Social Media and the Comparative Dynamics of Political Polarization

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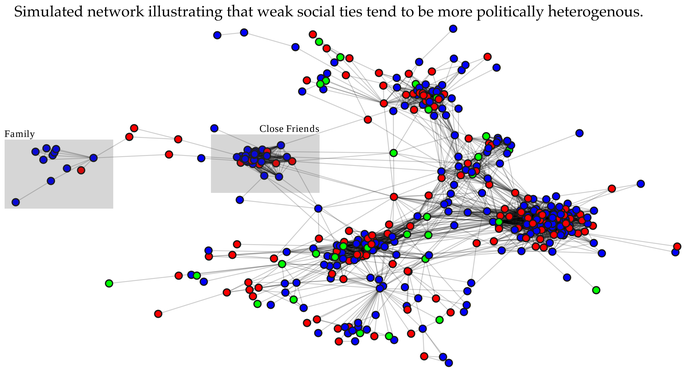
Motivation

- Growing importance of social media as source of political information
- Contending views on social media and political polarization:
  1. "Public sphere": new space for political deliberation, which should lead to social consensus and political tolerance (Brundidge, 2010; Mutz, 2002).
  2. "Echo chamber": ideological isolation in communities of like-minded individuals, which reinforces political extremism (Sunstein, 2001).
- Key transformation: social consumption of political information.
- Argument: social media reduce cost of interpersonal communication, which increases exposure to politically diverse information shared by weak social ties, and therefore induces political moderation.

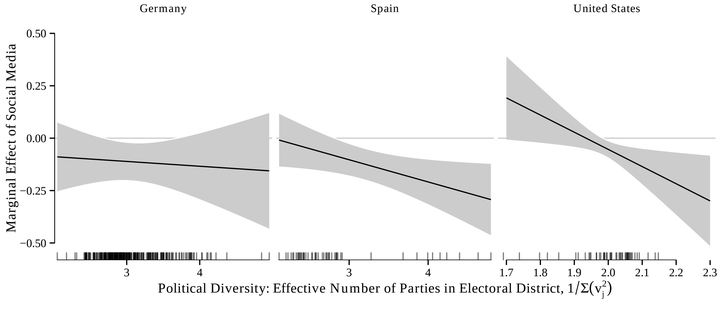
Simulated network illustrating that weak social ties tend to be more politically heterogenous.



Evidence from Survey Data

- Data: panel studies for elections in Germany (2013), U.S. (2012), Spain (2011)
- Advantages: representative sample; within-subjects analysis.
- Outcome variable: change in political extremism from pre- to post-election wave (change in absolute distance between ideological self-placement and political center)
- Independent variable: use of social media (Twitter, Facebook) during campaign.
- Findings:
  1. Social media users are more likely to moderate their political position during the campaign, controlling for demographic, political, and media consumption.
  2. Magnitude of marginal effect of social media increases for individuals in politically heterogeneous electoral districts (more potential exposure to diversity).

Estimated Marginal Effect of Social Media Usage on Political Extremism



Dynamic Ideal Point Estimation using Social Media Data

- The structure of the social media networks in which political actors and citizens are embedded can be a valid source of information about their ideological positions (Barberá, 2014).
- Users' and political actors' ideology (θ_{it} and ϕ_j) are defined as latent parameters.
- Spatial following model: the probability that user i follows political account j in period t is:

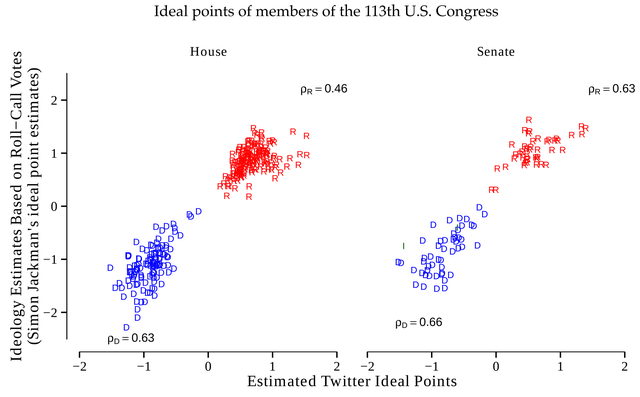
$$P(y_{ijt} = 1 | \alpha_j, \beta_i, \gamma, \theta_{it}, \phi_j) = \text{logit}^{-1}\left(\alpha_j + \beta_i - \gamma||\theta_{it} - \phi_j||^2\right)$$

  where $\alpha_j =$ *popularity*, $\beta_i =$ political interest, $\gamma =$ normalizing constant.
- Random walk prior: $\theta_{it} \sim N(\theta_{it-1}, \Delta_{\theta_{it}})$ (Martin and Quinn, 2002)
- Estimation using MCMC in two stages: (1) j parameters are estimated with sample of "informed" users (follow 10 or more political accounts) and (2) i parameters are estimated individually with $\Delta_{\theta_{it}} = 0.5$ assuming $\theta_{it=T} \sim N(0, 1)$

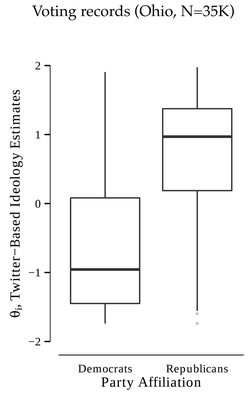
Application: 1.9 Million Ideal Point Estimates in the U.S.

- Census of active Twitter users in the U.S. from 200M geolocated tweets + 70M tweets about 2012 election, 2014 Super-Bowl and Oscars, collected using streamR package (Barberá, 2013)
- For ∼900 popular political accounts (legislators, candidates, media, think tanks, etc.), followers lists from Twitter REST API, exploiting their reverse chronological order to observe network changes (for now, only used in Ohio application).
- Sample size: 1.9 million active Twitter users who follow 2+ political accounts. Ideology estimated as of June 2014.
- **Validation of static estimates.** Twitter-based ideology estimates replicate conventional measures of ideology:

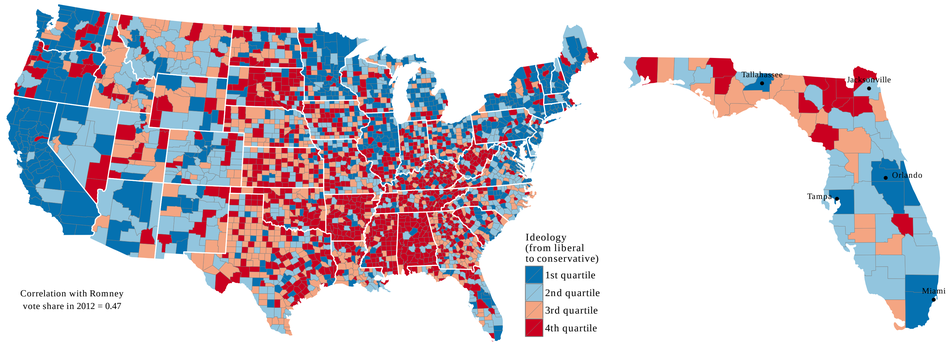
Ideal points of members of the 113th U.S. Congress



Voting records (Ohio, N=35K)



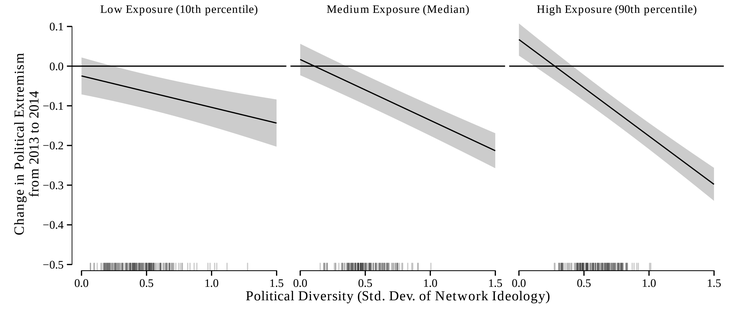
Estimated ideal point of average Twitter user by county (posterior estimates from hierarchical regression model)



Evidence from Social Media Data

- Data: 35,000 Twitter users from Ohio, matched with publicly available voter files
- Advantages: precise measurement of political positions, exposure to political information, and network diversity.
- Dynamic ideology estimates as of January 2013 and June 2014.
- Outcome variable: change in political extremism (absolute distance between each voter's ideal point and that of the median voter)
- Independent variables:
  - Network diversity: standard deviation of ideological position of users (non-elites) each voter follows on Twitter
  - Exposure to politics: number of "politically interested users" (follow 3 or more politicians) each voter follows on Twitter
- Controls: age, turnout in 2012, number of followers, number of tweets sent, party affiliation, county fixed effects.
- Findings:
  - Voters in diverse networks became more ideologically moderate, controlling for demographic and political variables.
  - Effect is larger for users with more potential exposure to political content

Estimated predicted change in political extremism, conditional on network diversity and potential exposure to political information



Conclusions

- Exposure to diverse political information on social media appears to induce ideological moderation at the individual level.
- Dynamic ideal point estimates based on Twitter networks can be used to examine individual-level changes in political positions over time.
- Next step: experimental work to identify causal effects; examine network changes.

References

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