

REVIEW ARTICLE

THE CHINESE SURVEILLANCE SYSTEM OF COVID-19 DISEASE IN THE LIGHT OF ARTIFICIAL INTELLIGENCE

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Summary

There are two key sources of data that contribute to biomedicine research: surveillance and questionnaires and interviews. The Centers for Disease Control and Prevention (CDC, Atlanta, GA, USA) defines surveillance as the ongoing systematic collection, analysis, and interpretation of health data, essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination to those who need to know. The three things to keep in mind about surveillance systems are that they are ongoing (collecting information only once is not a surveillance system), the data collected are used (analyzed and interpreted) and finally, surveillance data is disseminated. There are several tangible applications of surveillance as a tool. For example, surveillance data can be used to establish public health priorities, aid in determining resource allocation and assess or evaluate public health programs. Surveillance data originate from many sources; therefore, standardization of surveillance practices is an ongoing challenge.

For epidemiologists specifically, surveillance data can be used to determine a baseline for the detection of epidemics or for early detection of epidemics. This is clearly the positive meaning and impact of this system collecting sensitive population data. However, expression surveillance means in effect, supervision or control. The subsequent resulting regulations are the subject of reflection in this article.

Key words: Surveillance; China; Artificial intelligence; Pandemic; Covid-19; Health Code app; Monitoring

Introduction

Over the years, the Chinese government successfully expanded its databases and stored millions of information about its citizens and everyone who visits China. The country has overwhelming control over the population, and their monitoring is more invasive than ever. According to estimations, the country owns nearly one billion surveillance cameras, which generate a huge amount of data (1).

The SARS-CoV-2 pandemic poses a threat not only to the well-being of people but also brought data and privacy concerns up to the surface. To stop the pandemic, the countries started to deploy various tracking measures.

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The major problem with these methods is the invasion of privacy. Tracking means the government monitors, collects and processes data about the citizens, which caused a global uproar recently (2). By being technologically advanced, China had a quick, but certainly not so perfect, reaction to control the spread of Covid-19. They utilized their artificial intelligence (AI) knowledge, their existing surveillance techniques, and the social credit system to create the Health Code app, which was used effectively to contain the pandemic.

However, knowing China's monitoring tendencies, we cannot be sure that the app was used only for the sake of people's health. The impact of Covid-19 on human lives was far-reaching, and the measures taken to combat the virus similarly transformed daily experiences.

Characterization of using AI in China

China has its focus on the development of AI, especially facial recognition. The country introduced the biometric face recognition database in the early 2000s, and they reached a point in 2014 when they started to install face scanners in subway stations in order to monitor the behavior of the citizens. At the same time, in 2014, the State Council announced the pilot run of the social credit system. The social credit system is a carrot-and-stick method in which the citizens are categorized according to their scores and they receive either rewards for being model citizens or getting punished for bad behavior. They try to examine various parts of a person's life, including spending habits and location data. A person can be reported by others or get caught on an installed Closed-circuit television (CCTV) (if the rules are violated). It is possible to receive minus points for traffic violations, stealing electricity, protesting illegally, spreading rumors online, taking any kind of action against the government, or participating in cults, or instead, you can gain plus points up to 1300 points by engaging in charity work, taking care of elderly family members, praising the government on social media, donating blood, having a good financial history and many more. If someone follows the rules and gains points, that person can get several rewards, for example, shorter wait times in hospitals, cheaper public transport, deposit-free car and bicycle rent, priority for school admission, easier access to loans, and so forth. Gaining minus points can lead to restrictions such as a ban on flight booking, ineligibility for government jobs, no access to private schools, and denial of permits to certain services. The system also rewards people who betray others and report someone for bad behavior. From a Chinese viewpoint, surveillance and the credit system are necessary in order to maintain internal stability. By looking at someone's score, we can be certain that the person can be trusted. It is unquestionable that this method brings transparency into the society, for example, it is possible to check a company's status before working with them (3, 4).

Collectivism and paternalistic mentality

The European population rejected the idea of a tracking app right away with great resistance, but the situation is different in China (5). This acceptance might come from China's Confucianism. Confucianism taught the Chinese that the community should be in the center. People need to have strong discipline and respect toward others, especially elders. The Confucian teachings live in China's paternalistic leadership and collectivism (6). While in Europe, individualism became stronger, independence, privacy, and individual achievements became important, China stuck with its collectivist mindset where group success is considered crucial, and the hierarchy is still going strong.

Using paternalism, the government can interfere in the decision-making of the people. A leader can go against the will of a person in order to achieve the well-being or the goal of a group. China operates this way, but this kind of governance requires the political trust and support of the people. In the case of the Covid-19 pandemic, the citizens sacrificed their own privacies to achieve a higher goal, they acted collectively and accepted the new Covid-19 related measures in order to protect the group. The paternalist state is then capable of supervising "its children" more effectively without much resistance (6, 7).

The Health Code app

When the pandemic started, China quickly released the Health Code app (8). This new piece of technology expands the currently available surveillance, and it was created to monitor the spread of the coronavirus. The app is based on a Quick Response (QR code). The background behind the QR code is color coded, it shows green, yellow, or red colors to show the level of isolation needed. Those who receive a green code can move around freely, while

a yellow code shows that there is a high chance that the person got in contact with an infected individual, therefore they cannot travel freely. A red code means complete isolation for 14 days. This system relies on two kinds of data collection methods. First, it collects data from your phone, like Global Positioning System (GPS) data, and second, it relies on self-declaration. It means a citizen has to upload his or her profile photo and answer health-related questions in the app (9).

The app is decentralized, which means local governments built their own versions; therefore the apps collect slightly different data, and if you travel across different cities, you have to download all the apps because, without a green code, you cannot use public transportation and toll gates (10). The government created the Health Code app with the help of Ant Financial, which is the sister company of Alibaba (11). Alibaba is a leading E-commerce platform, launched in 1999. It is similar to eBay; the Alibaba marketplace connects buyers and sellers (12). Even though Alibaba has its hand in the creation process, the app is owned by the government. According to a research, people feel safer when the government gets their data, instead of private companies. Chinese people are more concerned about big companies that use their data for commercial purposes, and they accept the government's attempt to monitor the Covid-19 for the sake of society (13). However, conglomerates and the government are not the only privacy concerns regarding this app. In December 2020, when the Health Code app had around 30 million users, it got hacked, and the hackers gained access to personal data, health appointments, and profile photos (14). Since the app was created in a rush and it is not secure enough, not just the government can use it for surveillance but also hackers.

This app affects people's lives tremendously. The algorithm behind the app is not disclosed, as a result, citizens do not know exactly how it works. There were cases when it suddenly changed to a red code, and Chinese citizens could not return home because the security staff did not let them through. The government does not communicate what can affect the color changes, other than the obvious reason when someone gets infected. The app makes it harder to travel for those, who actually do not own a smartphone, like the older generations. Currently, in China, moving around without the use of a smartphone is a difficult task to do (11).

By using this decentralized model, the government actually collects more fake data than real. To travel, people have to download several apps in order to use public transportation in a certain region. Many of them admitted that they report false information because they have to fill out their data in several apps and they try to do it as quickly as possible because downloading a new app and registering correctly slows down the whole border crossing process (13). Other times, the citizens just try to avoid public transportation altogether in order to avoid the use of the Health Code app (15). Therefore, the app cannot even do its original job properly and it is also difficult to clean the database and use the collected data for other purposes because of the high amount of fake data. Even though self-reported information can be false, computer-generated ones are still useful for the government, for example, GPS data. Some people have admitted that they just use a screenshot of a green code to travel around because, at many checkpoints, the staff does not check the QR code or the timestamp, they only look at the green color. Some people said they like this smartphone solution because it is easier to deceive the app than to deceive your neighbors and other people who may monitor you. The people also see this as collective monitoring, because the collected big data cannot be analyzed individually for every person. It is more likely to analyze the whole community and individuals can still hide themselves quite well (13).

The Health Code app in China is a good example of the term function creep. Function creep means that someone can use the app for something different from its original purpose (16). The city of Hangzhou deployed the Health Code app first, in February 2020. Hangzhou is the capital of Zhejiang province, located in East China near to Shanghai (17). The city has more than 8 million inhabitants (18). Three months later, the municipal government decided that it would be a good idea to keep the app for other purposes after the pandemic to continue the surveillance permanently. The city of Suzhou also had the same idea. Suzhou also has a population of more than 8 million (18). The city can be found right next to Shanghai, only two hours away from Hangzhou. Both of the cities wanted to drop the color coding and create a point system around it, just like the Chinese social credit system. They wanted to take away points for smoking, drinking alcohol, and giving points for voluntary work, walking more than 15000 steps a day, or following traffic rules. The city of Suzhou even ran a test with 5800 participants (10, 19). In this function creep, the two cities tried to take advantage of the pandemic situation to monitor their citizens, by extending the use of the app, but for this big and obvious step, they received a backlash from the population.

There is a current case where a city was able to successfully control the people through the Health Code app. Even though the pandemic situation is getting better, the app is still in use, making the citizens' life harder than ever. There are four rural banks in Henan that are getting closer to collapse. The banks froze all of the accounts in April 2022. The people who could not take out their savings went there to protest. The first protest went well, but when they planned the second one, the Health Code app stood in their way. Those who had a negative Covid test during the travel suddenly got a red code when they tried to reach the area where the banks are located. Anyone who has a red code, cannot travel further because according to the app, they have a high risk of being infected, therefore they are banned from any kind of transportation. Strangely enough, only those, who are using those banks got red codes and only after they scanned the QR code in the area of the destination. More than 40 of them were placed in a hotel for quarantine that day. Their colors turned back to green a day later. Those, who do not use these banks got green codes at those control points. The city has denied using the Health Code for other than its intended purpose however it is clear that the app had an influence over the protest there (20).

The pandemic shaped other fields as well which is connected to surveillance. Beijing changed its media during the pandemic. China decided to stop issuing visas to foreign journalists and those, who were already inside the country got forced out. Currently, the only source of information is the one that is state-approved. By doing this, China's image had become more positive in the foreign media. The news shows images like China building a new hospital in Tunisia or providing medical aid in some countries. In a survey, 56% of other countries' news sites have reported that news about China became more favorable (21). By forcing out journalists it is harder to know the truth about the current state of the country. To know the current state of surveillance in the country, we need to rely mostly on the citizens' reports on social media which also can be faked in order to gain positive points in the social credit system. This makes it harder to know the truth. Thankfully, according to the decision of the Chinese authorities, starting from January 8, 2023, the entry to China opened again, and Chinese embassies started to resume the issuance of Chinese visas and residence permits to foreigners. The surveillance is still present however, travelers have to register via the WeChat app and fill out their personal information and health data there (22).

The Chinese government's method

In the previous sections, I have mentioned Confucianism and collectivism as a reason that makes the people so calm about the government's actions. Besides that, Chinese officials' policymaking style can be another reason why the Chinese people are not bothered by the new surveillance tactics as much as they should be. President Xi Jinping came to power in 2012 and decided to continue the large-scale monitoring of the people. He tried to tackle corruption, eliminate political rivals, and bring social stability by gradually incrementing surveillance in the country (23). The keyword here is "gradually". He led the country towards maximum surveillance through the use of AI and big data, but he took small steps to achieve it. Bringing everything at once could have caused an uproar, as it did in the city of Hangzhou, where the mayor wanted to continue the use of the health app for surveillance even after the pandemic ends. China kept taking incremental steps, for example, they stopped renewing visas of foreign journalists, and then started to create positive news about China and disseminated it to foreign news companies so it seems that China handles the pandemic well (21). Although the Health Code app got removed in several cities, China will continue the monitoring of the people, which might become easier after collecting all of the information from the Health Code (24). The strengthening of AI and dataveillance was also supported in the "Made in China 2025" plan, which talks about how to advance Information Technology (IT), robotics, AI, and aerospace production in the country. China created this plan in 2015, and its goal is to become the best in the field of technology (25). In 2017, the Chinese government released another plan to reach global leadership in AI, and in that document, they stated that AI is crucial to keep social stability (23).

During the Covid-19 pandemic, Wuhan introduced new robots in their hospitals which were programmed for different tasks, for example, to disinfect areas (26). The Health App allowed a higher level of monitoring and even though the app got removed in several cities, the huge amount of collected data stays stored in the hand of the government. Alibaba, which owns China's biggest e-commerce platform, launched its online service to get an appointment and a consultation with doctors online (27). Artificial intelligence also went through a huge development, for example, besides its use for surveillance, it is getting used to analyze tomography scans to detect coronavirus cases with higher accuracy. Baidu, Inc. - multinational technology company specializing in Internet-related services and products and AI in the country, developed a new algorithm called LinearFold that is capable

of predicting the virus's RNA secondary structure. It made it easier to develop vaccines against Covid-19 (28). China also released a new facial recognition technology during the pandemic (29). From the above-mentioned examples, we can see that the pandemic boosted the Made in China 2025 plan not just in surveillance but in other fields as well.

Therefore, Covid-19 has permitted the Chinese government to advance its technology and implement new technologies as well as new monitoring methods in the guise of acting for the well-being of people, which is a paternalistic tendency. Since Xi Jinping made sure to surveil its opposition, he was able to develop the Health Code app and the surveillance system without any serious political debate.

Conclusion

The collected information shows that the pandemic accelerated the development of surveillance in the country. The Health Code app might have the greatest impact on the citizens. It monitors them in new ways and restricts their freedom by not letting people travel around. The city of Hangzhou and Suzhou used the app as a function creep by starting to develop a permanent system to monitor the people after the pandemic. By looking at this example, we can see that the pandemic was used as a testing ground to see how people react to stricter surveillance. An expert researcher about China has stated that China has a tendency to develop and bring in new types of surveillance technologies whenever a major event is happening, such as the 2008 Beijing Olympics or the World Expo in Shanghai (11). And this happened again in the case of the Covid-19 pandemic. Covid-19 gave a push to the government's plans, and thanks to this, they were able to expand surveillance with very little resistance. There is no new trend, we can see from the development of the AI plan and the Made in China 2025 plan, China already intended to implement these pre-existing technologies, and the pandemic just accelerated these plans in the same way as other big events in the past.

China knows the way how to introduce these policies and technologies; by using small steps therefore, the people have time to get used to it. Chinese people are more likely to accept these changes for the protection of the community. The collectivism in the country brings this tolerance to a high level, the citizens are willing to take bigger sacrifices in order to help the group. The current situation implies that the ongoing Covid-19 related surveillance was used as a function creep for a long time, collecting more data than what we can imagine.

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Adherence to ethical standards

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