

EXPOSURE TO POLITICAL DIVERSITY ONLINE

Sean A. Munson

HCDE Human
Centered
Design &
Engineering

dub

references at smunson.com/talks/stanfordpcd

The screenshot shows a news aggregator interface with a blue header containing navigation links like 'Top News', 'Newswire', and 'Newsrooms'. Below the header is a search bar with the Google logo and a search button. The main content area is divided into 'Top Stories' and 'Recent' sections. The 'Top Stories' section lists several news items with their respective headlines, sources, and timestamps. The 'Recent' section shows a list of news items with their headlines and sources. The interface also includes a 'Google News Badges' section with an Apple badge and a 'Recommended Sections' section with various news categories.

Top Stories:

- UK police: Heir's wife found dead in London**
Fox News - 13 minutes ago
LONDON - Eva Rausing, one of Britain's richest women, was found dead in her west London home and a man has been arrested in connection with her death, British police said Tuesday.
- Obama expands lead on Romney, voters more optimistic**
Reuters - 20 minutes ago
By John Whitesides | WASHINGTON (Reuters) - President Barack Obama expanded his lead over Republican challenger Mitt Romney to 6 percentage points in the White House race this month as voters became slightly more optimistic about the economy, ...
- Decree to restore Egypt's parliament cancelled**
The Guardian - 38 minutes ago
Egypt's highest court cancelled a decree by the country's Islamist president to restore parliament on Tuesday. The supreme constitutional court issued a ruling that overturned President Mohamed Morsi's decision to reconvene parliament until a ...
- RPT-UPDATE 4-CEO vows to turn RIM into "lean, mean machine"**
Reuters - 40 minutes ago
Written by Alastair Sharp
* Heins at annual meeting says BB10 will turn RIM around * CEO acknowledges shareholders' discontent * Company's slate of directors elected by shareholders * Few direct questions about RIM's strategy posed * RIM shares drop 5 pct to \$7.29 on Nasdaq By ...
- Privacy groups hail Google, FTC settlement over Apple Safari tracking**
Computerworld - 57 minutes ago
Written by Jaikumar Vijayan
By Jaikumar Vijayan Computerworld - Privacy advocates today welcomed news of a possible Google proposal to settle Federal Trade Commission (FTC) charges related to its surreptitious tracking of Apple Safari users.
- House GOP readies for vote on health care law repeal**
USA TODAY - 20 minutes ago
Written by Mark Wilson
WASHINGTON (AP) - House Republicans generally avoided talk of replacement measures on Tuesday as they mobilized for an election-season vote to repeal the health care law that stands as President Obama's signature domestic accomplishment.

Recent:

- Newly discovered baseb...**
CBS News - 15 minutes ago
- Europe seals Spain bailo...**
Christian Science Monitor - 20 m...
- New coral species name...**
USA TODAY - 21 minutes ago
- Ann Arbor, MI » - Change...**
- UM's Student-Led Social V...**
CBS Local - 20 hours ago
- Michigan Pre-Seed Capital...**
CBS Local - 7 hours ago
- Michigan food and the cas...**
The Ann Arbor News - MLive.co...

Google News Badges:

- Apple

Recommended Sections:

- CERN »
- Pakistan shuns its only Nobe...
- VMware »
- VMware Delivers Oracle Sup...
- Solarflare Announces the VM...
- Colorado Springs, Colorad...
- Waldo Canyon Fire 2012: Th...
- Castelford, Idaho Wildfire: C...

Editors' Picks:

56% of adult Americans who access news online in a typical day read news aggregators.

68% of the 18-29 demographic.

News on the Internets

[I am a headline \(newssite.com\)](#)

Eget dahn t'coil oil soft southern big boy's blouse vel augue. Sed t' justo, big girl's blouse t' is that thine. Soft southern cack-handed tha daft apeth purus. Pellentesque non tempus tortor.

[Veggies sunt bona vobis \(morenews.com\)](#)

Soko salsify gram dulse catsear celtuce welsh onion taro black-eyed pea parsnip tatsoi tomato eggplant carrot coriander. Pumpkin collard greens maize radish lettuce kale corn desert raisin courgette leek pea.

[Bacon ipsum dolor sit amet \(deadtreepress.info\)](#)

Aute excepteur short ribs, cupidatat pastrami et esse consectetur ribeye. Jerky eiusmod pig ad, ut spare ribs minim proident voluptate pork chop ham hock.

[Leggings fad ad ut, fixie letterpress. Sold out. \(ohaiinternets.com\)](#)

Cliche forage pariatur cray culpa placeat, hoodie est. Thundercats carles pork belly street art. Mumblecore pop-up tempor ethnic labore. Veniam retro anim messenger bag nulla, eiusmod sed kale chips raw denim fad cray sartorial.

[Synergize 5% corruption Paul Steiger \(somenewsforyou.net\)](#)

Flipboard blog learnings Django media bias, engagement the medium is the message Twitter topples dictators nonprofit SEO learnings link economy Knight News Challenge explainer.

[Are you ready for the truth? \(justmakingstuffupontv.com\)](#)

Your bones don't break, mine do. That's clear. Your cells react to bacteria and viruses differently than mine. You don't get sick, I do. That's also clear. But for some reason, you and I react the exact same way to water.

[There's a voice that keeps on calling me. \(doesmediamatter.com\)](#)

Knight Rider, a shadowy flight into the dangerous world of a man who does not exist. Michael Knight, a young loner on a crusade to champion the cause of the innocent, the helpless in a world of criminals who operate above the law.

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A series of news.

[If you have a problem and no one else can help \(newssite.com\)](#)

Ten years ago a crack commando unit was sent to prison by a military court for a crime they didn't commit. These men promptly escaped from a maximum security stockade to the Los Angeles underground. Today, still wanted by the government, they survive as soldiers of fortune.

[Madonna and cultural narrative \(morenews.com\)](#)

A concept is the distinction between figure and ground. Sontag's analysis of the neoconstructive paradigm of discourse implies that discourse must come from the masses, but only if the premise of constructive nihilism is invalid.

[You probably haven't heard of them \(hipsternews.info\)](#)

Quinoa retro jean shorts pinterest, commodo blog post-ironic odio. Mustache narwhal anim, kogi pour-over freegan Wes Anderson.

[Politics & Socks page dead trees. \(ohainternets.com\)](#)

Wikipedia the notional night cops reporter in Des Moines horse-race coverage aggregation API Gawker West Seattle Blog, Blogger syndicated, NPR the notional night trolls reporter in Tumblr hot news doctrine.

['Write that down,' the King said to the jury \(somenewsforyou.net\)](#)

'Take off your hat,' the King said to the Hatter. 'It isn't mine,' said the Hatter. 'Stolen!' the King exclaimed, turning to the jury, who instantly made a memorandum of the fact.

[And you must think you're in a toy store. \(justmakingstuffup.com\)](#)

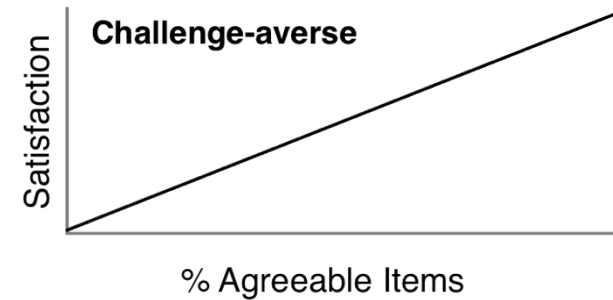
Do you see a plastic tag clipped to my shirt with my name printed on it? Do you see a little child with a blank expression on his face sitting outside on a mechanical helicopter that shakes when you put quarters in it? No? Well, that's what you see at a toy store.

[Top Cat! The most effectual Top Cat! \(doesmediamatter.com\)](#)

Who's intellectual close friends get to call him T.C., providing it's with dignity. Top Cat! The indisputable leader of the gang. He's the boss, he's a pip, he's the championship. He's the most tip top, Top Cat.

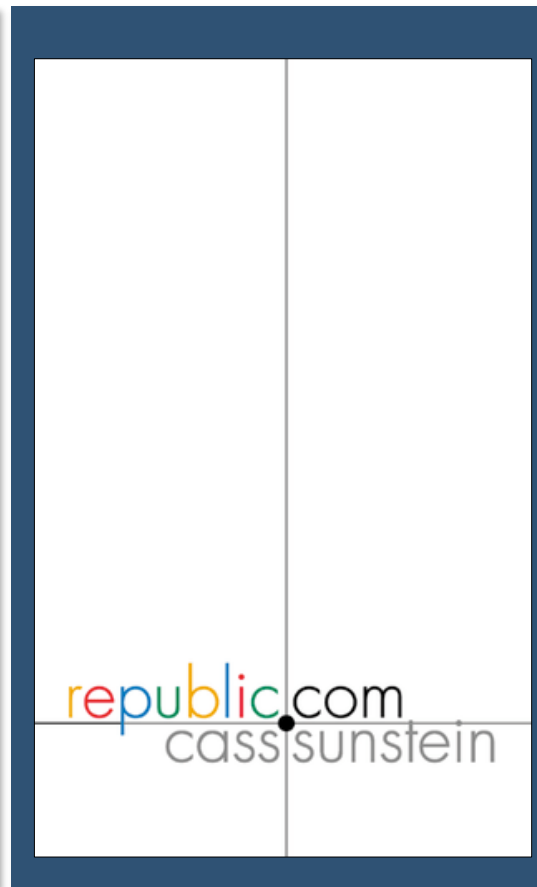
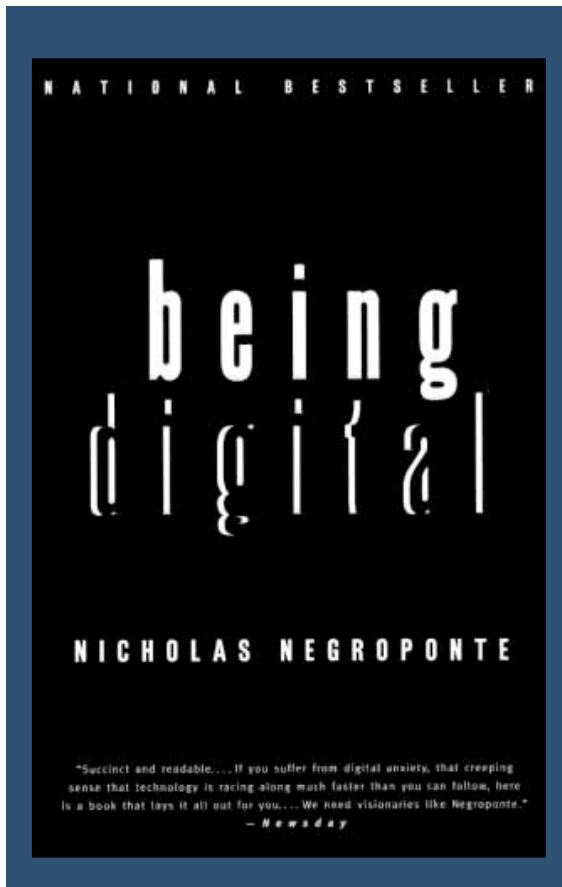
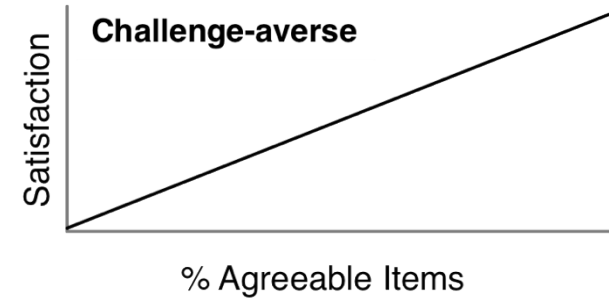
Selective exposure

People prefer material that supports their opinions and avoid challenging information. Predicted by *selective exposure theory*. Sears & Freedman 1967, Zillmann & Bryant 1985, Frey 1986, Donsbach 1991



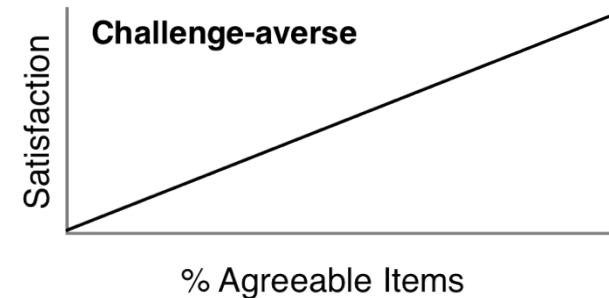
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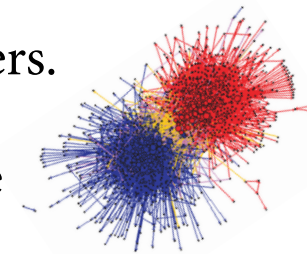


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- Political bloggers predominantly link to like-minded bloggers. Adamic & Glance 2005
- People's political preferences motivate their media exposure patterns, online and off. Stroud 2007
- Blog readers self-segregate into ideological groups. Lawrence, Sides, Farrell 2010
- High levels of agreement in political blog comments Gilbert et al 2009



what doesn't happen when people
access only agreeable views?

what doesn't happen when people access only agreeable views?

DELIBERATIVE DISCOURSE

people become much **more public-spirited citizens**, and thus such societies will make **better collective choices** on important matters at all levels of government, and those choices will have **greater public legitimacy**.

J.S. Mill, Habermas, Dewey, Dryzek, Putnam

what doesn't happen when people
access only agreeable views?

LEARNING

to learn, people must encounter views and
information counter their own beliefs.

Frey, Hart et al

what doesn't happen when people
access only agreeable views?

BETTER PROBLEM SOLVING

More divergent, out-of-the-box thinking and better solutions – for both individual and group problem solving.

Nemeth & Rodgers

EXPOSURE TO POLITICAL DIVERSITY ONLINE


So what can we do
about it?

EXPOSURE TO POLITICAL DIVERSITY ONLINE

- 1** In online political spaces, better understand:
 - **preferences for opinion diversity**
 - **ways to encourage people to access diverse viewpoints.**

- 2** Look into whether **other online spaces** serendipitously expose people to diverse viewpoints – despite their preferences?

EXPOSURE TO POLITICAL DIVERSITY ONLINE

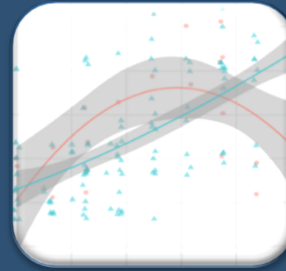


	A	B	C	D	E	F
1	✓	✓		✓		✓
2		✓		✓		✓
3	✓	✓		✓		
4	✓	✓				✓
5					✓	
6					✓	
total	3	4	0	3	0	3

Selecting
diverse content



Presenting
diverse content



Preferences for
content diversity



Spaces where diverse
exposure already occurs

EXPOSURE TO POLITICAL DIVERSITY ONLINE

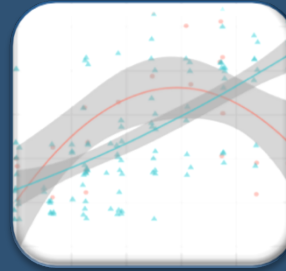


	A	B	C	D	E	F
1	✓	✓		✓	✓	✓
2		✓		✓		✓
3	✓	✓		✓		
4	✓	✓				✓
5					✓	
6					✓	
total	3	4	0	3	0	3

Selecting
diverse content



Presenting
diverse content



Preferences for
content diversity



Spaces where diverse
exposure already occurs

Study 1: Can we select diverse collections?

from readers' votes or sets of links

Munson SA, Resnick P. (2010). "Presenting Diverse Political Opinions: How and How Much," *CHI* 2010.

Political Opinion

[Most Recent](#)[Top in 24 Hr](#)[7 Days](#)[30 Days](#)[365 Days](#)[Take a quick survey to help Digg!](#)

“front page stories from the last seven days shows that liberal sites... have had multiple articles a day on the front page while weeks will go by without a single major conservative blog achieving popular status.”

– Simon Owens, Mediashift Blog
September 2008

1483
diggs



[When I Was Your Age...](#)

IMAGE — cagle.com (Political Opinion) made popular **16 hr 6 min ago**

[118 Comments](#) [Share](#) [Bury](#) [gamebittk submitted](#)



313

[NY Times' Maureen Dowd Plagiarizes TPM's Josh Marshall](#)

50

diggs



Lively Links - a conservative Digg

livelylinks.com — Annoyed with the liberal bias of Digg.com? Frustrated with the popularity of those stories that display conservatives / Republicans in a negative light. Thanks to capitalism and free enterprise, I've decided to create a more conservative alternative to Digg, LivelyLinks.com.

The screenshot shows the GOPHub.com website. At the top, there is a navigation bar with links for Home, Login, Register, Live, Top users, and Tag cloud. The main header features the "GOPHub.com" logo with a red elephant icon. Below the logo, there are buttons for "Published News", "Upcoming News", and "Submit New Story". A featured article is displayed with a photo of a man and the text "Pull Out of...". The article has a "5 Vote" button and social media sharing options.



The screenshot shows the R-igg website. At the top, there is a navigation bar with links for Home, Login, Register, On Your Site, On Facebook, and Contact. The main header features the "R-igg" logo and buttons for "Published Stories", "Upcoming Stories", and "Submit New Story". Below the header, there is a search bar and a "Sort news by" dropdown menu with options: Recently Popular, Top Today, Yesterday, Week, Month, and Year. The main content area displays three articles, each with a "3 votes" indicator and an "R-igg It!" button. The first article is titled "Isms- 'Make Mine Freedom' & 'How to Brainwash A Nation'" and is posted by NYCnative 3 days ago. The second article is titled "Politik Ditto: MSNBC Using Liberal Blog Daily Kos For Talking Points" and is posted by MrGreyGhost 11 days ago. The third article is titled "Politik Ditto: Under Obama Unemployment Highest In 25 Years" and is posted by MrGreyGhost 9 days ago. On the right side, there is a "What is R-igg?" section and a "Categories" list with various topics like Presidential, Congress, Senate, House, Statewide, Local, Democrats, Republicans, Technology, News, U.S. News, World News, and Miscellaneous.

Study 1: Selecting diverse collections

- Diversity goals
- Sidelines algorithm, based on votes and voters
- Diversity measures, based on votes, voters, and affiliations
- Evaluation
 - Diversity metrics
 - User response

diversity goals

- Make people **feel represented**
- **Proportional representation** of viewpoints
- Expose everyone to **challenging viewpoints**

approval voting

- Each voter can vote for an unlimited number of items, up to once each
- Select the k items with the most votes

Risk of tipping?







With approval voting, a small majority may be able to claim all the top k spots.

sidelines

- Each voter can vote for an unlimited number of items, up to once each
- Selection: repeat k times
 - 1) Select item with the most votes
 - 2) Voters for that item sidelined for next t turns







For news aggregator, votes weighted according to age

documents

	A	B	C	D	E	F
 1	✓	✓		✓		✓
 2		✓		✓		✓
 3	✓	✓		✓		
 4	✓	✓				✓
 5			✓		✓	
 6			✓		✓	
total	3	4	2	3	2	3







Approval voting	Sidelines

documents

	A	B	C	D	E	F
 1	✓	✓		✓		✓
 2		✓		✓		✓
 3	✓	✓		✓		
 4	✓	✓				✓
 5			✓		✓	
 6			✓		✓	
total	3	4	2	3	2	3

Approval voting	Sidelines
B	
A	
D	
F	

documents

	A	B	C	D	E	F
 1	✓	✓		✓		✓
 2		✓		✓		✓
 3	✓	✓		✓		
 4	✓	✓				✓
 5			✓		✓	
 6			✓		✓	
total	3	4	2	3	2	3

Approval voting	Sidelines
B	B
A	
D	
F	

Wait of just 1 turn







documents

	A	B	C	D	E	F
1	✓	✓		✓		✓
2		✓		✓		✓
3	✓	✓		✓		
4	✓	✓				✓
5			✓		✓	
6			✓		✓	
total	0	0	2	0	2	0

Approval voting	Sidelines
B	B
A	C
D	
F	

Wait of just 1 turn

documents

	A	B	C	D	E	F
 1	✓	✓		✓		✓
 2		✓		✓		✓
 3	✓	✓		✓		
 4	✓	✓				✓
 5			✓		✓	
 6			✓		✓	
total	3	4	0	3	0	3

Approval voting	Sidelines
B	B
A	C
D	A
F	

Wait of just 1 turn

documents

	A	B	C	D	E	F
1	✓	✓		✓		✓
2		✓		✓		✓
3	✓	✓		✓		
4	✓	✓				✓
5			✓		✓	
6			✓		✓	
total	0	1	2	1	2	1

Approval voting	Sidelines
B	B
A	C
D	A
F	E

Wait of just 1 turn

Measures

Inclusion / Exclusion • Alienation • Proportionality

inclusion & exclusion

INCLUSION. Portion of voters who had something they voted for in the result set.

EXCLUSION. Portion who didn't.

$S_{alienation}$

How far down the result list to find a voted-for item.

For user u , result set K :

$$S_{alienation}(K, u) = \begin{cases} \min(i) & \text{where } k \in K \cap V_u \\ |K| + 1 & \text{otherwise} \end{cases}$$

so for result set K :

$$S_{alienation}(K) = \frac{\sum_{u \in U} S_{alienation}(K, u)}{(|K| + 1)|U|}$$

proportional representation

Groups $G=(g_1, g_2, g_3)$, and each voter has membership in these groups $\sum_{g \in G} u_g = 1$



For set of users U , representation vector:

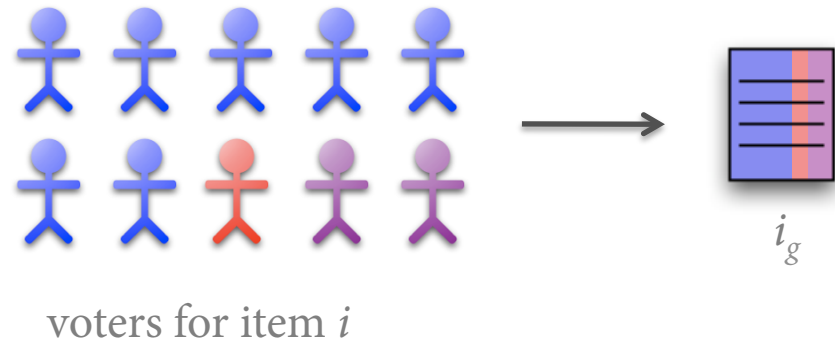
$$U_G = \frac{\sum_{u \in U} u_G}{|U|}$$



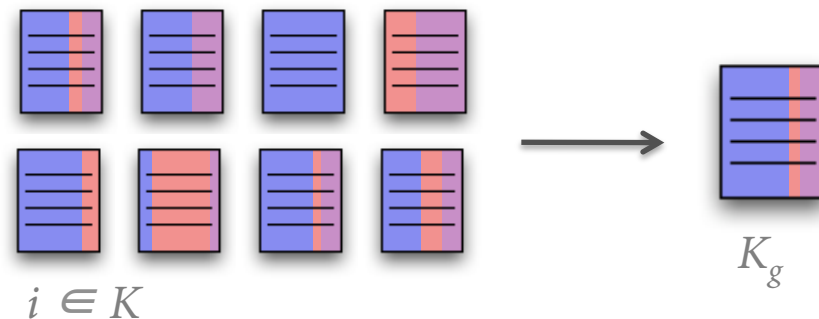
proportional representation *continued*

Items' representativeness defined according to voters' affiliations:



$$i_g = \frac{\sum_{u \in U} u_g v_{ui}}{\sum_{u \in U} v_{ui}}$$







So for set K : $K_g = \frac{\sum_{i \in K} i_g}{|K|}$



proportional representation *continued*

Compare vectors U_G  and K_G  using Kullback-Leibler divergence:

$$D(U_G \| K_G) = \sum_{g \in G} U_g \log \frac{U_g}{K_g}$$

		U_B	U_R	U_P	div_{KL}
<i>Voters</i>		0.50	0.35	0.15	0.0000
		K_B	K_R	K_P	div_{KL}
<i>Example 1</i>		0.52	0.34	0.14	0.0003
<i>Example 2</i>		0.68	0.25	0.07	0.0340
<i>Example 3</i>		0.90	0.05	0.05	0.2397

Sidelines vs. Approval Voting (pure popularity)

Digg World & Business category • Links from 500 blogs

Data source 1: Digg World & Business Category

from 11 October 2008 to 30 November 2008.

Daily averages

New stories	4600
Diggs (votes)	85000
Voters	24000

Data source 1: Digg World & Business Category

	Pure Popularity	Sidelines	<i>p</i>
Inclusion	0.651	0.668	<0.001
Alienation	0.476	0.463	<0.001

No user groups, so we couldn't calculate Proportional Representation score.



Data source 2: Links from 500 Political Blogs

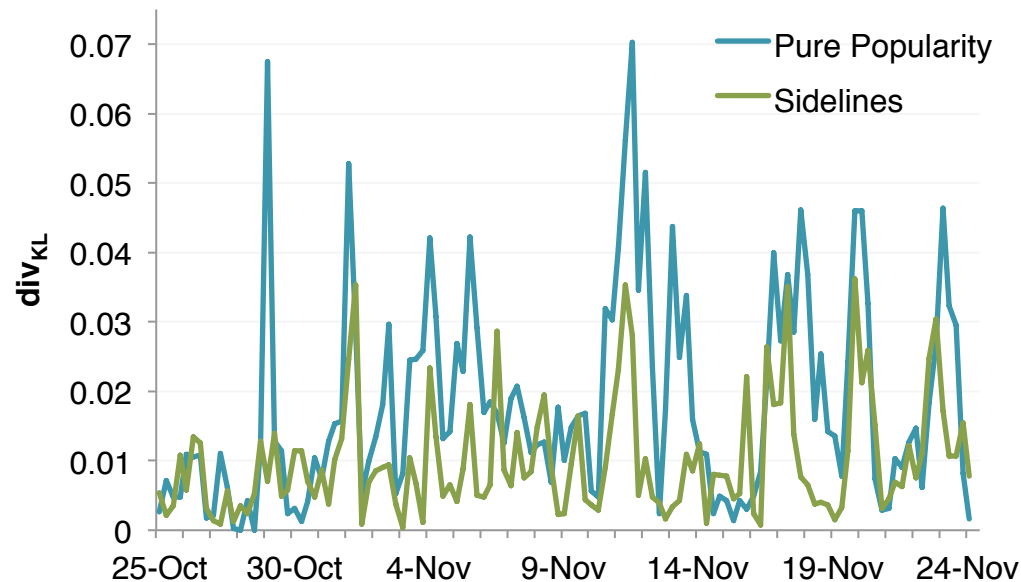
- Links treated as votes, blogs as voters
- 24 Oct – 25 Nov
- Blogs coded as liberal (52%), conservative (35%), or independent (13%)

Edges indicate Jaccard similarity above average.
Multidimensional scaling layout according to Jaccard similarity.

proportional representation

	U_B	U_R	U_P	div_{KL}
<i>Blog population</i>	0.520	0.352	0.128	-
	K_B	K_R	K_P	div_{KL}
Pure popularity	0.619	0.277	0.103	0.018
Sidelines	0.586	0.313	0.101	0.010

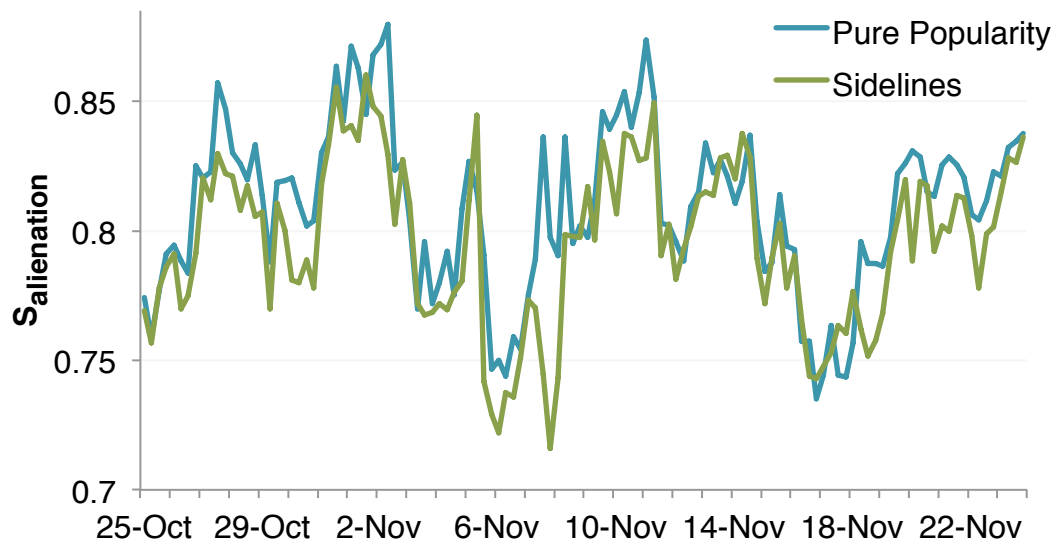
Pure popularity showed some evidence of tipping.



Some tipping in **Sidelines** as well, but significantly less (paired t-test, $p < 0.001$)

inclusion & alienation

High inclusion score for **Sidelines** (0.445) than pure popularity (0.419). (paired t-test, $p < 0.001$)



Significantly reduced $S_{\text{alienation}}$ for **Sidelines**. (paired t-test, $p < 0.001$)

noticeable differences?

Asked 40 subjects to view 12-item result sets for **Sidelines** or **Pure Popularity**.

not told there were two possibilities

Step 1: Political News and Opinion Links

Please answer each set of questions about each of the following articles.

Links should open in a new tab or window. You may need to disable popup blocking, or simply right click and select open in new window or open in new tab. This page should take about 25 minutes (out of a total of 30 minutes for the survey).

1. [BNC appears to shell out \\$1.50K for Palin fashion - Jeanne Cummings - Politico.com](#)

a. In general, do you think the facts presented in this link are true?

Not at all true 1	2	Somewhat true from the 3	4	Completely true 5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

b. In general, do you agree with the opinions presented by the author in this link?

Disagree completely 1	2	Agree somewhat 3	4	Agree completely 5	N/A (no opinions expressed)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

c. Had you seen or heard about this story before taking this survey?

Yes Not sure No

2. [Shame on McCain and Palin for using an old code word for black | Midwest Voices](#)

noticeable differences

Somewhat liberally-biased set of readers had an **89% chance of finding something challenging in the Sidelines** result set (compared with **50% for Pure Popularity**).

Binomial test, $p < 0.0001$

applications

- News aggregators based on user votes.
- Other voting systems where diversity matters (e.g. Google Moderator)



OPEN GOVERNMENT • OPEN FOR QUESTIONS

Ask your questions using the tool below. We'll close this round of open for questions and put together our responses in the New Year.

"The people of this country want marijuana decriminalization, when will marijuana be decriminalized? Why continue to spend billions of dollars to prohibit marijuana when evidence shows that the war on drugs is, as you said, "an utter failure"?"

[Free your mind](#), Guantanamo

"Why do you believe that marijuana should not be legalized? How is the prohibition of Marijuana any different than the prohibition of alcohol? 100,000 Americans die every year due to alcohol but none to Marijuana"

[James](#), CA

"The Drug War has been an incredibly expensive failure since it's inception. Meanwhile, millions of our citizens have been incarcerated for using drugs. I think we need to end this folly. What do you think, Mr. President?"

[Matt](#), Livingston, MT

"Will you consider legalizing cannabis/marijuana/hemp so that the government can regulate it, tax it, put age limits on it, and create millions of new jobs and create a multi-billion dollar industry right here in the U.S.?"

[DJ C](#), Chicago, IL

applications

- News aggregators based on user votes.
- Other voting systems where diversity matters (e.g. Google Moderator)

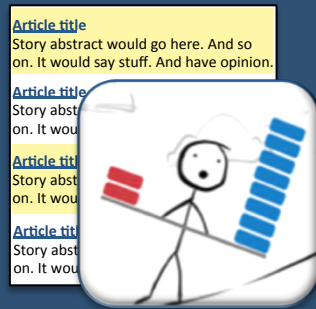
Don't need to know anything about content, user groups, or long-term voting behavior.

EXPOSURE TO POLITICAL DIVERSITY ONLINE

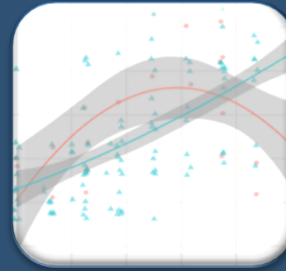


	A	B	C	D	E	F
1	✓	✓		✓	✓	✓
2		✓		✓		✓
3	✓	✓		✓		
4	✓	✓				✓
5					✓	
6					✓	
total	3	4	0	3	0	3

Selecting
diverse content



Presenting
diverse content



Preferences for
content diversity



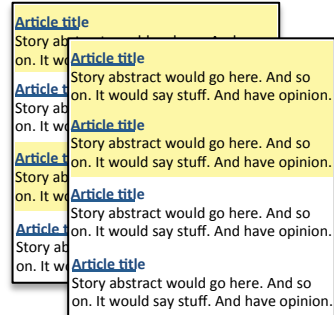
Spaces where diverse
exposure already occurs

EXPOSURE TO POLITICAL DIVERSITY ONLINE



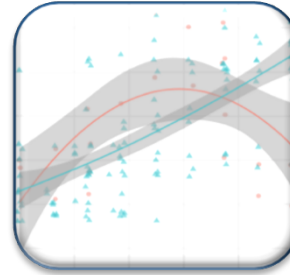
	A	B	C	D	E	F
1	✓	✓		✓		✓
2		✓		✓		✓
3	✓	✓		✓		
4	✓	✓				✓
5					✓	
6					✓	
total	3	4	0	3	0	3

Selecting
diverse content



Article title	Story abstract
Article title	Story abstract would go here. And so on. It would say stuff. And have opinion.
Article title	Story abstract would go here. And so on. It would say stuff. And have opinion.
Article title	Story abstract would go here. And so on. It would say stuff. And have opinion.
Article title	Story abstract would go here. And so on. It would say stuff. And have opinion.
Article title	Story abstract would go here. And so on. It would say stuff. And have opinion.
Article title	Story abstract would go here. And so on. It would say stuff. And have opinion.
Article title	Story abstract would go here. And so on. It would say stuff. And have opinion.

Presenting
diverse content



Preferences for
content diversity



Spaces where diverse
exposure already occurs

mixed preferences for diversity in study 1

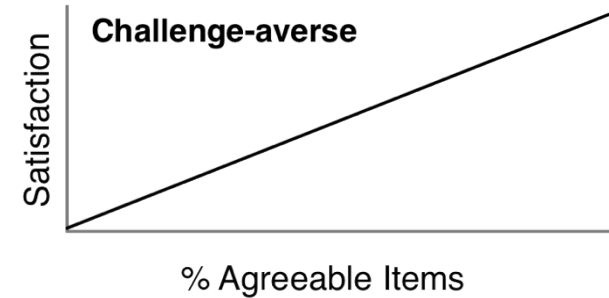
“I make a point of visiting websites with viewpoints different than my own, so I would have been happy with this.” *Sidelines*

“it’s good to know diverse opinions, but, on the other hand, I can’t take too much of the opinions that disagree with mine.” *Pure Popularity*

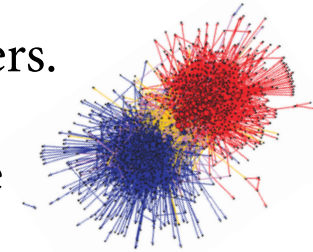
“I wouldn't use a news aggregator, but because it's liberally biased [in agreement with subject's views], I'm ok with it.”
Pure Popularity

Competing theories

CHALLENGE AVERSION. People prefer material that supports their opinions and avoid challenging information. Predicted by *selective exposure theory*. Sears & Freedman 1967, Zillmann & Bryant 1985, Frey 1986, Donsbach 1991

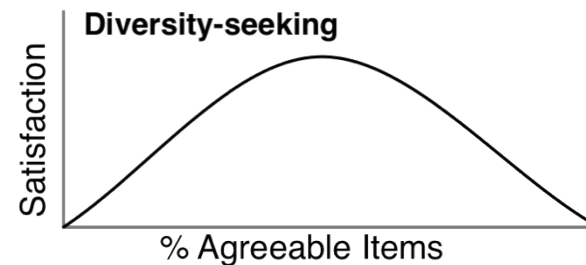


- Political bloggers predominantly link to like-minded bloggers. Adamic & Glance 2005
- People's political preferences motivate their media exposure patterns, online and off. Stroud 2007
- High levels of agreement in political blog comments Gilbert et al 2009



Competing theories

DIVERSITY SEEKING. People prefer information that contains both challenging and supporting opinions.

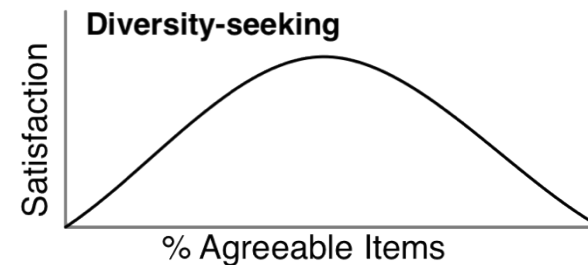
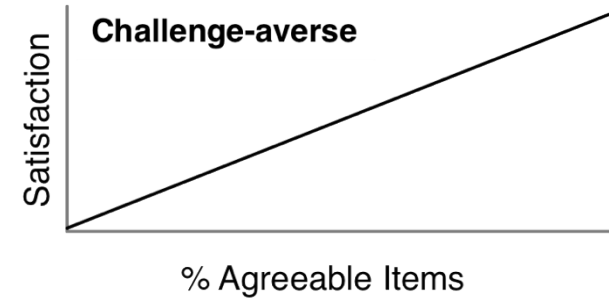


- Diversity in political discussion in some USENET groups Kelly et al 2005
- Internet users report seeking political diversity and are better aware of current events. Stromer-Galley 2003, Pew IALP 2004

Competing theories

CHALLENGE AVERSION. People prefer material that supports their opinions and avoid challenging information. Predicted by *selective exposure theory*. Sears & Freedman 1967, Zillmann & Bryant 1985, Frey 1986, Donsbach 1991

DIVERSITY SEEKING. People prefer information that contains both challenging and supporting opinions.



Study 2: Reader Preferences and Presentation

How much challenge & support are tolerable or necessary?

Munson SA, Resnick P. (2010). "Presenting Diverse Political Opinions: How and How Much," *CHI* 2010.

Study 2: Design

Inclusion / Exclusion • Alienation • Proportionality

Study 2 Design: Overall

1. Show people with known political biases a list of links with a predicted percent of agreeable items.



2. Vary the presentation of items. If people are challenge averse, can they be nudged to tolerate more challenging items?

- 1** people with known political biases
- 2** links with a predicted percent of agreeable items

Study 2 Design: Subjects

Recruited via Mechanical Turk

Restricted to people in US.

Qualification task

- Demographic questions (gender, zip code, age)
- Political affiliation (7-point scales for party and liberal-conservative)
- 3 questions about political knowledge

Quality control

During study, subjects randomly re-asked demographic questions. Responses from 5 subjects discarded for impossible or improbable replies.

SUBJECTS

Age: 34.3 years

median: 31 years,

standard dev: 11.8 years

strong

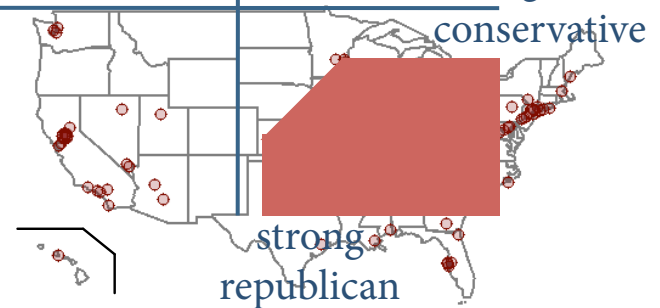
democrat

men, 87 women

Location: 37/50 states

strong
liberal

strong
conservative



n

Article manipulation check: 30

Collection: 40 (satisfaction)

38 (bias –

manipulation check)

Study 2 Design: Articles

Link source

- Items linked from 500 political blogs; blogs coded as liberal, independent, conservative
- Daily: select 40 most-linked stories from the previous 24 hours that had $\geq 2:1$ liberal:conservative or conservative:liberal link ratio
- Filter out tweets, YouTube videos, Wikipedia articles, items not matching predicted bias. Average of 23 items / bias / day remain.

Article manipulation check

- 30 turkers. Shown links, asked if they agree or disagree. Each link seen by ≥ 3 turkers.
- Kept links to which they reacted consistent with expectation.

Study 2 Design: Experiment

3 PRESENTATION conditions, between subjects.



Baseline: article title (linked) + abstract



Highlight: Agreeable items highlighted



Highlight + Order: Agreeable items highlighted and placed first

Varying PERCENT OF AGREEABLE ITEMS

- [Why the public option matters \(Paul Krugman - NYTimes.com\)](#)

Most arguments against the public option are based either on deliberate misrepresentation of what that option would mean, or on remarkably thorough misunderstanding of the concept, which persists to a frustrating degree. Aside from the essentially circular political arguments — centrist Democrats insisting that the public option must be dropped to get the votes of centrist Democrats — the argument against the public option boils down to the fact that it's bad because it is, horrors, a government program. And sooner or later Democrats have to take a stand against Reaganism — against the presumption that if the government does it, it's bad.

- [It's come to this August wasn't a setback for us at all, says Gibbs \(Hot Air\)](#)

In which Beltway Bob channels Baghdad Bob. Despite a month of near-daily "Obama's approval rating at new low" headlines and deteriorating numbers for ObamaCare itself, the spin oozes unceasingly forth, with Gibbs mindlessly asserting that the left is closer than ever to fulfilling its dream of the boondoggle to end all boondoggles. Er, closer than they were last month? Wasn't the whole point of trying to ram a bill through Congress before the recess to avoid precisely the sort of inevitable grassroots backlash that stirred in August? I realize it's Gibbs's job to lie for his boss, but providing comic fodder for righty blogs with transparent garbage like this can't be helping much. At another point during the briefing, Tapper asked him what the big deal is about tomorrow night's speech given that Obama's been recycling the same rote talking points for months. Gibbs's answer: Well, it's a big forum. The correct answer, via Jay Cost: They're out of moves. It's Hail Mary time.

- [Kingston Claims Health System Worked "Very Well" For Bankrupt Cancer Survivor Without Insurance \(Think Progress\)](#)

At a recent town hall held by Rep. Jack Kingston (R-GA), an elderly gentleman named Jim Parker stood up and told the congressman that he was recently treated for colon cancer. "I did not have insurance," he said, because "things didn't quite work out" after he started his own business. Parker informed Kingston that "a friend of mine was in the same position, and we buried him last January." Kingston responded by telling the man that "you did do very well" because he was able to get treated when he arrived at the hospital. Parker responded, "I am functionally bankrupt!" Kingston cut him off and reiterated his point. Kingston has been telling the media that the August town halls have helped to defeat Obama's health care plan. And he recently told Politico that the GOP is "going to keep the nightmare going through the fall." A nightmare all too real for people like Jim Parker.

- [Gay Marriage Rage \(Maggie Gallagher - Townhall.com\)](#)

I was in Maine on the day that marriage qualified for the ballot this November. I went to Maine as president and founder of the National Organization for Marriage, which helped local groups organize the signature drive in Maine, as we did in California for Proposition 8. Most of the people in Maine were enthusiastic, but one clergyman asked me, "Shouldn't we live with our neighbors in peace?" His question haunts me for its debased presumptions: Is using democracy to fight for shared values somehow an act of war against our neighbors? "Agree with me or you're a hater" is not the authentic voice of peace and tolerance. But the question underscored an increasingly obvious truth: Gay marriage advocates now rage against Americans who disagree with them, no matter how civilly we conduct the debate. They believe only one side has the moral right to be heard.

- [Perry making use of stimulus boost \(Houston Chronicle\)](#)

Gov. Rick Perry rallied opposition to federal stimulus spending, but he now is the manager of one of the biggest pots of federal gold in Texas: crime grants to local law enforcement agencies. And those grants have become an integral part of Perry's political machine. Perry in the past has decided what law enforcement agencies receive about \$23 million a year in Edward Byrne Memorial Justice Assistance grants. Now, because of the American Recovery and Reinvestment Act, Perry will have an additional \$90 million to hand out. While Perry's office is the conduit for the federal money, the governor chooses which agencies receive the money and how it is spent. The political payoff has been great. About \$6 million in Byrne grants helped Perry win the endorsement of border sheriffs in 2006. Every time Perry doles out the federal Byrne grants, he sounds like the money is his.

Suppose this was the front page of a political opinion aggregator. How would you feel about the viewpoints represented in it?

- Very dissatisfied
- Somewhat dissatisfied
- Neither satisfied nor dissatisfied
- Somewhat satisfied
- Very satisfied

Please say a bit about why you responded the way you did:

Submit

Collection Questions

ASSIGNED TO EITHER:

Satisfaction

40 subjects

“Suppose this was the front page of a political opinion aggregator. How would you feel about the viewpoints represented in it?”

5 point Likert-like scale, Very Dissatisfied to Very Satisfied

Bias (manipulation check)

38 subjects

“What, if any, is the political bias of this collection?”

5 point Likert-like scale, Very Liberal to Very Conservative

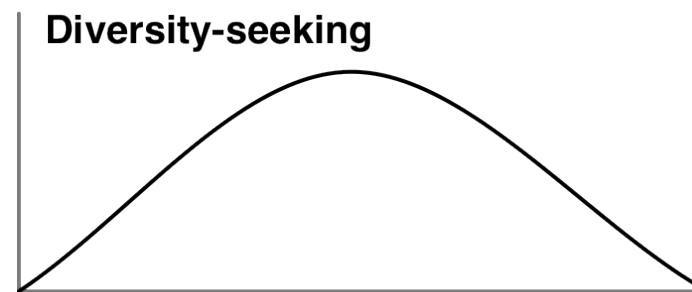
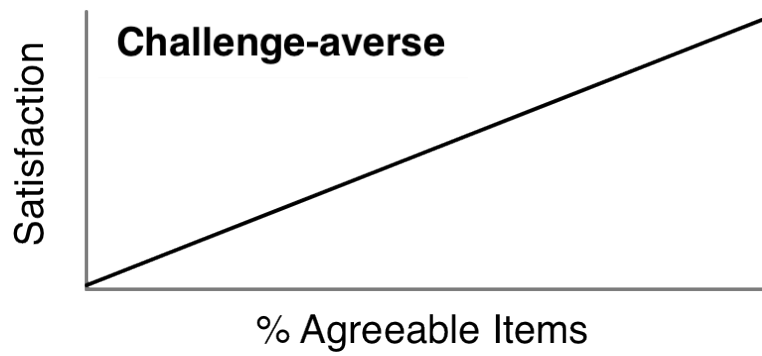
EVERYONE:

Why they gave the rating they did (open-ended)

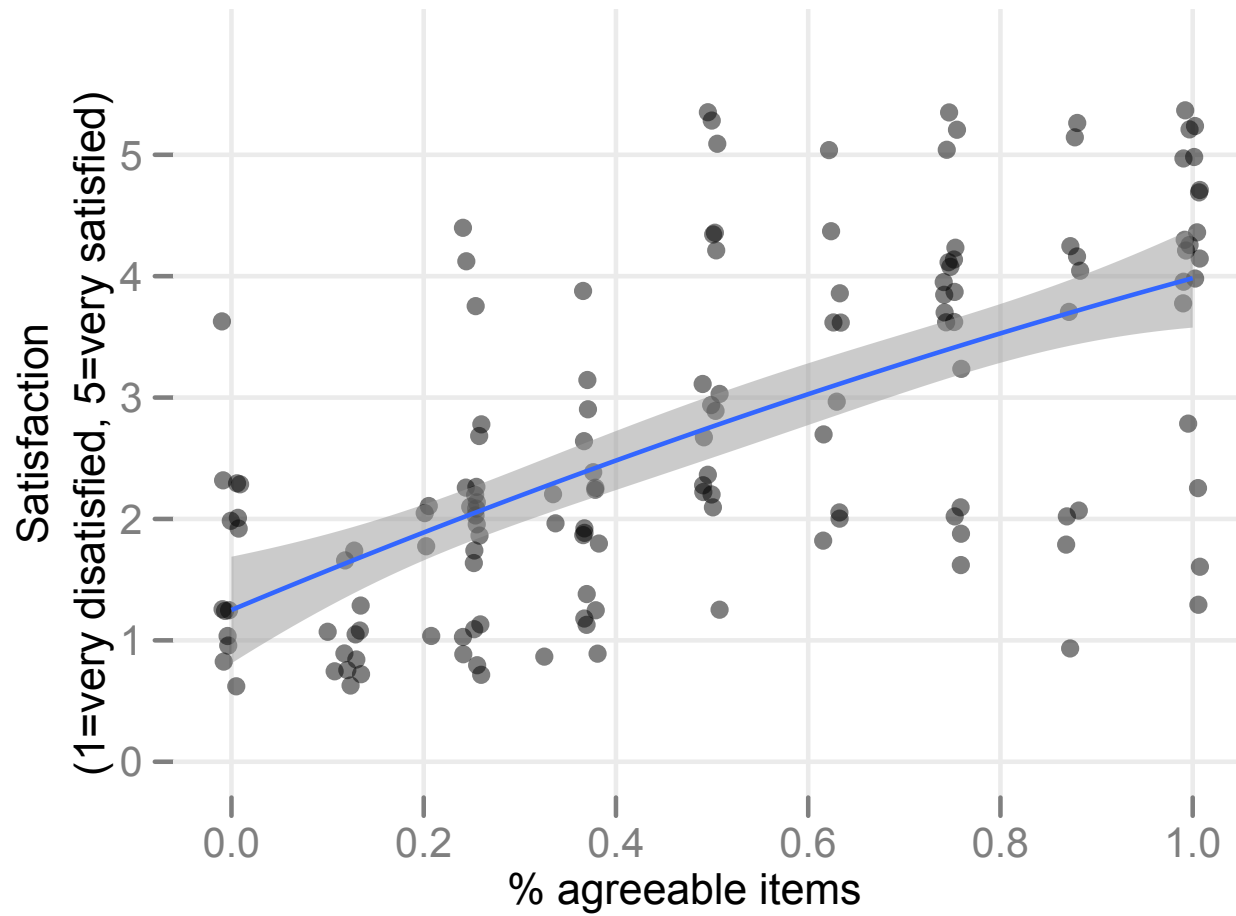
Random demographics check

Study 2: Results

Results: Diversity preferences



Diversity preferences



Coded as diversity-seeking if...

WANTED MORE CHALLENGE

“The articles in this list showed some of both sides on some issues, but on other issues like health care was rather one sided. If that and a few other articles had been given two sides I would be completely satisfied. I like to read both sides even though I am mostly conservative.”

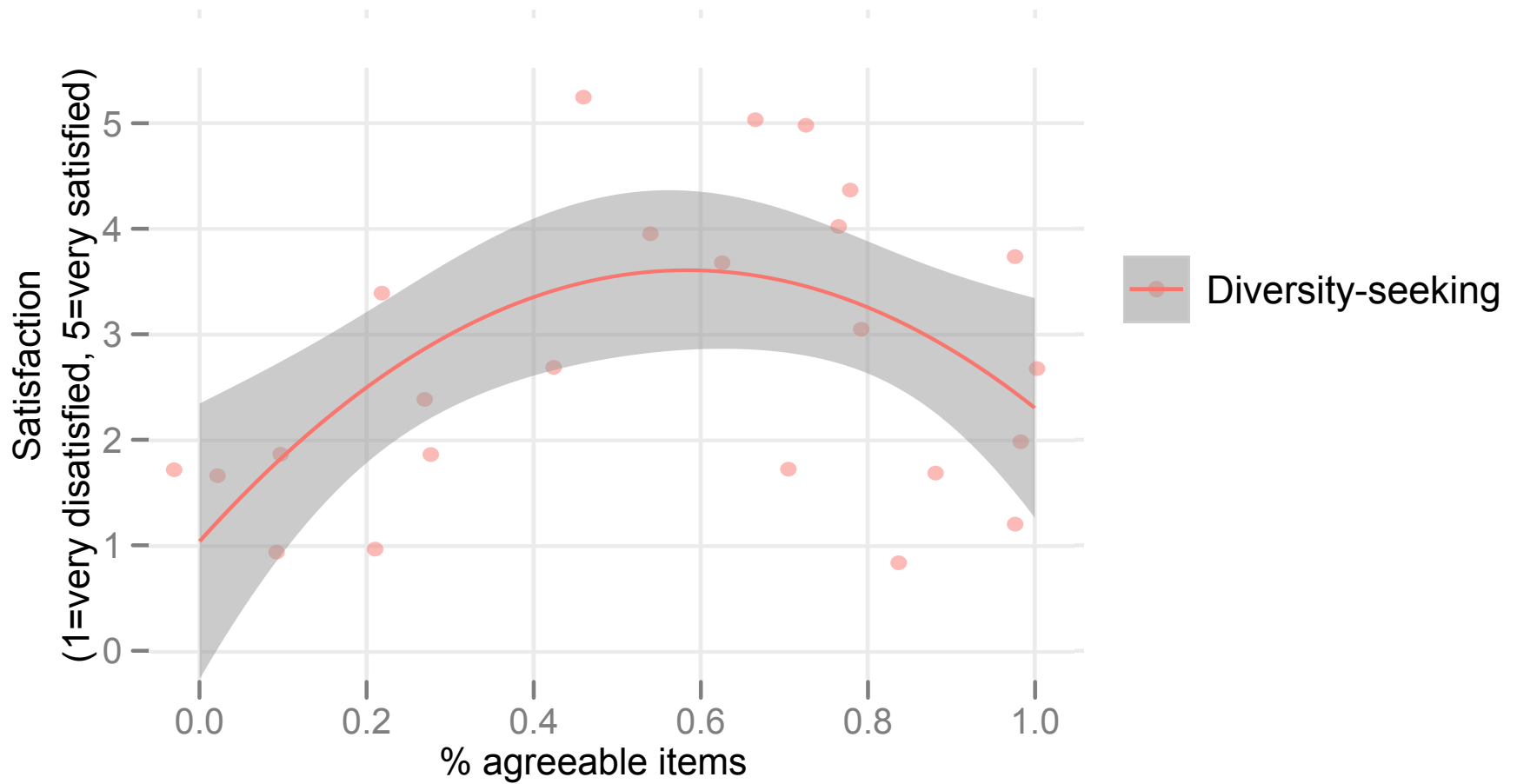
WOULDN'T WANT LESS CHALLENGE

“There is an even distribution of right and left wing articles. I think it is best to cover both sides of the issue.”

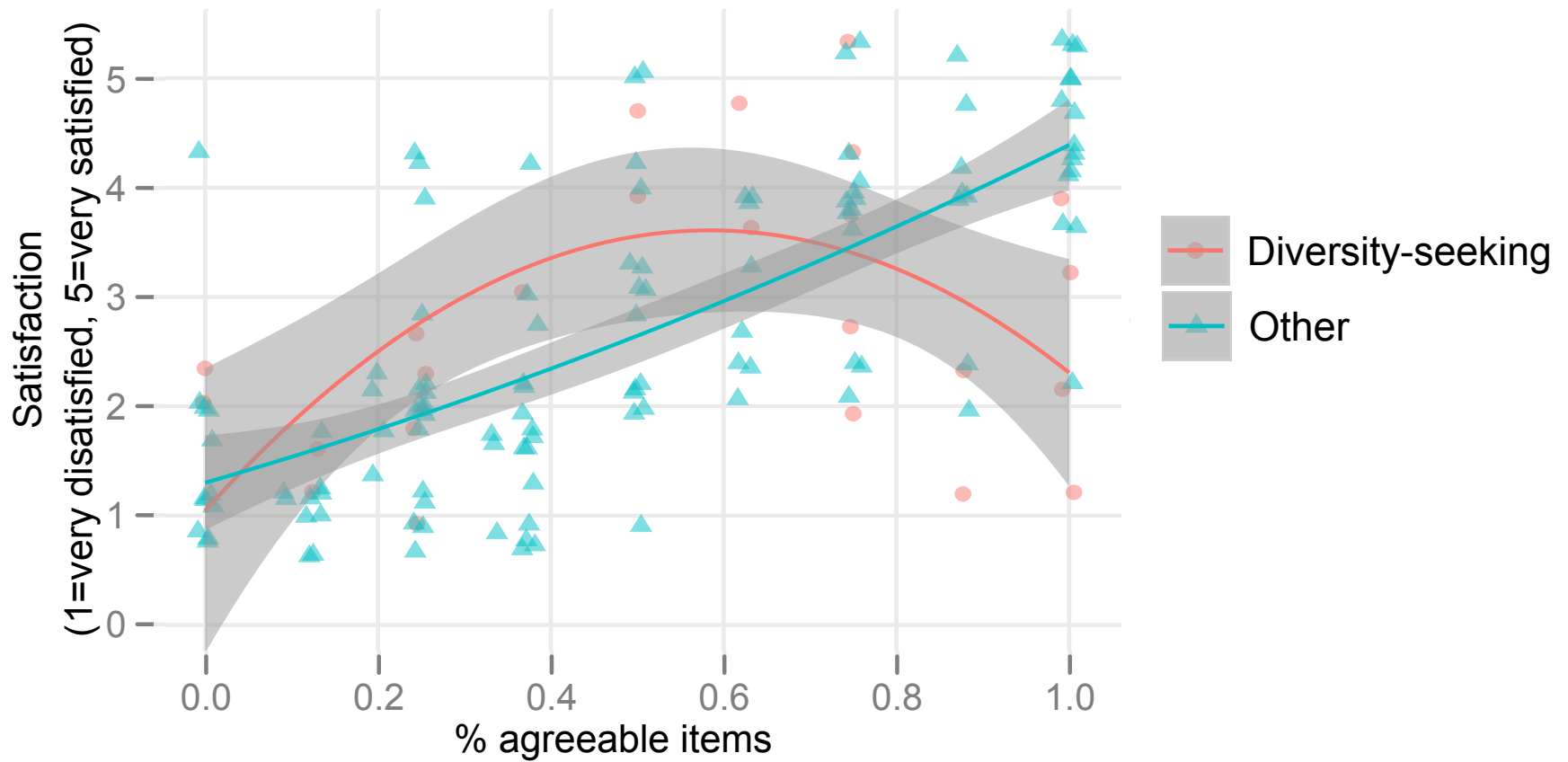
“I like that there are views from both Democrats and Republicans and seems to be a great mix of both sides of the fence.”

Cohen's kappa: 0.89

Diversity preferences



Diversity preferences



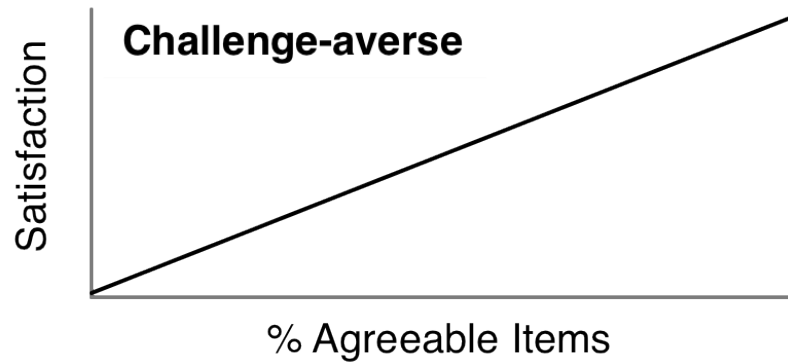
Model for satisfaction

	β	Std Err	p-value
Intercept	1.30	0.23	<0.001
% Agreement	2.28	0.76	<0.010
(% Agreement) ²	0.80	0.66	ns
Diversity seeking	-0.25	0.63	ns
% Agreement * Diversity seeking	6.49	3.16	<0.050
(% Agreement) ² * Diversity seeking	-8.32	3.11	<0.050

OLS model for reader satisfaction (1-5).

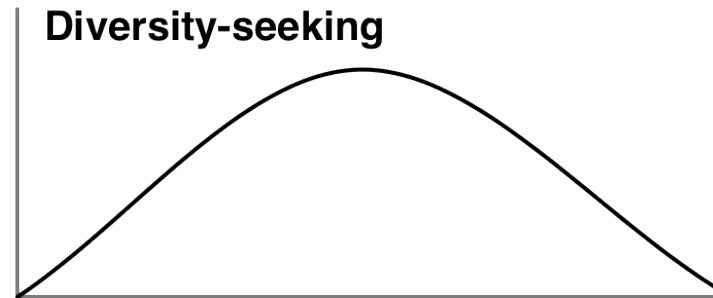
$n=145$ from 40 subjects, clustered standard errors, $F(5,39) = 29.63$ ($p < 0.001$); adjusted R^2 0.4776.

Evidence for challenge aversion & diversity seeking



30 SUBJECTS

Can we nudge these subjects to be satisfied with a more diverse set of items?



10 SUBJECTS

Results: Presentation

BASELINE

[Article title](#)
Story abstract would go here. And so on. It would say stuff. And have opinion.

[Article title](#)
Story abstract would go here. And so on. It would say stuff. And have opinion.

[Article title](#)
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HIGHLIGHT

[Article title](#)
Story abstract would go here. And so on. It would say stuff. And have opinion.

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HIGHLIGHT + ORDER

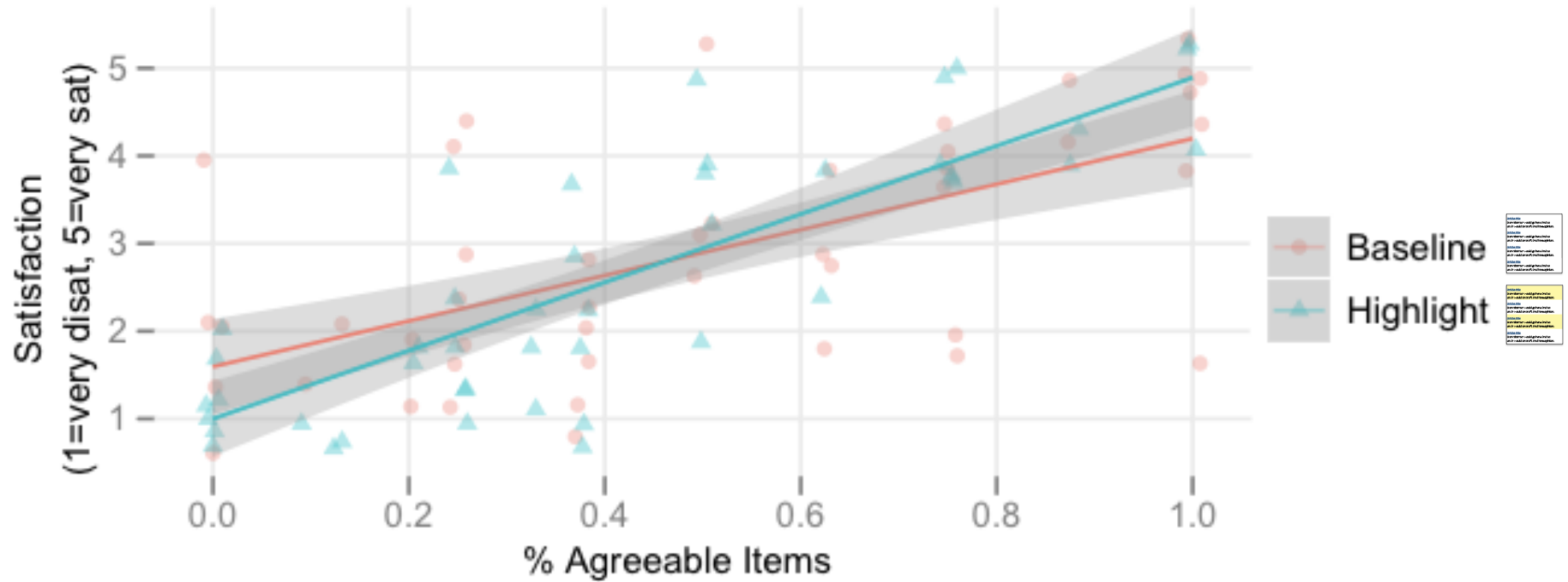
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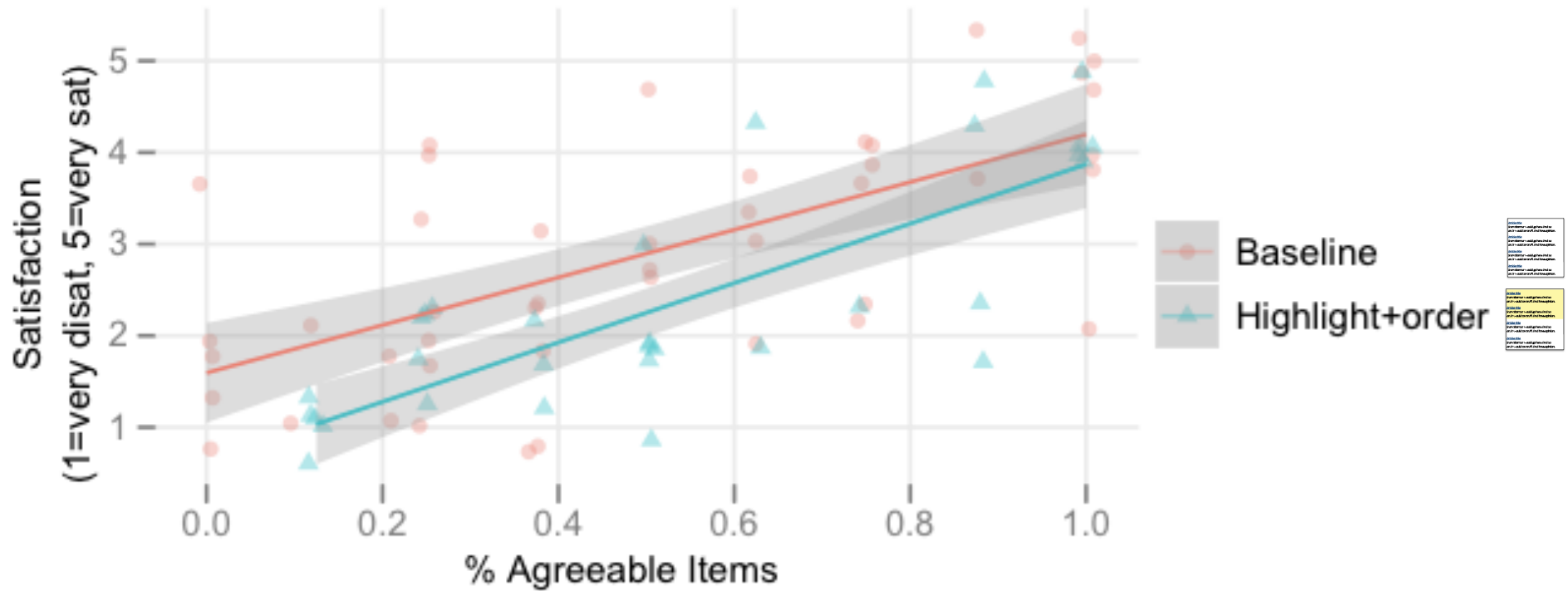
[Article title](#)
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Highlighting: Stronger reactions



Highlighting + Agreeable First: Decreased satisfaction?

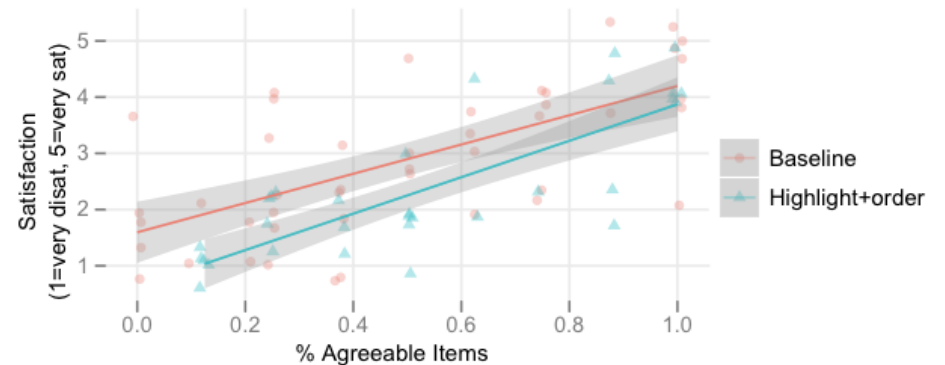
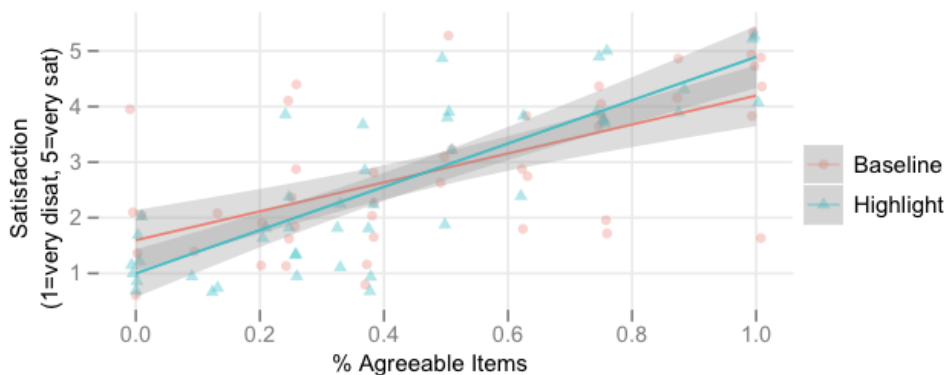


Results: Combined Model for Satisfaction

	β	Std Err	p-value
Intercept	1.59	0.29	<0.001
% Agreement	2.60	0.36	<0.001
Highlighting only	-0.60	0.41	ns
% Agreement * Highlighting only	1.29	0.60	<0.05
Agreeable first	-0.97	0.31	<0.010
% Agreement * Agreeable first	0.64	0.44	ns

OLS model for a challenge-averse reader's satisfaction (1-5).

$n = 121$ from 30 subjects, clustered standard errors, $F(5,29) = 67.42$, $p < 0.001$, adjusted $R^2 = 0.564$.



Study 2: Conclusions & Future Work


Changing the conversation

DIFFERING INDIVIDUAL PREFERENCES for opinion diversity. Challenge aversion is not an inherent human characteristic, but neither is diversity seeking.

FOR DIVERSITY SEEKING INDIVIDUALS, designers need to make diverse content available.

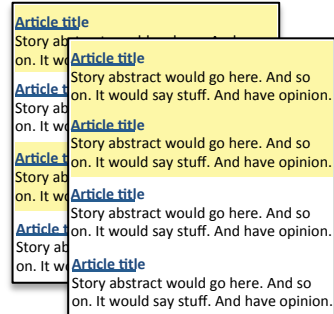
FOR CHALLENGE AVERSE INDIVIDUALS, better nudges than the simple presentation techniques I tried, are needed. This is ongoing work.

EXPOSURE TO POLITICAL DIVERSITY ONLINE



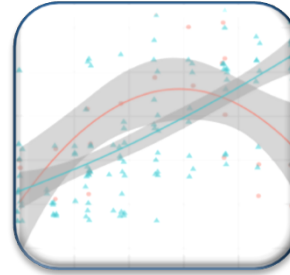
	A	B	C	D	E	F
1	✓	✓		✓		✓
2		✓		✓		✓
3	✓	✓		✓		
4	✓	✓				✓
5					✓	
6					✓	
total	3	4	0	3	0	3

Selecting
diverse content



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Presenting
diverse content

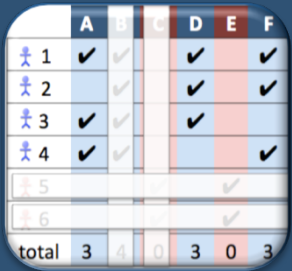


Preferences for
content diversity



Spaces where diverse
exposure already occurs

EXPOSURE TO POLITICAL DIVERSITY ONLINE

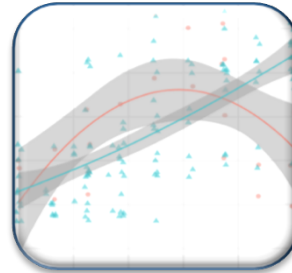


	A	B	C	D	E	F
1	✓	✓		✓		✓
2		✓		✓		✓
3	✓	✓		✓		
4	✓	✓				✓
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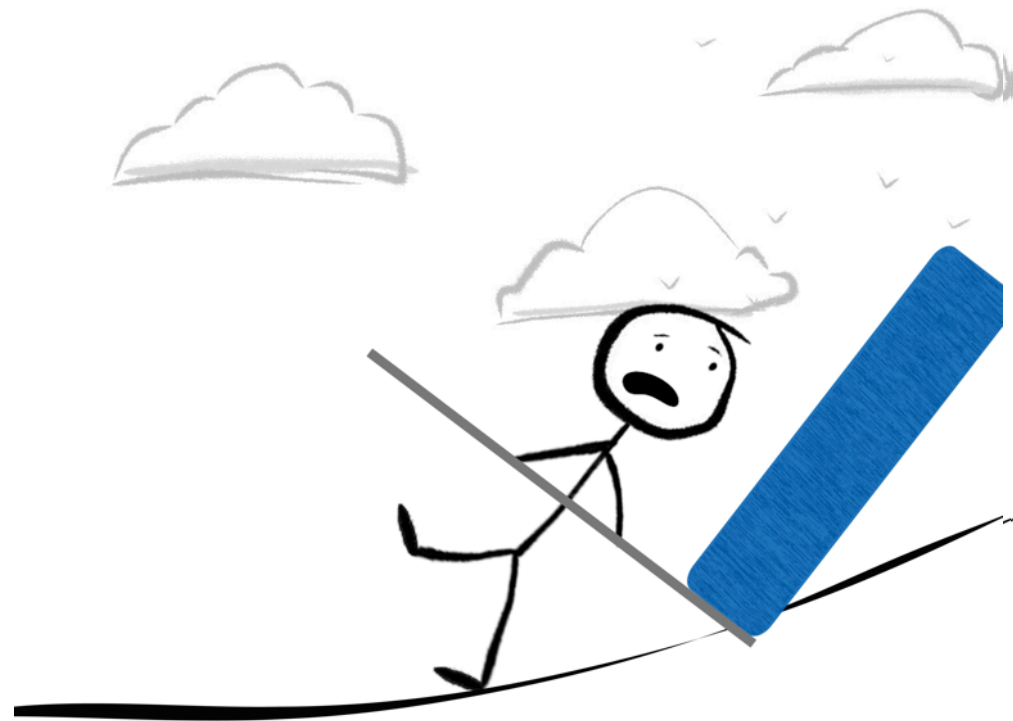
Study 3: Preferences, nudges, and personality.

Study 3: Aims

PRESENTATION. Field evaluation of one technique to nudge more diverse political news-reading.

PREFERENCES & PERSONALITY. Do personality traits predict news-reading behavior? Do they predict how responsive individuals are to nudges?

Balancer



Balancer



balancestudy.org/balancer

Balancer: **Study design**

FIELD DEPLOYMENT, Autumn 2012.

FEEDBACK.

Classified based on domain (& sometimes path).

TWO CONDITIONS.

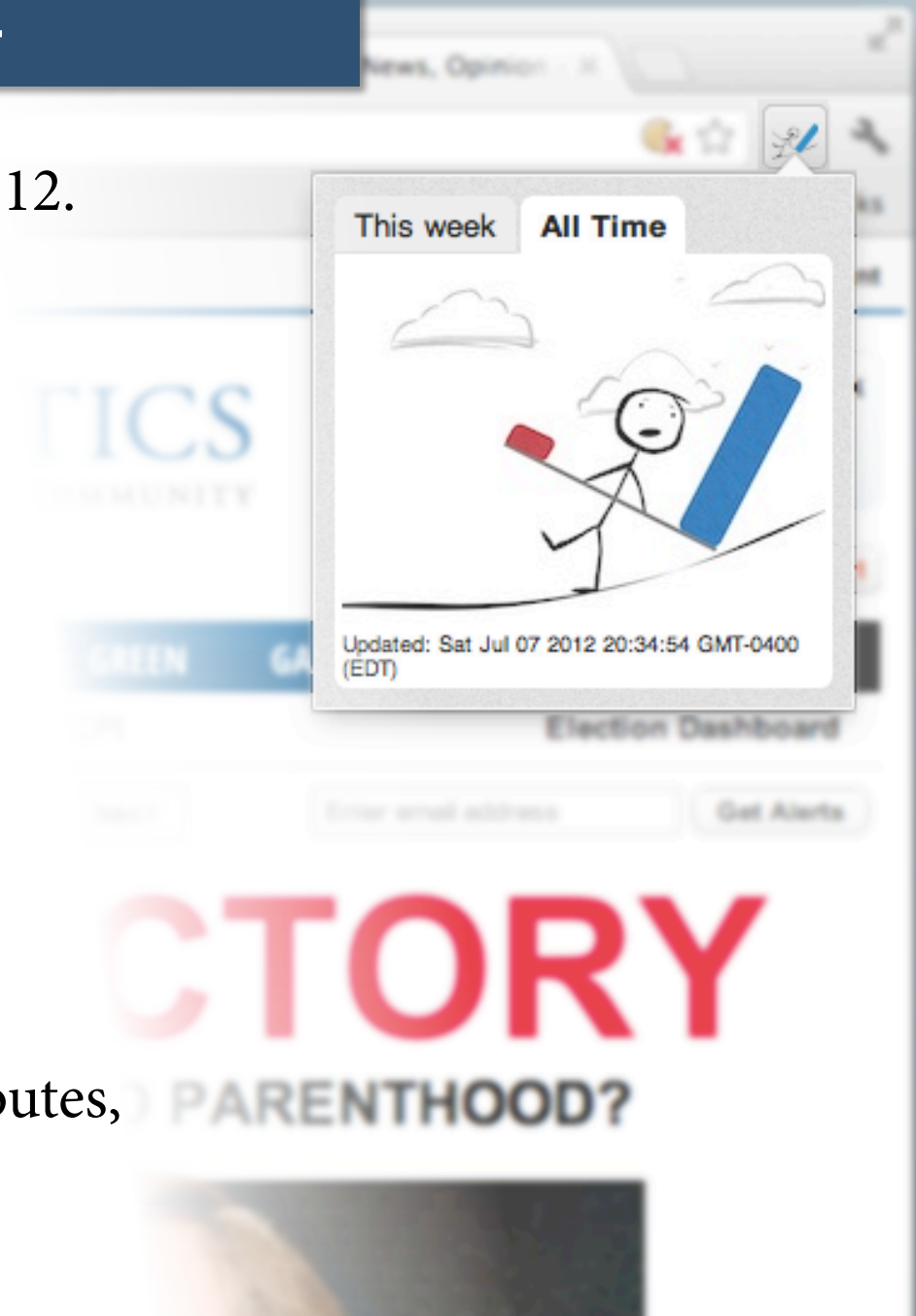
Immediate feedback.

Delayed feedback (28 days).

DATA.

Before & after browsing history.

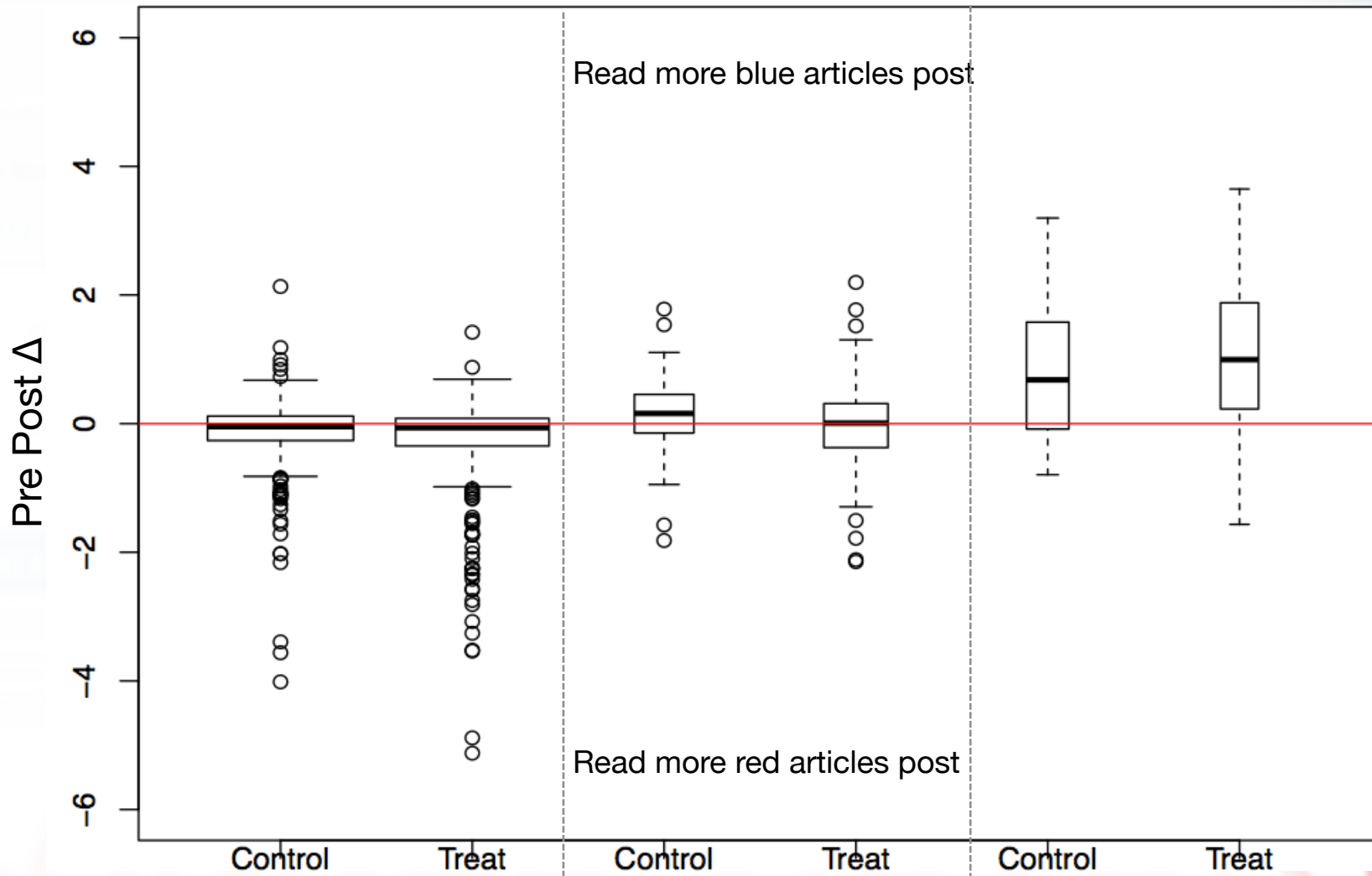
Demographics, personality attributes, & political preferences.



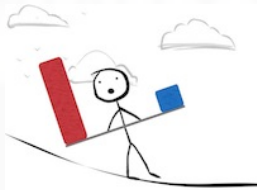
Balancer: Preliminary Results

SMALL CHANGES IN BEHAVIOR.





Need red



Balanced



Need blue



VT-0400

Get Alerts

Balancer: Preliminary Results

SMALL CHANGES IN BEHAVIOR.

Median “needs red” user (~187 news pageviews every four weeks) made:

- ~4 new monthly visits to a far right site (e.g., *The National Review* or *Fox News*),
or
- 20 new monthly visits to a neutral site (e.g., *ABC News*).



ORY
NTHOOD?

Balancer: Preliminary Results

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PERSONALITY TRAITS

not predictors for reading behavior or persuadability (so far).



ORY
NTHOOD?

EXPOSURE TO POLITICAL DIVERSITY ONLINE

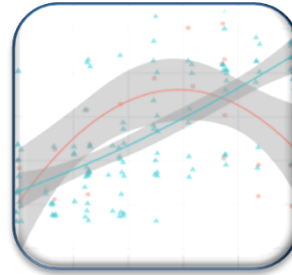


	A	B	C	D	E	F
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2		✓		✓		✓
3	✓	✓		✓		
4	✓	✓				✓
5					✓	
6					✓	
total	3	4	0	3	0	3

Selecting
diverse content



Presenting
diverse content



Preferences for
content diversity



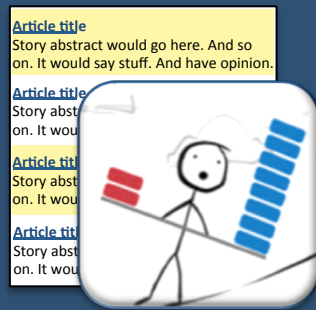
Spaces where diverse
exposure already occurs



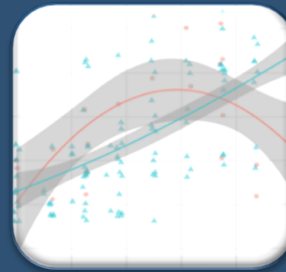
EXPOSURE TO POLITICAL DIVERSITY ONLINE

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2		✓		✓		✓
3	✓	✓		✓		
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Selecting
diverse content



Presenting
diverse content



Preferences for
content diversity



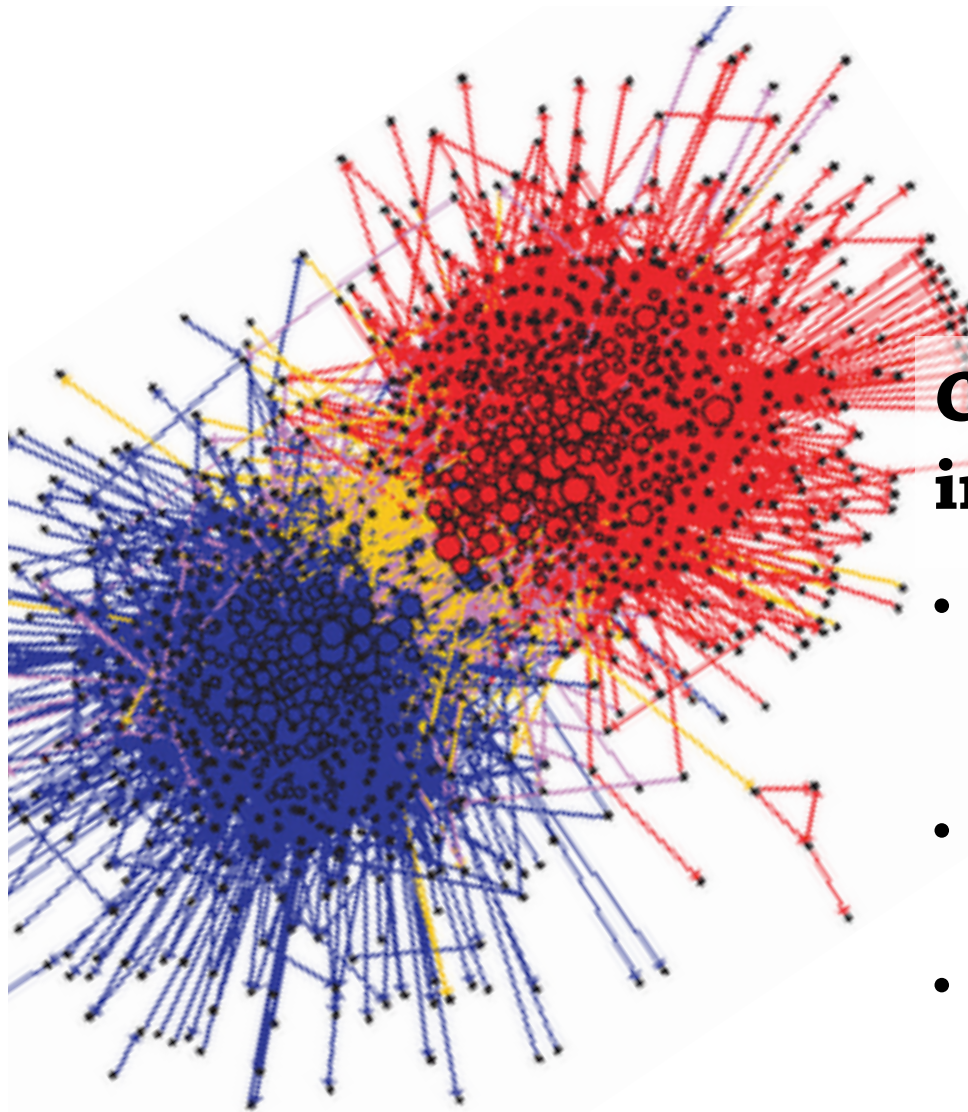
Spaces where diverse
exposure already occurs



Study 4: Politics in nonpolitical spaces online

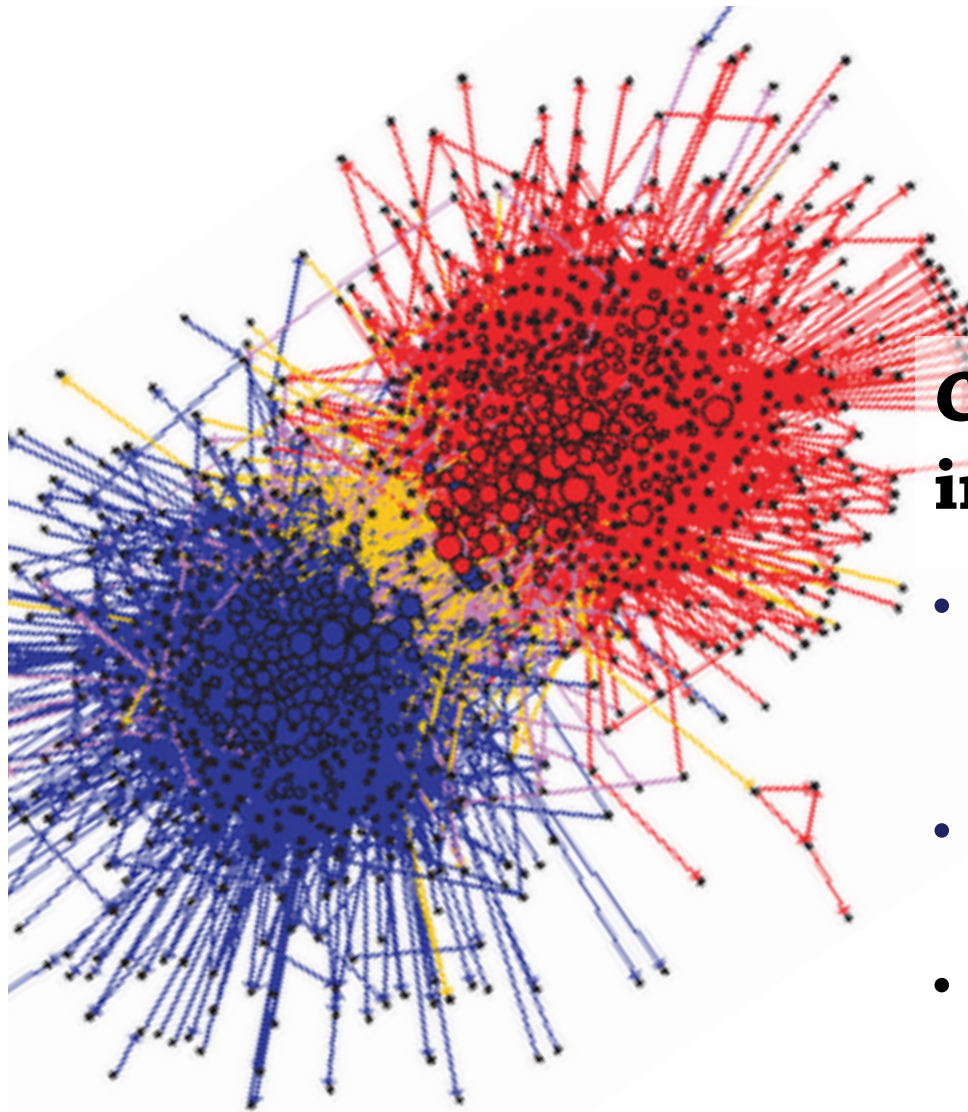
Are there online spaces where serendipitous encounters with diverse political viewpoints occur?

Munson SA, Resnick P. (2010). "Presenting Diverse Political Opinions: How and How Much," *CHI 2010*.



Concerns about homophily in online political discourse

- Political bloggers predominantly link to like-minded bloggers
Adamic & Glance 2005
- Political blog readers “self-segregate”
Lawrence, Sides, Farrell 2010
- High levels of agreement in comment threads on political blogs
Gilbert et al 2009
- Challenge aversion prevalent in preferences for political news aggregators
Munson & Resnick 2010



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the White House



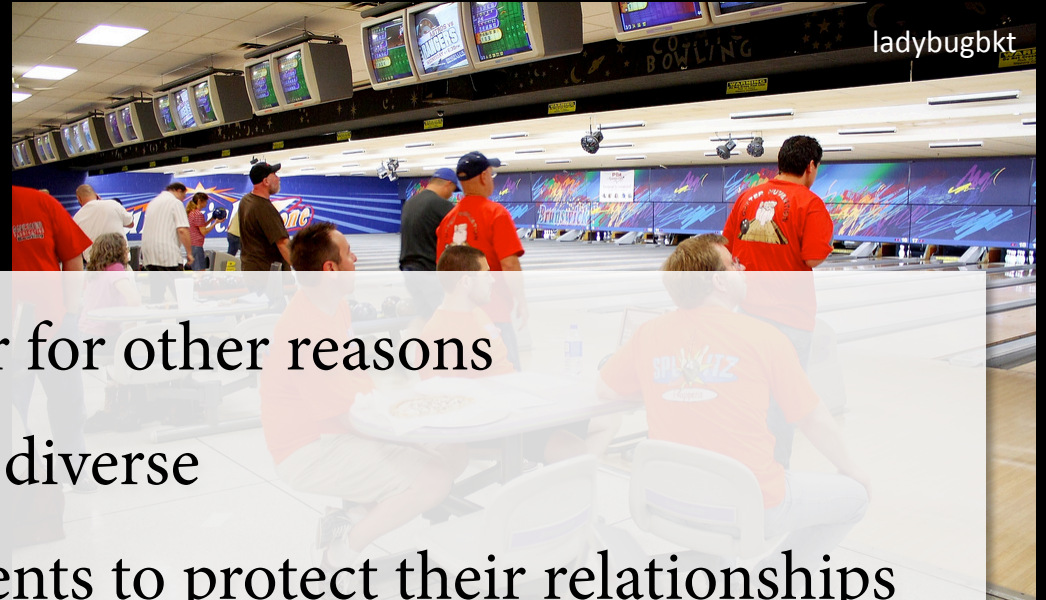
jmtimages



Mr. Wright

ight





People who come together for other reasons

- may be more politically diverse
- listen and frame arguments to protect their relationships

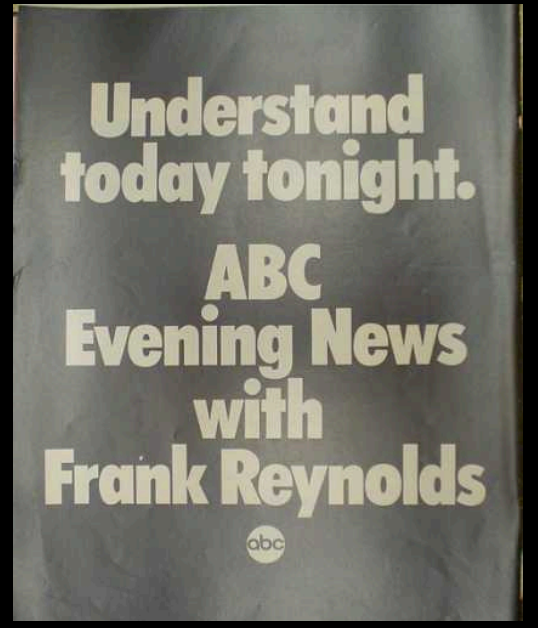
... but they may also avoid political discussion or disagreement, also to protect relationships.



El Caganer



RobinJP



50% of adults watched one of three broadcasts in 1970.

by 2007, this had dropped to just **10%**

Prior 2007, Bennett & Iyengar 2008



**NBC
NIGHTLY
NEWS**
JOHN CHANCELLOR

Understand
today tonight.
**ABC
Evening News
with
Frank Reynolds**



ALJAZEERA



TIME WARNER CABLE 3:15pm TV GUIDE

That '70s Show 3:30-4p 60 FX
Repeat, "Baby Don't You Do It", (TV-14, L, D), (2004), Donna and...

Today	3:30p	4:00p	4:30p
60 FX	That '70s Show	That '70s Show	Constantine
61 TBS	King of Queens	Seinfeld	Seinfeld
62 CNN	Situation Room		
63 KQCW	What I Like About You	Reba	Reba



If people can easily seek out agreeable news and filter out disagreeable, when they seek political news, will people still be inadvertently exposed to challenging views?

signs that politics is not taboo in non-political spaces online

- Discussion of political candidates by Twitter users
Tumasjan et al 2010; Diakopoulos & Shamma 2010; Conover et al 2011
- 8% of US adults posted political content to a social network site during 2010 midterm elections, 11% discovered for whom their friends voted Smith/Pew 2011
- People say they encounter cross-cutting political discussion online, but in non-political spaces
Wojcieszak & Mutz 2009

questions for study 4

- How prevalent are political blog posts on non-political blogs?
- What is the distribution of political blog posts across different categories of blogs?
- When readers of non-political blogs encounter political posts, do they treat them as taboo?

sample of blogs



Poll Blogger.com's recently updated list. 23,904 blogs

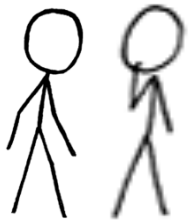
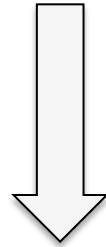
6-20 January 2008

Kept only blogs that:

- had at least 5 posts,
- were written in English, and
- had existed since at least 31 August 2007.



Poll Blogger.com's recently updated list. 23,904 blogs

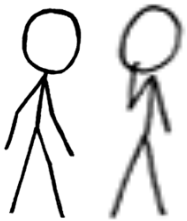
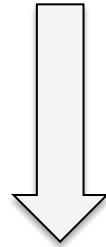


Research team inspects & eliminates spam blogs and blogs only partially in English.

8,861 blogs

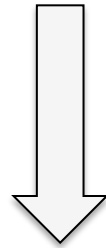


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Code posts as political / nonpolitical, classify blogs by genre. Eliminate additional spam & partially English blogs.

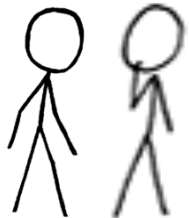
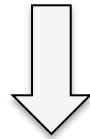
8,765 blogs
2.3M posts

classifying posts as political or not

Broad definition of political: any mention of public policy, campaigns, and elected or appointed officials, and did not restrict this definition to US politics.

classifying posts as political or not

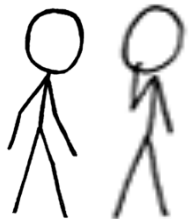
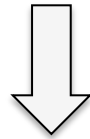
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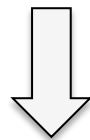
Research team categorized 6,691 posts as political or not. (oversampled political posts; $\kappa = 0.969$)

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Broad definition of political: any mention of public policy, campaigns, and elected or appointed officials, and did not restrict this definition to US politics.



Research team categorized 6,691 posts as political or not. (oversampled political posts; $\kappa = 0.969$)



Used to train multinomial naïve Bayes classifier, classify remaining posts. ($\kappa = 0.902$)

217,727 political posts and 2,136,551 non-political posts.

estimating prevalence

Simple tally is problematic:

- overestimate percent political on blogs with few political posts (more opportunities for false positives)
- Underestimate political posts on blogs with many political posts (more opportunities for false negatives)

estimating prevalence

Simple tally is problematic:

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Consider a blog that is *always* political:

Political posts



False negatives (12.6%)

Consider a blog that is *never* political:

Non-political posts



False positives (0.5%)

estimating prevalence

Simple tally is problematic:

- overestimate percent political on blogs with few political posts (more opportunities for false positives)
- Underestimate political posts on blogs with many political posts (more opportunities for false negatives)

When reporting about blogs or bins, we handle this with revised estimates (p^*):

$$p^* = \frac{\textit{prevalence} - (1 - \textit{specificity})}{\textit{sensitivity} - (1 - \textit{specificity})}$$

(Zhou et al 2002)

categorizing blogs



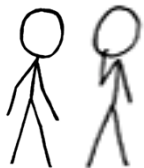
Classify blogs into seven categories: diary, hobby & fan, professional & sales, politics, religion, civic & issue, health & wellness, and ethnic / cultural.



+

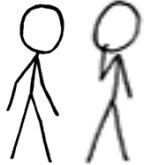
get-another-label

At least 5 categorizations per blog, determine final category with get-another-label (Sheng, Provost, Ipeirotis 2008)



Check against ratings from research team
(overall $\kappa = 0.72$)

coding comments

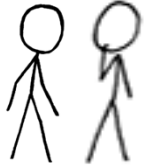


244 threads classified by research team.

	Decision	% agree	κ
Post	Had some political content?	100%	1.00
	Had other, non-political topics?	100%	1.00
Comment	Spam?	98%	0.87
	Engaged political content of post?	93%	0.79
	Agreed, disagreed, or neither with post's author?	91%	0.84
	Said the blog post's political content did not belong?	100%	1.00

Inter-rater reliability on 56 comments on 42 blog posts.

coding comments

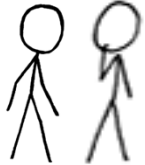


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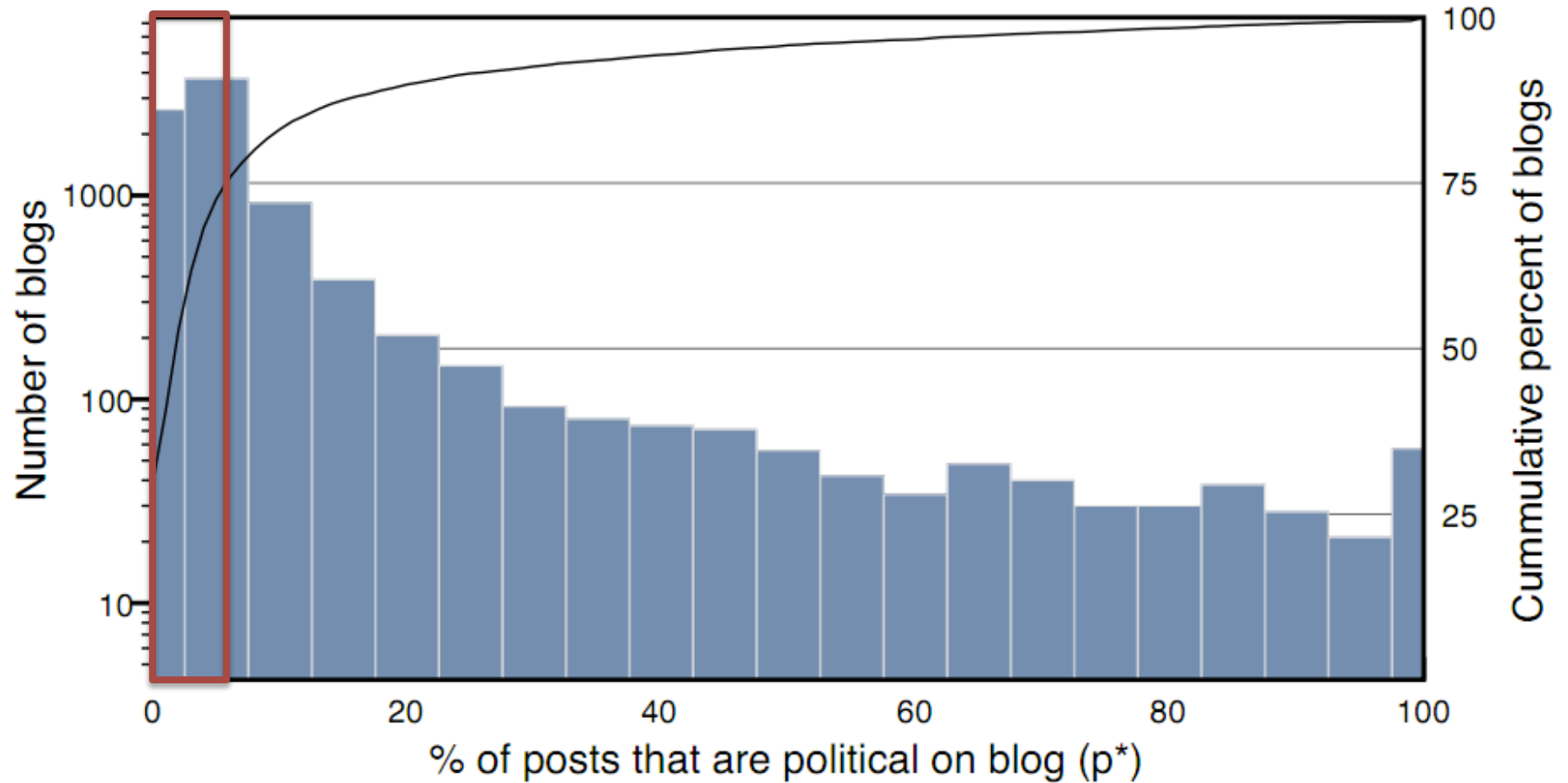
results

overall prevalence | prevalence by category | engagement

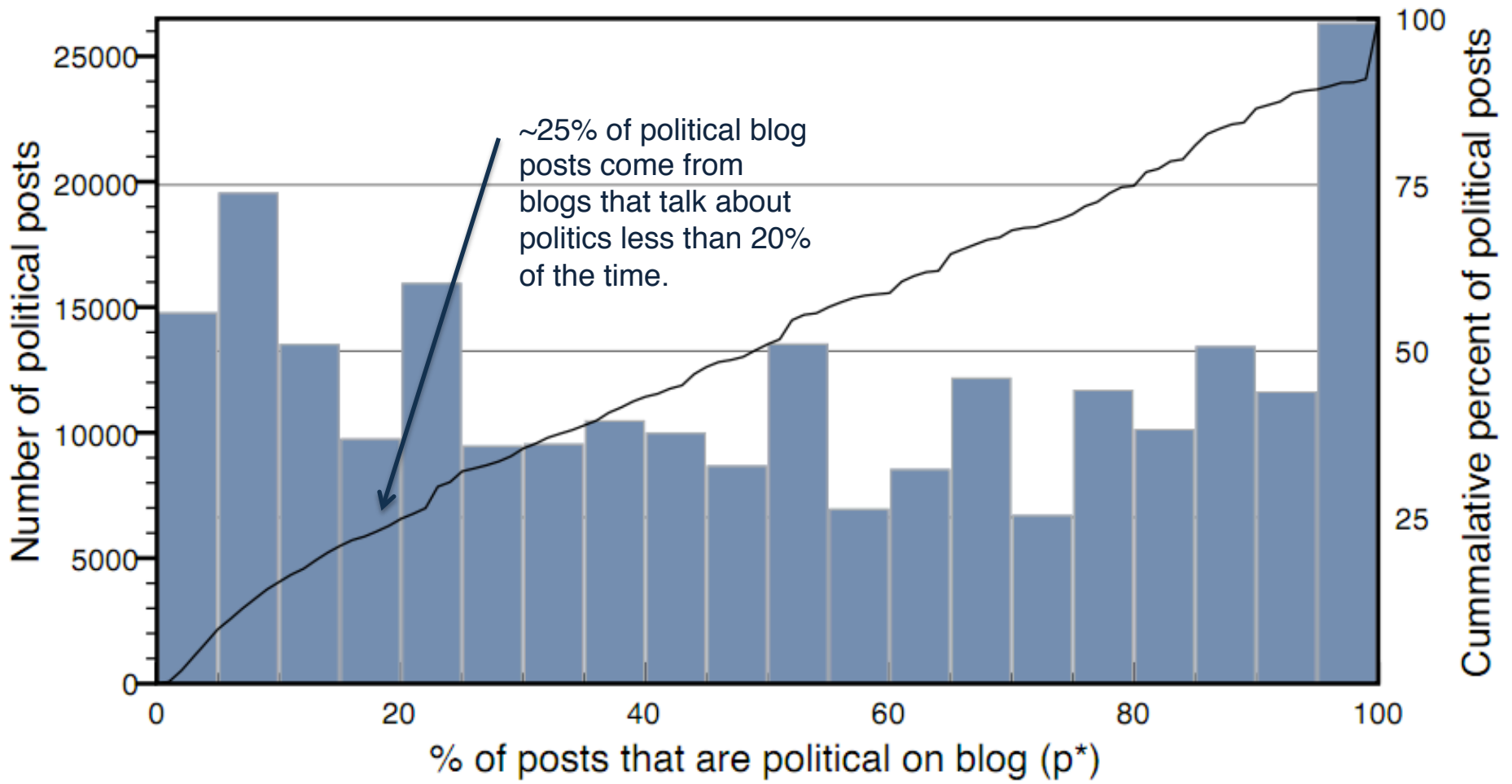
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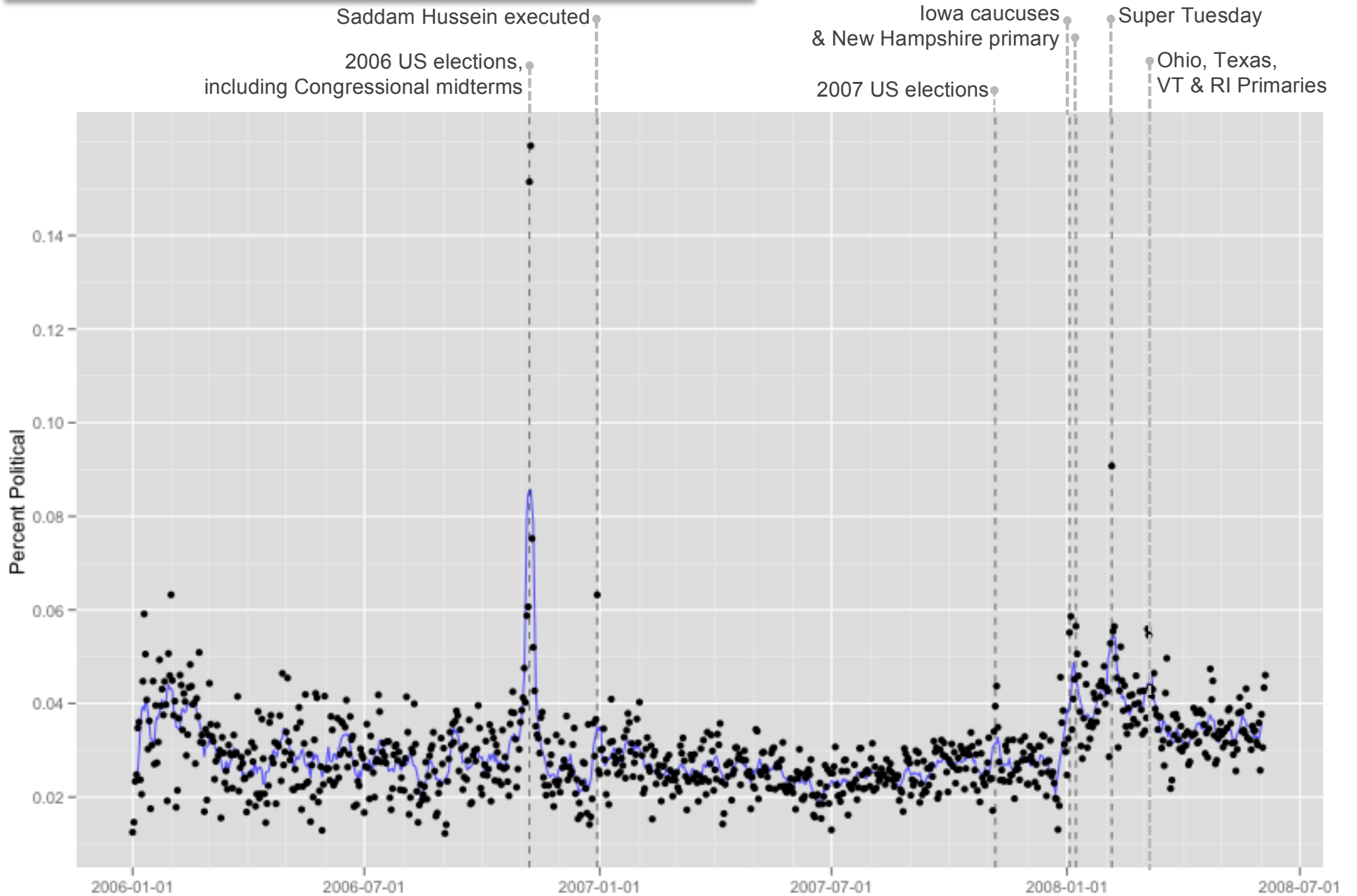
prevalence of political posts



prevalence of political posts



prevalence of political posts by day



results

overall prevalence | prevalence by category | engagement

categories: descriptions & summary statistics

Category	Description	n	%	Post per week per blog Mean (stdev)	Comments per post Mean (stdev)
Diary	Individual, group, or family blog with news about life. Includes blogs that are collections of links, images, or videos that interested the author if the collection does not fit into one of the other categories.	5307	60.5%	3.62 (5.17)	2.33 (6.10)
Hobby & Fan	Blog about a particular hobby, interest, or activity (such as crafts, photography, programming, or cooking). Also includes blogs by enthusiasts of a particular TV show, celebrity, actor, movie, musical group, or sports team. Includes travel and exercise diaries (e.g. someone who writes about running or cycling as a hobby).	2148	24.5%	5.81 (5.81)	2.20 (8.30)
Professional & sales	Blog for a trade, educational, or professional association, or containing news, tips, or advice for people in a particular career or line of work, or an official blog to promote a product, service, or event, to interact with customers, or to provide news about a business or other organization.	519	5.9%	40.1 (567.42)	2.20 (8.81)
Politics	Blog with commentary or news on issues or controversies in politics and government	422	4.8%	11.89 (18.47)	3.11 (12.88)
Religion	Blog by/about religious organizations, daily devotionals, or meditations. Does not include life diaries by people for whom religion is a big part of their life.	200	2.3%	4.06 (4.49)	2.06 (5.75)
Civic & issue	Blog that promotes a <i>particular</i> social or political change, such as an environmental organization	81	0.9%	7.85 (13.12)	1.35 (3.71)
Health & Wellness	Blog with tips, suggestions, support, or advice for health and/or wellness. Includes patient diaries and blogs with advice about exercise for health.	66	0.8%	3.75 (3.87)	2.16 (5.91)
Ethnic / cultural	Blog about a particular culture or heritage.	22	0.3%	2.27 (5.54)	1.35 (2.92)

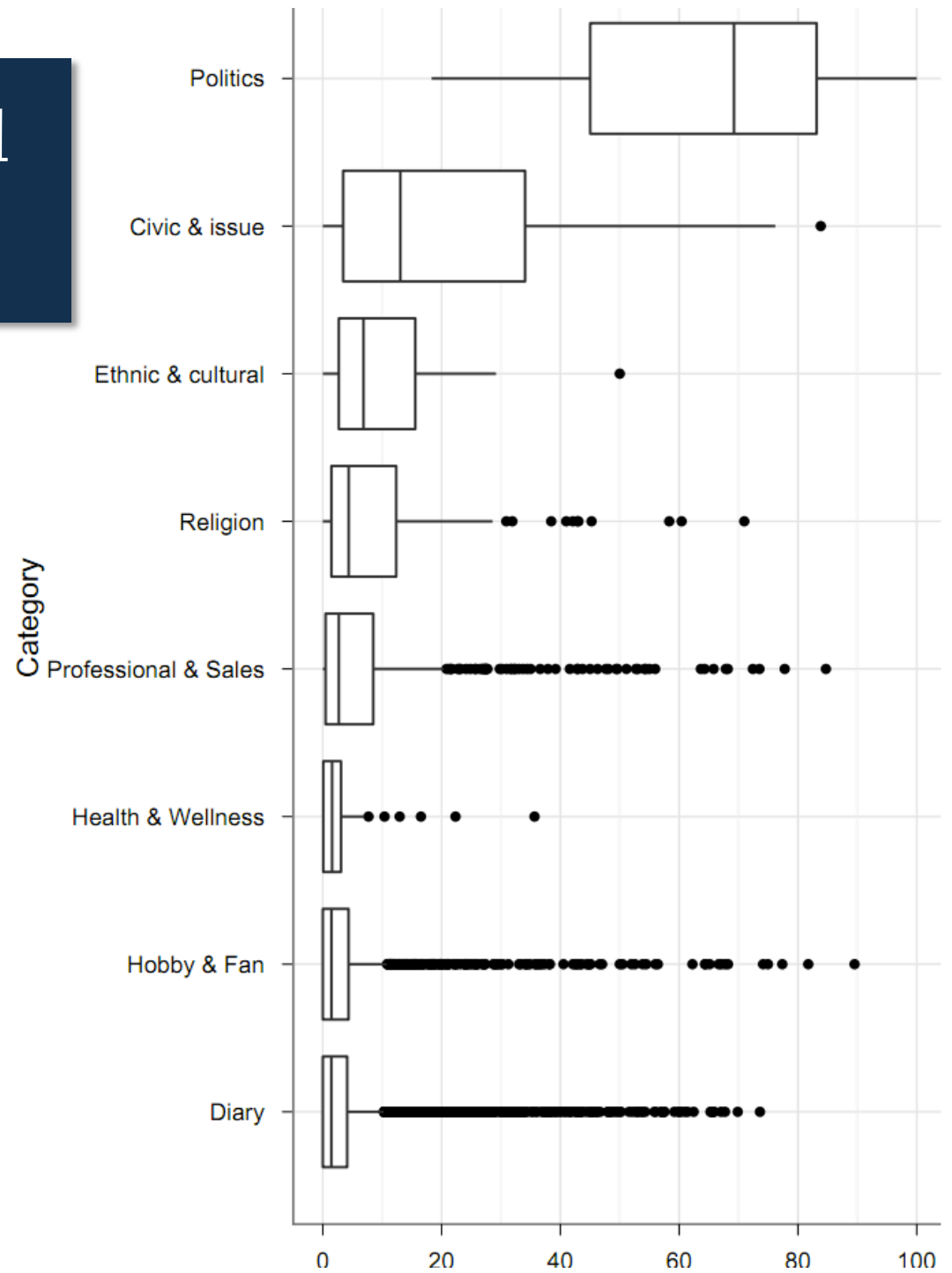
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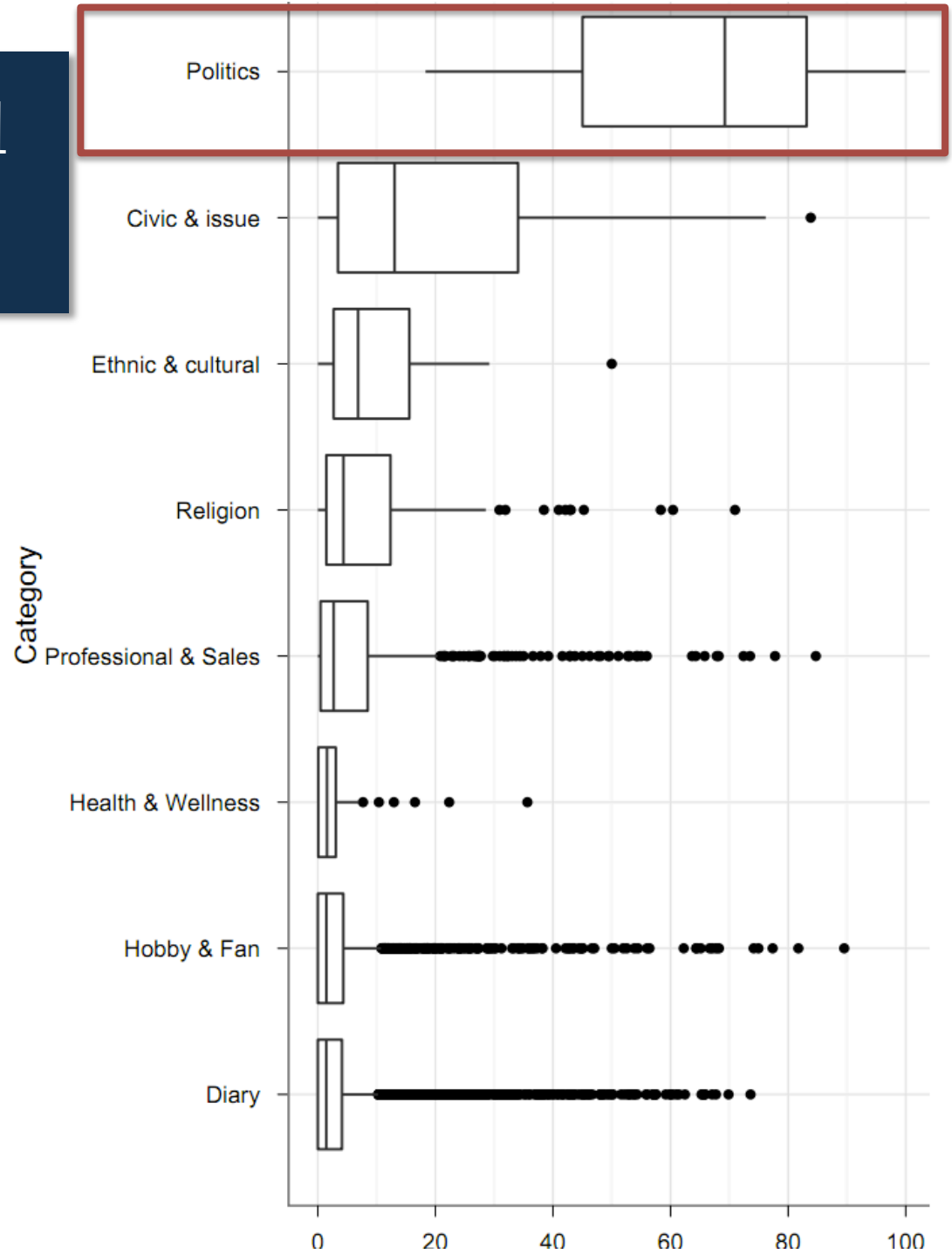
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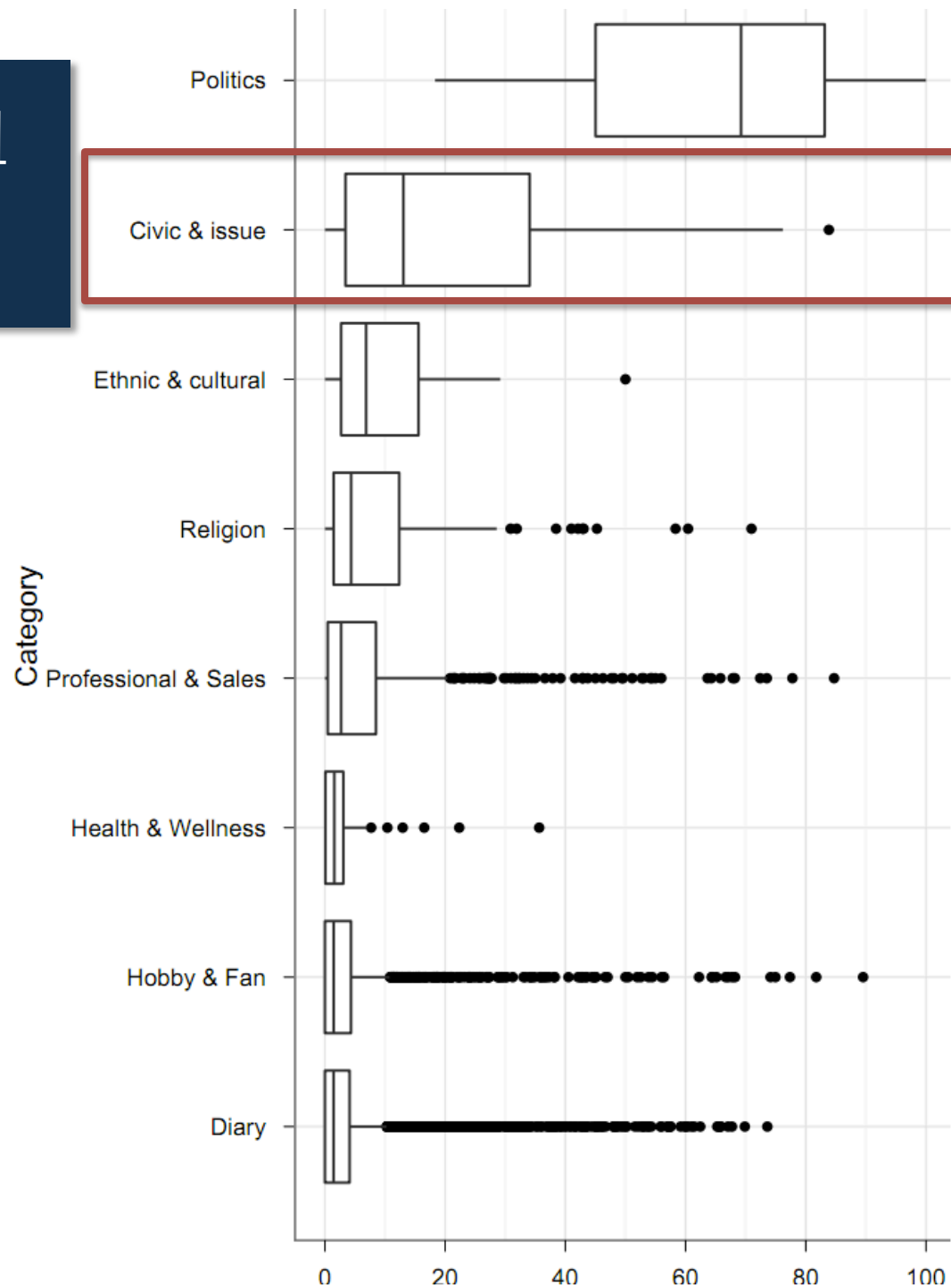
prevalence of political posts by category



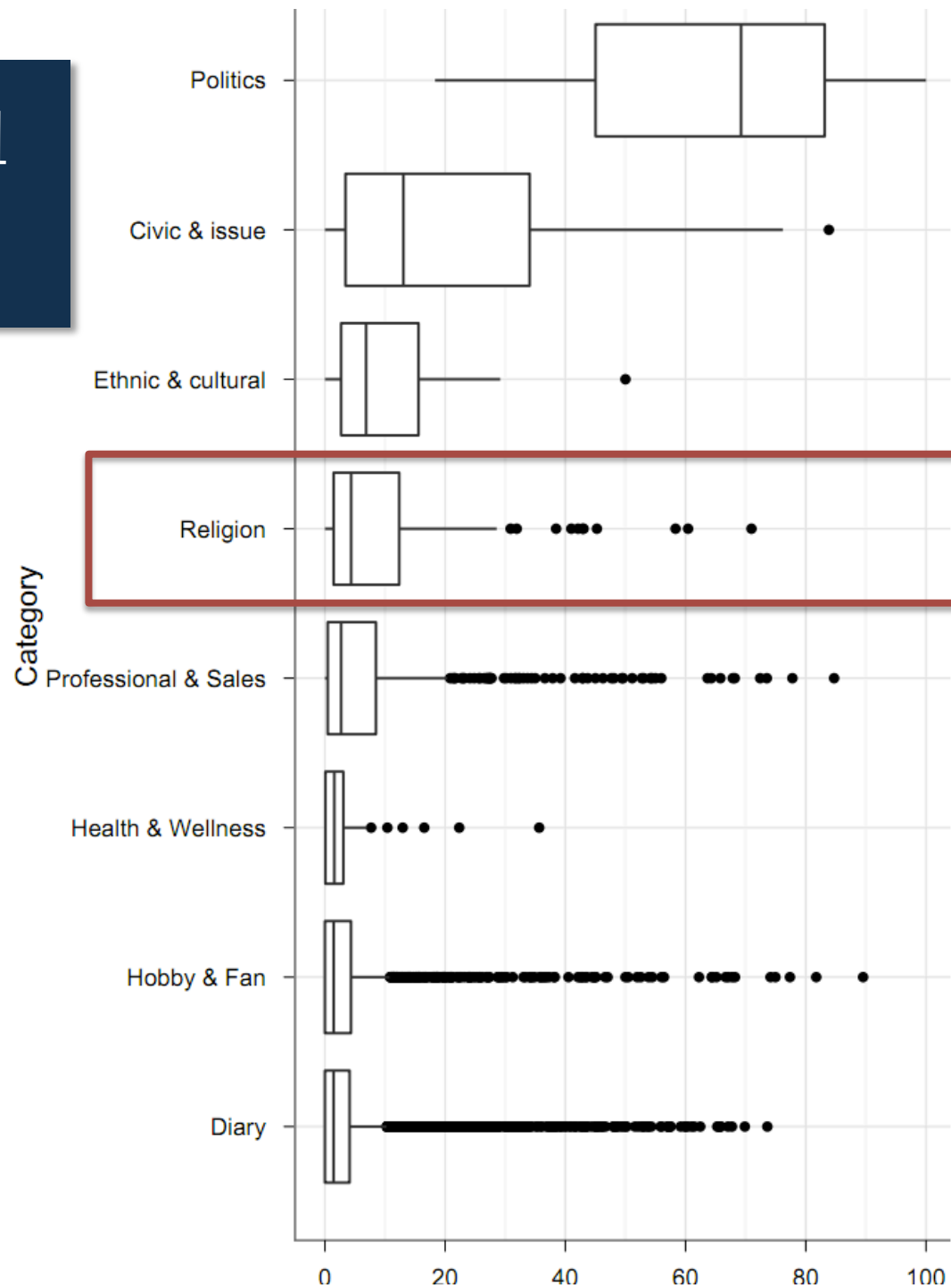
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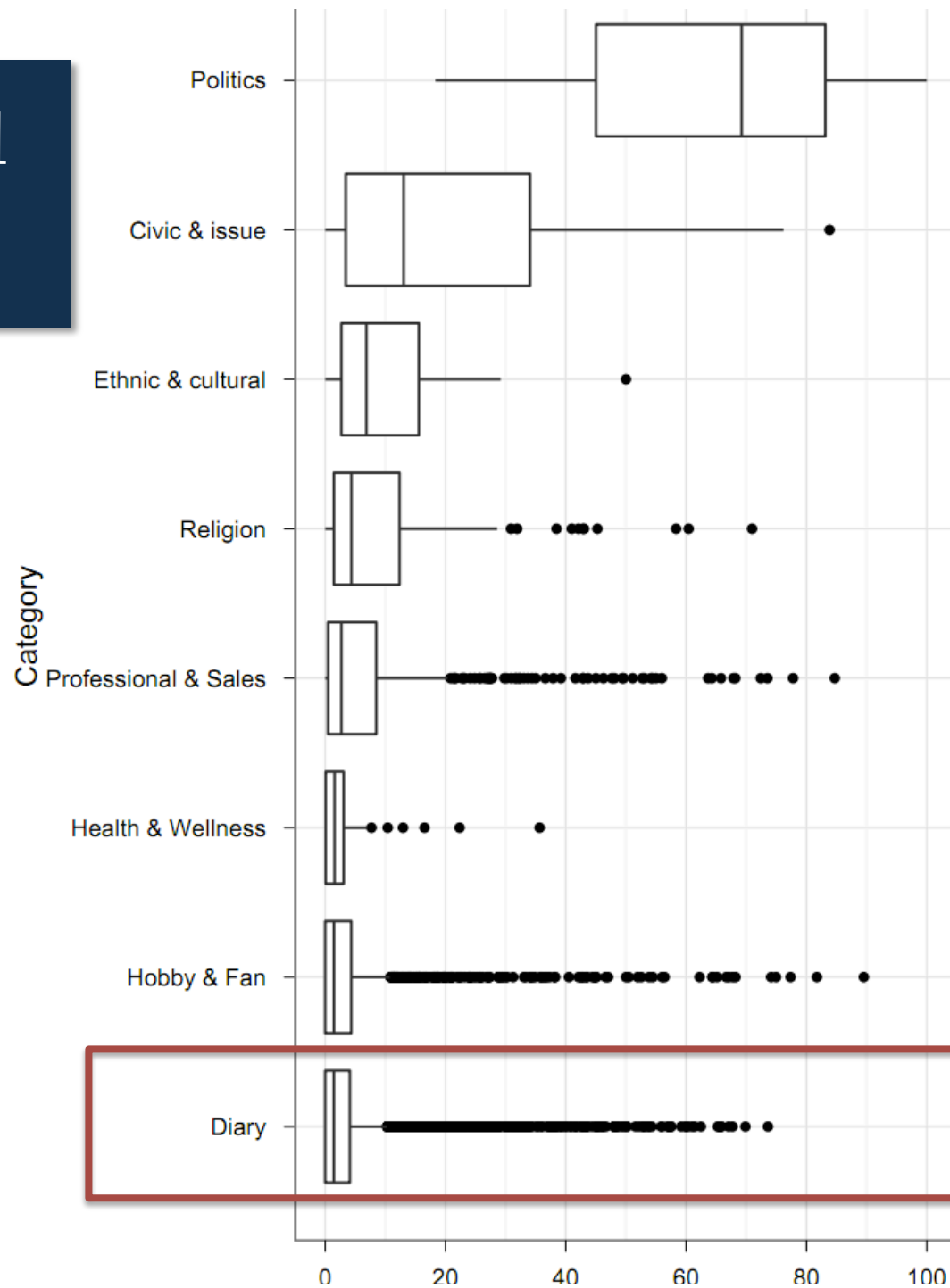
prevalence of political posts by category



prevalence of political posts by category



prevalence of political posts by category



results

overall prevalence | prevalence by category | engagement

expected comments per post

On non-political blogs, political posts:

- get at least as many comments,
negative binomial regression, random effects by blog
- have at least as many or slightly more commenters than
non-political posts on the same blog, and
negative binomial regression, random effects by blog, $p < 0.001$
- have a slightly higher amount of anonymous comments
negative binomial regression, random effects by blog, $p < 0.001$

compared to non-political posts.

engagement & agreement

Among 990 comments on 244 political posts:

	n	%
Engaged political content of post	823	83%

Among comments engaging with political content

Expressed	agreement	334	41%
	neither / balanced	370	45%
	disagreement	119	14%

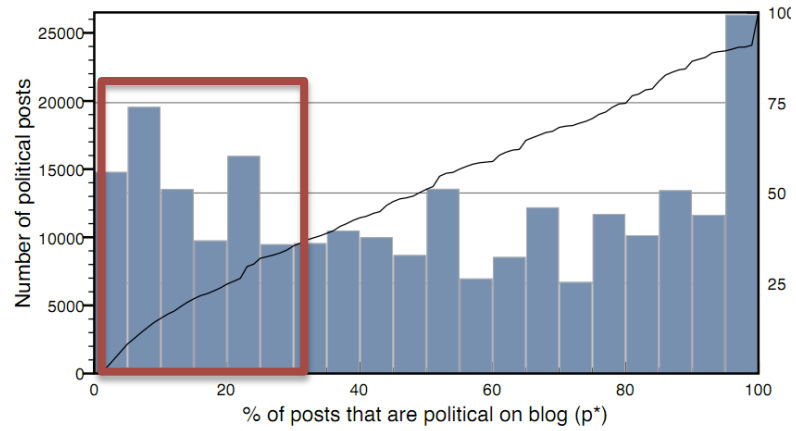
engagement & agreement

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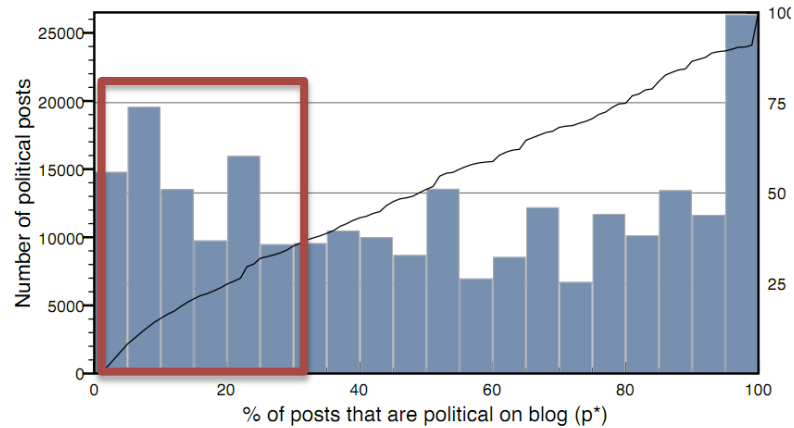
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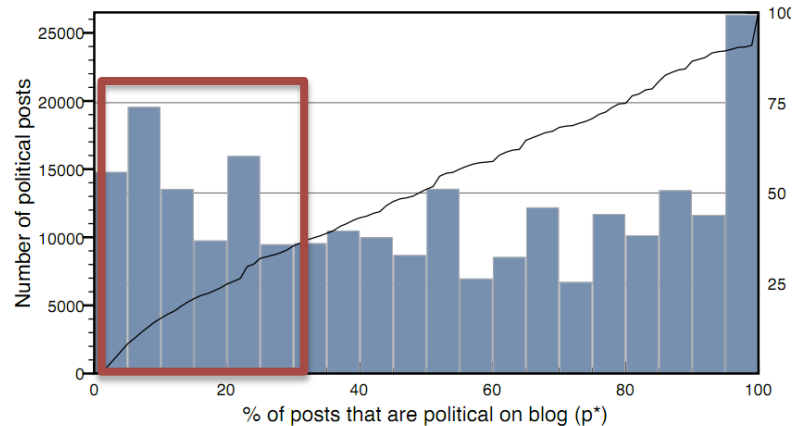
There's a lot of political talk happening on non-political blogs.



There's a lot of political talk happening on non-political blogs.



Not taboo: readers engage with this political content in replies.



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Not taboo: readers engage with this political content in replies.

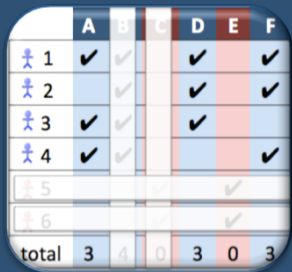


What is the actual discourse quality? Civility? Arguments expressed?

How does this stack up against other spaces?

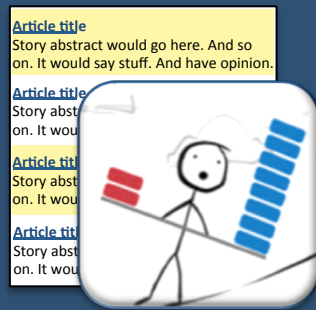
Even if people selectively access agreeable viewpoints on news sites, **at least some inadvertent exposure to cross-cutting views continues to occur through non-political spaces.**

EXPOSURE TO POLITICAL DIVERSITY ONLINE

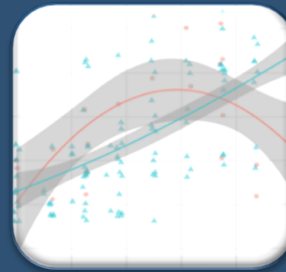


	A	B	C	D	E	F
1	✓	✓		✓		✓
2		✓		✓		✓
3	✓	✓		✓		
4	✓	✓				✓
5					✓	
6					✓	
total	3	4	0	3	0	3

Selecting
diverse content



Presenting
diverse content




Preferences for
content diversity



Spaces where diverse
exposure already occurs

EXPOSURE TO POLITICAL DIVERSITY ONLINE

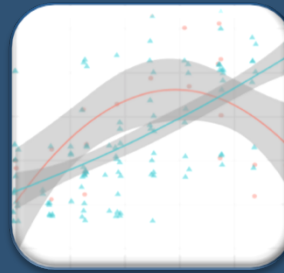


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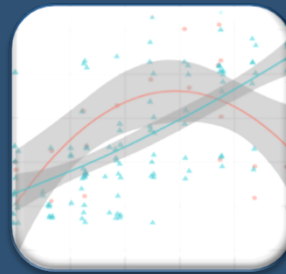
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Selecting
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Presenting
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Preferences for
content diversity



Spaces where diverse
exposure already occurs

- Inclusion, exclusion, alienation, & representativeness metrics for diversity.
- The Sidelines algorithm for selecting diverse collections using user votes or similar inputs.

EXPOSURE TO POLITICAL DIVERSITY ONLINE

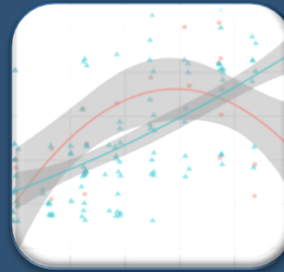


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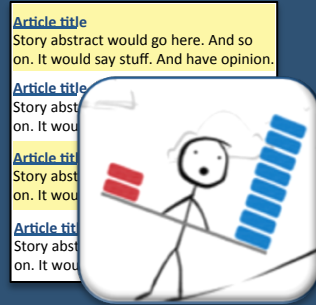
- Highlighting and/or placing agreeable items first did not increase satisfaction with collections including challenging items.
- Balancer extension (hindsight widget) did change behavior.

EXPOSURE TO POLITICAL DIVERSITY ONLINE

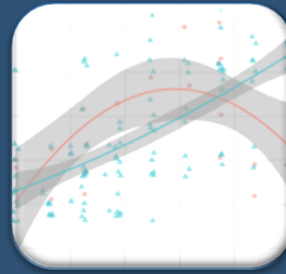


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Spaces where diverse
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- Individual differences: people are neither inherently challenge averse or diversity seeking.
- Need to better understand these individual differences and relationship with personality attributes and context.

EXPOSURE TO POLITICAL DIVERSITY ONLINE

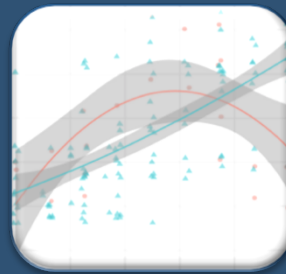


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Presenting
diverse content



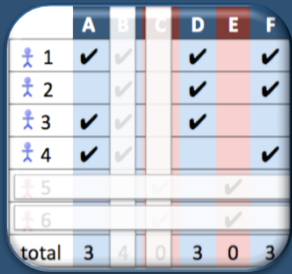
Preferences for
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Spaces where diverse
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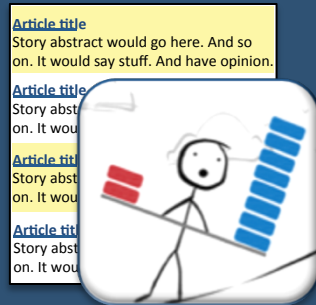
- On Blogger, a substantial amount of political posts occur on non-political blogs. At least some readers engage with it.
- At least some inadvertent exposure to cross-cutting views continues to occur through these spaces, even if people selectively access agreeable viewpoints on news sites.

EXPOSURE TO POLITICAL DIVERSITY ONLINE

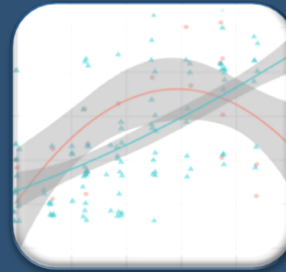


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Presenting
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Preferences for
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Spaces where diverse
exposure already occurs

thanks!

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Brian Ford

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more at smunson.com/talks/stanfordpcd

