The Geography of Online News Engagement

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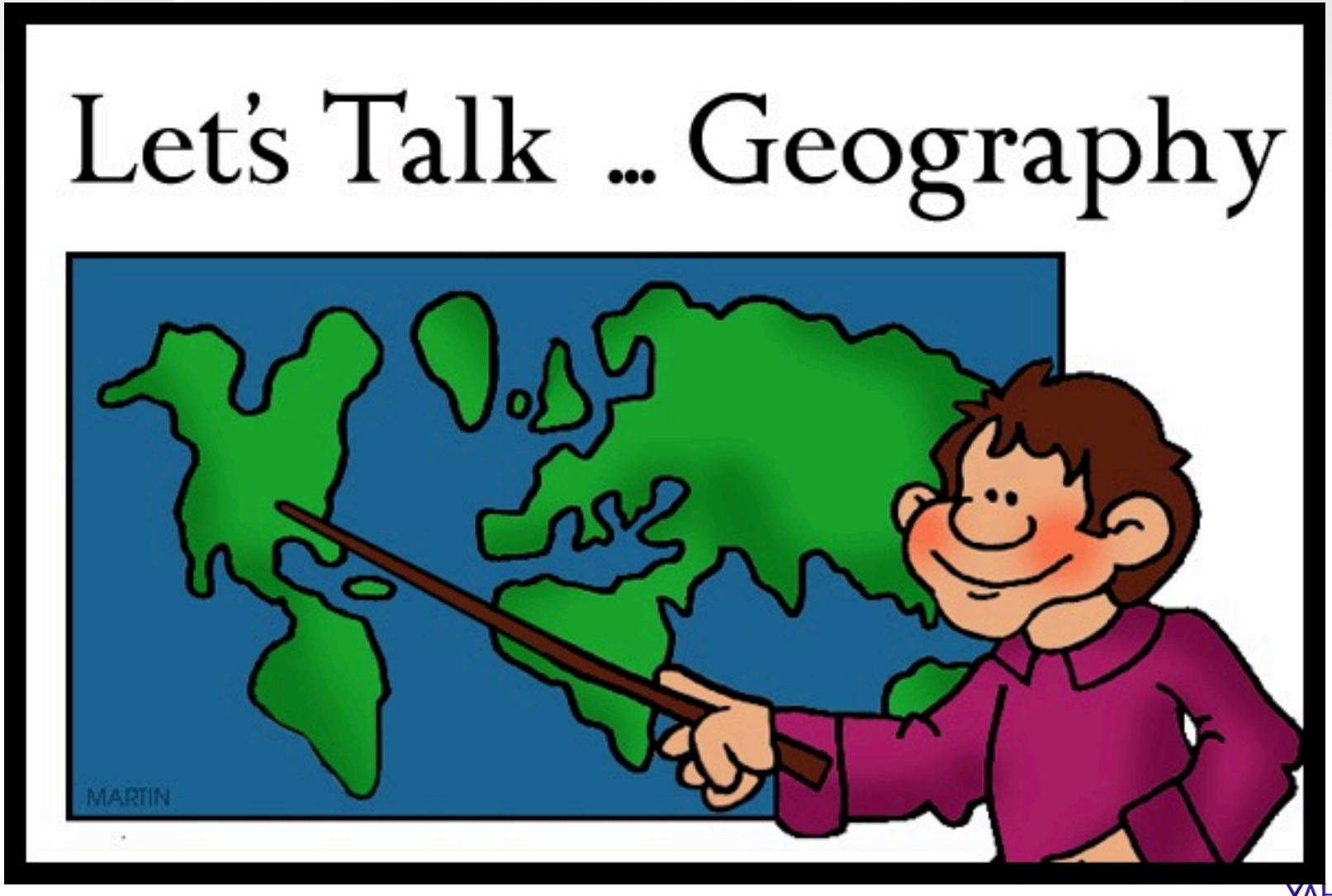


YAHOO!

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**;*

YAHOO!

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**.*

YAHOO!

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**

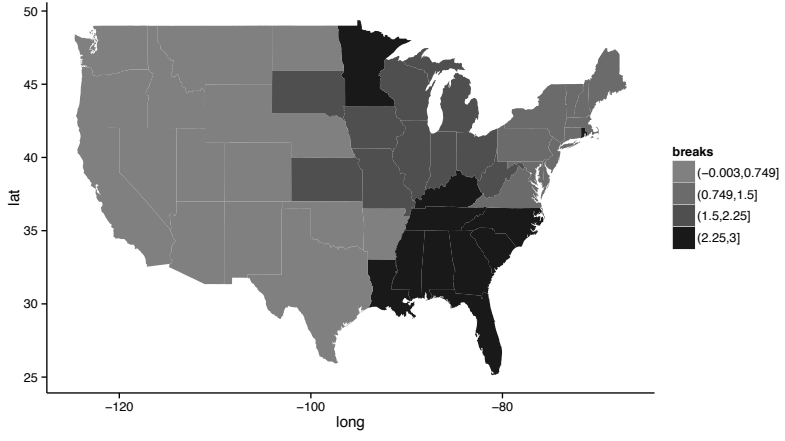
YAHOO!

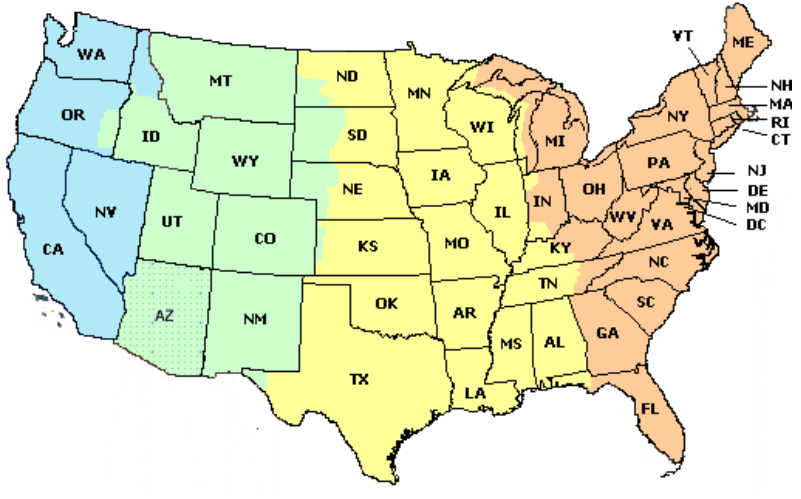
Data description

- 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





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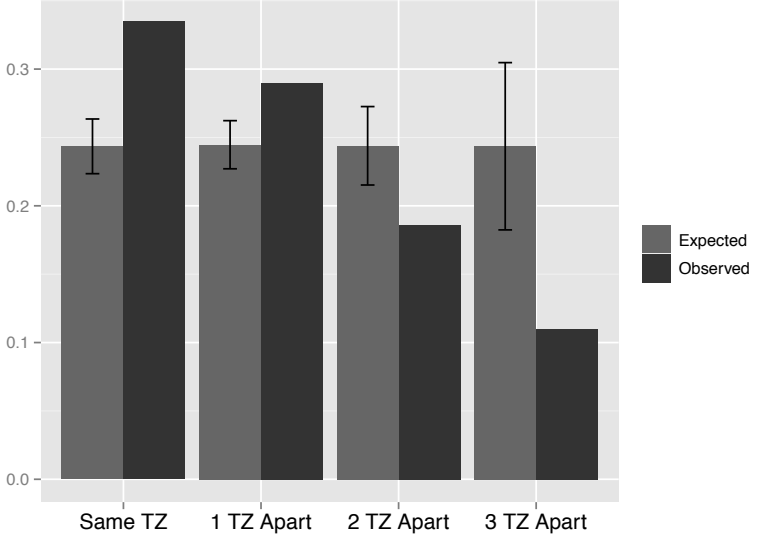
The time zone effect

- 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.



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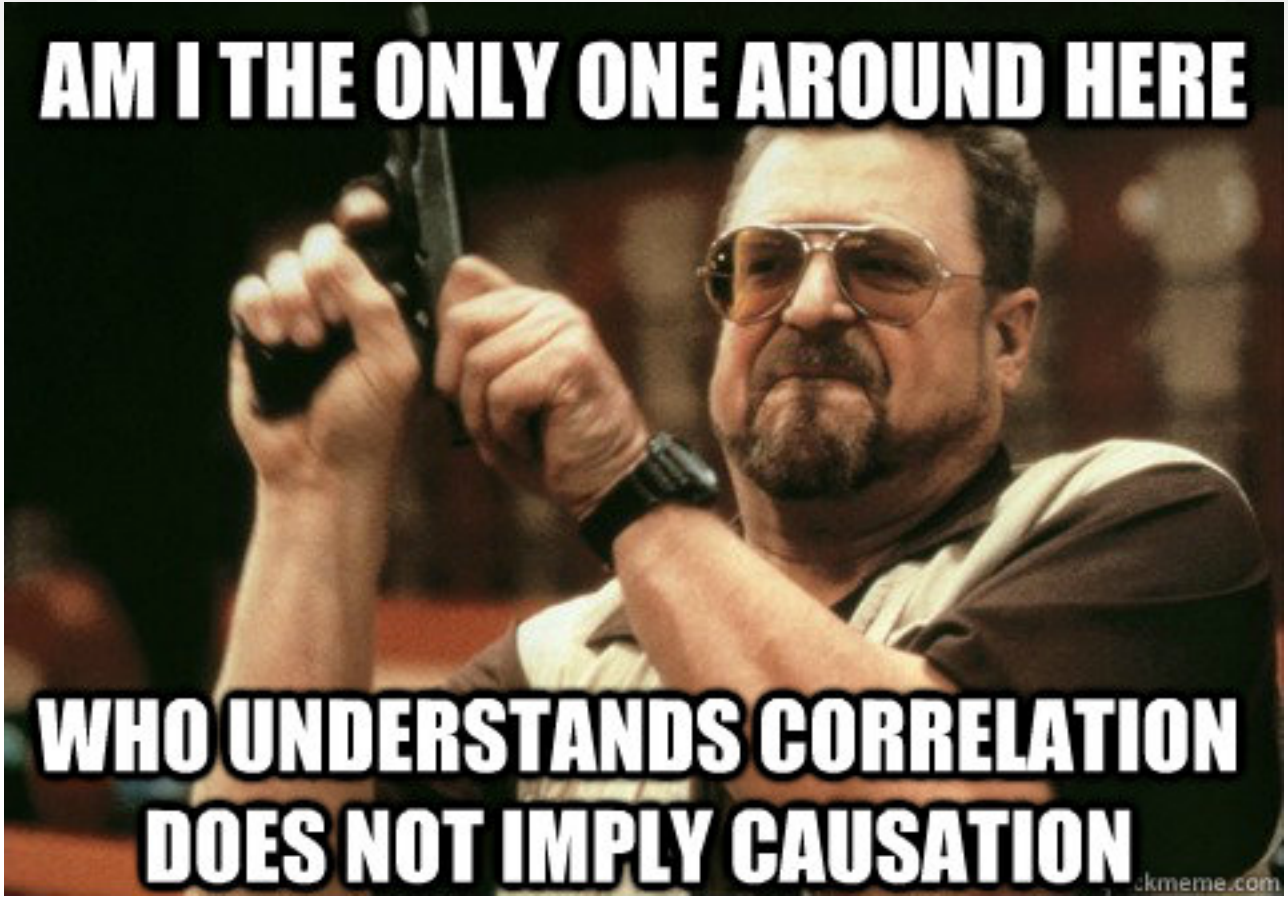
The Geography of News Engagement

- 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**


AM I THE ONLY ONE AROUND HERE
WHO UNDERSTANDS CORRELATION
DOES NOT IMPLY CAUSATION
ckmeme.com

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).

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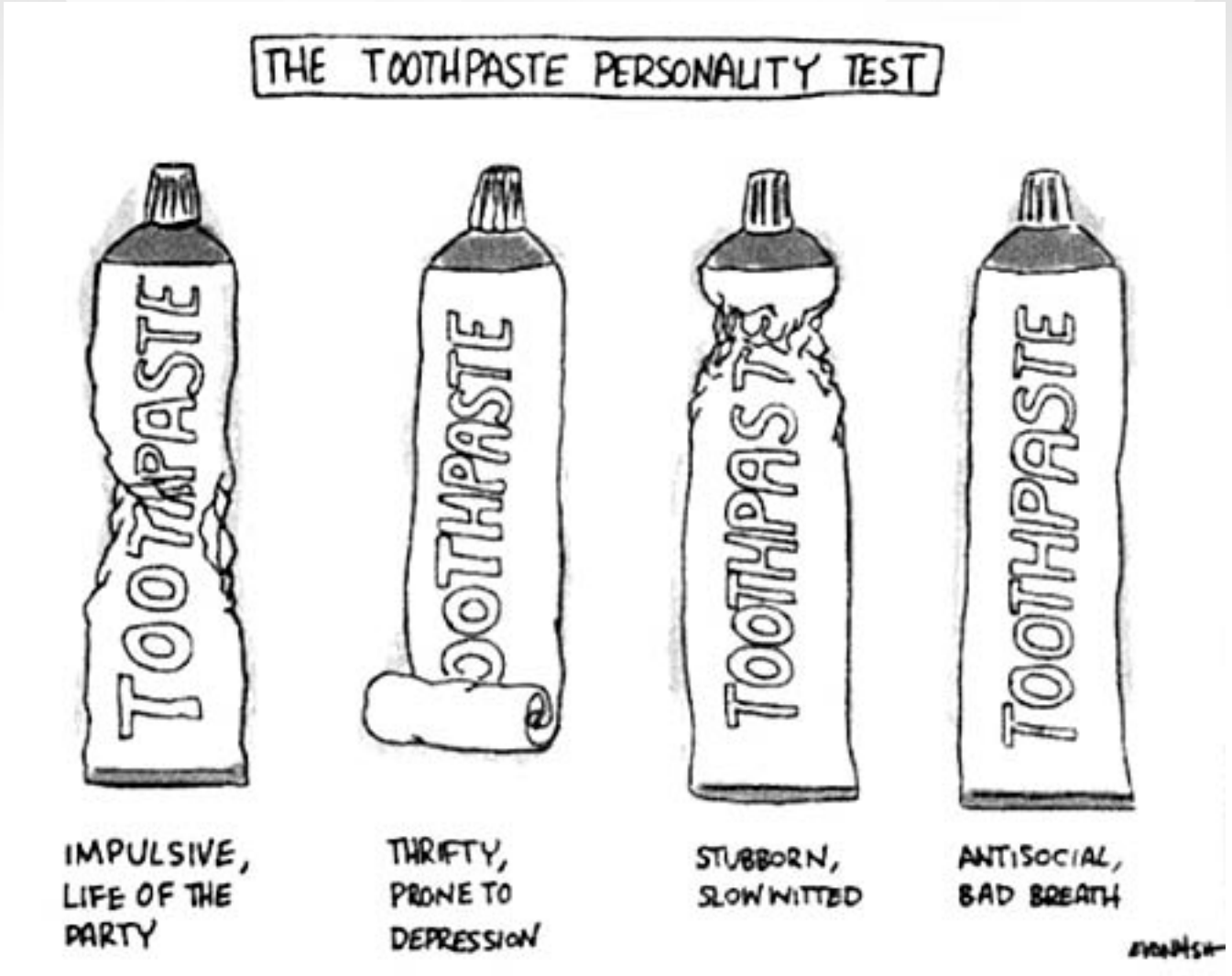
THE TOOTHPASTE PERSONALITY TEST
TOOTHPASTE
TOOTHPASTE
TOOTHPASTE
TOOTHPASTE
IMPULSIVE, LIFE OF THE PARTY
THRIFTY, PRONE TO DEPRESSION
STUBBORN, SLOW WITTED
ANTISOCIAL, BAD BREATH

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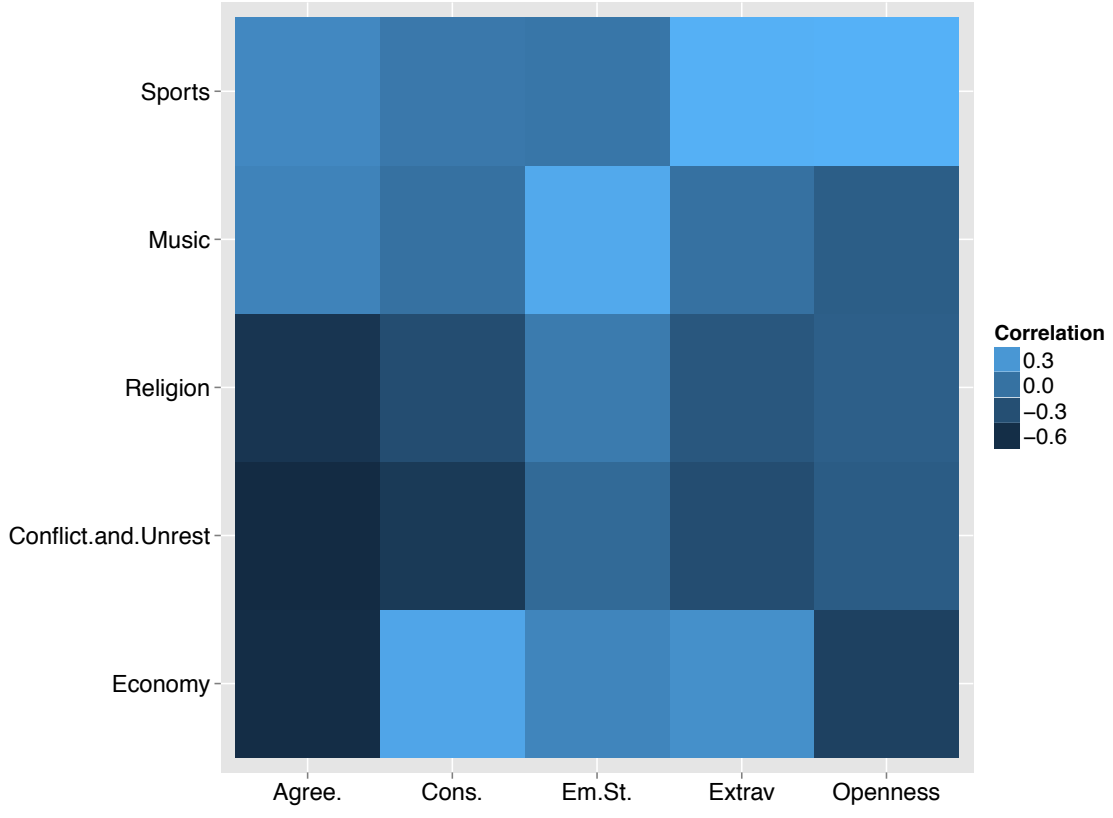
The Big Five Personnality Traits

1. **Openess:** *Imaginative*, *spontaneous*, and *adventurous* individuals;
2. **Conscientiousness:** *Ambitious*, *resourceful* and *persistent* individuals;
3. **Extraversion:** Individuals who are *sociable* and tend to seek *excite-ment;*
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



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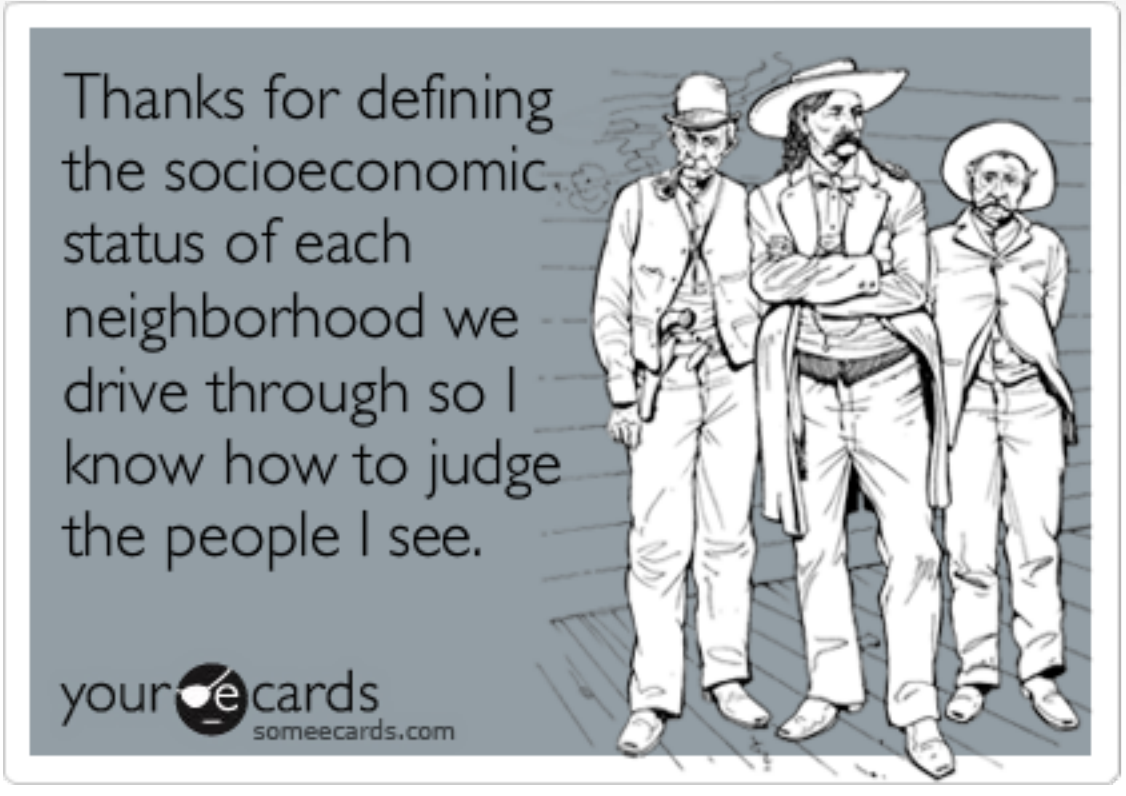
Thanks for defining the socioeconomic status of each neighborhood we drive through so I know how to judge the people I see.
yourecards
someecards.com

Socioeconomic Indicators

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

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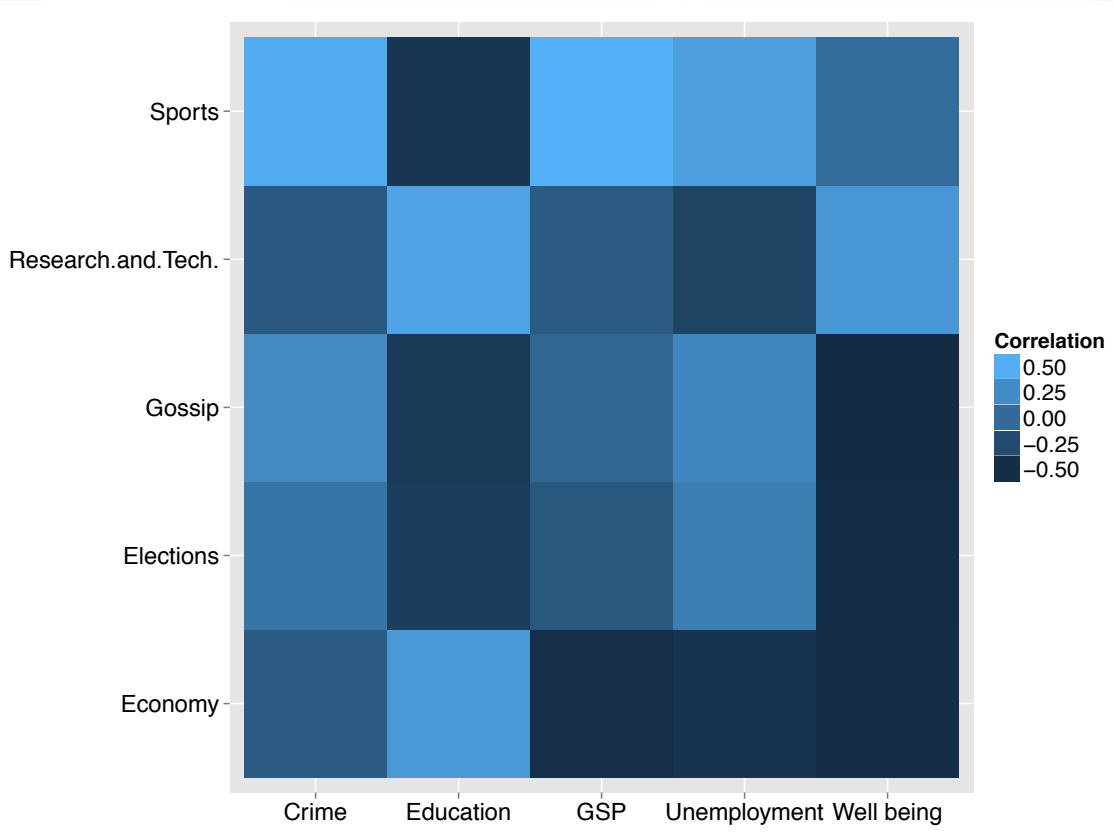
Correlation of news user engagement factors with socio economic indicators



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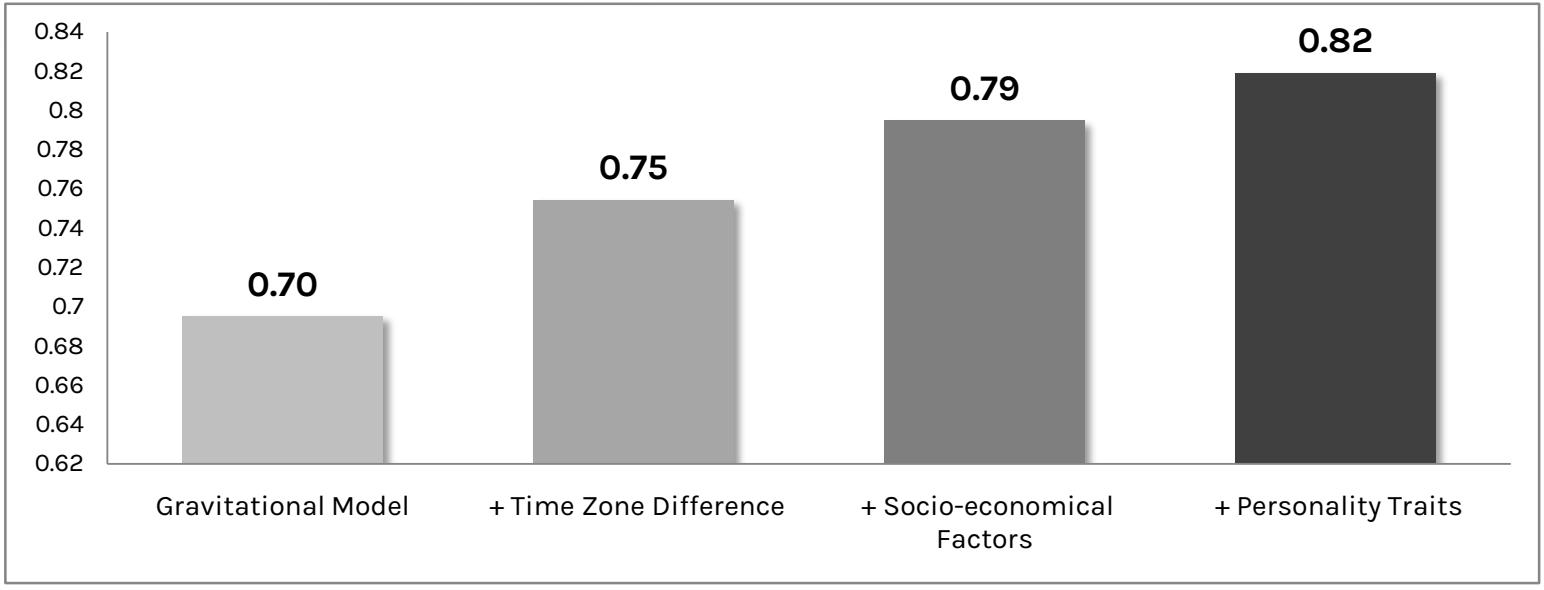
Conclusions: Putting all together



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Questions