



# 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 & report
- Participant research presentation



## 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 2022



# 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?

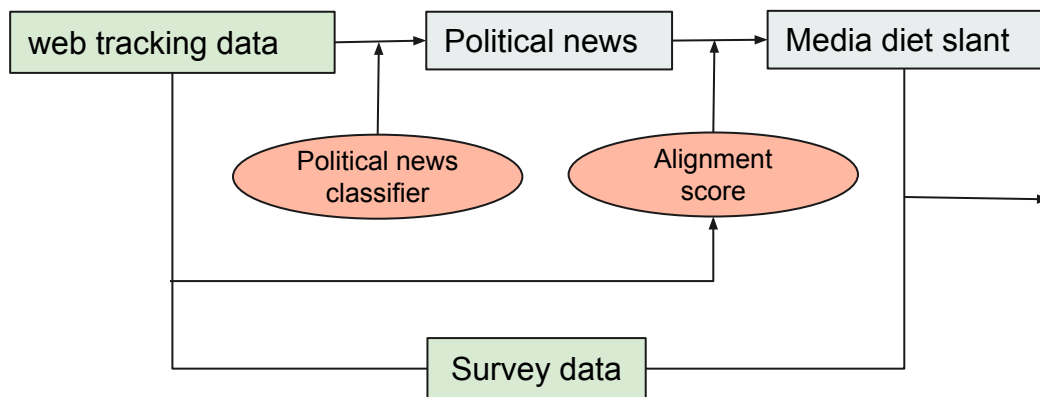
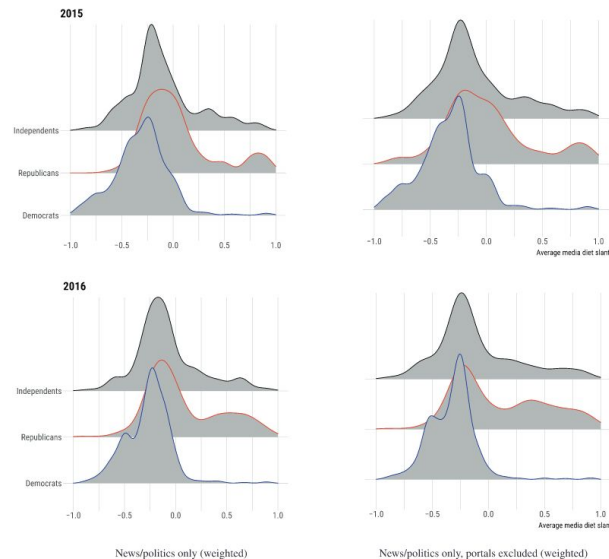
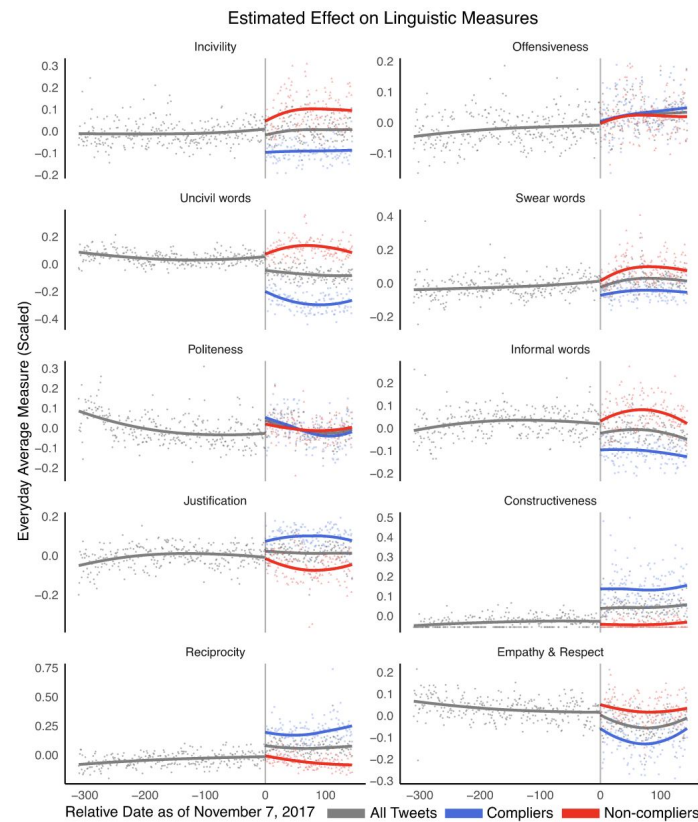
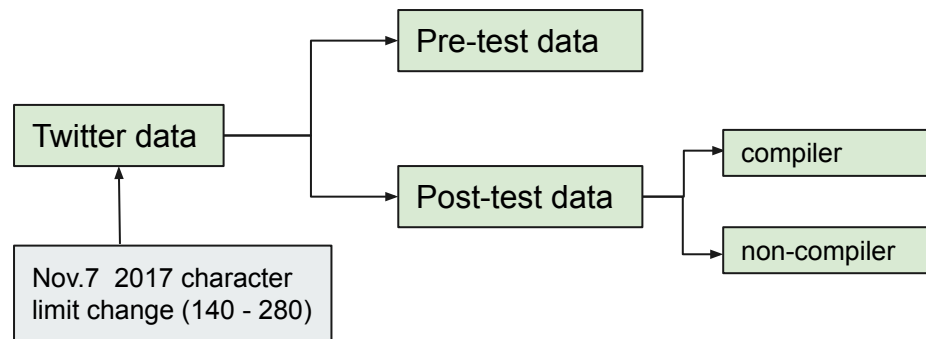


FIGURE 1 Americans' Online Media Diets by Partisanship



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)

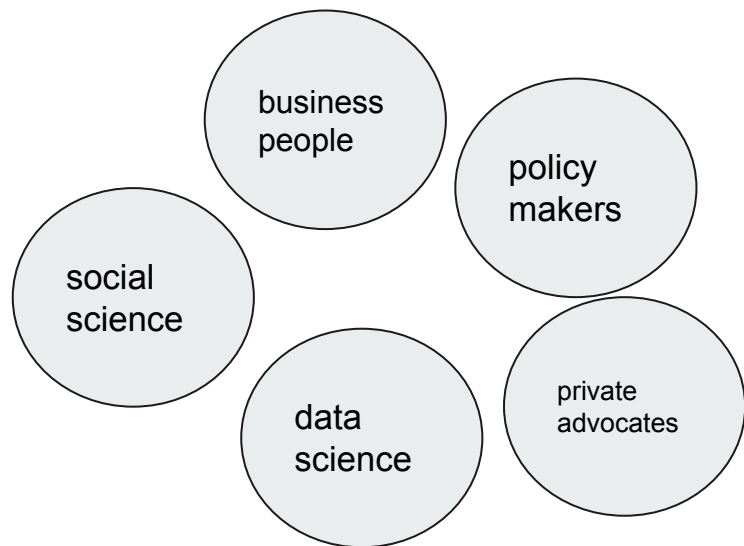
Case #1: online echo chamber, web-browsing history + survey

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



# What is computational social science?

Involves multiple communities

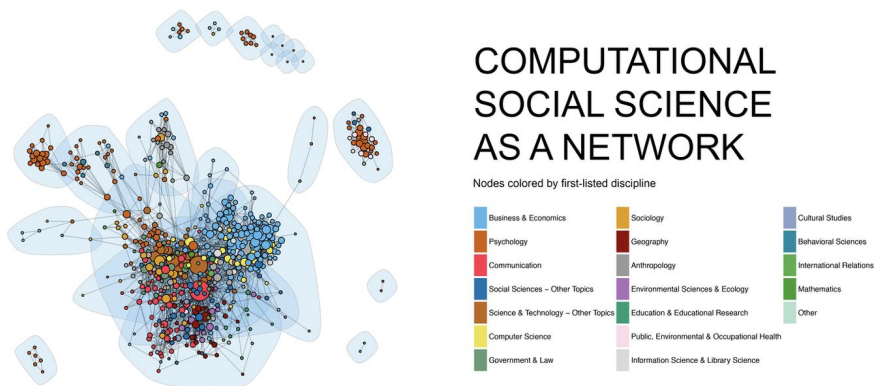




# What is computational social science?

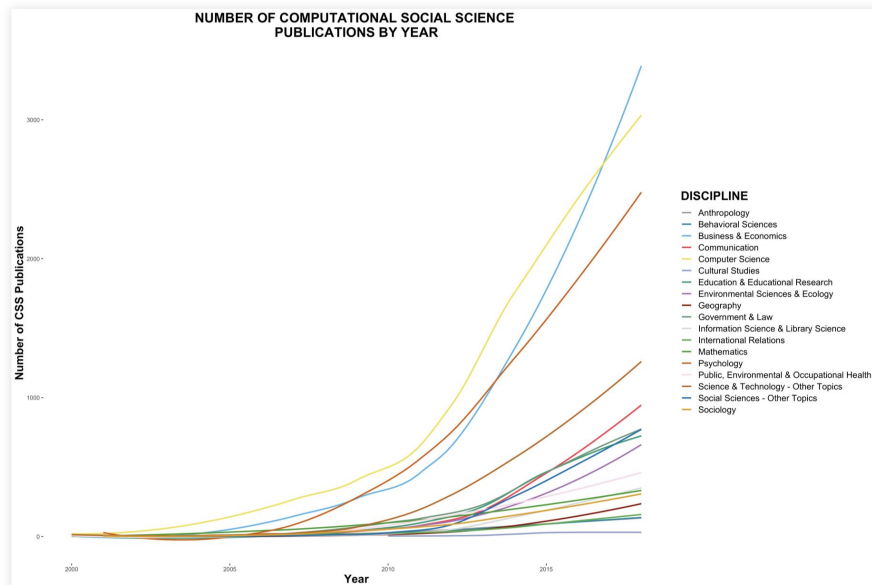
Often involves ethical/privacy questions that are now considered complex (we will cover this shortly)

# 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 (historically high)!!

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



# Goal of SICSS #1



Provide state of the art training

We provide state-of-the art training in a range of different areas in computational social science from ethics to text analysis and mass collaboration.

**Bootcamp**

**Main Curriculum**



**Partner Location Materials**



Chris Birl  
SUMMER INSTITUTE  
COMPUTATIONAL SOCIAL SCIENCE

**Welcome to Boot Camp**


2:44



Chris Birl  
SUMMER INSTITUTE  
COMPUTATIONAL SOCIAL SCIENCE

**Installing R and RStudio**

14:01



Chris Birl  
SUMMER INSTITUTE  
COMPUTATIONAL SOCIAL SCIENCE

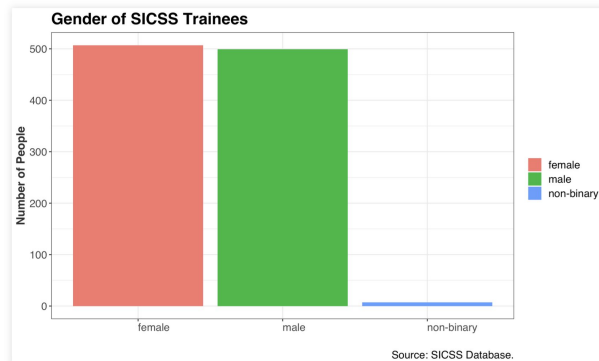
**R Basics**

17:36

[illegible]

## Goal of SICSS #3

Reach a broad & diverse audience



<https://sicss.io/locations>




## Goal of SICSS #4

Open source

Repositories	199
Code	?
Commits	392
Issues	124
Discussions	0
Packages	0
Marketplace	0
Topics	1
Wikis	4
Users	13

### 199 repository results

 [allisonmorgan/sicss\\_boulder](#)  
Adaptation of **SICSS** lectures for CU Boulder site (August 13th - 17th)  
☆ 11 ● Jupyter Notebook Updated on Sep 22, 2018

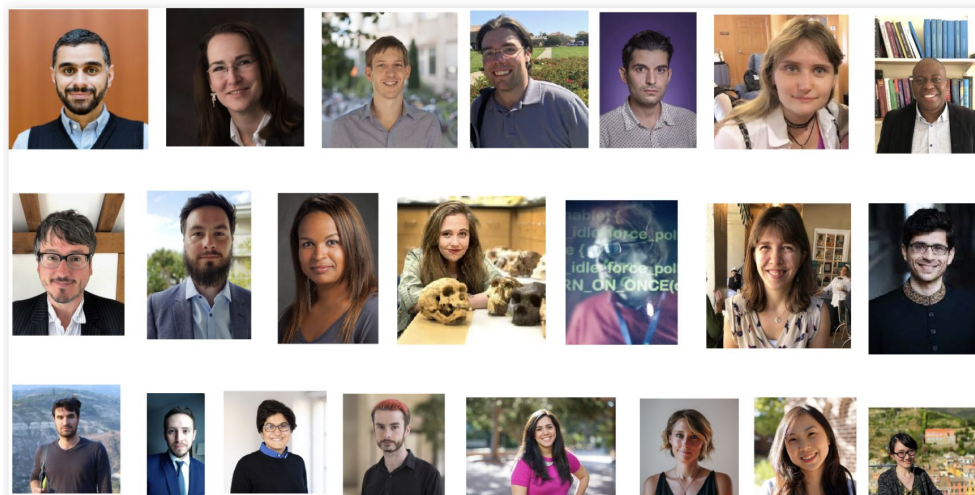
 [computational-social-science-zurich/sicss-zurich](#)  
☆ 6 ● Jupyter Notebook Updated on Jun 20, 2021

 [visseho/Cours\\_SICSS\\_Montreal](#)  
☆ 5 ● HTML Updated on Mar 29

 [ruettenauer/SICSS-Spatial](#)  
☆ 11 ● R Updated on Jun 21, 2021

## Goal of SICSS #5

Teach the teachers



## How SICSS-NDSU works





# Schedule

## Topics:

- Introduction and ethics
- Collecting digital trace data
- Natural language processing
- Network analysis
- Data visualization
- Supervised machine learning
- Unsupervised machine learning:





## 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	
	Participant presentations		



# Lecture and tutorial

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

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

## Invited speakers

6 speakers from Communication, Political Science, English, Culture Studies across U.S., China, and Netherlands

Topics cover image/video-as-data, network analysis, CCS + qualitative methods, V-Dem datasets, etc.

1 hour during lunch time (45 min talk + 15 min Q&A)

\*optional readings





## 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



# Participant research presentation

15-min talk by our participants at SICSS-NDSU



## Group projects & presentation

3-4 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)
- 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
6.24 (F)	Announcing group assignment	Group working on data viz activity
6.27 (M)	Brainstorming ideas	Finalizing idea and getting it started
6.28 (T)	Briefing group idea & progress	Working on the project
6.29 (W)	Briefing group progress	Working on the project, send slides/files by EOD
6.30 (T)	Presenting results/deliverables	

- 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 faq 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 have a 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

# sicss-ndsu

Important announcement

# sicss-ndsu-faq

Q&A on tutorial & group activities & Rs

# sicss-ndsu-random

Fun things to share

▼ Direct messages

Immediate communication with organizers, and participants

Small group communication



## Social media

Tweet using #SICSS2022 #SICSSNDSU 👍

Follow each other on Twitter 🖱️

For research presenters, please notify the group if you would NOT like your presentation tweeted.



# Feedback

Daily surveys

Overall surveys at the completion of the workshop

Reach out to Shuning ([shuning.lu@ndsu.edu](mailto:shuning.lu@ndsu.edu)) and Zoltan ([zoltan.majdik@ndsu.edu](mailto:zoltan.majdik@ndsu.edu)) for more immediate feedback



## Any questions?

Let's take a break and start! 🎉