

Coronavirus Effects on Transportation



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Executive Summary

We know from experience with infectious diseases that new strains can travel quickly around the world. Since the novel coronavirus was discovered in China in December and found on cruise ship passengers, officials and the public have been concerned about its spread and any resulting impacts (Figure 1).

Transportation industries are feeling effects but the extent of impacts depends on how quickly affected manufacturers can recover, and indications are that recovery is well under way and impact on supply chains will be noticeable but limited. Maritime shipping and aviation are experiencing the most effects. Rail will also be affected, with trucking likely to have lesser impacts. Domestic auto manufacturers are likely to see delays or increased shipping costs but auto dealers are optimistic that inventories will not be affected.

Results for transportation providers are mixed. Public transit in China saw significant reduction in ridership, so domestic agencies are implementing disinfectant and other programs to keep travelers safe. Ride-hailing company Lyft feels it is seeing riders coming over from public transit, while Uber is preparing for possible ridership reductions.

Governments, companies, and individuals have been quick to take action to prevent or reduce effects of infection. Amazon instructed its global workforce to avoid nonessential travel. Several major conferences and events have been canceled or moved online only. Consumers are seeing effects such as product shortages but these so far are more demand-driven than supply issues. Many companies are developing telecommuting plans or other contingency approaches.

As the spread and severity play out in real time, transportation and mobility are expected to adjust.

Confirmed
96,688

Deaths
3,304

Critical
7,258

Recovered
53,710

Figure 1: COVID-19 impact as of 3/5/20.
Source:
<https://covid2019.azurewebsites.net/>

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Introduction

Coronaviruses were discovered in animals in the 1930s and in humans in 1965.¹ Coronavirus effects on people range from viruses such as the common cold, estimated to have passed from animals to humans some time in the last 200 years,² to the Severe Acute Respiratory Syndrome (SARS) coronavirus, which was identified in 2003 and has a fatality rate of at least 10 percent but has no currently known circulation³ (SARS spread to 24 countries but there have been no known cases reported since 2004).⁴

A pneumonia outbreak in Wuhan, China in December 2019 led to the diagnosis of a previously unidentified virus, coronavirus 2019-nCoV (hereafter COVID-19).⁵ The virus is responsible for more than 200 deaths and 10,000 cases in the first two weeks.⁶ Figure 1 on the preceding page provides the status of COVID-19 as of March 4, 2019.

History tells us that infectious diseases can and will spread rapidly around the world, facilitated by the ability to travel by airplane. Examples include Influenza H1N1 identified in Mexico in 2009 and spread worldwide; NDM-1, identified in India in 2009 and found in 28 countries; and SARS-CoV, discovered in China in 2002 and found in the USA and other countries.⁷ Global air travel has increased more than ten-fold since SARS.⁸

Effects on Transportation

The appearance and spread of COVID-19 affects transportation of people and goods around the world. Amazon instructed its 798,000 employees worldwide to avoid nonessential travel.⁹ Twitter is “strongly encouraging all employees globally to work from home if they’re able”¹⁰ and, along with Salesforce, has prohibited most U.S. employees from flying domestically on business.¹¹

Maritime Shipping

Outbound loaded containers shipped from China to the U.S. fell from 3,200 per day to about 1,830 per day for the week ending February 28.¹² The Ports of Los Angeles, Long Beach, and Oakland expect import volumes to drop noticeably this year as a result of COVID-19.¹³ About half of the shipments in and out of the Port of Los Angeles involve China. The port saw a 25 percent reduction in February and notes that it expects traffic to recover but have effects such as bottlenecks caused by a resulting backlog of containers to be shipped.¹⁴ The Port of Baltimore is reducing container terminal operating hours due to the decline in incoming cargo, with the disruption expected to last a few months.¹⁵ Ports from South Carolina to Florida are preparing for reduced trade.¹⁶ Georgia ports anticipate a reduction of up to 40 percent in incoming shipments in March and April.¹⁷ The

Port of Mobile experienced a five percent reduction in February and anticipates a reduction of up to 25 percent in March.¹⁸

First quarter cargo volumes at U.S. ports could be down 20 percent or more over last year, which port officials are attributing to COVID-19-related supply chain disruptions.¹⁹ Shippers and logistics companies were expected to discuss the issue at the annual Trans Pacific Maritime (TPM) conference in Long Beach, which has now been canceled due to COVID-19 concerns.²⁰

While negative effects are anticipated for container and dry bulk ships, tankers that carry products like oil, where demand changes faster than supply, will experience a temporary surplus.²¹

Domestic companies dependent on Chinese manufacturers are being affected by backups in the supply chain, constricting inventories. A San Diego company that makes board games reports a two to six week delay but expects the situation to even out before the holiday season.²² While some companies are seeking other sources in countries like Mexico, retailers are concerned that in a prolonged disruption some products may not be available as soon as mid-April.²³

There are signs that recovery has started in China. One observer believes that Chinese economic activity generally should return to normal by late March.²⁴ Maersk estimates that Chinese factories are now operating at about half capacity, “ramping up to around 90 percent of capacity by the first week of March.”²⁵ French container transportation and shipping company CMA CGM announced that “Manufacturing activities are gradually picking up, more port workers and truck drivers are returning to their posts, and cargo flow is easing up at the major coastal ports. In short, business operations have now entered the recovery phase.”²⁶ Cargometrics reports that Chinese shipping exports have returned to “the seasonally expected range” as shown in Figure 2.²⁷

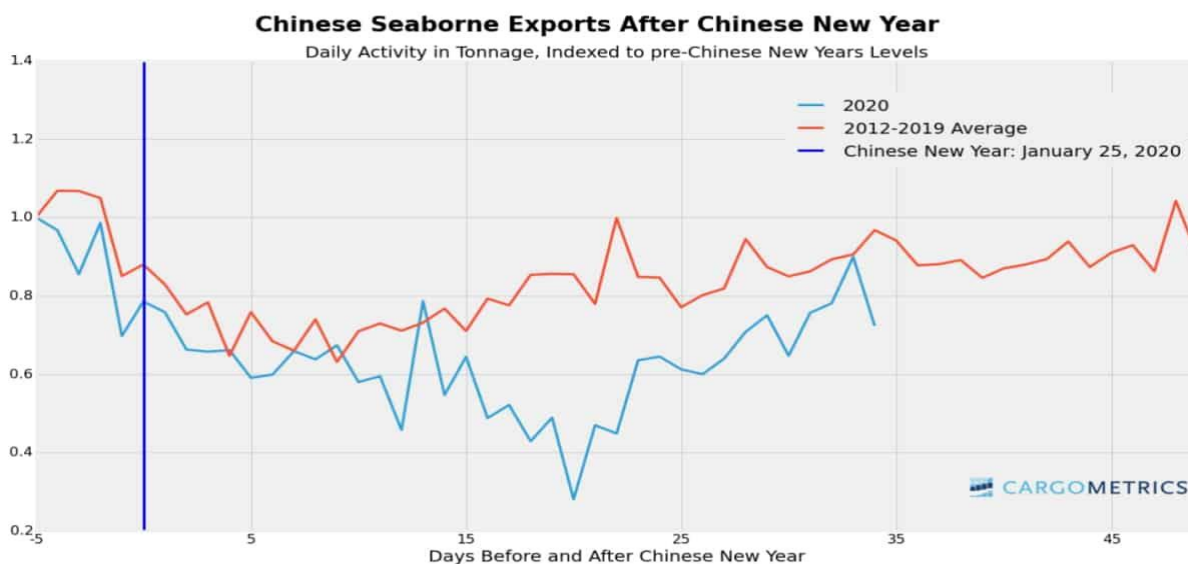


Figure 2: Chinese Seaborne Exports After Chinese New Year. Source: CargoMetrics, <https://www.freightwaves.com/news/china-cargo-flows-rapidly-return-to-pre-COVID-19-levels>

Passenger Ships

The cruise ship Diamond Princess left Yokohama, Japan on January 20, 2020. Ultimately, 542 passengers and crew were diagnosed with COVID-19, accounting for more than half of the cases confirmed outside of China at the time.²⁸

The first California resident to die from COVID-19 is thought to have been exposed on a cruise ship travelling from San Francisco to Mexico.²⁹ Cruise lines are enhancing screening, canceling or adapting sailings and implementing precautions. Some are allowing customers to rebook cruises for later dates without financial penalties.³⁰ The U.S. Coast Guard is assessing if inbound ships have visited a COVID-19 affected country among the last five ports of call³¹ and denying entry to vessels carrying anyone that has been to China in the previous 14 days.³²

Aviation and Air Travel

United, Delta, and Hawaiian Airlines are reducing or suspending services to certain Asian countries, including flights from/to the U.S. mainland. Air freight companies are also reducing flights.³³ Attendees at a conference of airplane financiers and lessors noted that passenger and cargo flights in China have greatly decreased but expect the ultimate result will be like the SARS virus outbreak, where air traffic in the Asia Pacific area dropped drastically for three months but “largely recovered within six months.”³⁴ According to the International Air Transport Association, the SARS outbreak cost \$29 billion in global airline revenue, concentrated in the Asia-Pacific region, and took nine months to recover.³⁵ Some airlines are preparing for loss of revenue by implementing hiring freezes and reducing flights (Lufthansa, British Airways).³⁶

The Centers for Disease Control and the Department of State maintain current travel advisories on their respective public websites.

Rail

Freight railroads are uncertain of how they will be affected but are preparing for a possible reduction in traffic followed by an increase in the last half of the year.³⁷

Truck

Truckload freight marketplace operator DAT observes that imports account for a small percentage of overland freight, so the effects will be blunted for the trucking industry.³⁸

Automotive Supply Chains

Automakers including Volkswagen³⁹ and Tesla⁴⁰ have experienced some suspension of production at foreign factories. Auto sales in China fell 92 percent in the first half of February compared to the same period in 2019, and the China Association of Automobile Manufacturers expects a yearly decline of 5 percent assuming the virus is contained before April.⁴¹ Vehicle and part production are being disrupted but the extent and duration are currently unclear.⁴² General Motors plants in

Michigan and Texas may experience effects from production outages.⁴³ Some suppliers are shipping parts from China to Toyota's North America plants by airplane.⁴⁴ U.S. autodealers do not expect the virus to affect sales or availability of vehicles or parts.⁴⁵

Transportation Network Companies

The ride-hailing industry, generally referred to as transportation network companies (TNCs), are noting concern. Uber has acknowledged that COVID-19 poses a material risk to the business⁴⁶ and has reduced the number of airport pickups.⁴⁷ Lyft provides sanitizers at driver service locations and airport queues. Two Uber drivers in Mexico unknowingly transported an infected passenger; Uber suspended 240 passengers who may have been subsequently exposed.⁴⁸ While there are anecdotal reports about taxi and TNC drivers avoiding airports,⁴⁹ taking extraordinary precautions (Figure 3), or being selective about passengers,⁵⁰ and ridership declines in foreign countries,⁵¹ there are no domestic ridership numbers available publicly to gauge possible impacts. Lyft, which only operates in North America, sees risks from COVID-19 primarily as threatening the supply chains for scooter and bike-sharing and believes it is benefiting from people now choosing Lyft over public transit.⁵²



Figure 3: Plastic Separates TNC Driver and Passengers. Source: <https://twitter.com/evadou/status/1231157938527461377>

Public Transportation

Passenger traffic at Beijing's rail and subway stations dropped 82 percent by February 18, although travel was also impacted by the Lunar New Year holiday.⁵³ The New York Metropolitan Transportation Authority plans to disinfect trains and buses every 3 days.⁵⁴ The American Public Transportation Association (APTA) is serving as a best practices repository for transit agencies, sharing information online⁵⁵ and through webinars.⁵⁶

Effects on Going Out in Public

Conferences and Events

A number of conferences that attract thousands of attendees are being canceled or postponed, with the action being attributed to COVID-19 concerns.⁵⁷ These include San Francisco’s Game Developers Conference,⁵⁸ Houston’s CERAWeek,⁵⁹ and Denver’s American Physical Society March Meeting.⁶⁰

The South by Southwest (SXSW) conference is an annual event in Austin, Texas that had over 70,000 people attend in 2019.⁶¹ This year, companies such as Intel, Twitter, and Facebook⁶² have announced that they will not send employees to the conference, and Twitter’s CEO canceled his keynote presentation.⁶³ About 50,000 people have signed a petition to cancel SXSW.⁶⁴

Art shows in China and Hong Kong are being canceled and moved online to digital galleries.⁶⁵ Movie theater closures in China resulted in a loss of \$200 million over two months and affected American studios whose film openings, such as Paramount’s “Sonic the Hedgehog” and Eon Production’s “No Time to Die,” were canceled.⁶⁶ The National College Players Association has called for canceling events that put players in contact with crowds and raised the possibility of holding the NCAA’s March Madness Tournament without audiences.⁶⁷ Portland Trailblazers player C.J. McCollum said “I am officially taking a break from signing autographs until further notice.”⁶⁸

Daily Activities

Some consumer product shortages are attributable to a COVID-19 driven spike in demand. Hand sanitizers and face masks are in short supply or unavailable, causing stores like Kroger to limit sales.⁶⁹ Amazon, Walmart, and eBay third party sellers have significantly raised product and shipping prices.⁷⁰ Costco Online shows several popular brands of bath and facial tissues to be out of stock (Figure 4).⁷¹

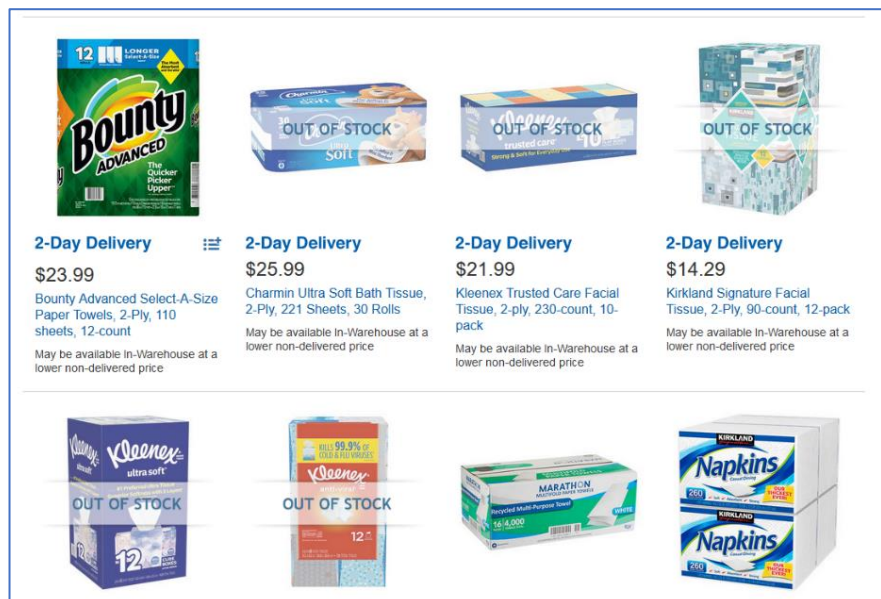


Figure 4: Out of stock facial tissues. Source: <https://www.costco.com/tissues-paper-towels.html>

Realtors in Seattle are reporting a drop in demand and a change in how homebuyers approach house hunting. Some customers are asking to meet agents somewhere other than a public place like a coffee shop. Some sellers with concerns about strangers in their homes are cancelling listings or moving home tours online.⁷² In China, food delivery drones and robots are being used to avoid direct human contact,⁷³ while in America some Chinese restaurants have seen declines in the number of customers (Figure 5).

Governmental Response

The United Kingdom estimates that up to a fifth of employees could be absent from work in late March/early April and requires all arriving vessels from foreign ports and certain arriving flights to certify that passengers are well.⁷⁴ The Centers for Disease Control advise employers to send sick employees home, perform routine environmental cleaning, and follow the latest CDC travel guidance.⁷⁵

Federal and state laws typically authorize certain public officials to limit or restrict transportation, including closure of major traffic generators.⁷⁶ President Trump told reporters that he is not considering restricting domestic travel.⁷⁷ Los Angeles County declared a state of emergency and may prohibit spectators at sports events or cancel the events.⁷⁸ New York City has advised its citizens that they do not need to limit travel within the city, avoid gatherings or public transportation, or change how they get or prepare food, but that the situation is rapidly changing and they should watch for updates.⁷⁹

Conclusion

Impacts from COVID-19 are being felt across a number of industries, some more extensively than others, and are expected to increase as international supply chain effects are felt and the public reacts to the spread of infection. The severity of transportation impacts will depend on the abilities of manufacturers to maintain inventories, government agencies to manage exposure, and the workforce to adapt to rapidly and sometimes drastically changing conditions during the coming weeks. The public and private sectors are working together to provide current information, including steps to reduce effects, improve resilience, and speed recovery, which could come as soon as April or May.



Figure 5: Chinese restaurants seeing business decline. Source: https://twitter.com/Femme_Foodie/status/1235252330251063299

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