Introduction to Computational Social Science

Summer Institute in Computational Social Science at NDSU 2022

Today's agenda

Morning:

- Introduction
- CSS & ethics
- Research speed-dating

Afternoon:

- Group activity
- Set up R environment

Welcome from the Chair | Department of Communication

Dr. Stephenson J. Beck

Introduction of the team

Dr. Shuning Lu

- Graduate education at UT Austin

- Research training in journalism/mass communication

- Got interested in computational approaches to communication since 2014 Fudan Institute of Summer Training, elevated in 2016 Chinese U of Hong Kong Workshop, refreshed in SICSS-Rutgers 2021

- Research using CSS include examining online Twitter discussion, exploring news innovation with patent data, identifying linguistic markers of fact-checking messages.

THIS IS ME

Dr. Zoltan Majdik

- Graduate education at USC/Annenberg

- Research training in rhetoric/humanities

- Got interested in computational approaches to humanistic work because of some frustrations with the limits (or rather, inconsistencies) of epistemic claims made in the humanities

- Research focus on complex linguistic/rhetorical language structures, their circulation/propagation in large corpora, and deep learning/neural networks.

Introduction of participants

Who are you?

Research interests?

Goal for SICSS-NDSU 2023

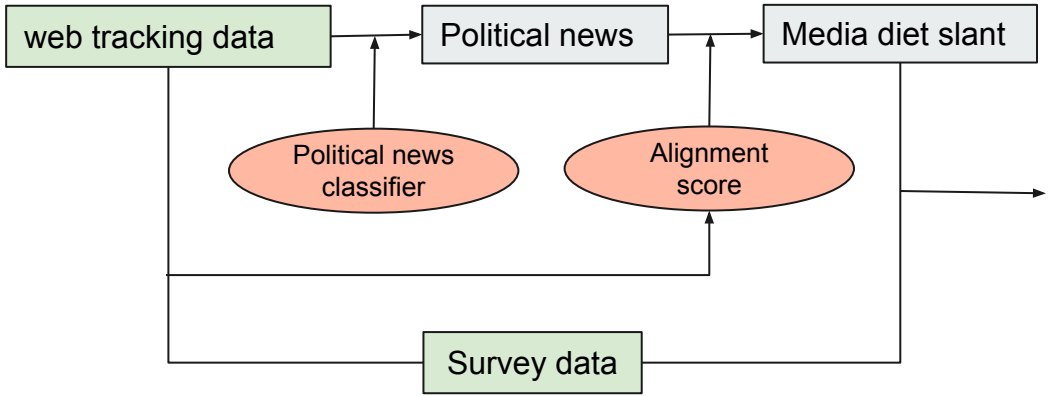
What is computational social science?

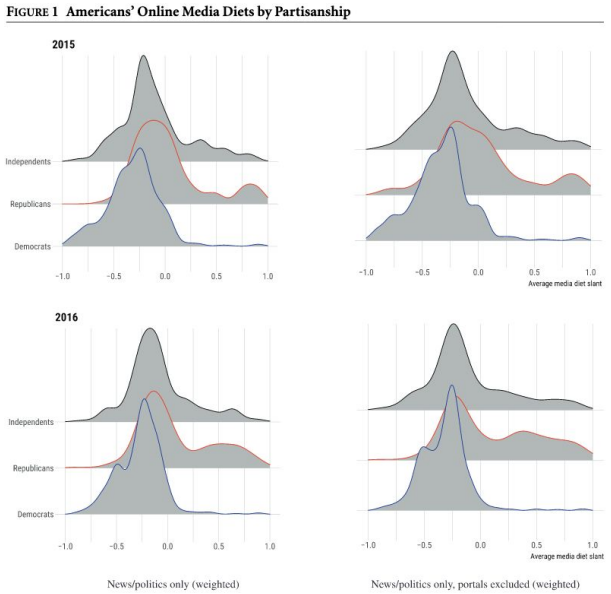
Anything that is cool.

—Matthew J. Salganik, Author of *Bit by Bit*

What is computational social science to you?

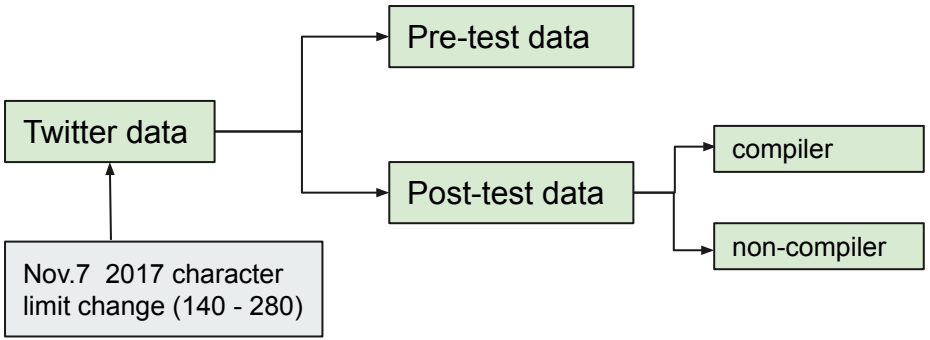
Case #1: Does echo chamber exist?

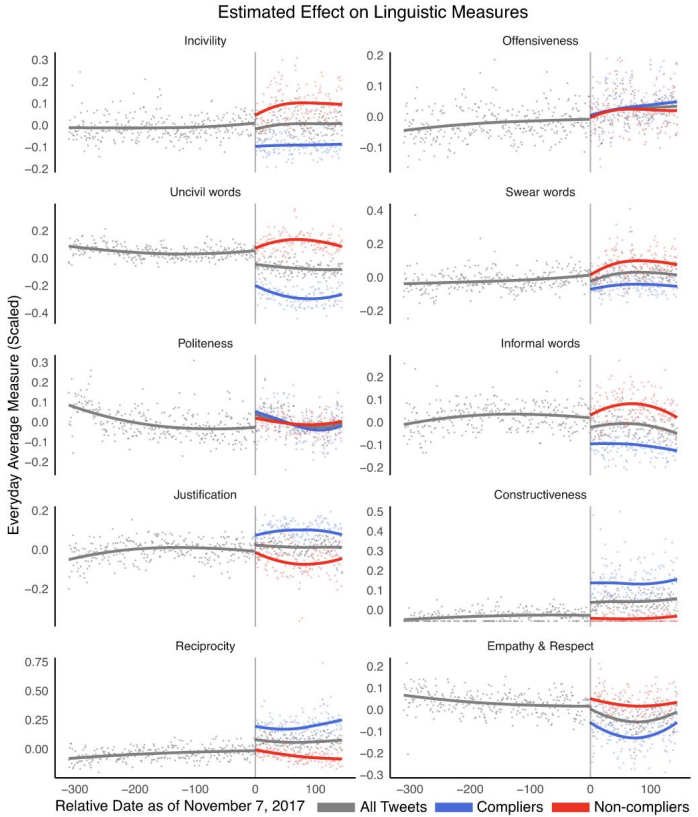




Guess, A. M. (2021). (Almost) Everything in Moderation: New Evidence on Americans' Online Media Diets. American Journal of Political Science, 65(4), 1007-1022.

Case #2: Brevity is the new soul





Jaidka, K., Zhou, A., & Lelkes, Y. (2019). Brevity is the soul of Twitter: The constraint affordance and political discussion. Journal of Communication, 69(4), 345-372.

What is computational social science?

Computer science	Social science
Study anything	Study social things
Methods driven	Question driven
Large found data	Small designed data
Prediction	Explanation

What is computational social science?

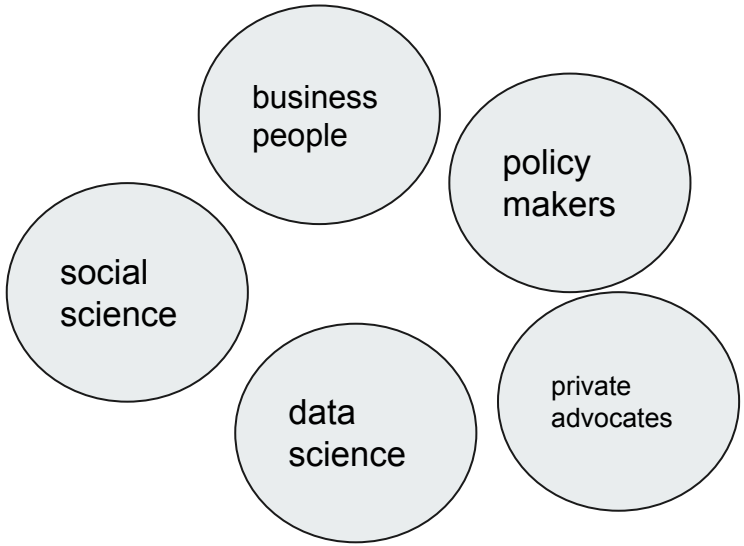
Combines readymades and custommades (Salganik 2017)

Case #1: online echo chamber, web-browsing history + survey

Case #2: brevity is the new soul, Twitter data

What is computational social science?

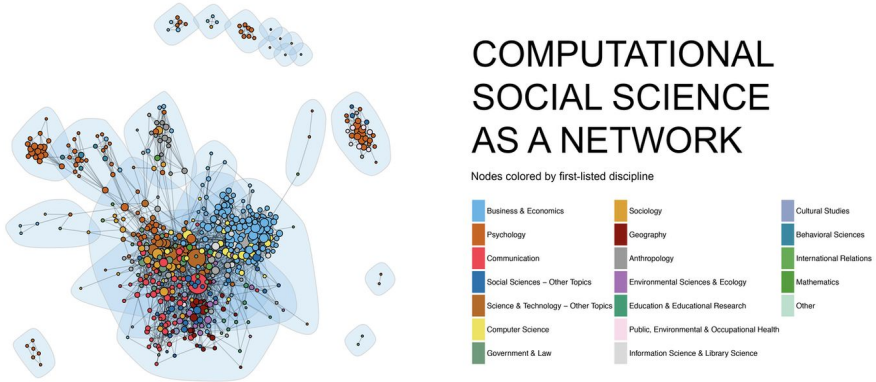
Involves multiple communities



What is computational social science?

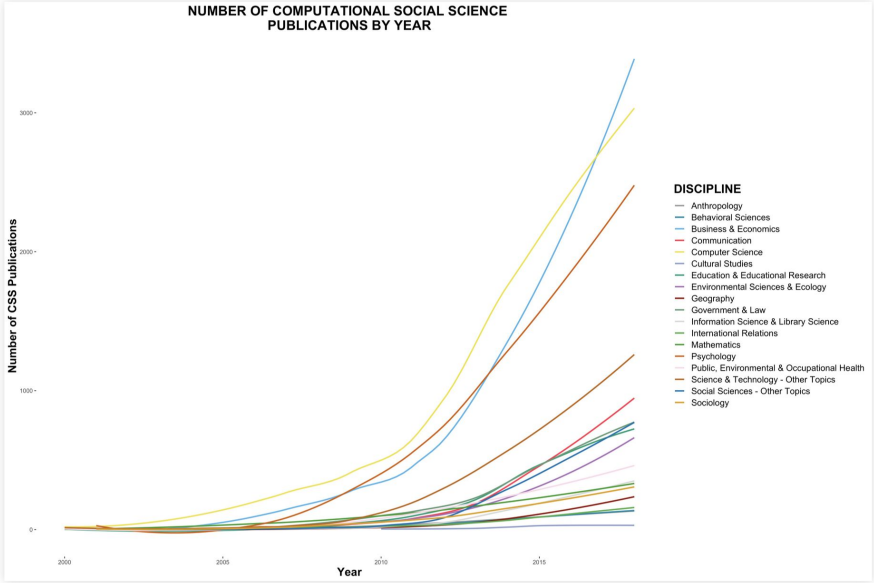
Often involves ethical/privacy questions that are now considered complex (we will cover this shortly)

Current status of computational social science



https://www.chrisbail.net/post/mapping-computational-social-science

Current status of computational social science



https://www.chrisbail.net/post/mapping-computational-social-science

What is SICSS?

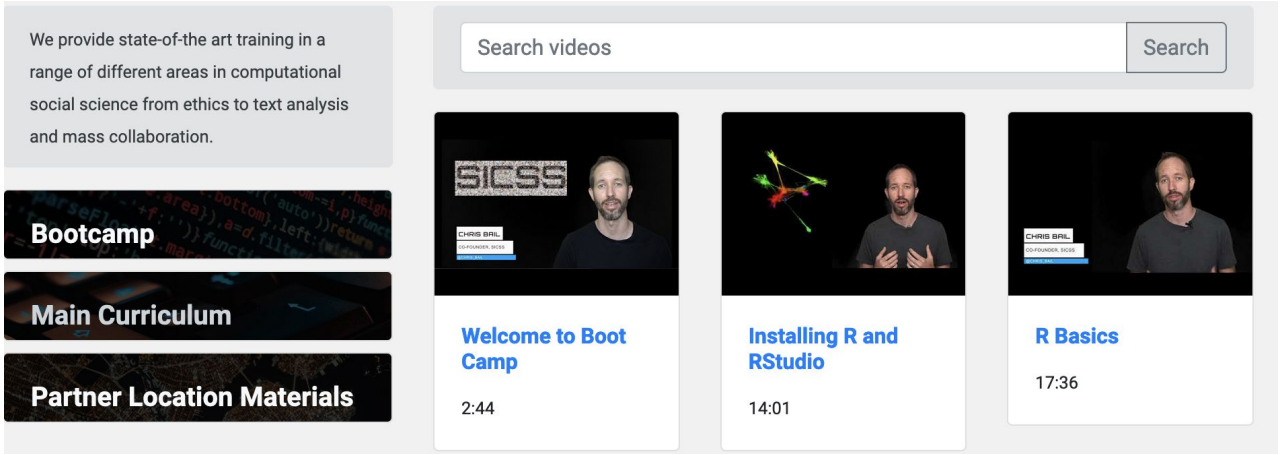
History of the Summer Institute in Computational Social Science (SICSS)

- 2017: single program at Princeton University
- 2018-2019: grow to 12 sites around the world
- 2020-2021: online mode due to COVID-19
- 2022: back to in-person with 32 sites
- 2023: in-person with 29 sites

SICSS-NDSU is the first site located in upper midwest US.

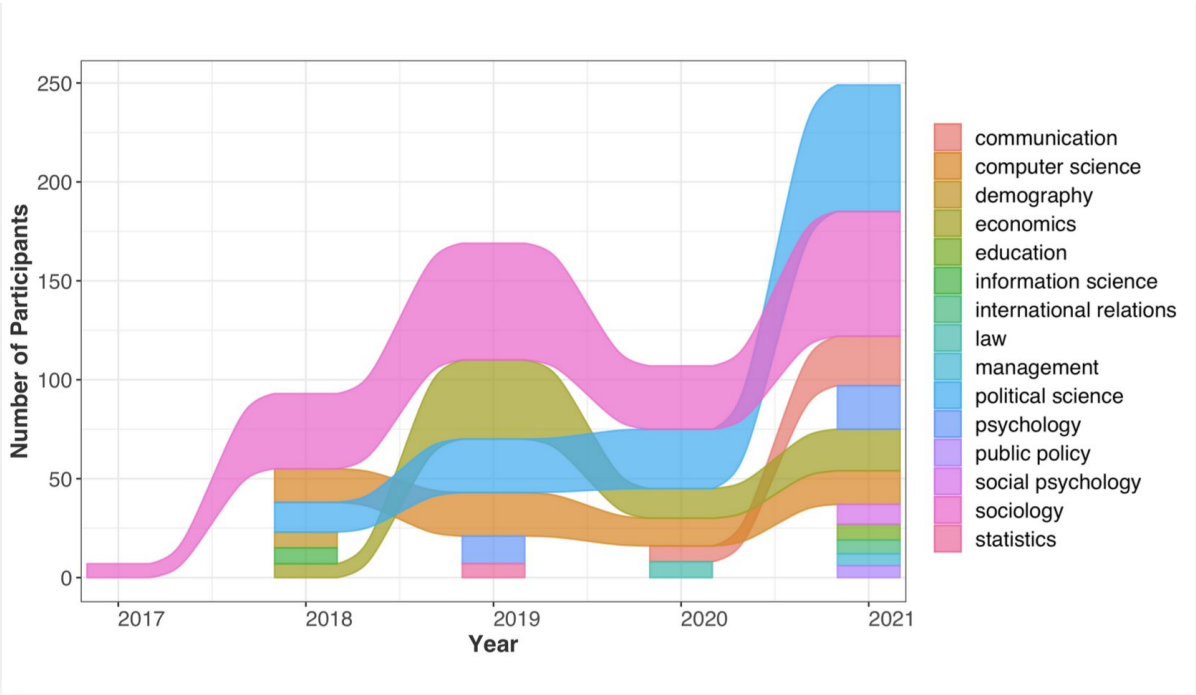
Goal of SICSS #1

Provide state of the art training



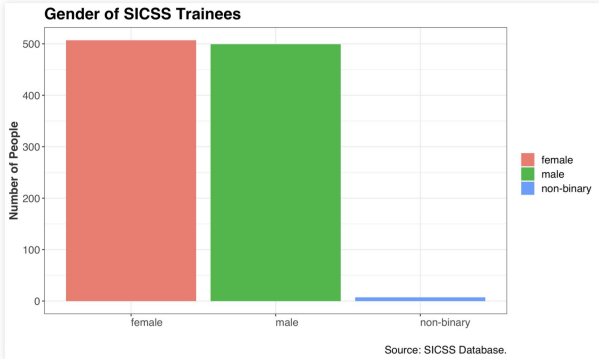
Goal of SICSS #2

Challenge disciplinary divides



Goal of SICSS #3

Reach a broad & diverse audience



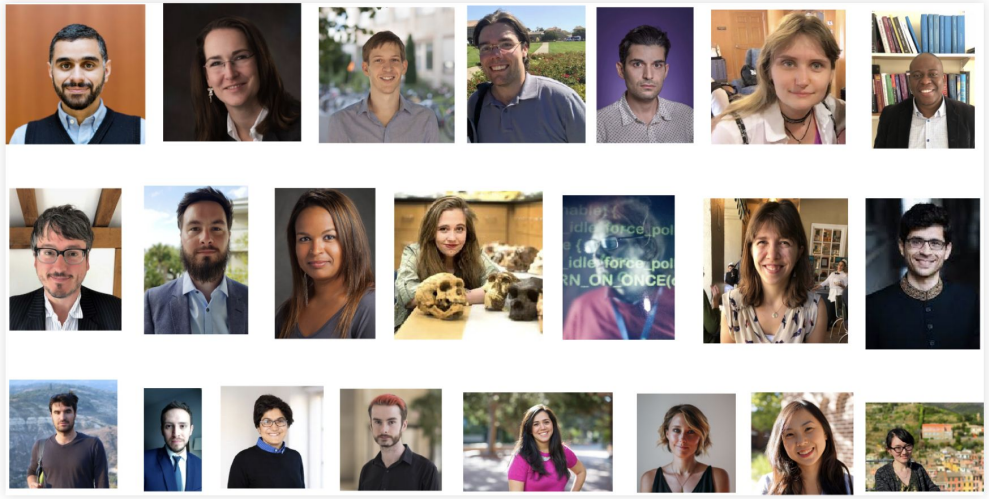
https://sicss.io/locations

Goal of SICSS #4

Open source

Goal of SICSS #5

Teach the teachers



SICSS-NDSU 2022

20 participants from multiple disciplines, and different career stages across the U.S.

COVID-19 vaccines discussion on Twitter

by Yuming Fang, University of Minnesota; Wenhao Li, University of Minnesota; Shuxi Wu, U Minnesota

Coffee drinking and stratification

by Jess DeDeyne, Baylor University; Maral Abdollahi, University of Minnesota; Emily Galbra North Dakota State University

Comparative education policy text analysis

by Lei Jiang, North Dakota State University; Tzu-Hsin Huang, Washington University in St. I Sarah Thorngate, Northwestern University & Loyola University Chicago

Public comments on AI Tech

by Kurt Williams, North Dakota State University; Sara Bano, North Dakota State University; Kuanr, Northeastern University

How SICSS-NDSU 2023 works

Schedule

Topics:

- Introduction and ethics (Shuning)
- Auditing algorithms (Shuning)
- Collecting digital trace data (Shuning)
- Natural language processing (Zoltan)
- Data visualization (Zoltan)
- Unsupervised machine learning (Shuning)
- Deep learning and neural networks (Zoltan)
- Fine-tuning Chatgpt API (Zoltan)

Schedule

	Week #1	Week #2	
Morning	Lecture & Tutorial		Group presentation
	Research speed dating	Group check-ins	
Lunch	Lunch and guest speaker series		Farewell
Afternoon	Small group activity	Project-based group activity	

Lecture and tutorial

NDSU-SICSS code & slides: https://github.com/shuninglu/sicss-ndsu-2023

Additional learning materials from other sites: https://sicss.io/overview

Invited speakers

6 speakers from Communication, Political Science, Sociology, BioStatistics, and Computer Science across U.S.

Topics cover mathematical models, network analysis, strategic communication, V-Dem datasets, etc.

1 hour during lunch time (40 min talk + 15 min Q&A)

Research speed dating

One-on-one interaction opportunity for first three days

Prompts will be provided at the time of activity.

Small group activities for week #1

Work in group on a problem tailored to the learning material

Prompts will be provided at the time of activity

Report group processes and results in the end of the activity

Group projects & presentation

3 participants in a group (assigned using clustering method)

Two rounds of group speed dating this Friday

Group finalization before lunch this Friday

Group projects & presentation

Type of group projects:

- Traditional academic research project (proposal, pilot study, hybrid design)
- Public good/resource (building a database)
- Teaching and learning (building a R tutorial)

All projects should be open-access.

Group projects & presentation

Timeline

	Morning	Afternoon
6.23 (F)	Finalizing group	Group working on data viz activity
6.26 (M)	Brainstorming ideas	Finalizing idea and getting it started
6.27 (T)	Briefing group idea & progress	Working on the project
6.28 (W)	Briefing group progress	Working on the project, send slides/files by EOD
6.29 (Th)	Presenting results/deliverables	Dismissed

- You are allowed but certainly not required to work outside of SICSS “regular” hours.

Suggestions for group projects (SICSS principles)

Openness: actively hear from every person when generating the plan

Patience: consider taking on a project component that help you learn, even if you are less experienced

Togetherness: carve out a meaningful role for each person in the group. Be mindful of the labor division

Generosity: teach each other within and cross groups on theories, coding, methods, among others

Suggestions for group projects (practical)

Use a file-share platform (GitHub, Google Doc, One Drive, Dropbox, etc.)

Create a Slack group for immediate contact and feedback

Use the channel to post questions

Suggestions for group projects (presentations)

Each group will have a 15-min slot (10 min for presentation + 5 min for Q&A)

The presentation should be tangible, such as using slides; each person should a have role in the presentation

Presentation content:

- What is your project topic/research question?
- A description of the motivation/importance of the topic/project
- Any specific hypotheses you have (if applicable)
- Overview of your project plan and/or research design
- Initial findings and/or visualizations
- Conclusions: discussion of obstacles/limitations/areas for feedback, and next steps

Slack

Important announcement by organizers

Q&A on tutorial & group activities & R

Fun things to share

Immediate communication with organizers, and participants

Small group communication

Feedback

Daily surveys

Overall surveys at the completion of the workshop

Reach out to Shuning and Zoltan on Slack for more immediate feedback

Social media

Tweet using #SICSS2023 #SICSSNDSU 👍

Follow each other on Twitter 👆

Any questions?

Let’s take a break and start!🎉