

Network Public Opinion Governance during Public Health Emergencies in the Post-Epidemic Era--a Case of “Covid-19 Epidemic Outbreak in Nanjing and Zhangjiajie” in Sina Micro-Blog

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Abstract. In the Post-epidemic Era, the ongoing rebound of the COVID-19 epidemic is testing the initiatives and capabilities of local governments in epidemic prevention. Taking the events of “COVID-19 epidemic outbreak in Nanjing and Zhangjiajie” as an example, this paper used web crawler tools to scarp relevant data from Sina Micro-blog statistical and data visualisation methods to analyze the life cycle and the features of public opinion evolution of the event, and provide suggestions for the government to manage network public opinion in public health emergencies.

1. Introduction

With the development of the Internet and new media, more and more social media platforms have entered the vision of the masses, especially Sina Micro-blog and WeChat. These social media platforms have the characteristics of large amount of information, interactivity, autonomy and convenience and civilianization. Through these platforms, the opportunity for netizen groups to voice their opinions has increased, allowing for the rapid formation of a network of public opinion field, prompting the information fission spread[1]. Therefore, the potential crisis in the dissemination of network public opinion is forcing governments to open their information portals, listen to the voices of the public, and monitor network public opinion.

In the post-epidemic era, the COVID-19 epidemic has not yet faded from the lives of the masses. The highly contagious virus requires governments to remain alert at all times, beware of epidemic outbreaks, and also test the initiatives and attitudes of local governments in epidemic prevention. On 20th July, 2021, the COVID-19 epidemic broke out at Nanjing Lukou Airport. On 26th July 2021, additional confirmed case in Dalian traveled through Nanjing Lukou Airport on 17th July and then to Zhangjiajie, then Zhangjiajie was caught in a chain of transmission of this outbreak. Since 26th July, the netizen community has been engaged in heated discussions about the governments of Nanjing and Zhangjiajie’s epidemic prevention initiatives and attitudes, Concerns about the epidemic and derivative events continue to rise and emotions fluctuate dramatically.

3. Review of the Literature

3.1 Network Public Opinion Governance

Network public opinion is a major form of social opinion. It refers to the socio-political attitudes, beliefs and values generated held by the public around the occurrence, development and changes of social events via the Internet, and is a comprehensive of opinions, statements and attitudes with strong influence[2].

Since network public opinion entered the horizon of Chinese academia, research on the governance of network public opinion continued to deepen and many scholars have provided innovative perspectives on it. Zhang explained the ecological governance of online public opinions in the information age from the perspective of reconstruction of government trust[3]. Li et al. collected 215 documents about policies toward internet public opinion and used content analysis and specific software to analyze the data, the study discussed the tactics and strategy of the government's Internet public opinion governance in terms of working concepts, working principles and working mechanisms[4]. By combing the origin and classification of network public opinion governance, Cao et al. proposed a “technical governance path” featuring “the target reshaping” and “subject reorganization” in order to compensate for the limitations of the existing public opinion governance mechanism[5].

3.2 Governance of Network Public Opinion on Public Health Emergencies

Prior to the COVID-19 epidemic outbreak, there was less research on the governance of network public opinion on public health emergencies. Ding et al. analyzed the current state of research on online public opinion on public health emergencies and summarized three research perspectives in the relevant literature, namely, public health research perspective, news communication research perspective and social psychological research perspective[6]. After the outbreak of COVID-19, the amount of literature has increased rapidly. Cao et al. combined the life cycle theory, the TF-IDF model and the LDA method to mine the discussion content and time sequence development trend of each stage in the public opinion communication cycle[7]. Du et al. constructed a dynamic equilibrium model of evidence-based governance and provided some new ideas for the government to effectively respond to the network public opinion from the perspectives of decision-makers' ability, scientific evidence and public value[8].

4. Research Design

In this paper, two Sina Micro-blog topics, #Nanjing Epidemic# and #Zhangjiajie Epidemic#, were selected as the main topics for this data collection and analysis, in addition, 13 secondary topics reflecting the dual subjects of Nanjing and Zhangjiajie were selected, totaling 15 topics. Under these 15 topics, using the advanced search function of Sina Micro-blog, we searched within the time interval from 26th July to 17th August, using “original” as the type. A total of 49,088 original micro-blogs were crawled. Secondly, duplicate, irrelevant texts were deleted and cleaned. a total of 10,590 valid related micro blogs were finally used in the analysis.

5. Research Result

5.1 Network Public Opinion Life Cycle

This paper counted the number of daily effective micro-blogs, visualized the data and combined

them with relevant key topic time points to derive the network opinion life cycle of the event of Nanjing and Zhangjiajie epidemic, and divided the cycle into four stages, namely, diffusion stage, outbreak stage, repeated stage and long tail stage.

Main Topics: ①#Epidemic in Nanjing & ②#Epidemic in Zhangjiajie
Secondary topics in outbreak stage
③7.28 #4 cases of infected people have seen a show together ④7.29 #The current round of the epidemic may have formed a dual centre of transmission in Nanjing and Zhangjiajie ⑤7.29 #Zhangjiajie closes all scenic spots & ④7.30 # Nanjing's scenic spots resuming opening today ⑦7.30 #Nanjing issues a letter of apology & ⑧7.30#Nanjing apologizes to Hubei,Hunan and netizens & ⑨7.30 #Overwhelmed by Zhangjiajie's closure poster ⑩7.30 #All residential areas in Zhangjiajie are under closed management ⑪7.30 #Nanjing Traffic Radio & ⑫#Nanjing media pinned the blame on Zhangjiajie ⑬7.31 #First case in Zhangjiajie linked to epidemic at Nanjing Lukou Airport
Secondary topics in repeated stage
⑭8.4# A number of public officials in Zhangjiajie were held accountable for ineffective epidemic prevention ⑮8.7#Officials at LuKou airport were held accountable for failure to prevent and control epidemic

Fig.1 Sina Micro-Blog Topics

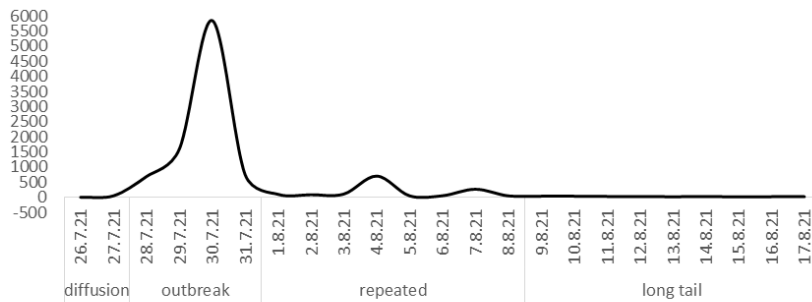


Fig.2 Network Public Opinion Life Cycle4.2 Topic Clustering Intensity Analysis

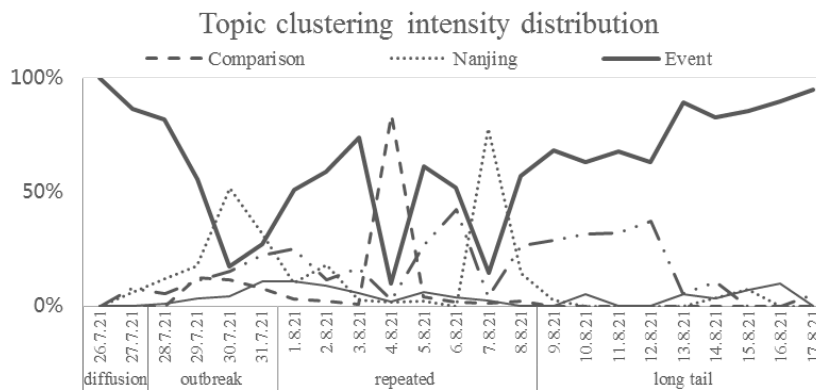


Fig.3 Topic Clustering Intensity Distribution

Using the ROST-CM6 tools to divide the valid micro-blogs into five main categories, namely contrast, views on Nanjing, event, public opinion, and views on Zhangjiajie. (1) Contrast: a contrast between the performance of the two main subjects, Nanjing and Zhangjiajie, in the prevention and control of the epidemic and the release of information. (2) Views on Nanjing (3) Event: including

the sequence of event, netizens' reactions to the epidemic event, and concerns about epidemic-related issues (e.g. tourism, epidemic prevention). (4) Public opinion: including views on some of the news media during the epidemic, dissatisfaction with radical comments, and reflections on public opinion. (5) Views on Zhangjiajie.

1) During the outbreak stage, major mainstream media such as @ CCTV News began to cover the event of the spread of the epidemic in Nanjing and Zhangjiajie. The topic of Nanjing generated even more attention.

Except for 4 August when the intensity of the contrast topics peaked, the intensity of the contrast topics was higher at that stage compared to other points in time due to the contrast generated by two sets of micro-blog topics, they are topic 5 and 6, topic 7, 8 and 9. The difference in the way Nanjing and Zhangjiajie handled the epidemic and their attitudes caused netizens debate.

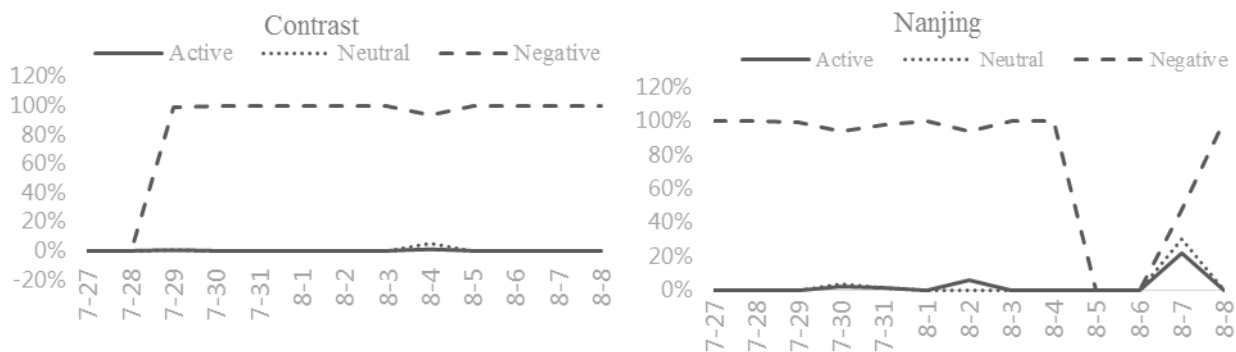
The intensity of the views on Zhangjiajie topic continued to rise at this stage, for one reason, along with the increase in coverage, netizens expressed sympathy and heartache for Zhangjiajie being caught up in the epidemic and tourism as the pillar industry coming to a halt. Secondly, Zhangjiajie released a set of posters on 30th July. The positive attitude in handling the situation and the warm response approach sparked resonance and discussion among netizens, who said they would definitely travel to Zhangjiajie after the outbreak.

The public opinion topic was on the rise at this stage. On the one hand, netizens expressed their dissatisfaction with some radical comments. On the other hand, the official media @NanjingTrafficRadio released a WeChat public article on the night of 29th July, “Cases linked to tourism in Zhangjiajie appear in many places in China”, which is suspected of pinning the blame on Zhangjiajie. The incident sparked a debate among netizens on whether it was reasonable for the official media to make such a statement.

2) During the repeated stage, on 4th August, netizens expressed their strong dissatisfaction that #A number of public officials in Zhangjiajie were held accountable for ineffective epidemic prevention# while Nanjing instead recognized officials and staffs, so the contrast topic was at its peak. After #officials at LuKou airport were held accountable for failure to prevent and control epidemic# on 7th August, netizens put the focus back on their views on Nanjing and discussed whether the treatment was justified. It is worth noting that on 4th August and 7th August, the intensity of other topics decreased, reflecting that netizens' emotions and concerns are highly influenced by the micro-blog topics created by the media.

3) During the long tail stage, the volume of discussion dropped significantly. Contrast topic, Nanjing topic, and public opinion topic all show a low intensity, indicating that with the passage of time and the handling of the epidemic, the emotions of netizens have gradually stabilized, and their focus has returned to the event itself, cheering for Nanjing and Zhangjiajie, praying for an early end to epidemic, harbouring hope for the future.

4.3 Sentiment analysis



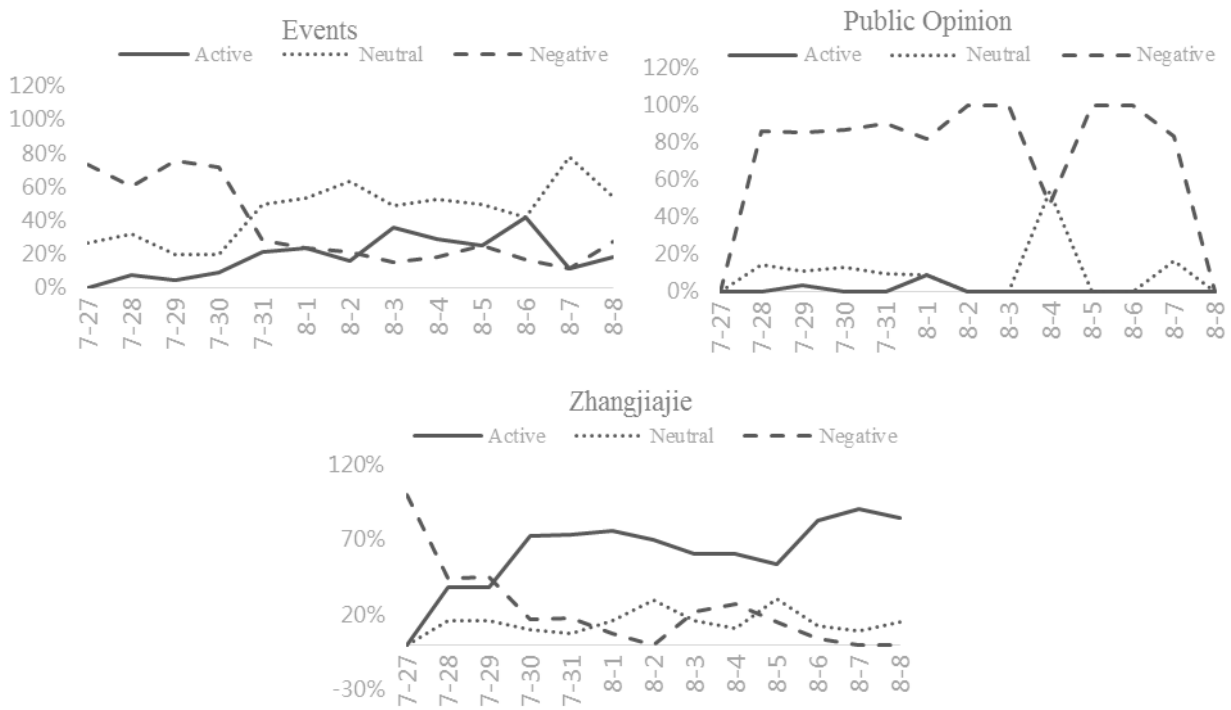


Fig.4 Topic Sentiment Distribution

The intensity of micro-blog topics evolve over time, while the sentiment of netizens under each topic also fluctuate. This paper used the sentiment analysis module of ROST CM6 tool to analyse the sentiment of the collected micro-blogs. The results included positive, neutral and negative sentiment. Supplemented with manual proofreading, the data were visualized to obtain the graph of sentiment fluctuations of each topic under the life cycle of the public opinion on the event. The number of micro-blogs were low during 26th July and long tail period, there are high number of confounding factors, so the topic sentiment analysis is conducted for the micro-blog texts from 27th July to 8th August.

Overall, the sentiment fluctuations of the five topics are highly correlated with their topic characteristics. The overall sentiment of the event topics was neutral, and the negative sentiment gradually decreased, indicating that the emotions of netizens were eased as the epidemic was gradually brought under control. Contrast, Nanjing, and public opinion topics maintain high levels of negative sentiment throughout the life cycle of network public opinion, and reach 100% on several occasions. Here are a few points to note: (1) On 6th August Nanjing topic sentiment was 0, the reason was that 24 hours had passed since Zhangjiajie was held accountable on 4th August. The epidemic control was taking effect, netizens' dissatisfaction with Nanjing reduced or became a low concern, at this time the epidemic prevention and cheering for Zhangjiajie became the main discussion point. (2) On 4th August, the neutral sentiment on the topic of public opinion was close to the negative sentiment, a point in time when #A number of public officials in Zhangjiajie were held accountable for ineffective epidemic prevention#. The increase in neutral sentiment was due to the fact that some netizens returned to their senses after the outbreak stage and believed that Zhangjiajie was not entirely without fault on the issue of accountability, it was reasonable to pursue accountability. Netizens also appealed to wait for accountability for Nanjing and not rush to judgment. (3)The topic of Nanjing was more emotionally rich on 7th August compared to other points in time, the reason was that #officials at LuKou airport held accountable for failure to

prevent and control epidemic#, the emotions of some netizens were satisfied, saying that they were delighted to finally wait for accountability, reflecting positive emotions, while some netizens had a neutral attitude, still a high proportion of netizens thought that the accountability in Nanjing was too light and the officials should be severely punished.

6. Conclusions and Recommendations

6.1 Conclusion

1) Amplification of public sentiment and agendas under public health emergencies. Facing a public health emergency, netizens tend to be more anxious and interpret information in a more radical and one-sided manner, which increases the probability of public health emergencies turning into public opinion emergencies. Netizens' dissatisfaction with the Nanjing government's loopholes in epidemic prevention continued to spread to the city and the people of Nanjing, completely deviating from the agenda of the event itself and amplifying public opinion significantly.

2) The government's handling of public health emergencies is prone to contrasts and the contrasts highly influence the intensity of public sentiment. In this event it was even more unusual that because of the urgency of the epidemic itself, which required the government to act quickly, the two governments released information at almost the same point in time, making the contrast even more striking. This paper considered three main contrasts in this event: they are topic 5 and 6, topic 7, 8 and 9, and topic 14 and 15. These three points in time became the high points of public opinion and negative sentiment for this event.

3) Network public opinion under public health emergencies have significant timeliness. The secondary topics of the event have a short life cycle, usually lasting around two to three days. Netizens will keep searching for information and expressing their opinions to relieve their anxiety when public health emergency occurs, so when secondary hot topics arise, they tend to generate a lot of discussions. After the topic dissipates, the focus tends to return to the event itself.

4) Network public opinion is pulled by the hashtag created by the media. When public opinion emergencies occur on the Internet, the media's interpretation of the information and their emotional tendency highly influence the direction of public opinion. On 29th July Nanjing issued a notice to close the indoor area of the scenic spot, the outdoor area of the scenic spot will only receive visitors at 50% of the maximum daily carrying capacity. However, when the media released this information, the hashtag adopted was #Nanjing's scenic spots resuming opening today#, causing discontent among netizens. It is evident that netizens' comments and emotions were to some extent pulled by the media.

6.2 Recommendation

1) Proactive disclosure of information in a timely manner to reassure the public. Analysis shows that people in a state of anxiety will amplify the facts and their sentiments. Therefore, the government mainstream media should disclose information in a timely manner, so as to be open and transparent and let the public know what happened in the first instance. At the same time, officials should always capture public opinion, take the initiative to respond to queries, and dispel rumours timely to avoid the ferment of network public opinion crises.

2) Apology and accountability in place. In the event of an unexpected crisis, the government should promptly explain the situation and apologize to the public, showing a positive attitude to the public through its actions. When the crisis implicates other subjects, the government should take responsibility, avoiding the act of shirking blame to others and, if necessary, cooperating with other subjects to speak out and create a harmonious public opinion environment.

3) Constrain the voice of the official media, not the masses. Analysis shows that the attitudes and emotions of netizens towards events are highly correlated with the potential emotions and attitudes of the media when they release information. Therefore, when public opinion emergencies occur, official media should put aside emotional factors and publish information from an independent and impartial perspective, and pay attention to the wording when creating hashtags to avoid misunderstanding among netizens. In addition, the government often suppress trending topics to avoid the spread of public opinion, but netizens will see this as an act of preventing them from speaking out, which will intensify netizens' anger and affect the credibility of the government, bringing about a crisis in network public opinion governance. Therefore, the government should not blindly suppress trending topics, and when rumours dominate, it can choose to publish rumor refutation on the top of the trending topic page to correctly guide netizens' emotions.

4) Accurate timing for playing the emotion card. During an epidemic, the official media will often choose to publish heart-warming news to reassure the public. When the official media does not make a transparent and comprehensive announcement on the progress of the epidemic, netizens who are anxious to know what happened will tend to be more angry and believe that the official media is diverting attention. The right "emotion card" should be both rational and warm. For example, Zhangjiajie reacted promptly, disclosed relevant information and quickly launched a series of posters to capture the public's sympathy, occupying the high ground of public opinion and winning public support.

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