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Framing as an Information Control Strategy in Times of Crisis

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Abstract

How can authoritarian regimes effectively control information to maintain regime legitimacy in times of crisis? We argue that media framing constitutes a subtle and sophisticated information control strategy in authoritarian regimes and plays a critical role in steering public opinion and cultivating an image of competent government during a tremendous crisis. Using structural topic models (STM), we conduct a textual analysis of more than 4,600 news reports produced by seven Chinese media outlets during the COVID-19 pandemic. We find that Chinese media, instructed by the propaganda authorities, used a heroism frame to feature frontline medics' sacrifices when saving others in need and resorted to a contrast frame to highlight the poor performance of the United States in the fight against COVID-19. We also show that both state and commercial media outlets used these two frames, though the tone of commercial media coverage was generally more moderate than the state media version.

Keywords: authoritarian regimes; information control; framing; text analysis

Introduction

To enhance regime resilience, contemporary authoritarian regimes increasingly resort to a toolkit of sophisticated information control strategies rather than relying excessively on bloody repression or ideological indoctrination (Guriev and Treisman 2019). Specifically, authoritarian governments monitor and censor potentially deleterious messages (e.g., King, Pan, and Roberts 2013; Shao 2018; Tai 2014), flood the media with distracting or “cheerleading” information (e.g., Han 2018; King, Pan, and Roberts 2017), and disrupt the communication and coordination of citizens (e.g., Edmond 2013). However, information control strategies such as censorship may backfire, especially during periods of crisis (Gläsel and Paula 2020; Hobbs and Roberts 2018; Jansen and Martin 2015; Roberts 2018; Pan and Siegel 2020). One central but understudied question is how authoritarian regimes effectively control information and steer public opinion to mitigate vulnerability to crises.

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In this article, we focus on China and explore information control strategies during the COVID-19 crisis. The COVID-19 pandemic provides a clear lens through which we can examine the information control tactics used to shape public opinion and maintain the legitimacy of authoritarian governments during a tremendous crisis. Since the first identified case in Wuhan in December 2019, the COVID-19 epidemic has unleashed an unprecedented crisis that has swept through more than 190 countries around the world and resulted in more than 250 million infected cases and approximately five million deaths.¹ As the first country to report infected cases, China was undoubtedly the first to bear the brunt of the COVID-19 epidemic. The Chinese government's initial response to the outbreak of COVID-19 drew harsh criticism at home and abroad, plunging the regime into a serious crisis of legitimacy. The Chinese authorities shifted the propaganda machine into high gear and used a wide array of information control strategies to assuage the public's anger and concerns, and more importantly, to regain legitimacy.

We contend that, during a crisis, authoritarian governments can use media framing as a subtle information control strategy to shape public opinion and cultivate an image of competence. Framing prompts people to focus on a subset of potentially relevant considerations of an issue and alters the balance of considerations that citizens weigh when forming an opinion about an issue (e.g., Chong and Druckman 2007a). In times of crisis, framing can lead citizens of authoritarian regimes to pay more attention to the encouraging aspects of the crisis (e.g., lives saved), which evoke positive feelings. More importantly, framing can also alter the reference points that people use when establishing evaluative standards and thus help improve their perception of an authoritarian government's performance during a crisis. The effectiveness of framing during crises hinges on the existence of competing or alternative frames (Sniderman and Theriault 2004). In authoritarian regimes where state media are tightly controlled by governments, the presence of competing frames is largely determined by the extent to which the government can exercise control over commercial media outlets. When commercial media generally follow official narratives and present very few competing frames, framing tactics would be effective in maintaining the government's legitimacy.

To gain some insights into China's framing tactics during the COVID-19 epidemic, we collect more than 4,600 news reports produced by three state-run and four commercial media outlets from January to April 2020. Using structural topic models (STM) (Roberts, Stewart, and Airolidi 2016), we document the major topics covered by these seven Chinese media outlets and explore the differences in the COVID-19 news coverage between state media and commercial media. We find that both state and commercial media exploited heroism and contrast framing to steer public opinion during the COVID-19 epidemic, although the tone of commercial media coverage was generally more moderate than the state media version.

During the early stage of the COVID-19 outbreak, Chinese media covered a series of touching stories about frontline medics' sacrifices when saving others in need, holding them up as heroic examples in the fight against the virus. The heroism frame can arguably evoke positive feelings and instill hope of overcoming difficult situations (e.g., Kinsella, Ritchie, and Igou 2015b). Our analysis also reveals that as COVID-19 began to appear to be largely under control in China, the Chinese

media shifted to a contrast frame to highlight the poor anti-pandemic performance of the Trump administration in contrast to China's "success" story. The use of contrast frame was intended to alter people's evaluative standards and boost their satisfaction with the Chinese government, given that people tend to make judgments based on comparison with a particular reference point (e.g., Judd and Harackiewicz 1980; Sherif, Taub, and Hovland 1958).

In addition, we present some suggestive evidence on the effects of these framing tactics on people's attention. We use the Baidu Index, Google Trend's equivalent in China, to retrieve the search volume of related keywords. When the heroism frame was widely used in Chinese media coverage, the search volume of notable medics' names shot up to a relatively high level, which was on a par with that of some terms referring to certain controversial issues and government officials under criticism. Strikingly, after mid-March, the search volume on the "U.S. epidemic" surged, and it peaked even higher than the "Wuhan epidemic" search volume in February.

It is also worth noting that hard propaganda messages about the Chinese Communist Party's leadership in the fight against COVID-19 and China's contribution to the international community, were also prevalent but largely in state media coverage. During the COVID-19 crisis, hard propaganda could have signaled the government's strength in maintaining political order, and more importantly, President Xi's unchallenged authority as the paramount leader. Moreover, the Chinese authorities censored dozens of news reports from commercial media during the early stage of the COVID-19 outbreak, aiming to draw a "red line" around commercial media outlets and push them to align with official rhetoric in news reporting.

This article makes several contributions to scholarship. First, a burgeoning literature sheds light on authoritarian information control strategies (e.g., Guriev and Treisman 2019; Roberts 2018). Our study enriches this line of inquiry by exploring the role of media framing, a subtle and understudied information control strategy, used to steer public opinion and avoid blame (e.g., Baekkeskov and Rubin 2017; Hood 2010), especially during periods of crisis when authoritarian regimes are particularly vulnerable. Second, while framing effects have been studied extensively in democracies with a competitive political environment (for reviews, see Chong and Druckman 2007a; Druckman and Lupia 2016), our study reveals how framing tactics can be used strategically to safeguard authoritarian rule and weaken competing voices when a regime is threatened. Our study thus has important implications for understanding framing effects in a setting where opposing party cues and counter-frames are weak or even absent. Finally, to the extent that recent studies have examined framing tactics in authoritarian regimes, they have focused primarily on variants of blame attribution frames (e.g., Alrababa'h and Blaydes 2021; Bray, Shriver, and Adams 2019; Dukalskis 2017; Dukalskis and Patane 2019; Edelman and Joshi 2018; Rozenas and Stukal 2019). Still less is known about what kinds of frames are effective in times of crisis, when people tend to pay attention to treatment responsibility; that is, who or what has the ability to alleviate a problem (e.g., Iyengar 1996). We identify two major framing tactics in Chinese media's COVID-19 coverage that could shape people's opinion of the government's treatment responsibility and, in turn, improve their evaluation of government performance.

Framing to cultivate an image of competence during crises

In times of crisis, the free flow of information is likely to pose a formidable threat to authoritarian regimes, and information control becomes critically important for authoritarian regime survival (e.g., Enikolopov, Makarin, and Petrova 2020; Hollyer, Rosendorff, and Vreeland 2015). One strategy that comes into mind first is censorship, which helps authoritarian rulers to block or remove certain deleterious materials, especially those referring to collective action (e.g., King, Pan, and Roberts 2013; Roberts 2018). However, censorship can also spur people to access the restricted content or become attracted to politically sensitive information (e.g., Jansen and Martin 2015; Hobbs and Roberts 2018). These backfiring effects are likely to be most pronounced during periods of crisis. For example, during the Tianjin explosion in August 2015, which killed and injured hundreds of people near the port of Tianjin, Chinese citizens were eager to seek out restricted information (Roberts 2018, Ch5). As Roberts (2018, 10) insightfully notes, censorship “can be counterproductive and dangerous to the regime when it uses this censorship too decisively during times it needs censorship most.”

We posit that authoritarian governments can use media framing as a subtler information control strategy to steer public opinion during times of crisis. In times of crisis, it is crucial for authoritarian regimes to control media narratives that may affect the government’s image. Framing tactics help paint the authoritarian government’s response to the crisis in a favorable light and shape people’s opinion of the government’s performance during crises. Framing effects occur when a speaker’s focus on a subset of potentially relevant considerations causes people to focus on those considerations when forming an opinion (Chong and Druckman 2007a). Most citizens’ cognitions and opinions are low-quality, unstable, and thus readily affected or shaped by external factors, particularly the mass media (e.g., Zaller 1992). As a result, frame in communication or media frame—the words, images, phrases, and presentation styles used by a media outlet to transmit information with salience on particular aspects (e.g., Chong and Druckman 2007b; Entman 1993; Gamson and Modigliani 1989)—has a profound impact on frame in thought, that is, people’s cognitive schemas about issues (Chong and Druckman 2007a; Goffman 1974). Framing is effective because the specific frame adopted by media outlets alters the balance of considerations that citizens weight when contemplating an issue (Druckman 2004; Nelson, Oxley, and Clawson 1997).

An emerging body of literature provides insights into the framing tactics used to enhance the legitimacy of authoritarian regimes. For instance, to shift people’s attention away from the pitfalls of China’s authoritarian political system, Chinese state media often frame corruption cases as individual incidents and attribute corruption to government officials’ individual flaws (Chen and Zhang 2016). During social protests, authoritarian regimes use derogatory frames to accuse protesters of terrorism, violence, and extremism (Edel and Josua 2018), and stigmatize them as criminals for interfering with political order (Dukalskis 2017; Dukalskis and Patane 2019) or even as “class enemies” for organizing a “counter-revolution” (Bray, Shriver, and Adams 2019). More importantly, blame attribution frames are widely used to shift the blame from authoritarian rulers onto external factors. For instance, Alrababa’h

and Blaydes (2021) show that state media in Syria linked the domestic uprising in the context of the Arab Spring to foreign conspiracies against the Syrian state. Rozenas and Stukal (2019) find that Russia's state-controlled television tends to shift the blame for bad economic news onto external factors such as foreign economy or foreign governments, especially during politically sensitive times.

Nevertheless, these framing tactics may turn out to be less effective under certain circumstances. During a tremendous crisis like the COVID-19 pandemic, instead of focusing on the exact cause of the crisis, ordinary citizens tend to blame the government for failing to respond effectively (Arceneaux and Stein 2006; Bucher 1957). In democratic regimes, citizens tend to blame incumbent governments for natural disasters that are beyond the control of politicians (Achen and Bartels 2004). However, the impact of natural disasters on the political support of individual politicians is conditional on the government's responses and actions (Gasper and Reeves 2011). Similarly, the incumbent presidential party is held accountable for actions taken *after* a disaster (Healy and Malhotra 2009). In Russia, a hybrid regime, government performance after a natural disaster boosted political support for the authorities at all levels (Lazarev et al. 2014).

In this sense, the effectiveness of framing tactics in times of crisis lies in the attribution of responsibility. Brickman et al. (1982, 369) distinguish between the attribution of causal responsibility and the attribution of treatment responsibility: the former refers to "the responsibility for the origin of a past event, clearly involving the question of deserving and blame," whereas the latter refers to "the responsibility for the solution to future events, involving an assessment of who might be able to control events." During periods of crisis, people are likely to pay more attention to treatment responsibility, that is, who or what has the ability to or should alleviate a problem (e.g., Iyengar 1996). Therefore, blame attribution frames that attempt to shirk responsibility may not be effective at steering public opinion, largely because citizens tend to focus on authoritarian governments' performance during a tremendous crisis.

In this light, authoritarian governments ought to devote attention and resources to framing the *responses* rather than the *causes* of the crisis, especially when the origins of the crisis are unknown or when it is due to a natural disaster such as a hurricane, flood, or earthquake. An ineffective or failed response can be attributed to either a lack of effort or a lack of ability (e.g., Brickman et al. 1982; Weiner 2006). Authoritarian leaders can certainly use technical experts and agencies as "lighting rods" to shift blame (Baekkeskov and Rubin 2017). But this strategy does not necessarily help improve the regime legitimacy. Instead, authoritarian governments can use framing tactics to cultivate an image of a competent government by highlighting how the government mobilizes people and resources to protect and save people in need. As a guiding principle, the media reporting will therefore emphasize "gains"—lives saved by the government responses—over "losses"—lives lost during the crisis (e.g., Tversky and Kahneman 1981). In general, media frames aim to increase the weight of "positive aspects" in people's cognition when they contemplate the government's treatment responsibility. To feature the response to the crisis more effectively, media outlets can also use episodic frames that focus on individual stories and concrete acts rather than thematic frames that emphasize general patterns (Iyengar 1990). Regardless of the specific tactic, the ultimate goal is to use media framing to alter

citizens' evaluative standards and improve their perception of the government's performance during a crisis.

Authoritarian governments are well-positioned to use framing tactics to influence people's preferences. To some extent, the effectiveness of framing depends on the degree of choice in the media environment (Prior 2007). In democracies, people form their opinions in a competitive political environment where competing information, values, and cues are readily available and easily accessible (Druckman and Lupia 2016). The effects of a particular frame are likely to be attenuated by a competing frame (Sniderman and Theriault 2004) or an opposing party cue (Slothuus and De Vreese 2010). In contrast, authoritarian governments tilt the media playing field by directly or indirectly controlling the media (Cho, Lee, and Song 2017; Gehlbach and Sonin 2014) and suppressing competing voices from other media channels (Roberts 2020). Accordingly, authoritarian governments can steer all media outlets to align reporting with official rhetoric (Stockmann 2013). Thus framing tactics are expected to work well in authoritarian settings where competing frames are generally weak or even absent, and citizens have very limited choices due to media control.

Chinese media's framing tactics during the COVID-19 pandemic

After the COVID-19 outbreak, the Chinese government was confronted with several daunting challenges, including a surge in infected cases, the controversy surrounding draconian lockdown policies, people's harsh criticism of the malfeasance of local officials in Hubei province and the mismanagement of China's Red Cross, and an outpouring of grief and anger expressed after whistleblower Li Wenliang's death.² To be sure, the Chinese government faced a serious legitimacy crisis. Like the response to SARS in 2003, the Chinese government launched a "people's war" to mobilize resources and personnel (Lawson and Xu 2007). The Chinese media, instructed by China's propaganda authorities, used two major framing tactics to influence public opinion and mitigate public distress.

The first tactic focuses on framing heroism when reporting on frontline medical professionals and workers. Heroic behavior occurs in an atypical situation (e.g., a natural disaster) and involves significant personal risk, aimed at improving the welfare of others (Jayawickreme and Di Stefano 2012). Heroic individuals are often described as brave, determined, altruistic, and self-sacrificing. In some cases, they are extolled as moral exemplars who protect and save those in need (Kinsella, Ritchie, and Igou 2015a). Psychology research suggests that heroic behavior can arouse positive emotions such as elevation, gratitude, and admiration (e.g., Algoe and Haidt 2009), and can inspire people to take prosocial or altruistic action (e.g., Van Tongeren et al. 2018). Inspiring narratives about heroes' sacrifices and saving others in need can instill hope, improve morale, and motivate people to transcend difficult situations (Kinsella, Ritchie, and Igou 2015b). Moreover, episodic frames, which focus on personal experiences and acts (Iyengar 1990), are typically adopted during the media coverage of heroic exemplars. When people experience high levels of emotion (e.g., in the midst of a crisis), episodic frames are generally more influential than thematic frames that emphasize general patterns of certain issues (Aare 2011). Thus, framing

heroism can be useful for evoking positive feelings and directing people away from self-centered concerns.

The mass media in China have a long tradition of shaping the image of exemplars or models. During a grave crisis, the portrayal of exemplars can also be used to evoke positive emotions and shape public opinion. For example, during the 2008 Wenchuan earthquake, China's state media adopted people-centric rhetoric and framed People's Liberation Army soldiers as selfless heroic exemplars dedicated to front-line rescue work (Yin and Wang 2010). Similarly, during the COVID-19 crisis, many frontline medical workers, especially those sacrificed for the anti-epidemic fight, were framed as brave and selfless exemplars and praised by media outlets as "heroes," "models," and "pioneers." The coverage of touching stories about heroic individuals helps evoke people's positive feelings and alleviate their self-centered anxiety during periods of crisis. In short, the heroism frame alters the balance of considerations people make when they contemplate a crisis.

The other tactic is the use of contrast frame, which alters the reference points that people use to determine their evaluative standards. As most citizens have few stable opinions, they tend to make judgments based on comparison with a reference (e.g., Judd and Harackiewicz 1980; Sherif, Taub, and Hovland 1958). This psychological mechanism is widely embedded in ordinary people's everyday lives. Prospect theory in behavioral economics suggests that when people choose between alternatives, they tend to contrast the expected utility with a reference point instead of calculating the absolute utility (e.g., Barberis 2013; Kahneman and Tversky 1979). To a large extent, this use of reference points forms and shapes people's political attitudes. Thus framing can highlight the poor performance of foreign countries and lead audiences to use this as a reference point to evaluate their own domestic situation, increasing their satisfaction with the government through contrast.

In particular, citizens without overseas experience are inclined to form opinions of other countries based on media frames and are likely to have a positive assessment of government after contrasting with a poor reference. Kayser and Peress (2012) find that, in elections, voters influenced by media reporting punish or reward incumbent governments by benchmarking domestic economic performance via an international comparison. Huang (2015a) demonstrates that Chinese people's rosier estimation of foreign socioeconomic conditions lowers their evaluation of the Chinese government, while their awareness of political instability in foreign countries can increase their satisfaction with China. Under certain circumstances, the use of a contrast frame could also provoke the public's nationalist sentiments and generate a "rally-round-the-flag" effect. For a long time, nationalism has been regarded as a crucial means to boost popular support and enhance authoritarian resilience, especially during crises (e.g., Tang 2016; Weiss 2014).

During the COVID-19 crisis, a contrast frame was widely adopted by Chinese media. For example, the *Global Times*, a state-affiliated newspaper, wrote, "if we have to evaluate the anti-epidemic performance across countries in the world now, the US is undoubtedly one of the worst ... A chaotic, irresponsible, impulsive, and angry United States greatly increases the risks faced by the world." (如果非要现在就评价一下各国的抗疫表现, 美国毫无疑问是最差的之一 ... 一个混乱、不负责任且冲动愤怒的美国极大强化了世界面对的风险。; *Global Times* 2020c).

Furthermore, the Chinese media strived to cultivate an image of China's excellent performance during the anti-epidemic fight by making references to the United States. In one news report, the *Global Times* (2020b) quoted the words of an American: "I find China is safer when I am back to the United States."

It bears emphasis that the use of the two frames mentioned above was not limited to China's state media. Commercial media outlets also followed suit and placed great weight on the heroism and contrast frames during COVID-19 news reporting, as illustrated in the subsequent section. Previous literature suggests that the Chinese media ecosystem is not a monolithic entity, thereby leaving certain room for commercial media to cover news in response to the market demand, even during crises (e.g., Repnikova 2017a; 2017b). Nevertheless, the past few years have witnessed the tightening of control of the media in China. The Chinese authorities have placed a renewed emphasis on official ideology (e.g., Brady 2017). When the paramount leader Xi Jinping visited three major state-run media outlets in 2016, he made it clear that "All the work by the party's media must reflect the party's will, safeguard the party's authority, and safeguard the party's unity" and they must "love the party, protect the party, and closely align themselves with the party leadership in thought, politics, and action" (Associated Press 2016). Some liberal-oriented voices such as *Nanfang Zhoumo* (南方周末; *Southern Weekly*) and *Yanhuang Chunqiu* (炎黄春秋; *China through the Ages*) were cracked down on and punished by the Chinese authorities, clearly signaling "a shifting political wind" (Economy 2018, 21).

During the COVID-19 crisis, it comes as no surprise that both state and commercial media were instructed to follow official framing tactics. During a video conference about guiding public opinion of the COVID-19 crisis on January 31, 2020, Huang Kunming, the head of the Propaganda Department, urged the Chinese media to "tell of vividly exemplary deeds and touching stories of medics as well as researchers, thereby creating an atmosphere of public opinion that all people are united to fight against the epidemic." (生动讲述医护人员、科研人员等的先进事迹和感人故事, 营造万众一心、众志成城的舆论氛围。). On February 3, a Politburo Standing Committee meeting chaired by Xi underscored the need to "vividly tell the touching stories of the front-line epidemic prevention and fighting, tell the story of China's fight against the epidemic, and demonstrate the unity of the Chinese people and their spirit of helping each other." (生动讲述防疫抗疫一线的感人事迹, 讲好中国抗击疫情故事, 展现中国人民团结一心、同舟共济的精神风貌。; Xinhua News Agency 2020). In essence, Huang's speech in late January and the Politburo Standing Committee meeting in early February set the tone for the Chinese media's COVID-19 news reporting. Several sources suggest that the propaganda authorities imposed unprecedented control over commercial media during the COVID-19 pandemic. The *Wall Street Journal* reports that Chinese state media outlets were instructed by the Chinese authorities to "publish only information released through official channels" and "focus on promoting 'positive energy' and to avoid any critical reporting of officialdom" (Wei 2020). Thousands of leaked internal Chinese government documents obtained by the *New York Times* indicate that the Chinese authorities issued strict orders on the content and tone of the Chinese media's COVID-19 coverage. For example, Chinese media outlets were instructed to "play up the heroic

efforts by local medical workers dispatched to Wuhan” (Zhong et al. 2020). Therefore, commercial media had little choice but to largely follow the official narrative of COVID-19.

Empirical analysis

Data

To learn about the Chinese authorities’ propaganda strategies, we examine Chinese media’s news coverage of COVID-19 and collect 4,604 news reports on COVID-19 from seven media outlets from January 1 to April 30, 2020. The media outlets in our analysis include not only state-controlled (or official) media such as *People’s Daily* (*Renmin Ribao* 人民日报), *Global Times* (*Huanqiu Shibao* 环球时报), and *The Paper* (*Pengpai Xinwen* 澎湃新闻), but also commercial (or marketized) media such as *Caixin* (财新), *Caijing Magazine* (*Caijing Zazhi* 财经杂志), *Southern Weekly* (*Nanfang Zhoumo* 南方周末), and *Sanlian Lifeweek* (*Sanlian Shenghuo Zhoukan* 三联生活周刊).³ Figure 1 shows the distribution of news articles across these seven media outlets.

These media outlets are prototypical print and new media in China. From the perspective of Chinese media practitioners, the degree of marketization and perceived autonomy from the state are two crucial dimensions in categorizing media outlets into different types (Stockmann 2013). Party papers (*dangbao*) are clearly state media outlets because they are registered under a Party committee and function as the mouthpiece of the Party at a particular level of government. *People’s Daily* is the flagship mouthpiece of the Chinese Communist Party (CCP) and is directly controlled and sponsored by the Central Propaganda Department. *Global Times* is

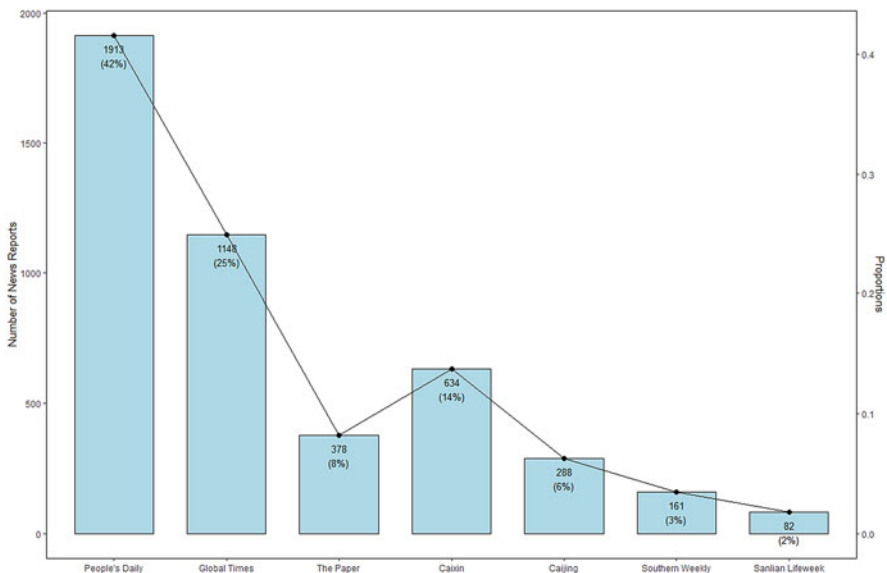


Figure 1. The distribution of the media coverage corpus

sponsored by *People's Daily* and is also a unit of the official mouthpiece. Both *People's Daily* and *Global Times* are tightly controlled by the Chinese propaganda apparatus in terms of daily operation and personnel appointments. For this reason, there is little dispute that these two newspapers are state media outlets. In the Chinese context, *Caixin*, *Caijing*, *Sanlian Lifeweek*, and *Southern Weekly* are typical commercial media outlets. *Caixin* and *Caijing Magazine* cover economic, societal, and political issues and have a wide readership in the financial industry, government, and academia; *Southern Weekly* is a renowned liberal-oriented newspaper; *Sanlian Lifeweek* is popular with the urban middle class. Although these four media outlets, and more broadly, almost all Chinese media outlets, are directly or indirectly affiliated with Party or state institutions (Stockmann 2013), their daily operations are not frequently intervened by their sponsoring institutions. Moreover, they all possess high degrees of marketization in the sense that their primary source of funding is advertising and private investment, not government fiscal subsidies. As a product of a state-sanctioned digital media experiment to “disseminate Party propaganda,” *The Paper* was launched by Shanghai United Media Group and was funded by the Shanghai government and Shanghai-based state-owned enterprises (Repnikova and Fang 2019). In this sense, *The Paper* is considered a state media outlet in our analysis.

Methods

The conventional approach of discourse or content analysis is time-consuming and labor-intensive when processing mega-text corpora. In this study, we use computer-assisted text analysis, which allows us to access, manage, and analyze a huge volume of data that is too large to be processed in traditional ways. The past few years have witnessed the flourishing application of computer-assisted text analysis in political science research topics (Grimmer and Stewart 2013).

We use structural topic models (STM) to explore the main themes covered by Chinese media during the COVID-19 epidemic. Topic models use unsupervised machine-learning techniques to map the content of text corpora into a set of substantively meaningful categories called “topics,” which might not be apparent to a reader of a large number of disparate documents (Blei 2012). For topic models, each document is a mixture of latent topics, and each topic is indicated by a mixture of words. Accordingly, each document is assigned a probability of belonging to a latent topic. Compared with other topic models such as the latent Dirichlet allocation (LDA), STM enables researchers to incorporate arbitrary metadata, defined as the information about each document, into a topic model (Roberts, Stewart, and Airoldi 2016). In other words, during the machine-learning procedure, STM uses the information in each document, such as the author(s), the date, and the length of the document, and the words contained in documents. We use the STM package in R to estimate topic models (Roberts, Stewart, and Tingley 2019). Throughout the paper, we use the date on which the news report was published and the type of media outlet (state or commercial) as the meta data. The STM thus enables us to compare the prevalence of estimated topics between state and commercial media outlets. In an additional analysis, we further explore each media outlet’s topic prevalence relative

to that of the other six media outlets. In this case, the meta data that we include are several dummy variables that indicate the names of media outlets.

It is worth noting that the texts in our analysis are all in Chinese. We use Jieba, a Chinese word segmentation tool, to tokenize Chinese sentences. We also remove stop words, punctuation, and numbers. During the estimation process, we choose spectral initialization to make the results reproducible.

An Overview of Topics in COVID-19 Coverage

Before using STM to estimate the topics of specific text corpora, researchers need to explicitly opt for the number of topics, yet there is no right answer to the appropriate number of topics for a given text corpora (Grimmer and Stewart 2013). In practice, one important justification for choosing the number of topics is interpretability (Blei 2012). As our corpora comprise 4,604 text documents, we chose five topics to start with. After conducting a comparison, we eventually confirmed that the news reports under analysis can be reasonably categorized into 10 topics.

Figure 2 shows the distribution of topics with our proposed labels across the corpus. Table A1 of the Online Appendix presents all of the topics with the 10 most frequent and exclusive words and our proposed labels.⁴ In addition to the topics directly related to COVID-19, such as the origin and genetic sequence of COVID-19 (Topic 5) and the treatment for COVID-19 (Topic 9), the economic and sociopolitical

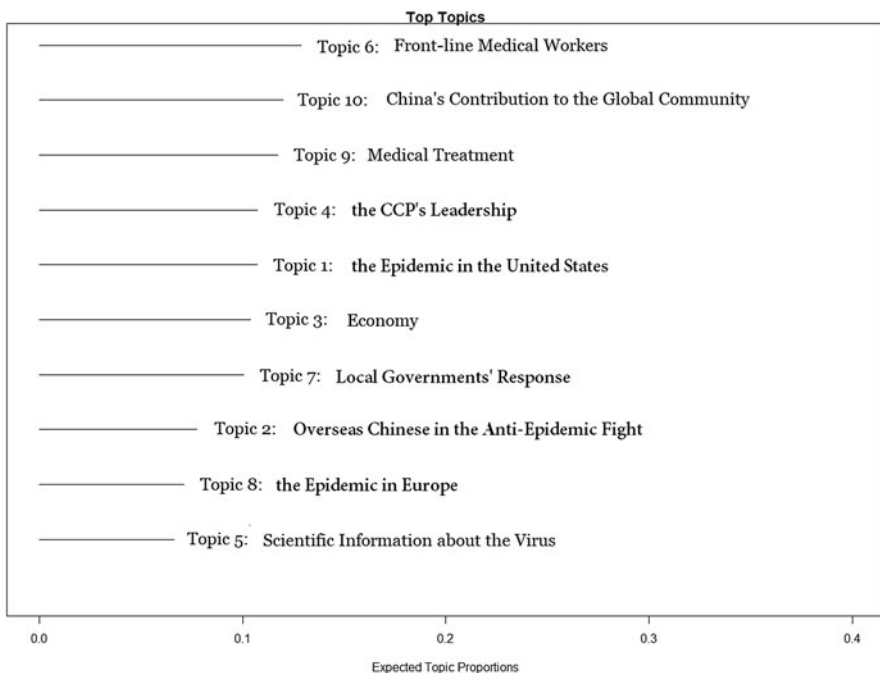


Figure 2. Distribution of topics across corpus. For each topic, the figure displays proposed topic label. The size of the bars represents expected proportions of each topic in the corpus

implications of the epidemic were extensively covered by the Chinese media. Meanwhile, beyond the domestic situation, China's media outlets also paid a great deal of attention to the global pandemic with a particular focus on the United States (Topic 1) and Europe (Topic 8).

Figure 2 also shows the expected topic proportions across the 10 topics. We see that stories about medical workers on the front line account for the highest proportion of media coverage, whereas scientific information about COVID-19 attracts the least media attention. This pattern is unlikely to be demand-driven because the information people needed most during the pandemic primarily includes the scientific knowledge about preventing and treating COVID-19, government policy responses to the pandemic, and official infection data (Jia and Meng 2020). Overall, the mass media conveyed more information about the impacts of the epidemic and the government's mitigation measures than the virus itself and ordinary people's actual status.

We further compare the news coverage between state media and commercial media. Figure 3 plots the differences in the expected proportions of 10 topics between these types of media, with commercial media as the reference group. State media produced more news reports about the epidemic in the US, overseas Chinese in the anti-epidemic fight, the CCP's leadership, and China's contribution to the international community (i.e., Topics 1, 2, 4, and 10). Meanwhile, commercial media paid more heed to scientific information, local governments' response, the epidemic in

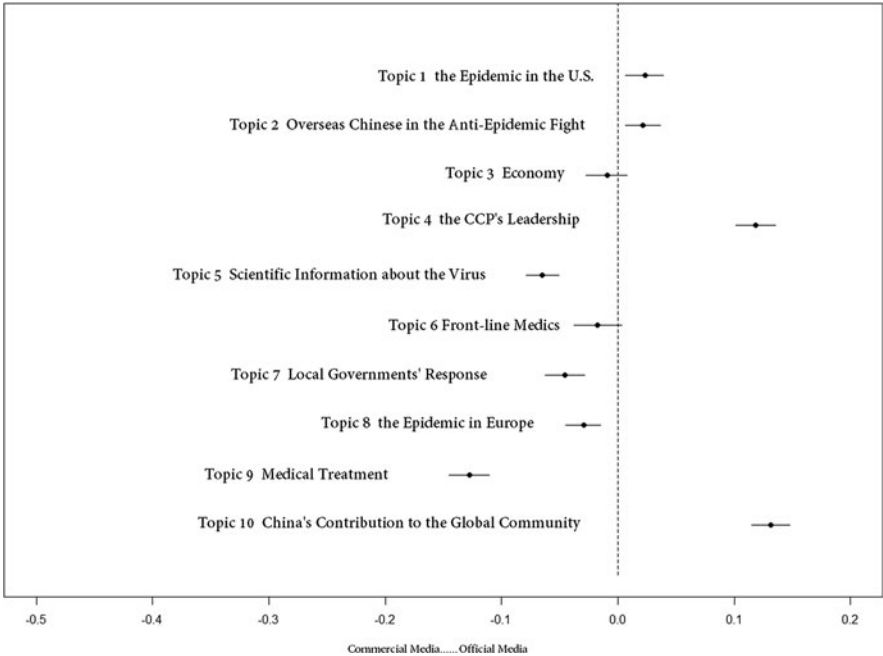


Figure 3. Topic prevalence contrast, by media type. The figure plots the point estimate and 95% confidence interval of the mean difference in topic proportions between state media and commercial media (the reference group)

Europe, and treatments for COVID-19 (i.e., Topic 5, 7, 8, and 9). The differences between the state and commercial media coverage of two topics, the economy and frontline medics (i.e., Topics 3 and 6), are not statistically significant.

We also investigate each media outlet's reporting practices in terms of topic prevalence, with the other six media outlets as the reference group. *People's Daily* mostly highlighted the Party's leadership role in the fight against the epidemic and China's contribution to the international community. *Global Times* paid overwhelming attention to the epidemic in the US. *The Paper* focused more on the stories about the frontline medics. Whereas *People's Daily* was mainly engaged in "hard propaganda" to broadcast the Party's leadership in "crude and heavy-handed" language (e.g., Huang 2018), *The Paper* and *Global Times* seemed to use more sophisticated tactics to divert people's attention. When it comes to commercial media outlets, *Caijing Magazine* and *Southern Weekly* devoted a huge amount of attention to the epidemic in the US and medical workers respectively, and they appear to cover the topics featured heavily in *The Paper* and *Global Times*. The results are shown in Figure A1 of the Online Appendix.

The heroism frame at the most difficult moment

From February to mid-March 2020 was the hardest period of China's anti-epidemic fight. During this time, the heroism frame was widely used by media outlets to steer public opinion. Figure 4 presents the dynamic trends in both state and commercial media's news reporting on the stories of front-line medical workers (i.e., Topic 6). The red and blue lines plot the prevalence of Topic 6 in state media and commercial media, respectively. We see that the topic of front-line medical workers was covered

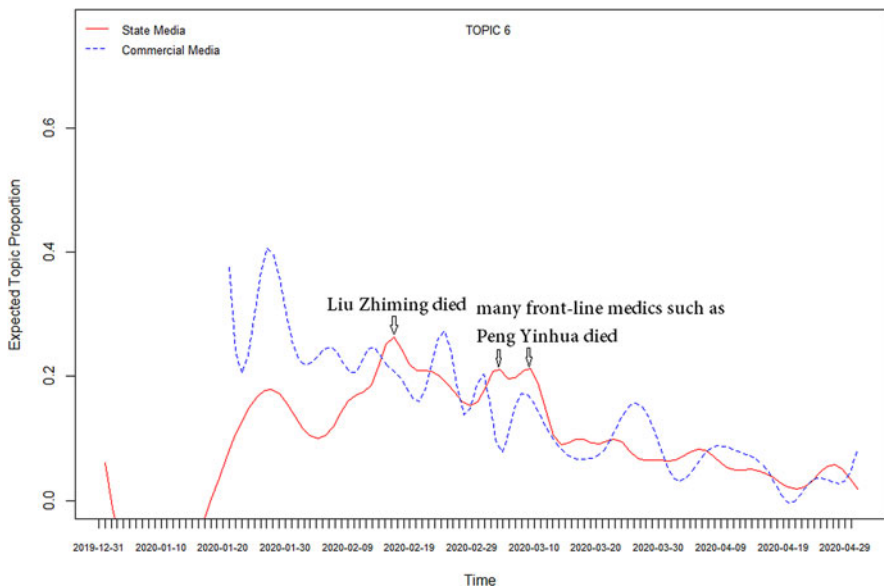


Figure 4. The coverage on front-line medics by media types over time

extensively by both types of media prior to mid-March and its prevalence declined sharply after late March.⁵

It seems that state media paid close attention to medics who died on duty. Figure 4 indicates that when medics died in their workplaces, the solid red line tends to be higher than the dotted blue line. For example, the red line is much higher in mid-February when Liu Zhiming (刘智明), the Dean of Wuchang Hospital in Wuhan, died of COVID-19. Similarly, in early March when many front-line medical workers, such as Peng Yinhua (彭银华) and Jiang Xueqing (江学庆) passed away, they were posthumously honored by the Chinese authorities. In this way, state media attempted to cultivate the image of several selfless “heroic exemplars” who fearlessly dedicated themselves to fighting against the epidemic. For instance, *The Paper* ran a news report titled *the Deceased Director of Wuchang Hospital “A Man Who Worked His Guts Out”* (去世的武昌医院院长, “一个拼了命做事的人”) in which a journalist wrote: “Liu Zhiming, disregarding personal safety, directed all medical workers in Wuchang Hospital to fight against the coronavirus on the front line ... they praised Liu as a ‘model’, a ‘pioneer’, and a ‘hero.’” (刘智明不顾个人安危, 带领武昌医院全体医务人员奋战在抗疫一线 ... 他们称赞刘智明是“榜样”, 是“先锋”, 是“英雄”。; *The Paper* 2020).

By using those emotionally charged words, state media sought to evoke ordinary citizens’ positive feelings and distract their attention from the “negative aspects” of China’s responses to the pandemic such as officials’ malfeasance, unpopular lockdown policies, and the controversy surrounding the Fang Fang Diary.⁶ The terms “model” and “hero” were also widely used by state media to praise medics who sacrificed themselves to fighting the epidemic, including the whistleblower Li Wenliang. State media framed Li as a hero like other medical workers who died on duty during the COVID-19 fight, without mentioning that he sounded the alarm about the COVID-19 outbreak and was deemed a “whistleblower” by the public.

Moreover, Figure 4 suggests that commercial media also devoted a great deal of attention to stories about front-line medics. A closer examination reveals that although commercial media outlets rarely used emotionally charged words, such as “models,” “exemplars,” and “hero,” they nevertheless engaged in shaping the image of selflessly dedicated medics with a relatively moderate tone. For example, in a news report about Liu Zhiming, *Southern Weekly* wrote,

Maybe Liu did the CT test for himself and got an injection. But he did not say that. After dawn, he devoted himself to the two-day hospital renovation work ... Director Liu said, “do not intubate me even if I am going to die.” ... Liu Zhiming worried that once the trachea was cut, aerosols might appear in the ward, which could be highly lethal.

可能是刘智明给自己做了CT检测, 还打了针。但这些, 他都没有说。天亮之后, 他开始投入到两天的医院改造工作中 ... 刘院长说, “我死了都不要给我插管。” ... 刘智明担心, 一旦切开气管, 就可能在病房里出现气溶胶, 杀伤力大。(*Southern Weekly* 2020)

While news coverage about heroic medical workers composed by commercial media used emotionally charged words less frequently than state media outlets, it

may have still helped the authorities steer public opinion by framing heroism. As Stockmann (2013) suggests, commercial media outlets brand themselves as trustworthy representatives of ordinary citizens, leading to greater credibility in the eyes of audiences.

To provide suggestive evidence on the effectiveness of the heroism frame, we use the Baidu Index to trace the search volume on keywords related to notable medics vis-à-vis some controversial matters. The preliminary analysis indicates that the attention to heroic medics such as Liu Zhiming and Peng Yinhua is on a par with that to some controversial matters and officials, such as the Fang Fang Diary and the Hubei Governor (see Figure A3 of the Online Appendix).⁷

Contrast frame: the US versus China

As the domestic epidemic eased, Chinese propaganda authorities shifted from the heroism frame to contrast frame by using the poor performance of the United States to highlight the “victory” of China. There are multiple plausible explanations for the narrative shift from heroes to the performance of the US. First, it could be the case that hero framing ran risks of angering the public. For example, to highlight the devotion of women to frontline medical work, several female nurses were reported to have shaved their heads. Some critics denounced such reporting as “turning a funeral into a wedding” (Li 2020). Nevertheless, there is insufficient evidence to suggest that public anger was so widespread that the CCP had to change its propaganda strategy. Indeed, heroism framing has always been part of the CCP’s playbook, and Chinese state media used heroism framing again in their reporting of the severe floods in Henan in July 2021 (*Global Times* 2021). Second, the narrative shift occurred around mid-March 2020, when COVID-19 was largely under control in China. As daily life returned to normal, the first batch of medical assistance teams left Wuhan on March 17, 2020. Because heroic behavior occurs in atypical situations and involves significant personal risk, the heroism frame will likely lose its appeal in normal times. Third and closely related, when President Xi visited Wuhan on March 20 and declared China’s victory over the coronavirus (Kuo 2020), Chinese media outlets began to emphasize China’s victory over the virus to boost public confidence in the CCP regime. By using the contrast frame to highlight the poor performance of other countries, Chinese media painted the CCP’s response in a better light.

Figure 5 plots the dynamic trends in news reporting on the United States from both state media (represented by the solid red line) and commercial media (represented by the dotted blue line). Clearly, both types of media outlets began to increasingly report the United States’ responses to the pandemic after mid-March.⁸ We conduct a preliminary sentiment analysis to further explore media outlets’ news reporting about the pandemic in the US. We use the HowNet lexicon to calculate a sentiment score for each document in our sample (Dong and Dong 2006). As Figure A5 of the Online Appendix shows, on average, state media outlets are more negative than their commercial counterparts when reporting the crisis in the US, though this difference is not statistically significant. When we compare *Caixin* and *Global Times*, we clearly see a significant difference in the average sentiment.

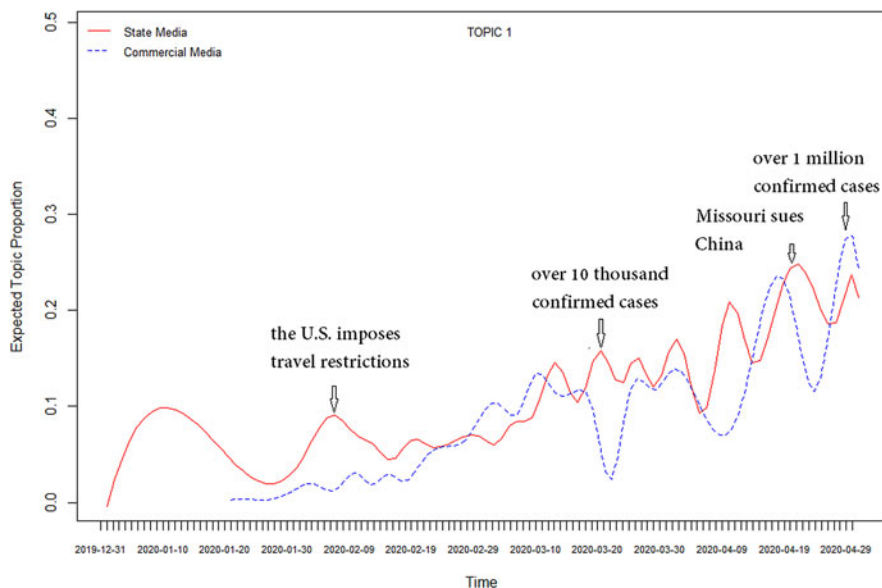


Figure 5. The coverage on the epidemic in the U.S. by media types over time

Although both state and commercial media outlets used negative words to report the US, they seemed to use different sets of words. Figure A6 of the Online Appendix presents the top 20 high-frequency negative words used by *Global Times* and *Caixin* respectively, where only six words were used in common.

Global Times not only covered the serious pandemic in the US by frequently using words like “death” (*siwang* 死亡) and “spread” (*manyang* 蔓延), but also underscored the poor performance of the Trump administration by using negative words such as “protest” (*kangyi* 抗议), “blame” (*zhize* 指责), and “dissatisfaction” (*buman* 不满). In addition, this tabloid praised China’s effective response when criticizing the poor performance of the US government. In a series of news reports, *Global Times* blamed the United States’ anti-pandemic failure on the lack of large-scale social management capability and the shirking of responsibility. In the meantime, it extolled China’s institutional advantage (*tizhi youshi* 体制优势), which made large-scale social mobilization possible in a short period, and it lauded China as a responsible major country that shared related information in a timely manner and actively offered assistance to other countries in the fight against the pandemic (e.g. *Global Times* 2020a; 2020c; 2020d).

Moreover, commercial media represented by *Caixin* also adopted a negative tone when discussing the US government’s performance, albeit in a milder way. As the high-frequency negative words shown in Figure A6 suggest, *Caixin* highlighted US citizens’ concerns about the pandemic’s rapid spread and attributed it to the “too slow” (*tai man* 太慢) reaction of Trump’s government. For instance, in one news report, this magazine emphasized the US failure to develop diagnostic reagents for large-scale production and nationwide distribution in a timely manner (*Caixin* 2020).

We further explore the effects of contrast frame on public attention. Figure A7 of the Online Appendix plots the Baidu Index of the “US epidemic” (*meiguo yiqing* 美国疫情), “Wuhan epidemic” (*wuhan yiqing* 武汉疫情), and “Italy epidemic” (*yidali yiqing* 意大利疫情) from January to April 2020. We can see that since mid-March, people’s interest in the “US epidemic” increased significantly and the peak of this term’s search volume was higher than that of the “Wuhan epidemic” in February and the “Italy epidemic” in March. It seems that ordinary people paid more attention to the situation in the US than that in China and Europe. This finding suggests that contrast frame with an emphasis on the poor situation in the US indeed attracted the public’s attention to the US and probably helped alter the public’s evaluation of the performance of the Chinese government.⁹

Hard Propaganda and limited censorship

In addition to framing tactics, traditional information control strategies such as hard propaganda and censorship still played certain roles during the COVID-19 crisis. In contrast to framing tactics that manipulate citizens in a subtle way, hard propaganda tends to use “crude and heavy-handed” messages to embrace official ideology (Huang 2018).

Figures 6 and 7 present two major hard propaganda topics largely covered by state media (exhibited by the solid red line). One topic is the CCP’s strong leadership in fighting the epidemic. As Figure 6 shows, all peaks of state media’s coverage on this topic from February to mid-March are associated with the paramount leader Xi Jinping. To put it more concretely, these peaks represent, from left to right, a

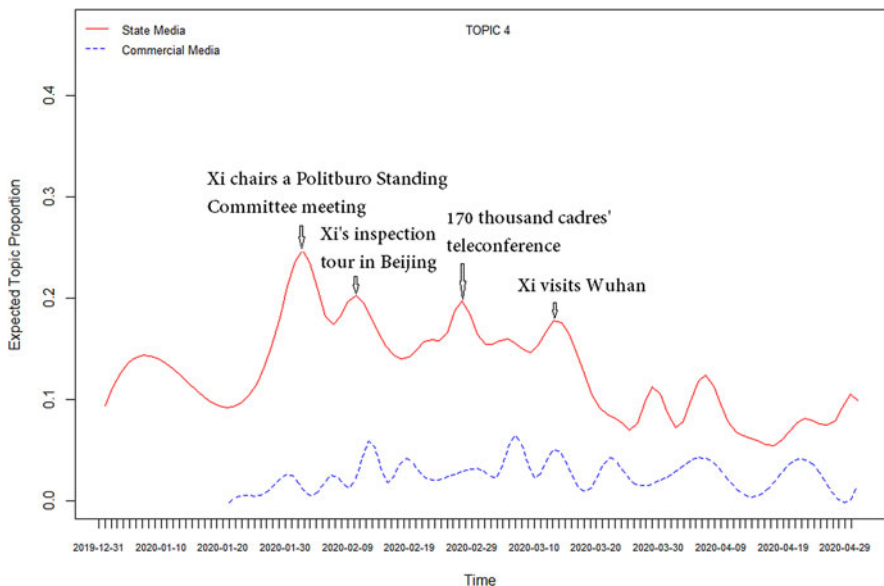


Figure 6. The coverage of the CCP’s leadership by media types over time

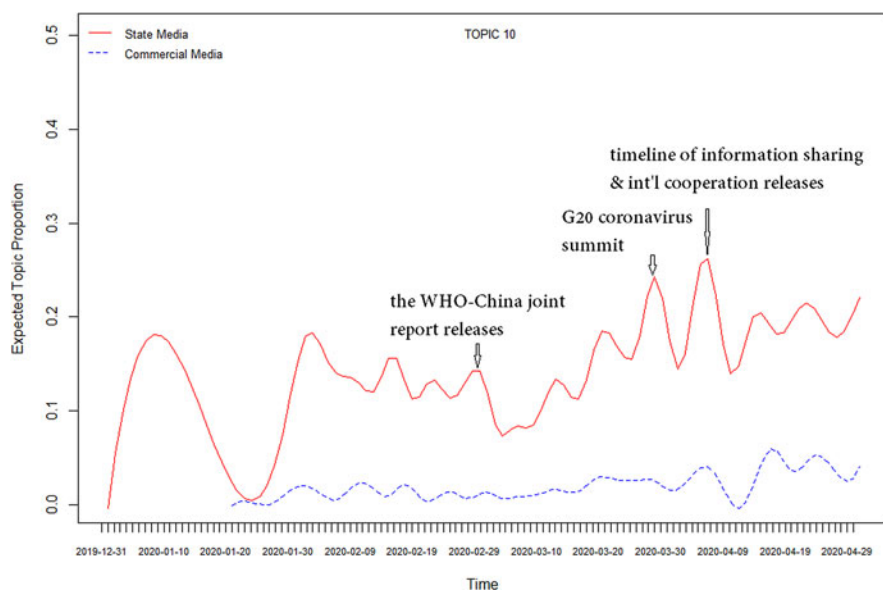


Figure 7. The coverage of China's contribution to the global community by media types over time

Politburo Standing Committee meeting chaired by Xi, Xi's inspection tour in Beijing, an unprecedented teleconference attended by some 170 thousand cadres from Xi to county-level party officials, and Xi's visit to Wuhan, respectively. Not surprisingly, the mouthpieces of the CCP fell in line with propaganda guidelines to strengthen the Party's leadership in the ideological sphere and gave significant prominence to the paramount leader (Brady 2017). In the context of COVID-19, hard propaganda was useful for signaling the government's strength in maintaining political order (Huang 2015b), and perhaps more importantly, Xi's unparalleled and unchallenged authority in the CCP.

The other topic refers to China's contribution to the global fight against the pandemic, as illustrated in Figure 7. State media outlets repeatedly emphasized that China's timely release of COVID-19 information had been praised by the global community (*People's Daily* 2020c). In addition, state media stressed that China had offered assistance to other countries by dispatching medical teams and providing medical supplies (*People's Daily* 2020d).

During the crisis, the Chinese authorities also imposed censorship on commercial media to control the flow of certain information, and more importantly, to tame commercial media. To explore the logic of authoritarian censorship, we collect 43 pieces of censored news reporting composed by commercial media from multiple sources.¹⁰ We use STM and document that these censored news reports can be categorized into three themes: (1) the miserable lives of patients, their family members, and ordinary people during the early stage of the COVID-19 outbreak; (2) content related to the whistleblower Li Wenliang, and (3) discussions about the responsibility for mishandling the epidemic (see Figure A8 of the Online Appendix). Undoubtedly, these

politically sensitive topics constituted powerful counter-frames to official rhetoric and could have damaged the competent image of the government. To be sure, the number of censored reports was not very large. However, such limited censorship did send a clear signal to commercial media about the presence of the red line.¹¹ An additional analysis of the censored articles in our sample reveals that the majority of the articles were censored in the first half of February, as shown in Figure A9 of the Online Appendix. We posit that the number of censored articles declined after mid-February not because the Chinese authorities loosened censorship but in large part because commercial media outlets became aware of the “red line” and became less critical of the government.

Conclusion

We have explored one understudied information control strategy—media framing—in authoritarian China during the COVID-19 crisis. A computer-assisted textual analysis of more than 4,600 news reports from seven Chinese media outlets reveals that the heroism and contrast frames have played a critical role in China’s COVID-19 media coverage. Framing tactics can influence the balance of considerations that ordinary people weight when contemplating the epidemic, thereby rendering them more likely to appreciate the government’s anti-epidemic performance. Although the US media also ran stories about heroic medical workers, its coverage of this topic was not as extensive as that of Chinese media outlets. Whereas Chinese media coverage of the US government’s performance helped cultivate a positive image of the Chinese government, the US media criticized the Trump administration to hold its government accountable.¹²

In this study, we focus on the patterns of information control strategies used by the Chinese authorities during the COVID-19 crisis. We provide suggestive evidence on the effects of framing tactics on people’s attention based on the Baidu Index. Overall, it appears that the Chinese government managed to maintain a fairly high level of public support despite the crisis. For instance, a survey from UC San Diego’s China Data Lab reveals that, on a 10-point scale, the Chinese public’s trust in the government increased from 8.65 in February 2020 to 8.87 in May 2020, whereas the favorability of the US dropped from 5.77 in June 2019 to 4.77 in May 2020 (Guang, Roberts, Xu, and Zhao 2020). Of course, we cannot attribute the increased trust in government solely to the Chinese government’s information control strategies. Future research could design experiments to rigorously tease out the framing effects in authoritarian regimes and compare the strength of framing effects across different frames and in different settings.

To be sure, these information control strategies also had a cost. Maintaining political stability at home may have cost a deterioration in relations with other countries, especially the United States. To manipulate people’s evaluative standards and evoke their nationalist sentiments, the propaganda authorities highlighted the poor situation on the other side of the Pacific by sharply criticizing the Trump administration’s anti-pandemic performance, and blindly praising the “wolf warrior” rhetoric from diplomats. Such contrast frame largely reinforced grassroots’ nationalist sentiments, but in turn may have constrained the flexibility of the Chinese government’s foreign

policies, as fanatical nationalists will not uphold any “feeble” policy (e.g., Weiss and Dafoe 2019). Consequently, we have already witnessed several rounds of a Sino-US war of words over the COVID-19 period, which has accelerated the transition of the United States’ China policy from constructive engagement to strategic competition (Yang 2021).

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Conflicts of Interest. The authors declare none.

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Notes

1. World Health Organization statistics, <https://covid19.who.int/> (accessed November 9, 2021).
2. Li was an ophthalmologist at Wuhan Central Hospital who, together with seven other medical professionals, sounded an alarm about the outbreak of a SARS-like virus. However, these whistle-blower doctors were reprimanded by the police for “rumor-mongering.” Li was unfortunately infected, and he died on February 7, 2020.
3. For the four commercial media outlets and *The Paper*, we collect the corpus from a GitHub database called “wuhan2019” (see <https://github.com/lestweforget/wuhan2019>). This database keeps an archive for the Chinese mainstream media’s COVID-19 news reports from January to mid-April 2020. To extend the data coverage to the end of April, we use web scraping to collect related articles from the websites of these media outlets. We select news reports that contain at least one of the following key terms: “unknown pneumonia (不明原因肺炎),” “epidemic (疫情),” “novel coronavirus (新冠),” and “novel coronavirus pneumonia (新冠肺炎).” News reports for two state media outlets, *People’s Daily* and *Global Times*, are not available on the Github database. We therefore use the same web-scraping and filtering method to collect the corpus from their websites.
4. Frequent and exclusive words are those that are both frequent and not shared by other topics.
5. The STM uses interpolation methods to produce smooth curves. When the data points are sparse, the smoothed curves may go below zero, as shown in Figure 4. We extract the raw data on the prevalence of the topic on frontline medics and present the results in Figure A2 of the Online Appendix. We see that Figure A2 and Figure 4 exhibit the same pattern.
6. A diary written by Fang Fang, a Wuhan-based writer, about Wuhan people’s everyday challenges and psychological reactions during the coronavirus epidemic.
7. The Hubei Governor, Wang Xiaodong, was heavily criticized by the public during the early stage due to improper words and deeds when treating the epidemic. See, Agence France-Presse 2020.
8. Commercial media also provided heavy coverage of how European countries responded to the pandemic, a topic that attracted limited attention from state media (see Figure A4 of the Online Appendix).
9. Some Chinese political analysts pointed out that the lackluster performance of other countries—Western democratic countries in particular—in handling COVID-19 boosted the legitimacy of the CCP regime (Dickson 2021).
10. The source of these news reports is <https://terminus2049.github.io/> (last accessed on November 9, 2021).
11. On February 5, 2020, the Cyberspace Administration of China (CAC), the top cyberspace watchdog, conducted “regulatory talk” (*yuetan*) with some online media outlets and platforms, including Baidu, Sina Weibo, Tencent, and ByteDance, and punished those publishing “harmful” content related to COVID-19. Since then, the window for relatively free reporting has closed. See *People’s Daily* 2020b; Initium Media, 2020.
12. See the analysis of the *New York Times* COVID-19 articles in Figure A10 of the Online Appendix.

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