

Why did COVID-19 have a bigger impact on the US stock market than the Chinese Stock Market?

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Abstract

This research paper focuses on the influence of Covid-19 on the Chinese stock market and the United States stock market. The purpose of this research is to figure out the differences between the Chinese stock market and the United States stock market when faced with the Covid-19 influence and why the Covid-19 has a bigger influence on the United States stock market than the Chinese stock market. The research includes three stock market indices from both countries in the first 100 days of Covid-19 started. It has two main objectives. The first one is the direct impact of Covid-19 that causes the difference reaction between the Chinese stock market and the United States Stock Market. Second is the indirect impact of Covid-19 on two countries such as lockdown policy (home stay policy) that results in the different stock market changes. We used stock regression as the method to analyze the reason for the difference in the stock market of both countries.

Introduction

In December of 2019, the coronavirus disease 2019(Covid-19) emerged in Hubei, Wuhan, China. Covid-19 is a severe disease that can be easily infected and has a relatively high death rate. Once it emerged, it heavily influenced China and the United States socially and economically.

Different attitudes of both countries

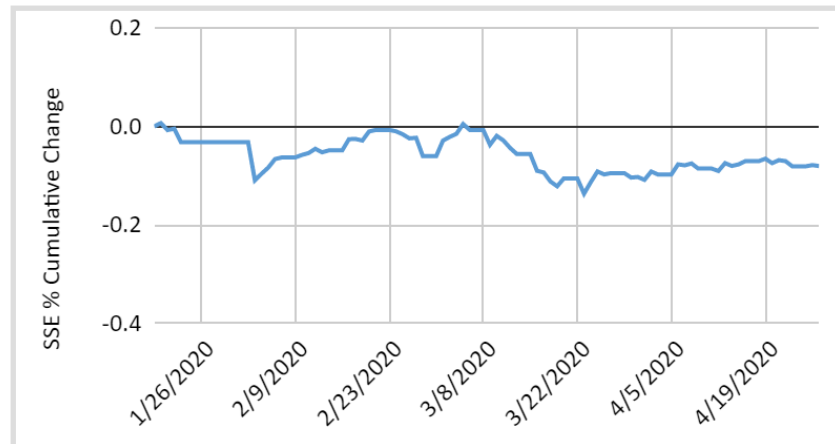
All the markets got shut down in China, and people were forced to stay at home with the most basic supply of households. These activities lead China to reach the minimum of its economy. When the Covid-19 spread to the United States, the government's ignorance caused the most severe International financial panic in 2020. On March 9, 2020, the S&P 500 fell 7% after the opening bell, triggering the first level of the meltdown mechanism. On March 12, 2020, the S&P 500 fell by more than 7% in a short period of time after the opening bell, triggering the first layer of the meltdown mechanism again. On March 16, 2020, the S&P 500 opened down 220.60 points, or 8.14%, triggering the third meltdown of the month. And on March 18, 2020, the S&P 500 fell 177.29 points, or 7.01%, intraday, triggering the fourth circuit break of the month.

The stock markets of both countries were influenced by the Covid-19 as well. However, the changes in the US stock market and the China stock market from the first 100 days show a different pattern. Even though both stock markets had a negative drop at the start of the Covid-19, the following graphs briefly show a more significant impact on the US stock market than the Chinese stock market. The following six graphs are the important indices from the Chinese and US stock markets in the first 100 days of Covid-19. The graphs represent the cumulative percentage change of each day compared to the starting first day. The Chinese stock

market includes the SSE Composite index, the SZSE Composite index, and the GEM index. The United States stock market includes the Nasque index, the Dow Jones index, and the SPX index. Each of the horizontally matched graphs represents similar fields of each country's stock market.

Figure 1

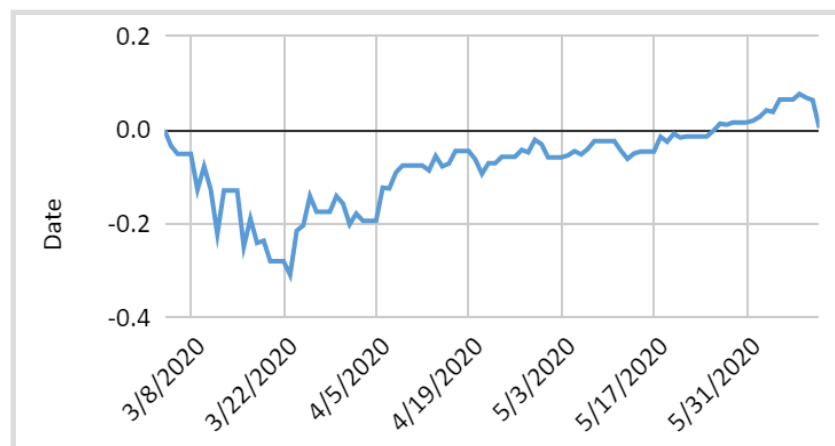
SSE % Cumulative Change



Note. Yahoo! (2021, November 11). *SSE Composite index (000001.SS) historical data.* Yahoo! Finance. Retrieved November 11, 2021, from <https://finance.yahoo.com/quote/000001.SS/history?p=000001.SS>.

Figure 2

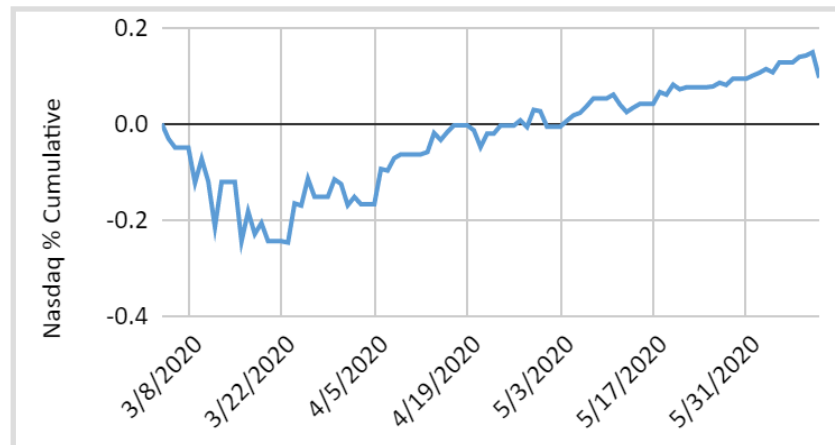
SPX % Cumulative Change



Note. S&P 500 (SPX) historical data. Nasdaq. (n.d.). Retrieved November 11, 2021, from <https://www.nasdaq.com/market-activity/index/spx/historical>.

Figure 3

NASDAQ % Cumulative Change



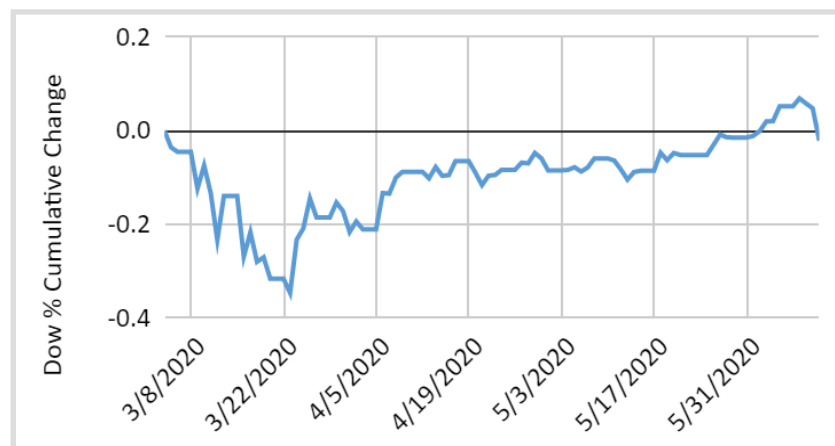
Note. Yahoo! (2021, November 11). Nasdaq composite (^IXIC) historical data. Yahoo! Finance.

Retrieved November 11, 2021, from [https://finance.yahoo.com/quote/%5EIXIC/history?](https://finance.yahoo.com/quote/%5EIXIC/history?period1=1463443200&period2=1621209600&interval=1d&filter=history&frequency=1d&includeAdjustedClose=true)

[period1=1463443200&period2=1621209600&interval=1d&filter=history&frequency=1d&includeAdjustedClose=true](https://finance.yahoo.com/quote/%5EIXIC/history?period1=1463443200&period2=1621209600&interval=1d&filter=history&frequency=1d&includeAdjustedClose=true).

Figure 4

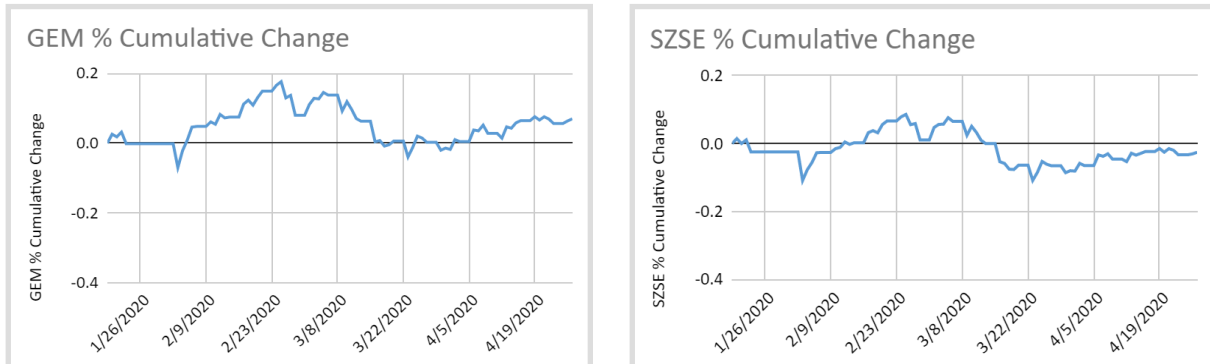
Dow % Cumulative Change



Note. Journal, W. S. (n.d.). *DJIA | dow jones industrial average historical prices - WSJ*. The Wall Street Journal. Retrieved November 11, 2021, from <https://www.wsj.com/market-data/quotes/index/DJIA/historical-prices>.

Figure 5

GEM & SZSE % Cumulative Change



Note. 创业板指 历史交易数据. 行情中心. (n.d.). Retrieved November 11, 2021, from http://quotes.money.163.com/trade/ljsysj_zhishu_399006.html.

COVID-19 has negatively influenced both countries at first. However, three indices of the US stock market have dropped approximately 30% at the most. Meanwhile, the indices of the Chinese stock market have dropped approximately 10% at the most. Thus, through the first 100 days of the Covid-19 pandemic, the United States stock market appeared in a more significant drop in the graphs.

Literature Review

The ongoing pandemic of coronavirus disease 2019 (COVID-19) was first identified in Wuhan, China, in December 2019. However, its variants have resulted in more challenging

situations in other countries, including the United States, Japan, Korea, etc. Due to its transmission via the respiratory route, COVID-19 quickly spread and is defined as one of the deadliest global pandemics in history. The severity of increasing death cases and people's panics have led to disruptions in multiple aspects, not limited to community, society, and economics, including the largest global recession in March 2020. Many studies have searched on the impact of the COVID-19 pandemic on the stock market in general; or, they prefer to search on the influence on one country's economy. Also, they only suggest the influence of the pandemic itself and how effective the pandemic is through the application of mathematical models. However, our research focused more on comparing its influence between the stock market of the United States and China and how these two independent economic organizations interact with each other, and the difference of their reactions.

After the breakout of the Covid-19 pandemic, the researchers from Guangxi University, Nahu A. Sansa, researched the impact of Covid-19 on the financial markets. The data is collected from China and the US stock market, including Dow Jones Index and SSE Index. The research contains data from 1st March 2020 to 25th March 2020. It uses a simple regression model to investigate the impact of the COVID - 19 on the Financial Markets. The research concludes that "there is a significant positive relationship between the COVID - 19 confirmed cases and all the financial markets (Shanghai stock exchange and New York Dow Jones) from 1st March 2020 to 25th March 2020 in China and USA"(Sansa). However, we do not agree with Sansa's conclusion. There are a couple of reasons: First, the research only contains one stock market index from each country, which cannot comprehensively summarize the country's entire stock market. Second, the data is collected from a short period of time that is not representative enough

to show the effect of Covid-19. Third, although the data is collected from the same period, it is not equivalent to the same Covid-19 pandemic impact. For example, in March, the Covid-19 pandemic had different effectiveness in China and the US. Fourth, the research model used simple regression analysis, which only conducted the relationship between stock market indices and the Covid-19 population. However, more factors serve as omitted variables.

Moreover, after the outbreak of the COVID-19 pandemic, many researchers did their research on the impact of COVID-19 on the volatility of stock prices from their countries. For example, the researchers Debakshi Bora and Daisy Basistha researched two stock market indices from India: BSE Sensex Index and NSE Nifty Index, using the autoregressive conditional heteroskedasticity model. The result shows that the stock market, especially the BSE Sensex, became more volatile during the pandemic period. This result means that stock market indices could be effectively influenced by minor factors that did not influence stock market indices before the COVID-19 pandemic. Thus, the COVID-19 not only directly impacts the stock market, but it also brings indirect influences on the stock market by making it more volatile.

Finally, due to the diverse national situations of countries, some researchers include detailed comparison through mathematical analysis between two countries, especially between China and the United States (which are the two countries most affected by the outbreak). In the economic research, “To what extent does COVID-19 drive stock market volatility? A comparison between the U.S. and China,” Xue Gao, Yixin Ren, and Muhammad Umar mainly focused on applying the quantile-on-quantile method to compare the impact of COVID-19 on stock market volatility between China and the United States concerning the oil price functions. However, they include other methods such as wavelet analysis and maximum overlap discrete wavelet transform

in their article to raise their credibility. The statistics of daily cases in both countries reflect the insensitivity of the U.S. market to the pandemic, which is not obvious when the outbreak first took place in the States by triggering four market meltdowns. This is a detailed sensitivity analysis of the stock market in different periods in which the researchers only pay attention to each independent reaction of the stock market. Therefore, they do not show a more specific and stronger statement of which country is influenced by the pandemic. Our research, however, includes specific comparisons between the Chinese market and the U.S., one with the consideration of factors that might cause these divergences. Last, they concluded that the stock market volatility has a positive relationship with the COVID-19 outbreak. Since the stronger the volatility, the more sensitive the stock market, there will be more influential factors that are significant to the market fluctuations, which lays a strong foundation for certain parts of our research.

Data Description

This research includes stock market indices, COVID-19 cases, government financial aid policies, and the lockdown policy data. The stock market indices are the dependent variable of the regression analysis. It includes three stock market indices from both countries. We include the SSE Composite Index, the SZSE Composite Index, and the Gem Index for the Chinese stock market. In addition, we include the Nasdaq Index, the Dow Jones Index, and the SPX index for the US stock market. We define the start of Covid-19 pandemic when there are over 100 cases. Therefore, each stock market index is collected in the first 100 days from the start of the

Covid-19 pandemic. The Chinese stock market data is from 1/19/2020 to 4/27/2020. The US stock market data is from 3/4/2020 to 6/11/2020.

The COVID-19 cases data includes daily new cases and cumulative cases of both countries. Thus, it represents the effectiveness of Covid-19 in each country. The government financial aid policy data includes the date and the amount of each government financial aid to face the covid-19 pandemic. This data is not the focus of this research, but it is used as a supplement of the first hypothesis to make the result more accurate. The lockdown data represents the effectiveness of the lockdown in both countries. We collect lockdown policies in each state of the U.S. and each province of China. We use different percentages for different levels of government regulation on lockdown and calculate the effectiveness of each countries' lockdown policy. And all the data are collected in the same area and same period for comparison.

Hypothesis

1. The U.S. has a larger ratio of covid cases over the national population, which means it went through a more serious situation than China did during the outbreak of COVID-19. The number of infected people in ratio is the factor that causes a bigger impact on the U.S. stock market than on the Chinese one. In other words, the more people get infected by COVID-19, the bigger the impact (negative) on the stock market. Funding from the government could be an omitted variable that impact the regression study.
2. The Chinese and US governments issued different levels of homestay restrictions to control the spread of the disease. A stringent lockdown policy was able to alleviate the

negative impacts of Covid-19, and consequently minimizing the damages incurred to the stock indices.

Regression Test

Simple Regression for the Individual Market Indices

In Table 1, the variable “Cases Per Millions” represents the number of people infected by Covid-19 in a million population. The application of the simple regression to different kinds of indices of the Chinese and US market reveals their correlation with the cumulative COVID-19 cases. Except for the SSE Index, all the Chinese and US stock market indices show positive correlation with the increasing number of COVID-19 cases.

Table 1

GEM Cumulative Verse Cases Per Million

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	0.006800	0.011730	0.579768	0.563401	-0.016477	0.030078
Cases Per Millions	0.000983	0.000239	4.108963	8.25E-05	0.000508	0.001458

SSE Cumulative Verse Cases Per Million

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-0.030386	0.007673	-3.960249	0.000142	-0.045612	-0.015160
Cases Per Millions	-0.000636	0.000157	-4.064053	9.74E-05	-0.000947	-0.000326

SZSE Cumulative Verse Cases Per Million

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-0.019950	0.011017	-1.810862	0.0732262	-0.041812	0.001913
Cases Per Millions	0.000107	0.000225	0.477700	0.633928	-0.000339	0.000553

Dow Cumulative Verse Cases Per Million

	<i>Coefficient s</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-0.177250	0.009110	-19.456266	1.98E-35	-0.195330	-0.159172
Cases Per Millions	3.22E-05	2.83E-06	11.348300	1.48E-19	2.65E-05	3.78E-05

Nasdaq Cumulative Verse Cases Per Million

	<i>Coefficient s</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-0.145338	0.006775	-21.45292	8.37E-39	-0.158782	-0.131894
Cases Per Millions	4.77E-05	2.11E-06	22.616294	1.12E-40	4.35E-05	5.19E-05

SPX Cumulative Verse Cases Per Million

	<i>Coefficient s</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-0.162447	0.007843	-20.711899	1.41E-37	-0.178011	-0.146882
Cases Per Millions	3.52E-05	2.44E-06	14.440003	5.26E-26	3.04E-05	4.01E-05

Stacked Regression without Government Funding

As a method for forming different linear combinations of multiple predictors, stacked regression improved the prediction accuracy by providing more information about the estimation of the dependent variables. The stacked regression in table 2 put all six stock market indices together in one regression. In order to distinguish them, we use three different dummy variables: US dummy, Industry, and Innovative. The regression still reveals a positive correlation between COVID-19 cases and stock market indices. The regression also reveals that the US stock market indices are 10% more volatile than Chinese.

The result of the regression analysis does not meet the expectations. We believe that the regression is not complete yet. There is an omitted variable that we did not consider: the financial aid from the government.

Table 2

Stacked Regression Analysis Without Government Funding

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.01742157	0.00800931	2.1751653	0.03001342
Covid Cases Per Million	0.00155656	0.00021495	7.24156599	1.388E-12
Time	-0.0058269	0.00050568	-11.522782	7.4531E-28
US Dummy	-0.1032186	0.00794458	-12.992334	3.9576E-34
Industry	-0.033002	0.00420667	-7.8451779	2.0335E-14
Innovative	0.05693203	0.00420667	13.5337644	1.5163E-36
Cases*Time	7.0171E-05	8.319E-06	8.43504616	2.5466E-16
Cases*US	-0.0014217	0.00021598	-6.5826467	1.0208E-10

Cases*US*Time	-7.033E-05	8.3295E-06	-8.4439522	2.3792E-16
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Stacked Regression with Government Funding (Predicted Date)

The predicted date means one day before the official releasing time for the government funding. It is helpful because usually, business owners can get the information before the actual announcement to the public in which this hypothetical time improves the accuracy of coefficients.

The second stacked regression shows that the financial aid has boosted the market indices on average 11% during the period. What is more, after we added the omitted variable, the regressions reveal a negative correlation between market indices and variable cases per million. For every COVID-19 case increased in a million people, the stock market decreased 0.1%. Since there is a negative relationship between COVID cases and market indices, the more the COVID-19 cases, the lower the cumulative market indices. The US has a worse scenario than China, which means they have more COVID-19 cases in a million people. Therefore, the final stacked regression supports the hypothesis that the COVID-19 pandemic has a bigger impact on the US stock market than the Chinese stock market because of the number of COVID-19 cases.

Table 3

Stacked Regression Analysis with Government Funding

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.055694	0.008044	6.923729	1.15E-11	0.039896	0.071492

Covid Cases Per Million	-0.00101	0.000302	-3.36356	0.000819	-0.00161	-0.00042
Time	-0.01019	0.000603	-16.9054	1.42E-52	-0.01137	-0.009
US Dummy	-0.10871	0.007238	-15.0183	2.07E-43	-0.12292	-0.09449
Industry	-0.033	0.003824	-8.63039	5.68E-17	-0.04051	-0.02549
Innovative	0.056932	0.003824	14.88833	8.55E-43	0.049422	0.064442
Cases*Time	0.000146	1.01E-05	14.37249	2.23E-40	0.000126	0.000165
Cases*US	0.001161	0.000303	3.831608	0.000141	0.000566	0.001756
Cases*US*Time	-0.00015	1.01E-05	-14.3727	2.22E-40	-0.00017	-0.00013
Government Financial Aid(in predicted date)	0.110211	0.009849	11.19038	1.71E-26	0.090868	0.129553

Note. Covid-19 US state policy database - [openicpsr.org](https://www.openicpsr.org/openicpsr/project/119446/version/V130/view?path=/openicpsr/119446/fcr:versions/V130/COVID-19-US-State-Policy-Database-master&type=folder). (n.d.). Retrieved November 11, 2021, from <https://www.openicpsr.org/openicpsr/project/119446/version/V130/view?path=/openicpsr/119446/fcr:versions/V130/COVID-19-US-State-Policy-Database-master&type=folder>.

Limitations of the Study

The study does not consider the difference in market mechanisms. For instance, the Chinese government has certain policies for circuit breakers, which are not included in the U.S. market. Also, it does not take other influential factors that might impact the volatility of the stock market into account. For example, the death of George Floyd on May 25, 2021, in Minnesota, United States, may have triggered the public's sentiment on race, which further led to the change of the stock market.

What is more, the study only took the first hundred days for each country. However, the Covid-19 pandemic ends within the first hundred days in China, and the U.S. does not. Therefore, there is a possibility that the Covid-19 pandemic impacts the stock market as a whole instead of on a certain time span.

Limitation on the expanded research topic about impact of lockdown policies:

1. The U.S. and The Chinese government used different policies and different standards on lockdown effectiveness. The data of effectiveness of lockdown is defined instead of collected.
2. The Chinese lockdown data is not well organized; there are a lot of missing data on the date and level of lockdown

Conclusion

The study conducts the impact of the COVID-19 pandemic on both the Chinese and the US stock market from the first hundred days of Covid-19 begins.

The literature review generates some knowledge regarding the impact of the COVID-19 pandemic for several countries or from different aspects. Moreover, our research paper provides insights into the influence of the number of COVID-19 cases on both Chinese and US stock markets, which can be employed as an indicator of the dissimilarity of market environments in the study of International Finance.

According to our linear regression tests, the rise of total COVID-19 cases harms both Chinese and US stock markets with the consideration of financial aids. Therefore, the US stock market has worse results than the Chinese stock market because of the worse Covid-19 pandemic and more infected people.

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[+https%3A%2F%2F covid19.who.int%2Finfo](https://voice.baidu.com/act/newpneumonia/newpneumonia/?from=osari_aladin_banner+https%3A%2F%2F covid19.who.int%2Finfo).