

Let's Hate Together: How People Share News in Messaging, Social, and Public Networks

Danielle Lottridge and Frank R. Bentley

Yahoo

Sunnyvale, USA

[dlottridge, fbentley]@yahoo-inc.com

ABSTRACT

There are currently a wide variety of ways to share news with others: from sharing in a personal message, to sharing on a social network, to publicly posting. Through a survey with over one thousand people and an artifact analysis of 262 shared articles, we examine differences in motivations and frequency of sharing news on public, social and private platforms. We find that public sharing is more focused on spreading an ideology, while private sharing in messaging is dominated by stories inspired by the recipient's interests or context. The survey revealed three main groups of news sharing practices: those who shared to all channels (public, social, private), those who didn't share at all, and those who shared to private and social. The groups differed in their attitudes toward online discussion; those that shared the most were neutral and those that didn't share had negative attitudes about discussion online. We discuss sharing practices and implications for social systems that support sharing news.

Author Keywords

News, Social Media, Sharing, Messaging, Diffusion.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous; H.4.3 Communications Applications

INTRODUCTION

The last ten years have brought foundational changes in the diffusion of news. In 2007, traditional news outlets, such as newspapers, radio, and television were still the main ways that people learned about news and Facebook was just emerging outside of college campuses and was focused on sharing personal updates. In 2017, 62% of Americans got news on social media [19] (and 79% use it) [20]. Ten years ago, the iPhone was just released and did not support apps, while today 77% of Americans own smart-phones [37] and use apps for an average of five hours per day [27]. People

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also now have easy access to platforms that broadcast publicly, such as Twitter and Reddit. This shift has enabled everyday people to be able to post news stories and amplify particular stories that they wish to promote. With this large number of accessible channels to share news on - public posts, groups on social media, and private messages - what channels are people choosing, why, and what types news are people sharing on these different channels? How is sharing news different across publicly visible and less visible channels? Previous research on this topic has largely examined particular channels, such as why people share news on Facebook [33, 37] without looking at the broader ecosystem of options that people have when choosing to share an article. For this research, we wanted to take a step back from any particular platform and more deeply understand the types of news that are being shared publicly, in social networks, and privately. We wanted to understand differences in motivations for sharing to these different audiences as well as the relative frequency that people choose to share news in each of these ways.

To better understand sharing during a typical news cycle, we collected and examined 262 screenshots of recently shared news articles in private, social, and public channels, along with the context and motivation for sharing. To further broaden our understanding, we surveyed over a thousand people to assess larger patterns in sharing and attitudes toward sharing and discussing news online in a sample representative of the US online population during a post-election period. Specifically, we sought to answer the following research questions:

- What type of news is shared publicly, semi-privately and privately? How do motivations change depending on channel?
- What are common practices of and attitudes toward sharing/discussing news online?

We sought to explore behaviors from a diverse American online population and explore posts by people with a wide range of divergent viewpoints.

RELATED WORK

How people share news with each other has been a common topic of study for many years and understanding this history prepared us for exploring and contextualizing current practices. DeFleur [15] presents a literature review of early studies, beginning around World War II, that studied how

news was diffused throughout a group of people. He observed a dearth of theory and an overall decline in the amount of research from 1946 to the 1970s. Research in this area picked up after the Kennedy assassination in 1963. Hill and Bonjean [24] discovered that the majority of people in Dallas (57%) had heard about the news from someone else, at the time, via word of mouth. Bud, MacClean, and Barnes [8] found that top breaking news is often spread quickly by word of mouth, whereas stories of less broad interest are frequently learned by mass media. Rawan [41] found the importance of social networks, in the traditional sense, to be important when the government is suppressing information, such as in 1979 Iran, where local mosque networks spread information about the revolution.

As digital communication systems emerged in the 1990s and 2000s, research began to explore this topic again. Boczkowski and Mitchelstein [7] studied the articles that users chose to email, comment on, or read, finding that as a period of heightened political activity emerged, users were more likely to share public affairs stories.

More recently, work has explored the sharing of news through social media websites such as Facebook or Twitter. Shaw et al. [42] coded 1750 tweets related to an Australian flood and observed 5 themes: information and advice giving, multi-media sharing, help and fundraising, personal narratives and discussion and reactions. This work is part of a branch of research that studies social media use during disaster and crisis, termed crisis informatics [39]. Researchers study news diffusion during other special circumstances. Vitak et al. [46] studied Facebook use during the 2008 election cycle finding multiple factors that lead to political posts on the network, including participation of their friends and overall amount of Facebook use. Other research examines news diffusion during what one might consider a more typical or ordinary news cycle. Burke et al. [9] studied changes in tie strength between Facebook users as they performed different types of activities on the site, such as sharing links, finding an increase of tie strength that is smaller than that of sharing news in direct messages. Lee, Ma and Goh [33] found that users were motivated to share news on Facebook to inform, socialize, entertain/escape and seek status. Oeldorf-Hirsch and Sundar [37] ran an experiment on sharing news on Facebook and found that commenting and validation affected participants' feelings of involvement. Baek [1] studied reasons for link sharing in Facebook explicitly, finding a variety of motivations including Information Sharing, Convenience and Entertainment, Passing Time, Interpersonal Utility, Control, and Promoting Work. Kumpel et al. [30] conducted a literature review of 109 studies of sharing news between 2004 and 2014. They found that most articles focused on understanding user and organizational behavior and motivations, with motivations including self-serving motives (gain reputation and/or followers, draw attention, gain status, altruistic motives (information sharing), and social motives (socializing,

getting social approval). Kumpel grouped articles based on their focus of understanding the user or organization, the content or the network. They found that most studies (71%) investigated a single social media platform, with Twitter being the most studied. None compared platforms in terms of their audience (public, social and private message).

As more communication moved to messaging over email, researchers studied motivations for sharing links through SMS or other messaging apps. O'Hara et al. [38] and Chen et al. [12] examined the links that are shared in everyday text messaging and how they are used to continue a conversation along through inserting additional information and grounding points to others who might not be familiar with the stories. Bentley et al. [2] explored links shared through text messaging applications, finding that only 17% were to news stories, with the most common category being to online video content (28%). Bentley and Peesapati [4] built a system to support sharing links from search results and found relatively few news stories were shared.

The change of the dissemination of news: from the mass media, to selective and often partisan media (explored in more detail in [44]), to social networks and messaging, has altered how news spreads. Ten years ago, the extent of selective exposure was unknown [44], with many arguing that social network platforms could increase access to divergent viewpoints. A 2015 study of over 10 million Facebook users found that ideological diversity in social network was the largest factor in exposure to crosscutting news but that users tend to only click into aligned news [2]. Similarly to other news topics, partisan media that elicits anger is more likely to be shared [22].

How people feel and react as they read news are related to the above motivations for sharing, and researchers have studied the relationship between emotional responses and news directly. Berger and Milkman [6] looked at 3 months' worth of data from the New York Times and found that intensely emotional online news (i.e. physiologically arousing) is more likely to be shared with others, particularly if it is awe-inspiring, with negative arousing news was a close second. Stieglitz and Dang-Xuan [43] analyzed the sentiment of over 165,000 tweets and found that highly emotional tweets were retweeted more often and more quickly compared to neutral tweets.

After the expanded emotion palette launched on Facebook in spring 2016, Larsson [32] followed their use on Facebook Pages for four Scandinavian newspapers and found that Like remained the most popular action. Celli et al. [11] found articles that arouse indignation had the most likes. Hille and Bakker [25] compared comments on public websites to those on Facebook for 62 Dutch news sources and found that anonymity was associated to a larger number of negative comments while (personally identifiable) Facebook comments were higher quality and fewer. The Love and Wow reactions were most used however Angry was associated with more sharing and commenting. Others

have also found that “bad news travels.” In an experiment and field study, participants were found to share negative content to more recipients for a longer period of time [26]. Gervais [18] observed that incivility begets incivility, which was supported by a recent experiment [13]. In this study, participants who saw trolling comments in an online forum and were in a bad mood were twice as likely to post troll-like comments themselves compared to a control condition. Maier [34] analyzed 104 editorial columns by the same author over a one-year period and found that highly emotional topics and domestic (geographically local) topics led to greater comments, likes and sharing.

In the related work above, we see existing motivations for sharing news content as well as historically how people have been made aware of the news of the day. However, several questions remain. Most notably: How are people choosing a particular channel when deciding to share news? Given the choice of a channel, we were also interested in exploring the types of news content shared to different audiences, a topic that has not been explored in great depth across these different types of communication channels.

METHODS

To better understand news sharing, we conducted an artifact content analysis of news shares from a variety of platforms and a survey on news-sharing practices and attitudes.

To collect artifacts, we deployed a survey on Mechanical Turk (MTurk) that asked participants “to take and upload screenshots of examples of when you shared/discussed news from personal social media and messaging.” MTurk participants responded to the following: *1. Find the most recent time that you shared news or discussed news in a post to personal social media such as Facebook status, Instagram post (NOT private messaging). This is your "first example." Take a screenshot and upload it. 2. What was the date and time of this example? 3. Who is/are the recipient(s) in this first example? (e.g. a Facebook group, all my Snapchat contacts, all of my Facebook friends, etc.) 4. Please give us a little background on the context that led to this first example? 5. In this first example, what was your motivation to share / discuss?* The above instruction sequence was for social media posts. This instruction sequence was repeated for a 2nd social media post, and adapted for 2 sequences for private sharing (e.g. Messenger, SMS, Whatsapp) and 2 more for public posts (e.g. Twitter, Reddit). Participants were paid \$4 for this task, which took approximately 10-15 minutes to complete, and were given instructions on how to anonymize any screenshots that might contain personal information. We included and paid all participants who uploaded a minimum of four screenshots from social and messaging, from any time in the past. Uploading screenshots of public posts was optional. The deployment date was April 18 2017, a period of typical news cycle, a few months after the presidential inauguration and a period where a variety of local and international stories were occurring.

These joint screenshots and answers became the items of analysis in a team-based affinity analysis, where themes emerged about overall motivations for sharing. Co-authors coded screenshots separately and discussed any inconsistencies to reach consensus on themes and artifact inclusion. Proportions of themes were compared across sharing channels using Chi-square with post-hoc z-test and p-values adjusted with Bonferroni method. Co-authors coded joint artifact-responses for valence by examining the stated reason for sharing or context that the participant provided and by examining the text of the post and subsequent discussion, when included. We also looked at frequency of sharing by share dates. Lastly, all items were tagged by the research team for the content type of the story and whether the share was private, social or public.

To reach a broad range of participants who do and don't share news and who are representative of online Americans [5], we deployed our survey with SurveyMonkey. SurveyMonkey participants are not paid. They complete surveys for a \$0.50 contribution to a charity of choice. We asked about the news sites/apps used, news-based activities engaged in at some point in the past month (e.g. commenting on an article, sharing with a friend, posting online, receiving mobile push notifications for news, etc.), as well as questions on attitudes towards news sharing (Tables 5, 6 and 7). The deployment was on November 15 2016, one week after the US presidential election, a period of heightened focus on US politics.

Respondents were grouped based on sharing and commenting practices with news-related content: whether they shared or commented publicly or never did so, whether they shared or commented on social media or never did so and whether they shared within private messaging or never did so. We examined patterns in sharing practices and compared the demographics between groups. Factor analysis was conducted on attitudinal questions and those with eigenvalues over 1 were included. Items with loadings over .58 were included in the factors and used to compute factor scores. We investigated the relationships between factors and sharing publicly, on social media, and privately using ANCOVA, with covariates age, gender, income, and education level. Methods for both studies were conducted in accordance with our institution's processes for conducting research with people and for collecting conversational data. Participant consent was obtained electronically as a part of the survey instruments.

ARTIFACT COLLECTION STUDY FINDINGS

52 participants completed the artifact collection survey: 31 females, 20 males and 1 other. 25% were 18-25, 37% were 26-35, 31% were 36-45 and 7% were >46 years old. Participants came from 30 different US states: 25% from West coast states, 35% from East coast states and 40% from central states. 19% had an income of <\$25k, 33% made between \$25k-\$50k, 21% made \$50k-\$75k, 15% made \$75k-\$100k, 8% \$100k-\$150k and 2% >\$150k.

	Median Date of Last Share	Median Date of 2nd to Last Share	Average Sharing Frequency
Public Post	19 days	53 days	26.5 days
Social Media Post	6 days	20 days	10 days
Shared in Messaging	15 days	29 days	14.5 days

Table 1: Median dates to the shares that we collected for participants who shared in each of these platforms.

Participants provided 262 examples of news sharing: 131 posts to social networks, 92 news items shared in messaging apps, and 39 public shares on sites such as Twitter or Reddit. The set of items was not maximized since we included participants even when they selected that they never shared to a particular channel.

Frequency of Sharing

We examined the frequency of sharing news across channels using the dates of the two most recent shares (Table 1). Participants shared most frequently to social networks, on average every 10 days; less frequently to messaging every two weeks, and least frequently publically, about once per month. Public posts were less common, with over half of the sample (n=27) never posting publicly.

Types of Content Shared

We categorized the types of news content shared (Table 2). The most common type of content shared was political news, representing 48% of all shared stories across platforms. Crime stories, such as a murderer on the run, or missing children, was the second most common type of story shared, at 14% of all stories. We found that most shared stories were seen as negative (Fig. 1). Transportation, Weather, Crime, Technology, Politics, and Celebrity stories shared were predominantly negative. 77% of all political stories were seen by the sharer as negative. This is likely reflective of the valence of the actual corpus of news stories available as well as due to selective exposure to negative news [29]. A tendency toward sharing negative news is inline with previous literature [26]. We note that different sharers perceived news valence differently. For example, one participant thought a story about Trump winning the election was negative while another shared it as a positive story.

To further investigate political perspective, the authors jointly analyzed the political agenda of posts. We examined the 5 elements of the artifacts to assess if the participant was clearly in support or against the news story shared and resultant political ideological standpoint as per the three “major domains of domestic policy” [30]: a) economic concerns such as health insurance, b) social issues, and c) racial questions [30]. Consensus was reached on all items. We found that 42% of participants made posts supporting liberal agendas (e.g. criticizing the border wall), 28% made posts supporting conservative agendas (e.g. stricter refugee policies), 12% posted supporting moderate agendas and

	Public	Social	Messaging	Total
Politics	54%	50%	43%	48%
Crime	23%	9%	17%	14%
Science	0%	10%	9%	8%
Media/Music/TV	5%	7%	6%	6%
Transportation	3%	1%	8%	4%
Technology	5%	4%	2%	3%
Human Interest	0%	5%	3%	3%
Sports	3%	3%	2%	3%
Shopping	0%	2%	4%	3%
Celebrity	3%	4%	1%	3%
Local	5%	0%	2%	2%

Table 2: The top types of news content that were shared on each platform.

18% did not post any clear political agenda. The topics spread across the major domains, with 27% economic concerns (e.g., cost of foreign wars); 22% were social concerns (e.g., support or critical of police); 15% were racial (e.g., if racist jokes were offensive); the largest theme at 37% was support or critique of specific politicians, the vast majority on Donald Trump himself.

Themes: News Shared and Reasons for Sharing

This section examines themes around types of news shared and reasons for sharing, across different platforms and audiences. Primary and secondary categories emerged from our affinity analysis (Table 3). Our primary categories were Pushing Political Viewpoints/Anger, Sharing Funny or Positive Stories, and Informing of General Interest / Local Stories. The proportion of sharing across these themes and channels differed significantly from what would be expected from evenly distributed frequencies ($\chi^2=195.257$, $p=.0009$). The proportion of Pushing Political Viewpoints shared publicly were significantly higher than expected ($z=3.3$, $p=.001$) with the private channel used for that content significantly less than expected ($z=-2.9$, $p=.004$). The superscripts in row 1 Table 3 show that the proportion shared publicly was significantly higher compared to the proportions shared on social and private messaging. The difference between social and private was not significant. Funny and positive content did not differ across channels.

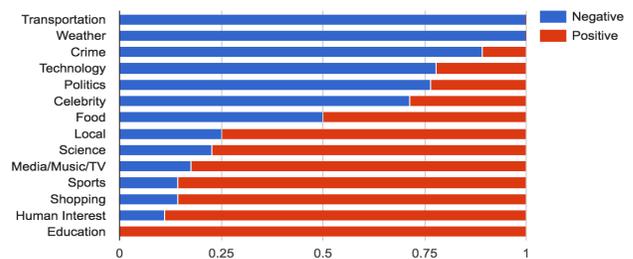


Figure 1: Percent of stories that were seen by the sharer to be negative or positive

	Public	Social	Messaging
Pushing Political Viewpoints/ Anger	67%^a Promote ideology (13) Righteous anger (12) Inviting discussion (1)	44%^b Promote ideology (38) I'm upset (19)	32%^b Let's hate together (11) Promote ideology (9) I'm upset (7) Let's celebrate (1)
Sharing Funny or Positive Stories	10%^a Funny (4)	11%^a Funny (9) Ridiculous (3) Feel-good story (3)	5%^a Funny (5)
Informing of General Interest / Local Stories	23%^a Spread awareness of daily news (9)	45%^b To inform (23) Local Interest (13) It's interesting (9) Interests of friends (8) Ongoing / create discussion (6)	63%^c I thought of you (20) Ongoing discussion (12) Local Interest (8) To inform (8) It's interesting (8) Asking questions (2) Provide support (1)

Table 3: Distribution of various intents to share across public postings, social media postings, and personal/group messages.

The superscripts in row 3 Table 3 show that all channels differed significantly for informative content. The public channel was used less than expected ($z=-3.4$, $p=.0007$), the social channel was used as expected and the private channel was used more than expected ($z=3.7$, $p=.0002$).

The high percentage of public posts for the purposes of pushing particular political viewpoints, and that this percentage decreased in social and messaging-based shares was especially interesting to us. In addition, the large proportion of shares meant to inform friends about a particular story/event of interest to them was also initially surprising to us, since so few of the public posts were for general news topics or to inform. Next, we describe each theme in greater detail.

Pushing Political Viewpoints/Anger

The most common reason for sharing news in public forums such as Twitter or Reddit was to push a particular viewpoint/ideology, or to express anger at a particular event captured in an article, comprising 67% of all public shares. This may not be surprising in 2017 America where the political climate is polarized [28]. This theme decreases significantly for smaller audiences, comprising 44% of social posts and 32% of news shared in messaging.

The posts in this category were political, from a wide range of divergent viewpoints. A common subtheme was righteous anger calling out perceived hypocrisy in politics. Examples from public sharing included tweets @realDonaldTrump discussing his ties with Russia replying to his own post about looking into Hillary's own ties, a tweet replying to another Trump tweet where he is sitting next to Condoleezza Rice asking if he told her about revoking the Fair Pay Order, and a public Facebook post against immigration showing refugees on the streets of

Paris and warning that "Americans don't want this in America." Many of these posts were "clever" in use of humor or relating circumstances together, and the text of the post often added new meaning over the article itself. "Personal brand" may be a part of sharing ideology, as it seemed like respondents shared widely to be associated with a particular ideology as well as amplify it.

In Messaging, news was shared in order to "hate together" with a trusted friend, more than just amplifying a particular viewpoint or highlighting a particular perceived injustice. One participant shared election news on the day after the US Presidential election with a close friend: "I was pretty heartbroken and felt like the world was ending, but I didn't want to give anyone the satisfaction of public mourning." Thus, the sadness of that day was shared with a close friend. Others shared news of the Republican health care bill out of "anger," and a Trump supporter sent a Twitter direct message to a friend to celebrate the "landslide" win in the Electoral College. The conversation around the shared media in this category frequently expressed shared hate, as in an example of an SMS conversation around a video of a woman being beaten at a Berkeley anti-Trump protest that was shared "because I can't stand these people protesting Trump." In this exchange one participant asked the other if he had watched "that video of the liberal **** getting knocked the **** out up at Berkeley?" The response included a "lol" and that "these **** heads [liberal protesters] are literally out of control." In Messaging, news was frequently shared to commiserate or celebrate the defeats of people with opposing viewpoints together with someone very close to the participant.

Angry news-related social posts were significantly fewer compared to public posts. Yet similar to the public examples, social posts often were shared to illustrate a

political viewpoint, or the consequences of some political action. One participant shared an article about Mexican tourists not wanting to visit “Trump’s America” and that this will have a large financial impact. She shared it “because I think that it’s important to share information on how hateful speech and actions are hurting our country right now.” On the right-leaning side of the spectrum, a participant shared an article about Bill O’Reilly being ousted from Fox News for allegations of harassment, quoting from the article in the post starting that it’s “evidence that the smear campaign is being orchestrated by the far-left organizations bent on destroying O’Reilly and Fox News for political and financial reasons.” Others shared news about Trump and Russia “to make sure people saw and were following the news,” an article on Obama’s “scandals” in comparison to Trump’s to “let people know how great Obama was,” or a link to an insensitive Pepsi ad with a comment that “I am not offended by this.” Another included a video supporting America bombing Syria with “That’s what I’m talking about, drop those ****ing bodies and stack them high.” Reasons to share included “exposing the fake news media for what it is” and wanting to share stories of “women lifting each other up, especially in this political climate.” Social shares sought to get political ideas out to a relatively large group of friends and to amplify the viewpoints of the poster. They often quoted from the article directly in the posts or shared their own feelings about the news, compared to public posts that had witty comments and were designed for a broader audience.

Sharing Funny or Positive Stories

This category included funny stories, “feel-good” stories, and items found to be “ridiculous” by the person sharing them. Public posts included general interest stories that the sharer expected might be amusing to broader audiences. For example, a participant tweeted a local news story about a man arrested while carrying methamphetamine and a python snake because it “was hilarious.” Another participant shared the changing of the Hollywood sign into “Hollyweed” because “it was hilarious and I thought we could all use a laugh.” Participants shared on Social Media to meet interests of their friend groups. In these cases, the funny or positive news stories were more about things that were funny or positive in a particular social, political, or local context over the more broadly funny stories shared publicly. One participant shared an article titled “Man dies peacefully after ex-wife lies to him about Trump being impeached” because “it was just so crazy.” Other examples included a parody video of a United Airlines training video after a passenger was forcefully removed from a plane, which was shared because “I wanted to share something I thought was funny that related to a bad situation,” a post about Trump eating “the most beautiful piece of Chocolate cake” while discussing war, and a post about an Ohio Radio Shack store posting that they “always hated all you ***** customers anyway” which was “funny” to the participant. Another example was about an older man who

donated money earned from recycling, shared because it was “a classic feel-good story.” The funny and positive stories shared in messaging appeared even more tailored to the interests of the specific receiver(s). One participant sent a story about a mom who shaved her head “to teach her son that a person is not defined by how they look ... or how people think they should look” to another mom friend of hers. Another shared a story about IKEA donating beds for cats to a friend who is a cat lover because it “was too cute not to send the link.” And another shared a link about a German female serial killer because “it was hilarious and [a friend in forensics/anthropology] would appreciate it.” Similar to Pushing Political Ideology theme, we observed the public posts to be about sharing something more broadly targeted, while the social and messaging shares were targeted more towards specific local audiences, political beliefs of friends, or interests of particular friends.

Informing with General Interest or Local Stories

The third primary theme centers on informing people of news, without specific political or humor-based motivations. Participants who shared public posts to spread awareness of news generally were interested in getting broad audiences for specific content. One post was a link to a newly released song because the participant “wanted to share my friend’s song with all my followers and hopefully drum up some sales and some plays for him.” Another participant shared a story of a person who was going around infecting people with HIV in order to “get this guy caught.” Another was a retweet of a post about concert tickets going on sale for a music festival so that “all my friends and followers [could] know tickets were on sale since many of us go every year.” These posts generally sought broad awareness or promotion of a specific event or story.

The examples of informative shares in messaging were different from those shared publically because news was shared with a particular individual because the story pertained to them in a specific, often personal way. One participant shared a story with her sister about a new way patients are being treated for spinal cord injury because their brother was shot and paralyzed. Another shared a news story about their friend being wanted with an outstanding warrant for his arrest. And a participant shared a story about a friend from college who was arrested for domestic abuse asking if a close friend remembered him “having problems” in college. Local news was a strong subtheme in messaging apps. These were often crime news stories about killers or rapists who were on the loose. One participant shared a story that they found on Facebook about a woman who was found strangled in her home through messaging with her family so that they could “be aware of any potential threat.” Another shared a link to a freeway bridge that collapsed in Atlanta with a friend who “was going to go to Atlanta in the near future.” In all of these Messaging cases, a specific recipient was thought of when seeing the story and it was shared in order to inform them about something that was relevant to their lives.

The social posts meant to inform often were perceived by the sharer to be of interest to a wide range of friends, often related to a school or city. One friend posted an article about the recent athletic achievements of his university and wanted to “celebrate” with his friends about this. Another participant sent a link to a weather story about a snowstorm that was coming to inform her local friends. Links to missing children were also common, with participants hoping that “someone would find him and get him home to his family” or that they could mobilize “people to help find her if they see her.” Multiple people also shared stories about a killer on the loose in Ohio. Other local interest stories were more lighthearted, such as a participant informing her friends that a bar was opening up inside their local supermarket. At times the social posts were more broadly about interests of a participant’s friend group. Participants shared sports news, such as the outcome of a baseball game because they “wanted to make fun of two of my friends that are fans of the opposing team, and laugh with other friends [about the outcome of the game].” Another was an article about the Florida football team in need of a new quarterback because “a lot of my Facebook friends are fans of the team covered in the article, so they’d want to read it.” Participants shared articles about gluten being “toxic” to a group of people with gluten sensitivity, and an article about a new Invader Zim TV movie because her friends “loooove Invader Zim.” Similar to the personal messaging examples, these stories were shared with a specific audience that the participant knew would appreciate the content. In these cases, that audience was often a larger set of friends, over a single person, so social media was chosen to share the article. We found that general news is shared significantly more often in messaging, less often in social and the least in public. This trend is inline with literature on context collapse [45] because it suggests it’s easier to find general news appropriate to specific interests of small audiences than to find news that is appropriate for a large audience.

SURVEY FINDINGS

We collected 1028 complete survey responses. 55% were female. 29% were aged 18-29, 33% were 30-44, 26% were 45-59 and 12% were 60 or over. 3% has less than a high school degree, 13% had a high school degree or equivalent, 26% had some college but no degree, 13% had an associate degree, 28% had a bachelor degree and 17% had a graduate degree. Of the 88% that reported income, 26% < \$25k, 22% \$25k-\$49,999, 17% \$50-\$74,999, 14% \$75k-\$100k, 21% > \$100k. Age and education were related ($cor=.161$, $p<.001$).

In the artifact collection study, half of the sample did not share publically. We will now examine demographics of who shared news in private, social and public channels, using a larger sample. The largest group was those who shared to all public, social and private channels: $n=354$ (34%). The second largest group was those who never shared: $n=317$ (31%). The third largest group was those who shared to both messaging and social media: $n = 135$

	Age (years)	Gender (% female)	Income (USD)
No Sharing/Discussing	42.4	51.1%	\$73,007
Sharing/Discussing in Messaging and Social Media	40.8	66.7%	\$61,505
Sharing/Discussing in Private, Social and Public Channels	37.0	54.0%	\$49,343

Table 4: Average age, gender and income for three groups with different practices for sharing/discussing news

(13%). Of the other dual channel combinations: 13 (1%) shared to both public and private channels and 48 (5%) shared to public and social media. Of the single channels, 65 (6%) shared only to messaging, 82 (8%) shared only to social media, and 14 (1%) shared only to public channels.

Participants reported the frequency of sharing. For public sharing, 20% of participants shared once per week or more, 13% shared less than once per week and 67% never shared publicly. For social, 33% shared once per week or more, 19% less than once per week, and 48% never shared on social. For messaging, 33% shared once per week or more, 22% less than once per week, and 45% never shared privately. Here, social and messaging are more frequent than public, echoing the pattern in the artifact analysis.

Demographics and Sharing and Discussion

We wanted to understand who was sharing more and who was sharing less. We compared age, gender, education level and income across the three groups. There was a significant difference in the age makeup of groups, where those shared/discussed in all channels were younger (Table 4; $\chi^2=32.981$, $p<.001$). Gender differed across groups, where those who share and discuss through social media and messaging have a larger proportion of women (Table 4; $\chi^2=9.523$, $p=.009$). Lastly, income differed significantly across groups (Table 4; $\chi^2=65.443$, $p<.001$). There were no significant differences in education.

Factor Analysis of Attitudes

We examined attitudes toward sharing/discussing news to relate attitudes to behavior. Attitudinal questions were rated on agreement on 7-point scale of strongly agree to strongly disagree. All questions were included in a factor analysis using Principle Component Analysis as the extraction method and Varimax for rotation. Three factors had eigenvalues > 1, with the first factor explaining 32.8% of variance ($\alpha = .934$), the second factor, 13.0% ($\alpha = .594$) and the third factor, 8.0%, ($\alpha = .570$) for a cumulative total of 53.9%. Based on the questions in the groupings, we refer to Factor 1 as “Reputation and Influence in Public Discussion” (Table 5), Factor 2 as “Negatives of Public Discussion” (Table 6) and Factor 3 as “Nothing to Add to Public Discussion” (Table 7). Factor 1’s strong loadings on the mix of questions about online reputation, influence and benefits of public discussion were surprising. Factor 1 shows that interest in online discussion, the desire to build online reputation and the belief that

I am interested in sharing my opinions with people I don't know.	.828
I'm interested in creating/reposting news-related media online.	.789
I contribute to online discussions in order to learn more.	.788
I share my opinions because the public needs to see a variety of perspectives.	.785
I want to increase the reach of my posts to help get my opinions out there.	.782
I post online to educate others.	.765
I want to help the public better understand current events.	.746
I feel comfortable debating online about current events with anyone.	.722
I want to be a recognized expert of a certain subcategory of news online.	.699
I want to be the first to share.	.698
I feel motivated to post more when people like or respond to my posts.	.691
I want to know what others are thinking and saying.	.691
I am building up a reputation online.	.686

Table 5: Survey Items and Loadings for Factor 1 “Reputation and Influence in Public Discussion”

I prefer to avoid conflicts about news online.	.693
I feel less motivated to contribute online when quality of online discussion is poor.	.676
I am worried about abusive comments and retaliation online.	.635

Table 6: Survey Items and Loadings for Factor 2 “Negatives of Public Discussion”

I don't know enough about current events to feel comfortable discussing news with others.	.716
I don't have anything to add to news discussions.	.589

Table 7: Survey Items and Loadings for Factor 3 “Nothing To Add to Public Discussion”

online discussion can educate one's self and others are highly related. The second factor “Negatives of Public Discussion” brings together attitudes on negative aspects and “trolling” behavior in online discussion. The third factor “Nothing to Add to Public Discussion” relates to self-assessment of what one can contribute to online discussion. Thus, our three orthogonal factors are: 1) belief in the positive aspects of online discussion and desire to participate, 2) the beliefs around conflicts that arise with participation, and 3) beliefs of one's ability to participate.

Sharing Behavior, Demographics and Attitudes

The various groups held different attitudes (Table 8).

Factor 1 “Reputation and Influence in Public Discussion”

Those who shared to all channels were the most positive on this factor, with an average score of slightly above neutral. Those who shared in messaging and on social media disagreed slightly overall, and those that did not share at all disagreed ($F[765,6]=129.066$, $p<.001$; LSD pairwise comparisons all significant $p<.001$). Both age ($p=.048$) and education ($p=.023$) had inverse relationships: the younger and less educated hold more positive beliefs toward the value of online discussion. (age: $cor=-.183$, $p<.001$; education: $cor=-.145$, $p<.001$).

Factor 2 Negatives of Public Discussion

Those who share/discuss news in social media and messaging are more concerned about online conflict compared to those who do not share to any channel ($F[765,6]=3.546$, $p=.029$; LSD pairwise comparisons $p=.008$). Education ($p=.022$), income ($p=.046$) and gender ($.002$) were significant covariates. Women tended to be more concerned (i.e., higher agreement, $m_w=4.44$ $n=423$, $m_m=4.09$, $n=349$).

Factor 3 Nothing To Add to Public Discussion

Those who share across all channels feel that they have something to contribute to online discussion, compared to those that share less or not at all ($F[765,6]=7.778$, $p<.001$; LSD pairwise comparisons ($p<.001$, and $p=.017$). Education ($p<.001$), age ($p=.02$) and gender ($.04$) influenced responses, with women close to neutral and men disagreeing slightly ($m_w=3.56$ $n=423$, and $m_m=3.33$, $n=349$). The younger and less educated, the more one felt like one could add (education: $cor =-.16$, $p<.001$; age: $cor =-.09$, $p=.02$).

This survey analysis brings into relief underlying attitudes related to posting behavior by comparing those who never share news, to those who share to private and social channels, to those who share to all channels. Those who never share are unconcerned about conflict online and are close to neutral on having something to contribute to discussion, and yet are pessimistic about online discussion. It is surprising that concerns about conflict are not a barrier to sharing, rather, never sharing is related to negative attitudes toward online discourse. Those who share to all channels including publicly have the most optimistic views of online discourse and are moderately concerned about

	Factor 1 Reputation and Influence	Factor 2 Negatives	Factor 3 Nothing to Add
No Sharing/Discussing	2.45 (SD=1.3)	4.13 (SD=1.6)	3.60 (SD=1.7)
Sharing/Discussing in Messaging and Social Media	3.18 (SD=1.2)	4.60 (SD=1.4)	3.59 (SD=1.3)
Sharing/Discussing in Private, Social and Public	4.10 (SD=1.1)	4.29 (SD=1.4)	3.28 (SD=1.4)

Table 8: Factor Scores Between Groups, Average on a 7-Point Scale of Strongly Agree to Strongly Disagree.

conflict online. This is the youngest and least educated group yet they feel they have the most to add to online discussion. Those who only post to private messaging and non-public social media are somewhat pessimistic about online discourse but are the most concerned about online conflict.

DISCUSSION

In this research, we analyzed 262 artifacts (screenshots of news posts and shares along with self-reports) depicting real, recent examples of sharing and discussing news over a variety of channels and platforms. This artifact collection was balanced with a survey with over 1,000 respondents, hundreds of whom never shared news – a proportion which may be underrepresented given the US post-election period [7]. Past research tends to examine sharing and interaction over single platform such as Facebook or New York Times; one of the strengths of this research is that it includes examples from non-visible channels (private messaging) and a variety of social platforms. Taken together, our studies point to trends on current news sharing behaviors, motivations and attitudes in America.

Public sharing was the least frequent across both samples, yet these are the shares that often reach the most people. Our large survey found that the people who share publicly are younger and lower income, and have neutral rather than negative attitudes toward public discourse. Our artifact revealed that the kind of news shared publically differs significantly from that shared to smaller, limited audiences. People shared political ideology everywhere, but the highest proportion of those were in public channels (two thirds), whereas there were smaller proportions in social and messaging (less than half). Like past research on the topics of types of news shared [6], we see strong emotions related to sharing, where people were upset and angry and took the action of sharing as a result of those feelings. Respondents promoted ideology that resonated with them and that they cared about deeply. They wanted others to know about these things that they considered important or upsetting. This concept of emotional disagreement is gaining recognition: earlier in 2017 PEW added the term “indignant disagreement” to their online glossary¹. Pushing ideology includes a strong emotional component; however the motivation to influence diverges from user motivations outlined in [30]. We observed artifacts that promoted messages that resonated with one’s values and others that seemed to promote association to ideology or the crafting of a “personal brand.” Our results suggest a particular belief system of positive self- and online-efficacy in those who engage in public discussion.

There was a large variation in the types of news shared based on political philosophy. We observed liberal participants posting to commiserate and “hate together” over Trump’s policies and actions, while we saw

conservative participants celebrating together over missile strikes and Trump protesters being attacked at rallies. We observed profanity in posts and negativity about particular groups of people, using words we chose to omit from this paper. A strength of this research is the variety of types of news shared, and the breadth of political partisanship demonstrated in the sample of artifacts. We observed many examples of conservative/Trump supporting posts, which seems in-line with his support in the general population - something that would be hard to achieve with any type of in-person study in our state.

Pushing ideology was more frequent in public channels and we found a key differentiator for sharing is the desire to engage in public discussion. We found that groups were not divided equally in terms of propensity to engage with each channel. Instead, we found, if they engaged in sharing at all, most people engaged in private and social sharing, with public sharing as less common.

We observed the smallest number of shares perceived as funny. An underlying motivation to post to wide audiences may be to impress others with hilarious news or including a clever caption. Some of the funny examples included political context so there may be underlying motivation to amplify a certain ideology. We saw humor/creativity in the tweets to promote ideologies publicly.

Public shares related to general interest were lower than expected whereas that type of sharing was as expected on social media, with a higher than expected proportion within messaging. In messaging, the motivation was primarily social, to maintain the relationship, because the sharer “thought of” the recipient. This stands in contrast to the purpose of sharing general interest news publicly, which was purely to spread awareness. On social media, the purpose was mixed, where some was shared to inform and some was shared because it generally matched the interests of friends.

The proportion of political content differs from previous work. 6.5% of Oeldorf-Hirsch and Sundar’s sample [37] and 24.6% of Lee et al.’s [33] sample shared political news whereas ours was 44% on social channels. The motivations in [33] did not include promoting ideology and being upset. The increase in political sharing suggests that today’s political climate is drastically stronger. While the current election cycle has been headline news for almost three years, this focus on politics may be an aspect of this particular time in America and could diminish over time. Oeldorf-Hirsch and Sundar [37] compared broadcast levels (own profile, another’s profile and direct message) and did not find main effects but found an interaction with comments: posting more publicly and receiving public engagement led to greatest feelings of involvement and sense of influence. This is inline with our observations that participants posted publicly and to social media rather than privately in order to influence the ideology of others.

¹ <http://www.people-press.org/2017/02/23/appendix-b-terminology/>

A design implication coming from the above is for platforms to provide users with strategies to increase amplification of their posts. For example, provide suggested hashtags or groups to increase reach. Further, posts and shares on social media platforms tend to have engagement metrics such as likes and reshares however they don't tend to have total viewcounts, which may be validating.

A third of our survey sample shared news in all channels: they are younger, have a lower income, feel neutral toward online discussion but feel they have something to add. People like these who are actively posting could be given more opportunities to engage with related and crosscutting content. For instance, after posting an article, a user could be shown which other users posted the same content, and they could also be exposed to related and crosscutting content. Moreover, our findings suggest that to reduce context collapse, provide the ability to select specific audiences for posts, for instance, friends from specific geographic areas.

Those who post to social media and messaging but not publically have the greatest concerns about trolling and retaliation online. We applaud current efforts on understanding predictors of trolling (e.g., [13]) as this is a barrier to participation in public forums.

LIMITATIONS

We would like to highlight a few limitations. Firstly, our data sought to understand online American behavior, but not all American nor global behavior. The survey platforms that we used are strongest in the United States, and can get us fairly representative samples of US online users [5]. However due to their weaknesses in other countries, we have chosen to only focus on United States participants for this work. Behavior in other countries, specifically around political news sharing, may be quite different.

Secondly, MTurk participants were responsible to locate and share their two most recent examples of news sharing in each platform. We cannot be certain that they shared the two latest postings and may have left items out. Yet, due to the quantity of racist, myogenic, and profane posts, we feel that we obtained a reasonable sample of the broad range of news viewpoints. However, if participants choose not to share particular posts, data on categories and time between shares may be incorrect. The trends in sharing frequencies across channels were similar across samples, however it relied on self-report, which is prone to memory error.

Third, there are relevant variables that were not tracked, such as feature-level and usability differences of sharing features across platforms, facility with basic sharing functionalities, barriers to access various platforms, etc. With our artifact analysis and with our survey, we assume that our data averages across a broad range of relevant variables that vary for online Americans: sizes of personal networks, technical abilities with social media, and proportionality of strong/weak ties.

Finally, the survey responses and the artifacts represent a snapshot of a very political period in the US. At other times of the year, or in years with less political activity, it is likely that we would see other types of content more commonly shared (e.g. more sports during NFL season, more activities/public interest stories in the summertime). Conducting this study in another season or collecting more longitudinal data is left to future work.

CONCLUSION

In this paper, we presented what we believe to be the first comprehensive look at news sharing behaviors across messaging apps, social media, and public platforms using an analysis of actual artifacts of sharing and a survey. By recruiting a broad sample of online participants from across the US, we were able to explore how a variety of online Americans share and don't share news, digitally.

Our research addressed differences in attitudes and motivations to share across different audiences and the different types and amounts of stories that were shared. Fewer people share news publicly, and on average they share less frequently than through social and private messaging. Those who share publicly have more faith in online discourse and are moderately worried about online conflict and those who never share are pessimistic about online discourse and less worried about conflict. Public shares have different news content: more political ideology and less information sharing.

While we intended to study general sharing during a typical news cycle, data was collected and analyzed in an unprecedented high-intensity election year. It might be argued that our results are evidence that after the American election there continues to be heightened after-effects. We encourage other researchers to continue this work by conducting similar studies outside of the United States and over longer time periods in order to investigate regional or temporal differences in sharing and discussing the news.

Whether done publicly or toward friends and family, we found that people use news to voice their values and ideology, especially when they believe others will listen and learn from it. People who only share with friends and family are more concerned about pitfalls of online discussion, and share information relevant to their relationships. By studying how people share news, and differences between sharing to different audiences through different platforms, we are understanding how people engage with this type of technology. Sharing links is an important part of the diffusion of news and these emotional, behavioral and technological mechanisms are believed to play a key part in swaying the 2016 US election [16]. This work aids researchers and designers to create systems that better support the sharing of news across a variety of platforms as well as engaging users to comment on news with the audiences that they choose.

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