YAHOO!

The Geography of Online News Engagement

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Let's Talk ... Geography



Motivations

- Despite its importance,
- the geographic processes of online engagement on news platforms have not been widely studied;

■ → Yahoo News site for more than two years: articles and user comments.



Contributions

In Online news platforms,

Users engage with each other depending on where they live



Contributions: Socio economic factors and user engagement

Users in states with:

high levels of **education** and **well-being** comment articles about **research** & **technology**, but not **politics**, **gossip** or **sport**;

high levels of **crime** and **unemployment** comment on articles about **sports**, but not those about **economy** or **research** and **technology**;

Contributions: Personality Traits and user engagement

Users from

states **low** in **neuroticism** (emotionally stable) comment on articles about **music**;

open and extravert states comment on articles about sport;

conscientious states on articles about economics.



Related work

- Influence of time on our actions online:
 - "emotion words by Twitter users influenced by times zones"

- News in tweets and geographics spread on Twitter:
 - "Reciprocal relations between people who live no more than 3 times zones away"
 - Physical distance constrained the spread of hashtags



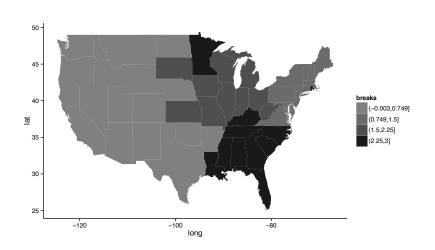
Data description

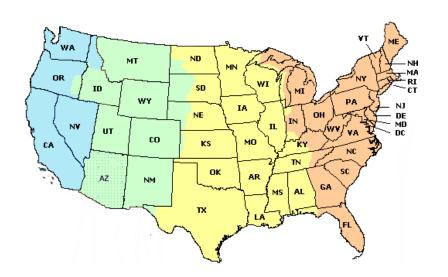
- Random sample of 200K news articles and 41M associated comments;
- Published from August 2010 to February 2013;
- On Yahoo! News US;
- English articles;
- Sources: Reuters, ABC News, AP, etc.;
- From anonymous user we have IP address → state(Yahoo places Web service).

State commenting graph

Nodes: US states

 Egde weight: number of times two users in state i and j comment on the same article

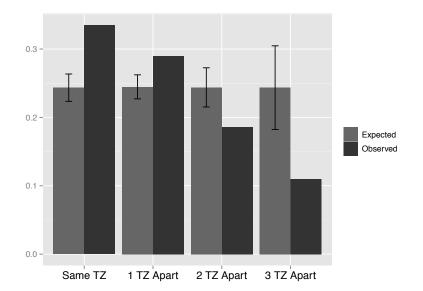






The time zone effect

- Users in the same TZ preferentially engage with the same articles, while users in different time zones engage with different articles;
- Engagement in k-time zone apart: count the number of times users from k-time zone apart engage in the same articles;
- Null model: We shuffle user's time zone assignment.



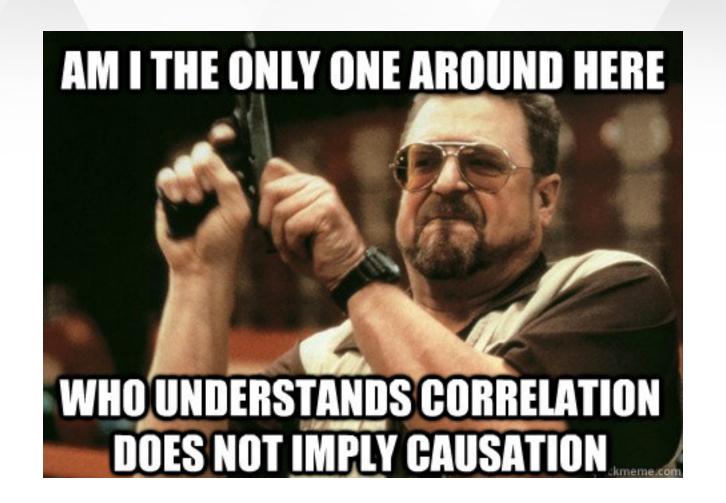


The Geography of News Engagement

The gravity model

$$F_{i,j}^{est} = g \frac{m_i m_j}{d_{i,j}^2}$$

- F measures the estimated engagement between two states;
- g is a scaling constant;
- d_{i,j} is the euclian distance between two states centers;
- m_k is number of users of state k.
- F correlates with number of the observed number of comments with a pearson correlation of 0.70



Assigning topic distributions to states

- 13.8% of articles are editorially labeled with IPTC categories
- IPTC consists of 1400 topics organized in a taxonomy;
- Average category per articles is 5;
- By using user engagement (on comments) we aggregated articles topics to form states topics:
 - Each time a user from state comment on an article, the tags contribute to the state topical distribution;
 - Tags contribution is normalized by the number of times they are used (to discount popular tags, similar to idf to discount stop words).



THE TOOTHPASTE PERSONALITY TEST



IMPULSIVE, LIFE OF THE PARTY



THRIFTY, PRONE TO DEPRESSION



STUBBORN, SLOW WITTED



BAD BREATH

BYCHRISH-



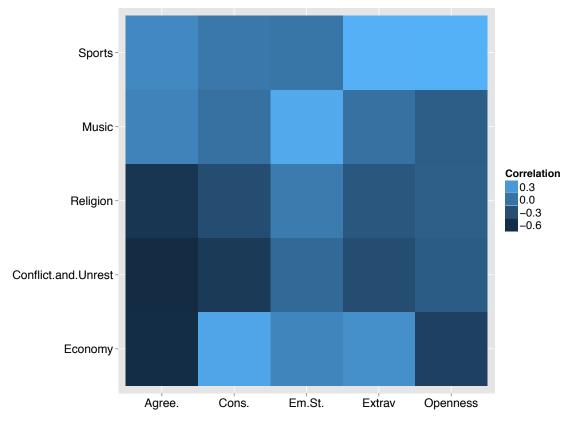
The Big Five Personnality Traits

- 1. Openess: Imaginative, spontaneous, and adventurous individuals;
- **2. Conscientiousness:** *Ambitious*, *resourceful* and *persistent* individuals;
- 3. **Extraversion:** Individuals who are *sociable* and tend to seek *excitement*;
- 4. **Agreeableness:** are *trusting*, *altruistic*, *tender-minded*, and are motivated to *maintain positive relationships* with others
- **5. Neuroticism:** Finally, *emotionally liable* and *impulsive* individuals.

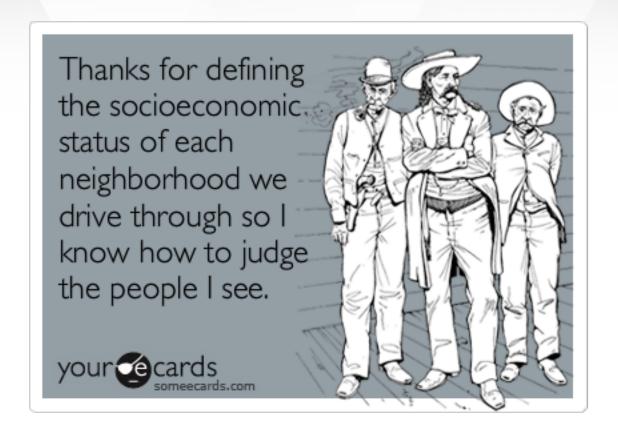
These factors have been **also studied at the state level** (strongly correlated with socio-economic indicators) [Rentfrow et al.]



Correlation of news user engagement factors with state personality scores







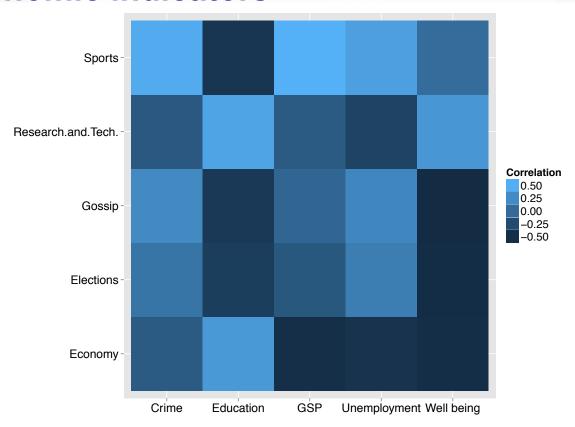


Socioeconomic Indicators

- 1. Well-being index;
- 2. Crime level
- 3. Rate of unemployment;
- 4. Gross State Product;
- 5. Education level.

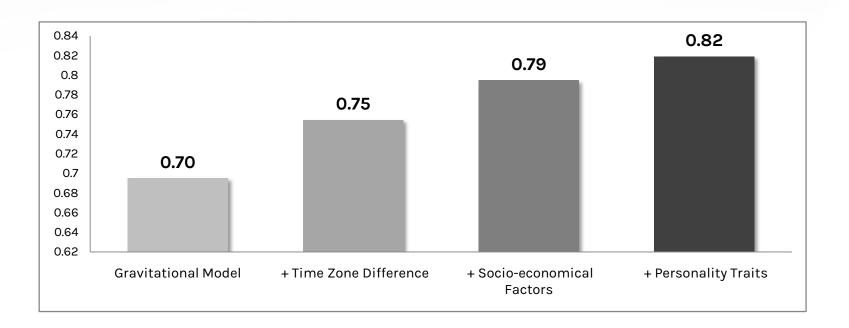


Correlation of news user engagement factors with socio economic indicators





Conclusions: Putting all together





Questions