How privacy concerns and cultural differences affect public opinion during the COVID-19 pandemic: a case study

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Abstract

Purpose – COVID-19, an infectious disease first identified in China, has resulted in an ongoing pandemic all over the world. Most of the countries have been experiencing a difficult period during the fighting of this pandemic. The purpose of this study is to explore the effect of privacy concerns and cultural differences on public opinion related to the pandemic. The authors conducted a comparative analysis of public opinion in the US and in China as a case study, in order to determine the results.

Design/methodology/approach – National policies on important issues faced during the COVID-19 pandemic in the US and in China were examined through a comparative analysis. The authors used text clustering and visualization to mine public opinion on two popular social media platforms, Twitter and Weibo. From the perspectives of concern for privacy and of national culture, this study combines qualitative and quantitative analysis to discover the acceptance level of national policies by the public in the two countries.

Findings – The anti-pandemic policies and measures of the US and China reflect the different characteristics of their respective political systems and national cultures. When considering the culture of the US, it is hard to establish and enforce a rigorous regulation on either mask wearing in public or home quarantine on the national level. The opinions of US people are diverse, regarding national COVID-19 policies, but they are rather unified on privacy issues. On the other hand, Chinese people show a high acceptance of national policies based on their mask-wearing customs and their culture of collectivism.

Originality/value – Prior studies have paid insufficient attention to the ways in which user privacy and cultural difference affect public opinion on national policies between the US and China. This case study that compares public opinion on current and topical issues which are closely bound up with public life shows originality, as it innovatively provides a cross-cultural perspective on the research of public opinion dissemination during emergencies by considering the ongoing COVID-19 pandemic.

Keywords Privacy concern, National culture, Public opinion, National policy, COVID-19, Twitter, Weibo

Paper type Research paper

Introduction

The ferocity of the COVID-19 outbreak and the magnitude of the damage caught many global public health experts off guard. After six months of fighting the COVID-19 pandemic, the world's two biggest powers had achieved very different results (He *et al.*, 2021). Many researchers have tried to explain the differences between China and the US in terms of the effectiveness of each nation's pandemic prevention and control policies (Xu *et al.*, 2019). Studies show that the governmental policies on curbing the COVID-19 pandemic are quite different between the two nations (Buranyi, 2020; Chamola *et al.*, 2020; Zhang *et al.*, 2020). Studies also identify that the national culture played a significant role in how people

perceived and behaved during the pandemic. There have been a few prior studies on public opinion on emergencies on Twitter and Weibo concentrating on user behaviors (Lin *et al.*, 2016; Liu *et al.*, 2012), sentiment analysis (Bai and Yu, 2016), topic detection (An *et al.*, 2018) and government strategies (Meng *et al.*, 2015). However, very few specific studies on how people from different countries perceive and react to the global pandemic can be found. The COVID-19 pandemic has certainly attracted the attention of numerous scholars from the biological, environmental, political, medical and clinical fields (Akbolat *et al.*, 2020; Dexter *et al.*, 2020; Huang *et al.*, 2020). Still, no study has concentrated on how various social media's public opinions are affected by privacy concerns and by cultural differences. As such, the contribution of our study can be summarized as follows:

This study manually collects the national regulations of the US and China regarding COVID-19, particularly about three topical issues: "masks," "quarantine" and "flight regulations." Policy toughness, management orientation and institutional mechanisms were also examined through a comparative analysis. We collected users' comments on those topics from two popular social media platforms: Twitter and Weibo. Text clustering was used to mine people's concerns about the coronavirus in relationship to the three topical issues, and visualization analysis was conducted to make the results more intuitive. This paper provides a cross-cultural research perspective on the theoretical level. Based on the theories of privacy concern, national culture, and public opinion on emergencies, a qualitative analysis was conducted to show how those factors affect information spreading regarding COVID-19 on different social media platforms.

On a practical level, the results are helpful in revealing public opinion about COVID-19 as it spread on Twitter and on Weibo and in revealing how people perceived and reacted to the policies published by their governments. This study shows the effectiveness and the benefits of examining public voices of health issues from the perspectives of privacy and national culture. The research is beneficial for policymakers and for others in terms of understanding what forms of national policy offer more incentive for people to follow. The study also reveals insights about social motivations and user behaviors when expressing public opinion. The main research question addressed in this paper is:

RQ1. How did culture affect national policymaking and public opinion regarding the COVID-19 pandemic on social media?

RQ2. To what extent did people's privacy concerns affect public opinion on social media regarding national policies taken against the COVID-19 pandemic?

The remainder of this paper is organized as follows: Section 2 provides related literature regarding privacy concerns on social media, national culture, and public opinion on national emergencies. In Section 3, the methods of data collection and data processing are presented. In Section 4, the findings are discussed in detail. Section 5 summarizes the findings, and Section 6 provides the conclusion and the limitations, as well as recommendations for future studies.

Literature review
National culture and privacy concerns
Culture is defined as the collective mental programming that distinguishes one social group from another (Hofstede and Bond, 1988). Hofstede's theory (1980) of cultural values has proven to be extremely useful in understanding cultural differences. Most cross-cultural studies have relied on the generic cultural values developed by Hofstede's research to explain people's behavioral differences across cultures. Those studies have applied this culture theory to explore ethics perceptions and behavior (Chang *et al.*, 2017; Tam and Oliveira, 2019) and multinational culture on Internet uses (Choden *et al.*, 2019). There is partial evidence for the influence of self-enhancement and self-transcendence upon social media and relations

between culture and technology (Li *et al.*, 2019; Salehan *et al.*, 2018). National culture can generate different influences on people's attitude toward public events, since various social media provide opportunities for users to express their opinions (Chen *et al.*, 2019).

However, insufficient attention has been given to the differences between political communication and national culture or everyday life from east and west, regarding the usage of social media. This paper takes the US and China as examples. Then, we are interested in knowing if there is any relationship between people's online social behavior and their national culture. What are the differences between eastern and western cultures when people express online public opinion regarding national events?

China and the US are assumed to have different cultures that relate to the social environment in which their citizen grow up, their people's unconscious values, and the stable core constructs of basic life (Hoehle *et al.*, 2015). Chinese culture differs substantively from that of the US on the individualism-versus-collectivism dimension. While the culture of the US is individualistic, China's is collectivistic (Fang *et al.*, 2016). Chinese culture appears to be somewhat vague and ambiguous in terms of the boundaries of its public and private spheres (Venkatesh and Zhang, 2010). Liu and Wang (2018) believed that group norms are positively related to privacy control and that this relationship is stronger in cultures with high collectivism. Chen and Zahedi (2016) argued that Chinese people have more exposure to negative information and are more sensitive to potential risks.

Also, the privacy concerns of citizens are closely related to national culture. Although there is a tension between citizens' privacy concerns and their acceptance of government surveillance, there is little systematic research in this regard, and even less in a cross-cultural context. Current studies have not concluded how national culture influences people's privacy concerns. From the perspective of individualism-versus-collectivism, we wonder: who are more privacy-conscious, the US people or the Chinese people? While differences in cultural dimensions are associated with differences in privacy concerns in some domains (Zabihzadeh *et al.*, 2018), we know that culture is an essential criterion for self-disclosure decisions, but this has not been well examined to understand how relationships differ across espoused cultural dimensions.

Thompson *et al.* (2020) found that national culture plays a role in influencing both public acceptance of surveillance and the adoption of privacy protections. The benefits of using social media are constantly present for most users, since social networking sites are taking over the traditional means of communication. Data surveillance via social media is taking place; this holds inherent risk, considering the consumption and production of social media-based information (Schyff *et al.*, 2020). What has come to light is that, enabled by the rapid growth of social media and mobile apps, various stakeholders are collecting and using large amounts of data, disregarding the ethics and politics (Chen and Quan-Haase, 2018). Issues of data ethics and politics include potential biases in social media data collection and interpretation, community and citizen concerns of data misuse both in public life and for journalistic purposes, and media coverage of national big data projects. Covert data capture is often regarded as a violation, invasion, or erosion of privacy rights (Zuboff, 2015). In the earliest research on privacy concerns of social media, Ribak and Turow (2003) compared US and Israeli parents' attitudes toward Web privacy; Olivero and Lunt (2004) explored the social and psychological issues that underlie consumers' privacy concerns. Previous studies concentrated on cyber-ethics, perceptions, privacy concerns in social media services and online news sharing (Jiang *et al.*, 2013; Li and Chen, 2010; Zimmer, 2010; Yu *et al.*, 2020).

Nowadays, the privacy and the security of information disclosure on social media are widely discussed in the realm of online environments (Aghasian *et al.*, 2020; Yue *et al.*, 2020). Users claim that they understand the risk of releasing private data but, at the same time, they accept to disclose data as the price of living in a modern world (Li *et al.*, 2020). Wang *et al.* (2019) explored the antecedents of self-disclosure intention on mobile social applications,

providing alternative explanations regarding the renowned "privacy paradox" phenomenon. Boyd and Crawford (2012) explored whether large-scale search data will usher in a new wave of privacy incursions and invasive marketing. Khalil *et al.* (2019) investigated both the impact of reciprocity in privacy settings on the compromises and losses in utility encountered by users. Though massive research using questionnaires, interviews and various models have been conducted to explore the self-disclosure intention of online users, few studies have intended to study online users' privacy concerns through comparative analysis between nations about public opinion on important national policies.

Public opinion on emergencies

Online public opinion is a collection of attitudes, emotions and opinions expressed by the public around the occurrence, development and change of social events in a certain social space (Bronstein *et al.*, 2016; Wang *et al.*, 2020; Zha *et al.*, 2019). Governments should seek to understand the prevailing views about current events and policies, and should identify extreme views and trends that may represent problematic situations, or precursors to violent actions, by monitoring public opinion (Alkhatib *et al.*, 2020). Maintaining constant awareness of public opinion allows authorities to better assess and predict public reactions in relation to ongoing events, and thus to take appropriate actions to maintain public safety (Larsen, 2020). Research has been conducted on the information transmission of emergencies (Liu and Liu, 2018), sentiment classification (Zhang *et al.*, 2018), topic detection (Xu *et al.*, 2017; Wang *et al.*, 2019) and decision-making in emergencies (Xu *et al.*, 2019; Xu *et al.*, 2019; Xu *et al.*, 2019).

The suddenness, urgency and social publicity of emergency events often have a great impact on public life. A deep analysis of emergency events can provide detailed and comprehensive information on ways in which the public gets the trends of events in a timely manner (Zhou and Jing, 2020). Research on emergency events has increasingly become a focal issue, and the literature regarding public opinion of emergencies has been growing rapidly, with the fields involved expanding and the interdisciplinary integration deepening. Zhao *et al.* (2020) built a model to simulate the spread of public opinion in emergencies based on the complex network theory, the information spread theory and the disease spread theory; Xu *et al.* (2020) applied a topic model to examined public opinion on Twitter at different disaster stages: the prodromal, acute, chronic and termination stages. Li *et al.* (2020) analyzed interactions between three groups in time and space using a classic SIR (susceptible, infected and recovered) epidemic model. The breeding and spreading of negative emotion in public emergencies posed severe challenges to social governance. Zhang *et al.* (2020a, b) used cognitive big data analytics and the deep learning method with a news framing framework to explore the influencing mechanism of the release strategy of government information on the contagion-evolution of negative emotion. Research (Xie *et al.*, 2017) found that government control of public opinion is more effective when it occurs in the initial stages of an incident. If netizens trust the government and the media, they are more likely to make cooperative decisions, maintain interest, and improve the management of online public sentiment (Wang *et al.*, 2020).

Methodology

Due to the popular use of social media by its users to express sentiments and emotions about current events, social media content analysis has been used as a promising solution to capture public opinion. Despite various studies on privacy and national culture, studies of social media users' concerns about emergencies during the environment of national trend through data mining have not been well considered or developed, especially in the situation of the COVID-19 outbreak. This research aims to explore how social media users react to national

policies when they are facing national emergencies. It also offers practical suggestions for governments to help them develop more acceptable policies based on privacy concerns and their national culture.

To explore the way in which privacy concerns and cultural differences have affected public opinion on certain public policies during the COVID-19 pandemic, we selected national policies from the US and China and used public opinions on Twitter and Weibo to carry out our research. The idea of modeling for public opinion analysis is based on the three-step social media analytics (SMA) framework proposed by Stieglitz *et al.* (2018), shown in Figure 1. National policies were collected manually and were stored in a policy database through data sorting and screening. Python was then used to collect user comments from Twitter and Weibo. We cleaned the data by removing URL links, special characters, punctuation marks and emoticons. Finally, we built two opinion databases – one for Twitter and one for Weibo. In the process of data analysis, we used different analysis methods including qualitative analysis, content analysis, text clustering and visual analysis (He *et al.*, 2015). The detail is provided below.

Data selection
The government policies regarding COVID-19 in the US and in China were collected manually. We searched documents published by national policy initiatives, international security organizations and political leaders. The most representative policies were selected based on the authority of the publisher and its social influence. Those publishers included, in the US, the Centers for Disease Control and Prevention, the Department of Public Health, the US President and, in China, the Chinese Center for Disease Control and Prevention and the China State Council. As we considered the policies published by the US and the Chinese governments, we found that there were similarities but also differences on three main important themes: wearing, quarantine, and flight policies. We also checked tweets and weibo microblogs on Twitter and Weibo related to COVID-19, and we found that those three topics were widely discussed by users.

We chose Twitter and Weibo as the primary data sources of public opinion on COVID-19 for our study. Twitter is an American microblogging and social networking service on which users post and interact with messages known as "tweets." By 2012, more than 100 million users posted 340 million tweets on Twitter every day. The service handled an average of 1.6 billion search queries per day. According to the latest report from Statista, by September 2019, the global number of monthly active Twitter users was 330 million, and the number of monthly active US Twitter users was to 68 million. On the other hand, Sina Weibo has been called the Chinese version of Twitter. According to the report of the fourth quarter of 2018, there were 462 million monthly active users on Weibo, a number that had increased by 70 million for three consecutive years.
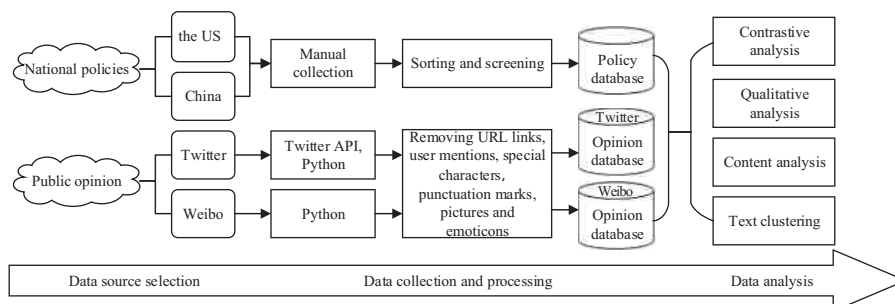

Figure 1.
The framework of
national policy and
public opinion
analytics

In China, according to the state council contingency plan for public health emergencies by the Central People's Government of the People's Republic of China, 24 provinces, municipalities and autonomous regions had launched a first-level response to the Public Health Emergency of International Concern (PHEIC) as of January 25, 2020. However, it was not until March 13, 2020 in the US that the President declared the coronavirus pandemic to be a national emergency. Due to the different period of the epidemic outbreak in China and the US, the time interval of data collection was set from January 25 to February 25 on Weibo and from March 15 to April 15 on Twitter.

To achieve the objective of this research, we used Python to do the data collection and analysis. Data on Weibo was extracted through python using hashtags of (1) ("COVID-19" or "nCoV" or "coronavirus") and "mask" until: 2020-02-25 since: 2020-01-25; (2) ("COVID-19" or "nCoV" or "coronavirus") and "quarantine" until: 2020-02-25 since: 2020-01-25; (3) ("COVID-19" or "nCoV" or "coronavirus") and "flight policy" until: 2020-02-25 since: 2020-01-25. Data on Twitter was extracted through Twitter API with hashtags of (1) ("COVID-19" or "nCoV" or "coronavirus") and "mask" lang:en until:2020-04-15 since:2020-03-15; (2) ("COVID-19" or "nCoV" or "coronavirus") and "quarantine" lang:en until:2020-04-15 since:2020-03-15; (3) ("COVID-19" or "nCoV" or "coronavirus") and "flight policy" lang:en until:2020-04-15 since:2020-03-15.

Data collection

The procedure of collecting Weibo's user data took several steps, using Python programming. First, we checked all of the comments on Weibo and got the corresponding web addresses. Then, we set the link level to 1 if the number of comments was not equal to 0. The "fromUid" field of the source code was set to the "Uid" of the blog. We repeated the steps above for all of the comments on the websites. The comment number returned the traversal if it accounted to 0. Finally, we retrieved the web address of all of the comments after completion and classified the collected information to the Weibo database. By determining the information source and the path of the information dissemination, a chain using the original blog "source" as the root node was established. The Python program was designed to gather all relevant comments on Weibo. Each data item contained necessary attributes, including the user ID (UID), the user's name (ex. Nick), the time and the contents.

To extract data on public opinion, we collected user comments on Weibo and Twitter separately. The Tweepy web service was used for the data retrieval. We set the keywords, language and time, and then we retrieved the data from Twitter's Search Application Programming Interface (API). From the raw data set and the OSN platform API, documents were extracted which consist of text data from individual users. Only public tweets posted by 67,356 distinct users were collected in this study. Twitter was used in this study because it is a preferred platform in the US for discussions, and it is easier to collect public messages from Twitter due to its relatively flexible API rules (Rathnayake, 2021). Each document contained only necessary attributes, including the user's name (e.g. Nick), time and contents. Personal data such as gender, age and career were not collected. The dataset was only used for research purposes and was not for commercial or political use.

Data processing

A microblog is a form that allows users to update short online text in real time and publicly. People post microblogs on Weibo; this is the same as tweets on Twitter. We collected 48,357 microblogs from Weibo and 35,426 tweets from Twitter during two different time periods. Data was then saved to Excel spreadsheets for further processing. Not all of the data was relevant to the research topic and, thus, irrelevant topics needed to be filtered out. URL links, user mentions (@), special characters (#, $, %, ^, and *), punctuation marks, pictures and

emoticons were removed from the texts. Typos in the tweets were neglected, since they're normal and they frequently occur in textual data on social media platforms. In addition, the URLs that contained the tweets were removed in order to increase the quality of the text in each tweet. Data were sorted to six files, according to their different topical issues on Twitter and Weibo.

We used Citespace to do the text clustering and to draw the topic maps. Citespace is a big data tool that is useful when dealing with masses of texts by text clustering. In that process, we used the cosine coefficient algorithm to do the text similarity calculation, the minimum spanning tree algorithm to optimize the network, and TF-IDF to generate cluster tags. Research has found that the combination of the algorithm for text similarity calculation, network optimization and clustering tag generation provides relatively more accurate results than other combination methods (Chen and Morris, 2003). Based on the different topics on Twitter and Weibo, six topic maps were produced. Content analysis on regulations at the national levels in US and China and on how users on Twitter and Weibo spoke about their concern about COVID-19 were conducted based on the collected data.

Results

The purpose of this study was to explore the effect of privacy concerns and cultural differences on public opinion related to national policies taken against the COVID-19 pandemic. We first collected the national policies, in terms of the masks, quarantine and flight regulations announced by the governments of both the US and China. The results are summarized in Appendix.

People who socialize closely with others are more likely to make contact with droplets containing pathogens. The WHO (2020a) determined and released that wearing a medical mask is one of the most effective prevention measures to limit the spread of certain respiratory diseases, including 2019-nCoV, in affected areas. However, asking people to wear masks in the US has shown a deeply rooted historical problem. Some states in the US even have passed anti-mask laws to punish violent demonstrators who hid their identities with masks before this pandemic. Therefore, there was controversy about whether to wear a mask in public in the US as COVID-19 broke out. When the US President declared that people may wear non-surgical masks to prevent novel Coronavirus from spreading, wearing masks became merely a suggestion to protect others. Then, on April 1, the California Department of Public Health (DPH) released that it was not a state-wide mandate to wear face coverings. Only one month later, DPH announced that people were required to wear face masks or cloth face coverings in public places where social distancing would not be possible. On the other hand, as COVID-19 first started its outbreak in Wuhan, the Chinese government recommended mask wearing on a national scale. Since wearing masks in China has been a long tradition because of protecting personal identity and preventing illness from bad weather or air pollution, there was little debate among the Chinese population about mask wearing as protection from the virus.

In the absence of a COVID-19 vaccine, non-drug interventions, such as physical isolation and epidemiological investigation, remain important tools for controlling the outbreak. Research has found that centralized isolation can better reduce family and community transmission (Dickens et al., 2020). In China, cases identified through liberal testing, regardless of their symptom profiles, were immediately isolated in purpose-built shelters, since delays in isolation from symptom onset would increase transmission risk substantially. In the US, people had to cooperate with the efforts of federal and state or local health authorities to avoid contact other exposed people to prevent the possible spread of the quarantinable communicable disease (CDC, Legal Authorities for Isolation and Quarantine). However, in the US, detailed laws can vary from state to state and can be specific or broad.

In some states, local health authorities implement a state law. In most states, breaking a quarantine order is a criminal misdemeanor.

As the epidemic continued to spread around the world, the US and China adopted different response strategies and measures. When the COVID-19 first broke out in China, the WHO announced that there was no reason to take measures that would unnecessarily interfere with international travel (WHO, 2020b). At that time, many countries, including the US, had canceled flights to other countries, and the Chinese government was also trying to limit the mobility of people by reducing international flights. Although the primary purpose of those flight regulations was to prevent the coronavirus from coming into their counties from other countries, it was also beneficial to contain the spread of the infected cases.

Public opinion toward the topics of masks, quarantine and flight policy is different on Twitter and Weibo, as shown in Figure 2(a), (b), (c). Examples of different opinions are provided in Table 1. The percentages of the Twitter users' comments about whether wearing a mask is effective on preventing the coronavirus were both higher than those of the Weibo users. 14.2% of Twitter users, as opposed to only 3.7% of Weibo users, believed that wearing a mask would not prevent the novel coronavirus. Similar percentages of users on Twitter and Weibo (18.8% and 21.8%, respectively) were talking about cases of COVID-19. Up to 38.6% of Weibo users, as opposed to 7.6% of Twitter users, were discussing the shortage of masks. Most people shared their experiences of going to several pharmacies but not being able to buy a single mask. Regarding the topic of quarantine, there was a higher percentage of users (19.6%) on Twitter than on Weibo (8.2%) who thought that people should be quarantined after coming out of disaster zones. The results also show that people in both the US and China were fond of talking about quarantine during COVID-19 pandemic and sharing their own experiences. While 24.8% of Twitter users told a story of quarantine, up to 38.2% of Weibo users used microblogs as a quarantine diary and recorded their notes about staying at home. As to the topic of the flight policy, although many users on both Twitter and Weibo were concerned about flight cancellation and refund policies, user comments showed a great diversity of people's opinion on Twitter and on Weibo, respectively. On one hand, more than 40% of Twitter users discussed the economic losses to airline companies and to the nation as a result of canceled flights. However, Weibo users (6.2%) did not pay much attention to that at all. On the other hand, 43.6% of Weibo users complained about the canceled flights, while only 4.2% of Twitter users discussed that issue. There were even 12.2% of Twitter users who believed that the nation should cut down the flights, since many among the flight staff were confirmed positive for COVID-19. In contrast, only 1.2% of Weibo users showed support to this national policy of canceling flights. It was interesting to find that, at the time when people were asking about the refunds from airline companies, many Twitter users were concerned about economic losses for the airline companies. However, there was little concern in the perspective of the economic losses of airline companies from Weibo users.

Among all the collected comments, we found a recurring controversial topic, which was the "health code." At the peak of the coronavirus epidemic in China, officials quickly tapped into the smartphone as the advanced tracking device to identify and to isolate people who might be spreading the virus. A few months later, Chinese official statistics indicated that the worst of the epidemic had passed, but the government's tracking app showed no signs of its stopping. As we collected data from Twitter on how American people perceived the use of health code in China, in the less than one thousand comments, 62% of Twitter users opposed this policy. Many of them stated that if the government were to track people's locations through their cellphone, it would not make much of a difference in limiting the spread of COVID-19. Many Twitter users felt anxious when they realized that their personal data, including geographical data, could be monitored by the government. However, not many Chinese users felt that way. Up to 64% of the Weibo users felt safe and reassured, as they believed that the coronavirus would be under better control with government monitoring.
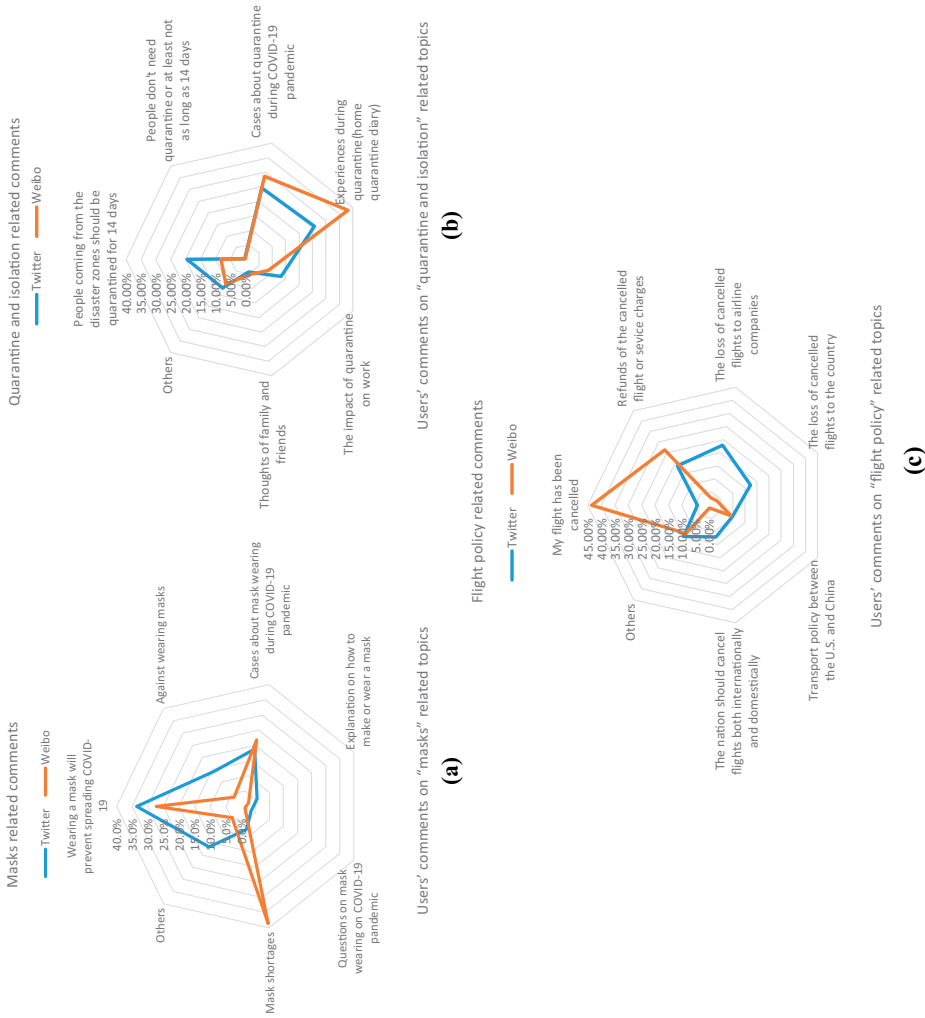
Masks related comments

Twitter ——— Weibo

Wearing a mask will
prevent spreading COVID-
19

Against wearing masks

Cases about mask wearing
during COVID-19
pandemic

Explanation on how to
make or wear a mask

Others

40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%

Mask shortages

Questions on mask
wearing on COVID-19
pandemic

Users' comments on "masks" related topics

(a)

Quarantine and isolation related comments

Twitter ——— Weibo

People coming from the
disaster zones should be
quarantined for 14 days

People don't need
quarantine or at least not
as long as 14 days

Cases about quarantine
during COVID-19
pandemic

Experiences during
quarantine (home
quarantine diary)

40.00%
35.00%
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

Others

Thoughts of family and
friends

The impact of quarantine
on work

Users' comments on "quarantine and isolation" related topics

(b)

Flight policy related comments

Twitter ——— Weibo

My flight has been
cancelled

Refunds of the cancelled
flight or service charges

The loss of cancelled
flights to airline
companies

The loss of cancelled
flights to the country

45.00%
40.00%
35.00%
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

Others

The nation should cancel
flights both internationally
and domestically

Transport policy between
the U.S. and China

Users' comments on "flight policy" related topics

(c)

Figure 2.
Radar map of public
opinion on COVID-19
issues on Twitter
and Weibo

Topic	Opinion	Percentage	Twitter Example	Percentage	Weibo Example
Masks	Wearing a mask will prevent spreading COVID-19	33.6%	Wearing a mask can greatly reduce the spread of microdroplets, helping to protect both the speaker and their listeners from the risk of catching coronavirus	27.30%	Please wear masks in public areas, for yourself and for others
	Against wearing masks	14.2%	Entering a shop with a face mask might get me killed. I fear more to be mistaken for an armed robber than coronavirus. We Black Americans fear where we can go, how we can show up, what we can wear, what we can say	3.70%	Wearing a mask does not protect against the virus. If you are healthy, a mask will not prevent you from harmful virus spreading through the air. You're still going to get sick. So there's no need to wear a mask
	Cases about mask wearing during COVID-19 pandemic	18.8%	Travelling nurse, 33, becomes the latest frontline healthcare worker to die from coronavirus after her husband says she was exposed to infection when hospital DIDN'T give her a mask to treat patients	21.80%	The Chang'an District Court sentenced Yang to six months in prison for obstructing public service. On February 4, Yang, who didn't wearing a mask and beat the police with his fist
	Explanation on how to make or wear a mask	5.6%	If one wears a mask, do put it on correctly. It needs to cover the whole area of nose and mouth to minimize air particles in your space	2.60%	Everything you need to know about masks during epidemic prevention is here-Novel Coronavirus knowledge
	Questions on mask wearing on COVID-19 pandemic	3.5%	Your coronavirus questions, answered: How can I disinfect a face mask? Should I wear gloves?	1.30%	What's the difference between N-95 masks and general masks?
	Mask shortages	7.6%	Many around the world are experiencing mask shortages. To help, we are still offering free filter mask inserts to put inside homemade masks. You can find the templates for these masks and more information . . .	38.60%	I went to 11 pharmacies and could not buy a mask
	Others	16.70%	Austria has even made it compulsory for people to wear a mask in supermarkets and pharmacies	4.70%	I haven't put on makeup for a month because I have to wear a mask every day
Quarantine and isolation	People coming from the disaster zones should be quarantined for 14 days	19.60%	World is fighting from the novel corona virus. Here are some ways to prevent yourself from coronavirus: stay home; quarantine; stay healthy; be protected	8.20%	Please comply with quarantine requirements. People coming out of severely affected areas please automatically declare and quarantine

(continued)

Topic	Opinion	Percentage	Twitter Example	Percentage	Weibo Example
	People don't need quarantine or at least not as long as 14 days	0.30%	Please kill me rather than force me to be quarantined for weeks. I can't bear that	0.20%	Officials have called for a 14-day quarantine. But once you pass the nucleic acid tests for three times, you don't have to be quarantined for that long
	Cases about quarantine during COVID-19 pandemic	24.60%	Wow more than 5400 people had been asked to self-quarantine in California as of February 14th according to California Department of Public Health	28.60%	A man in Shandong province became ill 10 days after being released from quarantine. His wife and children were all asymptomatic infected
	Experiences during quarantine(home quarantine diary)	25.70%	What do you do during quarantine days? Today we will show you, how to play Mini Golf using simple instruments at home	38.20%	Home quarantine makes me an amateur cook. I always hope to have more leisure time watching movie, playing video games and staying with my cat. COVID-19 makes it happen
	The impact of quarantine on work	13.20%	Working remotely doesn't mean sacrificing accountability	8.60%	Online meetings are not as efficient as meetings in the company
	Thoughts of family and friends	4.40%	What are you missing most during this stay at home order? For us at DCG , we are looking forward to brunch , dinner with friends, and working in the office	5.30%	I have been away from home for half a month. I really miss my husband. I've been married for eight years and it's the first time I was separated from my husband for that long. I hope the outbreak ends soon so I can go home
	Others	12.20%	You might be scratching your head, thinking about how to reach investors and create awareness for your company or investment opportunity in this new COVID19 reality?	10.60%	To celebrate the lifting of the quarantine, I went to eat hot pot with my friends
Flight policy	My flight has been cancelled	4.20%	I booked a flight to travel in the month of March but was cancelled due to COVID-19	43.60%	A flight to Osaka has been cancelled for the second time in this month
	Refunds of the cancelled flight or service charges	18.70%	Let's all raise against airline policies to be changed with full refunds for cancelled flights due to coronavirus. The ones who wish to travel can go ahead and the ones can't please refund	26.30%	The ticket was purchased in December. Due to the current epidemic situation, the flight was suddenly cancelled and asked to be rescheduled. However, China Southern Airlines insists on charging fees for refund

(continued)

Table 1.

Topic	Opinion	Percentage	Twitter Example	Percentage	Weibo Example
	The loss of cancelled flights to airline companies	22.90%	Whatever the validity of your first statement, it is also undeniably the case that they are under severe strain from coronavirus. If these airlines collapses, we are talking about hundreds of jobs lost immediately, and thousands as ripple effect. They are a huge part of our econ	2.80%	In the context of quarantine and flight policies, various business trips and exhibitions have been forced to stop, most of the national flights have been cancelled. The total direct loss of the entire travel-related industry is estimated at about 10 percent of the nation's GDP.
	The loss of cancelled flights to the country	17.30%	Coronavirus 128,000 job losses and 13 billion hit to GDP after three months of travel restrictions, IATA says	3.40%	Since China declared the outburst of COVID-19, many of China's exports were greatly restricted or even banned by other countries
	Transport policy between the US and China	9.80%	Most major airlines had already suspended flights to China prior to Trump's China travel ban announcement on Jan. 31, following the lead of several major international carriers that had stopped due to the coronavirus outbreak	9.20%	China and the United States should not cancel the shuttle flights, no matter for which country is a big loss
	The nation should cancel flights both internationally and domestically	12.20%	With the link between COVID-19 and travel, why hasn't there been a moratorium on air travel? I genuinely don't understand this, esp now that airline employees are getting sick by the hundreds. What am I missing?	1.20%	There's nothing wrong to cancel the flights during the epidemic
	Others	14.90%	With rapid COVID-19 testing coming online and the use of personal masks to minimize the spread, do you think the airlines will be back online sooner than later if an instant test result can be had pre-boarding?	13.50%	The cancelled Hainan Airlines reminded me to check in

Table 1.

Therefore, they were more willing to reveal their own personal data to make sure that they had not been in contact with those infected people.

The clusters of user comments on Twitter and Weibo generated many branches, indicating that users had different opinions on the "mask wearing" policy. We circled the centralized clusters which were classified into evident themes in the graphs. Members of different clusters were shown in different colors. As depicted in Figure 3, mask-related comments about N95 accounted for a large proportion of this topic on Twitter, whose users
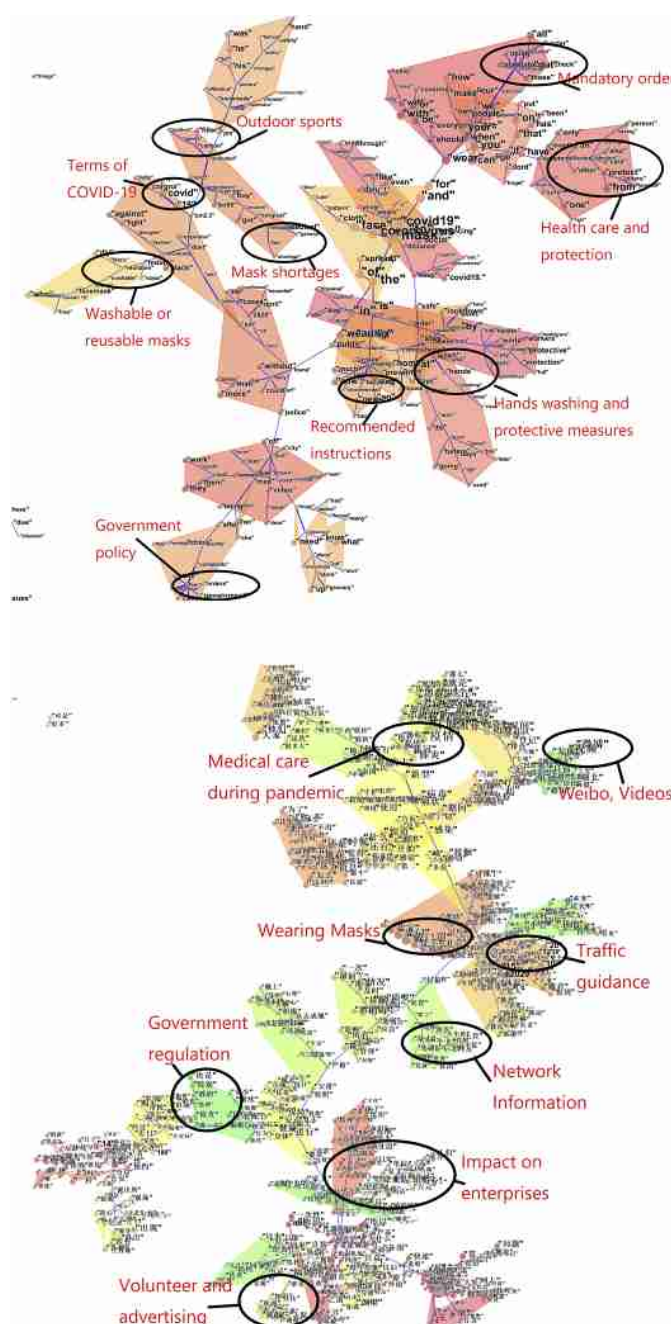
Figure 3.
Text clustering map of
public opinion on
"masks" on Twitter
and Weibo

mostly discussed washable, reusable masks and N95 masks. Other topics related to masks included health care and protection during the pandemic, government policies, mandatory orders by the nation and the recommended instructions. Weibo users, on the other hand, were concerned more about medical care during the pandemic, volunteering and advertising, government regulations, and the impact of COVID-19 on enterprises.

The text clustering map of public opinion on Twitter is quite different from that on Weibo, as shown in Figure 4. The branches of the Twitter map exhibit many overlapping parts, which made the boundaries of the Twitter map more obscure than those of the Weibo map. We found that Twitter's user comments were not centralized, often containing more than one topic in one tweet such as "I hate wearing masks and quarantine. Keeping social distance with my friends makes me anxious." This comment included three evident topics: masks, quarantine and social distancing. Widely discussed by Twitter users were comments on the invisible risks of the coronavirus, self-quarantine, government publications, communities, webinars and online communications, while topics discussed by Weibo users were material support, public security, isolation areas, medical treatment, traffic control, organizations and communities.

The text clustering of public opinion on "flight policy" showed similarity on both Twitter and Weibo. Each map generated many branches with distinct boundaries. As shown in Figure 5, the key topics on Twitter related to flight policy include risks of flight cancellations, air transportation, refunds, recoveries of airlines and industries, and lockdown. And, on Twitter, public opinion regarding the President of the US and flight to China were important branches consisting of various viewpoints. In the meantime, Weibo users mostly commented on their flight schedules, causes of flight delay, refunds, and security auditing. Communication with airlines was also a popular topic among Weibo users. On the contrary, the topic of airline communication was not widely discussed by Twitter users.

Discussion and implications

To some extent, the anti-epidemic policies and measures of the US and China reflect the characteristics of their respective political systems and national cultures. Wearing masks, for people in the US, has been a deeply rooted and historical problem. Before the COVID-19 outbreak, people in the US thought that only sick people would need to wear masks in public. As a matter of fact, some states in the US had passed anti-mask laws to prevent violent demonstrators from hiding their identities with masks (Boyd and Field, 2016). There could be additional problems for individuals with special needs to wear masks. For example, for people who have hearing loss, opaque cloth face masks make it especially difficult to communicate because masks cover the mouth and the lower portion of the face, hiding lips and facial expressions. The solution to solve such a problem would be wearing a partially or fully transparent face mask. In contrast, even in the absence of COVID-19 or other epidemics, the Chinese custom of wearing masks has long been for self-protection (Liu *et al.*, 2018). It is more of a cultural phenomenon that prevents illness from air pollution or bad weather such as sandstorms (Lee and Chen, 2019). Under some conditions, many Chinese people, celebrities in particular, like to wear masks to protect their personal privacy because they want to keep a low profile or because they do not want others to recognize them in public.

Every society has a social contract that frames the ways in which we act and prioritize decisions and choices: as individuals, as in the US, and as the collective, as in China, or through some mix of those forms, as in Canada or France. One of the key lessons from a global response to a pandemic is that the cultural logic of different societies shapes and influences their prevention strategies. Airhihenbuwa *et al.* (2020) state that "In the United Sates, individual vulnerability to risk is culturally privileged over community risk, when both should be addressed equally." People in the US enjoy the country's weather and lifestyle, in
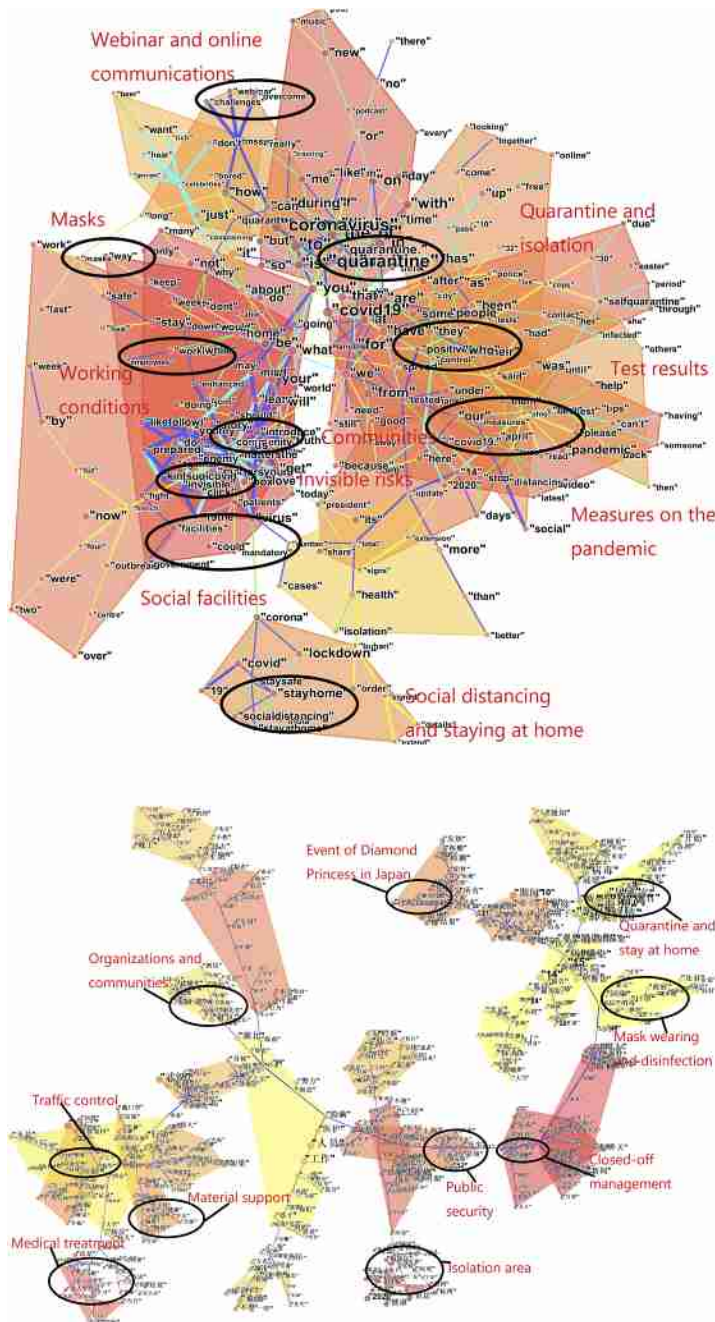
Figure 4.
Text clustering map of
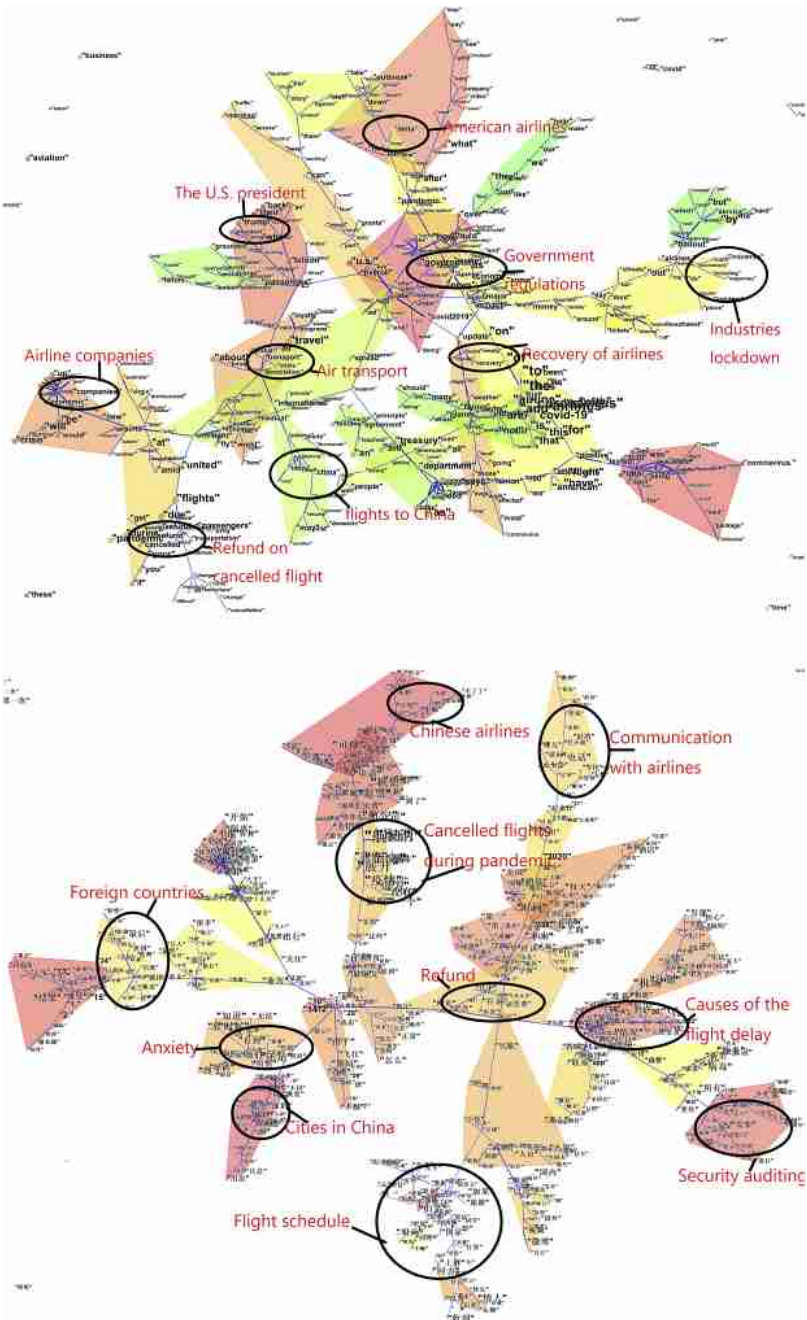public opinion on
"quarantine" on
Twitter and Weibo

which outdoor recreation, arts, sports and live events are embedded in the social fabric. As Claassen and Gibson (2018) indicate, the American national identity is about political freedom. In addition, Americans tend to share a worldview that is future-focused and energetic, which is not consistent with pandemic-driven lockdowns and social isolation (Berggren and Nilsson, 2016). On the other hand, when outbreaks occurred in China, all of the provincial governments adopted a nationally uniform quarantine policy as a collective action to varying degrees and scopes (Airhihenbuwa *et al.*, 2020). This collective action, in response to the outbreak, reflects the cultural contract of the Chinese society (Ma *et al.*, 2014). It also reflects the collective consciousness that makes the Chinese more receptive to national policies, which in turn makes them more willing to endure the personal inconveniences of quarantine.

The Twitter and Weibo users' opinions also show evident differences regarding the national flight policy. A high percentage of Weibo users complained about the impact of canceled flights on the individual, such as their having to delay work or their getting trapped in some places. However, Twitter users paid more attention to the influence of canceled flights on the nation, such as the loss of the national airline, unemployment and the social economic recession. Another important finding is that a relatively high proportion of Twitter users supported the policy and believed that canceling flights was an effective measure to control the spread of the coronavirus. However, very few Weibo users expressed that opinion. Although this does not necessarily illustrate they feel this way, Twitter users show their concerns for the nation more directly.

Also, the ongoing coronavirus outbreak has brought privacy and surveillance concerns to the forefront – from hacking video conferencing to tracking people's cellphones as a measure to limit and to prevent the spread of the virus. Hsieh and Lee (2020) argued that the intention of location tagging is driven by a facilitating route that involves social benefits and functional benefits and by an impeding route that involves perceived risks related to privacy concerns. We found that Weibo users had a lot of concerns about the safety of mobile devices, mobile applications and online public services, both before and after the COVID-19 outbreak. Before the outbreak, Chinese users had expressed their desire for the government and related administrative departments to establish the safety protocols and to enforce legal protections for personal privacy (Zhu and Bao, 2018). Their self-consciousness regarding protecting their personal information and continuing to publish sensitive content on the internet has been also increasing in recent years. However, their privacy concerns have fallen behind the public health emergency. They were willing to provide their personal data to help the government fight against COVID-19 through the disaster (Benreguia *et al.*, 2020). On the other hand, Qin *et al.*'s research (2018) indicates that Twitter users emphasized the human right of controlling their own data and were more concerned about how to improve their personal data protection. The support rates of Twitter and Weibo users for using the "health code" app on a national scale confirmed this finding. However, their rejection of using the "health code" app may not fully reflect people's privacy concern. The reasons for a proportion of people to reject this app include "feeling it unscientific," "useless" or "a waste of national resources." Many people appeared to believe that there are better ways to prevent virus spreading than by using the "health code" app.

Future national policy development is recommended, with a stronger consideration of fairness and equity. When formulating policies, the government should take into full consideration whether or not its people can obtain the greatest fairness and justice, and whether those policies can be effective, rather than remain in dogmas or clauses. Only in this way will people feel more respected, less stressed, and therefore more likely to support those policies. Privacy supporters voiced their concerns regarding the implications of mass surveillance using coronavirus apps, in particular about whether the surveillance infrastructure established to deal with the coronavirus pandemic would be dismantled once the threat is over (Gerke *et al.*, 2020). The primary user concerns pertain to the

government's use of the data for purposes other than contact tracing (Ahmed *et al.*, 2020). We think that the government may pass special privacy protection regulations aiming at addressing privacy issues during and after the COVID-19 pandemic. The surveillance of individual locations by the government for preventing COVID-19's spreading would have to be "lawful, necessary and proportionate" and the use of surveillance data by the government would have to be limited to COVID-19 purposes (Kolfschooten and Ruijter, 2020). Data security and anonymity would have to be enforced and shown to be protected based on evidence, and any sharing of data with third parties would have to be defined by law.

Conclusions

By combining the theories of privacy concerns and national culture, this study examines what people are concerned about and how well people support national policies taken against the COVID-19 pandemic made by government through social data analysis. A comparative analysis was conducted to find the differences in user comments on national policies in the US and in China. We used the methods of text clustering and visualization to mine user comments on three specific topics: "masks," "quarantine" and "flight policy." The results show that there are differences in terms of policy reaction and acceptance by netizens in the two countries because of privacy concerns and national culture. This study confirms that targeted social data collection and analysis on current and important issues can be very helpful to understand public opinions and their trends. On a practical level, this study is helpful for the authority of network management to regulate the information spreading about national emergencies on social media. It also offers implications for governments, regarding how to make appropriate policies based on the conditions of national culture and the privacy concerns of citizens.

The current study has a number of limitations. First, this paper only collected data on three topics relating to COVID-19 with limited datasets from two popular social media platforms: Twitter and Weibo. Second, excluding pictures and emoticons may have affected the meanings of some user comments. Third, the level of freedom of speech on the social media in different cultures may have affected the data collected in this study. Finally, people's opinion regarding national events may be affected by other factors beyond their culture, including politics and religion. However, this study focuses on understanding public opinion regarding COVID-19 based only on national culture. In terms of future research regarding these limitations, we hope to conduct a longitudinal analysis to analyze user-generated data regarding the COVID-19 pandemic for an extended period across various social media platforms. Sentiment analysis and opinion mining will be included to better explain users' online behaviors as they encounter emergencies. We will also code and analyze emoticons when mining users' emotional polarity.

References

Aghasian, E., Garg, S. and Montgomery, J. (2020), "An automated model to score the privacy of unstructured information—social media case", *Computers and Security*, Vol. 92, 101778.

Ahmed, N., Michelin, R.A., Xue, W., Sushmita, R., Robert, M., Salil, S.K., Aruna, S., Wen, H., Helge, J. and Sanjay, J. (2020), "A survey of COVID-19 contact tracing apps", *IEEE ACCESS*, Vol. 8, pp. 134577-134601.

Airhihenbuwa, C.O., Iwelunmor, J., Munodawafa, D., Ford, C.L., Oni, T., Agyemang, C., Mota, C., Ikuomola, O.B., Simbayi, L., Fallah, M.P., Qian, Z., Makinwa, B., Niang, C. and Okosun, I. (2020), "Culture matters in communicating the global response to COVID-19", *Preventing Chronic Disease*, Vol. 17, p. 20245, doi: 10.5888/pcd17.200245.

Akbolat, M., Bostan, S., Kaya, A., Ozata, M. and Gunes, D. (2020), "Assessments of anxiety levels and working conditions of health employees working in COVID-19 pandemic hospitals", *Electronic Journal of General Medicine*, Vol. 17 No. 5, em246, doi: 10.29333/ejgm/8228.

Alkhatib, M., Barachi, M.E., Aleahmad, A., Oroumchian, F. and Shaalan, K. (2020), "A sentiment reporting framework for major city events: case study on the China-United States trade war", *Journal of Cleaner Production*, Vol. 264, 121426.

An, L., Yu, C., Lin, X., Du, T., Zhou, L. and Li, G. (2018), "Topical evolution patterns and temporal trends of microblogs on public health emergencies", *Online Information Review*, Vol. 42 No. 6, pp. 821-846.

Bai, H. and Yu, G. (2016), "A Weibo-based approach to disaster informatics: incidents monitor in post-disaster situation via Weibo text negative sentiment analysis", *Natural Hazards*, Vol. 82 No. 2, pp. 1177-1196.

Benreguia, B., Moumen, H. and Merzoug, M.A. (2020), "Tracking COVID-19 by tracking infectious trajectories", *IEEE Access*, Vol. 8, pp. 145242-145255.

Berggren, N. and Nilsson, T. (2016), "Tolerance in the United States: does economic freedom transform racial, religious, political and sexual attitudes?", *European Journal of Political Economy*, Vol. 45, pp. 53-70.

Boyd, D. and Crawford, K. (2012), "Critical questions for big data", *Information, Communication and Society*, Vol. 15 No. 5, pp. 662-679.

Boyd, R. and Field, L.K. (2016), "Blind injustice: theorizing anonymity and accountability in modern democracies", *Polity*, Vol. 48 No. 3, pp. 332-358.

Bronstein, J., Gazit, T., Perez, O., Bar-Ilan, J., Aharony, N. and Amichai-Hamburger, Y. (2016), "An examination of the factors contributing to participation in online social platforms", *Aslib Journal of Information Management*, Vol. 68 No. 6, pp. 793-818.

Buranyi, S. (2020), "The COVID-19 catastrophe: what's gone wrong and how to stop it happening again", *Nature*, Vol. 582, pp. 478-479.

Centers for Disease Control and Prevetion (CDC) (2020), "Legal authorities for isolation and quarantine", available at: https://www.cdc.gov/quarantine/aboutlawsregulationsquarantineisolation.html.

Central People's Government of the People's Republic of China (2020), January 25, "Shanghai, Tianjin, Chongqing and Anhui have launched a first-level response mechanism for major public health emergencies", available at: http://www.gov.cn/xinwen/2020-01/24/content_5472050.htm.

Chamola, V., Hassija, V., Gupta, V. and Guizani, M. (2020), "A comprehensive review of the COVID-19 pandemic and the role of IoT, Drones, AI, blockchain, and 5G in managing its impact", *IEEE Access*, Vol. 8, pp. 90225-90265.

Chang, C.L.H. and Chen, J.Q. (2017), "The information ethics perception gaps between Chinese and American students", *Information Technology and People*, Vol. 30. No. 2, pp. 473-502, doi: 10.1108/itp-08-2014-0181.

Chen, W. and Quan-Haase, A. (2018), "Big data ethics and politics: toward new understandings", *Social Science Computer Review*, Vol. 38 No. 1, pp. 3-9.

Chen, Y. and Zahedi, F.M. (2016), "Individuals' internet security perceptions and behaviors: polycontextual contrasts between the United States and China", *MIS Quarterly*, Vol. 40 No. 1, pp. 205-222.

Chen, C. and Morris, S. (2003), "Visualizing evolving networks: minimum spanning trees versus pathfinder networks", *IEEE Symposium on Information Visualization 2003 (IEEE Cat. No. 03TH8714)*. doi: 10.1109/infvis.2003.1249010.

Chen, L., Zhang, X. and Li, Z. (2019), "Understanding the Chinese information culture and its impact on IT perceptions", *Information Technology and People*, Vol. 33 No. 1, pp. 56-82.

Choden, K., Bagchi, K.K., Udo, G.J. and Kirs, P.J. (2019), "The influence of individual values on internet use: a multinational study", *International Journal of Information Management*, Vol. 46, pp. 198-209.

Claassen, C. and Gibson, J.L. (2018), "Does intolerance dampen dissent? Macro-tolerance and protest in American metropolitan areas", *Political Behavior*, Vol. 41 No. 1, pp. 165-185.

Dexter, F., Elhakim, M., Loftus, R.W., Seering, M.S. and Epstein, R.H. (2020), "Strategies for daily operating room management of ambulatory surgery centers following resolution of the acute phase of the COVID-19 pandemic", *Journal of Clinical Anesthesia*, Vol. 64, p. 109854.

Dickens, B.L., Koo, J.R., Wilder-Smith, A. and Cook, A.R. (2020), "Institutional, not home-based, isolation could contain the COVID-19 outbreak", *The Lancet*, Vol. 395 No. 10236, pp. 1541-1542.

Fang, X., Lederer, A.L. and Benamati, J. (2016), "The influence of national culture on information technology development, implementation, and support challenges in China and the United States", *Journal of Global Information Technology Management*, Vol. 19 No. 1, pp. 26-43.

Gerke, S., Shachar, C., Chai, P.R. and Cohen, I.G. (2020), "Regulatory, safety, and privacy concerns of home monitoring technologies during COVID-19", *Nature Medicine*, Vol. 26 No. 8, pp. 1176-1182.

He, W., Wu, H., Yan, G., Akula, V. and Shen, J. (2015), "A novel social media competitive analytics framework with sentiment benchmarks", *Information and Management*, Vol. 52 No. 7, pp. 801-812.

He, W., Zhang, J. and Li, W. (2021), "Information technology solutions, challenges, and suggestions for tackling the COVID-19 pandemic", *International Journal of Information Management*, Vol. 57, p. 102287, doi: 10.1016/j.ijinfomgt.2020.102287.

Hoehle, H., Zhang, X. and Venkatesh, V. (2015), "An espoused cultural perspective to understand continued intention to use mobile applications: a four-country study of mobile social media application usability", *European Journal of Information Systems*, Vol. 24 No. 3, pp. 337-359.

Hofstede, G. and Bond, M.H. (1988), "The confucius connection: from cultural roots to economic growth", *Organizational Dynamics*, Vol. 16 No. 1, pp. 4-21.

Hofstede, G. (1980), *Culture's Consequences: International Differences in Work-Related Values*, Sage, Beverly Hills, CA.

Hsieh, S.H. and Lee, C.T. (2020), "Traces of mobility: examining location disclosure on social networks with mobile location tagging", *Telematics and Informatics*, Vol. 49, p. 101366.

Huang, Z., Tian, D., Liu, Y., Lin, Z., Lyon, C.J., Lai, W., . . . and Ning, B. (2020), "Ultra-sensitive and high-throughput CRISPR-p owered COVID-19 diagnosis", *Biosensors and Bioelectronics*, Vol. 164, p. 112316.

Jiang, Z., Heng, C.S. and Choi, B.C.F. (2013), "Privacy concerns and privacy-protective behavior in synchronous online social interactions", *Information System Research*, Vol. 24 No. 3, pp. 579-595.

Khalil, A., Zia, H. and Abdallah, S. (2019), "Privacy in the context of reciprocity: conceptualizing users' choices", *Online Information Review*, Vol. 43 No. 7, pp. 1316-1333.

Kolfschooten, H.V. and Ruijter, A.D. (2020), "COVID-19 and privacy in the European Union: a legal perspective on contact tracing", *Contemporary Security Policy*, Vol. 41 No. 3, pp. 478-491.

Larsen, E.G. (2020), "Personal politics? Healthcare policies, personal experiences and government attitudes", *Journal of European Social Policy*, 095892872090431, doi: 10.1177/0958928720904319.

Lee, J. and Chen, C. (2019), "The moderator of innovation culture and the mediator of realized absorptive capacity in enhancing organizations' absorptive capacity for SPI success", *Journal of Global Information Management*, Vol. 27 No. 4, pp. 70-90.

Li, N. and Chen, G. (2010), "Sharing location in online social networks", *IEEE Network*, Vol. 24 No. 5, pp. 20-25.

Li, F., Liu, Y. and Meng, T. (2019), "Discursive strategy of opinion expression and government response in China: text analysis based on online petitions", *Telematics and Informatics*, Vol. 42, p. 101238.

Li, S., Liu, Z. and Li, Y. (2020), "Temporal and spatial evolution of online public sentiment on emergencies", *Information Processing and Management*, Vol. 57 No. 2, p. 102177.

Lin, X., Lachlan, K.A. and Spence, P.R. (2016), "Exploring extreme events on social media: a comparison of user reposting/retweeting behaviors on Twitter and Weibo", *Computers in Human Behavior*, Vol. 65, pp. 576-581.

Liu, X. and Liu, C. (2018), "Information diffusion and opinion leader mathematical modeling based on microblog", *IEEE Access*, Vol. 6, pp. 34736-34745.

Liu, Z. and Wang, X. (2018), "How to regulate individuals' privacy boundaries on social network sites: a cross-cultural comparison", *Information and Management*, Vol. 55, pp. 1005-1023.

Liu, Z., Liu, L. and Li, H. (2012), "Determinants of information retweeting in microblogging", *Internet Research*, Vol. 22 No. 4, pp. 443-466.

Liu, S., Yang, J.Z., Chu, H., Sun, S. and Li, H. (2018), "Different culture or different mind? Perception and acceptance of HPV vaccine in China and in the US", *Journal of Health Communication*, Vol. 23 No. 12, pp. 1008-1016.

Ma, Z., Huang, Y., Wu, J., Dong, W. and Qi, L. (2014), "What matters for knowledge sharing in collectivistic cultures? Empirical evidence from China", *Journal of Knowledge Management*, Vol. 18 No. 5, pp. 1004-1019.

Meng, Q., Zhang, N., Zhao, X., Li, F. and Guan, X. (2015), "The governance strategies for public emergencies on social media and their effects: a case study based on the microblog data", *Electronic Markets*, Vol. 26 No. 1, pp. 15-29.

Olivero, N. and Lunt, P. (2004), "Privacy versus willingness to disclose in e-commerce exchanges: the effect of risk awareness on the relative role of trust and control", *Journal of Economic Psychology*, Vol. 25 No. 2, pp. 243-262.

Qin, L., Kim, Y. and Tan, X. (2018), "Understanding the intention of using mobile social networking apps across cultures", *International Journal of Human–Computer Interaction*, Vol. 34 No. 12, pp. 1183-1193.

Rathnayake, C. (2021), "Uptake, polymorphism, and the construction of networked events on Twitter", *Telematics and Informatics*, Vol. 57, p. 101518.

Ribak, R. and Turow, J. (2003), "Internet power and social context: a globalization approach to web privacy concerns", *Journal of Broadcasting and Electronic Media*, Vol. 47 No. 3, pp. 328-349.

Salehan, M., Kim, D.J. and Lee, J. (2018), "Are there any relationships between technology and cultural values? A country-level trend study of the association between information communication technology and cultural values", *Information and Management*, Vol. 55 No. 6, pp. 725-745.

Schyff, K.V., Flowerday, S. and Furnell, S. (2020), "Duplicitous social media and data surveillance: an evaluation of privacy risk", *Computers and Security*, Vol. 94, p. 101822.

Statista (2019), Published by J. Clement, available at: https://www.statista.com/statistics/274564/monthly-active-twitter-users-in-the-united-states/.

Stieglitz, S., Mirbabaie, M., Ross, B. and Neuberger, C. (2018), "Social media analytics – challenges in topic discovery, data collection, and data preparation", *International Journal of Information Management*, Vol. 39, pp. 156-168.

Tam, C. and Oliveira, T. (2019), "Does culture influence m-banking use and individual performance?", *Information and Management*, Vol. 56 No. 3, pp. 356-363.

The White House (2020), "Proclamation on declaring a national emergency concerning the novel coronavirus disease (COVID-19) outbreak", available at: https://www.whitehouse.gov/presidential-actions/proclamation-declaring-national-emergency-concerning-novel-coronavirus-disease-covid-19-outbreak/.

Thompson, N., Mcgill, T., Bunn, A. and Alexander, R. (2020), "Cultural factors and the role of privacy concerns in acceptance of government surveillance", *Journal of the Association for Information Science and Technology*, Vol. 71 No. 9, pp. 1129-1142.

Venkatesh, V. and Zhang, X. (2010), "Unified theory of acceptance and use of technology: US Vs. China", *Journal of Global Information Technology Management*, Vol. 13 No. 1, pp. 5-27.

Wang, G., Chi, Y., Liu, Y. and Wang, Y. (2019), "Studies on a multidimensional public opinion network model and its topic detection algorithm", *Information Processing and Management*, Vol. 56 No. 3, pp. 584-608.

Wang, X., Xing, Y., Wei, Y., Zheng, Q. and Xing, G. (2020), "Public opinion information dissemination in mobile social networks–taking Sina Weibo as an example", *Information Discovery and Delivery*, Vol. 48 No. 4, pp. 213-224.

WHO (2020a), "Updated WHO recommendations for international traffic in relation to COVID-19 outbreak", available at: https://www.who.int/news-room/articles-detail/updated-whorecommendations-for-international-traffic-in-relation-to-covid-19-outbreak (accessed 29 February 2020).

WHO (2020b), "Advice on the use of masks the community, during home care and in health care settings in the context of the novel coronavirus (2019-nCoV) outbreak", available at: https://www.who.int/docs/default-source/documents/advice-on-the-use-of-masks-2019-ncov.pdf?sfvrsn=40619336_1&download=true (accessed 29 January 2020).

Xie, Y., Qiao, R., Shao, G. and Chen, H. (2017), "Research on Chinese social media users' communication behaviors during public emergency events", *Telematics and Informatics*, Vol. 34 No. 3, pp. 740-754.

Xu, W., Liu, L. and Shang, W. (2017), "Leveraging cross-media analytics to detect events and mine opinions for emergency management", *Online Information Review*, Vol. 41 No. 4, pp. 487-506.

Xu, A., Zare, H., Dai, X., Xiang, Y. and Gaskin, D.J. (2019a), "Defining hospital community benefit activities using Delphi technique: a comparison between China and the United States", *PloS One*, Vol. 14 No. 11, doi: 10.1371/journal.pone.0225243.

Xu, X., Wang, L., Chen, X. and Liu, B. (2019b), "Large group emergency decision-making method with linguistic risk appetites based on criteria mining", *Knowledge-Based Systems*, Vol. 182, p. 104849.

Xu, X., Yang, X., Chen, X. and Liu, B. (2019c), "Large group two-stage risk emergency decision-making method based on big data analysis of social media", *Journal of Intelligent and Fuzzy Systems*, Vol. 36 No. 3, pp. 2645-2659.

Xu, X., Yin, X. and Chen, X. (2019d), "A large-group emergency risk decision method based on data mining of public attribute preferences", *Knowledge-Based Systems*, Vol. 163, pp. 495-509.

Xu, Z., Lachlan, K., Ellis, L. and Rainear, A.M. (2020), "Understanding public opinion in different disaster stages: a case study of Hurricane Irma", *Internet Research*, Vol. 30 No. 2, pp. 695-709.

Yu, L., Li, H., He, W., Wang, F.K. and Jiao, S. (2020), "A meta-analysis to explore privacy cognition and information disclosure of internet users", *International Journal of Information Management*, Vol. 51, p. 102015.

Yue, H., He, S. and Liu, Z. (2020), "Social media users send promotional links to strangers: legitimate promotion or security vulnerability?", *IEEE Access*, Vol. 8, pp. 41705-41718.

Zabihzadeh, A., Mazaheri, M.A., Hatami, J., Nikfarjam, M.R., Panaghi, L. and Davoodi, T. (2018), "Cultural differences in conceptual representation of 'Privacy': a comparison between Iran and the United States", *The Journal of Social Psychology*, Vol. 159 No. 4, pp. 357-370.

Zha, X., Yang, H., Yan, Y., Yan, G., Huang, C. and Liu, K. (2019), "Exploring adaptive information sharing from the perspective of cognitive switching", *Aslib Journal of Information Management*, Vol. 71 No. 4, pp. 535-557.

Zhang, W., Zhu, Y. and Wang, J. (2018), "An intelligent textual corpus big data computing approach for lexicons construction and sentiment classification of public emergency events", *Multimedia Tools and Applications*, Vol. 78 No. 21, pp. 30159-30174.

Zhang, L., Zhao, W., Sun, B., Huang, Y. and Glänzel, W. (2020a), "How scientific research reacts to international public health emergencies: a global analysis of response patterns", *Scientometrics*, Vol. 124 No. 1, pp. 747-773.

Zhang, W., Wang, M. and Zhu, Y. (2020b), "Does government information release really matter in regulating contagion-evolution of negative emotion during public emergencies? From the perspective of cognitive big data analytics", *International Journal of Information Management*, Vol. 50, pp. 498-514.

Zhao, J., Zeng, D., Qin, J., Si, H. and Liu, X. (2020), "Simulation and modeling of microblog-based spread of public opinions on emergencies", *Neural Computing and Applications*, Vol. 33. No. 2, pp. 547-564, doi: 10.1007/s00521-020-04919-2.

Zhou, Q. and Jing, M. (2020), Multidimensional mining of public opinion in emergency events, *The Electronic Library*, Vol. 38. No. 3, pp. 545-560.

Zhu, X. and Bao, Z. (2018), "Why people use social networking sites passively", *Aslib Journal of Information Management*, Vol. 70 No. 2, pp. 158-175.

Zimmer, M. (2010), "'But the data is already public': on the ethics of research in Facebook", *Ethics and Information Technology*, Vol. 12 No. 4, pp. 313-325.

Zuboff, S. (2015), "Big other: surveillance capitalism and the prospects of an information civilization", *Journal of Information Technology*, Vol. 30 No. 1, pp. 75-89.

Appendix

Policies	The US	Announced by	Date	China	Announced by	Date
Masks	People may wear non-surgical masks to prevent novel Coronavirus from spreading. Masks are recommended to protect others. The move is merely a suggestion that people should voluntarily wear non-surgical masks when they go outside	The President of the US	4/3/2020	The public are supposed to wear masks scientifically. It can prevent respiratory infections such as COVID-19. It protects us and contributes to public health	Chinese Center for Disease Control and Prevention (CDC)	3/25/2020
	People are required face masks or cloth face coverings in public places where social distancing is not possible. This applies to both indoor and outdoor spaces. Exceptions include children under the age of 2 and those unable to wear a mask or face covering due to a medical condition	Department of Public Health	5/1/2020	It is recommended in crowded places. Spare masks should be kept on hand in medium-and low-risk areas. Masks should be worn when in close contact with others	China State Council	2/20/2020

Table A1.
Policies at the national level on different topics in the US and China

(*continued*)

Policies	The US	Announced by	Date	China	Announced by	Date
Quarantine	Both quarantine and isolation involve separation of people to protect the public, help limit further spread of COVID-19 and can be done voluntarily or be required by health authorities	Centers for Disease Control and Prevention	5/6/2020	When people are tested, they are asked to wait for test results in the hospital. If they are tested positive, they have to stay in the hospital until two negative tests in a row proving that they no longer have the virus. People who have contacted with an infected person are required to be quarantined at home for two weeks	Media: Sina's military	1/22/2020
	If you are sick, stay home. If your children are sick, keep them home. If anyone in your household is diagnosed with COVID-19, everyone in your household should be quarantined. If anyone in your household is vulnerable, everyone should focus on protecting them	The White House	3/17/2020	We do a good job in the treatment of critically ill patients, including 14 days of isolation and 28 days of follow-up for discharged patients. We strengthen monitoring of cases related to fever clinics in medical institutions and direct reporting of infectious diseases through the network	The Central Committee of the Communist Party of China	2/20/2020

(*continued*)

Table A1.

Policies	The US	Announced by	Date	China	Announced by	Date
Flight regulation	As a result of the COVID-19 outbreak, all travel from Europe to the US will be suspended for 30 days from the 13th, with the exception of the UK	The President of the US	3/14/2020	Hubei Airport Group is required to put forward proposals to airline transportation to reduce domestic flights in China. Required is also the flight reduction plan for airline transportation in and out of the Wuhan airport in a timely manner	Central People's Government of the People's Republic of China	1/21/2020
	All scheduled passenger services of Chinese airlines to and from the United States will be suspended	US Department of Transportation	3/20/2020	Airline companies including Air China, China Southern airlines and China Eastern Airlines are planning to reduce international flights in response to the novel Coronavirus outbreak	Media: Sina science and technology	1/23/2020

Table A1.

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