

Applications

Computational Linguistics: Jordan Boyd-Graber

University of Maryland

Computational Social Science

Alternatives / Complements to Traditional Social Science

i.	JUN 21-25	B+ Suffolk University	500 LV		Wolf	49%	36%	Wagner	Wolf +13
ii. / ~	JUN 23-24	B YouGov	1,000 A		Approve	45%	49%	Disapprove	Disapprove +4
	JUN 22-24	B YouGov	1,000 A		Approve	39%	50%	Disapprove	Disapprove +11
	JUN 20-24	C+ Rasmussen Reports/Pulse Opinion Research	1,500 LV		Approve	46%	52%	Disapprove	Disapprove +6
	JUN 18-24	B Gallup	1,500 A		Approve	41%	55%	Disapprove	Disapprove +14
	JUN 20-21	B YouGov	1,000 A		Approve	38%	51%	Disapprove	Disapprove +13
	JUN 16-19	B Public Opinion Strategies	800 A		Approve	41%	47%	Disapprove	Disapprove +6
	JUN 22-24	B- Morning Consult	1,989 RV		Democrat	44%	37%	Republican	Democrat +7
J-11	JUN 22-25	A+ Monmouth University	339 LV		Sherrill	45%	40%	Webber	Sherrill +5
J-11	JUN 22-25	A+ Monmouth University	406 V		Sherrill	40%	38%	Webber	Sherrill +2
i.	JUN 21-25	B+ Suffolk University	500 LV		Casey	47%	32%	Barletta	Casey +15
a.	JUN 21-25	A- Quinnipiac University	1,153 RV		Kaine	54%	36%	Stewart	Kaine +18

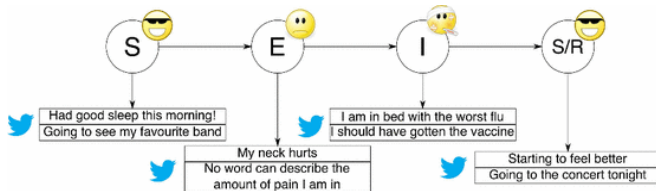
- Polls
- Surveys
- Voting patterns

Social Media



- People share more readily
- Self-censorship on official channels
- Faster feedback

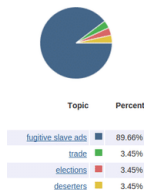
Social Media



- People share more readily
- Self-censorship on official channels
- Faster feedback

Topic Models

TOPIC PROPORTIONS



From the Wed., Dec. 25, 1861 issue

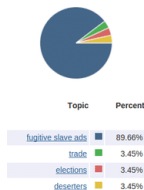
—Ranaway from the subscriber, on the 3d inst., my slave woman PARTHENA. Had on a dark brown and white calico dress. She is of a ginger-bread color; medium size; the right fore-finger shortened and crooked, from a whitlow. I think she is harbored somewhere in or near Duvall's addition. For her delivery to me I will pay \$10.

G. W. H. TYLER. de 6—ts

- Open-ended responses
- Questions you “forgot to ask”
- Help with interpretation

Topic Models

TOPIC PROPORTIONS



From the Wed., Dec. 25, 1861 issue

—Ranaway from the subscriber, on the 3d inst., my slave woman PARTHENA. Had on a dark brown and white calico dress. She is of a ginger-bread color; medium size; the right fore-finger shortened and crooked, from a whitlow. I think she is harbored somewhere in or near Duvall's addition. For her delivery to me I will pay \$10.

G. W. H. TYLER. de 6—ts

- Open-ended responses
- Questions you “forgot to ask”
- Help with interpretation
- Tension: prediction or interpretation

Qualitative Analysis (Grounded Theory)

Grounded Theory

Inductive coding of qualitative data
to reach understanding

- low-quality models/theories and refining
- topics are “grounded” in specific word tokens
- Baumer et al. [2017]: compare themes
- model gives topic-specific “reading list”
- efficient, insulation from human biases.

Sentiment Analysis

ENTERPRISE SOCIAL MEDIA ANALYTICS

Understanding Consumer Concerns

Top Emotions



#NetBaseLIVE

Top Hashtags

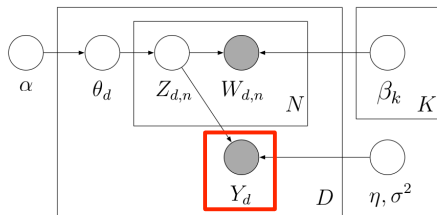
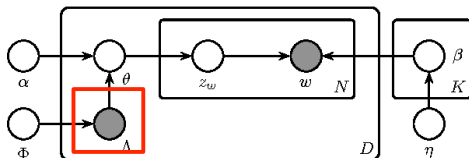


- "Sick" and "E. coli scare" conversation bubbling up due to negative press
- People will still eat Chipotle despite the #ecoliscare

NETBASE™

- Given a piece of text, does it have positive or negative sentiment?
- Data: product reviews, social media
- Stanford Sentiment Treebank: syntactic annotations

Upstream vs. Downstream Model



- Is your prediction conditioned on text or vice-versa?
- Upstream: More interpretable, easier to train
- Downstream: Better prediction

Stance Prediction



- Predict how people feel about issue
- Traditionally: from votes

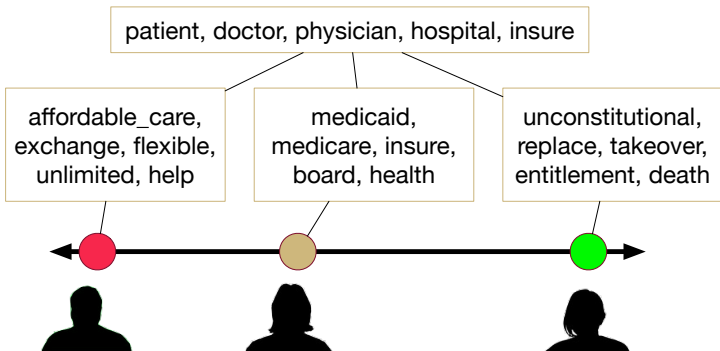
Stance Prediction



- Predict how people feel about issue
- Traditionally: from votes ... from text?

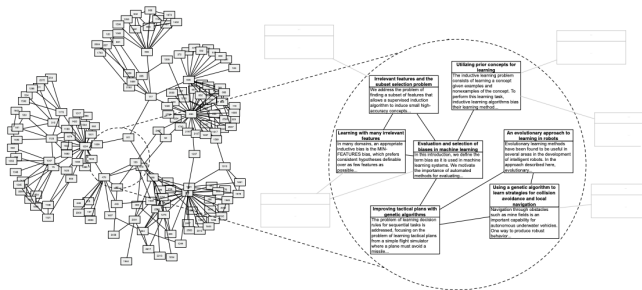
Framing

Issue: Healthcare



Jointly learn topics and predictions.

Social Networks



- Predict links
- Predict when friendships end (and why)

More importantly . . .

- Suicide risk
- Unhealthy habits
- Bullying

More importantly . . .

- Suicide risk
- Unhealthy habits
- Bullying

Computational social science emphasizes interpretability, broader impacts, and captures what about language is unique to humans