

# Coronavirus: epidemiology, macro impacts, freight flows

## Overview

The Wuhan coronavirus outbreak spooked global equities markets and sent Brent crude prices down 9.4% since last Wednesday. In this report, we review the latest epidemiological studies of the outbreak and assess the likely macroeconomic and freight impacts from the disease and government responses to the disease.

As of Monday afternoon, Jan. 27, the coronavirus appears to be more infectious but less deadly than the SARS virus, which proliferated in a 2003 outbreak. However, the quarantining of important industrial cities in China—including Wuhan—and the extension of the Chinese Year Holiday will undoubtedly hamper economic activity and exports.

Already, local officials in Shanghai—the major port nearest to Wuhan and the largest container port in China—have Chinese companies to resume operations prior to February 9, which will crash Transpacific volumes even further. Shanghai had a throughput of 42 million in 2018, and 3.27 million in December 2019. In our view, responses to the coronavirus, while necessary, will act as a multiplier on the already existing barriers to Transpacific trade.

As long as workers are kept from manufacturing plants and transportation infrastructure—and if quarantines are extended to Beijing and Shenzhen—Chinese trade will come under increasing pressure. Current models suggest that the virus may be contained in two months.

## Coronavirus infections and fatalities

2003 SARS infections	8,098
2003 SARS fatalities (rate)	774 (9.5%)
2012 MERS infections	1,329
2012 MERS fatalities (rate)	525 (32%)
2019-nCoV infections	2,886
2019-nCoV fatalities (rate)	81 (2.8%)

## Chinese infections by province

Hubei	1,423
Guangdong	151
Zhejiang	128
Henan	128
Chongqing	110

## International infections by country

Hong Kong	8
Thailand	8
Macau	6
Australia	5
Taiwan	5

### JP Hampstead

Director, Passport Research  
[jphampstead@freightwaves.com](mailto:jphampstead@freightwaves.com)  
 (865) 388-1708

### Hunter Carroll

Research Associate  
[hcarroll@freightwaves.com](mailto:hcarroll@freightwaves.com)  
 (423) 650-5702

### Tony Mulvey

Research Associate  
[tmulvey@freightwaves.com](mailto:tmulvey@freightwaves.com)  
 (423) 637-1940

## Epidemiology

We conducted a review of the 11 most recent epidemiological studies on the Wuhan 2019-nCoV ('coronavirus') available on bioRxiv.org, an open-source site where biologists upload pre-prints of academic papers prior to peer review.

While cautioning that the outbreak is still in its early stages and treating Chinese government reports with some skepticism, it appears that the coronavirus originating in Wuhan is more infectious, but less deadly, than the SARS coronavirus that spread in the 2003 outbreak. The Wuhan coronavirus genome is 96% identical to a bat coronavirus, suggesting that bats may serve as the reservoir species of the Wuhan coronavirus.

Epidemiologists quantify the infectiousness of a disease by its 'basic reproduction number', or  $R_e$ , where an  $R_e$  value of 1 is a self-sustaining infection (each patient infects one other person), and anything below 1 represents an infection that will naturally fizzle out. Early calculations of very high  $R_e$  values for the coronavirus—from 3.3 to 5.47 according to a study posted January 24—have been revised downward to roughly 2.2, although another study we find credible put the Wuhan coronavirus  $R_e$  at 2.9. For reference, the SARS  $R_e$  value was estimated at 1.77-1.85.

The  $R_e$  value of a virus tends to fall, of course, as control measures such as quarantining and patient isolation are implemented—as authorities respond to the outbreak and take action, subsequent patients are able to infect fewer and fewer additional patients.

Some epidemiologists have attempted to predict the overall number of infections and deaths caused by the current Wuhan coronavirus with mathematical models. One study said the outbreak may lead to a total of 8,042 patients and 898 deaths (fatality rate of 11%, well above the currently observed rate).

Severe control policies will further reduce the basic reproduction number of the virus and limit the death toll, but these very policies will affect Chinese economic activity and freight patterns. Consumer spending, manufacturing activity, and transportation and logistics will all be negatively affected by quarantines, restrictions on freedom of movement, and the extension of the Lunar New Year holiday.

In what follows, we attempt some preliminary estimates at macroeconomic and freight-specific effects.

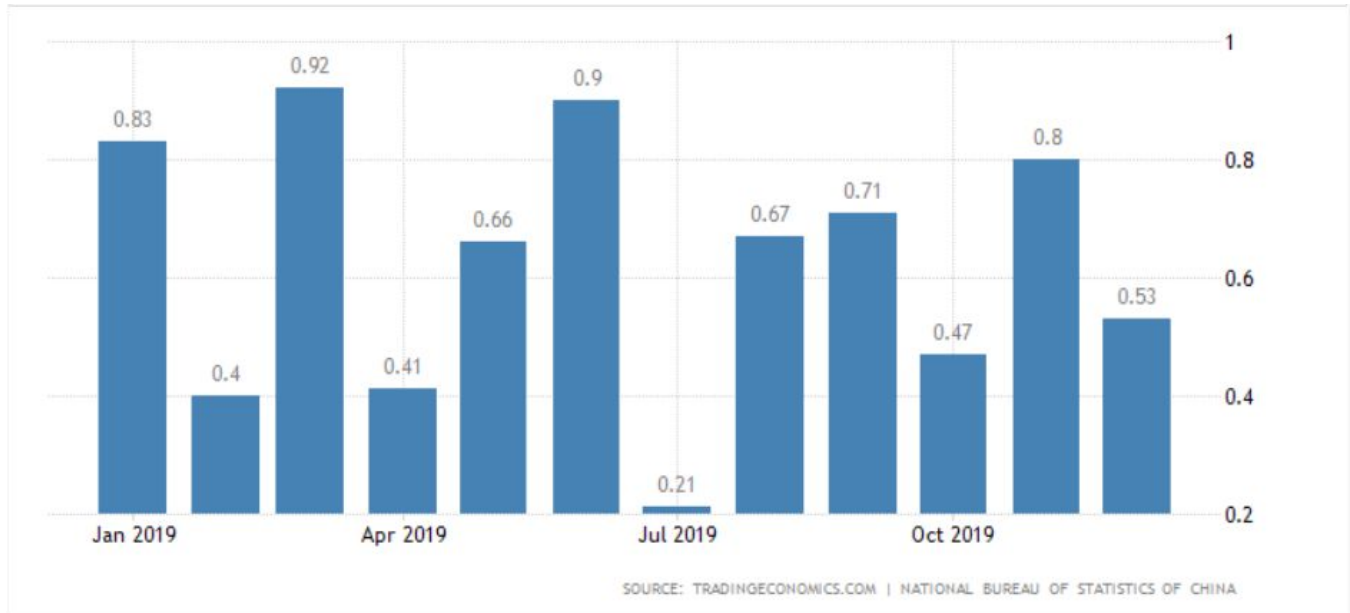
## Macro impacts

The 2019 Novel Coronavirus (2019-nCoV) has reached epidemic levels in China. The rapid spread of the virus has outpaced the Guangdong/Hong Kong SARS outbreak in 2002/2003.

The rapid spread of 19-nCoV will significantly impact the Chinese economy that is far more mature and globally connected than the China of 2003.

January 27, 2020 | 6:50 PM EST

When the SARS outbreak occurred in late 2002 through July 2003, the economy was hit hard and quickly. Retail sales in Hong Kong fell 8.2% month-over-month in April 2003, two months after the first case of SARS was confirmed in Hong Kong. Hong Kong saw tourism numbers drastically dip during the SARS outbreak as individuals were informed to not take unnecessary trips to the region.



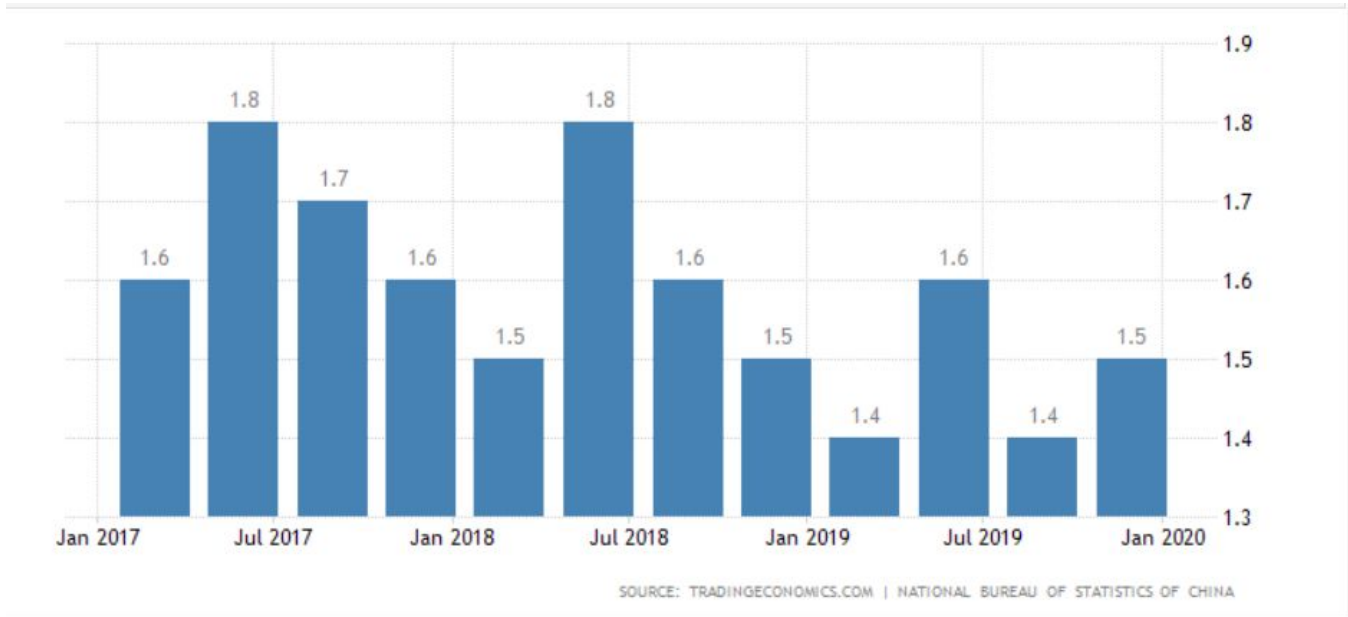
(Chart: China retail sales growth month-over-month.)

The wider Chinese economy felt the effects of the SARS outbreak, too, as retail sales fell 6.8% year-over-year in Q2 2003. China’s GDP growth slowed by 18% sequentially.

The number of suspected cases of 2019-nCoV is growing at a rate faster than either SARS or MERS as the virus is showing that it is potentially contagious prior to presenting symptoms, unlike SARS.

As the Wuhan coronavirus spreads through China and the rest of the world, more people will stay indoors, producing and consuming less.

We expect retail sales numbers in China to suffer setbacks until indisputable news of containment is widely disseminated. This early into the outbreak, the overall risks to the economy are still unknown. Once the risks are more established and we have better data to calculate the virus’ Re and lethality values, consumer spending will return to normal, as it did even before the SARS outbreak was over.



(Chinese GDP growth Q/Q)

The overall Chinese economy may see growth slow or turn negative in the first quarter of 2020 as the outbreak persists. Large sections of the goods economy, including industrial production and retail consumption, will slow down, especially if the virus takes hold in China’s coastal cities.

The timing of the virus, during the Lunar New Year, could have been worse. Chinese exports essentially shut down during the holiday as workers return to their home villages; we expect this year’s drop in export volumes to be deeper and longer than in years past. The official holiday period has already been extended two days, now into early February, which will further negatively impact trade.

In our view, the likely impacts to the United States’ economy include a longer and deeper drought of outbound freight from port freight markets Los Angeles and Long Beach. Retailers in the United States will be forced to run down their inventories to meet sales demand and on-time fulfillment service metrics could suffer if the outbreak persists and inventories are not replenished.

**Freight flows**

We have written extensively about the trade war’s disruption on freight lanes over the past several months. As we finally saw light at the end of the tunnel with a signing of the Phase 1 Trade Deal, a new coronavirus hits central China.

Freight volumes will likely be affected short-term but it is unclear what the impact will be on freight lanes. Over the past couple of years we have seen companies shift their production from China to other Southeast Asian nations due to the trade war. If the Chinese government proves to be a dishonest or incompetent actor in handling the Wuhan coronavirus, the outbreak could accelerate this shift away from China.

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The coronavirus outbreak coincides with the Lunar New Year, one of China's most important holidays. China has extended the holiday through February 3rd so that vacationers don't have to travel again while the coronavirus is spreading rapidly; Officials are hoping that this will help slow-down the spread.

In Scorpio Bulker's conference call, President Robert Bugbee said that there has yet to be an impact on dry bulk volumes. We believe that this will likely change as the virus continues to spread across China and into the rest of the world.

"The saying used to be: when the U.S. sneezes, the world catches a cold; you could argue today that when China sneezes, the world catches a cold," a transport and logistics M&A advisor said to us today. "The coronavirus is really a multiplier effect on the already-ailing China-U.S. trade relationship. Ocean, air, logistics, and indeed all companies will be impacted where crossborder China-U.S. trade is a significant part of the business."

China has quarantined a total of [17 cities with a population of more than 50 million](#). The quarantines haven't shown up in the trade data yet, but they will. If quarantines expand to major port cities, they will have pronounced impacts on trade. The quarantines, for instance, include all commercial vehicles—including trucks—which would make it impossible for freight to get in and out of quarantined ports.



(Chart: FreightWaves SONAR. Prices for eastbound Transatlantic TEUs and air cargo rates from Hong Kong to North America in USD).

Air rates from Hong Kong to North America slid for most of the last two months of the year which continued into 2020. They have slightly increased over the past week. Maritime rates from China to North America West Coast have been in a trend up over the past month and a half as steamship lines remove capacity from the lane and void sailings.

Again, in our view, the most significant impact to freight will be a drought of freight inbound to North American West Coast ports and outbound from those markets, deeper than what's typical for Q1 and potentially lasting much longer than what is typical.