

The Development of the Global Pandemic¹

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The trend of global spread, from January to August 2020, is from East and South East Asia to Europe and North America, and onto Eurasia, South Asia and Latin America. Whilst China was the original epicentre, the U.S. has stayed the longest in the top-10 infected regions, followed by Brazil. Global cooperation has been put to the most severe stress test.

The COVID-19 outbreak had its first cases in Wuhan, China, in early December 2019.² The World Health Organization (WHO) declared the outbreak a pandemic on 11 March. This chapter outlines the development of the COVID-19 pandemic from its initial phase in December 2019 until 18 September, the date global cases of COVID-19 passed 30 million (30,232,252), reporting 946,778 deaths.³ The overall death rate is about 0.031.⁴ As shown in Figure 1.1, the highest point of the daily new cases reached 314,271 on 18 September, and the daily confirmed number goes up and down over time with an overall upward trend. Figure 1.2 shows the global deaths per day. The figures are of a relatively low level initially, with a daily average of 81 deaths from 23 January to 9 March. The number has been on the rise from March to April, however. It goes lower thereafter throughout May but bounces up again since middle of June. The highest record of daily deaths is 10,491 on 16 April, the only five-digit number since January.

Figure 1.3 depicts the pattern of the upward climb of cumulative cases, where the line steepens from the late March to exceed 20 million on 11 August, and 30 million on 18 September. The total confirmed cases globally first reached 100,000 on 7 March. Then quickly in just 27 days it reached 1 million on 3 April. Speeding up, the number surpassed 2 million on 16 April, only 13 days after. It reached 5 million on 22 May. On 29 June, the number reached 10 million. The leap from 10 million to 20 million on 11 August took 42 days. From 20 million to 30 million on 18 September, it took 38 days.

1 Data used in this report on the global development of the pandemic draws from the Global Timeline, unless otherwise specified. The case statistics are from Our World in Data (OWID): <https://ourworldindata.org/coronavirus-data-explorer> and Coronavirus Resource Center of Johns Hopkins University: <https://coronavirus.jhu.edu/>.

2 WHO, “Novel Coronavirus – China,” January 12, 2020, www.who.int/csr/don/12-january-2020-novel-coronavirus-china/en/

3 Our World in Data (OWID), <https://ourworldindata.org/coronavirus-data-explorer>, accessed on 21 September, 2020.

4 This is arrived by a simple division of the reported deaths and the global total cases. But the death toll statistics and the calculation of the death rate due to the pandemic are complicated by definitional issues and varied scope of testing and reporting of cases amongst regions and countries, however. There have been abundant discussions on this theme. See for one at www.webmd.com/lung/news/20200901/what-changing-death-rates-tell-us-about-covid, accessed 20 September 2020.

Figure 1.1
Global daily new cases, as of 18 September 2020

Source: OWID

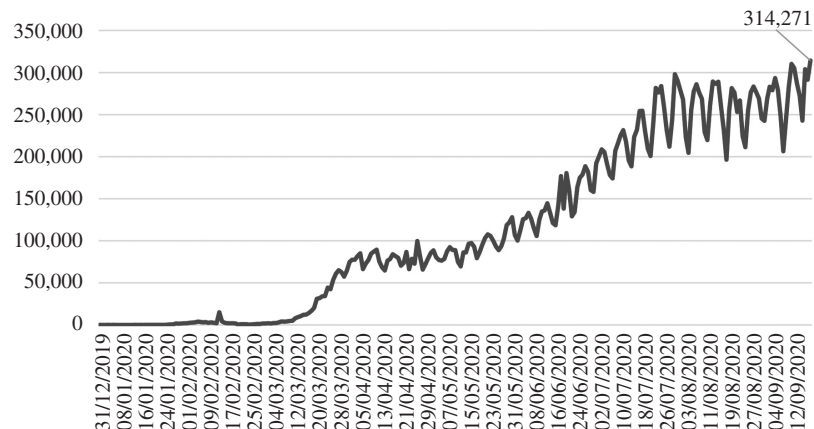


Figure 1.2
Global daily deaths, as of 18 September 2020

Source: OWID

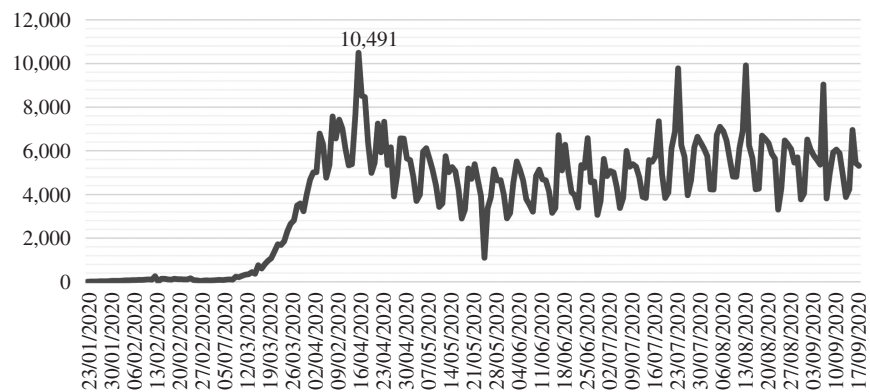
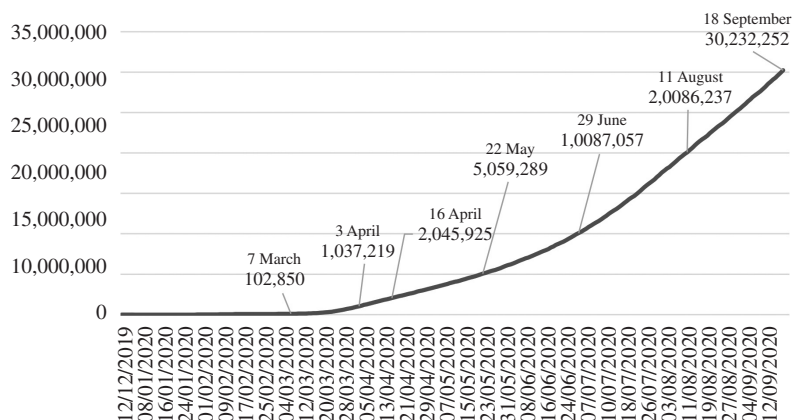


Figure 1.3
Global cumulative cases, as of 18 September 2020

Source: OWID



The Global Spread: Evolving Top-10 Countries

Starting with a few patients seeking help for pneumonia-like symptoms with unknown sources in Wuhan, China, during the first week of December 2019, and then dozens of patients with similar symptoms by 31 December, cases have spread to most provinces in China within January 2020.⁵ Towards the end of January a few regions outside of mainland China saw their first cases, including Hong Kong, Thailand, Japan, South Korea and U.S., which almost invariably could trace to a prior travel history to the city of Wuhan. The South China Seafood Wholesale Market in Wuhan, where a portion of the early cases were closely connected, was closed for environmental disinfection on 1 January 2020, which some medical experts subsequently criticised as counter-productive to a scientific inquiry into the origins of the outbreak, as possible environmental evidences were eliminated prematurely.⁶ After WHO's Strategic and Technical Advisory Group on Infectious Hazards held a first meeting, the WHO published its first batch of guidance documents on the new virus. The first-ever publication of the genome sequence of the new virus by Professor Zhang Yongzheng and his team at Shanghai Public Health Center on 11 January facilitated further research into it.⁷ Zhang's laboratory was, however, shut down for "rectifications" one day after.

Figure 1.4 Countries of top-10 confirmed cases worldwide, January to August 2020

No.	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	CHINA	CHINA	US	US	US	US	US	US
2	THAILAND	S.KOREA	ITALY	SPAIN	BRAZIL	BRAZIL	BRAZIL	BRAZIL
3	JAPAN	ITALY	SPAIN	ITALY	RUSSIA	RUSSIA	INDIA	INDIA
4	SINGAPORE	DIAMOND PRINCESS	CHINA	UK	UK	INDIA	RUSSIA	RUSSIA
5	S.KOREA	IRAN	GERMANY	GERMANY	SPAIN	UK	SOUTH AFRICA	PERU
6	TAIWAN	JAPAN	IRAN	FRANCE	ITALY	PERU	MEXICO	SOUTH AFRICA
7	AUSTRALIA	SINGAPORE	FRANCE	TURKEY	INDIA	CHILE	PERU	COLOMBIA
8	MALAYSIA	GERMANY	UK	RUSSIA	GERMANY	SPAIN	CHILE	MEXICO
9	US	FRANCE	SWITZERLAND	IRAN	PERU	ITALY	IRAN	SPAIN
10	FRANCE	KUWAIT	TURKEY	BRAZIL	TURKEY	IRAN	UK	ARGENTINA

Source: Constructed with data from John Hopkins University (<https://coronavirus.jhu.edu/data>)

Figure 1.4 shows the changing profile of the "top-10" countries, measured by cumulative confirmed cases at the end of each month since January 2020. The evolution sees considerable shifts in the pattern. China being the epicentre of the original outbreak ranked the first during January and February and was at the fourth place by end of March, overtaken by U.S., Italy and Spain, and since April fell outside the top-10 list. By end of August, mainland China registered cumulative cases of 85,058 which is 20% of Argentina's 417,735 total, the tenth place on the top-10 league.⁸ Ten countries have occupied the top 3 places across

- 5 When the first case emerged in Wuhan is not exactly clear as current evidence gives two "first case" patients, one on 1 December in a report published in The Lancet and the other on 8 December according to the Wuhan official sources. See Mainland China Timeline.
- 6 The Standard, "Wuhan destroyed virus evidence early, Yuen Kwok-yung says", www.thestandard.com.hk/breaking-news/section/4/151892/Wuhan-destroyed-virus-evidence-early,-Yuen-Kwok-yung-says
- 7 The sequencing was shared at the Virologic.org and GenBank websites on 11 January. "Severe acute respiratory syndrome coronavirus 2 isolate Wuhan-Hu-1, complete genome (GenBank: MN908947.3)," National Center for Biotechnology Information, www.ncbi.nlm.nih.gov/nucleotide/MN908947
- 8 National Health Commission of the PRC, "截至7月31日24时新型冠状病毒肺炎疫情最新情况," www.nhc.gov.cn/xcs/yqtb/202009/170661a5589542c497b5822270d8eb7c.shtml

the 8-month period. U.S. appears most frequently: 6 of the 24 slots and all at the top rank from March to August. This is followed by Brazil with 4 slots and then Italy with 3 slots. Italy is between the top second and third place during February to April and is the first European country in the top three position. Brazil is second place after U.S. during May to August. It is at the tenth place in April, suggesting a rapid sharp surge during May. China, Spain, Russia and India each have appeared twice in the top three slots, and Thailand, South Korea, and Japan have one appearance each. Thailand, South Korea and Japan are places of early outbreaks which have since been successfully contained, whilst India enters into the seventh place in May, rising quickly to the fourth in June and the third in July and August. India has been reporting the most cases in Asia and third worldwide, at the time of writing in September 2020. The trend of global spread is from East and South East Asia to Europe and North America, and to Eurasia, South Asia and Latin America. The main developments in each month within the top-10 are summarised below.

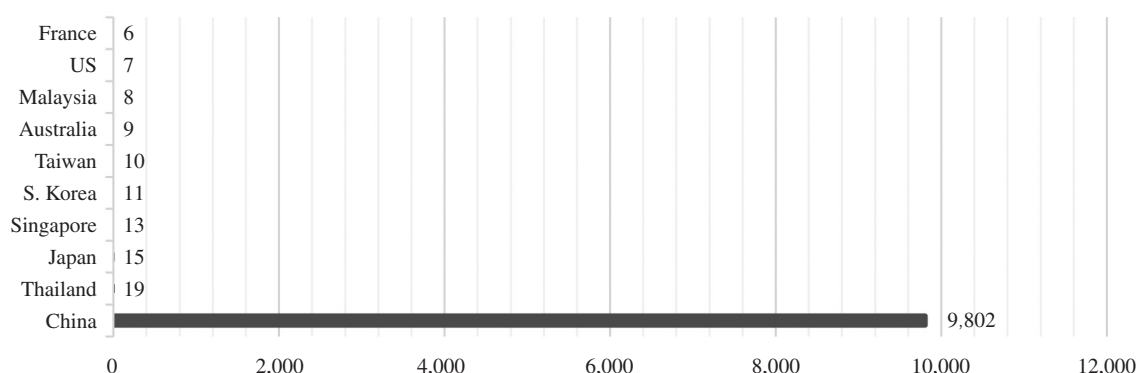
January 2020: Early Responses

The global total reached 9,824 cases on 31 January, when the outbreak was still predominantly within China. Countries/regions in Asia started to report a handful of cases, so had Australia, U.S. and France. China, with 9,802 cases, accounted for 99% among the top-10 countries, as well as the world total. The rest of the countries except China in the top-10 list had an average of 11 cases.

The first death in China due to the new virus was registered on 10 January 2020. The epicentre of the outbreak, Wuhan city, was locked down on 23 January with the city cut off from the rest of China and all movements away and into the city prohibited. During January, the virus spread to many parts of China. On 13 January, the first case outside China was reported in Thailand: an imported case from a traveller from Wuhan. On 16 January, Japan's Ministry of Health informed the WHO of its first case, from a person who had recent travel history to Wuhan. On the 20th, the U.S. and South Korea both reported their first cases, again, from travellers who came back from their trips to Wuhan. Despite cases rising in China, to set a Guinness world record, Wuhan's government on 18 January hosted a banquet attended by 40,000 families to celebrate the forthcoming Chinese New Year. Wuhan officials reportedly distributed 200,000 free tickets to attend festive activities to Wuhan residents.

WHO's Americas regional office issued the first epidemiological alert on 16 January. On 21 January, during its visit in China, WHO revised its previous claims on 14 and 19 January to acknowledge that it is "now very clear from the latest information that there was at least some human-to-human transmission, and that infections among health care workers strengthened the evidence for this".

Figure 1.5 Countries of top-10 confirmed cases, as of 31 January 2020



Source: Graph constructed based on data from Johns Hopkins University

February 2020: Asia Hit First

Global total reached 85,236 by 29 February from 9,824 as of 31 January, a huge increase of 768%. Global death was 2,921. The leap of cases was mainly due to the large-scale outbreak within China, especially in Wuhan after its shutdown on 23 January. The epidemic spread to a few countries of Asia and started to affect Europe and the Middle East. By end of February, the share of cases in China dropped to 93% of the top-10 total from 99% in January. South Korea accounted for 4% and the rest were all around 1%. The total top-10 countries still took up about 97% of global cases.

The major outbreak in China happened from late January to mid-February, after Zhong Nanshan, the Chinese respiratory expert, announced on 20 January that the COVID-19 had human-to-human transmission. Before Wuhan was totally locked down on 23 January, about 300,000 Wuhan citizens fled, en masse, mostly to the rest of the country and others overseas, during the several hours between announcement and execution of the lockdown measures.⁹ In addition, an estimated 5 million migrant workers and residents had left the city for home in other provinces since early January for the celebration of Chinese New Year, which in 2020 fell on 25 January.¹⁰ Soon, provinces in China reported new cases. On 25 January, the construction of an emergency hospital (Huoshenshan Hospital) started in Wuhan. A second hospital (Leishenshan Hospital), was soon added, following the experience of the SARS response in 2003, when the Xiaotangshan SARS hospital in Beijing was completed in 7 days to assist with treating patients. In addition, 16 “cabin” hospitals were set up in Wuhan for patients with mild symptoms. Medical teams from across China were sent to Wuhan to support the anti-epidemic work and the overloaded local medical system. During these weeks, the Wuhan local administration was strongly criticized by the public for the chaotic management of medical supplies, and its failure to protect its medical staff and treat patients of suspected cases efficiently.

Chinese researchers reported on 7 February their finding that the virus found in pangolins have a 99% match with the new coronavirus. The WHO deployed, on 8 February, an advance team for the WHO-China joint mission to examine the origin of the virus. China announced a permanent ban on wildlife consumption 20 days later, whilst exempting medical use and some other purposes.¹¹ WHO published home care guides for those suspected with the infection.

Outside mainland China, the outbreak in a leisure cruise, the Diamond Princess cruise, on 5 February off Japan saw 3,600 passengers quarantined on board. Passengers were given tests whilst on board, and only those tested negative were allowed to leave, excepting those who shared rooms with infected passengers. In total 705 people were found to be infected.

South Korea surpassed Diamond Princess to the second place on 24 February, with cumulative 3,150 cases by end of February. South Korea also reported their first death from the virus on 20 February. 200 cases were attributed to one cluster, arising from activities in Shincheonji Church of Jesus in northern part of South Korea. The government then shut down nursing homes and community centres and banned public rallies in Seoul.

9 English Source : *The Sun*, “Coronavirus chaos as 300,000 people travelled out of Wuhan on trains in just one day before lockdown”, www.thesun.co.uk/news/10809454/coronavirus-thousands-fled-train-wuhan/Chinese Source: *The Paper*, “學術視角告訴你：500萬武漢人是‘逃離’還是‘正常離開’”，www.thepaper.cn/newsDetail_forward_5654383

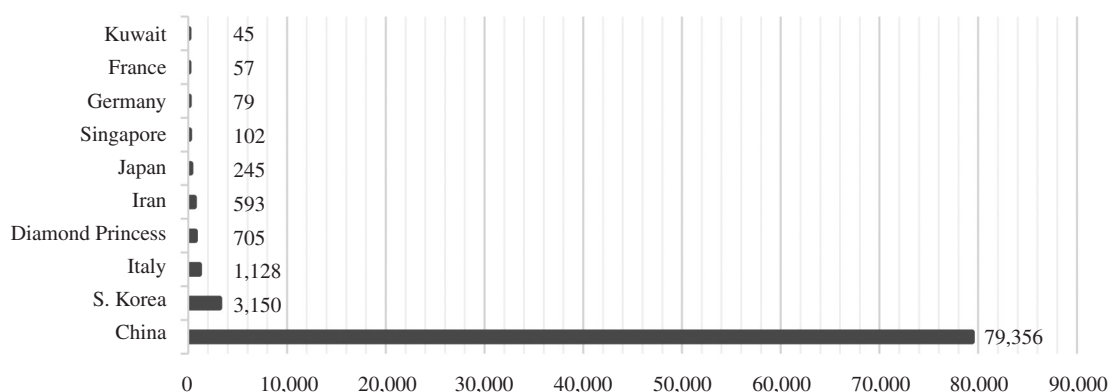
10 *The Paper*, “學術視角告訴你：500萬武漢人是‘逃離’還是‘正常離開’”，www.thepaper.cn/newsDetail_forward_5654383

11 *New York Times*, “China’s Ban on Wildlife Trade a Big Step, but Has Loopholes, Conservationists Say,” February 27, 2020

Italy, the third highest, saw its cases surge overnight on 28 February from 655 to 888, exceeding Diamond Princess. Officials locked down 10 towns, closed schools and cancelled sporting and cultural events. Even with cases rising, Italy decided to leave its borders open whilst several European neighbouring countries advised their nationals to postpone their trips to Italy.

On 24 February, Iran had 61 cases and 12 deaths in less than a week. The source of spread in Iraq, Afghanistan, Bahrain, Kuwait, Oman, Lebanon, the United Arab Emirates and Canada were traced to Iran. The death toll in Iran surged quickly, with local officials reporting 50 cases on 25 February, raising concerns about things running out of control. Confirmed cases in Iran exploded by 10-fold in 4 days, reaching 593 on 29 February.

Figure 1.6 Countries of top-10 confirmed cases, as of 29 February 2020



Source: Graph constructed with data from Johns Hopkins University

March 2020: Start of Global Spread

March was a critical month when the epicentre of the outbreak shifted from Asia and severely hit Europe and North America. Cumulative cases reached 807,614 as of 31 March, an 847% increase from the end of February. The number of deaths reached 38,719, a 12-fold increase to the death toll in February. The distribution of cases changed dramatically during March. The previous top country, China, ranked the fourth accounting for 12% of the total cases from top-10 list, while the U.S. became the first place with a 27% share. Italy and Spain ranked second and third with 15% and 14% shares respectively. The rest were no more than 10%. The total cases of top-10 took up about 85% of the global total.

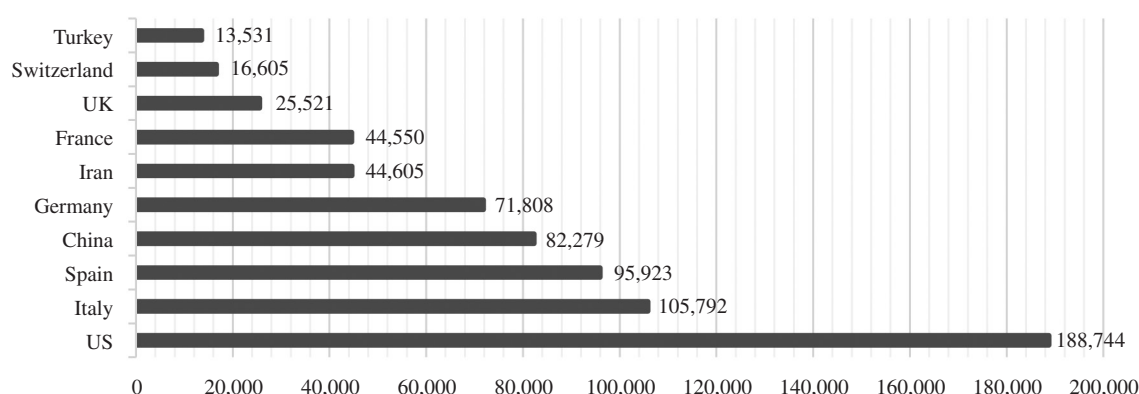
The U.S. became the country hit the hardest with the virus with 188,744 cumulative cases and over 5,000 deaths at the end of March, after reporting its first case on 29 February. The cases surged in the middle of March. Daily deaths soared from nearly zero in mid-March to over 1,000 by end of March. Cumulative cases in the U.S. ranked the first globally on 26 March, surpassing Italy and China overnight. China's ranking drops from the top first place during January and February to the fourth with 82,279 cumulative cases by 31 March. According to the data mapping by Johns Hopkins University, the early outbreak in the U.S. took place mainly in the north-eastern coast, especially New York and New Jersey. In New York, the

daily cases first reached over 1,500 on 18 March and then quickly exceeded 5,000 on 25 March. Daily cases in New Jersey also soared to over 1,000 from 25 March.¹²

Italy and Spain in the second (105,792 cases) and third places (95,923 cases) exceeded China's cumulative confirmed cases on 27 and 30 March respectively. Spain's first case emerged on 31 January: a German tourist who had recently visited China. Italy announced the first "red zone" "lockdown" areas in Europe on 9 March, affecting 16 million people, which was extended the very next day to a nationwide lockdown. The Italian Government announced a 25 billion euros plan to fight the virus.

Ranking the fifth after China, Germany had its first case on 28 January. It had 71,808 cases as of 31 March, 908 times of February. Iran, the sixth, had 44,605 cases which is 75 times that of February. The virus reached Europe on the 24 January in France, with 3 people who had travelled to Wuhan. France reported a total of 44,550 cases as of 31 March. U.K. (25,521), Switzerland (16,605) and Turkey (13,531) first entered the list of top-10.

Figure 1.7 Countries of top-10 confirmed cases, as of 31 March 2020



Source: Graph constructed with data from Johns Hopkins University

April 2020: Epicentre in Europe

By end of April, the global cumulative cases reached 3,138,126, an increase of 288% from end of March. Total death was 227,895, about six times of March. During this period, U.S. and Europe continued to see the spread of the outbreak. The first to sixth places on the top-10 list are all North American and European countries. The share of U.S., still the first place, in the top-10 total increased from 27% to 45%, with the rest of the countries all under 10%. Spain and Italy ranked the second both taking up about 9%. The U.K. and Germany followed with around 7%. The rest were no more than 5%. The top-10 countries shared about 75% of the global total.

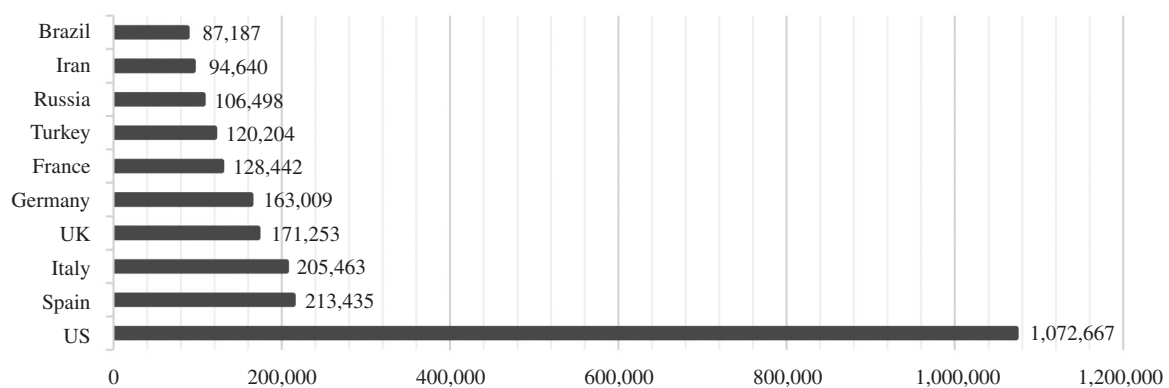
The U.S. continued to be the country hit the hardest with 1,072,667 total confirmed cases as of 30 April. In 2 months since its first reported case on 29 February, the infection proliferated immensely,

12 "Daily confirmed new cases (3-day moving average). Outbreak evolution for the 50 STATES, D.C., AND PUERTO RICO," Coronavirus Resource Centre of Johns Hopkins University, 2020, <https://coronavirus.jhu.edu/data/new-cases-50-states>

about 109 times compared to the total cases at the end of January. It is worth noting that U.S. had confirmed cases more than five times that of Spain, at the second place, as of 30 April. The worst hit state at the time, New York, had its peaking daily new cases of 10,824 on 9 April, and New Jersey peaked at 3,972 on 4 April. Massachusetts also reached the highest daily number of 3,507 on 24 April. Louisiana which located in the south of U.S. had its first peak in April with 2,024 daily cases on 3 April.¹³

Spain's 213,435 cumulative cases was double that of the previous month. Italy, the third place, had 205,463 cases. The U.K. had its first case on 31 January. U.K.'s cases surged by almost 7-fold from 25,150 in March to 171,253, rising to the fourth from eighth place in the top-10. Germany followed with 163,009 cases. France has a cumulative number of 128,442, ranking the sixth. Turkey, from tenth to seventh, reported 120,204 cases as of 30 April. Russia first came into the top-10 list on the eighth place with 106,498 cases. Iran dropped by 3 places to ninth with 94,640 cases. Brazil had its first case on the 26th of February, which is also the first in Latin America. It ranked the tenth at the end of April with 87,187 confirmed cases. China dropped out of the top -10 list, with 83,944 cumulative cases.

Figure 1.8 Countries of top-10 confirmed cases, as of 30 April 2020



Source: Graph constructed with data from Johns Hopkins University

May 2020: Shift to the Americas

As of 31 May the global total confirmed cases reached 6,012,227, which has increased by 92% compared to April. Total death increased to 368,044 in total, and for the first time with a lower rate (61%). The global increase showed the first sign of slowing down. The outbreak largely left Asia and increasingly affected the Americas, with a dramatic nearly 6-fold surge in Brazil in a month and a second Latin American country, Peru, entering the top-10 list. U.S. took up 43% among the top-10 countries, a slight decrease. Brazil came at the second with 12%. The third was Russia with around 10% which also surged quickly compared to April. The rest were all under 7%. The top-10 list countries shared about 69% of the worldwide total, signalling a further spread of the outbreak among more countries globally.

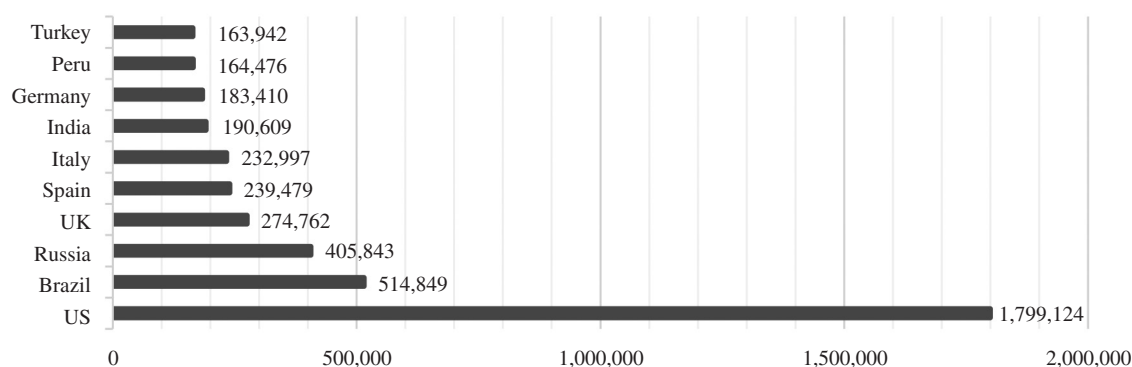
The U.S. in the top place had 1,799,124 cases, doubling its end of April record. U.S. suffered its 100,000th death on 23 May. Resisting criticisms domestically and from abroad of its ineffective anti-

13 "Daily confirmed new cases (3-day moving average). Outbreak evolution for the 50 STATES, D.C, AND PUERTO RICO".

pandemic measures, President Trump deepened the blame-diplomacy and alleged the WHO for assisting China in covering up in the initial stages of the outbreak.

Brazil replaced China in 10th place on 30 April. However, by 22 May, it surpassed Russia with the second-highest count with 330,980 cases. As of the end of May, Brazil had almost 6 times of cases compared to that of 30 April. Russia in third place had 405,843 cases, 3.8 times of the previous month. European countries saw a flattening trend in May, either keeping the same rank or declining. In fourth place same as in April was the U.K. with 274,762 cases. Spain and Italy decreased the ranking. Spain had 239,479 cases and Italy 232,997 cases. India ranked seventh with 190,609. Germany followed with 183,410 cases from fifth in April to eighth as of May. Ninth was Peru, another South American country, with 164,476 cases and lastly Turkey with 163,942 cases.

Figure 1.9 Countries of top-10 confirmed cases, as of 31 May 2020



Source: Graph constructed with data from Johns Hopkins University

June 2020: Hitting BRICS

The BRICS countries (Brazil, Russia, India, China and South Africa), with the exception of China, began to be the hardest hit in June. Global total confirmed cases reached 10,245,215 as of 30 June with 502,122 deaths, a 70.5% increase from May and death increased by 36%. It continued to decline in terms of global case growth. The U.S. remained the most affected country with over 2 million total confirmed cases, about double of the second place, Brazil. Outbreaks in Brazil, India and Russia surged, making the second, third and fourth in the top-10 list. In comparison, the situation in Europe improved. The share of U.S. in the top-10 list decreased to 38%, followed by Brazil with about 20%. Russia and India, both taking up around 9%. The rest were below 5%. The top-10 countries shares around 67% of global total cases, decreasing further slightly.

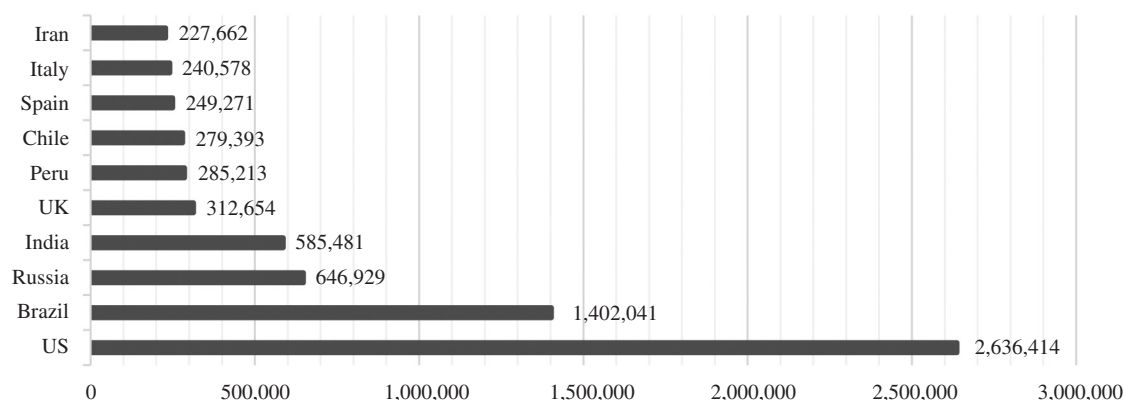
The United States topped 2,000,000 cases and 100,000 deaths on 16 June, with 2,636,414 cases by 30 June. The trend of outbreak in the U.S. gradually shifted from north-east to the south and west. States such as Florida, California and Arizona began to report a much higher number of confirmed cases. The daily cases first surpassed 5,000 in Florida on 30 June. California reached over 5,000 daily cases on 22 June, and Arizona passed 2,500 on 21 June.¹⁴

14 "Daily confirmed new cases (3-day moving average). Outbreak evolution for the 50 STATES, D.C, AND PUERTO RICO".

Brazil followed the U.S. with 1,402,041 cumulative cases, 2.7 times that of the previous month. Brazil's death toll surpassed Italy to become the third highest in the world on the 5th of June. Russia came third with 646,929 cases. Russia topped its cases on the 11th of June. India came after with 585,481 cases as of 30 June, ranking from seventh to fourth of top-10. Doctors in India feared the virus had yet to peak there as Delhi hospitals struggled to find beds for patients. The U.K. came 5th with 312,654 cases.

Latin America registered 70,000 deaths by mid-June. Apart from Brazil, Peru and Chile were also hit severely with 1 in 300 infections per capita. Peru came sixth with 285,213 cases and Chile seventh with 279,393 cases. U.K. decreased by one rank to fifth as of 30 June, with 312,654. Spain came with 249,271 cases from fifth to eighth, and Italy with 240,578 from sixth to ninth. Last was Iran with 227,662 cases. France said that it had the virus under control. The epidemic in Europe was being contained as Germany, Turkey and France were not amongst the top-10 most affected countries anymore. The number of infected people passed 10 million and deaths reached 500,000 on 29 June.

Figure 1.10 Countries of top-10 confirmed cases, as of 30 June 2020



Source: Graph made by author based on data from Johns Hopkins University

July 2020: Escalation in the Americas

As of 31 July, the global total cases reached 17,298,367 (69% increase) and total death of 668,330 (33% increase). U.S. remains the hardest hit country and U.K. the only European country on the top-10 list, ranking the tenth. Cases surged in the Americas, in India, Russia, and Africa. The percentage of U.S. in the top-10 list stayed relatively consistent with 38%. The share of cases in Brazil moved slightly up to 22%. India surged quickly to 14% at the third place. The rest were all under 7%. The total cases within top-10 countries took up around 70%, which bounced back since June.

The U.S. reported 4,562,107 cumulative cases as of 31 July, almost double that of 30 June. July 16 was a record single day high with over 77,000 cases. Florida became the epicentre of U.S. in July, with a peaking daily confirmed number of 12,761 on 12 July. Arizona also reported a highest daily number of 4,300 on 1 July. California reached a peak of daily cases at 11,604 on 29 July.

Brazil came second with 2,662,485 cases, reaching over 90,000 deaths in total by the end of July. With a lack of testing the true figures were believed to be higher. With poverty and malnutrition, tackling the virus was a challenge. Indigenous communities were the worst affected. But the cases rose the fastest when it hit the cities such as Sao Paulo and Rio de Janeiro. The president of Brazil joined an