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# Prevention and Control Effects of Different Prevention and Control Mechanisms on the Epidemic of COVID-19

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**Abstract:** The author wrote this article when the global COVID-19 epidemic has been nearly three years. Objective: To compare and explain the overall effect of different prevention and control mechanisms on the prevention and control of the novel coronavirus outbreak in the early stage and their impact on the economy and society; To disseminate advanced and scientific mechanisms for infectious disease prevention and control to the people and reduce the harm of infectious diseases to mankind. Analysis methods: According to the official data and the available data, a variety of statistical methods were used to analyze the epidemic law of COVID-19 under different prevention and control mechanisms, and to elaborate the prevention and control effects of different prevention and control mechanisms. Results: Through comparison and analysis, China with A type of prevention and control mechanism with a total of 258398 confirmed cases, an incidence rate of 0.18%, and a total of 5226 deaths. The COVID-19 epidemic had little impact on the economy and society, social stability, and rapid economic recovery. Which adopt B kind of prevention and control mechanism to control the new outbreak in the United States, the new crown lu, pneumonia epidemic outbreak, 99229138 cases of the cumulative cases, incidence was 30.25%, the total death toll has more than one million people, the absolute number of morbidity and mortality is higher than China's, America's new crown pneumonia outbreak of a pandemic caused serious influence on the economic and social, The loss of labor force is serious, the supply chain of industrial chain should be hindered, unemployment rate is rising, inflation, social conflicts are intensified, and economic recovery is difficult. Facts show that the prevention and control mechanism A is superior to the prevention and control mechanism B.

**Keywords:** COVID-19, Epidemic, Prevention And Control Mechanism, Effect Analysis

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## 1. Introduction

In early 2020, the global outbreak of COVID-19 has been circulating for nearly three years, affecting more than 200 countries and regions, and 127 countries or regions have more than 100,000 confirmed cases of COVID-19. [1] The COVID-19 epidemic has turned into a global crisis, which is the most serious challenge to human society since the Second World War. Like a black swan, it has obscured the light of the world, undermined economic prosperity, blocked normal industrial and supply chains, changed people's production and living habits, affected the normal order of production and life, accelerated the reconstruction and reconstruction of the world economy, and brought many uncertainties to world economic growth. However, in the face of the sudden outbreak of COVID-19, countries adopted different prevention and control

mechanisms in the early stages of the epidemic, with different results. Some countries and regions have taken active and scientific measures to cope with the epidemic. They are less affected by the epidemic, have low morbidity and mortality rates, have little impact on their economies, and have enjoyed rapid recovery [2]. Other countries and regions have adopted a negative attitude and approach, with exceptionally high morbidity and mortality rates and profound economic and social consequences. In order to analyze the effect of different prevention and control mechanisms on epidemic prevention and control outbreak in the early stage, summarize the experience of infectious disease prevention and control, and promote effective infectious disease prevention and control methods, the author analyzed the prevention and control mechanisms and methods of two different COVID-19 outbreaks, and summarized them in the following section.

## 2. Overview of the Two Main Different Prevention and Control Mechanisms

The world has generally adopted two prevention and control mechanisms for the COVID-19 pandemic. First, China is the main representative of the prevention and control mechanism, which places great emphasis on the government's initiative [3]. Upon the discovery of the epidemic, governments at all levels immediately established special COVID-19 prevention and control headquarters and joint prevention and control coordination mechanisms, strictly implemented the National Law on the Prevention and Control of Infectious Diseases, and quickly established an emergency command network for the prevention and control of COVID-19 from the vertical to the horizontal. With the participation of the whole people, all staff will receive free vaccination against COVID-19. We will implement precise prevention and control of the outbreak, implement the principle of territorial management of the local government, and make the chief executive responsible for the outbreak. Closed-loop transport of confirmed cases and close contacts to specialized hospitals or places for treatment and isolation will be implemented. The implementation of risk levels for disposal: high-risk areas residents should stay at home, living materials delivered to their homes. Residents in medium-risk areas should not leave the community and receive living materials at random times in the community to avoid the spillover and spread of the epidemic. Adhering to the principle of putting people first and life first, the government has invested a large amount of material and money in the prevention and control of the COVID-19 epidemic, providing free vaccinations, free nucleic acid testing and timely treatment for the sick [4]. We should adhere to scientific epidemic prevention, involve the whole people, Strengthen social contact management and use high-tech means to record the flow trajectory of social personnel formulate citizen epidemic prevention codes, and revise epidemic prevention regulations at an appropriate time [5]. During the epidemic, when entering or leaving public places, "Show the health code, the travel code, and scan the place code, wear masks, stay one meter away, disinfect and wash hands frequently, and do not gather", the whole people have built an epidemic prevention firewall. The daily prevention and control strategy of "external prevention of import, internal prevention of return bomb, social dynamic zero" is implemented [6]. In this epidemic prevention mechanism, the government takes the initiative to control the epidemic, which not only reduces the chance of

virus transmission, but also reduces the harm to the economy and society. (This article named this prevention and control method as the "A" prevention and control mechanism of COVID-19 epidemic.) [7] Second, the European-American prevention and control mechanism, dominated by the United States, emphasizes the spontaneous prevention and control method, and overemphasizes the random and free prevention and control mode in the face of the epidemic [8]. Emphasizing the role of herd immunity in the prevention and control of the COVID-19 epidemic, and adopting arbitrary and free prevention and control methods. The government does not take the initiative enough, there is no effective prevention and control command network, and the government directives cannot be implemented. Despite the country's relevant laws and regulations, but the prevention and control of specific measures to carry out the difficult, difficult to form a unified epidemic prevention and control of power, individually, made from different departments, public disoriented, generally do not accept wearing a mask, not gathered and necessary quarantine and epidemic prevention measures, let the pathogens and infection free diffusion and flow, accelerate the spread of the outbreak and spread [9]. In this kind of anti control machine, people want to own a vaccine, at his own expense for screening cases, treatment after diagnosis to determine to independently at its own cost, such as the practice, has delayed the new crown pneumonia epidemic control and the best time to confirmed cases treatment (in this paper, the control method named the new crown pneumonia B kind of epidemic prevention and control mechanism).

## 3. Effect Analysis of Different Prevention and Control Mechanisms

### 3.1. Data Source and Collation

In order to facilitate more specific analysis and be more realistic, this paper used the relevant data and materials of COVID-19 epidemic situation published by the official and official websites of China and the United States, representative countries with different prevention and control mechanisms, as the research data. The specific epidemic data were extracted from the "Epidemic Bulletin" on the official website of the National Health Commission, PRC and the "Real-time Developments of the Global COVID-19 Epidemic" on Sina.com. The time period for analyzing the harvest data was August 1, 2021 to September 30, 2021. See Table 1 after sorting out the original dat.

**Table 1.** Daily increasing number of confirmed cases in representative countries under the two mechanisms from August 1, 2021 to September 30, 2021 Unit: cases.

Representative country	From 1 August 2021 to 30 September 2021, the number of confirmed cases increased daily
China	98, 90, 96, 85, 124, 106, 96, 125, 143, 111, 81, 99, 66, 53, 51, 42, 28, 46, 33, 20, 32, 21, 35, 20, 26, 32, 32, 21, 33, 23, 27, 28, 28, 28, 28, 18, 35, 19, 28, 17, 25, 46, 49, 92, 73, 80, 84, 46, 66, 49, 72, 41, 43, 54, 38, 29, 35, 31, 28, 22, 34
The United States	32698, 82740, 171624, 132897, 126003, 145026, 91278, 24572, 79443, 139692, 116660, 183880, 162554, 86568, 56018, 153365, 226710, 177328, 176968, 166716, 147280, 27792, 172837, 197912, 223395, 160049, 209711, 86105, 72738, 176655, 68012, 153942, 219717, 78854, 38457, 53314, 184840, 277461, 229687, 181836, 86813, 38365, 60842, 230775, 174930, 186829, 150388, 84719, 58583, 119871, 172783, 177802, 140237, 138423, 205440, 35233, 96273, 174645, 121080, 145850

### 3.2. Density Analysis of Immunization Vaccine Injection of COVID-19 Under Different Prevention and Control Mechanisms

Under the A-type prevention and control mechanism, governments at all levels have taken active measures to prevent and control the epidemic, and extensively mobilized people to get immunized against COVID-19 to enhance their immunity. By November 5, 2022, China had reported A total of 344023.1 Ten thousand doses. The total number of people vaccinated reached 1.304 billion, 1.272 billion were fully vaccinated, accounting for 92.48% and 90.24% of the total population, respectively greatly enhanced the self-immunity of the general population greatly reduced the risk of infection and incidence, and reduced the number of severe cases and deaths [10]. Under the B prevention and control mechanism, the government did not pay enough attention to the social benefits of vaccination, and hesitated. The implementation of immunization was ineffective, and the injection schedule was very slow, which delayed the favorable opportunity to stop the spread of the epidemic. In addition, the vaccination was self-funded, and the enthusiasm of the public was not high. Of the three COVID-19 vaccines authorized in the United States at the end of July 2021, only one of the Pfizer vaccines was authorized for use in 12- to 17-year-olds, and only 8.9 million 12- to 17-year-olds had been vaccinated by late July 2021, As of December 21, 2021, the U.S. Centers for Disease Control and Prevention (CDC) said the U.S. had received about 5,0346,1 Ten thousand doses of COVID-19 vaccine, or 1.5 doses per person [11]. But currently, only 49.1% of the 226.6 million people eligible for booster doses have received them, according to the CDC. The delayed use and injection of

COVID-19 vaccine greatly delayed the control of the epidemic, increased the infection rate and incidence, and increased the number of severe cases and deaths. Data show that COVID-19 vaccination rates in the United States lag behind many other high-income countries, as well as China's vaccination efforts [12].

### 3.3. Analysis of the Effect of Different Prevention and Control Mechanisms on the Prevention and Control of COVID-19

Due to the different strategies and measures taken by the two countries with different prevention and control mechanisms, the effects of prevention and control are certainly different. A total of 3129 confirmed cases were recorded in China from August 1, 2021 to September 30, 2021, following the A-type COVID-19 epidemic prevention and control mechanism. Only 52 cases occurred daily on average, with a daily increasing rate of 0.064%, while in the United States, which adopted B prevention and control mechanism, 8,554,792 cases were diagnosed during the same period, with a daily average of 142,580 cases, with a daily increasing rate of 0.32%, which was 2741 times and 5.1 times that of China, respectively. Therefore, the spread of COVID-19 in the United States is much faster than that in China, the incidence of COVID-19 in the United States during the analysis period was 2.608%, and the mortality rate was 1.13%. In China, the incidence of COVID-19 was 0.00028% and the death rate was 0 during the analysis period. In fact, in China, very few patients died except for severe cases of COVID-19 infection in Wuhan and Shanghai during the outbreak. The incidence of COVID-19 in the United States was 93,142 times higher than that in China. related data in table 2.

**Table 2.** Prevention and control effects of COVID-19 epidemic analysis periods under the prevention and control mechanisms A and B.

Representative Country	Total national population (one hundred million)	Daily average confirmed cases (Example)	Daily increasing proportion of confirmed cases (%)	It takes 100,000 cases (day)	Incidence rate (%)	mortality rate (%)
China (A prevention and control mechanism)	14.1	52	0.064	1924	0.00028	0
The United States (B prevention mechanism)	3.28	142580	0.326	1	2.608	1.13

### 3.4. Analysis of Epidemic Fluctuations Under Different Prevention and Control Mechanisms

According to the analysis period, we calculated the daily confirmed cases in China and the United States, the representative countries with different prevention and control mechanisms of A and B, and obtained the daily increase or decrease percentage of confirmed cases. We used this data to plot daily fluctuations in confirmed cases (Figure 1).

As shown in the figure, the number of daily confirmed cases in the United States during the analysis period was large and the fluctuation range was drastic. The confirmed cases on August 9, 2021 and August 23, 2021 respectively reached 179,443 and 172,837, thus forming the peak and sub-peak peaks in the figure [13]. At the same time also can be seen from the picture, with the passage of time, the outbreak of every wave peak on the wane, the wave on September 27,

2021 of the United States broke out outbreaks, the highest number of confirmed cases is 96273, far below the initial wave analysis. It was much lower than the peak of the epidemic in the initial wave of the analysis period, indicating that the epidemic had a tendency to gradually weaken, which was also in line with the general epidemic law of infectious diseases. And adopts A kind of prevention and control mechanism of prevention and control of new crown pneumonia outbreak, compared to China and the United States dot distribution, epidemic outbreak is weak, the number of confirmed cases increased per day curve for A long time in the lower part of the United States, wave of outbreaks of confirmed cases peak occurred in 2021 more than the day on September 7, the new crown pneumonia cases confirmed 35 cases, 94.44% higher than yesterday Although the epidemic occurred frequently, it was small in scale and easy to control, and did not lead to a major disaster caused by the epidemic.

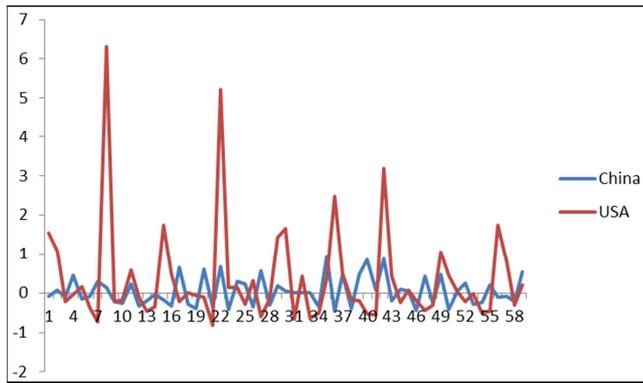


Figure 1. Daily increase and decrease of confirmed cases in the analysis period.

### 3.5. Analysis of the Economic and Social Impact of COVID-19 Under Different Prevention and Control Mechanisms

Some countries, led by the United States, have adopted B prevention and control mechanisms to prevent and control the COVID-19 epidemic outbreak in the early stage, which has achieved extremely poor results. In the United States, which has adopted the type B contract system to prevent and control the COVID-19 outbreak, the COVID-19 outbreak could cause millions of lives lost and economic losses of \$16 trillion [14]. About half of that \$16 trillion is related to lost gross domestic product due to the economic lockdown, while the other half is due to health losses, including premature deaths and mental and long-term health damage, that could result in hundreds of thousands, if not millions, of Americans displaced by the coronavirus leaving the labor force. As the COVID-19 pandemic deepens its impact on the US economy and society, nearly 40 percent of low-income Americans may have lost their jobs. Eventually, the industry stagnated, the industrial chain and supply chain were broken, the economic cycle was blocked, a large number of workers lost their jobs, prices rose, inflation, social intensification, economic recession and difficult recovery. Adopt A kind of prevention and control mechanism of China outbreak in the early stage, because of the new champions league pneumonia powerful effective disease prevention and control measures, the new crown pneumonia incidence is low, the death toll is little, the impact on the economic and social, in 2020 and 2021, A new global champions league pneumonia in popularity, many countries appear the phenomenon of the economic downturn, and the Chinese economy still achieved positive growth, They grew by 1.9% and 8.1%. In September 2022, the GDP increased by 3.9% year on year, fixed asset investment increased by 5.9% year on year, total retail sales of consumer goods increased by 2.5% year on year, and imports and exports maintained a steady growth trend.

## 4. Summary and Discussion

The analysis showed that different prevention and control mechanisms at the early stage of the outbreak brought different prevention and control effects, and the extent of the epidemic's impact on the economy and society was also different.

### 4.1. The Difference of Immune Injection in Different Prevention and Control Mechanisms

Different mechanisms of COVID-19 prevention and control attach different importance to basic immunization. Countries such as China, which has adopted the A-type prevention and control mechanism to prevent and control the COVID-19 epidemic, adhere to the concept of "people first, life first" and attach importance to the vaccination of the vast number of people. Vaccination technology and epidemic prevention knowledge are well publicized, and the government implements free injection. People across the country have widely accepted the COVID-19 vaccine injection, and the action is fast and the injection schedule is fast. By October 26, 2022, the Chinese mainland has received 3,439.299 million doses of COVID-19 vaccine. Many people also received two or three doses of booster immunization, so the average person received 2.5 doses of immunization vaccine, which greatly enhanced people's immunity and self-protection against the novel coronavirus, reduced the risk of infection and incidence, and reduced the occurrence of severe cases and deaths. The United States, which has implemented the B type of COVID-19 prevention and control mechanism, is hesitant about vaccine injection. Some people are skeptical about the immune effect of the injection on the vaccine, and the self-funded injection has greatly delayed the vaccination of the novel coronavirus and reduced the rate of vaccine injection. This increases the risk of infection and the incidence of COVID-19 among the population in the United States. Due to the massive outbreak of COVID-19, the medical system in the United States is overwhelmed, medical resources are scarce and patients cannot get timely treatment, so the number of severe cases and deaths of COVID-19 has increased greatly. Vaccine immunization is a basic work to improve people's resistance to COVID-19, which is worthy of promotion and application. Therefore, countries and regions with a prevention and control mechanism can effectively control the COVID-19 epidemic, while countries and regions with B prevention and control mechanism have low immune capacity, high infection rate, morbidity rate and mortality rate, and the epidemic has caused a deep impact on the economy and society.

### 4.2. The Effect of Different Prevention and Control Mechanisms Is Different

Different prevention and control mechanisms represent different prevention and control effects of countries. Since the outbreak of the epidemic in China, China, which has implemented the A-type prevention and control mechanism, has generally carried out the work of vaccinating people against COVID-19, and the mortality rate is very low. As of October 27, 2022, a total of 258,398 confirmed cases and 5,226 deaths had been recorded, with morbidity and mortality rates of 0.18% and 2.022%, respectively. However, the United States, which adopted the B prevention and control mechanism, received about 503.5 million doses (5,0348,0667) of COVID-19 vaccine on October 20, 2022, even though the epidemic has been circulating around the world for nearly

three years, with 1.5 doses per capita. Only 49.1% of all people eligible for the booster dose received the booster dose. As of October 27, 2022, a total of 99,229,138 confirmed cases and 1,0944,163 deaths had been reported in the US, with the morbidity and mortality rates of 30.25% and 1.1 percent, respectively. The absolute number of cases and deaths is much higher than in China,

#### ***4.3. Different Prevention and Control Mechanisms Have Different Impacts on Local Economy and Society***

Different prevention and control mechanisms the early stage of the outbreak have different effects on economic and social development. Authorities have estimated that the coronavirus outbreak in the United States could cause millions of lives lost and \$16 trillion in economic losses. As the COVID-19 pandemic deepens its impact on the US economy and society, nearly 40 percent of low-income Americans may have lost their jobs [15]. In the end, production is stagnated, industrial and supply chains are broken, the production cycle is blocked, a large number of workers lose their jobs, prices rise, inflation, economic recession, and it is difficult to recover. China, which has adopted the "A" prevention and control mechanism, has taken effective measures to prevent and control the COVID-19 epidemic [16], with a low incidence of COVID-19, fewer deaths and less impact on the economy and society. In September 2022, the GDP increased by 3.9% year on year, fixed asset investment increased by 5.9% year on year, and retail sales of consumer goods increased by 2.5% year on year. Imports and exports have maintained a steady growth trend, and the economy and society have shown a bright future of continuous improvement.

In summary, Analysis shows that in the early stage of the outbreak, decisive and correct prevention and control mechanisms can timely control the rapid spread of the epidemic and achieve good prevention and control effects of the novel coronavirus. the results of this study provide a scientific basis and a typical example of success for the formulation and improvement of scientific and effective infectious disease prevention and control programs and the promotion of advanced infectious disease prevention and control mechanisms.

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## **Biography**

**Li Ming Quan**, male, was born in 1957 with a postgraduate degree in economics, senior animal husbandry division. Long - term engaged in agricultural and animal husbandry economic research work.