# Who Portrayed It as "The Chinese Virus"?
# An Analysis of the Multiplatform Partisan Framing in U.S. News Coverage About China in the COVID-19 Pandemic

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The emergence of social media as news sources has added another layer to news framing research. This study analyzes U.S. news coverage about China in the COVID-19 pandemic—an important issue because of the recently rising xenophobia and racism toward Asians—to explore how publishing platforms influence partisan framing in digital news. By conducting structural topic modeling (STM) analyses on website news and news tweets published by 27 major U.S. news media, this study examines how framing varied across media with different political orientations and whether publishing platforms moderate framing strategies. The results show support for differences across the spectrum of political orientation and between the two platforms. Conservative media tend to adopt more sensational and attitudinal frames compared to media that are more liberal. The gap between the two sides of the political spectrum was in general wider on Twitter than on news websites. Implications on media effects studies and activism against hate crimes are discussed.

*Keywords: framing theory, partisan framing, digital news, social media, health issue, foreign affairs, China, COVID-19*

The recent years have witnessed an increasingly balkanized news environment in the United States, especially online (Baum & Groeling, 2008). Research has shown that elite polarization represented by partisan news framing will fundamentally direct public opinion (Druckman, Peterson, & Slothuus, 2013). People's exposure, especially partisan selective exposure, has exacerbated affective polarization and made it difficult to build common ground for healthy political deliberation (Iyengar, Lelkes, Levendusky, Malhotra, & Westwood, 2019).

Additionally, digital platforms may feature different frames in certain issue coverage. There has been an increase in partisan polarization on social media, often evidenced by the dissemination of hate

speech and mis- or disinformation (e.g., Bridgman et al., 2020). This polarization on social media presents a sharp contrast to news websites. Major social media, such as Twitter and Facebook, have announced policies to fight against hateful conduct (e.g., "Hateful Conduct Policy," n.d.). Meanwhile, the increasing commercial competition among the multiplied news media has driven major U.S. news outlets to actively disseminate news and interact with readers using their accounts on social media platforms. Nevertheless, hardly do we know how the different platform affordances influence news framing.

This study, therefore, aims to examine how political orientation and publishing platform influence news media's framing on an important topic—China and COVID-19—in major U.S. media. With the intensified competition between the United States and China for global leadership, their relationship is gradually moving to the center of political discussion among American news media. The ability to handle the diplomatic relationship with China has become a major factor when evaluating political candidates in the 2020 U.S. presidential election (Kapur, 2020). A 2021 report also revealed deepening partisan divides on attitudes toward China (Silver, Devlin, & Huang, 2021), which indicates potentially polarized news framing.

More specifically, the COVID-19 pandemic added tension to and widened the gaps in U.S. news coverage about China. COVID-19 presents unique challenges as it is the first global pandemic to occur in the era of digital media. While digital media enable the spread of important updates and health information, it has also amplified an "infodemic" full of mis- and disinformation, as well as harmful conspiracy theories.

A predominant part of news coverage in the current infodemic is related to the divergent and problematic framing of China in the spread of the virus. For example, serious allegations have emerged about the origin of the virus, with even former U.S. President Donald Trump alleging that the virus was manmade and inadvertently released to the public (Mangan & Lovelace, 2020). Following these allegations, the United States has experienced a 150% surge in hate crimes targeting Asians (Farivar, 2021).

The present study seeks to analyze the extent to which the frames used within the media sphere have contributed to global tensions about the COVID-19 pandemic. This study expands the existing literature on framing theory in three ways: (1) identifying the different partisan framing strategies adopted by U.S. news media; (2) differentiating two versions of framing systems on websites and social media; and (3) revealing whether the partisan framing interacts with the impact of the presenting platform. This study also innovatively introduced an advanced topic modeling method, structural topic modeling (STM), to test the main and interaction effects of conditional partisan framing.

## Literature Review

### *Framing Theory*

Framing theory, as postulated by Goffman (1974), described the use of different framing strategies by media organizations. Reese (2001) articulated that media framing refers to how events and issues are organized and made sense of by the media. The selection of specific frames leads to meaning creation by portraying salient information to audiences, which can draw attention—whether purposefully or

inadvertently—to specific aspects of reality and are the reflection of power play and ideology battles (Entman, 1991).

Scholars have developed different analytical frameworks and techniques for framing analysis. With the development of computer-assisted content analyses, unsupervised machine learning has been widely used to understand large quantities of digital texts (Nicholls & Culpepper, 2020). Reese (2001) also stressed that framing analysis should bridge the quantitative and qualitative scholarship by including ideological analysis, which is the strength of the framing theory, as it can capture both the said and the unsaid, contextual information. Thus, we take advantage of both routes by combining computational methods and manual analysis.

Although many framing studies stopped at interpreting the frames, issue framing in media has been proven to have a significant impact on information processing decisions (e.g., Scheufele & Tewksbury, 2007). The issue that we focus on here—the portrayal of China in the COVID-19 pandemic—stands at the intersection between framing a foreign country and framing a public health issue. Scholars have shown that media framing of foreign countries could affect U.S. people's impression of the countries as well as their understanding of the diplomatic policies of the United States (e.g., Saleem, 2007). News coverage on public health issues was also found to promote policy changes through informing the public, interpreting meanings, cultivating values, and attracting attention for advertisers (Gollust, Fowler, & Niederdeppe, 2019). Thus, identifying frames in covering this issue can help to inform not only the public's opinions and behaviors but also potential policy directions.

### U.S. News Frames of China

How U.S. media frame China is a well-studied topic. Previous research studied specific issues about China, such as human rights (Lee, Li, & Lee, 2011), international events (Akhavan-Majid & Ramaprasad, 1998), public health issues including SARS (Luther & Zhou, 2005) and AIDS (Wu, 2006), Sino-U.S. relationship (Hook & Pu, 2006), and the overall national image (Golan & Lukito, 2015). Most studies contrasted the multiple realities presented in the United States and China's media and focused on how the socially constructed news reflected the divided ideology in the two countries.

The previous framing analysis on China, nevertheless, shares three drawbacks: First, because of the limited capacity of manual analysis, most studies took only several media outlets as examples and did not present the diversity in the U.S. media ecosystem. For instance, Golan and Lukito (2015) showed that the *New York Times* and *The Wall Street Journal* framed China in distinctive ways. Second, researchers emphasized the macrolevel cross-national difference in framing strategies and assumed that all news media shared the same set of framing strategies. With the increasing fragmentation of U.S. news media in recent decades, it is also important to dive deeper into the potential differences across the political spectrum, as well as across different platforms. Third, previous studies often examine China's national image as a pure foreign affair issue. The rapid global transmission of COVID-19, however, has redefined the China-related issue: China is blamed for spreading the virus to the United States and works as the major supplier of key personal and professional protective equipment, which connects China further with other countries like the United States (Mangan & Lovelace, 2020).

Accordingly, we first seek to understand the overall framing strategies used by all major U.S. news media:

RQ1:    How do U.S. news media, regardless of their political orientation and publishing platform, frame their coverage of China during the COVID-19 pandemic in their digital news coverage?

### Political Orientation of the Media

There has been ample literature about how news outlets with varying political orientations frame their content and the resulting effects on audiences (Benkler, Faris, & Roberts, 2018; Faris et al., 2017; Polletta & Callahan, 2018). The fragmentation and division of the media environment have resulted in a preponderance of hyperpartisan outlets. As the number of cable television networks continues to grow, these outlets are increasingly embracing polarized partisan perspectives, which often results in weaponized news content that further divides the electorate (Benkler et al., 2018; Polletta & Callahan, 2018). Furthermore, as noted by Faris et al. (2017), the media ecosystem itself functions quite differently because of this proliferation in outlets, where left-wing organizations tend to be more rooted in traditions and practices of objective journalism, and right-wing outlets tend to be more polarized and argumentative in their reporting. Benkler and colleagues (2018) forge similar claims, arguing that the right-wing media system functions in a structurally different way than the rest of the media system, as conservative outlets are closely interconnected, exhibit very little ideological diversity, and have fundamentally detached themselves from the rest of the media ecosystem.

Specific to the COVID-19 pandemic, misinformation and conspiracy theories can likely be traced back to partisan media, as the literature demonstrates that partisan outlets often spread extremist views and attitudes (Warner & Neville-Shepard, 2014). Garrett, Long, and Jeong (2019) also argued that Americans who consume information from partisan media tend to express less accurate beliefs about various politically charged topics than those who do not consume partisan media.

More specifically, ample evidence suggests that the conservative media sphere relies heavily on a strong distrust of authority and deep-rooted cynicism (van der Linden et al., 2020). These qualities are often reflected in conservative outlets' framing strategy. Miller, Saunders, and Farhart (2016) argue that individuals who consume more conservative news are more likely to subscribe to conspiracy theories and misinformation. Researchers have also found that certain news categories, especially those around controversy and conflicts, are generally more sensational and attitudinal, which means they were normally composed to evoke startling or thrilling emotions (Grabe, Zhou, & Barnett, 2001; Kilgo, Harlow, García-Perdomo, & Salaverría, 2018). Thus, considering the existing literature, we hypothesize:

H1:    The news frames adopted by U.S. conservative media in coverage about China during the COVID-19 pandemic will be those that are generally portrayed more sensationally and attitudinally than the ones of liberal media.

### Between-Platform Differences

Previous research has offered indications about how news organizations, when using different platforms to disseminate news, adopt distinct framing strategies. Considering the trend of media convergence—a trend describing the blurred boundary and increased connectivity between media forms—since the 1980s, there has been an increased encouragement among traditional news media to adopt a plurality of media formats, specifically news websites (Peil & Sparviero, 2017). Among those who get digital news, around 76% use social media as their news source (Shearer & Mitchell, 2021).

The digitization of news also encouraged media to expand their online presence to social media, especially Twitter, the arguably most open and widely used platform in the United States. While news websites largely replicate the content from the more traditional forms, social media accounts of news organizations curate a very different agenda because of audiences' characteristics and platform features (Messing & Westwood, 2014). As early as 2011, research has revealed that the news agenda presented on Twitter has begun to deviate from the one on legacy media's website (Pew Research Center, 2011). More recent studies further showed that many news media tend to create content specific to social media platforms and have a distinctive news framing on Twitter (Palser, 2009).

Existing research has also posited that news framing on social media may be confined largely by the platform's affordances (boyd & Ellison, 2007; Bucher & Helmond, 2017). Scholars found that, because of the platforms' social nature and recommendation systems, news media tend to use sensational words or clickbait more often on their social media accounts to boost interactions (Kilgo et al., 2018). Other platform features, such as the 280-character limit on Twitter, lead to the compromise of details in news reporting. A higher level of ambiguity about misinformation might distort audiences' accuracy judgment and exaggerate selective perception (Zhou, Xiu, Wang, & Yu, 2021). Budhwani and Sun (2020) also empirically showed a surge of tweets mentioning "the Chinese virus" and "China virus," which may create and perpetuate stigma against China, Chinese people, and even the larger Asian community. Besides China-related topics, scholars such as Zhang (2021) explored 19 major social issues with a U.S. data set and found that even the same news organizations publish in slightly different ways on news websites and social media, in terms of both issue salience and news content. Thus, the following hypothesis is proposed:

H2:    The framing strategies adopted by U.S. media on Twitter in coverage about China during the COVID-19 pandemic will be those that are generally portrayed more sensationally and attitudinally compared to their websites.

Additionally, the gap between platforms may be different by media's political orientation, as the two sides have different levels of motivations to cater their content for social media, which is more traffic-driven and competitive than news websites. A report showed that liberals were more likely to get political news from social media such as Twitter than conservatives (Mitchell et al., 2014). Thus, liberal media should technically be more motivated to invest in their social media team. On the other hand, as social media are charged for nourishing conspiracy theories and misinformation, the sensational aspect of conservative news might be exacerbated on platforms like Twitter compared to news websites. Given the intensifying polarization in the United States, it is also of great normative importance to examine if the platform

difference has widened the framing strategy gap between the two sides of the political spectrum. We explore this interaction effect in the form of a research question:

RQ2:    Will platform differences interact with the impact of news media's political orientation on framing strategies?

## Method

### Data Collection

We collected both website articles and tweets from 27 American media outlets (see Table 1) using Brandwatch, a social media analytic platform. The political orientation of each outlet was determined using AllSides, a website that reports media bias ratings among news sources based on an aggregated and normalized collection of editorial reviews, third-party data, independent reviews, and finally the site's Blind Bias Survey (AllSides, n.d.). Our data include four right (coded as 1), two right-leaning (coded as 0.5), seven central (coded as 0), seven left-leaning (coded as −0.5), and six left (coded as −1) news media. It is worth noting that our analysis includes outlets categorized as central, left-, and right-wing organizations. This decision was made to analyze the comprehensive media system to make meaningful comparisons across political orientations. Thus, we introduced political orientation as a continuous variable and included media located at all points of the spectrum. We searched all news items published by these outlets between January 1, 2020, the day after Wuhan Municipal Health Commission of China first reported "viral pneumonia" in Wuhan (WHO, 2020), to May 7, 2020. News articles and tweets were included if they contain both China-related keywords (i.e., China, Chinese, Beijing, or Wuhan) in the title and COVID-19-related keywords (i.e., COVID19, COVID-19, 2019-nCoV, COVID, Coronavirus, corona virus, China virus, Wuhan virus, Chinese virus, CCP virus, or the pandemic) in the full text. Our data collection yielded a final corpus of 7,545 tweets and 19,747 news articles. Following the approach from Guo and colleagues (2021), only the headlines of online news articles were used in the analysis to match with the length of news tweets.

*Table 1. Information About 27 Major U.S. News Outlets.*

| Media Outlet | Website URL | Twitter Handle | # of News Articles | # of Tweets | Political Orientation |
|---|---|---|---|---|---|
| ABC News | abcnews.go.com | @ABC | 241 | 668 | Left-Leaning |
| Breitbart News | breitbart.com | @BreitbartNews | 2258 | 448 | Right |
| CBS News | cbsnews.com | @CBSNews | 122 | 318 | Left-Leaning |
| Chicago Tribune | chicagotribune.com | @chicagotribune | 71 | 123 | Center |
| CNN | cnn.com | @CNN | 756 | 896 | Left |
| Daily Caller | dailycaller.com | @DailyCaller | 257 | 442 | Right |
| Daily Kos | dailykos.com | @dailykos | 82 | 17 | Left |
| Fox News | foxnews.com | @FoxNews | 573 | 3 | Right-Leaning |
| Huffington Post | huffpost.com | @huffpost | 35 | 72 | Left |
| LA Times | latimes.com | @latimes | 44 | 303 | Left-Leaning |
| Mother Jones | motherjones.com | @MotherJones | 10 | 27 | Left |
| MSNBC | msnbc.com | @MSNBC | 29 | 149 | Left |
| NBC News | nbcnews.com | @NBCNews | 91 | 406 | Left-Leaning |
| Newsmax | newsmax.com | @newsmax | 255 | 95 | Right-Leaning |
| Newsweek | newsweek.com | @Newsweek | 252 | 284 | Center |
| NPR | npr.org | @NPR | 247 | 261 | Center |
| New York Times | nytimes.com | @nytimes | 1322 | 693 | Left-Leaning |
| One America News Network | oann.com | @OANN | 724 | 168 | Right |
| PBS | pbs.org | @PBS | 39 | 4 | Center |
| Politico | politico.com | @politico | 39 | 108 | Left-Leaning |
| Slate | slate.com | @slate | 25 | 239 | Left |
| The Blaze | theblaze.com | @theblaze | 7 | 126 | Right |
| The Hill | thehill.com | @thehill | 348 | 483 | Center |
| USATODAY | usatoday.com | @USATODAY | 219 | 218 | Center |
| Washington Post | washingtonpost.com | @washingtonpost | 193 | 299 | Left-Leaning |
| Wall Street Journal | wsj.com | @WSJ | 536 | 574 | Center |
| Yahoo News | news.yahoo.com | @YahooNews | 10972 | 121 | Left-Leaning |

***Unsupervised Machine Learning***

Computer-assisted content analysis has been widely applied to framing analysis as manual analysis cannot handle the massive digital texts generated every day (Guo, Vargo, Pan, Ding, & Ishwar, 2016). Because of the lack of established frames in this issue, we chose the more inductive unsupervised machine-learning method to explore the latent pattern. Compared with other unsupervised approaches, the STM (Roberts, Stewart, Tingley, & Airoldi, 2013), a popular political science method developed based on Latent Dirichlet Allocation (LDA; Blei, Ng, & Jordan, 2003), enjoys the benefit of taking metadata (e.g., time and media types) into consideration when modeling topics. Because of the polarized and fragmented media

environment and the rapidly changing public attention in the digital media era (Bennett & Iyengar, 2008), we believe that STM can better capture the frames while enabling significant tests on the focal variables. For instance, if we were to add political orientation as a covariate, STM would provide us with information about how the prevalence of a frame will change when the political orientation score increases or decreases a unit and whether the change is significant. Additionally, as controversy exists on whether the extracted topics can be directly equated to frames, we borrowed from Nicholls and Culpepper's (2020) approach and combined STM and manual analysis to identify the labels and meta-labels. We adopted the R package "stm" to fit the models and used the default spectral initialization. As this package uses the term "topic" to refer to all resulting clusters, we use "topic" and "frame" interchangeably in this study.

It is worth noting here that the present study focuses on emphasis frames—a form of framing that involves the overall manipulation of content. As described by Cacciatore, Scheufele, and Iyengar (2016), existing studies about emphasis frames focus on the manipulation of content that audiences are exposed to rather than how equivalent information is presented. As posited by Tankard (2001), news headlines have exhibited their ability to present emphasis frames when they are first seen by audiences and often determine the perception of the text that follows.

The present study also borrowed this approach (i.e., analyzing headlines for frames) from empirical studies, such as Guo et al. (2021), that argue that headlines are a worthwhile unit of analysis, particularly in the context of the contemporary media sphere where sensational headlines and clickbait garner widespread attention. The popularity of social media as news sources has also encouraged longer and more information-rich headlines in newsrooms, which made the detection of frames in headlines more feasible.

Specifically, we performed the data analysis in five steps. First, both news headlines and tweets were cleaned through the removal of emojis, URLs, mentions, retweet headers, special characters, and the keywords used to search. We also unified the spelling of some frequently appeared place names and turned each into a singular phrase (e.g., "new york" to "newyork") to ensure they can be identified together (e.g., not "new" and "york"). Secondly, we added the two focal variables—media's political orientation and the binary variable of platform difference—and their interaction term into the model respectively as the prevalence covariates, with overtime change (i.e., month with a spline) controlled. We chose to control months over days for two reasons: (1) News media tend to have some continuity on their framing strategy and will be less likely to change overnight; (2) The "stm" package does not allow more than 50 covariates while using the dummy variables of days will generate 126 additional covariates; (3) We used the function "searchK" to look for the best number of topics. Following the suggestion of Roberts, Stewart, and Tingley (2019), we calculated held-out log-likelihood (Wallach, Murray, Salakhutdinov, & Mimno, 2009) and residual analysis (Taddy, 2012), the average exclusivity, and the average semantic coherence across topics when K = 5 – 70 with the function "searchK." The four criteria indicated that K = 29, 30, 31, and 33 showed good performance. We then plotted the exclusivity and semantic coherence of each topic and looked into the top words of each model. Finally, the authors reached the consensus that 30 clusters represented the optimal number of topics for modeling. Fourth, we manually labeled each topic based on the top words with the highest rankings in the probability, FREX, lift, and score metrics, which balances both words exclusivity and frequency (Roberts et al., 2019), as well as the sample texts. We manually grouped the 30 frames into frame packages based on the similarity of the labels. Finally, we estimated the effects of all variables and

the interaction term. According to the handbook of STM (Roberts et al., 2019), the interaction term between covariates can be added to the R formula utilizing the standard notation. The expressions were *Political orientation + Platform + s(Month)* and *Political orientation × Platform + s(Month).*

## Results

Overall, the results demonstrate that U.S. news coverage on COVID-19 and China focused on five frame packages and one miscellaneous package, with the attention equally distributed to each of them. We also observed significant differences in framing strategies across political orientation, especially when it comes to frames related to controversies and conspiracy theories and frames featuring how China was struck by the pandemic. As expected, the publishing platform has a significant impact on most frame prevalence rates and moderate the effect of media political orientation.

To answer RQ1, Table 2 summarizes the 30 frames used in the media's coverage of China in the COVID-19 pandemic. Five major frame packages emerged from these 30 frames. First, six frames highlight the controversies and conspiracy theories related to China. These frames blame China for the origin of the virus (Topic 27), the handling of the pandemic (Topic 8), and the general lack of trustworthiness of the authority (Topic 3, Topic 20, and Topic 29). Following the framework proposed by Entman (1991), we argue that this frame package defines the COVID-19 pandemic as a manmade disaster, identifies the cause as a communist conspiracy, casts doubt on China's authority, and calls for the investigation and sanction of China. From the examples, we can tell that news coverage with this frame package often cites political figures from the Republican Party, such as Mike Pompeo, and U.S. government departments, such as "US intelligence community" and "US health officials."

### *Table 2. Labels and Examples of the 30 Resulting Frames.*

| Frame Package | Frame # | Frame Label | Stemmed Top Words (Highest Probability) | Examples |
|---|---|---|---|---|
| Controversies and Conspiracy Theories (Average prevalence = .035) | Topic 3 | Calls to investigate China's cover-up | call, trump, critic, investig, hous, unitedst, handl | "Sen. Josh Hawley Calls for International Probe into China's 'Cover-Up'" |
| | Topic 8 | Controversy around China's handling of the pandemic as an authoritarian country | time, one, just, come, mani, polic, newyork | "How suspicious should we be of China's success story?" |
| | Topic 20 | Rumors/misinformation on social media in the United States and China | state, media, can, pass, give, polit, shut | "China Censors WeChat Messages, Blacklists Keyword Triggers" |
| | Topic 27 | COVID-19 coming from Wuhan Lab | warn, lab, unitedst, doctor, pompeo, wuhan, claim | "Mike Pompeo Says There's Enormous Evidence That COVID-19 Came From Wuhan Lab" |

|  | | | | |
|---|---|---|---|---|
|  | Topic 29 | U.S. politicians blaming CCP for the pandemic | trump, pandem, presid, respons, blame, communist, american | "GOP Senator Ben Sasse: Communist Party Has Lied, China Is Lying And Will Continue To Lie About COVID-19" |
| Economic Impacts of COVID-19 (Average prevalence = .031) | Topic 10 | Global financial impacts of the pandemic | show, data, share, even, hope, firm, releas | "United States STOCKS-Wall St jumps as China stimulus measures soothe virus worries" |
|  | Topic 11 | Impacts on international tourism from and to China | amid, flight, hongkong, outbreak, airlin, cancel, suspend | "Hong Kong suspends most of its border crossings with mainland China amid COVID-19 outbreak" |
|  | Topic 14 | Impacts on China's manufacturing industry | suppli, eas, control, busi, factori, compani, export | "China March exports slump slows to 6.6% year-on-year, imports down 0.9%" |
|  | Topic 21 | Impacts on transnational corporations | demand, australia, sale, threaten, journalist, restaur, pressur | "Nike's Quarterly Sales Pressured by Coronavirus Closures in China" |
|  | Topic 23 | Panic impacting the stock market and oil prices | spread, global, fear, latest, market, stock, grow | "Stocks, Oil Prices Skid as China Virus Fears Drive Investors to Safe Havens" |
|  | Topic 24 | China's financial efforts on recovering the economy | hit, economi, trade, cut, econom, billion, despit | "China tries to revive coronavirus-hit economy, but consumers remain wary" |
| Domestic Situation in China (Average prevalence = .041) | Topic 1 | Lockdown in Wuhan | wuhan, outbreak, citi, dead, end, leav, lift | "Deserted streets. Closed shops. Wuhan, the city at the center of a deadly coronavirus outbreak, looks like a ghost town." |
|  | Topic 4 | Impacts on students and schools related to China | student, protect, novel, high, school, appear, univers | "Coronavirus: Quarantined school children in China spam homework app with 1-star reviews to get it kicked off app store" |
|  | Topic 9 | Chinese holidays during the pandemic | year, keep, plan, second, holiday, lunar, relat | "Lunar New Year means everything in China. Canceling celebrations is a massive deal—CNN" |

|  | Topic 16 | The pandemic situation in Asia | virus, korea, asia, south, japan, epicentr, die | "Asia Today: Sri Lanka reimposes curfew; 12 cases in China" |
|---|---|---|---|---|
|  | Topic 19 | Changes of event plans in China | beij, close, due, store, reopen, may, appl | "Apple to delay reopening of retail stores in China" |
|  | Topic 25 | Case reports in China | case, new, report, first, confirm, infect, day | "Mainland China reports 394 new confirmed cases of coronavirus, lowest since Jan 23" |
|  | Topic 28 | China's quarantine policies | peopl, lockdown, quarantin, return, home, work, back | "China's Concentration Camp Capital Quarantines at Least 99 over Coronavirus" |
| China's Influences on Other Countries (Average prevalence = .033) | Topic 12 | China providing ventilators for New York State | say, will, offici, unitedst, help, make, deal | "Cuomo says China and Oregon will be sending ventilators to New York" |
|  | Topic 13 | Foreigners' evacuation from Wuhan | wuhan, evacu, unitedst, american, citizen, arriv, test | "Two chartered flights carrying hundreds of Americans fleeing the coronavirus outbreak in China have landed at Travis Air Force Base in Northern California" |
|  | Topic 17 | The quality of medical supplies sent worldwide by China | mask, hospit, face, medic, test, worker, million | "Netherlands Recalls 600,000 Defective Masks Sent from China" |
|  | Topic 30 | The transmission of COVID-19 | unitedst, outbreak, start, epidem, offici, author, covid- | "U.S. Health Officials Confirm Second U.S. Case of Wuhan Coronavirus" |
| International Public Health Updates (Average prevalence = .034) | Topic 2 | The need for herd immunity | now, like, get, diseas, need, know, look | "As we look at what happened in China, and what's happening now in Italy, it's easy to adopt a fatalistic attitude that "there's nothing we can do, we're all going to get it anyway."" |
|  | Topic 6 | The global death toll | death, toll, rise, number, itali, near, top | "Coronavirus Cases Surpass 60,000 in US; Spain Death Toll Overtakes China" |
|  | Topic 15 | International travel bans | travel, countri, ban, nation, foreign, contain, restrict | "China temporarily bans foreign nationals to curb the spread and return of coronavirus" |

| | Topic 22 | Declaring of the global health emergency | health, world, said, public, offici, emerg, accord | "World Health Organization declares global emergency over Coronavirus" |
|---|---|---|---|---|
| | Topic 26 | Vaccines development | patient, use, studi, find, scientist, drug, vaccin | "Study from China raises serious questions about both COVID-19 immunity and vaccine effectiveness" |
| Other (Average prevalence = .018) | Topic 5 | Miscellaneous | take, video, street, wall, pay, race, three | "China reclassifies dogs as pets, not livestock, in wake of the coronavirus" |
| | Topic 7 | Miscellaneous | month, set, recov, almost, key, soon, seen | "U.S. playing dangerous game, China says, after warship sails through Taiwan Strait" |
| | Topic 18 | Breaking news or daily news summaries | live, news, updat, announc, follow, brief, thursday | "What's Happening: Nativity church shut, China factories open"[1] |

The second frame package deviates from the political aspect and focuses on the economic impacts of COVID-19. News coverage using this frame package mainly stressed both the general global economic impact (Topic 10: finance; Topic 21: transnational corporations; Topic 23: stock market and oil prices) and the major hit on China's economy (Topic 11: international tourism; Topic 14: manufacturing industry; Topic 24: finance). This frame package describes the pandemic from an economic perspective and focuses on reporting numbers and policies.

The third frame package emphasizes people's lives in China and other Asian countries during the pandemic, which includes frames portraying the general picture (Topic 16, Topic 25, and Topic 28) as well as the specific aspects (Topic 1: Wuhan lockdown; Topic 4: schools; Topic 9: holidays; Topic 19: events). This frame package defines the pandemic as a disruption to people's normal life (e.g., "ghost town"; "canceling celebrations"). While most frames within this package are objective depictions of the domestic situation of China, some also make moral judgments and imply that governments deprived citizens' freedom.

Moving to the fourth package, four frames focus on China's impacts on other countries at the early- (Topic 13: evacuation), mid- (Topic 30: transmission), and later-stage (Topics 12 and 17: medical supplies) of the pandemic. In this frame package, Topic 12 and Topic 17 provide an interesting contrast in portraying China's image: While Topic 12 defines China as a helpful supplier and friendly supporter of the New York State, Topic 17 emphasizes the quality concerns about supplies made in China. Topics 13 and 30 also frame China as an unsafe place and the source of blame for the global COVID-19 pandemic.

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[1] These headlines are examples of the analyzed texts. The references are thus omitted from this study.

The last frame package primarily covers international public health updates, with various specific frames focusing on WHO's announcement (Topic 22), the death toll (Topic 6), and the solutions (Topic 2: herd immunity; Topic 15: travel bans; Topic 26: vaccine). In this package, China only plays a peripheral role and is framed as an ordinary member of the international community. Finally, our results also led to three miscellaneous frames covering news summaries or news that is not directly related to China and the COVID-19 pandemic.

The STM results show that the five frame packages are equally distributed. Four of the major frame packages have very similar average prevalence (.031–.035), with the domestic situation in China package slightly higher than the others (average prevalence = .041). If we further look at the prevalence ranking of the 30 specific frames, Topic 25, which represents the daily case report in China, occurs most frequently and is followed by Topic 29, U.S. politicians blaming CCP for the pandemic, and Topic 6, the death toll worldwide.

To address H1, H2, and RQ2, we estimated the effect of political orientation, platform, and their interaction term (see Table 3). The results show significant partisan differences for 21 of 30 frames. A closer look tells us that conservative media tended to adopt controversies and conspiracy theories frames more frequently (except for Topic 8 on authoritarian handling: $B = -.003$, $p < .05$) while liberal media were more likely to cover the domestic situation in China, China's influences on the other countries, and international public health updates (except for Topic 2 on herd immunity: $B = .003$, $p < .01$). The partisan division is less clear on the frame package of economic impacts of COVID-19—only on Topic 10 (global financial impacts of the pandemic) that liberal media have significantly higher frame prevalence. It is also worthy to note that the partisan difference appeared to be the largest on the frame of U.S. politicians blaming China's Communist Party (CCP) for the pandemic (Topic 29; $B = .023$, $p < .001$), meaning that while conservative media have intensive coverage on this frame, liberal media hardly use it. Thus, we conclude that partisan framing indeed exists in U.S. media's portrayal of China in the COVID-19 pandemic. H1 is supported.

*Table 3. Effect Estimates of the Focal Variables and the Interaction Term for Each Frame.*

| Frame Package | Frame # | Political Orientation (Conservative) | Platform (Website) | Political Orientation × Platform | Month (Jan) | Month (Feb) | Month (March) | Month (April) |
|---|---|---|---|---|---|---|---|---|
| Controversies | Topic 3 | .010*** | .000 | .001 | −.010** | .023*** | .059*** | .074*** |
| and | Topic 8 | −.003* | −.026*** | .007*** | .009** | .017*** | .005 | .002 |
| Conspiracy | Topic 20 | .006*** | −.004*** | .002** | .001 | .009* | .003 | .003 |
| Theories | Topic 27 | .007*** | −.011*** | −.011*** | −.007 | −.003 | .000 | .094*** |
| | Topic 29 | .023*** | −.018*** | −.019*** | −.041*** | .111*** | .037*** | .061*** |
| Economic | Topic 10 | −.004*** | .008*** | −002** | .014*** | .000 | .023*** | .010*** |
| Impact of | Topic 11 | .000 | .010*** | −.006*** | −.005 | −.073*** | −.045 | −.047*** |
| COVID-19 | Topic 14 | .000 | .009*** | .001 | .013*** | .024*** | .024*** | .021*** |
| | Topic 21 | .002 | .017*** | −.003* | .008* | .012*** | .021*** | .018*** |
| | Topic 23 | −.002 | .005*** | .000 | .005 | −.050*** | −.030*** | −.014*** |
| | Topic 24 | .002 | .015*** | .003* | .028*** | .004 | .020*** | .005 |
| Domestic | Topic 1 | −.006*** | .003** | −.002* | −.040*** | −.046*** | −.021*** | −.046*** |
| Situation in | Topic 4 | −.002** | −.003** | .008*** | .004 | .000 | .009** | .006** |
| China | Topic 9 | −.003*** | .002 | .000 | −.010** | −.006 | .002 | −.001 |
| | Topic 16 | .007*** | .030*** | .005*** | −.009* | −.014** | −.040*** | −.035*** |
| | Topic 19 | −.003* | .020*** | −.005** | .026*** | .005 | .000 | −.005 |
| | Topic 25 | −.011*** | −.001 | .004 | −.015*** | .027*** | −.040*** | −.041*** |
| | Topic 28 | −.008*** | .001 | .003* | .012*** | −.001 | −.012** | −.025*** |
| China's | Topic 12 | .000 | .001 | −.001 | .007* | .006 | .041*** | .029*** |
| Influences on | Topic 13 | −.009*** | .005** | −.005** | −.009 | −.067*** | −.060*** | −.067*** |
| Other | Topic 17 | −.004*** | .003 | .002 | .005 | .011* | .006 | −.005 |
| Countries | Topic 30 | .000 | .000 | .001*** | .000 | .001 | −.003*** | −.001** |
| International | Topic 2 | .003** | −.028*** | .005*** | −.016*** | .027*** | −.009** | .009** |
| Public Health | Topic 6 | −.002* | .003* | .001 | .020*** | −.001 | −.020*** | −.03*** |
| Updates | Topic 15 | −.003** | −.003* | .003** | −.017*** | −.030*** | −.033*** | −.038*** |
| | Topic 22 | −.003** | −.037*** | .017*** | −.001 | −.016** | .003 | −.006* |
| | Topic 26 | .000 | −.001 | −.001 | .021*** | −.026*** | .034*** | .000 |
| Other | Topic 5 | .001 | .01*** | −.003** | .019*** | −.001 | .016*** | .013*** |
| | Topic 7 | −.002** | .000 | .000 | .002 | .018*** | .019*** | .007** |
| | Topic 18 | −.005*** | −.012*** | .001 | −.012*** | .023*** | −.009** | .000 |

*Note.* *p < .05. **p < .01. ***p < .001. Cell entries are unstandardized coefficients (*B*).

For H2, the results show statistically significant differences between websites and Twitter for 22 of 30 frames. As shown in Table 3, the direction of the effects was consistent within most frame packages. U.S. news media adopted the controversies and conspiracy theories frames (*B* = −.026–−.004, *p* < .001), three international public health updates frames (Topic 2: *B* = −.028, *p* < .001; Topic 15: *B* = −.003, *p* < .05; Topic 22: *B* = −.037, *p* < .001), and the students and schools frame (Topic 4: *B* = −.003, *p* < .01) significantly more frequently on Twitter than on news websites. On the contrary, all the economic impact

frames ($B$ = .005–.017, $p$ < .001) three domestic situation frames (Topic 1: $B$ = .003, $p$ < .01; Topic 16: $B$ = .030, $p$ < .001; Topic 19: $B$ = .020, $p$ < .001), the foreigners' evacuation frame (Topic 13), the global death toll frame (Topic 6) was more prevalent on websites compared to on Twitter. In sum, H2 is supported. In accordance with previous literature, the frequently used frames on Twitter are more sensational and time-sensitive while less in-depth and credible. In contrast, the website news focused more on the detailed situation, which requires more space to elaborate and longer attention from readers.

Finally, RQ2 analyzed the interaction between news media's political orientation and their publishing platform. Results show that platform differences significantly moderate partisan framing on 18 of the 30 frames. As summarized in Table 4, the partisan gap was wider on Twitter for 10/18 frames, which was the majority. Figure 1 illustrates some examples of the conditional partisan framing effects. On frames related to controversies and conspiracy theories (Topics 8, 27, and 29), as well as frames stressing impacts on international tourism (Topic 11), impacts on transnational corporations (Topic 21), global health emergency (Topic 22), China's quarantine policies (Topic 28), and the transmission of COVID-19 (Topic 30) and miscellaneous (Topic 5), posting on Twitter intensified media polarization in framing selection when portraying China and COVID-19. For instance, while liberal media criticized China's handling of the pandemic significantly more than conservative media on Twitter (Topic 8), the two sides are about the same on their websites—both hardly adopted this frame. Additionally, although the "blaming Wuhan lab" frame (Topic 27) is more prevalent in the right-wing media on both platforms, the between-partisan difference is much larger on Twitter. Specifically, Topics 1, 2, 10, 13, 15, 16, 19, 20, and 24 all used less sensational framing techniques, with the content within these clusters being more policy-oriented or factual-based and requiring more elaboration from the audience. The implications for these findings will be further explicated in the discussion section.

*Table 4. Summary of the Interaction Effects Between News Media's Political Orientation and Publishing Platform.*

| Frame Package | Frame # | Interaction Effect | Platform gap by Partisan | Partisan Gap by Platform |
|---|---|---|---|---|
| Controversies and Conspiracy Theories | Topic 3 | ns | ns | ns |
| | Topic 8 | Twitter > Websites for all | Left > Right | Twitter > Websites |
| | Topic 20 | Twitter > Websites for all | Left > Right | Websites > Twitter |
| | Topic 27 | Twitter > Websites for all | Right > Left | Twitter > Websites |
| | Topic 29 | Twitter > Websites for all | Right > Left | Twitter > Websites |
| Economic Impacts of COVID-19 | Topic 10 | Websites > Twitter for all | Left > Right | Websites > Twitter |
| | Topic 11 | Websites > Twitter for all | Left > Right | Twitter > Websites |
| | Topic 14 | ns | ns | ns |
| | Topic 21 | Websites > Twitter for all | Left > Right | Twitter > Websites |
| | Topic 23 | ns | ns | ns |
| | Topic 24 | Websites > Twitter for all | Right > Left | Websites > Twitter |
| Domestic Situation in China | Topic 1 | Websites > Twitter for all | Left > Right | Websites > Twitter |
| | Topic 4 | ns | ns | ns |
| | Topic 9 | ns | ns | ns |
| | Topic 16 | Websites > Twitter for all | Right > Left | Websites > Twitter |

| | Topic 19 | Websites > Twitter for all | Left > Right | Websites > Twitter |
|---|---|---|---|---|
| | Topic 25 | ns | ns | ns |
| China's Influences on Other Countries | Topic 28 | Twitter > Websites for left-wing; Websites > Twitter for right-wing | Right ≈ Left | Twitter > Websites |
| | Topic 12 | ns | ns | ns |
| | Topic 13 | Websites > Twitter for left-wing; Twitter > Websites for right-wing | Left > Right | Websites > Twitter |
| | Topic 17 | ns | ns | ns |
| | Topic 30 | Twitter > Websites for all | Left > Right | Twitter > Websites |
| International Public Health Updates | Topic 2 | Twitter > Websites for all | Left > Right | Websites > Twitter |
| | Topic 6 | ns | ns | ns |
| | Topic 15 | Twitter > Websites for left-wing; Websites > Twitter for right-wing | Left > Right | Twitter > Websites |
| | Topic 22 | Twitter > Websites for all | Left > Right | Twitter > Websites |
| | Topic 26 | ns | ns | ns |
| Other | Topic 5 | Websites > Twitter for all | Left > Right | Twitter > Websites |
| | Topic 7 | ns | ns | ns |
| | Topic 18 | ns | ns | ns |
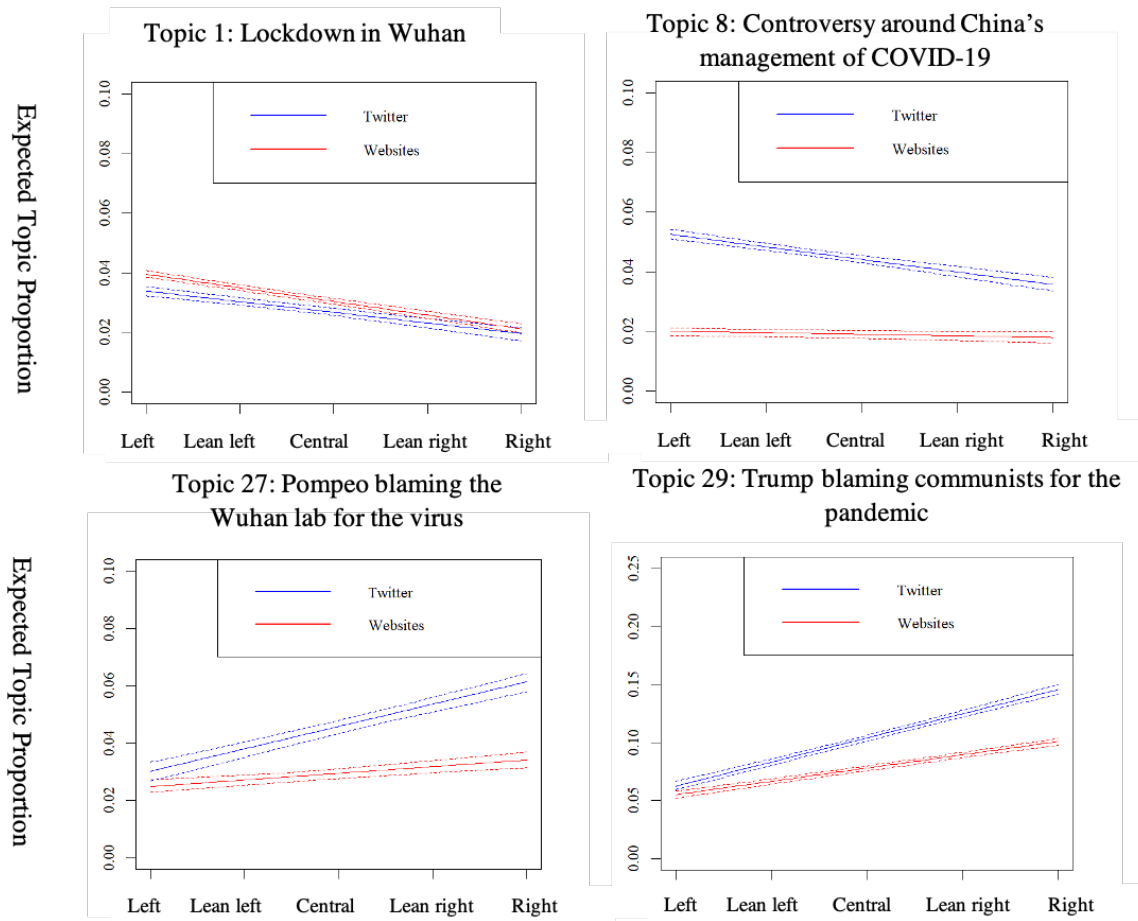
*Figure 1. Example interaction plots.*

**Discussion**

The present study offers a myriad of findings concerning how news outlets portray China in their daily reporting. Considering the significant rise in hate crimes toward Asians that marred the beginning of 2021, as well as the infodemic surrounding the COVID-19 pandemic, we argue that there are several implications associated with such framing analysis.

One particularly interesting finding is the partisan difference in framing. As previously discussed, left-wing media often framed their news coverage in a much broader sense, focusing on news updates across the globe. These frames were more generalized and featured less editorializing. In contrast, right-wing media outlets tend to focus their coverage much more heavily on what can be perceived as attitudinal frames, often placing a heavy emphasis on China's negative image in the spread of COVID-19. This can specifically be observed in the prevalence of the "controversies and conspiracies" frame, which is heavily

used among right outlets. When adopting a more qualitative approach and looking closer at the frame packages, we observed that many of the conservative outlets endeavored to portray China as the primary source of blame for the spread of COVID-19. Further, we observed many news items about misinformation and conspiracy theories propagated by right-wing outlets. These frames present serious implications, as existing literature illustrates a clear linkage between consumption of conservative media and the tendency to subscribe to conspiracy theories and misinformation (Garrett et al., 2019). Thus, it stands to reason that the proliferation of harmful allegations throughout the right-wing media, such as the theory that COVID-19 was manmade by China to control their population, may have contributed to the rising racial tensions that plagued the United States in early 2021.

Our results also demonstrate that media outlets were significantly more polarized on Twitter accounts than in their website news. As previously described, this can likely be attributed to the tendency of relying on flashy or sensational content to drive engagement (Kilgo et al., 2018). Further, the features of Twitter, particularly its 280-character limit, may exacerbate the partisan gaps because of the lack of details and articulation in news. As Bridgman et al. (2020) argued, this presents serious concerns, as social media often facilitate the spread of misinformation because of the tendency to succumb to unverified content. Based on our findings, we suggest that social media platforms may need to consider partisan framing differences when moderating content and design features for news media accounts.

Various implications can be gleaned from the findings. While many scholars have clamored to posit the effects that media frames can have on audiences, we argue that it is no longer enough to ask respondents which outlets they get their news from. Rather, future research should begin to address what platforms audiences are reliant on for their news, as there are significant differences in the framing techniques used on various platforms. Further, this finding illustrates the growing relationship between content and technology, where perhaps technological affordances have begun to impact the content issued by media outlets.

In a year marred by rising racial tensions and hate crimes, it appears that much of this polarization can also be observed within the media sphere. An overall negative sentiment toward China is noticeably apparent in many of the frames used within the news media's coverage. It is possible, considering the core tenets of framing theory (Entman, 1991), that this sentiment has begun to bleed over into public sentiment and has impacted the public's perceptions.

Finally, there are several implications here for contemporary newsrooms. As discussed, Twitter content was more polarized and sensational than online news. This is likely to generate clicks and drive traffic to outlets' online news sites. Interestingly, prior research shows that audiences are not necessarily more likely to engage with sensational content versus content that is framed in a more regular manner (Kilgo et al., 2018). Thus, this leaves us to question what benefits sensationalized content outlets provide, other than further exacerbating partisan divides and stoking the flames of polarization.

This study is not without its limitations. It is difficult to assert any sort of causality with the presented findings. Rather, our goal is to provide a comprehensive overview of news frames on the studied issue and compare the frames across partisanship and platforms. Additionally, because of the inherent

drawbacks of the computer-assisted inductive framing identification technique, what we presented here are emphasis frames, which represent manipulation of the content, rather than equivalence framing, which emphasizes manipulation of the presentation of logically equivalent content. While we have no intention to get involved in the controversies around the definition of framing, we do recognize that the latter may bring us a more theoretically valuable analysis (Cacciatore et al., 2016). Future research should explore a more sophisticated combination of theory and methods to identify equivalence frames from the "big data." Finally, although certain news frames are more likely to be sensational than others, those traditionally less sensational frames, such as global death toll, are still possible to be covered in an attitudinal and sensational way. Future research could benefit from a more nuanced sentiment analysis to understand the emotional dimension of the cross-partisan and between-platform framing differences.

In summary, the present study offers a myriad of findings relevant to how news outlets presented their coverage of China during the COVID-19 pandemic. Considering the significant rise in hate crimes targeting Asians, it stands to reason that the media may have played a role in exacerbating already tense relations among the two nations. Finally, our work extends existing research pertaining to political polarization, as it shows that different platforms can instigate polarization more so than others.

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