American Sociological Review* 82(5):879-909. (Sakai).
3-1	Lab	Start: Lab #6. Due: Lab #5, by 10:00a.

Week 8

3-4	Structural Topic Modeling, Pt. I	Required: Bail, Chris. 2018. "Topic Modeling." Read from "Structural Topic Modeling" through "Limitations of Topic Models." (`https://cbail.github.io/SICSS_Topic_Modeling.html#limitations-of-topic-models`). Recommended: Roberts, Margaret E., Brandon M. Stewart, Dustin Tingley, Christopher Lucas, Jetson Leder-Luis, Shana Kushner Gadarian, Bethany Albertson & David G. Rand. 2014. "Structural Topic Models for Open-Ended Survey Responses." *American Journal of Political Science* 58(4):1064-82. (Sakai).; Genovese, Federica. 2015. "*Politics ex Cathedra*: Religious Authority and the Pope in Modern International Relations." *Research & Politics* 2(4):1-15. (Sakai).; Farrell, Justin. 2016. "Corporate Funding and Ideological Polarization about Climate Change." *Proceedings of the National Academy of Sciences* 113(1):92-97. (Sakai).; Light, Ryan & Colin Odden. 2017. "Managing the Boundaries of Taste: Culture, Valuation, and Computational Social Science." *Social Forces* 96(2):877-908. (Sakai).
3-6	Structural Topic Modeling, Pt. II	Required: Bail, Chris. 2018. "Topic Modeling." Read from "Structural Topic Modeling" through "Limitations of Topic Models." (`https://cbail.github.io/SICSS_Topic_Modeling.html#limitations-of-topic-models`). Recommended: Roberts, Margaret E., Brandon M. Stewart, Dustin Tingley, Christopher Lucas, Jetson Leder-Luis, Shana Kushner Gadarian, Bethany Albertson & David G. Rand. 2014. "Structural Topic Models for Open-Ended Survey Responses." *American Journal of Political Science* 58(4):1064-82. (Sakai).; Genovese, Federica. 2015. "*Politics ex Cathedra*: Religious Authority and the Pope in Modern International Relations." *Research & Politics* 2(4):1-15. (Sakai).; Farrell, Justin. 2016. "Corporate Funding and Ideological Polarization about Climate Change." *Proceedings of the National Academy of Sciences* 113(1):92-97. (Sakai).; Light, Ryan & Colin Odden. 2017. "Managing the Boundaries of Taste: Culture, Valuation, and Computational Social Science." *Social Forces* 96(2):877-908. (Sakai).

3-8	Lab	Start: Lab #7. Due: Lab #6, by 10:00a.

Week 9

	No class; mid-term break	

Week 10

3-18	Word-embeddings, Pt. I	Required: Huang, Roger. 2017. "An Introduction to Word Embeddings." *Springboard*. (`https://cran.r-project.org/web/packages/text2vec/vignettes/glove.html`).; Selivanov, Dmitriy. 2017. "GloVe Word Embeddings." (`http://text2vec.org/glove.html`). Recommended: Kozlowski, Austin C., Matt Taddy & James A. Evans. 2018. "The Geometry of Culture: Analyzing Meaning through Word Embeddings." *arXiv*. (`https://arxiv.org/pdf/1803.09288.pdf`).; Garg, Nikhil, Londa Schiebinger, Dan Jurafsky & James Zou. 2018. "Word Embeddings Quantify 100 Years of Gender and Ethnic Stereotypes." *Proceedings of the National Academy of Sciences* 115(16):3635-44. (Sakai).
3-20	Word-embeddings, Pt. II	Required: Huang, Roger. 2017. "An Introduction to Word Embeddings." *Springboard*. (`https://cran.r-project.org/web/packages/text2vec/vignettes/glove.html`).; Selivanov, Dmitriy. 2017. "GloVe Word Embeddings." (`http://text2vec.org/glove.html`). Recommended: Kozlowski, Austin C., Matt Taddy & James A. Evans. 2018. "The Geometry of Culture: Analyzing Meaning through Word Embeddings." *arXiv*. (`https://arxiv.org/pdf/1803.09288.pdf`).; Garg, Nikhil, Londa Schiebinger, Dan Jurafsky & James Zou. 2018. "Word Embeddings Quantify 100 Years of Gender and Ethnic Stereotypes." *Proceedings of the National Academy of Sciences* 115(16):3635-44. (Sakai).
3-22	Lab	Start: Lab #8. Due: Lab #7, by 10:00a. Due: Paper proposal, by midnight.

UNIT 3: Network Methods

Week 11

3-25	Introduction to Networks	Required: Meeks, Elijah & Maya Krishnan. N.d. "Introduction to Network Analysis and Representation." Not much to read *per se*; just play around with the parameters and read the descriptions of what is going on as you do so. (`http://dhs.stanford.edu/dh/networks/`). Recommended: Crossley, Nick, Elisa Bellotti, Gemma Edwards, Martin G. Everett, Johan Koskinen & Mark Tranmer. 2015. "Chapter 1." Pp. 1-24 in *Social Network Analysis for Ego-Nets*. (E-book avaiLable through the library).

3-27	Text Networks, Pt. I	Required: Bail Chris. 2018. "Text Networks." (https://cbail.github.io/SICSS_Text_Networks.html). Recommended: Bail, Chris. 2018. "SICSS 2018 - Text Networks." Video. (https://www.youtube.com/watch?v=lUVTUOs8RTo&feature=youtu.be).; CNetS. 2018. *Hoaxy*. (https://hoaxy.iuni.iu.edu/).
3-29	Lab	Start: Lab #9. Due: Lab #8, by 10:00a.

Week 12

4-1	Text Networks, Pt. II	Required: Bail Chris. 2018. "Text Networks." (https://cbail.github.io/SICSS_Text_Networks.html). Recommended: Bail, Christopher Andrew. 2016. "Combining Natural Language Processing and Network Analysis to Examine How Advocacy Organizations Stimulate Conversation on Social Media." *Proceedings of the National Academy of Sciences* 113(42):11823-28. (Sakai).; Rule, Alix, Jean-Philippe Cointet & Peter S. Bearman. 2015. "Lexical Shifts, Substantive Changes, and Continuity in State of the Union Discourse, 1790-2014." *Proceedings of the National Academy of Sciences* 112(35):10837-44. (Sakai).; Lee, Monica & John Levi Martin. 2015. "Coding, Counting, and Cultural Cartography." *American Journal of Cultural Sociology* 3(1):1-33. (Sakai).
4-3	Text Networks, Pt. III	Required: Bail Chris. 2018. "Text Networks." (https://cbail.github.io/SICSS_Text_Networks.html). Recommended: Bail, Christopher Andrew. 2016. "Combining Natural Language Processing and Network Analysis to Examine How Advocacy Organizations Stimulate Conversation on Social Media." *Proceedings of the National Academy of Sciences* 113(42):11823-28. (Sakai).; Rule, Alix, Jean-Philippe Cointet & Peter S. Bearman. 2015. "Lexical Shifts, Substantive Changes, and Continuity in State of the Union Discourse, 1790-2014." *Proceedings of the National Academy of Sciences* 112(35):10837-44. (Sakai).; Lee, Monica & John Levi Martin. 2015. "Coding, Counting, and Cultural Cartography." *American Journal of Cultural Sociology* 3(1):1-33. (Sakai).
4-5	Lab	Start: Lab #10. Due: Lab #9, by 10:00a.

UNIT 4: Extensions & Ethics

Week 13

4-8	Mixed-Methods, Pt. I	Required: Chakrabarti, Parijat & Margaret Frye. 2017. "A Mixed-Methods Framework for Analyzing Text Data: Integrating Computational Techniques with Qualitative Methods in Demography." *Demographic Research* 37(42):1351-82. (https://www.demographic-research.org/volumes/vol37/42/37-42.pdf).

		Recommended: Wiedemann, Gregor. 2013. "Opening Up to Big Data: Computer-Assisted Analysis of Textual Data in Social Sciences." *Historical Social Research* 38(4):332-57. (Sakai).; Hanna, Alex. 2013. "Computer-Aided Content Analysis of Digitally Enabled Movements." *Mobilization* 18(4):367-88. (Sakai).
4-10	Mixed-Methods, Pt. II	Required: Nelson, Laura K. 2017."Computational Grounded Theory: A Methodological Framework." *Sociological Methods & Research*. (Sakai). Recommended: Bail, Christopher A. 2014. "The Cultural Environment: Measuring Culture with Big Data." *Theory & Society* 43(3-4):465-82. (Sakai).
4-12	Lab	Work On: Final papers. Due: Lab #10, by 10:00a.
Week 14		
4-15	Ethics, Pt. I	Required: Slaganik, Matthew J. 2018. "Chapter 6: Ethics." Pp. 281-330 in *Bit by Bit: Social Research in the Digital Age*. Princeton, NJ: Princeton University Press. (`https://www.bitbybitbook.com/en/1st-ed/ethics/`). Recommended: Moreno, Megan A., Natalie Goniu, Peter. S. Moreno & Douglas Diekema. 2013. "Ethics of Social Media Research: Common Concerns and Practical Considerations." *Cyberpsychology, Behavior & Social Networking* 16(9):708-13. (Sakai).; Beninger, Kelsey. 2016. "Social Media Users' Views on the Ethics of Social Media Research." Pp. 57-73 in *The SAGE Handbook of Social Media Research Methods*, edited by L. Sloan & A. Quan-Haase. Thousand Oaks, CA: SAGE. (E-book available through the library).
4-17	Ethics, Pt. II	Required: Slaganik, Matthew J. 2018. "Chapter 6: Ethics." Pp. 281-330 in *Bit by Bit: Social Research in the Digital Age*. Princeton, NJ: Princeton University Press. (`https://www.bitbybitbook.com/en/1st-ed/ethics/`). Recommended: Moreno, Megan A., Natalie Goniu, Peter. S. Moreno & Douglas Diekema. 2013. "Ethics of Social Media Research: Common Concerns and Practical Considerations." *Cyberpsychology, Behavior & Social Networking* 16(9):708-13. (Sakai).; Beninger, Kelsey. 2016. "Social Media Users' Views on the Ethics of Social Media Research." Pp. 57-73 in *The SAGE Handbook of Social Media Research Methods*, edited by L. Sloan & A. Quan-Haase. Thousand Oaks, CA: SAGE. (E-book available through the library).
4-19	No-class; Easter break	
Week 15		
4-22	No class; Easter break	
4-24	Presentations	
4-26	Presentations	

Week 16	
4-29	Presentations
5-1	Presentations
Final Exam Week	
5-7	Due: Final papers, by 10:00a.