

TV or cell phone? A study on media selection of information of “COVID-19” in Wuhan residents

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ABSTRACT. *in the first 20 years of the 20th century, the rapid development of the Internet and new media in China has entered the era of media integration and coexistence and common prosperity of various media. Three major public health emergencies related to influenza virus, including SARS in 2003, H1N1 in 2009 and COVID-19 in 2020, were also on the scene. The author, who was born and raised in the city of — Wuhan in the early stage of the "COVID-19" outbreak and lived in the city during the outbreak, visited 786 households in Wuhan by RDD sampling method and computer-aided telephonic mobile phone survey system. The network media represented by Social Media has become more than the mass media represented by TV, and has become the core channel for the transmission of epidemic information.*

KEYWORDS: *all media, COVID-19, public health emergencies, communication channels, media selection*

1. Introduction

At the end of 2019, a sudden outbreak of a new type of coronavirus pneumonia broke out from Wuhan and spread rapidly as China returned to its hometown during the Spring Festival. According to Article 2 of the Regulations on the Emergency Response to Public Health Emergencies promulgated by the State Council on May 12, 2003, a public health emergency is defined as "the outbreak of a major infectious disease that occurs suddenly and causes or is likely to cause serious damage to the public health, mass diseases of unknown causes, major food and occupational poisoning, and other serious incidents affecting public health," so the State Council of China has classified "COVID-19" as an infectious disease. Since January 23, 2020, the Wuhan Municipal Government, the Hubei Provincial Government and the State Council have successively set up the Emergency Command/Work Group for the Epidemic, and 30 provinces in China have initiated the I-level response to major public health emergencies. The epidemic also spread worldwide at the end of January. In a news conference in Geneva on the evening of January 30, 2020, World Health

Organization (WHO) Director General Tam Desai said the outbreak of a new type of coronavirus pneumonia had constituted a public health emergency of international concern.[1]Wuhan, as the site of the outbreak, is the largest and only sub-provincial city in central china, with a population of 12 million in the middle reaches of the yangtze river and the capital of hubei province.

At the same time, the media environment of China's information dissemination has undergone profound changes in 2020, and the media channels are rich and diversified, the audience communication effect of different media channels is inevitably different, different audiences also have a preference for the media, and different media play a different role in the dissemination of information. Clarifying the audience characteristics of these different media can provide decision-making basis for the publishers of epidemic information to reasonably select the channel of information dissemination of events and to monitor, identify, diagnose and evaluate the relevant information of each channel. Erica Weintraub Austin (1994), a professor at Washington State University, has found that audiences are more likely to believe in reputable media by studying the 516 student readings of false news in the New York Times (high reputation) and the Star (low reputation) media[2]. By studying Ghana's 2003-2004 national hand-washing campaign, the scholar Scott Beth et al. found that the mass communication media could not cover the whole target group, especially the lower socio-economic status group and the specific region, and needed to use various complementary channels for integrated transmission in major public health incidents[3]. Chinese scholar Yu Guoming (2003), by studying the choice of communication channels for Beijing residents during the SARS period, found that in the overall communication pattern of China, Mass communication channels, although occupying the mainstream, face the challenge of other channels and emerging channels. Based on the research results and methods of the former, this paper puts forward the following research questions: information about "COVID-19" in the process of communication in Wuhan residents, the credibility of different media status?[4]Which medium can reach the public more widely? Traditional media such as TV, Radio, Newspaper and so on are more likely to choose which media to receive information than new media such as WeChat, QQ, live broadcast and Overseas media? What are the characteristics and rules of age, occupation, gender and educational background of various media audiences?

2. Methods

2.1 Research Methods and Model Building

The survey compiled a questionnaire, planned to visit 1000 Wuhan residents (Wuhan city government official website data: resident population 12 million), using the telephonemobile phone number book to assist Resilient Distributed Dataset (RDD) sampling method, through CATI technology, from February 20,2020 to February 26,2020. After the sample analysis, the unqualified interviewees (children under 1 and 12 years of age ;2, residents of Wuhan city who were not in the area of Wuhan city during the epidemic period) were excluded, and the qualified

sample number of this survey was 786 families of Wuhan residents. Further check the data released by the Wuhan Municipal People's Government on January 27,2020, and learn that "after the implementation of the measures to seal the city in Wuhan, there are about 9 million citizens left behind ". On the whole, the statistical probability of sampling survey is 78.6%, and the actual probability is 75%, so the sampling error of this survey sample is 3.6%, and the situation of data analysis can effectively represent the communication channel choice of Wuhan residents.

Based on the classification of information dissemination types and media channels by Chinese scholars Peng Lan's Network Media (2009 edition), Hu Zhengrong's General Theory of Communication (2008 edition) and Li Liangrong's Introduction to Journalism (2018 edition), this paper divides the media into Mass Communication, Organization Media and Network Media ,5 major types such as internal media and 14 terminal categories such as "Overseas media ", Mobilephoneshort message, Social media, etc., as shown in Figure 1, establish the basic analysis model of this empirical survey.

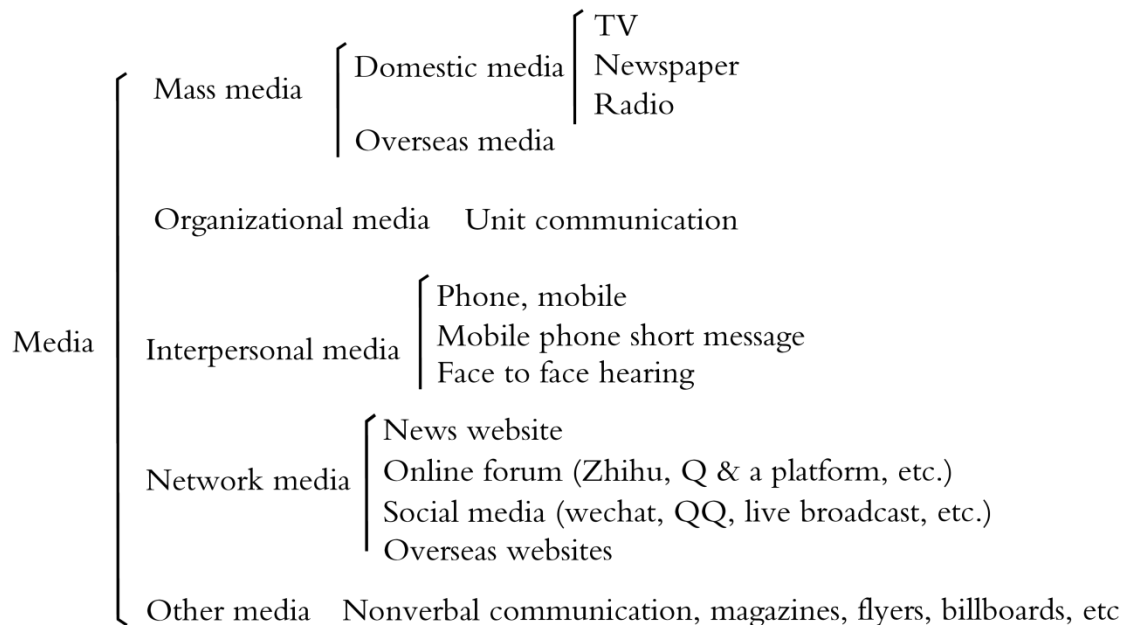


Figure 1: basic analysis mode of communication channels

2.2 Research Analysis

2.2.1 A Structural Investigation on the Distribution of 2.2.1 Communication Channels

The use of communication channels by Wuhan citizens has shown a trend of diversification, among which "Social media" is the most widely used channel by the public, "TV", "Face to Face gearing", "Radio", "Billboard/screen" and "Newspaper" are the most widely used channels.

Table 1: proportion of five major media

Media category	Specific media terminals	Coverage rate	Specific gravity	Total specific gravity
Mass communication	TV	76%	15.7%	31.6%
	Newspaper	46%	9.5%	
	Radio	23%	4.8%	
	Overseas media	8%	1.6%	
Interpersonal media	Face to face hearing	31%	6.4%	17.2%
	Telephone mobile phone	31.5%	6.5%	
	Short message	20.5%	4.3%	
Internet communication	News website	55%	11.4%	35.3%
	Network Forum	22%	4.5%	
	Social media	88%	18.2%	
	Overseas websites	6%	1.2%	
Organizational communication	Unit communication	46%	9.5%	9.5%
Other communication	Billboard / screen	26%	5.4%	6.3%
	Other ways	5%	1.0%	
Total		484%	100%	100%

As can be seen from table1, the distribution structure can also be found :(1) The main channels for obtaining information of "COVID-19" in Wuhan are characterized by diversity. Of the 14 main channel options surveyed, more than 40 percentage points have 6 channels ;(2) according to the selected rate, all channels can be classified from high to low to three grades. Level 1: Social Media, TV; Level 2: Newswebsite, Unit Communication, Newspaper; Level 3: Face to Face gearing, Network Forum, Radio, Telephonemobilephone, Billboard/screen; Level 4:" Overseas websites , " Overseasmedia, Otherway. (3) Social media has a high coverage of 88 per cent, as can be seen in the age of the media, where social media

occupies a significant place in communication. At the same time, the use of social media needs to rely on the Internet, and as of June 2019, the national Internet penetration rate reached 61.2%, indicating that the degree of Internet development in Wuhan is much higher than the national average. As of June 2019, there were 854 million Internet users in China, the Internet penetration rate reached 61.2%, and half of the Chinese have access to the Internet[5]. When the number of Internet users surges, the overlap between Internet users and public groups is already very high, in a sense, Internet users mean the public.

2.2.2 The network media channel and mass communication channel each account for a third of the system, but the network media channel already exceeds the mass communication channel, followed by intermediate media channel, organization media channel and other communication channels.

Social media accounts for 88 per cent of the composite share, as shown in Table 1, and not only half of the network media channel, but also 18.2 per cent and nearly half of the total communication channel system, indicating that social media have a considerable audience in the whole society.

At the same time, the network media channel's four categories of Newswebsite, Network Forum, Social Media and "Overseas websites" were analyzed, accounting for 11.4 percent of Newswebsite, second only to Social Media and TV in the overall communication system. The main channel for people to access information is no longer just the traditional mass media, but the online media represented by Newswebsite, Social media.

while further analyzing the mass communication channel as a whole, look at the weight size of each channel in this population. The analysis found that Mass communication accounted for 31.6% of the total transmission channel. Of these, Overseasmedia accounted for just 1.6 percent, compared with 30 percent for TV, Newspaper and Radio at home.

2.2.3 Using the Richter scale, which measures the public's trust in the information received by the six major media, found that "TV" had the highest trust and "Network Forum" the lowest, as table2 showed. Of the six channels of communication, the "occasional belief" and "more trust" of the public occupy the mainstream, with an overall average of 55.35%, more than half, indicating that the public of the whole media era, the sense of self-independence judgment is highly awakened. The "News website", "Network Forum" and "Social Media" in the network media have a combined ratio of 34%, 38.9% and 23.4% in the "Never Believe" category, respectively.

Table 2: audience's trust in information receiving channels

Question: novel coronavirus pneumonia information is received below. What is your belief level?					
Title / options	Never believe	Seldom believed	Occasionally believe	More believe	Long term trust
TV	2.5%	5.6%	18.5%	29.6%	43.8%
Newspaper	8.6%	10.2%	22.3%	26.8%	32.1%
Radio	6.3%	15.6%	26.9%	28.6%	22.6%
News website	8.4%	25.6%	30.1%	25.6%	10.3%
Network Forum	9.3%	29.6%	30.5%	23.8%	6.8%
Social media	7.6%	15.8%	29.6%	39.8%	7.2%
Global mean	7.12%	17.07%	26.32%	29.03%	20.47%

3. Results and Discussion

A comparative study of the audience characteristics (age, education and occupation) of the 14 media is conducted under the media environment throughout China, with a view to providing support for the analysis of the study, providing first-hand data for the actual dissemination work, and providing reference for other relevant studies in the follow-up.

3.1 The survey found that "Overseas media" and "Overseas websites" had the youngest audiences, with the overall age of network media and internet media ranging from 30-40 to mass communication media ranging from 40 to 50, creating a distinct generational differentiation. The average age of those who used "Over seas media" and "Overseas websites" to get information on "COVID-19" was the smallest, only 32.99 and 30.42, respectively. The highest proportions were in the 20-29 and 30-39 age groups, with a combined share of 83.8 per cent and 90.3 per cent, respectively. As can be seen in table 3, the same "phone mobile phone" and "mobile phone short message" users are mainly aged 20-29 and 30-39, with a combined ratio of 65.3 per cent and 67.5 per cent and an average younger age of 35.11 and 34.56, respectively. Relatively speaking, "TV", "Newspaper" and "Radio" have the largest audience age, with an average age of 43.57, 47.34, and 43.77.

Table 3: age composition comparison of 14 communication channels

		12-19 years old	20-29 years old	30-39 years old	40-49 years old	50-59 years old	Over 60 years old	Average age (year old)
Mass communication	TV	3.9%	15.6%	20.3%	20.6%	21.3%	18.3%	43.57
	Newspaper	1.2%	3.5%	18.5%	29.6%	36.8%	10.4%	47.34
	Radio	3.1%	6.5%	31.1%	25.5%	19.6%	14.2%	43.77
	Overseas media		46.3%	37.5%	6.2%	10.0%		32.99
Interpersonal media	Face to face hearing	29.3%	10.1%	12.6%	13.6%	16.3%	18.1%	37.42
	Telephone mobile phone	6.1%	38.6%	26.7%	10.1%	9.6%	8.9%	35.11
	Short message	3.5%	37.4%	30.1%	19.8%	6.0%	3.2%	34.56
Internet communication	News website	8.9%	27.1%	28.8%	30.1%	4.0%	1.1%	34.64
	Network Forum	11.2%	26.1%	29.1%	29.6%	2.3%	1.7%	34.05
	Social media	12.6%	28.3%	19.6%	19.1%	16.2%	4.2%	38.36
	Overseas websites		58.7%	31.6%	6.5%	3.2%		30.42
Organizational communication	Unit communication	5.1%	10.2%	21.6%	37.8%	23.2%	2.1%	41.93
Other communication	Billboard / screen	10.1%	12.6%	28.9%	31.1%	15.1%	2.2%	38.45
	Other ways	6.5%	18.1%	17.1%	18.9%	26.5%	12.9%	42.34
Global mean		7.25%	24.22%	25.25%	21.32%	15.01%	6.95%	

3.2The data show that the overall audience level of the "Overseas media" and "Overseas websites" media is significantly higher, with at least a junior college degree or above, followed by "United Communication" with a 32.2% college degree or above, and Mass Communication Media and Network Media with more than 60% of its audience is between junior high school and junior college.

As table 4 shows, people who get information on "coronavirus pneumonia" through "alternative media" and "alternative websites" are significantly more educated than the other 12 end-channel users, with a college level of 100% or above. Then there are the "Unit Communication" and "Newspaper" terminal channels, with 32.2 per cent of college degrees and 22 per cent of college degrees. The three terminal channels of intermediate media are all low. Mass communication media, centered on "TV," "Newspaper," and "Radio," have basically the same educational background as network media with "Newswebsite," "Network Forum," and "Social Media," with more than 60 percent of the audience between junior and junior college.

Table 4: educational background composition of 14 media audiences

		Primary school	Junior middle school	High school / technical secondary school	Junior College	Undergraduate	Postgraduate and above
Mass communication	TV	16.5%	23.3%	21.6%	18.4%	15.5%	4.7%
	Newspaper	7.0%	29.6%	18.6%	22.8%	16.5%	5.5%
	Radio	18.3%	20.6%	26.5%	17.3%	14.6%	2.7%
	Overseas media				33.5%	55.8%	10.7%
Interpersonal media	Face to face hearing	26.7%	22.6%	24.3%	12.3%	10.2%	3.9%
	Telephone mobile phone	32.6%	19.8%	18.6%	12.6%	10.6%	5.8%
	Short message	25.3%	27.3%	15.6%	15.1%	10.3%	6.4%
Internet communication	News website	12.3%	23.5%	26.3%	18.6%	10.3%	9.0%
	Network Forum	14.5%	26.3%	24.5%	20.6%	8.5%	5.6%
	Social media	18.6%	25.5%	26.5%	15.5%	9.6%	4.3%
	Overseas websites				28.5%	60.8%	10.7%
Organizational communication	Unit communication	10.5%	15.5%	20.5%	21.3%	23.6%	8.6%
Other communication	Billboard / screen	23.2%	19.6%	25.3%	18.6%	10.2%	3.1%
	Other ways	12.3%	24.6%	21.5%	20.3%	15.4%	5.9%
Global mean		15.56%	19.87%	19.27%	19.67%	19.42%	6.21%

3.3 To facilitate the analysis of occupational stratification in Chinese society, the occupational categories of the survey residents were combined into five broad categories: white-collar, blue-collar, student, retired persons, others (e.g., laid-off/unemployed or unemployed persons, freelancers). The data show that "Overseas media", "Overseas websites", "Face to Face hearing" and "Mobilephone short message" have the highest proportion of white-collar workers ;" Newswebsite", "Social media", "Unit Communication" and "Billboard/screen" have the highest proportion of blue-collar workers ;" Network Forum" has the highest proportion of students ;" Newspaper" has the highest proportion of retired staff. As can be seen in table 5, white-collar workers have the highest proportion of users of the four end-media "Overseasmedia", "Overseas websites", "Face to Face Wearing" and "Mobilephone short message" - up to 65.5 percent, 58.6 percent, 35.6 percent and 36.5 percent, respectively. Of the four end-media users of "Newswebsite", "Social Media", "Unit Communication", and "Billboard/screen", the highest proportions were blue-collar, with 35.3 percent, 34.6 percent, 45.6 percent, 36.5 percent, respectively. One feature of the Newspaper audience is the prominent proportion of retirees, at 28.5 percent, 16.8 percentage points higher than the overall level.

Table 5: audience occupation composition of 14 communication channels

		White-collar class	Blue collar	University Students	Retiree	Other
Mass communication	TV	12.5%	24.5%	13.6%	22.5%	26.9%
	Newspaper	19.2%	26.5%	18.5%	28.5%	7.3%
	Radio	15.3%	36.6%	9.8%	20.6%	17.7%
	Overseas media	65.5%	15.6%	17.4%	1.5%	0.0%
Interpersonal media	Face to face hearing	35.6%	15.5%	25.8%	1.5%	21.6%
	Telephone mobile phone	15.6%	29.6%	20.3%	14.3%	20.2%
	Short message	36.5%	28.6%	15.4%	13.6%	5.9%
Internet communication	News website	28.6%	35.3%	25.1%	6.8%	4.2%
	Network Forum	25.8%	30.6%	38.6%	2.8%	2.2%
	Social media	29.6%	34.6%	29.6%	1.8%	4.4%
	Overseas websites	58.6%	14.5%	26.9%		
Organizational communication	Unit communication	23.6%	45.6%	15.6%	15.2%	
Other communication	Billboard / screen	12.5%	36.6%	25.6%	24.1%	1.2%
	Other ways	29.6%	26.3%	25.3%	10.6%	8.2%
Global mean		29.18%	28.60%	21.96%	11.70%	8.56%

4. Conclusion

Based on the analysis of the media and audience characteristics of the information received by the residents of Wuhan about the epidemic situation of "COVID-19", we can infer the pattern characteristics and future changes of the communication system of Wuhan in the whole media era. Network media has become the core channel of the communication system in the central city of China in the whole media age. And with the rapid development of 5G network technology, the popularity of smart phone and the wide application of satellite technology, network media will continue to widen the gap with Mass communication media, occupying a larger proportion in the whole communication system. However, with the further development of mobile Internet and artificial intelligence technology, the network media terminal media, represented by "social media", will also be refined in the internal category to differentiate new media.

On the one hand, the central city of China, represented by "Wuhan ", has formed the bipolar pattern of " Network Media Media "and" Mass communication Media ".The proportion of the two (66.9%) has formed a monopoly in the whole communication system. But also notice "intermediate media (17.2%)" and" organization media "(9. With the rapid development of the Chinese economy, the interpersonal flow in the cities, including between different cities, regions and countries, is sure to become more frequent, and the opportunities of inter-personal media are also increasing. Similarly, with the expansion of the scale of cities and towns, a large number of rural labor force into all kinds of enterprises, the "Organization media media" will play an increasingly important pattern, although the speed of development can not keep up with the explosion of emerging technology, but in the information authority, credibility has the advantage of dissemination.

On the other hand, in the central city represented by "Wuhan ", the focus of different media is very obvious."Overseas media "," Overseas websites "," Telephone mobile phone" and "news site" were mainly used by young, highly educated white-collar workers, while "Newspaper" was a large proportion of older audiences, and the structure of "TV" and "Radio" was characterized by a lower educational background and a higher age ." Face to face "is a bigger part of the blue-collar class.The 2.8 per cent share of the media of Overseas Media and Overseas Websites suggests that highly educated young people have turned to Overseas Media for information as globalization and information dissemination technologies have developed.

In fact, no matter how the communication environment and media change, the government has always played a dual role in the process of information dissemination in the political society —— it is both the communicator and the manager of communication behavior.Therefore, based on the above conclusions, combined with my communication in the interview and the observation of the epidemic area, it is concluded that whether it is wuhan city or other central cities in china, including foreign cities, the urban government can improve the information dissemination ability to deal with major public health emergencies, and can continue to optimize from the connotation and extension of these two roles.First of all, pay attention to the network media channel, establish the Internet thinking and the concept of all media communication.With the further popularization of the Internet, the government must attach importance to the group of Internet users in the dissemination of event information, pay attention to the information needs of Internet users and participate in the dissemination of event information enthusiasm. Secondly, adapting to the pluralistic pattern of mass communication and network media as soon as possible, recognizing that the various media are in a competitive environment in this rapidly changing field of public opinion, which media can seize the commanding point of information reporting time, will gain the initiative of public opinion guidance; which media channel can fully report information, will reduce the space for other media to play; which channel of communication is objective information, will establish credibility first.

Third, the implementation of a decentralized dissemination mechanism to meet the needs of different people's personalized news information.because audiences of

different ages, occupations, and genders have different media choices for events. The urban media of various media, such as TV, Newspaper, Radio and Internet, can report the focus of their attention according to their respective audience characteristics, determine the strength and scale of their reports, and stress the way and scale of communication. Only in this way can we aim at the goal, avoid leaving the blank point of communication, and cause the waste of communication resources on some problems. Fourth, the government should proactively, timely, full, objective and sincere information dissemination: active disclosure of information and interactive exchanges, can eliminate the communication barriers between the government and the public, reduce the degree of deviation of information received by the public; timely and full disclosure of accurate information, response to false rumors, can reduce the dissemination of false information space, enhance the confidence and trust of the public to resist the epidemic, and facilitate the public to do a good job in planning to combat the epidemic; The objective and accurate information has the function of "dinghai god needle" in the public opinion vortex of the whole media era, which can not only avoid the key information being submerged and misunderstood in the process of dissemination, but also make the people eat the "reassurance".

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