# Political Analysis of Social Media Data

## Echo Chambers

Instructor: Gregory Eady
Office: 18.2.10
Office hours: Fridays 13-15

"One of the dangers of the Internet is that people can have entirely different realities ... They can be cocooned in information that reinforces their current biases"

– Barack Obama (2017)

1,700 views | Jul 20, 2019, 02:12pm EDT

# The Social Media Filter Bubble's Corrosive Impact On Democracy And The Press

**Kalev Leetaru** Contributor ⓘ

AI & Big Data

*I write about the broad intersection of data and society.*

# Echo chambers are dangerous – we must try to break free of our online bubbles

*David Robert Grimes*

Across the political spectrum we must all work harder to analyse our sources of information and our biases. The consequences of not doing so are dire

# The echo chamber has destroyed faith in our American democracy

BY DAN MAHAFFEE, OPINION CONTRIBUTOR — 04/15/18 07:00 AM EDT
THE VIEWS EXPRESSED BY CONTRIBUTORS ARE THEIR OWN AND NOT THE VIEW OF THE HILL

MOSTAFA M. EL-BERMAWY BUSINESS 11.18.16 05:45 AM

# Your Filter Bubble is Destroying Democracy

# *Social media echo chambers gifted Donald Trump the presidency*

Our tailored social media feeds not only hid from us the confused, angry people we needed to try and reason with, but it gave us a warped view of their motives. And this is where it gets particularly scary: Trump voters are fully aware he is sexist and xenophobic, they just don't care

*Christopher Hooton* | @christophhooton

Thursday 10 November 2016 13:00 | 34 comments

# Goals of today's lecture

1. Definitions
   - What are echo chambers?
   - What are filter bubbles?
   - What is selective exposure?
2. What has the existing literature found?
3. How might we, ourselves, measure information exposure?

# Why do we examine information exposure online?

- A successful democracy requires that citizens hold accurate beliefs
- Thus, the public will ideally be exposed to a diversity of viewpoints

## And yet with the advent of the internet, there are two potential conflicting consequences

1. Decreased barriers to diverse information
    - Some thus argue that the internet and social media broke people out of their pre-existing echo chambers
2. Increased ability to self-segregate
    - Some thus argue that the internet and social media facilitated the creation of echo chambers

## What is an echo chamber?

- Exposure primarily to information that confirms one's existing political beliefs

# What are the potential consequences of echo chambers?

- Theoretically is linked, for example, to:
  - Susceptibility to misinformation and fake news
  - Ideological polarization
  - Affective polarization
- Echo chambers' supposed rise is said to be a result of:
  - Expansion of cable TV
  - Use of broadband internet
  - Growth of social media

## Cass Sunstein (2001) and the conventional wisdom

"Our communications market is rapidly moving [toward a situation where] people restrict themselves to their own points of view—liberals watching and reading mostly or only liberals; moderates, moderates; conservatives, conservatives; Neo-Nazis, Neo-Nazis."

## Sunstein's (2001) claims:

- Offline newspapers are more diverse than online
- Face-to-face interactions are more diverse than online

# What is selective exposure?

- The purposeful selection of information that matches one's (ideological) predispositions
- This idea goes far back (e.g. Lazarsfeld, Berelson, and Gaudet, 1948)

# What is a filter bubble?

- Algorithms that amplify some (ideological) content in favor of other content
  - "content [that] is selected by algorithms according to a viewer's previous behaviors"
  - "algorithms inadvertently amplify ideological segregation by automatically recommending content an individual is likely to agree with"
- Echo chambers are a broader concept, where a "filter bubble" is a potential cause

# Trump on (purposeful) filter bubbles:

**Donald J. Trump** ✓
@realDonaldTrump

.@sundarpichai of Google was in the Oval Office working very hard to explain how much he liked me, what a great job the Administration is doing, that Google was not involved with China's military, that they didn't help Crooked Hillary over me in the 2016 Election, & that they...

7:51 PM · Aug 6, 2019 · Twitter for iPhone

**17K** Retweets **75.9K** Likes

**Donald J. Trump** ✓ @realDonaldTrump · Aug 6, 2019
Replying to @realDonaldTrump
... are NOT planning to illegally subvert the 2020 Election despite all that has been said to the contrary. It all sounded good until I watched Kevin Cernekee, a Google engineer, say terrible things about what they did in 2016 and that they want to "Make sure that Trump losses...

3.9K 14.4K 66.3K

**Donald J. Trump** ✓ @realDonaldTrump · Aug 6, 2019
...in 2020." Lou Dobbs stated that this is a fraud on the American public. @peterschweizer stated with certainty that they suppressed negative stories on Hillary Clinton, and boosted negative stories on Donald Trump. All very illegal. We are watching Google very closely!

10.2K 17K 77.1K

## But to what extent do echo chambers, selective exposure, and filter bubbles exist?

- This is a clear and important descriptive question
- But it can be difficult to answer
- Measurement is important
  - What would evidence of echo chambers look like?
- Are also important causal questions:
  - Does exposure to diverse information decrease polarization?
  - Does it decrease the prevalence of false beliefs?

# Ideological Segregation Online and Offline (Gentzkow & Shapiro 2011)

- One of first articles to deal rigorously with echo chambers
- Used rarely available data: web-tracking data
  - Not social media data, but might be thought of as analogous

## Web-browser media data:

- Data from passive browser plug-in
- All comScore sites categorized as "general news" or "politics"
- 1,379 sites in total
- Measure ideology as the proportion of liberals and conservatives who visit a news site

## Offline Media Data:

- MRI survey of American consumers
  - Cable news viewership of major cable networks (CNN, Fox News, MSNBC, CNBC, and Bloomberg)
  - Broadcast TV (ABC, CBS, NBC, PBS, or the BBC)
  - National news (NYT, USA Today, and WSJ)
  - Magazine readership (various)
  - Local news (any)

## Offline face-to-face data:

- 2006 GSS and 1992 cross-national Election Survey
- Questions about politics in one's face-to-face interactions:
  - Family (GSS)
  - Neighborhood (GSS)
  - Workplace (GSS)
  - Civic associations (GSS)
  - People the respondent trusts (GSS)
  - People whom they talk with about important matters (CNES)

# Measuring echo chambers "isolation index"

$$S_m = \sum_{j \in J_m} \left( \frac{cons_j}{cons_m} \cdot \frac{cons_j}{visits_j} \right) - \sum_{j \in J_m} \left( \frac{lib_j}{lib_m} \cdot \frac{cons_j}{visits_j} \right) \quad (1)$$

| | |
|---|---|
| $S$ | Measure of segregation (for medium $m$) |
| $m$ | Medium $m \in M$ media types (Internet, broadcast news, etc.) |
| $j$ | Outlet $j \in J$ media outlets (e.g. cnn.com, ABC, workplace) |
| $\frac{cons_j}{visits_j}$ | Ideology of media outlet $j$ |
| $\frac{cons_j}{cons_m}, \frac{lib_j}{lib_m}$ | Relative frequency of visits (basically a weight) |

The measure is just the difference in the *weighted average* of the ideology of the news sites that conservatives visit and those that liberals visit.

# Isolation measure:

$$S_m = \sum_{j \in J_m} \left( \frac{cons_j}{cons_m} \cdot \frac{cons_j}{visits_j} \right) - \sum_{j \in J_m} \left( \frac{lib_j}{lib_m} \cdot \frac{cons_j}{visits_j} \right)$$

**Example data:**

| media org $j$ | $cons_j$ | $lib_j$ | $visits_j$ | $\frac{cons_j}{visits_j}$ |
|---|---|---|---|---|
| foxnews.com | 1000 | 500 | 1500 | 0.67 |
| cnn.com | 500 | 1000 | 1500 | 0.33 |
| breitbart.com | 50 | 0 | 50 | 1 |
| $cons_m$ | 1550 | | | |
| $lib_m$ | | 1500 | | |

**Calculating the isolation index:**

$$\begin{aligned} S_m &= \left(\tfrac{1000}{1550} \cdot 0.67 + \tfrac{500}{1550} \cdot 0.33 + \tfrac{50}{1550} \cdot 1\right) - \left(\tfrac{500}{1500} \cdot 0.67 + \tfrac{1000}{1500} \cdot 0.33 + \tfrac{0}{1500} \cdot 1\right) \\ &= 0.57 - 0.44 \\ &= 0.13 \end{aligned}$$

## Gentzkow & Shapiro (2011)

"The isolation index captures the extent to which conservatives disproportionately visit outlets whose other visitors are conservative. The index ranges from 0 (all conservative and liberal visits are to the same outlet) to 1 (conservatives only visit 100% conservative outlets and liberals only visit 100% liberal outlets). With "liberals watching and reading mostly or only liberals" (Sunstein 2001, 4–5), and conservatives behaving analogously, $S_m$ would be close to 1."

## Some descriptive results:

- More conservatives than liberals use offline media in general
- Gap is smaller online (probably a heavily biased sample)

TABLE I

SIZE AND IDEOLOGICAL COMPOSITION OF MAJOR NEWS MEDIA

*U.S. adult population: 42% conservative, 21% liberal, 38% moderate*

| | Share of daily visitors who are: | | | Share of |
|---|---|---|---|---|
| Medium | Conservative | Liberal | Moderate | daily visits |
| Cable | .45 | .19 | .36 | .29 |
| Local newspapers | .43 | .19 | .38 | .29 |
| Broadcast news | .42 | .20 | .38 | .24 |
| Internet | .37 | .28 | .35 | .10 |
| Magazines | .37 | .28 | .35 | .05 |
| National newspapers | .40 | .31 | .29 | .03 |

# Major internet sites are more ideologically extreme than those offline. Offline news:

SIZE AND IDEOLOGICAL COMPOSITION OF OFFLINE NEWS OUTLETS

| | Share of daily readers who are: Conservative | Liberal | Moderate | Market share |
|---|---|---|---|---|
| **Magazines** | | | | |
| *Barron's* | .43 | .19 | .37 | .02 |
| *U.S. News & World Report* | .43 | .20 | .37 | .14 |
| *BusinessWeek* | .42 | .21 | .37 | .07 |
| *Forbes* | .40 | .22 | .37 | .04 |
| *Fortune* | .37 | .24 | .39 | .03 |
| *TIME* | .35 | .27 | .38 | .31 |
| *Newsweek* | .37 | .29 | .34 | .27 |
| *The Economist* | .35 | .41 | .23 | .04 |
| *The Atlantic* | .24 | .55 | .21 | .01 |
| *New Yorker* | .17 | .60 | .24 | .07 |
| **National newspapers** | | | | |
| *USA Today* | .45 | .22 | .33 | .40 |
| *Wall Street Journal* | .45 | .21 | .34 | .29 |
| *New York Times* | .26 | .54 | .21 | .31 |
| **Broadcast news** | | | | |
| CBS | .42 | .18 | .40 | .28 |
| NBC | .44 | .20 | .36 | .29 |
| ABC | .42 | .19 | .40 | .31 |
| BBC | .37 | .30 | .33 | .06 |
| PBS | .32 | .37 | .30 | .07 |
| **Cable** | | | | |
| Fox News | .54 | .13 | .33 | .36 |
| Bloomberg Television | .50 | .18 | .32 | .01 |
| CNBC | .41 | .22 | .37 | .13 |
| CNN | .40 | .22 | .38 | .33 |
| MSNBC | .39 | .24 | .36 | .17 |

# Online news

TABLE II

SIZE AND IDEOLOGICAL COMPOSITION OF ONLINE NEWS OUTLETS

| Ten largest | | | | |
|---|---|---|---|---|
| | Share of daily visitors who are: | | | Daily UV |
| Site | Conservative | Liberal | Moderate | ('000) |
| drudgereport.com | .78 | .06 | .16 | 475 |
| foxnews.com | .76 | .10 | .14 | 1,159 |
| AOL News | .37 | .23 | .40 | 3,971 |
| usatoday.com | .37 | .25 | .37 | 518 |
| msnbc.com | .34 | .26 | .40 | 3,264 |
| Yahoo! News | .31 | .25 | .43 | 6,455 |
| cnn.com | .33 | .27 | .40 | 2,650 |
| nytimes.com | .30 | .45 | .25 | 879 |
| huffingtonpost.com | .22 | .52 | .26 | 583 |
| BBC News | .16 | .57 | .26 | 472 |

## Main results:

- Estimated conservative exposure is 60.6%
- Estimated liberal exposure is 53.1%
- Isolation index is therefore: $60.6 - 53.1 = 7.5$
- Thus liberals do not only get news from liberal sites, nor conservatives from conservative sites

## Isolation estimates for other media:

- All media combined: 5.1
- Broadcast news: 1.8
- Cable news: 3.3
- Magazines: 4.7
- Local news: 4.8
- **Internet**: 7.5
- National print news: 10.4

## Isolation measures for offline interactions:

- **Internet**: 7.5 (for comparison)
- Within ZIP code: 9.4
- Voluntary associations: 14.5
- Workplace: 16.8
- Neighborhoods: 18.7
- Families: 24.3
- Trusted acquantances: 30.3
- Political discussants: 39.4

# Internet segregation is middling

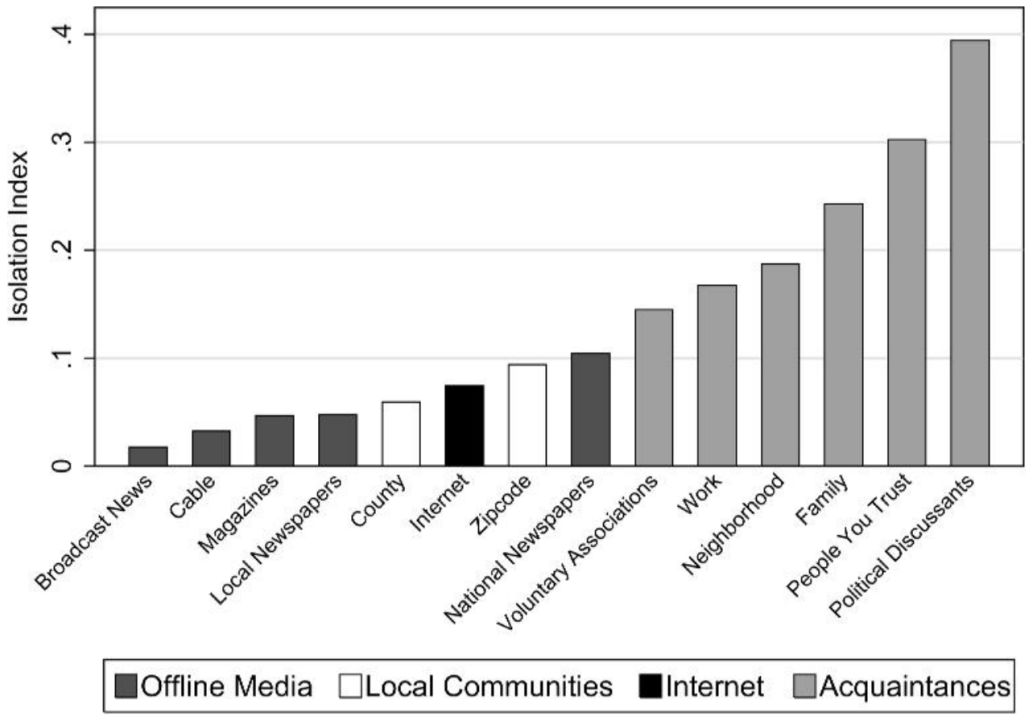



FIGURE II

Ideological Segregation by Medium and Type of Interaction

# Individual-level data tell a similar story:

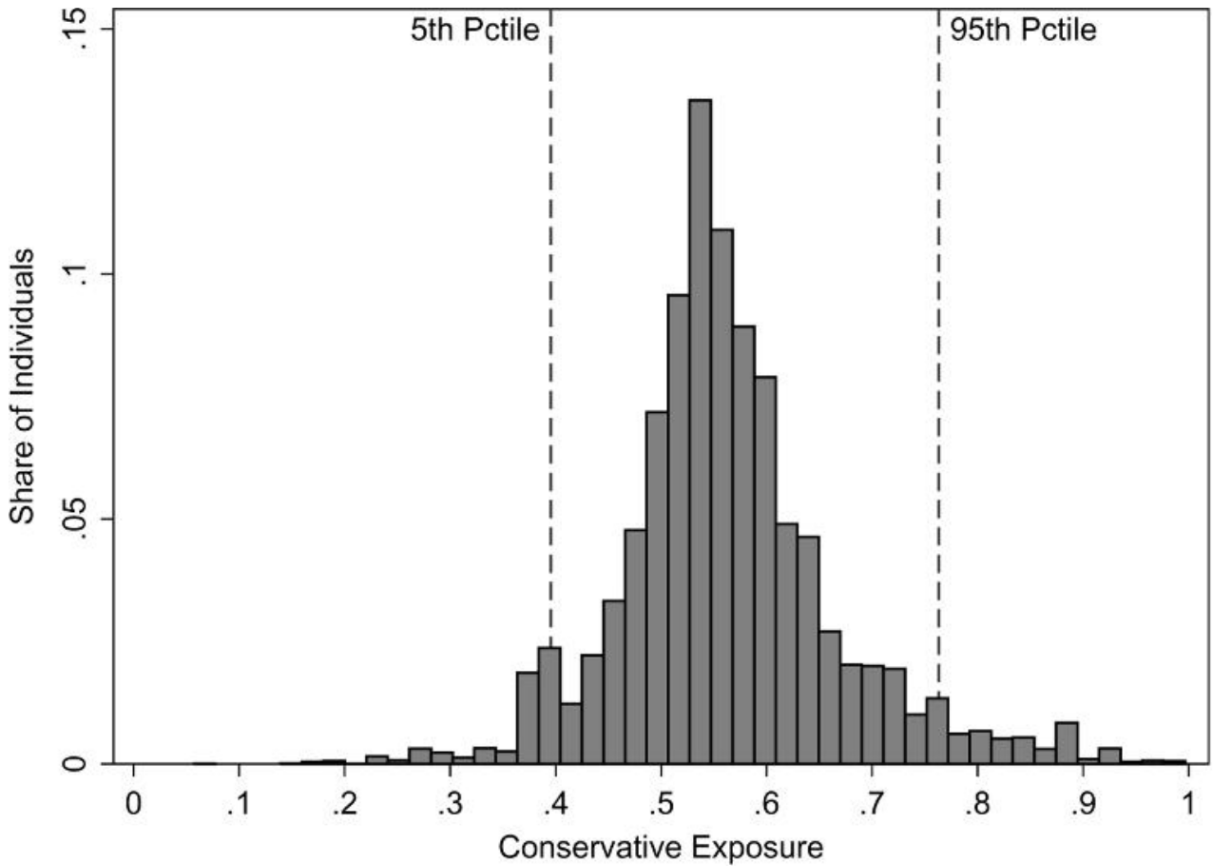
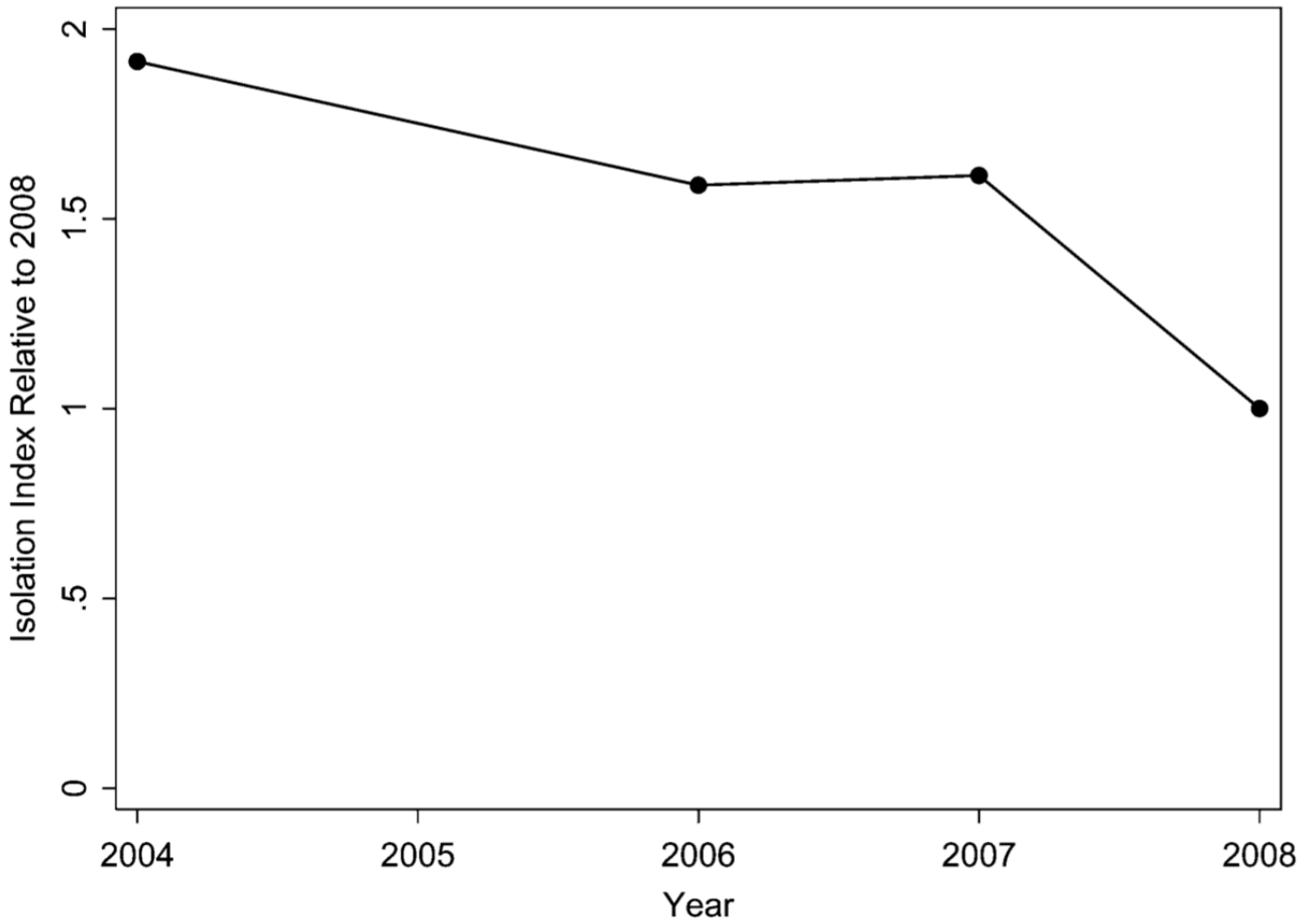



FIGURE III

Distribution of Conservative Exposure across Internet Users

# Little change in isolation over time:



## Interpreting the magnitude of isolation in other ways:

- Average liberal exposure equivalent to receiving all news from cnn.com
- Average conservative exposure equivalent to receiving all news from usatoday.com
- If one interacted with the people who also visit the same sites, 45% of them would be from a different ideology

## Why so little ideological isolation?

- Most traffic to small number of mainstream centrist sites (next slide)
- Political commentary often focuses on extreme sites, but such sites receive very little traffic
- Those who visit ideologically extreme sites are highly politically interested, and thus also visit mainstream sites frequently as well

# Mainstream sites dominate readership:

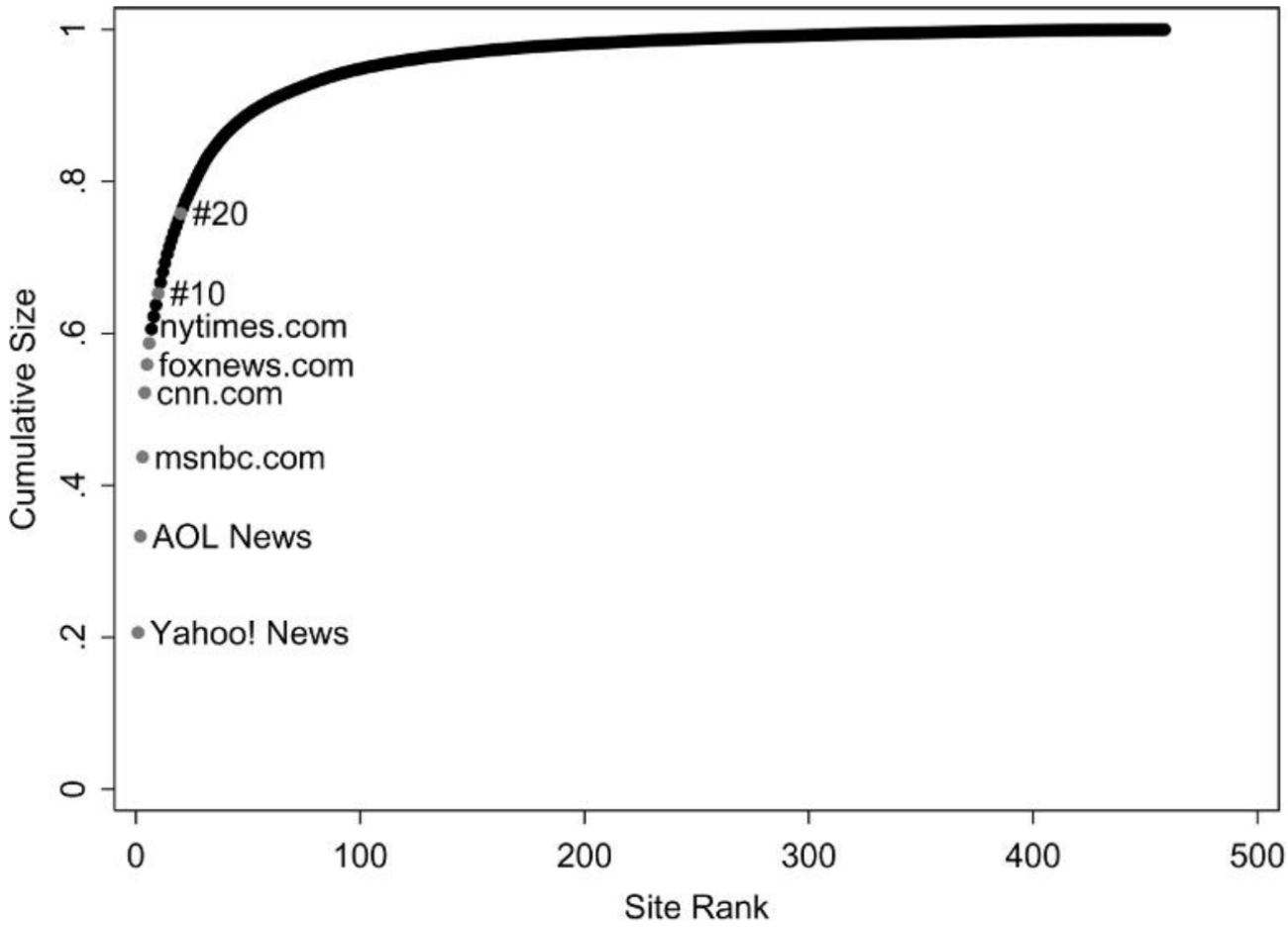



FIGURE V

Cumulative Distribution of Internet Unique Visits

## Conclusion:

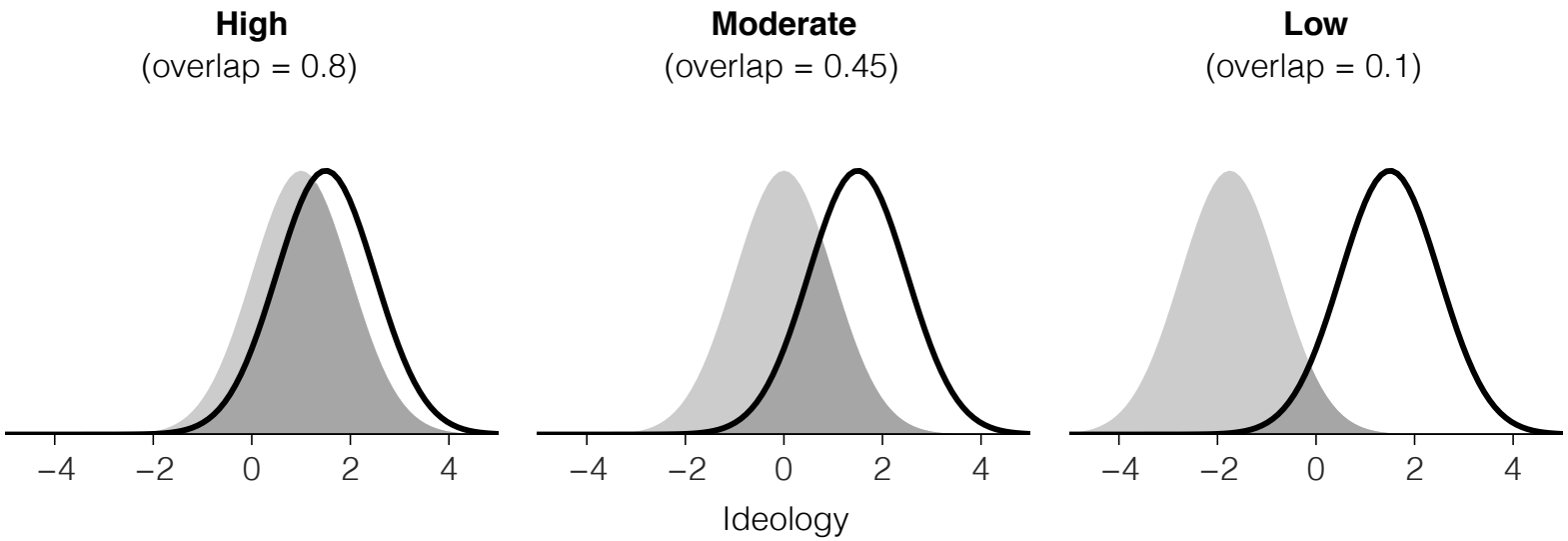
- Ideological isolation relatively low on internet news sites
- Higher isolation than offline media
- But lower than face-to-face interactions

# Why?

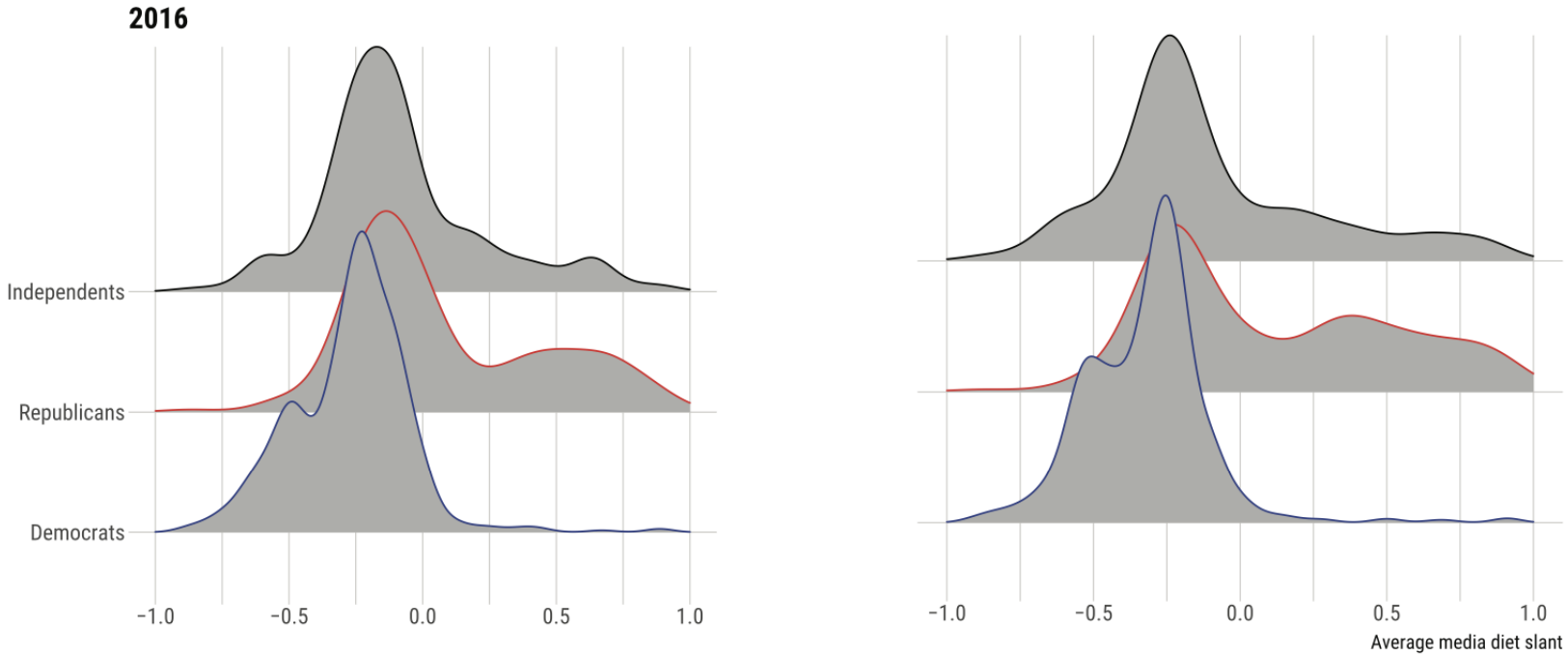
- Small number of mainstream sites draw the most traffic
  - Producers benefit financially from a high quality product that appeals to many people
  - Writing stories tailored to particular points of view is costly
- News consumers who visit ideologically extreme sites are large consumers
  - "Their omnivorousness outweighs their ideological extremity"

# (Almost) Everything in Moderation (Guess 2021)

- Web-tracking data from 2015/2016
- Similar results, but uses the overlap coefficient
- Stylized example:



# Republican/Democrat overlap of 46% (in 2016)




News/politics only (weighted) | News/politics only, portals excluded (weighted)

*Note:* Top: Distribution of the slant of respondents' online media diets, Feb. 27-March 19, 2015. Bottom: Distribution of online media diet slant, Oct. 7-31, 2016.

# Exposure to Ideologically Diverse News and Opinion on Facebook (Bakshy et al. 2015)

- Examine the news that Facebook users are exposed to on social media compared to that which they could potentially be exposed to
- 10.1 million users who identify as Republican or Democrat (i.e. is a politically interested sample, so not representative)

# Examine all hard news that could be potentially seen by Facebook users:

- Classify stories as either "hard" news (e.g. national news, politics) or "soft" news (e.g. sports, entertainment)
- 13% of all links are to hard news

### 1.4.1 Hard-soft classification

We build our hard-soft classifier using an approach often referred to in the Natural Language Processing literature as "bootstrapping" [28, 29, 30, 31] which entails using regular expressions to build a set of training labels (and should not be confused with bootstrapping in statistics).

We begin with URL content shared by at least 100 U.S. users. To extract features from the documents in question (text summaries of the articles sent to Facebook when a user shares content from an external website), we apply English stopwords; tokenize using unigrams, bigrams, and trigrams; and use tokens that have occurred in at least 2 and no more than half of all documents.

# Data

- Examine all web links users see and engage with
- 3.8 billion *potential* exposures
- 903 million *actual* exposures
- 59 million clicks

# Measurement

- Measure ideology as a proportion of Republicans who share a news domain
  - e.g. If foxnews.com URLs shared by 90% Republicans / 10% Democrats, its ideology is 0.9

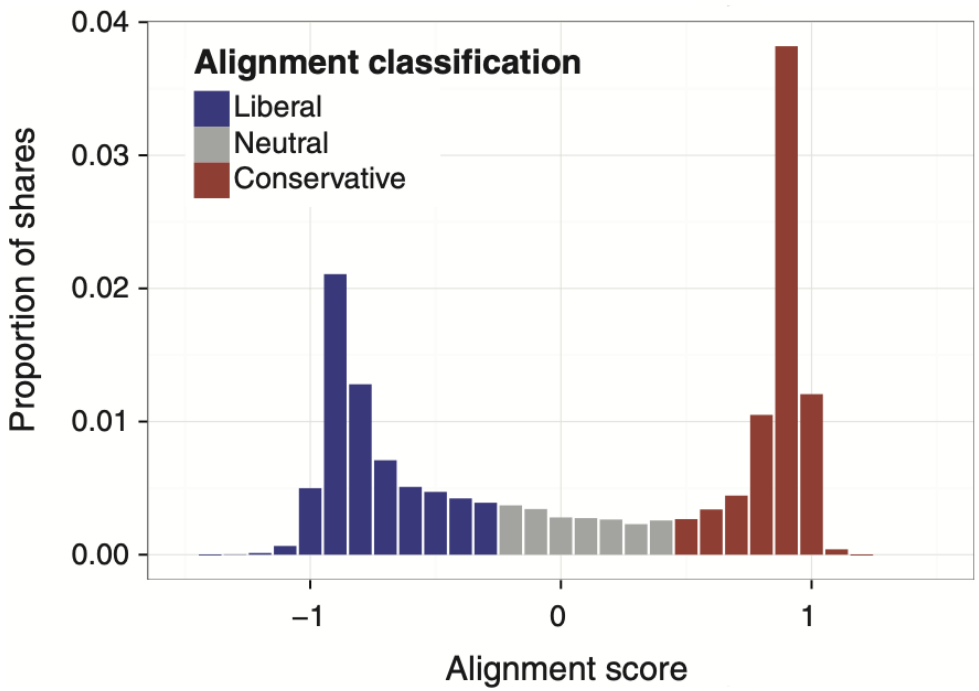



**Fig. 1. Distribution of ideological alignment of content shared on Facebook measured as the average affiliation of sharers weighted by the total number of shares.** Content was delineated as liberal, conservative, or neutral on the basis of the distribution of alignment scores (details are available in the supplementary materials).

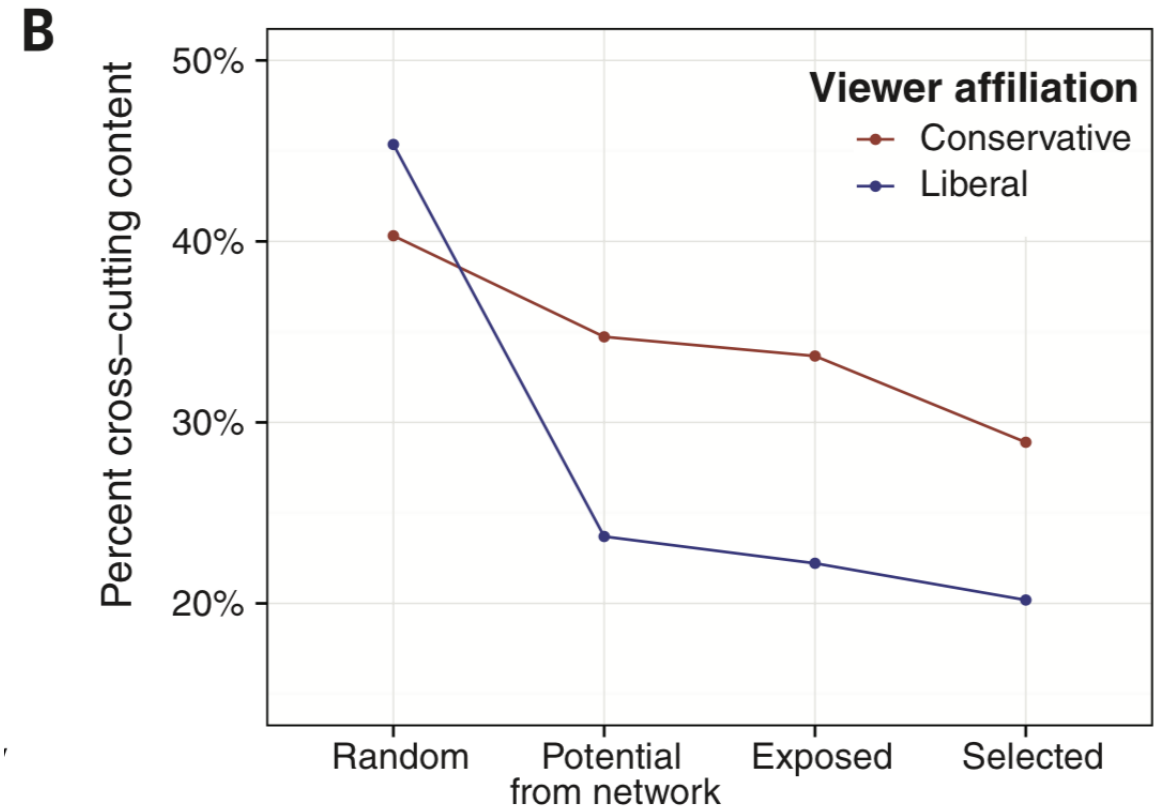
## Results

- 20% of liberals' friends are conservatives; 18% of conservatives' friends are liberals
- If people got their news at random from others, 45% would be cross-cutting for liberals, and 40% cross-cutting for conservatives
- In actuality, 24% are cross-cutting for liberals, and 35% cross-cutting for conservatives

# Main results

- Due to the news ranking algorithm, conservatives see 5% less cross-cutting news; liberals see 8% less cross-cutting news
- Conservatives are 17% less likely to click on cross-cutting information; liberals, 6% less

**"Potential from network"**: all possible news from friends
**"Exposure"**: news seen (as a result of the algorithm)
**"Selected"**: what users click on



## Conclusions

- Friend composition matters most for exposure to ideologically cross-cutting news
- Liberals have fewer conservative friends than conservatives have liberal friends
- "Individual choices more than algorithms limit exposure to attitude-challenging content"
- "Our work suggests that the power to expose oneself to perspectives from the other side in social media lies first and foremost with individuals"

# Recent research backs this up further

RESEARCH ARTICLE

SOCIAL MEDIA

## Asymmetric ideological segregation in exposure to political news on Facebook

Sandra González-Bailón[1]*, David Lazer[2], Pablo Barberá[3], Meiqing Zhang[3], Hunt Allcott[4], Taylor Brown[3], Adriana Crespo-Tenorio[3], Deen Freelon[1], Matthew Gentzkow[5], Andrew M. Guess[6], Shanto Iyengar[7], Young Mie Kim[8], Neil Malhotra[9], Devra Moehler[3], Brendan Nyhan[10], Jennifer Pan[11], Carlos Velasco Rivera[3], Jaime Settle[12], Emily Thorson[13], Rebekah Tromble[14], Arjun Wilkins[3], Magdalena Wojcieszak[15,16], Chad Kiewiet de Jonge[3], Annie Franco[3], Winter Mason[3], Natalie Jomini Stroud[17,18], Joshua A. Tucker[19,20]

Does Facebook enable ideological segregation in political news consumption? We analyzed exposure to news during the US 2020 election using aggregated data for 208 million US Facebook users. We compared the inventory of all political news that users could have seen in their feeds with the information that they saw (after algorithmic curation) and the information with which they engaged. We show that (i) ideological segregation is high and increases as we shift from potential exposure to actual exposure to engagement; (ii) there is an asymmetry between conservative and liberal audiences, with a substantial corner of the news ecosystem consumed exclusively by conservatives; and (iii) most misinformation, as identified by Meta's Third-Party Fact-Checking Program, exists within this homogeneously conservative corner, which has no equivalent on the liberal side. Sources favored by conservative audiences were more prevalent on Facebook's news ecosystem than those favored by liberals.

# At the URL-level (Panel C), algorithmic filtering does almost nothing

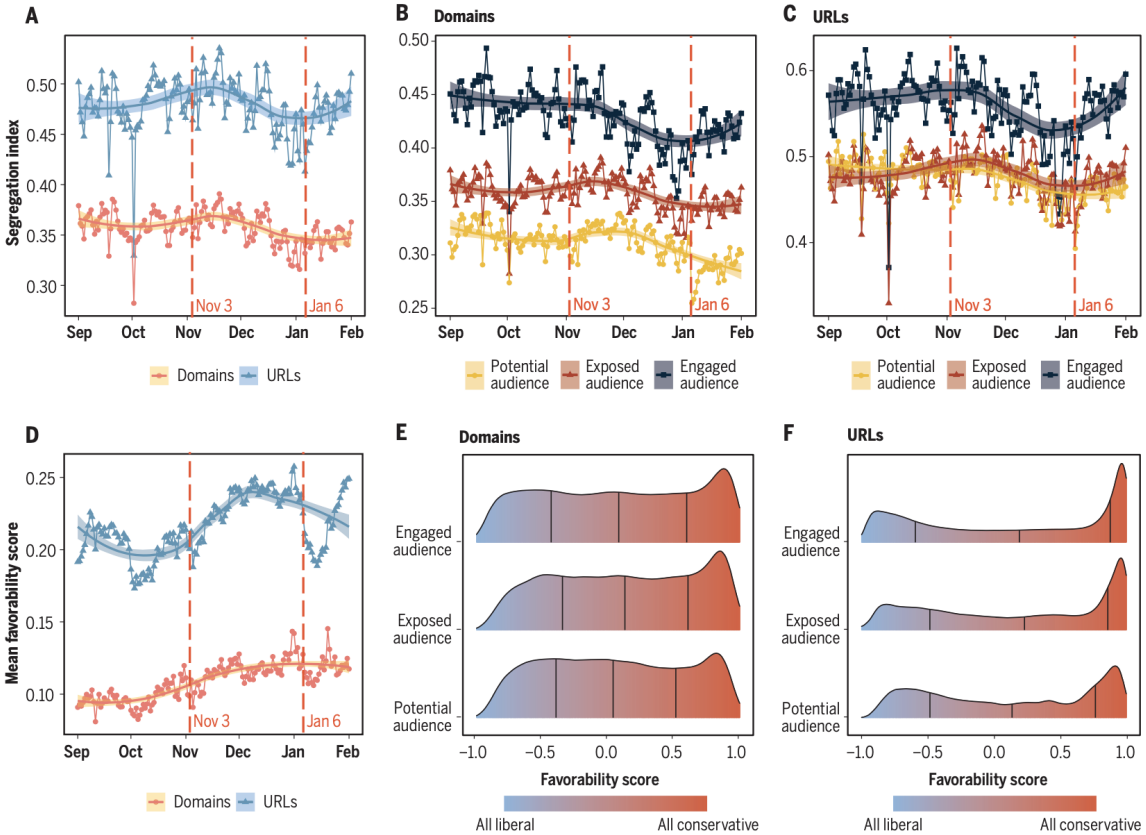



**Fig. 2. Segregation and audience polarization at the domain and URL levels.** (**A**) The segregation score based on exposed audience and calculated according to Eq. 1 is consistently higher at the URL level, suggesting that there are information curation practices with news stories that get masked when aggregating the data at the domain level. (**B** and **C**) Segregation scores drawn from exposed audiences are higher than those based on potential audiences but lower than the scores from engaged audiences (the difference between potential and engaged audiences is only visible at the domain level). This suggests that algorithmic and social amplification both contribute to segregation (note that we use different *y*-axis ranges to facilitate comparison across curves for domains and URLs). (**D**) The mean favorability scores (calculated according to Eq. 2, with −1 indicating a homogeneously liberal audience and 1 a homogeneously conservative audience) suggest that, overall, audiences that are consuming political news have a right-leaning slant (i.e., all scores are above the zero line). (**E** and **F**) The density plots show that the distribution is substantially skewed toward the right, with more domains and URLs being favored by very conservative audiences. Vertical black lines mark the quantiles of the distributions; scores are calculated for each domain and URL according to Eq. 2. For (A) to (D), shaded regions indicate 95% confidence intervals for the time trend based on a local polynomial regression.

# Selective Exposure in the Age of Social Media (Messing & Westwood 2014)

- Many say that polarization has occurred as a result of social media, and the algorithmic filtering
- Also from increasingly ideological news and selective exposure
- The authors argue, however, that the internet *promotes* exposure to ideologically diverse news
- Why? Because social media emphasizes the social value of news, rather than the partisan affiliation of the news outlet

## Before the internet:

- News source selection decided wholly by the individual
- Media was incentivized to create a trusted brand
- Early 2000s shift to:
  - Collaborative filtering ("people like you also like this")
  - User reviews
  - Aggregated popularity measures

## Social media shape modern media in two ways:

1. Allows users to select specific articles
2. Enables endorsements from others

## Does social media increase exposure to diverse political information?

1. Enables connections to "weak ties"
2. Aggregators don't consider ideology of source
3. Friends disagree on politics more than people believe
4. Lower social pressure online, so more sharing of controversial material

# Does social media decrease exposure to diverse political information?

1. Individuals can easily select a narrow set of media to read
2. Thus, select into opinion-reinforcing information

## Questions: Do people select by source? Or rely on social endorsements?

In general, people rely on heuristics:

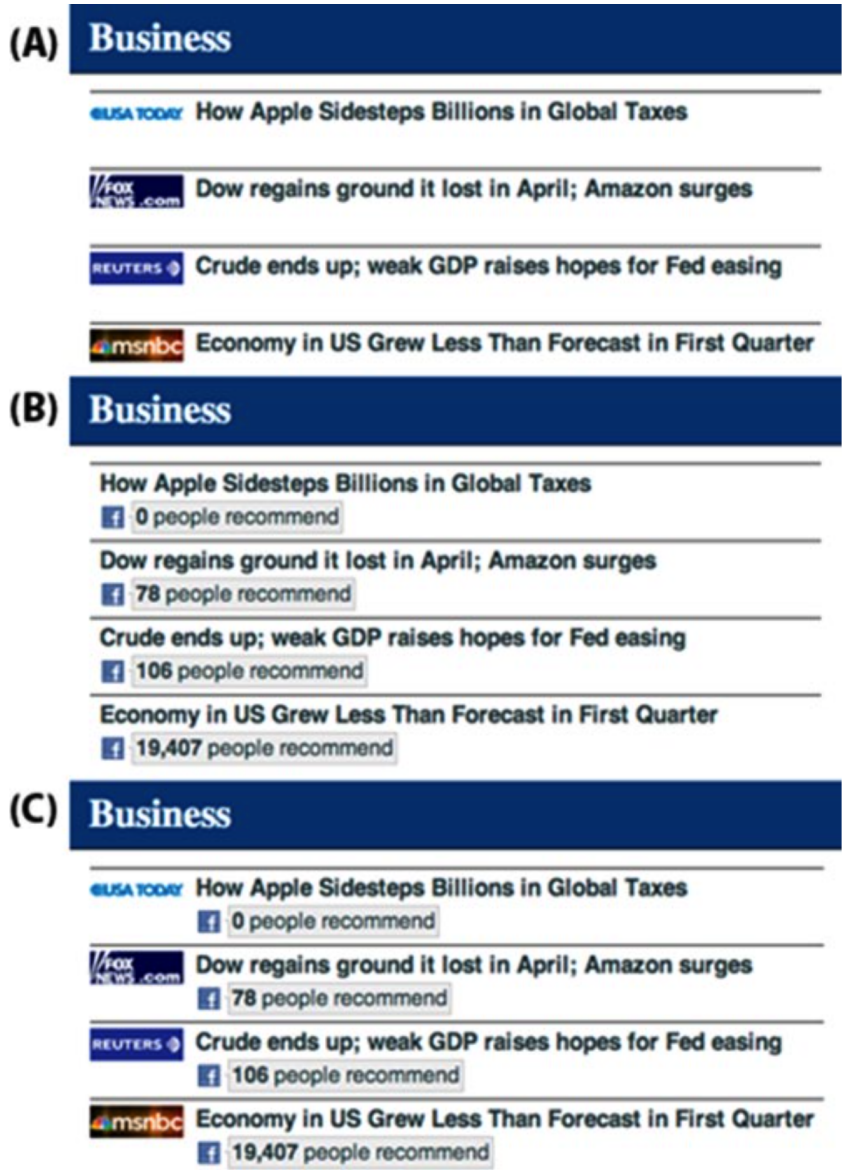
1. Choosing among a list of articles is cognitively taxing
2. In past, heuristics were:
   - Source
   - Story placement
   - Presence of photograph
   - Other editorial choices

## Online, heuristics are different:

1. Support by others is predictive of an article's relevance to oneself
2. Belief that once a large number of similar individuals support something, one should follow the crowd
3. Social endorsement convey social relevance of information
4. Sources host a variety of content, and cannot themselves convey much discriminating information

## Study 1:

- Build website to mimic social media
- mTurk sample (n = 739)
- Experimental conditions:
  1. Partisan-labeled news stories
  2. Socially endorsed news stories
  3. Partisan label + social endorsements


(A)
Business
USA TODAY How Apple Sidesteps Billions in Global Taxes
FOX NEWS .com Dow regains ground it lost in April; Amazon surges
REUTERS Crude ends up; weak GDP raises hopes for Fed easing
msnbc Economy in US Grew Less Than Forecast in First Quarter
(B)
Business
How Apple Sidesteps Billions in Global Taxes
0 people recommend
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106 people recommend
Economy in US Grew Less Than Forecast in First Quarter
19,407 people recommend
(C)
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USA TODAY How Apple Sidesteps Billions in Global Taxes
0 people recommend
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msnbc Economy in US Grew Less Than Forecast in First Quarter
19,407 people recommend

# Results

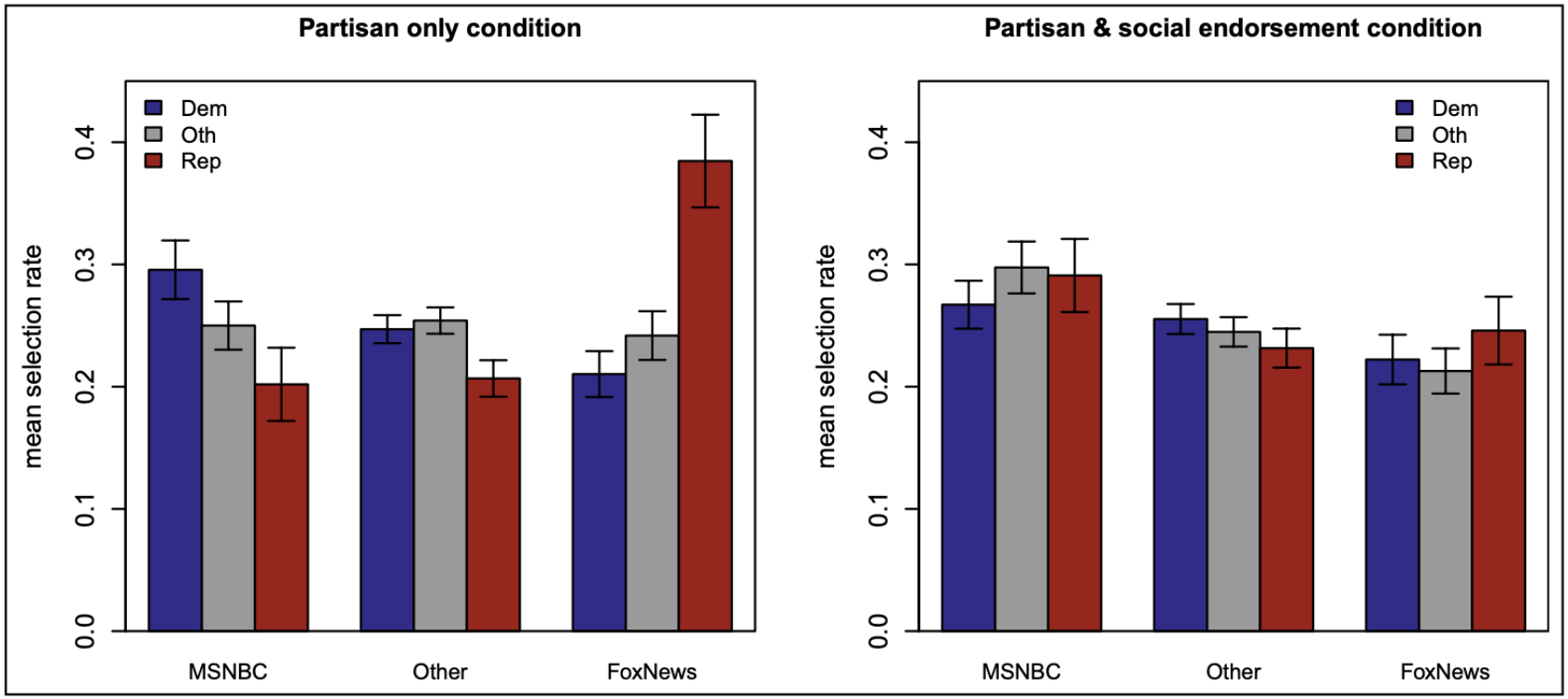
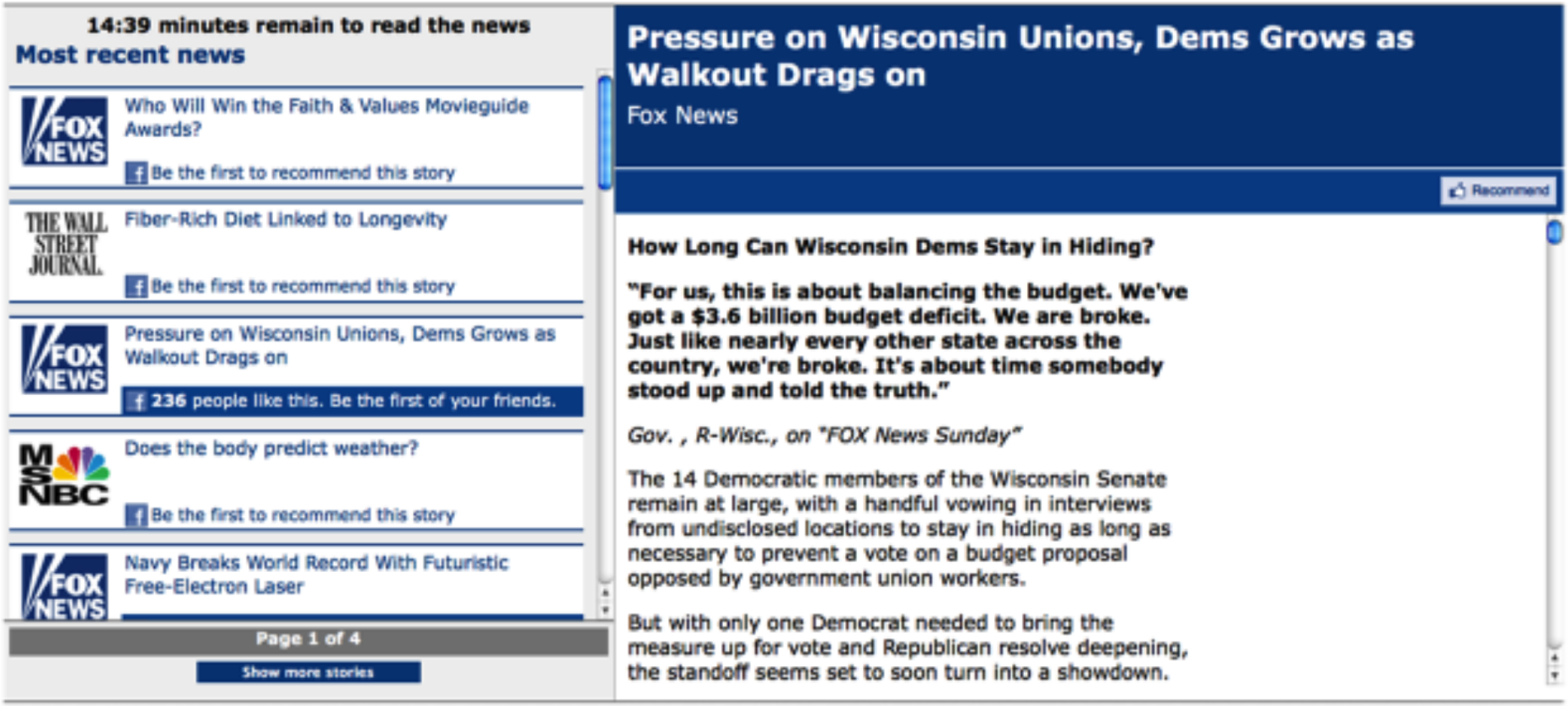



**Figure 2.** The presence of social endorsements impacts partisan selectivity.

## Study 2:

- Subjects asked to select any stories to read (among 80)
- Real stories from NYT, WSJ, FOX, CNN (CNN labeled MSNBC)
- Undergraduate sample (n = 153)
- Experimental conditions:
  1. All have source labels
  2. Random selection have endorsements


14:39 minutes remain to read the news
Most recent news
Who Will Win the Faith & Values Movieguide Awards?
Be the first to recommend this story
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"For us, this is about balancing the budget. We've got a $3.6 billion budget deficit. We are broke. Just like nearly every other state across the country, we're broke. It's about time somebody stood up and told the truth."
Gov. , R-Wisc., on "FOX News Sunday"
The 14 Democratic members of the Wisconsin Senate remain at large, with a handful vowing in interviews from undisclosed locations to stay in hiding as long as necessary to prevent a vote on a budget proposal opposed by government union workers.
But with only one Democrat needed to bring the measure up for vote and Republican resolve deepening, the standoff seems set to soon turn into a showdown.

## Results

- Without social cue, users select on partisanship of the media organization
- With social cue, however, they effectively ignore the partisanship of the outlet entirely

## Conclusion:

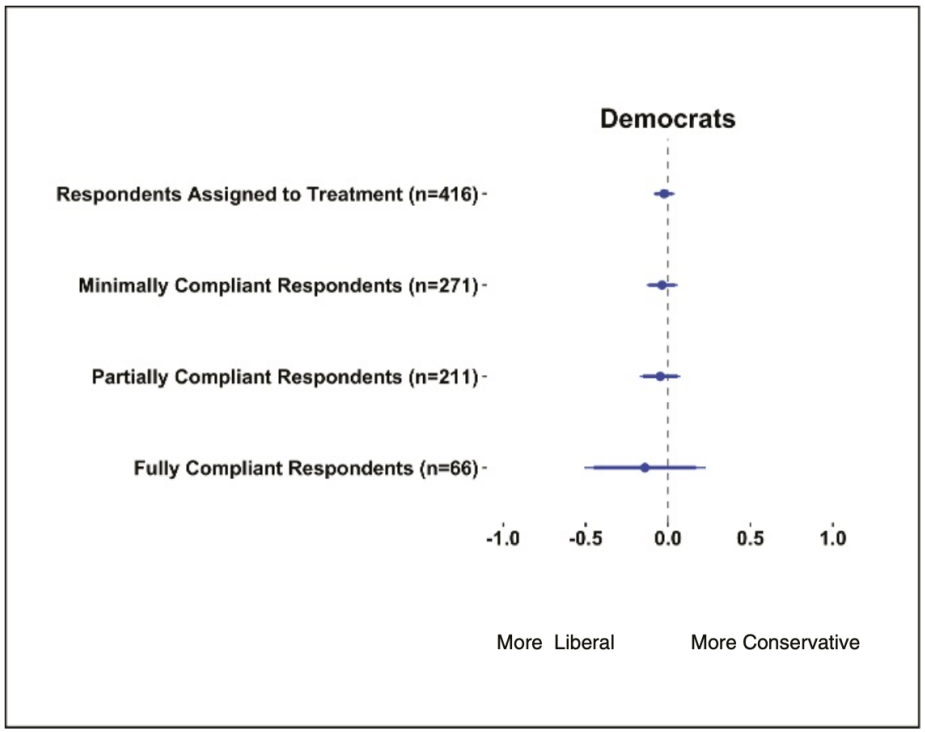
- Social endorsements (not ideology) dominate political information selection
- Social media can be expected to *increase* exposure to diverse political information
- Caveat: won't work if homogeneous social media contacts
- Implications for social media companies:
  - If friend-selection algorithms propose only like-minded individuals, then the political diversity of online network contacts may suffer

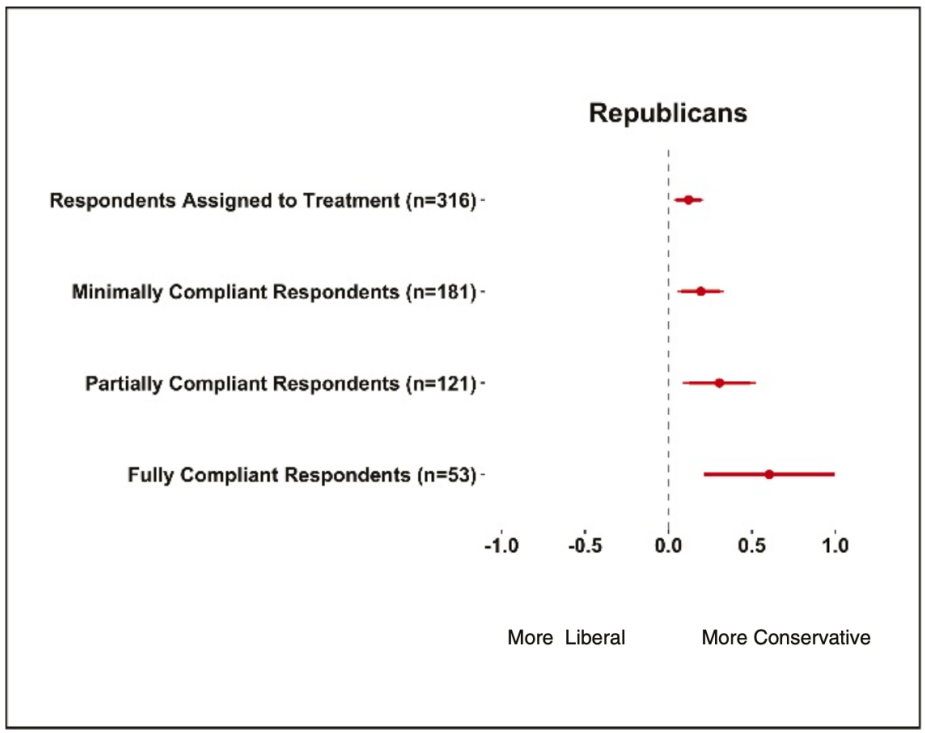
# Does exposure to opposing views on social decrease polarization? (Bail et al. 2018)

- Field experiment with Republican and Democratic Twitter users (n = 1,652)
- Offer those respondents in the treatment group $11 to follow a Twitter bot
  - Bots retweet messages from a randomly sampled list of 4,176 (Democratic / Republican) accounts (elected officials, opinion leaders, media organizations, and non-profits)

# Post-treatment data collection:

- Test if those in the treatment group (i.e. who followed a bot) became less ideologically extreme than those in the control group



## Recent research finds no effects of algorithms on polarization

SOCIAL MEDIA

# Reshares on social media amplify political news but do not detectably affect beliefs or opinions

Andrew M. Guess[1]*, Neil Malhotra[2], Jennifer Pan[3], Pablo Barberá[4], Hunt Allcott[5], Taylor Brown[4], Adriana Crespo-Tenorio[4], Drew Dimmery[4,6], Deen Freelon[7], Matthew Gentzkow[8], Sandra González-Bailón[9], Edward Kennedy[10], Young Mie Kim[11], David Lazer[12], Devra Moehler[4], Brendan Nyhan[13], Carlos Velasco Rivera[4], Jaime Settle[14], Daniel Robert Thomas[4], Emily Thorson[15], Rebekah Tromble[16], Arjun Wilkins[4], Magdalena Wojcieszak[17,18], Beixian Xiong[4], Chad Kiewiet de Jonge[4], Annie Franco[4], Winter Mason[4], Natalie Jomini Stroud[19], Joshua A. Tucker[20]

We studied the effects of exposure to reshared content on Facebook during the 2020 US election by assigning a random set of consenting, US-based users to feeds that did not contain any reshares over a 3-month period. We find that removing reshared content substantially decreases the amount of political news, including content from untrustworthy sources, to which users are exposed; decreases overall clicks and reactions; and reduces partisan news clicks. Further, we observe that removing reshared content produces clear decreases in news knowledge within the sample, although there is some uncertainty about how this would generalize to all users. Contrary to expectations, the treatment does not significantly affect political polarization or any measure of individual-level political attitudes.

## Recent research finds no effects of algorithms on polarization

SOCIAL MEDIA

# How do social media feed algorithms affect attitudes and behavior in an election campaign?

Andrew M. Guess[1]*, Neil Malhotra[2], Jennifer Pan[3], Pablo Barberá[4], Hunt Allcott[5], Taylor Brown[4], Adriana Crespo-Tenorio[4], Drew Dimmery[4,6], Deen Freelon[7], Matthew Gentzkow[8], Sandra González-Bailón[9], Edward Kennedy[10], Young Mie Kim[11], David Lazer[12], Devra Moehler[4], Brendan Nyhan[13], Carlos Velasco Rivera[4], Jaime Settle[14], Daniel Robert Thomas[4], Emily Thorson[15], Rebekah Tromble[16], Arjun Wilkins[4], Magdalena Wojcieszak[17,18], Beixian Xiong[4], Chad Kiewiet de Jonge[4], Annie Franco[4], Winter Mason[4], Natalie Jomini Stroud[19], Joshua A. Tucker[20]

We investigated the effects of Facebook's and Instagram's feed algorithms during the 2020 US election. We assigned a sample of consenting users to reverse-chronologically-ordered feeds instead of the default algorithms. Moving users out of algorithmic feeds substantially decreased the time they spent on the platforms and their activity. The chronological feed also affected exposure to content: The amount of political and untrustworthy content they saw increased on both platforms, the amount of content classified as uncivil or containing slur words they saw decreased on Facebook, and the amount of content from moderate friends and sources with ideologically mixed audiences they saw increased on Facebook. Despite these substantial changes in users' on-platform experience, the chronological feed did not significantly alter levels of issue polarization, affective polarization, political knowledge, or other key attitudes during the 3-month study period.