RETRACTION: Is the Health Code Policy the Best Choice for Prevention and Control in China's Epidemic Prevention Context?
—— Based on the Tripartite Static Game Model

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ABSTRACT
Since 2020, COVID-19 has wreaked havoc on the world, and countries have adopted different epidemic prevention policies to deal with sudden public health risks. China's achievements in epidemic prevention have also attracted worldwide attention, taking the lead in getting rid of the shadow of the epidemic and moving towards recovery, in which the health code policy plays a very important role. The epidemic situation in some countries has also been well controlled after using the health code policy. Therefore, the health code policy has received high attention all over the world. Based on the relevant theoretical analysis of behavioral economics and game theory, and based on the complete information static game model, this paper analyzes the benefits of citizens, government, and enterprises under different strategies, solves the Nash equilibrium, and obtains the optimal strategies of citizens, government and enterprises under different circumstances. It is found that the government's epidemic prevention decision will be the key of the game, We can promote citizens and enterprises to abide by and cooperate with epidemic prevention policies by increasing administrative penalties, increasing hidden costs or optimizing epidemic prevention policies, and reducing the losses of citizens and enterprises in the implementation of policies, to achieve the expected effect of policies.

Keywords: *COVID-19, Health code policy, Game theory, Public policy, Complete information static game*

1. INTRODUCTION AND LITERATURE REVIEW

Since the discovery of the New Coronavirus in 2019, the epidemic has rapidly raged around the world. As of February 8, 2022, the number of infectious diseases in the world has exceeded three hundred and ninety million cases. It is the most serious public health event in the world in the past century. In this epidemic, the Chinese government has made great achievements in anti-epidemic and launched the digital anti-epidemic means - health code policy. China was the first country to launch the health code policy. On December 10, 2020, the National Health Commission, the national medical insurance administration, and the State Administration of traditional Chinese medicine jointly issued the notice on further promoting the "Internet + medical and health" and "five ones" service actions, which clearly required the country to implement the national mutual recognition and one code access of the "Health Code". "Health Code" is a unified travel QR code based on real data, which is declared online by citizens, villagers, and floating population, and formed after evaluation and review by the prevention and control system. There are three colors after evaluation, "green code" means that the code holder has no abnormality; "Yellow code" means that the code holder is a returnee or non-resident who has visited medium and high-risk areas and needs to be isolated for about 7 days; "Red code" means that the code holder has contacted confirmed cases, is in the same space or has not contacted medical observation. It needs to be isolated for about 14 days and do continuous nucleic acid detection and health punch-in. After the implementation of the health code policy, the health code has become a necessary certificate for people to enter and leave public places such as public transport systems, supermarkets, communities, hospitals, and shopping malls.

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The author has retracted this article because of an overlap with a previous published paper [1] by different authors. The author Agrees to this retraction.
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Health code is a digital innovation measure in an anti-epidemic action. It not only plays an important role in epidemic prevention and control but also promotes the improvement of urban and regional digital governance ability and the innovation of government governance ability, which is manifested in management innovation, technology innovation, service innovation, organization innovation, governance innovation and other ways. The success of the health code is inseparable from the collaborative governance among local governments, grass-roots organizations, and enterprise ecology, which has made great contributions to the prevention and control of the epidemic situation and the recovery and development of production in the post epidemic era [1]. The health code policy has become the most effective and normalized prevention and control policy in China. However, the health code policy is a double-edged sword. "Behind all intelligence is monitoring and control." [2]. "Health Code" also has negative effects to a certain extent. While the health code policy plays a positive role in the prevention and control of the epidemic, it will also bring certain hidden dangers to the security of personal information, which may cause the public to worry and worry about personal privacy, algorithm accuracy, and excessive use of information [3]. From the perspective of personal information protection law, the generation of health codes must comply with the general principles of personal information protection. Article 41 of the network security law establishes the principles of legality, legitimacy, and necessity, which are theoretically expanded into the principles of legality, clear purpose, transparency, necessity, and suitability. With the stability of the epidemic and the popularity of vaccines, people gradually get out of the cloud of fear of viruses and begin to pay attention to the impact of big data on them. The personal information protection law of the people's Republic of China (Draft) divides personal information processing into information collection, storage, use, processing, transmission provision, and disclosure. The life cycle of the health code can be divided into five stages: creation, collection, processing, utilization, and management. There are practical difficulties faced respectively. Citizens have transferred their rights for the public interest, The right to know and the right to consent are ignored, causing damage to personal privacy [4]. Then, the flow of information is not controlled by the social security market, which will also lead to a huge risk of privacy or even personal security [5]. At the same time, health codes also have some problems in community function services, such as fragmentation of stored information, inability to guarantee information processing security, and difficult connection of information sharing interface [6]. More seriously, as one of the products of the intelligent era, health code will give birth to the capture of passive regulation in the intelligent era, that is, the regulator of state monopoly power will be controlled and "captured" by market monopolists, which will damage industrial interests, public interests, and national interests in a more far-reaching sense [7].

Academic circles have long discussed technological development in the digital age and how to balance the relationship between digital governance and citizens' privacy. Among them, whether the digital governance means represented by the health code made by Fang Xingdong, Yan Feng, Liu Nian, and Zhou Manqi are optimal policies has been studied. As a policymaker, the government should start from the total social effect. Health codes are also widely used internationally. Among them, China and South Korea are forced to use health codes, while most European and American countries use active health codes, which citizens can choose voluntarily. For example, on April 10, 2020, Apple and Google announced that they would jointly launch a scheme to help the government and health institutions slow down the spread of the virus by using Bluetooth technology. This scheme was also interpreted by domestic media as the European and American version of the "Health Code". Patients will have the right to upload data, and the data will be retained regularly and quantitatively, and will be deleted automatically after expiration. However, the effectiveness of such a health code policy will be much worse than that of compulsory use [8]. This paper will improve the models of Liu Nian and Zhou Manqi and establish a three-party complete information static game model of citizens, government, and enterprises based on the basic theorems of Nash equilibrium and game theory. Besides, this paper will analyze how the three parties make choices under different circumstances and discuss the impact mechanism of health code policy on the subject under the background of China's national defense epidemic policy. It is hoped that the follow-up can provide guidance and supplement to the government's policy-making and relevant academic theories.

2. FACTORS AFFECTING THE EFFECTIVENESS OF GOVERNMENT, CITIZENS, AND ENTERPRISES

Government, citizens, and enterprises are the main three parties forming economic relations in modern society. The study of tripartite collaborative governance is very important in the game mechanism. It refers to the cooperation mechanism established between the government, non-profit organizations, enterprises, citizens, and other stakeholders to achieve common goals, such as intergovernmental relations, cross-sectoral cooperation Public-private partnerships [9], focusing on areas such as governance, management, organizational autonomy, interdependence, and norms [10]. As an organ of the state to manage and handle affairs, the government should fully consider the interests of all parties and many factors when formulating policies; Citizens are the main body of the country, and the utility of citizens has a

significant impact on policy-making; Enterprises are the cells for the country to create economic vitality. The utility of enterprises reflects the will of citizens to a certain extent but also responds to government policies on behalf of their own economic benefits. It is an important reference index for the formulation of government public policies.

2.1. Influencing factors of government effectiveness

The government is the promoter of the health code policy, and the implementation of the health code policy plays a vital role in fighting the epidemic. As a data tracking system for epidemic prevention data, the health code system builds a network of "government enterprise social organization individuals" [11] based on the four-dimensional ICD system to quickly track and collect user location and health information, to track and trace the epidemic situation and its source. Before the health code system, it needs to be checked by manual visit and communication, which is inefficient and prone to mistakes or mistakes. After the government fully implements the health code policy, the data information will be quickly uploaded to the system when going in and out of large gathering places, and the information of confirmed cases, suspected cases, and close contacts can be collected into the system in time and space by using big data science and technology, Facilitate the government's investigation, greatly reduce the difficulty of investigation and the risk of cross-infection, and recover the regional economy faster. The government's implementation of the health code policy means that there is room for adjustment of the government's epidemic prevention policy. With data monitoring, the government can relax the epidemic prevention control in a planned way in the region, which will help citizens and enterprises return to normal faster.

However, the health code policy will also bring huge costs to the government. Its cost composition mainly includes administrative cost, operation cost, and data processing cost [12]. In China, Germany, and other countries, the government should implement the health code policy by increasing financial expenditure. For the government, the administrative cost is mainly the administrative expenditure, including the expenditure on the allocation of health code related personnel and technology; Operating costs refer to the expenses related to the Internet team developing, maintaining, and managing the health code system; Data processing cost mainly refers to the hidden cost brought by health code, that is, the privacy of data information has brought great commercial value, and the government needs to establish a perfect data security management system to eliminate the leakage of private information as much as possible, which will produce no small cost.

2.2. Factors affecting the effectiveness of citizens and enterprises

Under the influence of the epidemic, citizens are the direct audience of the epidemic prevention policies implemented by the government, while enterprises are citizens' economic collectives to a certain extent, which have certain interest interoperability in the main form. Although the extremely strict epidemic prevention policy will control the epidemic situation in a short time, it will greatly reduce the effectiveness of citizens in the long run. The complex administrative registration and epidemic prevention monitoring will also damage the interests of citizens. The strict epidemic prevention policy will limit the normal operation and economic activities of enterprises and have a certain impact on the regional and even national economies. Therefore, under the gentle health code policy, the government can carry out epidemic prevention in a regulatory manner. On the one hand, it subtracts the complicated epidemic prevention registration, which is convenient and fast; On the other hand, the relatively loose epidemic prevention environment under the health code policy can greatly promote the free flow of citizens and the normal operation of enterprises, and can more effectively restore and promote the economy.

However, the health code policy still has hidden costs for citizens and enterprises. As mentioned above, a large number of private personnel, company, and collective data information of citizens and enterprises under the health code policy are facing the risk of disclosure, that is, they "transfer" their private information to meet the needs of the epidemic prevention and control policy, At this time, the prevention and control of epidemic risk is the main cost paid by citizens and enterprises under the health code policy.

3. MODEL BUILDING

Under the double impact of contemporary public opinion and anti-epidemic policy, COVID-19 will have some emotional reactions to citizens and enterprises, and deeply affect the government's formulation of policies [13]. The game matrix in this paper is based on the game matrix established by Liu Nian and other authors, and further expands and joins the enterprise subject, trying to show the game process of the government, enterprises, and citizens under different choices, and analyzes the four main results according to the actual situation. As a policymaker, the government and the citizens and enterprises of the policy recipient are the three parties with limited rationality. The three parties play a strategic game around whether there is a health code or not.

The relevant assumptions of this model are added and improved based on the assumptions of Liu Nian and other authors:

Hypothesis (1): the government will only implement two epidemic prevention strategies. The first is to implement an epidemic prevention health code; The second is to implement relatively strict travel restrictions, including city closure, curfew, restriction of travel scope, temporary closure of large gathering public places such as cinemas, etc. When the government does not use the health code policy, it will implement the second strategy, regardless of mass immunization or allowing the epidemic to spread.

Hypothesis (2): This paper assumes that the health codes developed by private companies will eventually be taken over by the government and the government will bear the corresponding expenses. There is no health code of charitable nature of private enterprises.

Hypothesis (3): under the government's epidemic prevention and control policy, the utility and cost of the government, enterprises, and citizens are greater than 0.

Hypothesis (4): the implementation of the health code epidemic prevention policy can restore the economy faster than the implementation of the strict travel restriction policy, so the government's income under the health code epidemic prevention policy is higher than that when it is not used, but the cost of the government's use of the health code policy is higher than that of the travel restriction policy. Citizens and enterprises' living, working and daily operations are more convenient under the health code epidemic prevention policy than under the travel restriction policy, so the income of citizens and enterprises when implementing the health code policy is higher than when they do not use it. At the same time, the model only considers the cost of privacy transfer to citizens. Citizens need to transfer certain privacy rights under the health code policy, but citizens do not need to transfer privacy rights under the travel restriction policy. Therefore, for citizens, the former has hidden costs while the latter does not; On the contrary, enterprises can better carry out daily business activities under the health code policy, which will be more flexible than the more stringent epidemic prevention policy. Therefore, for enterprises, the cost of the former is lower than that of the latter.

Hypothesis (5): when citizens and enterprises do not fully comply with the epidemic prevention policy, the discount of government utility is the same whether to use health code or not.

Hypothesis (6): when citizens do not comply with the epidemic prevention policy and enterprises cooperate with the government's epidemic prevention policy, enterprises will impose a part of fines on individual citizens to punish citizens who do not fully comply with the epidemic prevention policy.

Hypothesis (7): when the government implements the health code policy, there is no situation that citizens abide by the epidemic prevention policy and enterprises do not fully cooperate with the epidemic prevention policy; However, when the government implements other epidemic prevention policies (i.e. more strict epidemic prevention policies), enterprises may not fully cooperate with the government's epidemic prevention policies, regardless of whether citizens choose to fully comply with the epidemic prevention policies or not.

Table 1. Description of model parameters

PARAMETERS	MEANING
Bg1	Benefits from the implementation of the health code policy by the government
Bg2	Income from other epidemic prevention policies implemented by the government
Cg1	The operating cost of the government's health code policy
Cg2	The operation cost of other epidemic prevention policies implemented by the government
Bc1	Citizens' income under health code policy
Bc2	Benefits of citizens under other epidemic prevention policies
Cc1	The cost paid by citizens under the health code policy (cost of privacy transfer)
Bf1	Income of enterprises under health code policy
Bf2	Benefits of enterprises under other epidemic prevention policies
Cf1	Costs paid by enterprises under the health code policy
Cf2	Costs paid by enterprises under other epidemic prevention policies
i	The loss rate of government effectiveness caused by citizens' incomplete compliance with epidemic prevention policies (0<i<1)
p	The discount rate of privacy transfer caused by citizens' incomplete compliance with epidemic prevention policies (0<p<1)
k	The increased rate of freedom brought by citizens' incomplete compliance with epidemic prevention policies (0<k<1)

f	Administrative punishment caused by citizens' failure to fully comply with epidemic prevention policies
i*	The loss rate of government effectiveness caused by enterprises' incomplete cooperation with epidemic prevention policies (0<i*<1)
p*	The discount rate of loss due to leakage of private information caused by incomplete cooperation of enterprises with epidemic prevention policies (0<p*<1)
k*	The improvement rate of enterprise operation flexibility is caused by the incomplete cooperation of enterprises with epidemic prevention policies (0<k*<1)
f2	Corporate punishment caused by citizens' failure to fully comply with epidemic prevention policies
f3	Administrative penalties caused by enterprises not fully cooperating with epidemic prevention policies

Based on the above model assumptions and relevant parameters, we can get: Bg1, Bg2, Cg1, Cg2, Bc1, Bc2, Cc1, Bf1, Bf2, Cf1, Cf2 are greater than 0, and Bg1>Bg2, Bc1>Bc2, Cg1>Cg2, Cf1<Cf2.

According to the above model assumptions and parameter settings, the tripartite game income matrix of government, citizens, and enterprises can be obtained (see the appendix of the article)

4. MODEL RESULTS AND ANALYSIS

4.1. Nash equilibrium results

Based on the game matrix, we first analyze the Nash equilibrium when four kinds of citizens and enterprises act in concert (because enterprises and citizens often act in concert because of mutual benefit):

(1) Cc1<pCc1+f+f2 and Bg1-Cg1>Bg2-Cg2: The Nash equilibrium is (Implementing health code policy, Cooperating with epidemic prevention policy, comply with the epidemic prevention policy)

(2) Bg2-Cg2>Bg1-Cg1, Bc2>(1+k)Bc2-f2 and Bf2-Cf2>(1+k*)Bf2-Cf2-f3:The Nash equilibrium is (no health code policy, cooperating with epidemic prevention policy, complying with the epidemic prevention policy)

(3) (i×i*)Bg1-Cg1>(i×i*)Bg2-Cg2 and Bf1-p*Cf1-f3>Bf1-Cf1+f2: The Nash equilibrium is (implementing the health code policy, no cooperation with the epidemic prevention policy, no compliance with epidemic prevention policy)

(4) (i×i*)Bg2-Cg2>(i×i*)Bg1-Cg1, (1+k)Bc2-f>Bc2 and (1+k*)Bf2-f3>Bf2+f2: The Nash equilibrium is (no health code policy, no cooperation with epidemic prevention policy, no compliance with epidemic prevention policy)

The following is an analysis of the situation when citizens and enterprises do not act in line:

(5) (1+k*)Bf2-Cf2-f3>Bf2-Cf2 and Bc2>(1+k)Bc2-f: the Nash equilibrium is (no health code policy, no cooperation with the epidemic prevention policy, complying with the epidemic prevention policy)

(6)iBg1-Cg1+f>iBg2-Cg2, Bf1-Cf1+f2>Bf1-p*Cf1-f3 and Bc1-pCc1-f-f2>Bc1-Cc1: The Nash equilibrium is (implementing the health code policy, cooperation with the epidemic prevention policy, no compliance with the epidemic prevention policy)

(7)iBg2-Cg2>iBg1-Cg1+f, Bf2-Cf2+f2>(1+k*)Bf2-Cf2-f3 and (1+k)Bc2-f2>Bc2: The Nash equilibrium is (no health code policy, cooperating with epidemic prevention policy, no compliance with the epidemic prevention policy).

From the above analysis, among the seven possibilities, the ideal situation of the government is only (1) and (2), while in most other cases, the implementation effect of epidemic prevention policy will be limited to varying degrees.

4.2. Result from analysis and practical significance

In the case of (1) and (2), both citizens and enterprises have chosen to abide by and cooperate with the government's epidemic prevention policy under the government's epidemic prevention policy. If the enterprise does not comply with the epidemic prevention policy, the cost and benefit will be more severe than that of the enterprise. Even if citizens are unwilling to transfer their right to privacy, they will still choose to comply with the epidemic prevention policy under the high administrative punishment, because the improvement of the effectiveness of the cost-benefit brought by the transition of their right to privacy can not cover the administrative punishment brought by the government under the non-compliance with the epidemic prevention policy; Enterprises will automatically choose to cooperate with the government's epidemic prevention policy when citizens comply with the government's epidemic prevention policy (more moderate health code policy). If the government chooses a more strict epidemic prevention policy (i.e. (2) cases) and the enterprise finds that the utility improvement brought by the improvement of its operational flexibility is lower than the administrative punishment brought by the government

under the incomplete cooperation with the epidemic prevention policy, it will still cooperate with the government's epidemic prevention policy. For the government, whether to use the health code or not depends on the benefit-cost ratio brought by the health code policy and other strict epidemic prevention policies. If the governance improvement brought by the implementation of the health code is greater than other epidemic prevention policies, it will choose to implement the health code policy, and vice versa.

In the case of (3) and (4), both citizens and enterprises choose not to actively comply with and cooperate with the government's epidemic prevention policy under the government's epidemic prevention policy. In an economic sense, when citizens and enterprises do not comply with or cooperate with the epidemic prevention policy, the administrative punishment is relatively loose, which is lower than the cost and benefit brought by citizens and enterprises when they do not cooperate or comply with the epidemic prevention policy. When the government implements the health code policy or other epidemic prevention policies, citizens are unwilling to give up their right to privacy (or reduce their degree of freedom). Therefore, to prevent the cost from falling, some citizens choose to travel and move freely in violation of regulations and get a part of the degree of freedom to increase the effectiveness. Due to the relatively loose administrative punishment of the government, The utility increase brought by the improvement of freedom can cover the administrative punishment of the government, so citizens will eventually choose not to comply with the epidemic prevention policy; Similarly, under the government's epidemic prevention policy, when the enterprise finds that the utility improvement brought by the improvement of its operational flexibility is higher than the administrative punishment brought by the government under the incomplete cooperation with the epidemic prevention policy, the enterprise will choose not to fully cooperate with the government's epidemic prevention policy. At this time, when citizens and enterprises do not fully comply with and cooperate with the epidemic prevention policy, the government will lose part of the income, and the total income is lower than (1) and (2).

For citizens, (5) is the same as (1) and (2), and (6) and (7) are the same as (3) and (4); For enterprises, (5) is the same as (3) and (4), and (6) and (7) are the same as (1) and (2). However, it is worth noting that when citizens choose not to comply with the epidemic prevention policy, but enterprises choose to cooperate with the government's epidemic prevention policy (i.e. (6) and (7) cases), enterprises and the government will punish some citizens who do not comply with the epidemic prevention policy at the same time. At this time, the effectiveness of citizens will be limited by the government and enterprises at the same time. Therefore, at this time, the effectiveness brought by the improvement of civil liberties is greatly improved, which often shows that there are problems in the government's epidemic prevention policy.

After the above theoretical analysis, the three parties will have different choices under different conditions. This paper will start with the choices of some real countries. In addition to China, the governments of Britain, the United States, Australia, and South Korea have implemented health codes, with different effects. The health code of Britain, America, and other western countries is a product jointly released by Apple and Google, and citizens are not required to download and use it. The principle is to mark people who have been infected with COVID-19 because their antibodies to the virus can be used as "healthy" people during the epidemic period, but because their mechanism of action is effective only after infection, and the government has not promulgated relevant policies on mandatory use of health codes, and Western citizens and enterprises have strong privacy awareness. European and American health codes have not had a great effect on the epidemic, which can be classified into (3) cases. What's more, in June 2020, a large number of people gathered in bars, restaurants, and other public areas in New York City. During this period, New York State received more than 20000 complaints about businesses violating the resumption plan. This shows that it can be classified as the most chaotic situation (4). Under the strict epidemic prevention policy implemented by the government, citizens and enterprises still do not choose to abide by and cooperate with the epidemic prevention policy. The root cause is the lack of binding force and credibility of the government.

In contrast, the epidemic prevention policy implemented by the Chinese government has been extremely successful. In the early stage of the epidemic, China implemented more stringent epidemic prevention policies (such as Wuhan City closure). Because of the rapid spread of the epidemic, the strict epidemic prevention policy such as Feng Cheng could quickly extinguish the rapid spread of COVID-19. After the initial control of the epidemic, China launched the health code, and the government vigorously promoted the health code policy. Although the government will not impose direct administrative penalties on citizens and enterprises who do not comply with or cooperate with the health code policy, in many cases, citizens have to use the health code (for example, do not show health? Do not enter shopping malls, buses, cinemas, and other public places), The hidden cost of not using health codes is added, forming the (1) situation that the government wants to see most. The policy implementation effect of the Chinese government is significantly better than that of Europe and the United States, and the anti-epidemic effect of the whole society is more obvious. Therefore, citizens and enterprises will recover their original production activities faster and obtain greater benefits to make up for the losses of enterprises and citizens in the process of

implementing the policy, forming a virtuous circle of the whole society.

5. CONCLUSION

In the post epidemic era, the normalized epidemic prevention policy implemented by the government will be the key to whether the country can quickly resume production and living activities. According to the mechanism derivation and practical analysis of the tripartite game model, this paper can get the following enlightenment:

First, the government's decision-making is the key to the game. We should fully consider the influence of citizens, enterprises, culture, and other factors. At the same time, the relevant results of the game are also affected by the government's credibility, binding force, and other factors. The government should evaluate the possibility of an epidemic prevention policy in combination with the actual situation and technical level, and try to achieve the ideal situation that enterprises and citizens abide by and cooperate with the epidemic prevention policy.

Second, the game process is dynamic and variable. Often in different situations, citizens and enterprises will lead to different game choices. For example, the government observed that the effect of implementing an epidemic prevention policy was poor, and timely adjustment may change the game choice between citizens and enterprises. Citizens will also change their game choice for a long time in some special circumstances. For example, when they observe that the effect of government policy is poor, or when the long-term policy defects lead to greater personal losses, citizens will pursue the maximization of interests, choose to change their game choice and no longer trust the government's decision-making. Therefore, standardizing and determining the government's policy choice is very important for social operation.

Third, from the game results, to obtain the results that both enterprises and citizens comply with and cooperate with the epidemic prevention policy, there are two methods to improve the administrative punishment, increase the hidden cost, and reduce the interests lost by citizens and enterprises due to the policy. Increasing the administrative punishment and increasing the hidden cost has low implementation difficulty and quick effect, but the government needs to have strong credibility and appeal. Based on citizens' and enterprises' great trust in the government, the implementation effect of the policy is better, otherwise, it will easily lead to public dissatisfaction and social dissatisfaction. Reducing the losses of citizens and enterprises due to the policy should be the direction of the long-term government's efforts in the field of public policy, although it is difficult to implement and slow to achieve results. For example, continuously improving the technical development level of the health code, paying more attention to the privacy information protection of citizens and enterprises, establishing a citizen enterprise government tripartite information supervision system, improving the supervision system and norms, and reducing the trust crisis caused by information leakage, for example, hackers capture the private information in the health code information and sell it to the black market, which poses a threat to the stability of social information. While continuously improving public policies, the government can improve citizens' credibility with the government, to create a virtuous social circle in which the people trust the government and the government to achieve the best.

To sum up, this paper studies the behavior game of the government, citizens, and enterprises under the formulation and influence of epidemic prevention policies in the case of a normalized epidemic hoping to provide further theoretical guidance for the optimization of government epidemic prevention and public health policies.

APPENDIX

Table 2. Tripartite game income matrix of government, citizen, and enterprise

		Citizen			
		Cooperating with the epidemic prevention policy		No cooperation with the epidemic prevention policy	
		Enterprise		Enterprise	
		Complying with the epidemic prevention policy	No compliance with the epidemic prevention policy	Complying with the epidemic prevention policy	No compliance with the epidemic prevention policy
Government	Implementing the health code policy	Bg1-Cg1 , Bf1-Cf1 , Bc1-Cc1	——	iBg1-Cg1+f , Bf1-Cf1+f2 , Bc1-pCc1-f-f2	(i×i*)Bg1-Cg1+f3+f , Bf1-p*Cf1-f3 , Bc1-pCc1-f
	No health code	Bg2-Cg2 , Bf2-Cf2 ,	Bg2-Cg2 , (1+k*)Bf2-	iBg2-Cg2 , Bf2-	(i×i*)Bg2-Cg2+f3+f ,

	policy (another epidemic prevention policy)	Bc2	Cf2-f3 , Bc2	Cf2+f2 , (1+k)Bc2-f2	(1+k*)Bf2-Cf2-f3 , (1+k)Bc2-f

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