

## EXPLAINER

# COVID-19 and SARS: An Epidemiological and Economic Comparison



COVID-19 is exacting a heavier toll on public health than its earlier coronavirus cousin SARS. Photo credit: ADB.

*The SARS outbreak in 2003 provides insights on how we can mitigate the health and economic impact of COVID-19.*

## Introduction

The novel coronavirus disease (COVID-19), which first emerged in late 2019, has become a global pandemic. Much is still unknown about SARS-CoV-2, the virus that causes it, and its destructive potential, but from the information known at this point, several facts are pertinent. First, it belongs to the same family of coronaviruses that cause SARS (severe acute respiratory syndrome), which spread in a global pandemic in 2003, and MERS (Middle East respiratory syndrome) that appeared in 2012 and continues to persist, mostly in the Middle East with other occasional hotspots elsewhere. Like these diseases, the main symptoms of COVID-19 appear in the upper respiratory system and it has most often more potent symptoms in older patients.

Second, and most importantly, the global mortality rate of 6.6%, based on 1,991,562 reported cases and 130,885 deaths as of 16 April, is significantly lower than the 10% of SARS and 35% for MERS according to the United States Center for Disease Control and Prevention (CDC). Furthermore, 6.6% may be a substantial overestimate. For example, a scientific analysis of cases aboard the Diamond Princess cruise ship yielded an estimate of 1.2%.<sup>[1]</sup> However, much uncertainty remains about reporting of caseloads. Also, as the disease is spreading to low-income and low middle-income countries with limited public health systems, the mortality rate may rise significantly.

While we probably have an accurate count of the number of people who died from the disease in some of the countries affected, we do not know the number of people who were infected, since many display only mild symptoms. The current death rate among reported Chinese patients is about 4%, but it is likely that some milder cases have not yet been diagnosed as diagnostic resources are being prioritized for those who are symptomatic (and in many countries only for those who are severely ill). Outside of the People's Republic of China (PRC), the mortality rate among reported cases is currently about 6.7%.

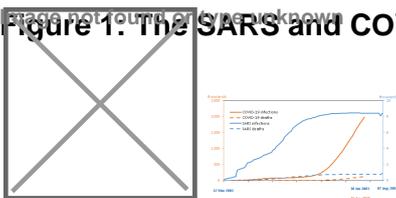
Third, even though it is of zoonotic origins (emerging from animal hosts), it is by now being spread through human-to-human contact. Its infection rate appears higher than SARS (and much higher than MERS) but not as high as the seasonal flu. Its infection rate may be as high as the flu only if there are a lot of undiagnosed cases (some epidemiological modelling suggests that).

Fourth, comparisons of this event with the deadly 1918–1919 flu pandemic are unwarranted. This is because that earlier flu virus was both infectious and very deadly, it affected most severely prime-age patients, and the state of the global health system at the time was drastically inferior to today's.

## Is COVID-19 the same as SARS?

SARS emerged in November 2002 and infected individuals across 26 countries around the world during the course of several months. Like COVID-19, it appears to have originated from animal markets. The SARS virus was contained relatively rapidly, ultimately infecting around 8,500 people with a mortality rate of around 10%. As mentioned above, the preliminary evidence seems to suggest that the COVID-19 mortality rate is much lower than SARS though it has managed to spread further and infect more people (see Figure 1). This is partly because there are a lot of mild or asymptomatic infections of COVID-19, so that the sick cannot be identified as rapidly and isolated. In these cases, carriers continue to spread the virus, not aware they are infected. Some estimates suggest there might be tens of thousands of carriers like that.

Figure 1: The SARS and COVID-19 Infection and Death Numbers Compared



SARS = Severe Acute Respiratory Syndrome.

Source: ADB calculations using data from CEIC and World Health Organization (accessed 17 April 2020).

The SARS outbreak did not lead to any long-lasting damage to public health, except of course to the families of those who died. Affected national health systems actually learned from the experience and improved their response capacity. This is in contrast to MERS, which appears to be entrenched and re-emerges in new clusters of infections (fortunately, it is less infectious). It is not yet clear whether COVID-19 will end up like SARS (with no long-term impact on health expenditures) or MERS (some need for long-term spending on prevention and treatments) or become a recurring epidemic, and what will be the

interactions between the public health prevention efforts targeting the seasonal flu and COVID-19.

Lastly, one big epidemiological difference between COVID-19 and SARS is that while SARS spread primarily in the PRC, COVID-19 has reached all corners of the world. By late March 2020, the US had the largest number of cases, while the disease showed signs of receding in the PRC. Other countries that suffered large outbreaks included France, Germany, Iran, Italy, the Republic of Korea, Spain, Switzerland, the United Kingdom, and caseloads have been on the rise in Japan and in most developing countries worldwide, where testing is substantially less widespread. The difference is partly due to the highly infectious nature of COVID-19 and partly due to closer links between countries. COVID-19 has not yet run its full course and its future epidemiological trajectory is highly uncertain. What is certain is that it is exacting a far heavier toll on global public health than its earlier coronavirus cousin SARS.

SARS was contained relatively rapidly, but the epidemic caused very significant economic losses. These economic costs did not stem from the 8,500 people who were directly infected. The economic effect of SARS occurred by changing the behavior of hundreds of millions of individuals who sought to avoid becoming infected by the virus, and by corporations and governments who implemented various changes to their operations by instituting travel bans for example. People changed their daily routine, such as staying home rather than going out to restaurants and shopping malls. These changes ended up causing much of the economic dislocation.

COVID-19 poses an incomparably larger risk to global public health and world economy. Though less deadly than SARS, COVID-19 has infected almost the entire world whereas SARS was largely confined to the PRC and a few other hotspots. The number of COVID-19 confirmed cases and fatalities are of an altogether different magnitude than the figures for SARS.

## What can we learn from the SARS outbreak?

Nevertheless, some lessons from SARS remain valid for COVID-19. While news headlines are dominated by the number of new cases and fatalities, as was the case with SARS, the economic impact of COVID-19 does not directly stem from those who are infected. Instead, they stem from the containment policies that governments put in place to contain the disease, in particular community quarantines and travel bans, as well as precautionary behavior of individuals. All of these will be amplified many times over since COVID-19 is a much bigger epidemic than SARS, implying much larger overall economic damage.

There are four main channels through which COVID-19 will affect economies in Asia and beyond. First and foremost, the service sector, in particular the leisure, hospitality, and retail industries, is hit very hard as people stay home. Domestic tourism also suffers. Second, worldwide travel bans exact a heavy toll on international tourism. Countries that attract a lot of foreign tourists, such as Maldives, Palau, and Thailand, take a bigger blow, but the effect on tourism will reverberate globally. Third, COVID-19 disrupts global supply chains and thus manufacturing sectors. This is especially important for Asia, where countries form a regional production network—i.e. Factory Asia—anchored around the PRC. Fourth, the draconian containment policies may induce credit defaults by businesses and households,

causing financial sector distress and even a financial crisis.

Furthermore, if the disease persists for an extended period, as is currently widely expected, other long-term effects will kick in. The heavy burden of taking care of COVID-19 patients may compromise the capacity of hospitals to provide adequate care for other patients, thereby harming the overall health of the population. The COVID-19 crisis may have other long-term effects on the world economy. For example, the crisis may accelerate trends toward self-sufficiency and away from free trade. Heavy dependence on imports of medical supplies and other personal protective equipment (PPE)—especially those needed for COVID-19, such as masks and ventilators—may be used by some to advocate economic nationalism and protectionism.

## Is social networking good or bad for this crisis?

Fear, propagated and amplified by social media, exacerbates the economic damage from COVID-19. Panic today travels much more widely and deeply because of social media, which was much less developed during SARS. Social media has allowed for the propagation of many myths about COVID-19—e.g. drinking water can flush coronavirus from your system or young people cannot get infected—that can potentially undermine efficient public response to crises.

At the same time, social media and more broadly information and communication technology (ICT) can also mitigate the negative effects of COVID-19. Social media is being used to alert millions of residents to community quarantines, curfews, and other relevant information. And, work-from-home arrangements adopted by companies would simply not have been possible without ICT. Online shopping substitutes for trips to the mall and distance learning substitutes for classroom lectures.

## How can we recover from this crisis?

Forceful fiscal and monetary policy response of governments are reducing the negative impact and preparing the ground for a quicker and more complete recovery.<sup>[2]</sup>

Finally, while COVID-19 is a once-in-a-lifetime global crisis, if society and government work closely together to fight COVID-19, there is every chance of defeating the disease and reviving the economy. One prominent example is government-mandated community quarantines and social distancing restrictions. They are proving to be effective in containing the coronavirus in many countries, especially if the public adheres to them and stay home.

<sup>[1]</sup> <https://www.medrxiv.org/content/10.1101/2020.03.05.20031773v2>

<sup>[2]</sup> <https://www.adb.org/publications/build-back-better>

# Resources

T.W. Russel et al. 2020. Estimating the Infection and Case Fatality Ratio for COVID-19 Using Age-Adjusted Data from the Outbreak on the Diamond Princess Cruise Ship. *Eurosurveillance*. 25 (12).

World Health Organization. Coronavirus disease (COVID-19) Pandemic.



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