

**THE COVID-19 PANDEMIC AND POLITICAL
(DIS)SATISFACTION: TRACING
PUBLIC OPINIONS IN CHINA
USING SOCIAL MEDIA DATA**

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EAI Background Brief No. 1529

Executive Summary

1. The COVID-19 pandemic has posed an unprecedented challenge to governments the world over. Studies reveal that public health crisis could have adverse impacts on citizens' political support for their government and in turn affects the effectiveness of policy implementation.
2. To identify changes in political support, over 120,000 social media posts from the Chinese Twitter, Sina Weibo, were used to trace the level of political satisfaction and dissatisfaction among Chinese netizens during COVID-19.
3. From January to late February, there were two dominant but opposing narratives on Weibo. One expresses satisfaction while another demonstrates dissatisfaction with the government's delays, cover-ups and inadequate considerations that led to many humanitarian disasters during the lockdown.
4. In spite of the tightened censorship on Weibo, the level of political dissatisfaction was still much more prevalent than the level of satisfaction in February. Wuhan, the epicentre of the outbreak, has consistently shown higher level of dissatisfaction.
5. By late February, the dominant topic shifted to discussions about pandemic situations outside of China. Most comments were about the incompetence of Western governments and how people in other countries were suffering.
6. Correspondingly, satisfaction level continued on a rising trend in March. By then, more compliments for the Chinese government's decisive and effective role in mobilising resources to contain the virus transmission poured in.
7. In this sense, the relatively poor performance of Western governments has helped to revive the domestic popularity of the Chinese government.

8. To secure political support amid a pandemic war, governments have to not only perform well, but also outperform their counterparts. This may be a new challenge for all governments in the COVID-19 pandemic.

THE COVID-19 PANDEMIC AND POLITICAL (DIS)SATISFACTION: TRACING PUBLIC OPINIONS IN CHINA USING SOCIAL MEDIA DATA

SHAN Wei & CHEN Juan*

Political Support Amid the Pandemic

- 1.1 The outbreak of COVID-19 in China had led to the lockdown of the entire Hubei province, especially Wuhan city, as well as communities across the country. It was after mid-February that the virus transmission was gradually under control. During this disaster, the Chinese people and economy suffered. The Chinese government reported a 6.8% drop in the first quarter Gross Domestic Product (GDP) growth vis-a-vis last year.¹
- 1.2 From late February, COVID-19 has rapidly spread to Japan, South Korea, Southeast Asia, Europe and America, erupting on an even larger scale in some countries. As of 15 April 2020, the total number of cases worldwide exceeded two million and more than 138,000 lives were taken.² Due to diverse institutional makeups and cultures, countries have adopted a range of different measures to curb the pandemic, with various results.

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¹ <https://qz.com/1839062/china-gdp-contracts-6-8-percent-in-first-quarter-due-to-coronavirus/>, accessed April 2020.

There are also other estimations by various observers. EAI predicted a contraction of 2.5% to 6.3% in China's first quarter GDP; Barclays expected a 15% negative growth; and Goldman Sachs forecast a 9% plunge. See <https://research.nus.edu.sg/eai/wp-content/uploads/sites/2/2020/03/EAIC-12-20200228.pdf>; <https://www.forbes.com/sites/kenrapoza/2020/03/23/unless-the-coronavirus-is-defeated-in-china-soon-their-national-gdp-goes-to-zero/#7645f7fe69b9>; and <https://www.reuters.com/article/us-china-economy-goldman/goldman-cuts-first-quarter-gdp-estimate-for-china-sees-9-contraction-vs-2-5-earlier-idUSKBN2140PL>, all accessed April 2020.

² https://www.worldometers.info/coronavirus/?utm_campaign=homeAdUOA?Si, accessed April 2020.

- 1.3 Conventionally, public health crises tend to undermine public confidence towards governments. The COVID-19 pandemic, however, generated ambiguity in the Chinese people's perception towards their government.
- 1.4 First, the outbreak and massive transmission of this virus is to an extent attributable to the Chinese government's cover-ups and delay in actions. On 31 December 2019, the Chinese government reported to the World Health Organisation of viral pneumonia cases in Wuhan,³ which was also announced on Wuhan Health Commission's official website.⁴ This indicates awareness of such cases by that time.
- 1.5 In the beginning of January 2020, doctors and scientists also warned of a SARS-like virus with possible human-to-human transmission. The government officially announced the presence of human-to-human transmission only on 20 January 2020 and subsequently began to take actions. This delay could have possibly led the Chinese public to evaluate their government negatively and caused a drop in political confidence. Indeed, some observers viewed the COVID-19 crisis as "China's Chernobyl".⁵
- 1.6 Second, China had implemented a comprehensive series of anti-epidemic measures, including lockdowns, since late January. Economic and daily activities almost came to a halt in the country. Responses by the Chinese government were rapid and in full force. In about 10 days, two specialised field hospitals were constructed in Wuhan,⁶ and 16 other quarantine facilities, converted from stadiums and exhibition centres, were set up within three weeks with 13,000 hospital beds.⁷ Grass-roots officials were also mobilised to perform widespread inspections in order to isolate as many suspected and confirmed cases of COVID-19 as possible.

³ <https://www.who.int/csr/don/05-january-2020-pneumonia-of-unknown-cause-china/en/>, accessed April 2020.

⁴ <http://wjw.wuhan.gov.cn/front/web/showDetail/2019123108989>, accessed April 2020.

⁵ <https://thediplomat.com/2020/03/is-covid-19-chinas-chernobyl-moment/>; <https://www.economist.com/advers/2020/04/16/is-china-winning>, accessed April 2020.

⁶ http://www.xinhuanet.com/local/2020-03/31/c_1125793256.htm, accessed April 2020.

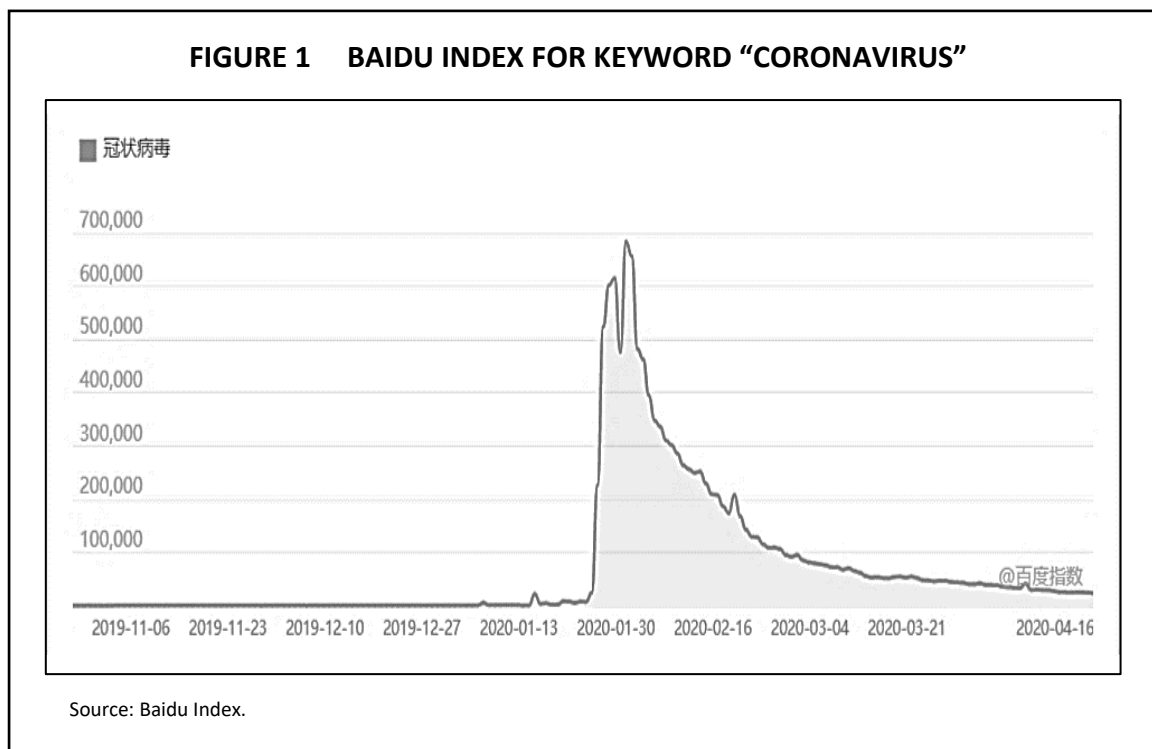
⁷ Chen, S, Zhang, Z, Yang, J, Wang, J, Zhai, X, Bärnighausen, T and Wang, C. (2020). "Fangcang shelter hospitals: a novel concept for responding to public health emergencies". *The Lancet*.

- 1.7 These measures were seemingly very effective as new confirmed cases began to drop in mid-February. In early March, the virus outbreak was put under control within China, a likely reason for the public's positive evaluation of their government on account of its effectiveness and competency in executing plans.
- 1.8 When the coronavirus spread to the rest of the world, countries have varied responses to the virus. The comparison of Chinese responses with those of other governments inevitably shapes the public's evaluation of their government.
- 1.9 A total of 129,524 posts from Sina Weibo, a Twitter-like Chinese microblog, was used to trace changes in Chinese netizens' political support during the COVID-19 crisis. Findings show that in the first two months of 2020, there were mainly two types of narratives on Weibo. The first and most prevalent narrative is critical of the government. It reflects grievances especially during the lockdown and anger towards the government's cover-up and delay in actions. The second narrative is the opposite and one that is supportive of the government for its decisive and effective measures enforced, demonstrating the "institutional advantage"⁸ of China's political system. This first narrative, however, presides over the second narrative despite the censorship.
- 1.10 Since March, a third line of narrative focusing on foreign situations became prominent in online discussions. This third narrative is partly about heroic acts of medical personnel in different countries amid their anti-pandemic war, and also about how the COVID-19 was losing control in other countries and the incompetency of certain governments especially in Europe and the United States.
- 1.11 The COVID-19 pandemic is the first global health crisis in the era of globalisation. Analysis of public opinion in China shows that in order to secure public confidence amid the anti-pandemic war, governments need to not only achieve a balance between containing the outbreak and maintaining normal economic and daily activities, but also outperform other countries.

⁸ The Chinese government's propaganda term for touting the superiority of their political system, aka "zhidu youshi".

Comparing Two Chinese Cities: Public Dissatisfaction in the Early Stage

2.1 On 31 December 2019, the Chinese government announced traces of unknown viral pneumonia in Wuhan city and informed of cases of human-to-human transmission on 20 January 2020. Since then, the COVID-19 outbreak has captured headlines. Figure 1 illustrates the daily frequency of the word search on “coronavirus” in the past six months on Baidu.com, the major search engine used in China. It shows that, since 20 January 2020, Chinese netizens’ focus on the coronavirus has skyrocketed.



2.2 The virus outbreak has also attracted immense discussions on Chinese social media platforms. Among them, Weibo is the most well-known and largest microblog in China, with more than 516 million active monthly users as of 2019.⁹ As Chinese netizens engaged in heated discussions online, tracing posts by Weibo users is a way to track the changes in public opinion during this period.

2.3 The Weibo posts by netizens used in this study were from two Chinese cities. One is Wuhan, the epicentre of the outbreak and capital of Hubei province. Another is

⁹ <http://www.bjd.com.cn/a/202002/27/WS5e574db4e4b05d1eff0b33ae.html>, accessed April 2020.

Chengdu, the capital of Sichuan province. A comparative analysis is adopted to mitigate biasness due to censorship on Weibo.

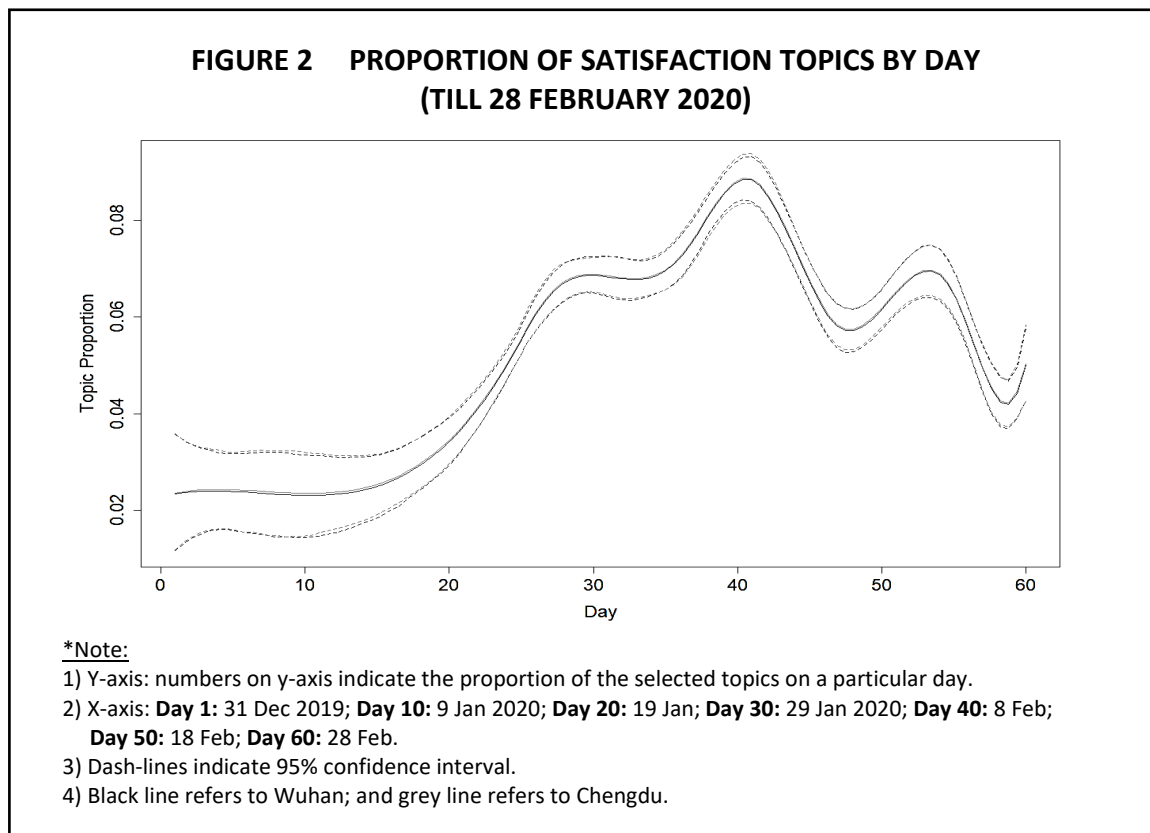
- 2.4 Wuhan and Chengdu are very similar in terms of disposable income per capita, economic structure, political status and medical resources such as number of sickbeds and medical personnel. They were, however, affected by the COVID-19 pandemic very differently. Wuhan, being the epicentre, was much more severely hit by the virus outbreak (more details in Appendix I).
- 2.5 By comparing public opinions in these two similar cities, attributing the difference in political satisfaction/dissatisfaction between the two cities to their different degrees of sufferings during the pandemic could be better established. If there is no significant difference, it would reflect that public opinions in Wuhan did not deviate from those of other Chinese cities represented by Chengdu.
- 2.6 The Structural Topic Model (STM), which contains algorithms that can identify latent topics among a large amount of Weibo posts, is used in this analysis. It also helps to calculate the prevalence of latent topics and analyse them over time (please see Appendix I).
- 2.7 The focus of this analysis is the Chinese netizens' evaluation of their government's performance during this COVID-19 outbreak. Topics associated with Weibo posts expressing compliment, approval and support towards the government are an indication of satisfaction. Other topics conveying censure, criticism and disapproval of the government are an indication of dissatisfaction (refer to Appendix II for examples).
- 2.8 Weibo posts, however, can be biased against critical opinions. Censorship, 50-cent army (government-hired online commentators) and government-run internet bots are removing mostly the voices of dissatisfaction on Weibo,¹⁰ and further generating posts expressing satisfaction. This would exaggerate satisfaction with the

¹⁰ King, G, Pan, J and Roberts, M E (2017). "How the Chinese government fabricates social media posts for strategic distraction, not engaged argument". *American Political Science Review*, 111(3), 484-501; Pan, J, Liu, Y, Liu, X and Hu, H. (2016). Discriminating bot accounts based solely on temporal features of microblog behavior. *Physica A: Statistical Mechanics and its Applications*, 450, 193-204.

government and underestimate dissatisfaction. As a result, any estimation on the level of dissatisfaction would be tilted towards the conservative side of the scale. As such, a rising level of criticism despite the biasness would indicate that the COVID-19 has a negative effect on political support. More weight to the level of dissatisfaction was thus given.

- 2.9 Topics touching on the COVID-19 situation outside of China and China's cooperation with other countries in the outbreak are analysed separately. Discussions on foreign situations had made a huge impact on the level of political satisfaction among Chinese netizens, warranting a separate analysis on the topic.
- 2.10 In the analysis of Weibo posts from 31 December 2019 to 5 April 2020, there was an overwhelming proportion of topics related to discussions on foreign situations (23 of 100 topics). This is due to changes that took place after March when China's virus outbreak has been largely contained, whereas countries in the West, Southeast Asia and East Asia have been experiencing surges in the number of coronavirus cases. This change diverted the attention of Weibo discussions from domestic to foreign situations.
- 2.11 A "zoom-in" approach to focus on public opinion during the earlier phase of the outbreak, from 31 December 2019 to 28 February 2020, was adopted to better identify the Weibo users' level of satisfaction/dissatisfaction towards the Chinese government. A total of 72,078 posts was analysed.
- 2.12 Figure 2 shows the changing trend of the level of satisfaction with government measures. The lines indicating Wuhan and Chengdu overlap, with no significant difference. The level of satisfaction in both cities has been ascending since around 14 January (Day 15) and peaked on 9 February (Day 41), before dropping and rebounding after 16 February (Day 48).
- 2.13 The rising trend of satisfaction was a response to the construction of the two well-known specialised field hospitals in Wuhan, namely, the "fire-god mountain" and

“thunder-god mountain”, which started in late January. They were both completed respectively on 4 and 6 February and began to take in patients.¹¹



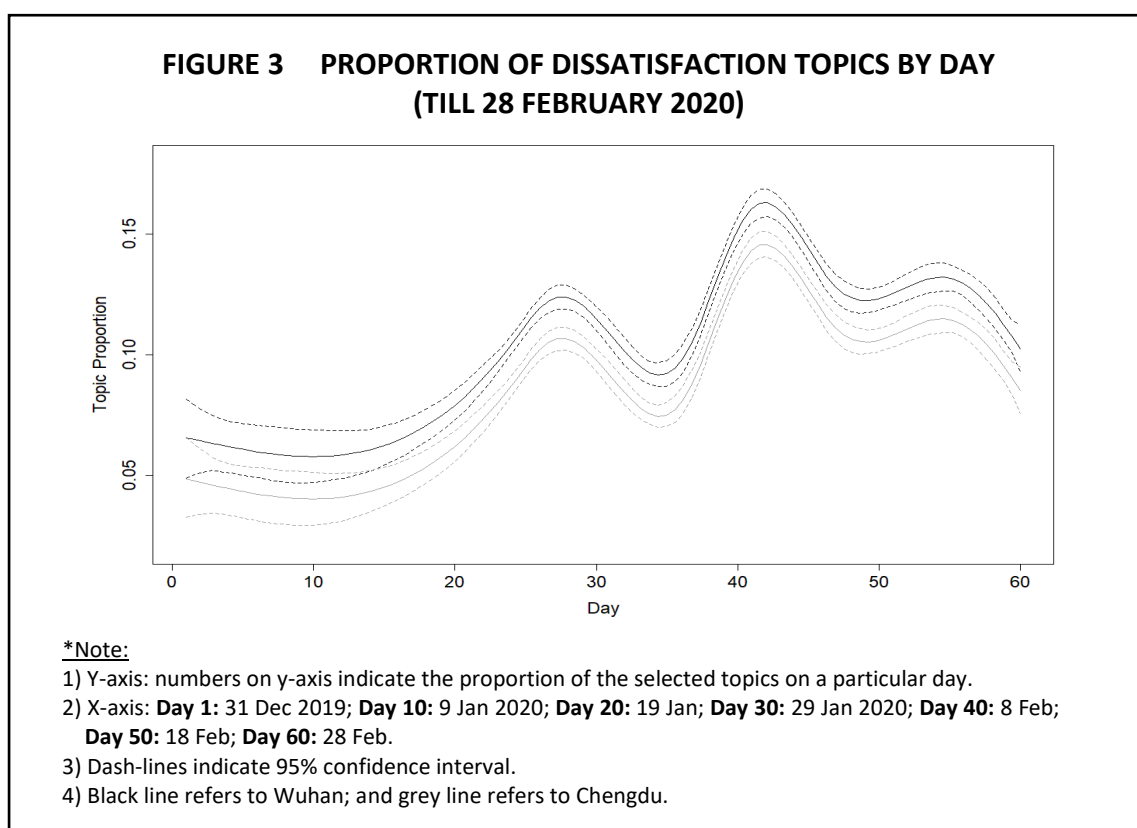
2.14 The rebound in satisfaction came after the replacement of local party leaders in Hubei. On 13 February, Beijing sacked Hubei’s provincial party secretary, Jiang Chaoliang, and Wuhan’s party secretary, Ma Guoqiang.¹² The dismissals seemed to have worked in terms of ameliorating the satisfaction level, albeit with no apparent effect on appeasing the dissatisfied.

2.15 As mentioned earlier, the level of satisfaction could be biased and overrated due to deliberate pro-government posts generated by the 50-cent army, bots and party-state official accounts on Weibo, making it necessary to give greater emphasis to the level of dissatisfaction.

¹¹ http://www.xinhuanet.com/2020-02/04/c_1210461201.htm; <https://m.chinanews.com/wap/detail/zwsp/sh/2020/02-06/9081550.shtml>, accessed April 2020.

¹² https://www.nytimes.com/2020/02/13/world/asia/china-coronavirus-xi-jinping.html?_ga=2.31232511.1770281864.1586963502-356253969.1586963502, accessed April 2020.

2.16 Figure 3 shows the changing trend of the topics on dissatisfaction during the same period. On 31 December 2019, the Chinese government had, for the first time, announced the presence of viral pneumonia with unknown cause without mentioning human-to-human transmission. In the first two weeks of January 2020, there were reports of no new cases.¹³ Therefore, the levels of dissatisfaction in both Chengdu and Wuhan remained low, without significant difference, as shown in Figure 3.



2.17 On 20 January (Day 21), China, for the first time, officially announced the human-to-human transmission of the coronavirus.¹⁴ Three days thereafter, Wuhan city began its lockdown. During this period, the level of dissatisfaction had spiked. The

¹³ On 31 December 2019, Wuhan’s Municipal Health Commission had announced on its official website a total of 27 cases of pneumonia with unknown cause that were related to the Huanan Seafood Market. As of 3 January 2020, the cases had reportedly increased to 44. Thereafter, Wuhan city continued to report of no new cases. See <http://wjw.wuhan.gov.cn/front/web/showDetail/2019123108989>; <http://wjw.wuhan.gov.cn/front/web/showDetail/2020010309017> and <http://wjw.wuhan.gov.cn/front/web/showDetail/2020010509020>, all accessed April 2020.

¹⁴ <http://www.eeo.com.cn/2020/0207/375826.shtml>; <https://www.nature.com/articles/s41562-020-0872-3/tables/1>, accessed April 2020.

dissatisfaction level in Wuhan and Chengdu began to show significant difference, with Wuhan rising higher than Chengdu.

- 2.18 From 27 January (Day 28), the level of criticism began to fall, the day Chinese Premier Li Keqiang visited Wuhan city. On 2 February (Day 34), the level of criticism began to increase again, the day Dr Li Wenliang posted on his social media account that he was diagnosed positive for COVID-19. The level of dissatisfaction had since witnessed rapid increase, especially after Dr Li passed away on 7 February 2020.
- 2.19 Dr Li was one of the few medical personnel working in Wuhan hospitals who tried to warn their friends of a possible SARS-like virus outbreak in late December 2019. They had attended to patients whose CT scans and blood test results showed signs of viral pneumonia. However, they were summoned by the police and made to sign an apology letter for “spreading rumours”.¹⁵ Dr Li and his counterparts were applauded as “whistle blowers” by many Chinese netizens and his death led to widespread mourning on the Chinese internet. Dr Li was deemed as a symbol of suffering that resonated with many Chinese people in the lockdown and his death propelled the level of dissatisfaction to its peak.
- 2.20 Dissatisfaction only started to drop after 10 February (Day 42). At the time, the Diamond Princess cruise, docked at the port of Yokohama in Japan, was becoming the largest centre of infection outside of China when confirmed cases aboard jumped from double to triple digits.¹⁶ While China’s reported number of new confirmed cases began to drop after 23 February,¹⁷ more and more countries were beginning to see an upsurge in coronavirus cases. The level of dissatisfaction had been declining since and the difference between Wuhan and Chengdu had turned insignificant.

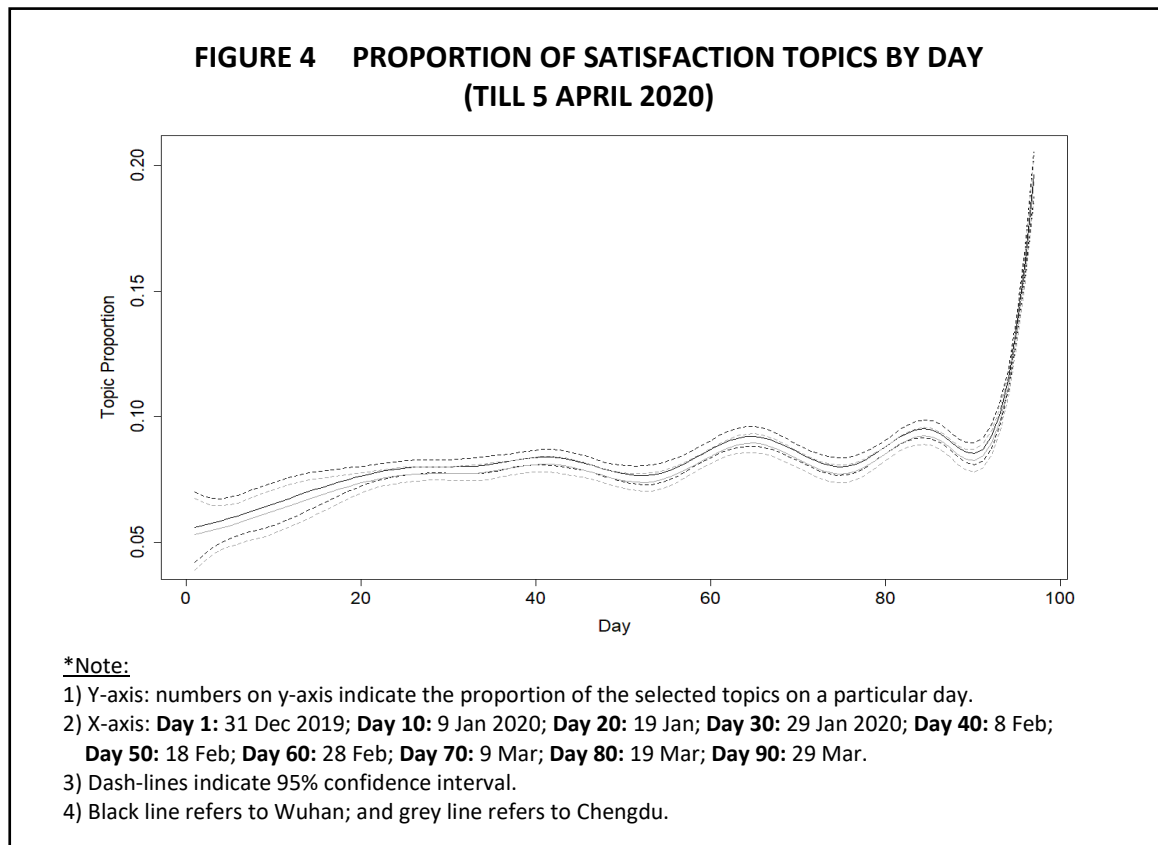
¹⁵ <https://www.bbc.com/zhongwen/trad/chinese-news-51403740>; <https://web.archive.org/web/20200310051522/http://china.caixin.com/2020-03-10/101526309.html>, accessed April 2020.

¹⁶ http://www.xinhuanet.com/politics/2020-02/20/c_1125599027.htm, accessed April 2020.

¹⁷ https://en.wikipedia.org/wiki/Template:2019%E2%80%9320_coronavirus_pandemic_data/Mainland_China_medical_cases, accessed April 2020.

Foreign Situations and the Rise of Satisfaction after February

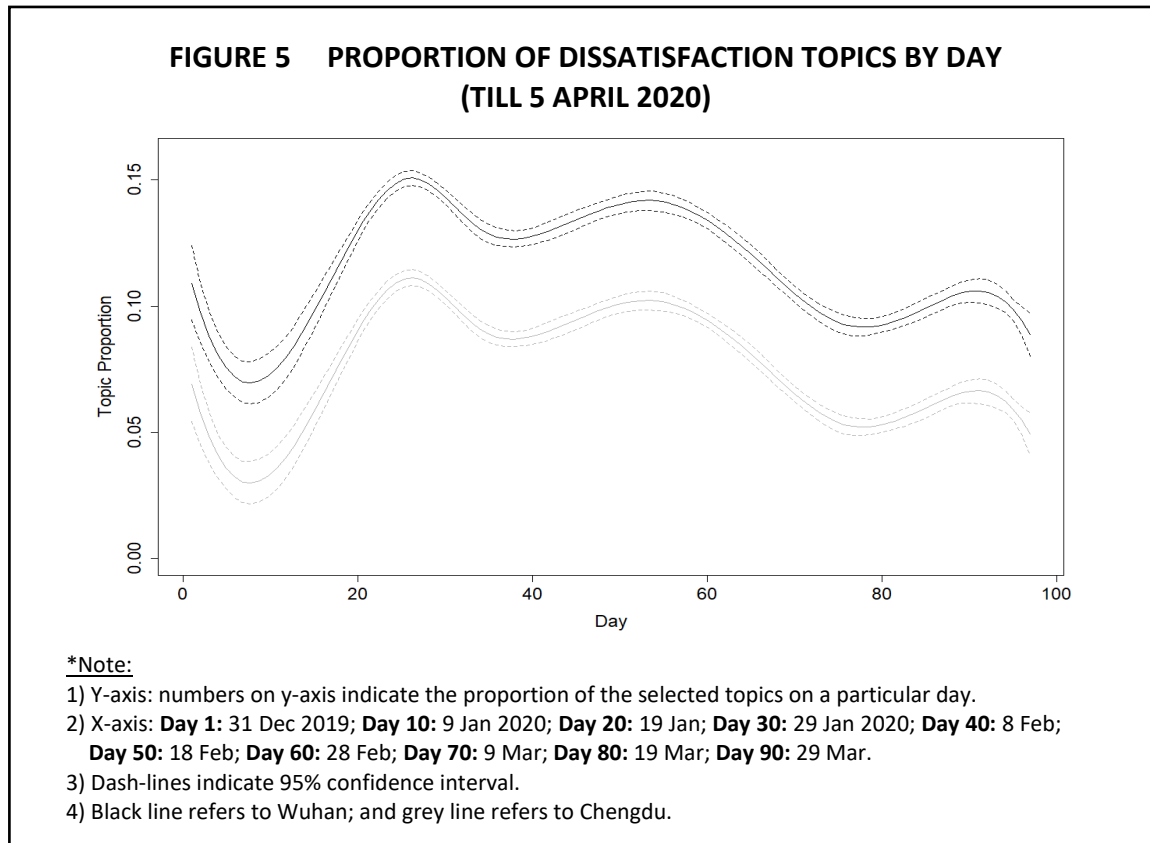
- 3.1 To further examine public opinions changes after February, this section looks at a wider timeframe, from 31 December 2019 to 5 April 2020. Discussions on foreign situations became the dominant topic (23% of topics) after late February. The overwhelming discussions on this topic have therefore diluted the proportions of the topics associated with political satisfaction and dissatisfaction.¹⁸
- 3.2 In March and early April, as indicated in Figure 4, the level of satisfaction in both Chengdu and Wuhan largely overlapped, and has been on a gradual upward trend especially after February.



- 3.3 Figure 5 shows that Wuhan has a consistently and significantly higher level of dissatisfaction than Chengdu. Similar to the results mentioned earlier, the increasing level of dissatisfaction peaked at around late January and fell after Chinese Premier

¹⁸ Among 100 topics, eight topics are identified as pro-government, and they are added up to indicate the level of satisfaction. Ten topics are identified to be critical of the government and are added up to reflect the level of dissatisfaction.

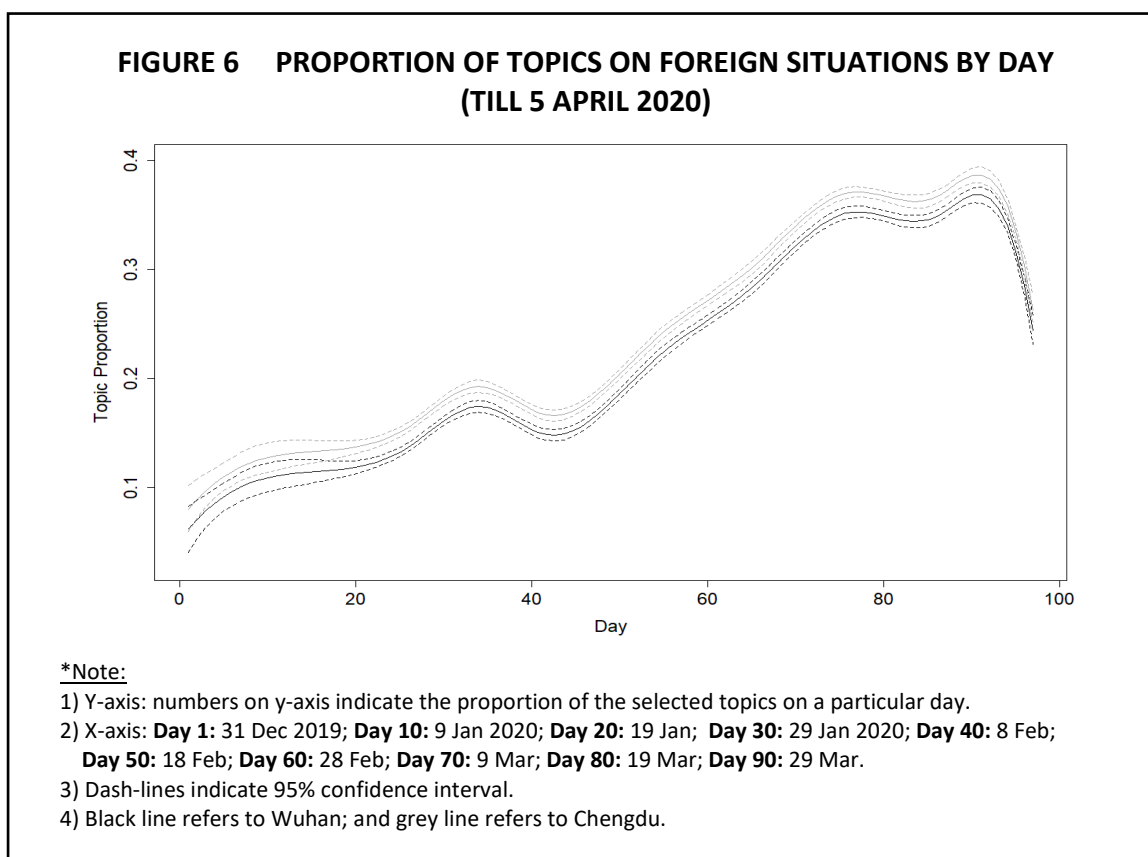
Li Keqiang’s visit to Wuhan. A second peak was around late February and the dissatisfaction fell as confirmed cases overseas, beginning with those on board the Diamond Princess cruise, began to rise. From then on, the level of dissatisfaction has been on a subsiding trend.



3.4 Figures 4 and 5 have minor differences from the “zoom-in” approach due to the variation in data scope. Nonetheless, their trends generally match each other. While satisfaction has been gradually increasing, the level of dissatisfaction had constantly been tapering off since the later part of February, which co-occurred with the upsurge in trajectory of confirmed cases in Japan and South Korea.

3.5 Results from both approaches also show that dissatisfaction topics took up a higher proportion compared to satisfaction topics. The proportion of satisfaction topics were generally below a score of 0.10 whereas dissatisfaction topics generally have proportion scores higher than 0.10 and could peak above 0.15.

3.6 The dominating topic after February was associated with discussions on the COVID-19 condition outside of China. As shown in Figure 6, in the earlier part of the COVID-19 outbreak, there was no significant difference in the level of attention to foreign situations between netizens of Wuhan and Chengdu. As more attention was diverted to other countries in February, differences began to emerge. Chengdu netizens constantly paid higher level of attention to what was happening in foreign countries. This was possibly because Chengdu citizens were less affected by the virus outbreak and had more energy and greater room in their minds to look beyond China.



3.7 Among discussions on foreign situations include positive comments, for instance, on how Japan and South Korea had provided aid to China during the outbreak. Most of the discussions, however, tilted towards negativity, particularly about deteriorating situations in foreign countries and how that reflected the incapability of certain governments or leaders. Such criticisms were often accompanied by comparisons with the performance of the Chinese government and complimenting the latter. See examples of posts related to this topic.

EXAMPLES OF POSTS IN TOPICS ON FOREIGN SITUATIONS

Extract from Original Posts	Translation
<p>“看完各国的措施之后的感慨：感谢国家给了我们安全感，让我们最大程度上避免接触病毒，保障生活必需，且医疗资源够的话会不惜代价地抢救。达尔文觉得淘汰的，我们的医护拼了命救下来，这才是最大的‘人权’。”</p>	<p>“Some thoughts after reading measures implemented in various countries: I thank my country for providing us with the sense of security, and to the largest extent prevent us from contracting the virus, ensure necessities for living, and to come to the rescue when medical supplies are insufficient...this is the greatest ‘human rights’”.</p>
<p>“很多人不理解为什么中国可以成功控制疫情，而西方国家却做不到？其实看看这些直播带货的县长就明白了，中国官员早已不是你们想象中的僵化官僚样子了。当特朗普与各个州长为了各种细节在电视上吵架时，中国的县长们却在为了解决农产品滞销而直播...”</p>	<p>“Many people do not understand why China could successfully control the pandemic, while the Western countries failed. It is evident...When Trump and governors of the various US states were quarrelling on the television over various details, China’s county governors were going on live broadcasts to help resolve the sales problem of agriculture products...”</p>
<p>“目前，韩国首尔市政府向中国提供的一批援助物资已经启运。首尔市市长朴元淳说：五年前，首尔因中东呼吸综合征疫情遭遇痛苦时，北京市政府提供了很大的帮助。现在，该是首尔报恩的时候了。首尔市政府愿助一臂之力，直到恢复正常生活。武汉加油，中国加油，首尔支持中国！”</p>	<p>“Currently, the first batch of supplies donated by Seoul to China is being shipped out. Seoul Mayor Park Won-soon says: five years ago, when Seoul was hit by the MERS, Beijing government has provided tremendous help. Now it is Seoul’s turn to repay the kindness...”</p>
<p>“从#中国向日本提供抗疫情物资#，到中国不会缺席韩日抗击疫情，涌动的是战疫情谊，彰显的是国家责任。‘青山一道同云雨，明月何曾是两乡。’疫情无国界、人间有真情，病毒是人类的敌人，分享防疫经验、提供力所能及的援助，用真心实意锻造大国担当！”</p>	<p>“China’s provision of anti-pandemic supplies to Japan and the promise to play a part in Japan and South Korea’s anti-pandemic efforts are indication of friendship as well as responsibility... to share experiences and to provide aid within our means are a sincere way of forging big power responsibility!”</p>

3.8 Simultaneously, the Chinese government has also been actively shaping its own narrative, which argues that the COVID-19 virus did not originate from China, and

probably from another country.¹⁹ Such a narrative is well-received by many Chinese, who came to believe that the Chinese government should not be responsible for the COVID-19 outbreak.

Implications

- 4.1 Overall, findings show that neither the replacement of local party leaders nor the amelioration of the epidemic situation has significantly helped to reduce the level of scepticism towards the government. It is the rapid and large-scale outbreak of the COVID-19 in other countries that led residents of Chengdu and Wuhan to believe that the Chinese government did a satisfactory job.
- 4.2 In general, during the early stage of the COVID-19 outbreak in China, there was a high level of dissatisfaction among Weibo users. This was reflected in the high proportion of posts criticising the Chinese government's cover-ups, inabilities and delays in dealing with the coronavirus outbreak. The death of Dr Li Wenliang was a symbolic event that peaked dissatisfaction sentiments.
- 4.3 When the Chinese government's measures to curb the spread of COVID-19 within the country eventually show effectiveness, the proportion of voices lauding government efforts also began to grow. The most significant factor that drove up the level of satisfaction is the massive outbreak of coronavirus in Europe and America in March. As confirmed cases in some of these countries exceeded that of China's with time, the level of criticism among Chinese netizens towards their own government also subsided, along with topics associated with dissatisfaction. In this sense, the failure of Western governments in efficiently curbing the spread of COVID-19 has saved the Chinese government from experiencing declining support.

¹⁹ Chinese foreign ministry spokesman Zhao Lijian even openly suggested on Twitter that "it might be the US Army who brought the epidemic to Wuhan". Zhao's allegation of the US Army was linked to the US Army's participation in the International Military World Games, together with representatives from more than 100 countries, held in Wuhan in October. See <https://www.scmp.com/news/china/society/article/3075051/chinese-foreign-ministry-spokesman-tweets-claim-us-military>, accessed April 2020.

4.4 However, Wuhan’s level of dissatisfaction has been significantly higher than that of Chengdu’s, indicating the adverse impact on those who were directly and immensely affected by the virus outbreak.

4.5 However, political satisfaction does not equate to the level in which citizens trust/distrust their government. In fact, many posts, while criticising the Chinese government and exhibiting high level of dissatisfaction, have also demonstrated trust towards the government. Below is a typical example of a comment that is highly dissatisfied with the work of local government, but still places trust in the party and the government to help the country overcome the pandemic.

EXAMPLE OF POST DISPLAYING DISSATISFACTION AND TRUST

Extract from Original Posts	Translation
<p>“自疫情发生以来，物业坚守岗位，但防护物资单薄，连护目镜，防护服都缺乏，洪山区相关部门来现场检查时，对这些问题视而不见？只是例行公事，态度让人寒心！！作为东方雅园居民一份子，在此为自救而呐喊，我们不传谣、不信谣、我们信任政府和党能打赢战疫，共克时艰。”</p>	<p>“Since the pandemic outbreak, the property management has been doing their job even when there is lack of protective equipment including protective goggles and suits. When officials from Hongshan district came for inspection, they actually turned a blind eye to these problems. They are just doing routine inspection, really disappointing!!!...to save ourselves, we should not spread and believe in rumours; we should trust the government and the party to win this battle against the pandemic and weather through this difficult time.”</p>

4.6 Considering that political trust is a more important component of regime legitimacy, the COVID-19 pandemic has yet to rock the legitimacy of the Chinese government.

4.7 Nevertheless, as the COVID-19 pandemic is ravaging the world and many countries have been forced to pause economic activities including manufacturing, a worldwide economic downturn is looming. China, being an important link in the global value chain, would inevitably be dragged into a global recession. Over

240,000 enterprises in China had already ceased operation permanently²⁰ and unemployment has begun to climb.²¹ Whether the Chinese government can weather through such an economic crisis with sustained level of public confidence is still unknown.

4.8 Internationally, this is the first global crisis that affects almost every individual across all social ladders in the era of globalisation. All governments are forced to deal with the same crisis. The development of social media enables netizens in different corners of the world to live broadcast their encounters and stories. It also allows, or inevitably leads, netizens to compare performances and effectiveness of different governments. In view of this, governments have to not only perform well, but also outperform their counterparts in order to gain political support. This could be a new challenge brought about by the COVID-19.

²⁰ <https://supchina.com/2020/04/09/more-than-240000-chinese-companies-declare-bankruptcy-in-the-first-two-months-of-2020/>, accessed April 2020.

²¹ <https://www.cnn.com/2020/03/16/china-economy-millions-lose-their-jobs-as-unemployment-spikes.html>, accessed April 2020.

APPENDIX I DATA COLLECTION AND RESEARCH DESIGN

1. Weibo data can be biased in two ways. First, Chinese internet censorship is likely to remove many relevant posts. Studies have shown that 5% to 16% of posts could be deleted by censors, and sensitive topics could receive higher level of censorship.²² For example, over 5,500 posts under just one discussion topic, with the hashtag “#wewantfreedomofspeech#”, on Weibo were removed on the day when Dr Li Wenliang passed away from the coronavirus.²³ He was one of the whistleblowers who warned his colleagues about a possible virus outbreak but was named as a “rumour monger” by the police.
2. Second is the existence of the 50-cent army²⁴ and internet bots²⁵ that are automated to post designated messages. These accounts are likely to be generating large amount of pro-government messages. The combination of these two factors can cause any analysis based on Weibo data to be biased. More specifically, it would exaggerate compliments of the government and underestimate dissatisfactions.
3. To resolve these two problems, two strategies are used. First is the use of a quasi-experimental design. Two similar cities hit by the COVID-19 at different degrees are chosen for comparing changes in their narratives on Weibo. There is little evidence that Weibo will censor based on location.²⁶ Weibo censorship is generally targeted at specific content or individuals and it can be assumed that censorship is evenly enforced in both cities. Therefore, in the comparison of the two cities, it can be seen when and how public opinions in Wuhan, the city hit most severely by COVID-19, deviate from other Chinese cities represented by Chengdu.
4. Second is the more weight given to the dissatisfaction narrative instead of the satisfaction narrative. Due to the problems of censorship and deliberate content-generating mentioned earlier, it is mostly the critical comments that are removed, whereas posts expressing satisfaction are excessively generated on Weibo. As a

²² <https://www.propublica.org/article/how-to-get-censored-on-chinas-twitter>, accessed April 2020; Zhu, T, Phipps, D, Pridgen, A, Crandall, J R and Wallach, D S (2012). Tracking and quantifying censorship on a Chinese microblogging site. *arXiv preprint arXiv:1211.6166*; Bamman, D, O'Connor, B and Smith, N (2012). “Censorship and deletion practices in Chinese social media”. *First Monday*, 17(3).

²³ <https://www.nytimes.com/2020/02/07/business/china-coronavirus-doctor-death.html>, accessed April 2020.

²⁴ King, G, Pan, J and Roberts, M E (2017). “How the Chinese government fabricates social media posts for strategic distraction, not engaged argument”. *American political science review*, 111(3), 484-501.

²⁵ Pan, J, Liu, Y, Liu, X and Hu, H (2016). “Discriminating bot accounts based solely on temporal features of microblog behavior”. *Physica A: Statistical Mechanics and its Applications*, 450, 193-204.

²⁶ Apart from more sensitive locations such as Tibet, Qinghai, Gansu, and Xinjiang. Please see: Bamman, D, O'Connor, B and Smith, N (2012). Censorship and deletion practices in Chinese social media. *First Monday*, 17(3).

result, the overall narrative on Weibo is likely to be biased against dissatisfaction and any estimation on the level of dissatisfaction would be tilted towards the conservative side of the scale. As such, if there is still a rising level of criticism despite the biasness, it would be safe to argue that the COVID-19 has a negative effect on political support.

5. Chengdu is selected to compare with Wuhan because they are very similar. Both cities are located in the mid-western region of China. Chengdu's disposable income per capita in 2018 was RMB36,142²⁷ and Wuhan's was RMB42,133.²⁸ The economic structure is somewhat identical in terms of the ratio of primary, secondary and tertiary industries between Chengdu (3.4 : 42.5 : 54.1) and Wuhan (2.4 : 43.0 : 54.6).²⁹ The cities' political statuses are also comparable as both are provincial capitals.³⁰
6. The number of regular residents in Chengdu were 16.04 million in 2017 and there were 10.89 million in the same year in Wuhan. In terms of medical resources per 1,000 population, as shown the Figure A, Chengdu and Wuhan are of similar levels. For sickbeds, Chengdu had 7.94 per thousand people, and Wuhan had 8.41. Chengdu had 9.85 medical personnel for every 1,000 people, and Wuhan had 9.41. Every 1,000 Chengdu residents had 3.63 doctors and Wuhan residents had 3.33.³¹

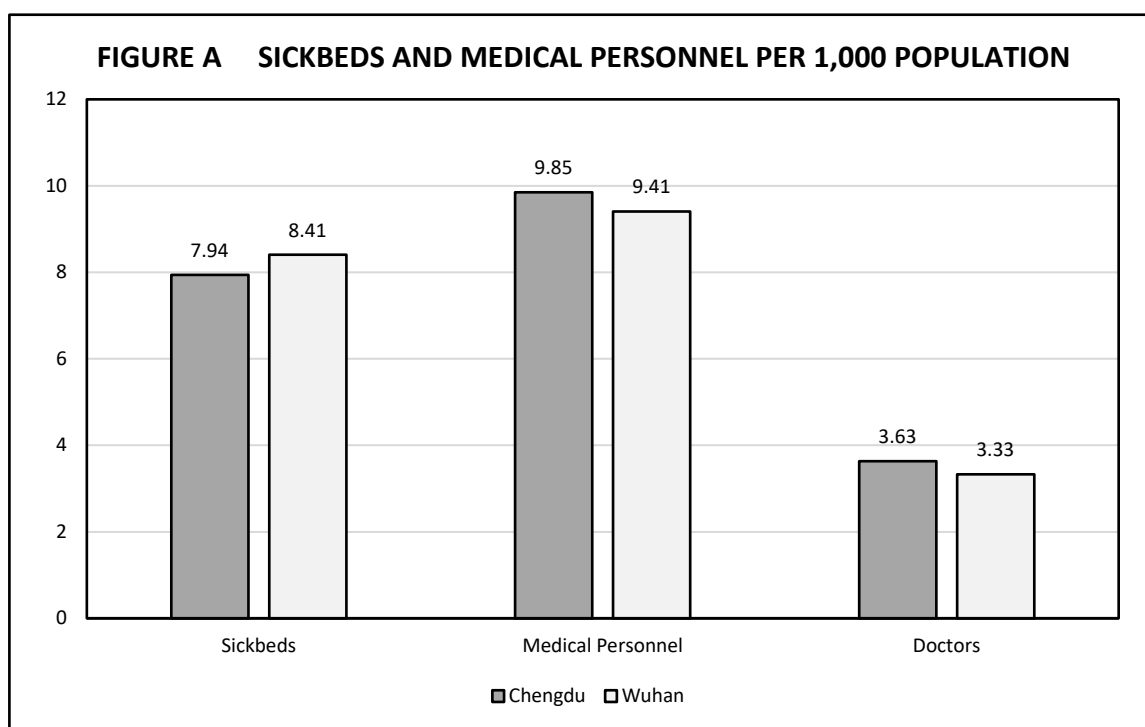
²⁷ http://www.chengdu.gov.cn/chengdu/smfw/2019-01/22/content_44d3691503a1470c996ccea735d9388.shtml?y7bRbP=KaMRkaq9xcA9xcA9xm0m4lmiJZg5WYUeFqsqdnruU5LqqcA, accessed April 2020.

²⁸ http://m.xinhuanet.com/hb/2019-01/26/c_1124045864.htm, accessed April 2020.

²⁹ "Three Traits of Wuhan's GDP in 2018", available at http://tjj.hubei.gov.cn/tjsj/tjfx/sxtjfx/201910/t20191026_27433.shtml, accessed April 2020; "Announcement of Chengdu's Economic and Social Development in 2018", available at http://www.chengdu.gov.cn/chengdu/smfw/2019-04/01/content_0dfa7a723a954414a6e5bbf265e30399.shtml?y7bRbP=KaM0cqrRKY2RKY2RKpGt4.WJnEN.fGnBvhuxbEX4_29qqm9, accessed April 2020.

³⁰ Furthermore, the provinces that the two cities belong to, namely, Hubei province and Sichuan province, do not share boundaries. The spatial distance between the two cities helps to alleviate potential problems such as spatial autocorrelation and "Galton's Problem". See Lee S I (2017) Correlation and Spatial Autocorrelation. In: Shekhar S, Xiong H and Zhou X (eds) *Encyclopedia of GIS*. Springer, Cham; and Naroll, Raoul, "Galton's Problem", Chapter 47 in Naroll and Cohen (eds), *A Handbook of Methods in Cultural Anthropology*, New York: Columbia University Press, 1973, pp. 974-989.

³¹ *Chengdu Statistical Yearbook 2018*, available at <http://www.cdstats.chengdu.gov.cn/uploadfiles/02010921/%E3%80%8A%E6%88%90%E9%83%BD%E7%BB%9F%E8%AE%A1%E5%B9%B4%E9%89%B4-2018%E3%80%8B%EF%BC%88%E5%85%A8%EF%BC%89.pdf>, accessed April 2020; *Wuhan Statistical Yearbook 2018*, available at <http://tjj.hubei.gov.cn/tjsj/sjkscx/tjnj/gszjtj/whs/201911/P020191104653356795480.pdf>, accessed April 2020.



7. Despite the political, economic and demographic similarities between the two cities, they were affected by the virus outbreak at very different levels. Up to mid-April, Wuhan’s confirmed cases were reportedly 50,008 and death cases were 2,579.³² In Chengdu, confirmed cases were reportedly 165 and death cases were only 3.³³ Besides, residents in Wuhan have suffered much more compared to those in Chengdu due to the lockdown. In the first few weeks of the lockdown, a large number of patients had overwhelmed the hospitals in Wuhan. As a result, many could not be admitted to hospitals nor received medical attention, and some had passed away at home. This, however, did not happen in Chengdu with far fewer confirmed cases.

8. Furthermore, the degree of lockdown in both cities had varied and hence brought different levels of disruptions to their residents’ life. In Wuhan, many residents were not allowed to leave their communities and some were not even allowed to leave their home for weeks. In Chengdu, there were generally fewer limits to residents’ movements in and out of their communities, for instance restrictions in terms of entrance/exit frequencies. According to a recent online survey conducted in the two cities, about 64% of Chengdu respondents reported of inconveniences caused by the lockdown whereas about 80% of Wuhan respondents felt inconvenient.³⁴

³² http://wjw.hubei.gov.cn/fbjd/dtyw/202004/t20200416_2223536.shtml, accessed April 2020. The Chinese government later revised the number of confirmed cases to 50,333 and the number of deaths to 3,869. See <http://cn.chinadaily.com.cn/a/202004/17/WS5e9931f8a310c00b73c77c86.html>, accessed April 2020.

³³ http://cdwjw.chengdu.gov.cn/cdwjw/gzdt/2020-04/16/content_12a01ae12a294ce5acadd7bb2908cb0a.shtml, accessed April 2020.

³⁴ Two-city survey done by the authors, with a sample of 733 respondents.

9. Such a comparison provides a certain level of confidence for arguing that difference shown in public opinions of the two cities is likely due to their different degrees of suffering caused by the pandemic. Without significant difference, it would mean that public opinions in Wuhan did not deviate from those of Chengdu.
10. Scrapped posts are located via Weibo's advance search function.³⁵ This function allows for identification of all posts uploaded by netizens of Wuhan and Chengdu that contain certain keywords. The keywords used in the search include "state+epidemic", "state+virus", "state+pneumonia", "government+epidemic", "government+virus" and "government+pneumonia". Posts had been scrapped starting from 31 December 2019, the day when the Chinese government officially admitted the presence of an epidemic, up to 5 April 2020 (a total of 97 days), three days before Wuhan lifted its lockdown. In all, there was a total of 129,524 scrapped posts.³⁶
11. This analysis uses the Structural Topic Model (STM) package in R.³⁷ STM is a type of topic model, which is a computer-assisted analytical model that uncovers latent topics in a corpus of texts. It does so by measuring the patterns in which words co-occur in individual texts and across the whole corpus of texts. In the process, the algorithms identify the hidden patterns and code words into meaningful themes called "topics".³⁸ STM proceeds further to allow for correlation between latent topics and document-level covariates, such as dates, locations and other labelled factors, thereby helping to discern any changing trends in the topics.
12. The STM analysis requires manual indication of the number of topics (or K). Pre-tests had been carried out on 40 to 110 topics, at an increment of 10. After a comparison of the coherence scores, exclusivity scores,³⁹ as well as content interpretation, this study identifies 100 topics (K=100) that are most suitable.
13. With the 100 topics generated from the STM analysis, this study first proceeded to identify topics that contain pro-government or critical texts, followed by outlining the daily trends of the interested narratives. This process also allows for pinpointing of events that triggered the changes in the trends.

³⁵ Posts were scrapped using Python and outputs were processed using PyQuery.

³⁶ It is noted that Weibo only returns a maximum of 50 pages of search results. Therefore, codes have been tailored to scrape the posts day by day. This ensures that some posts are not truncated due to Weibo's limit on page display.

³⁷ Developed by Roberts, Margaret E., Brandon M. Stewart and Dustin Tingley (2017).

³⁸ Farrell, J (2016). Corporate funding and ideological polarization about climate change. *Proceedings of the National Academy of Sciences*, 113(1), 92-97.

³⁹ Coherence score indicates the level in which the most probable words co-occur in a given topic. A higher coherence score will indicate a higher consistency of words within topics. Exclusivity score measures the uniqueness of the highly probable words to a topic. A higher exclusivity score means that the words are concentrated and unique to only a few topics. The higher the scores, the better the STM model. See Wesslen, R (2018). Computer-assisted text analysis for social science: Topic models and beyond. *arXiv preprint arXiv:1803.11045*.

APPENDIX II EXAMPLES OF POSTS

A. Examples of Posts on Satisfaction Topics

Extract from Original Posts	Translation
<p>“我们国家很少强调人权二字，但是每每在危难时期，国家不曾放弃过任何一个老百姓可以活下来的机会。透过这次疫情，我们审视到自身的不足，同时我们再一次为生在中国而庆幸！”</p> <p>“其实我真的觉得国家已经做的很好了。几千个亿免费给治疗,不需要你花一分钱,每天不重样的给医护和病患搭配三餐,全国加一起已经开除700多个监督不到位的??官,还有很多为人民做事的,我们本来什么忙都帮不上.这个时候就不要再跟风起哄,给国家添乱了//相信党，相信国家！#方舱医院是为了救人#”</p>	<p>“Our country seldom emphasises the term ‘human rights’, but whenever there is a crisis, the country never gives up a chance to ensure the survival of every single citizen...we feel fortunate to be born in China!”</p> <p>“I think the government has done a great job. It has poured billions of dollars to provide free medical treatment, and meals for medical staff and patients...we could not be of much help, so we should not create more mess for the government//Trust the party, trust the country!...”</p>

B. Examples of Posts on Dissatisfaction Topics

Extract from Original Posts	Translation
<p>“内紧外松的传统信息策略（政府内部信息畅通，对公众信息则拣选限制）在处理重大公共卫生事态上是危险的。疫情不是政府医院在背地里努力就能消灭的，它必须动员全社会最普通民众一起配合。向公众隐瞒，就要装出万事太平的样子，就会要求工作人员不戴口罩，那还防个毛传染 【武汉医生：疫情刚开始‘整个不让说’】”</p> <p>“大家一片喜悦，说着数字的降低，可惜我从来不信 zf⁴⁰ 给的数字，武汉数一数也关了又快两月了，以前试剂不够，现在还不够？人民水热火热，微博一片繁荣昌盛，看不到负面情绪还是看不到一群生活不济的人不是被病毒磨死的，是生活逼死的？好奇，真的好奇，6000万湖北人活生生的叫自己的 zf 逼死的逼死，逼疯的逼疯，有钱的别呛，你不需要为生活劳累。”</p>	<p>“When handling massive public health issues, it is dangerous to adopt a traditional strategy that maintains information flow within the government but selective exposure to the public... To pretend that nothing is happening, it would require workers not to wear masks. How to prevent transmission in that case? [Wuhan doctor: No one is allowed say anything in the early phase of pandemic]”</p> <p>“While many are so happy about the drop in case numbers, I never trust the statistics provided by the government. It has been almost two months since the breakout in Wuhan, and there is still not enough test kits? ... Among the 60 million Hubei people, some are forced to their death by their own government and some are tortured to madness...”</p>

⁴⁰ “zf” is the acronym for “zheng fu (or government)”, which is often used by Chinese netizens to avoid censorship.