

COVID-19 Update: Key Statistics



August 11, 2020



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Introduction

The COVID-19 pandemic that began in December 2019 continues. Some parts of the world that experienced significant numbers of cases in the winter and spring have brought SARS-CoV-2, the coronavirus that causes COVID-19, under control. Other parts of the world have begun to experience the pandemic only more recently. Elsewhere, the coronavirus continues to spread at a significant pace, such as in the U.S., where cases appeared in February and significant numbers of cases were first recorded in March.

The Society of Actuaries (SOA) published its first COVID-19 research brief on March 10, 2020, followed by regular updates and expansions through June 12, 2020. The comprehensive report includes a section of Key Statistics. On July 24, 2020, the SOA released a report showing updates through July 22 to selected graphs from or related to the Key Statistics section of the comprehensive report. This report provides similar updates through August 9, 2020.

Reported Cases

Confirmed cases are a function of the ability for any public health agency across countries to distribute, administer and collect test results from their respective health systems. It is important to recognize that the number of reported confirmed cases for any disease is typically fewer than the number of actual cases because of delays in full testing and reporting, as well as cases that have gone undiagnosed.

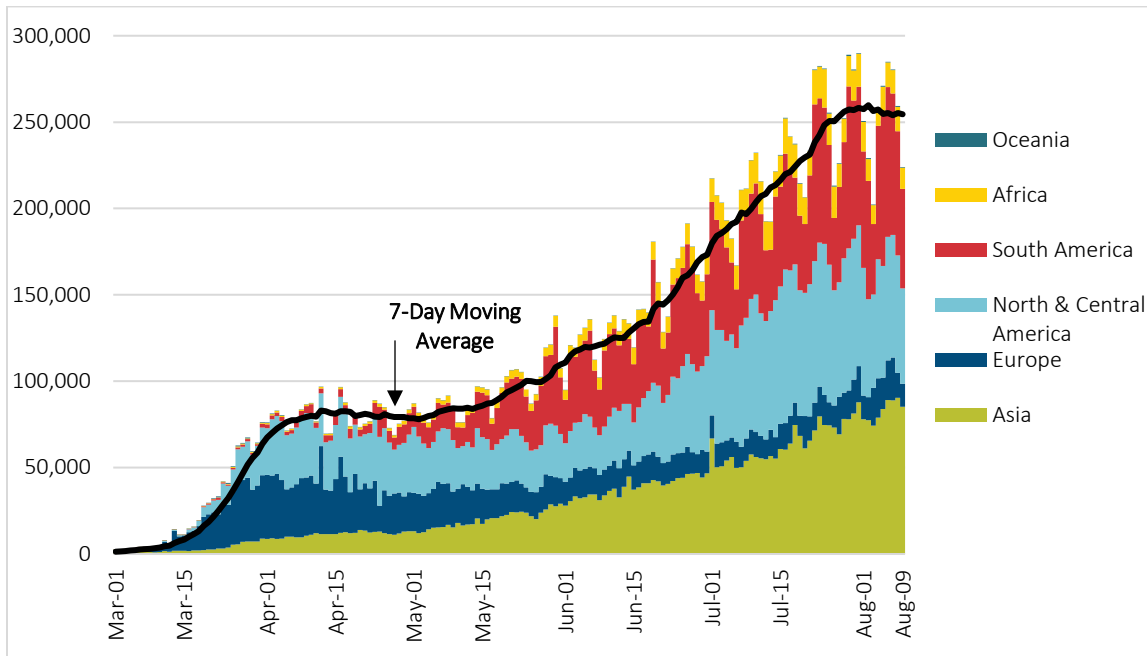
WORLDWIDE CASES

After a brief plateau from mid-April to mid-May, new reported confirmed COVID-19 cases rose steeply until the start of August. For the first nine days of August, daily new reported confirmed cases appear to have leveled off (Figure 1). Through August 9, 2020, 19.8 million cases had been reported worldwide. Since the start of the pandemic, the continental location of cases has shifted (Figure 2). Through most of February, daily new reported cases were largely contained in Asia. By mid-March, more daily new reported cases were from Europe than any other continent. By late March, Europe and North America shared roughly 85% of the daily new reported cases, relatively few new reported cases came from Asia, and a relatively small number of new cases began to be reported from Africa and South and Central Americas.

At the end of June, about 60% of daily new reported COVID-19 cases were coming from North, South and Central Americas. New cases in Asia had risen to approximately 20% of the world's daily reported new cases, and roughly 5% of the daily reported new cases were attributable to Africa.

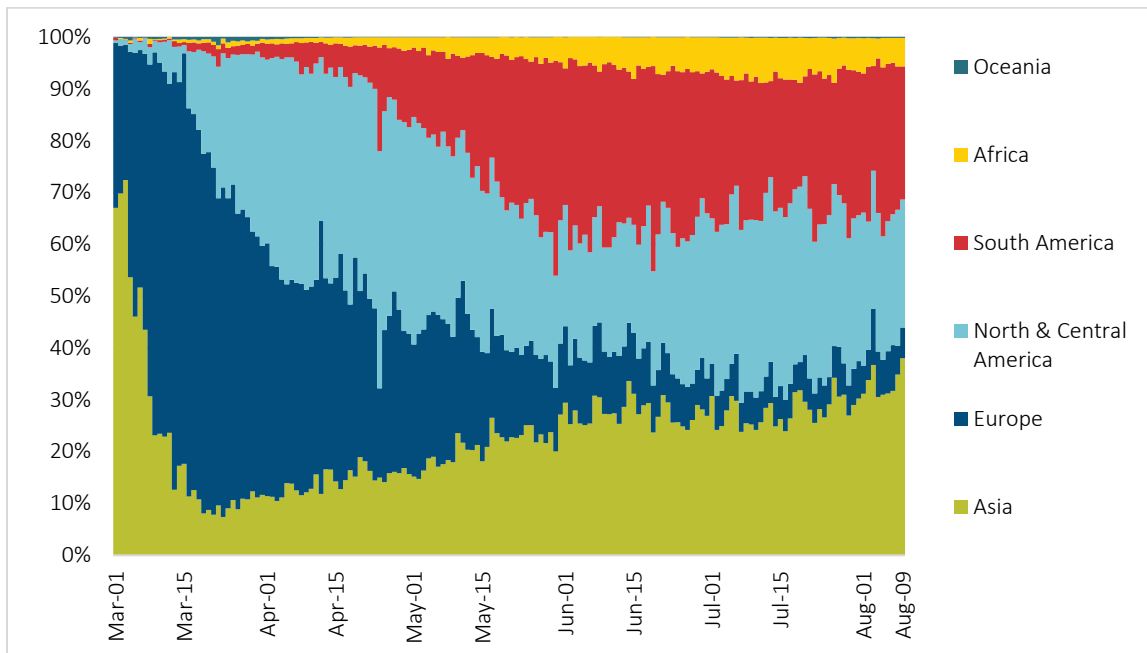
Through August 9, 2020, the U.S. had reported 25% of total cumulative worldwide cases, and Brazil had reported 15% of them (Figure 3). Of the 15 countries with the greatest number of cases, 13 of them have reported more than half of their cases since the start of June, and 8 of the top 15 have reported 70% or more of their cases since the start of June.

Figure 1
WORLDWIDE REPORTED CONFIRMED DAILY NEW COVID-19 CASES BY CONTINENT, AUGUST 9, 2020



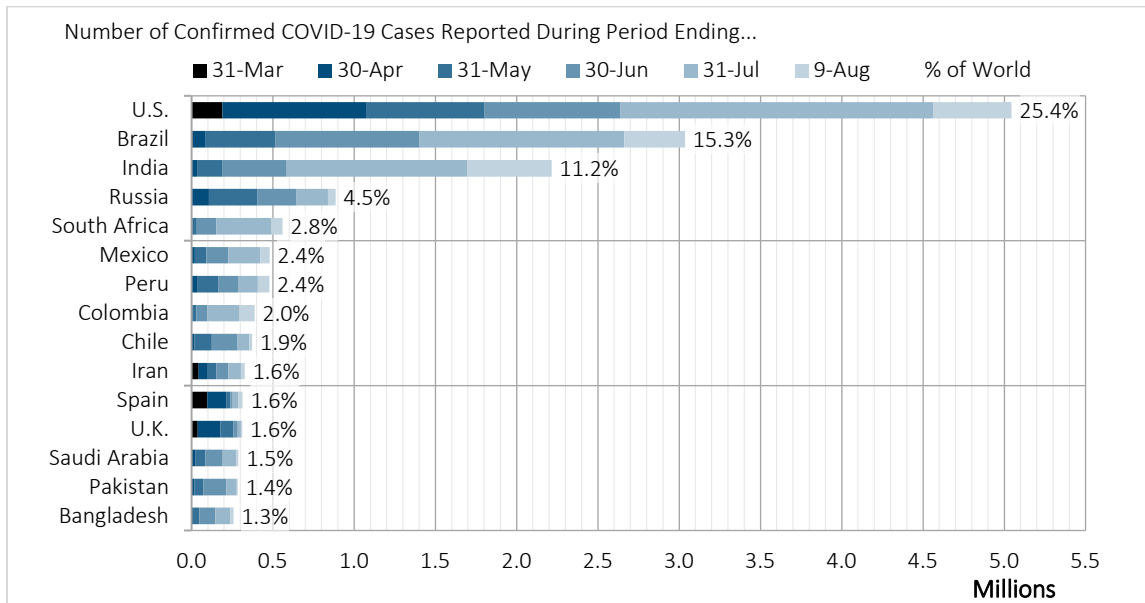
Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

Figure 2
PERCENTAGE OF WORLDWIDE DAILY REPORTED NEW COVID-19 DEATHS BY CONTINENT, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

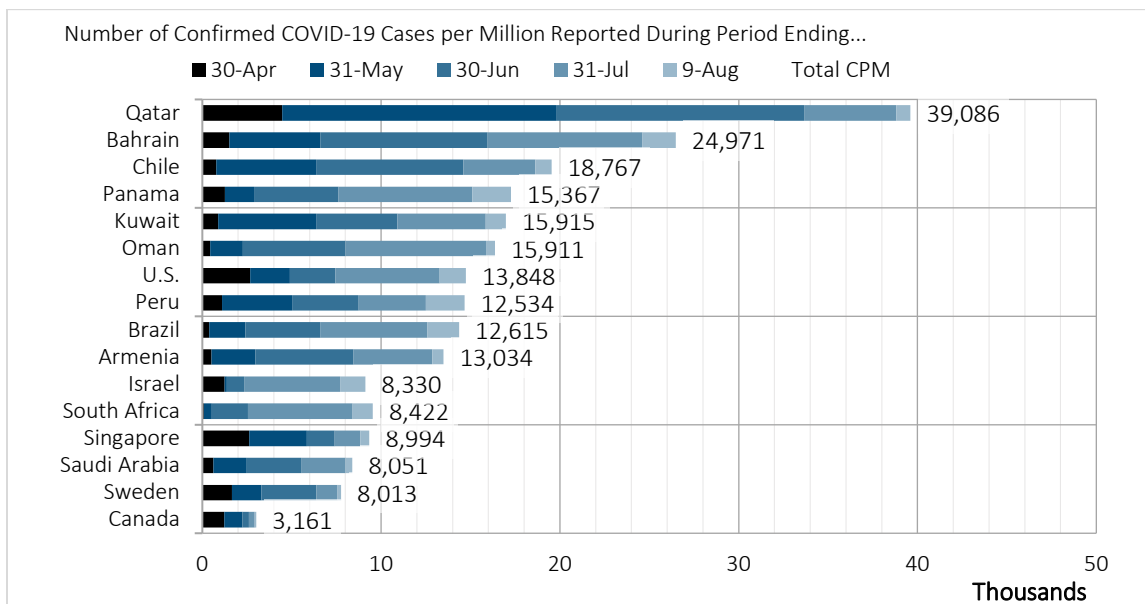
Figure 3
TOP 15 COUNTRIES FOR NUMBER OF REPORTED CONFIRMED COVID-19 CASES, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

Because population sizes differ across countries, considering the number of cases per million may be more insightful than examining the number of cases (Figure 4). Although Canada is not among the 15 countries with the greatest number of cases per million, Canada appears in the graph as a point of reference. While the U.S. ranks first in the number of cases, it ranks seventh in the number of cases per million, up from eighth place on July 22, 2020. Qatar continues to rank first in number of cases per million of population, far outpacing second place Bahrain and third place Chile.

Figure 4
TOP 15 COUNTRIES FOR NUMBER OF REPORTED CONFIRMED COVID-19 CASES PER MILLION, AUGUST 9, 2020

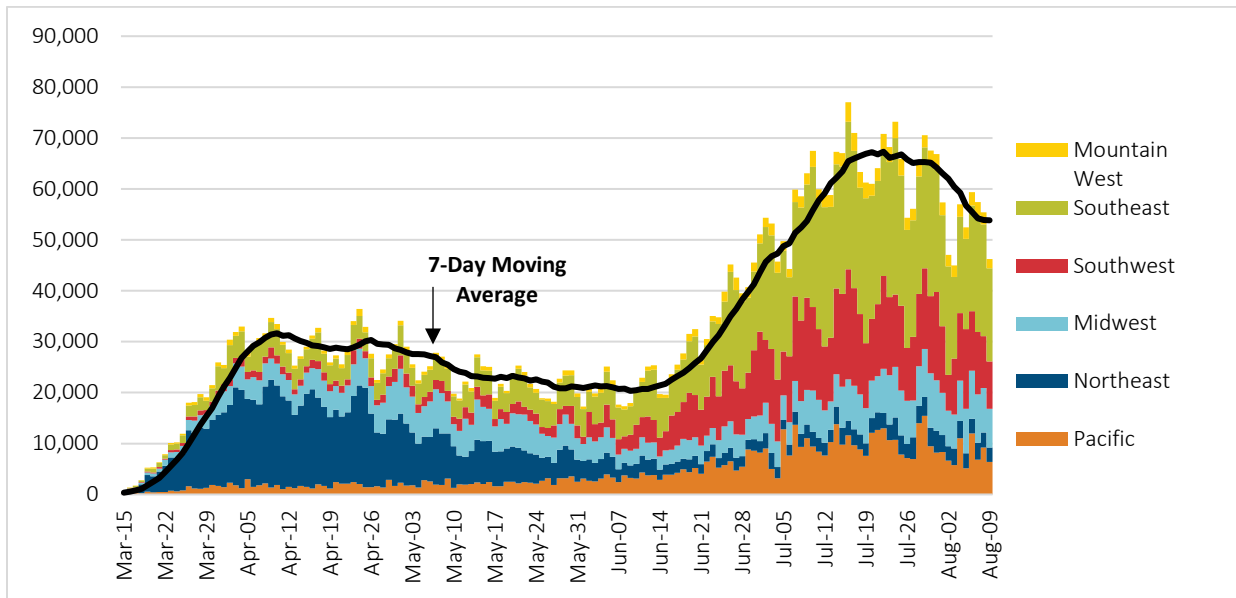


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

U.S. CASES

In the U.S., new reported confirmed COVID-19 cases initially peaked in early April 2020 and slowly declined before increasing again in later April (Figure 5); states are identified with corresponding colors by region in Figure 6. New cases generally declined slowly from late April until June 11, when they began an incline through mid July that was nearly as steep as the initial increase in new cases from mid-March through early April. Since late July, the daily number of new reported COVID-19 cases has generally declined but remains far above the peak levels in the spring. As of August 9, 2020, the U.S. has reported a total of 5.04 million cases; the 7-day rolling average of daily new cases is 53,813, which is 70% greater than its April 10 level of 31,628, which was the greatest level prior to June 24.

Figure 5
U.S. DAILY REPORTED CONFIRMED NEW COVID-19 CASES BY REGION, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

The regional location of new reported confirmed COVID-19 cases has clearly shifted since March 1, as is especially apparent in Figure 7. At the start of March, daily new reported confirmed cases were reported primarily from Pacific states. By March 19, the Northeast dominated daily new reported confirmed cases of COVID-19. Since mid June, roughly 60% of daily new cases have been attributable to Southeastern and Southwestern state; since mid-July, about 30% of daily new cases have been reported from Pacific and Midwestern states.

Figure 6
U.S. REGIONS

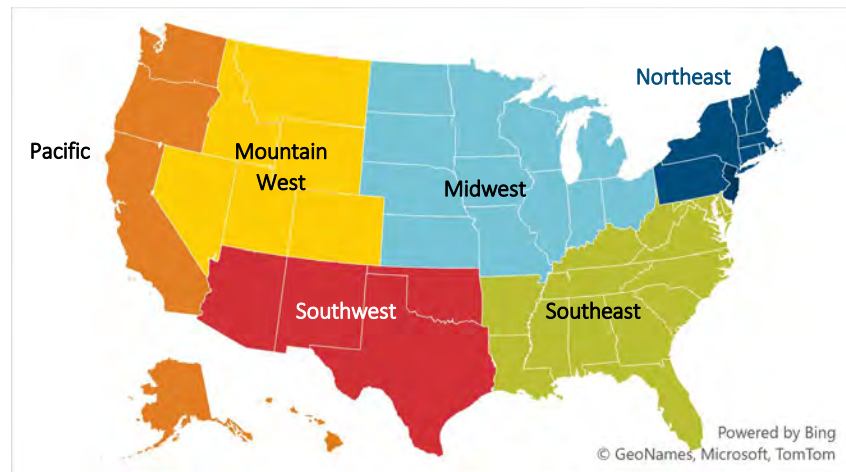
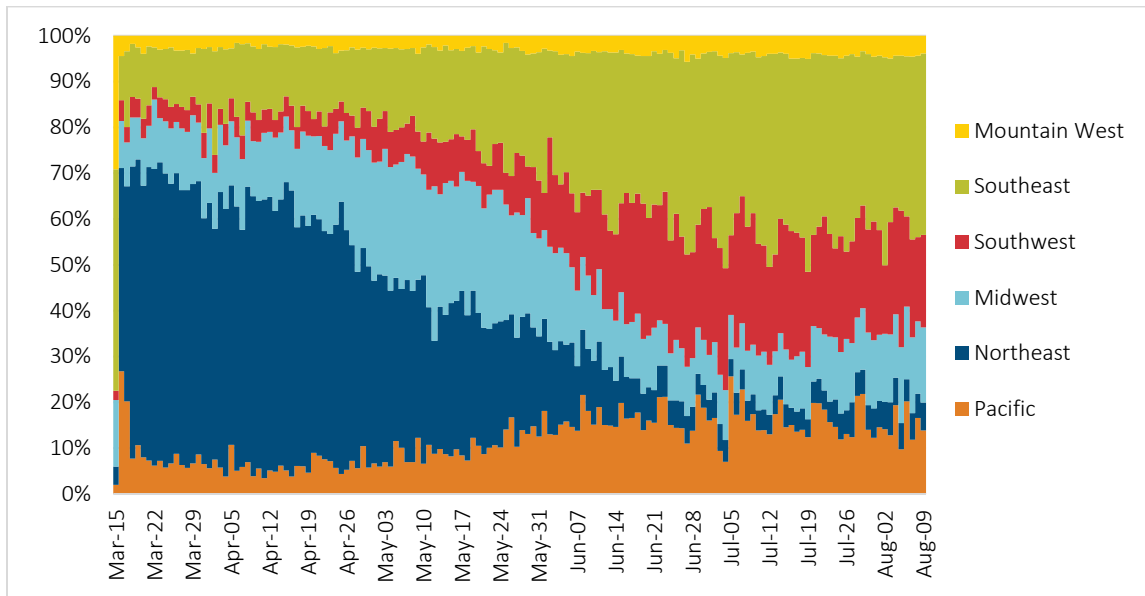


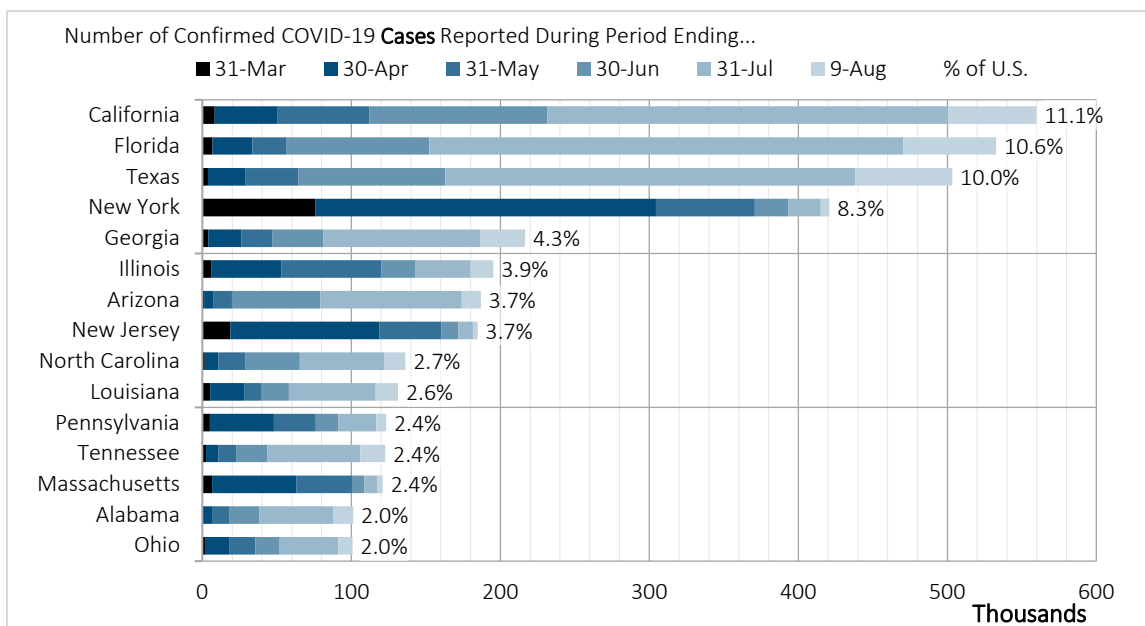
Figure 7
PROPORTION OF U.S. DAILY REPORTED CONFIRMED NEW COVID-19 CASES BY REGION, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

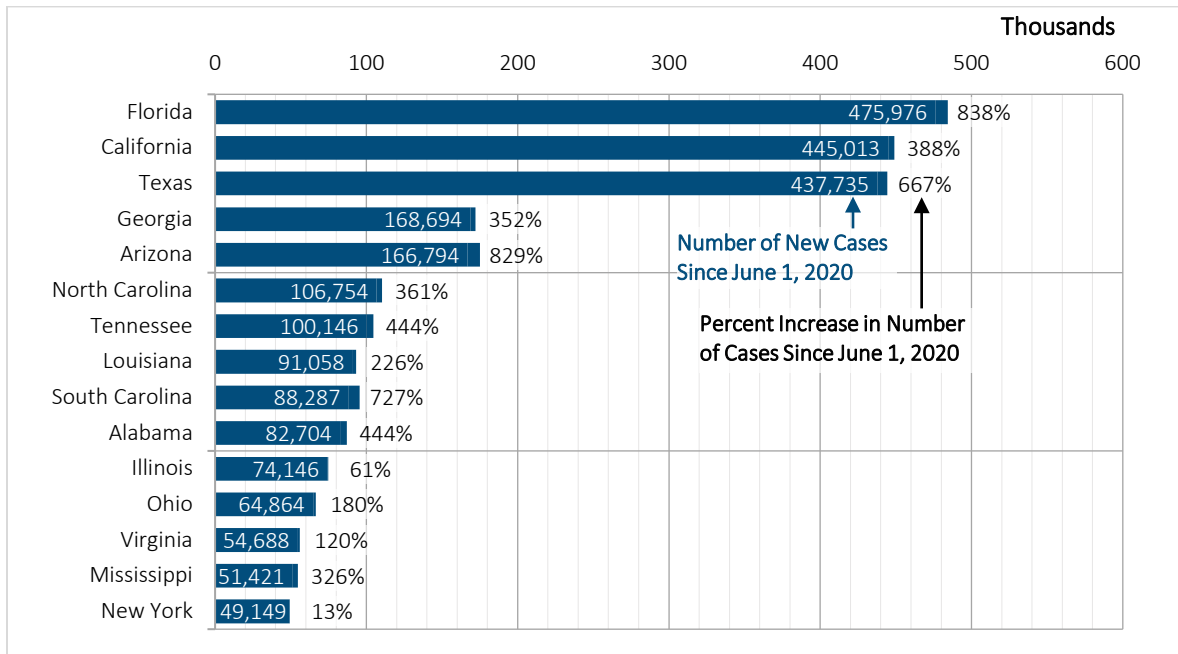
Through the spring, New York reported confirmed COVID-19 cases than any other state. Now California, Florida and Texas all report more cases than New York (Figure 8), and these three states have also reported the greatest increase in number of cases (Figure 9) since June 1. However, since mid-July, Louisiana, Arizona, Florida and Mississippi have reported more cases per million than New Jersey (Figure 10), which had previously led the nation in number of cases relative to state population.

Figure 8
TOP 15 STATES FOR NUMBER OF REPORTED CONFIRMED COVID-19 CASES, AUGUST 9, 2020



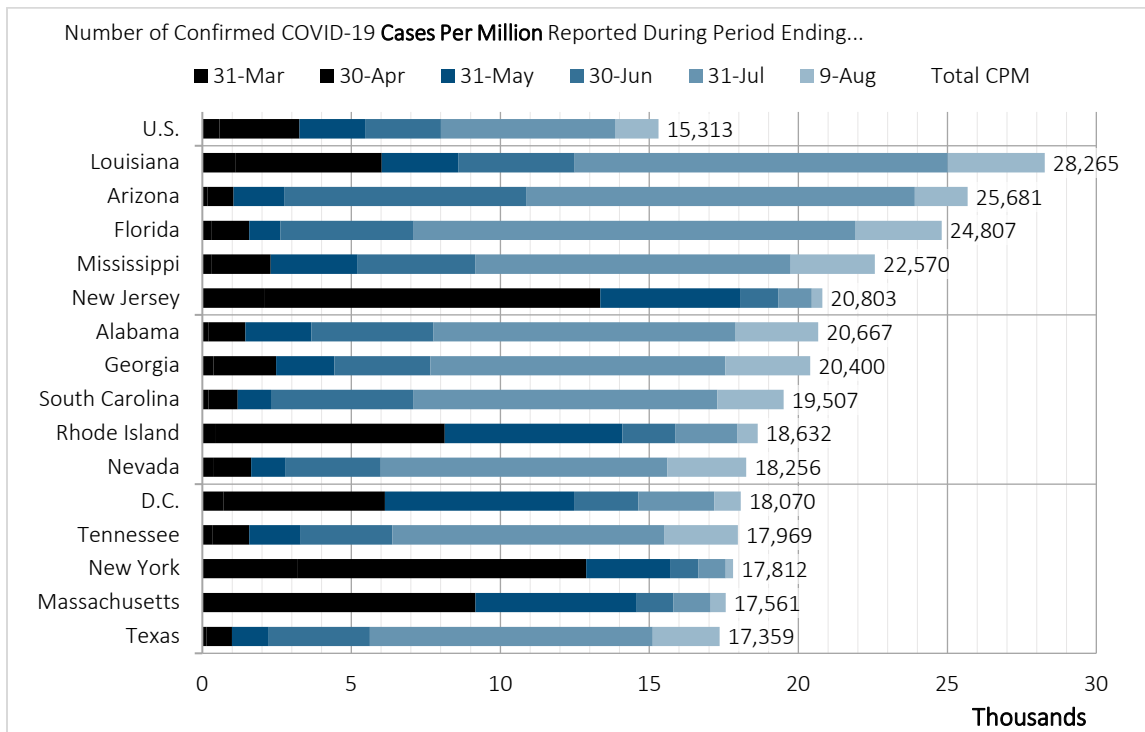
Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

Figure 9
STATES WITH THE MOST REPORTED CONFIRMED COVID-19 NEW CASES, JUNE 1, 2020–AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

Figure 10
TOP 15 STATES FOR NUMBER OF REPORTED CONFIRMED COVID-19 CASES PER MILLION, AUGUST 9, 2020

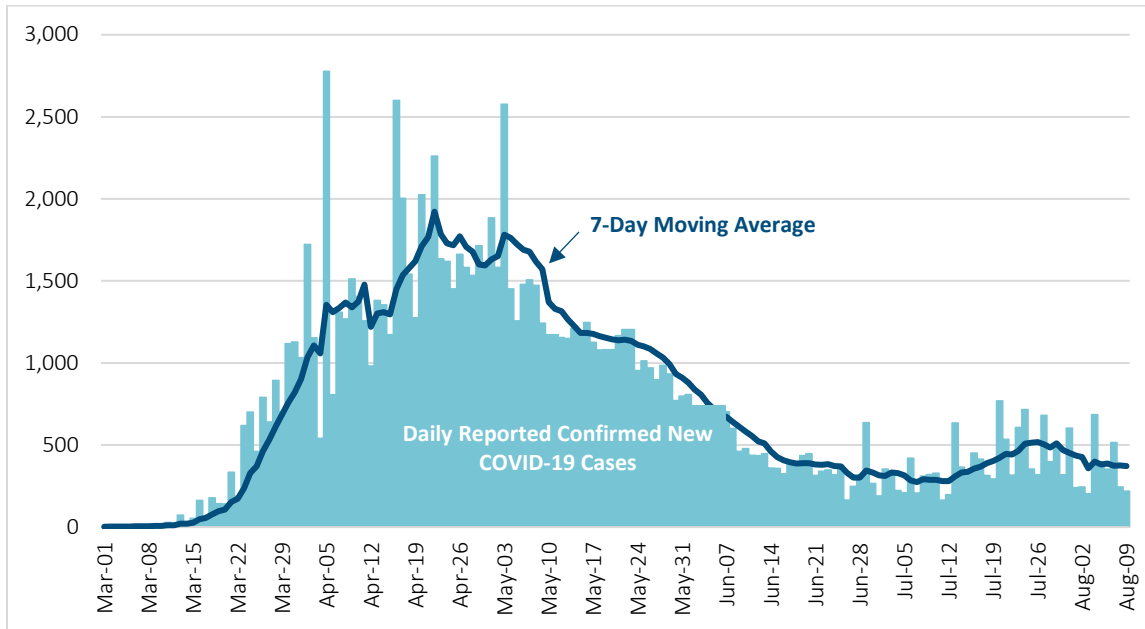


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

CANADIAN CASES

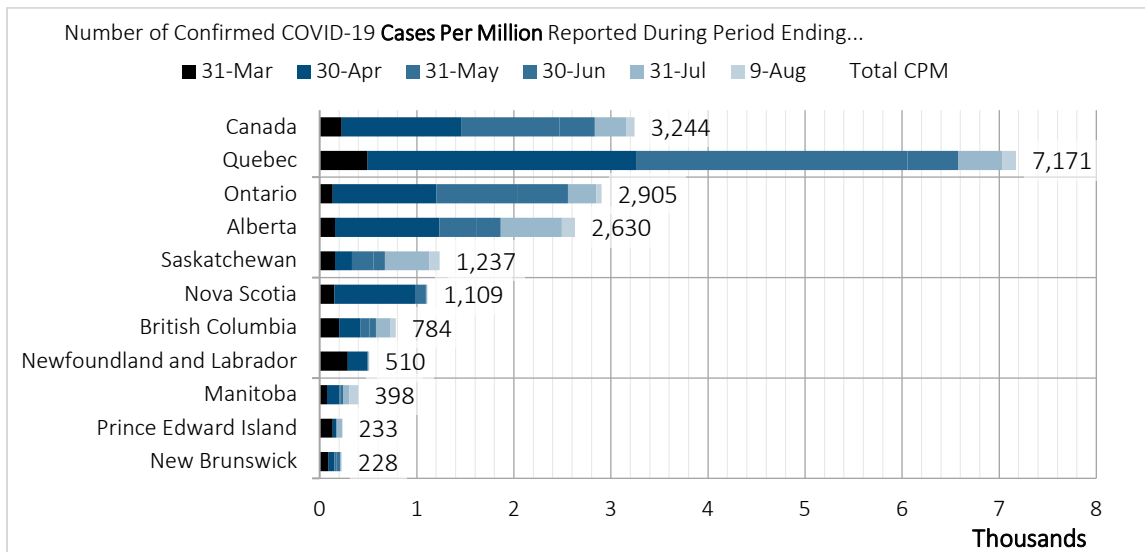
In Canada, the number of daily new reported confirmed COVID-19 cases fell steadily from early May through June, slowly rose through July before slowly declining again (Figure 11). Quebec continues to show more than double the number of reported confirmed COVID-19 cases per million than the respective number for Canada as a whole (Figure 12).

Figure 11
CANADIAN REPORTED CONFIRMED NEW COVID-19 CASES, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

Figure 12
NUMBER OF REPORTED CONFIRMED COVID-19 CASES PER MILLION BY PROVINCE, AUGUST 9, 2020



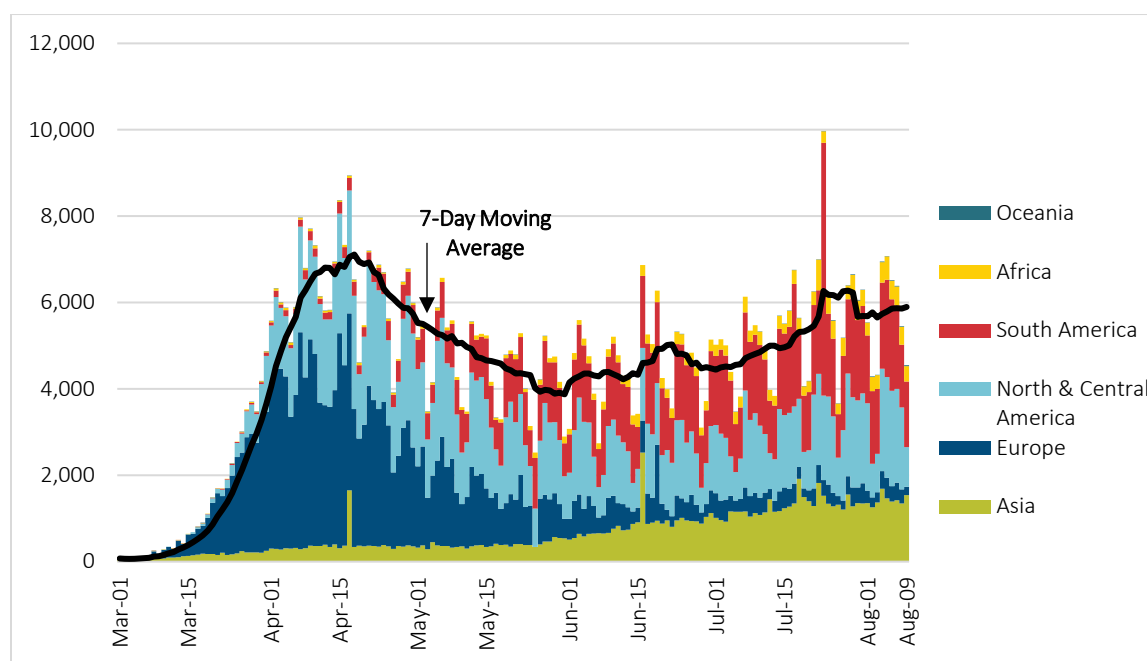
Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

Reported Deaths

WORLDWIDE DEATHS

Through August 9, 2020, approximately 534,000 deaths due to COVID-19 had been reported worldwide. While the number of daily reported new COVID-19 cases has consistently risen since the start of the pandemic, the number of reported new COVID-19 deaths slowed from mid-April through the end of May before slowly rising again (Figure 13). In addition, there has been a clear shift in the concentrations of deaths by continent. Through April, most deaths occurred in Europe and North America. Since late April, new deaths in Europe have steadily declined while new deaths in North and Central America have declined only somewhat. However, daily new deaths from South America have increased steadily since late April, and daily deaths in Asia have steadily increased since the start of June.

Figure 13
WORLDWIDE DAILY REPORTED NEW COVID-19 DEATHS BY CONTINENT, AUGUST 9, 2020



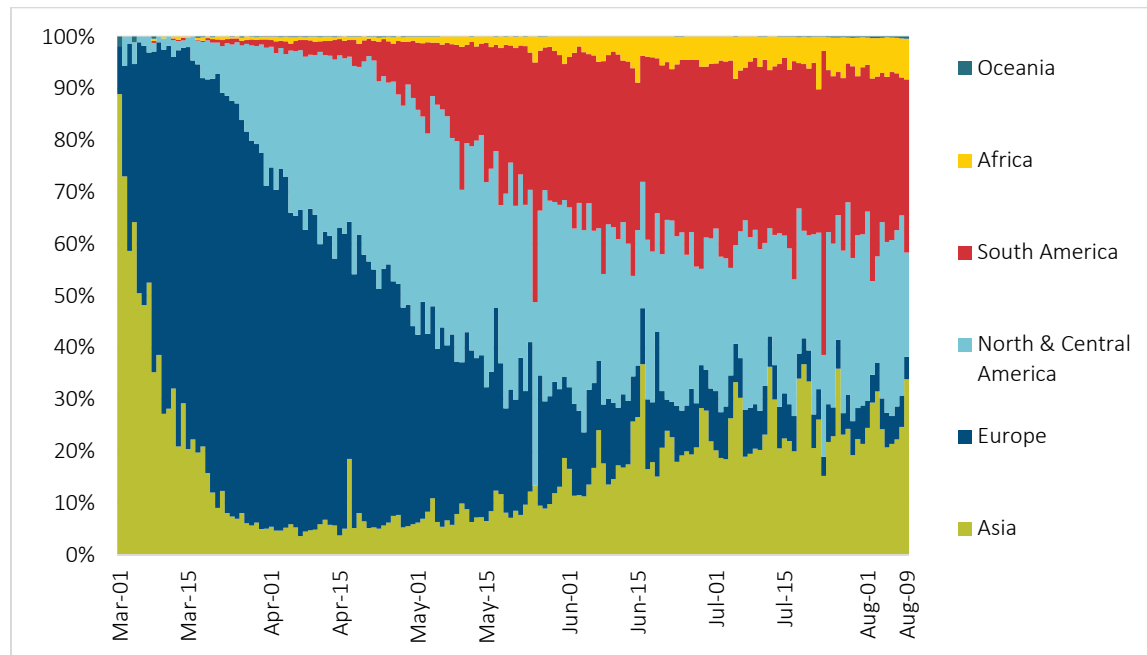
Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations. The spike in new deaths on July 23, 2020, reflects Peru's revised tally of deaths to include deaths that had previously been excluded.¹

The distribution of deaths across continents is more clearly illustrated in Figure 14. While the number of deaths in very early March was relatively small and not clearly visible in Figure 13, Figure 14 shows that nearly all of them were in Asia, with a few in Europe. By the end of March, most COVID-19 deaths were occurring in Europe, although deaths in North America were an increasingly larger proportion of total COVID-19 deaths. By early June, roughly one-third of COVID-19 deaths were occurring in Asia and Europe, roughly one-third in North and Central America, and roughly one-third in South America.

¹ VOA News. (2020, July 23). "Peru's President Says Thousands of COVID-19 Victims Left Off Death Tally." <https://www.voanews.com/covid-19-pandemic/perus-president-says-thousands-covid-19-victims-left-death-tally>.

By August 9, 2020, 34% of new deaths occurred in Asia, South America accounted for 33% of new deaths, North and Central America accounted for 20% of new deaths.

Figure 14
PROPORTION OF DAILY REPORTED NEW COVID-19 DEATHS BY CONTINENT, AUGUST 9, 2020

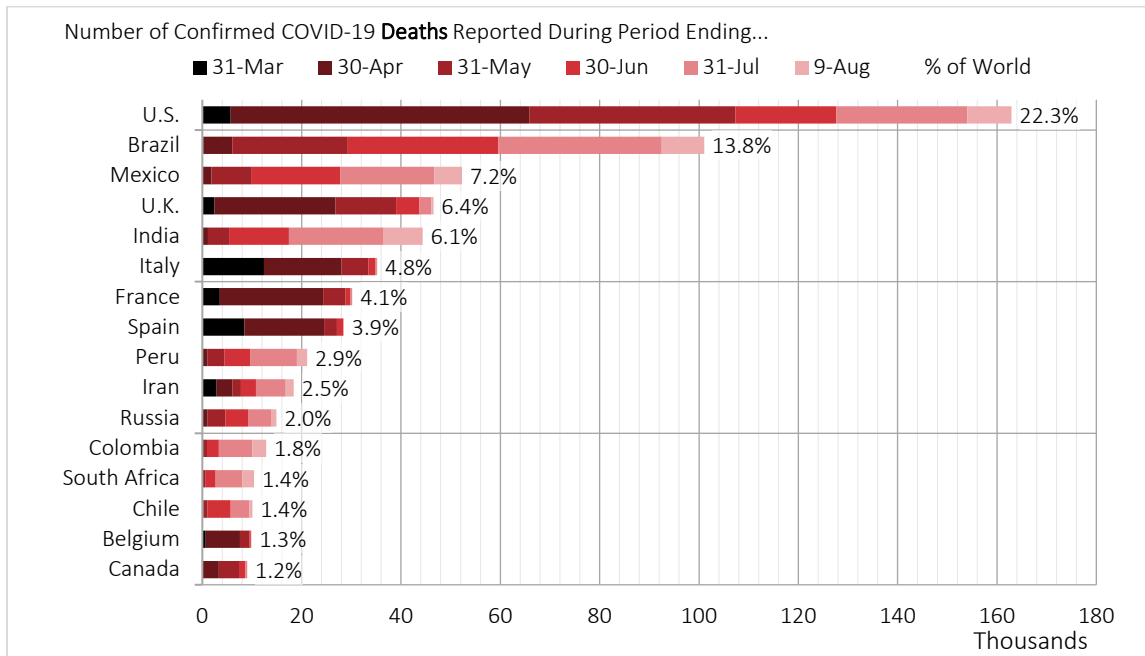


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

Through the same date, roughly half (49.7%) of the reported COVID-19 deaths have occurred in four countries: the U.S., Brazil, Mexico and the U.K. (Figure 15). Note that since July 22, the number of deaths in Mexico has exceeded the number in the U.K. Also note that while Canada is not among the 15 countries with the most reported COVID-19 deaths, Canada is included in the graph as a point of reference.

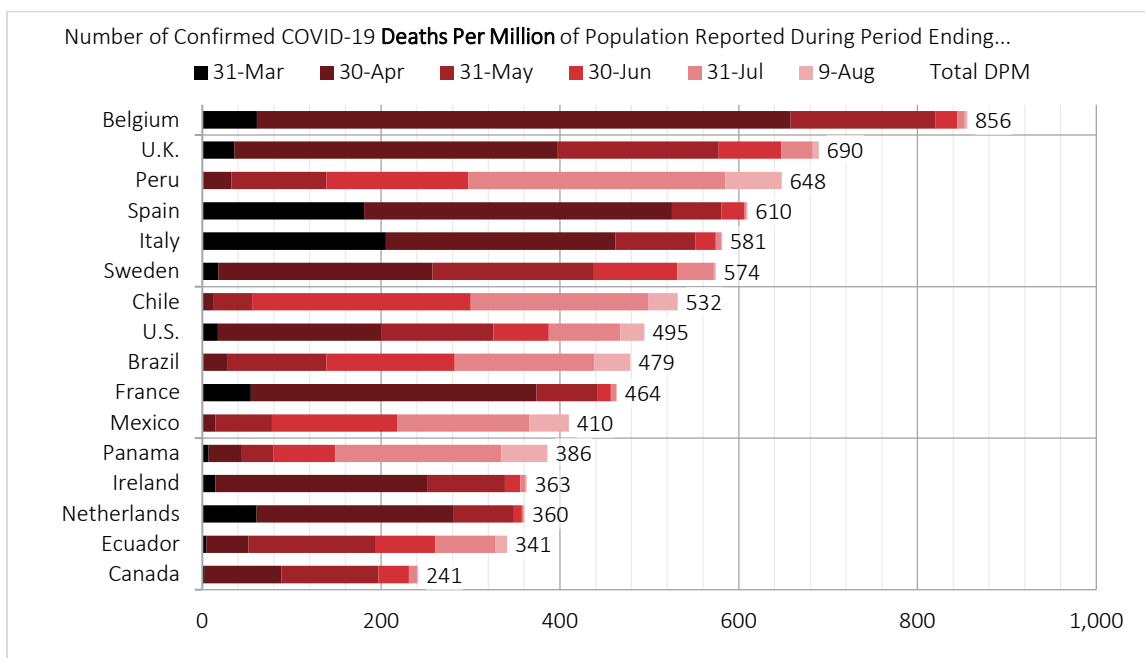
Because population sizes differ by country, considering the number of new deaths per million of population may be more illuminating than studying numbers of new deaths (Figure 16). While the U.S. ranks first in the number of deaths through August 9, 2020, it ranks eighth in the number of deaths per million. Belgium ranks first in number of deaths per million of population, followed by the U.K., Peru and Spain. Canada ranks seventeenth in number of deaths and twentieth in deaths per million.

Figure 15
TOP 15 COUNTRIES FOR NUMBER OF REPORTED COVID-19 DEATHS, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

Figure 16
TOP 16 COUNTRIES FOR NUMBER OF REPORTED CONFIRMED COVID-19 DEATHS PER MILLION, AUGUST 9, 2020

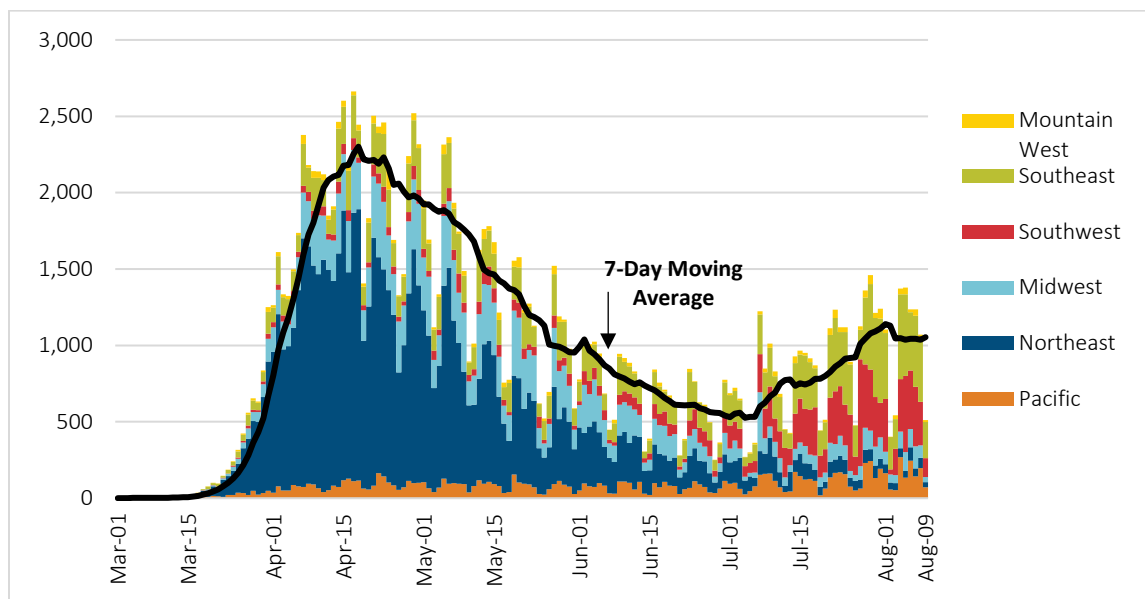


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

U.S. DEATHS

The number of reported new daily COVID-19 deaths in the U.S. generally declined from the first week of May through the first few days of July (Figure 17). One notable exception was June 25, when New Jersey reported 1,854 probable COVID-19 deaths since the start of the pandemic.² Prior to that, New Jersey, like other states, had reported only confirmed cases. Throughout July, daily reported new COVID-19 deaths steadily increased; the trend seems to have leveled off since then.

Figure 17
U.S. DAILY REPORTED NEW COVID-19 DEATHS BY REGION, AUGUST 9, 2020



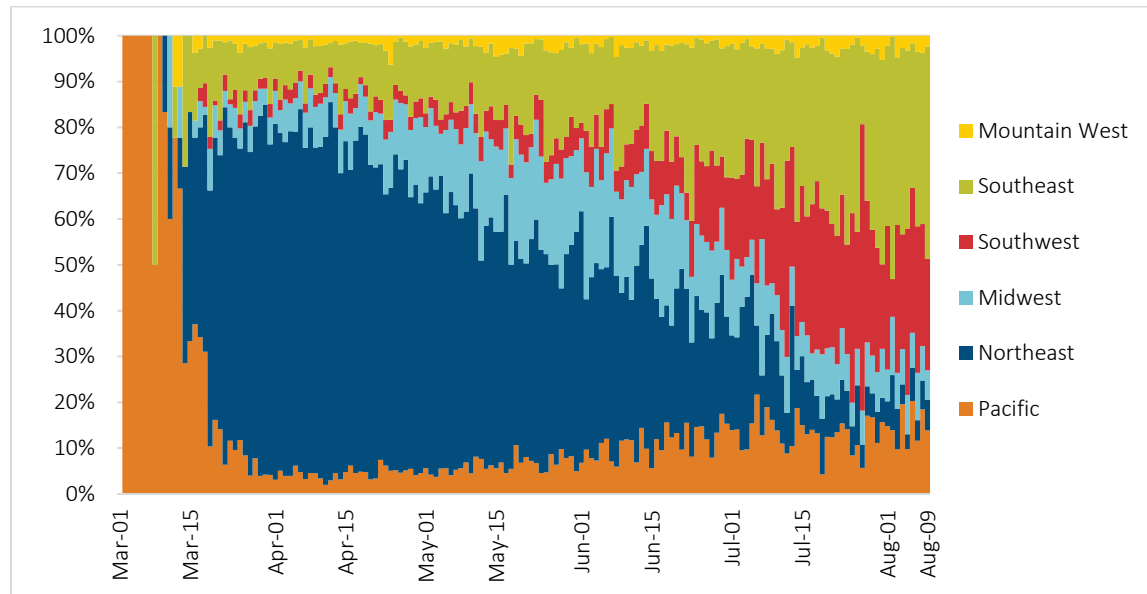
Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

As the concentration of COVID-19 cases has shifted across regions, COVID-19 deaths have also shifted, which is especially apparent in Figure 18. During the first half of March, nearly all U.S. deaths were reported from Pacific states. Significant numbers of new COVID-19 deaths began regularly occurring in the Northeast in mid-March, with roughly one-half of deaths from the Northeast, about one-third from Pacific states, and the remainder distributed across other regions.

In general, more than half of new COVID-19 deaths continued to occur in the Northeast until late May. During that period, the proportion of new reported COVID-19 deaths in the Midwest grew significantly. And by the end May, the proportion of new reported deaths from the Southeast had also grown substantially. Through June, the proportions of deaths occurring in the Northeast generally declined before ticking upward at the end of the month and into July. Proportions of new COVID-19 deaths attributable to the Midwest generally declined through June and into July. However, the proportions of new COVID-19 deaths steadily increased through June and July in the Southeast, Southwest and Pacific. Since mid July, roughly two-thirds of all U.S. COVID-19 deaths have been occurring in the Southeast and Southwest.

² Murphy, Governor Phil. (2020, June 25). "Transcript: June 25th, 2020 Coronavirus Briefing Media." State of New Jersey. <https://www.nj.gov/governor/news/news/562020/20200625a.shtml>.

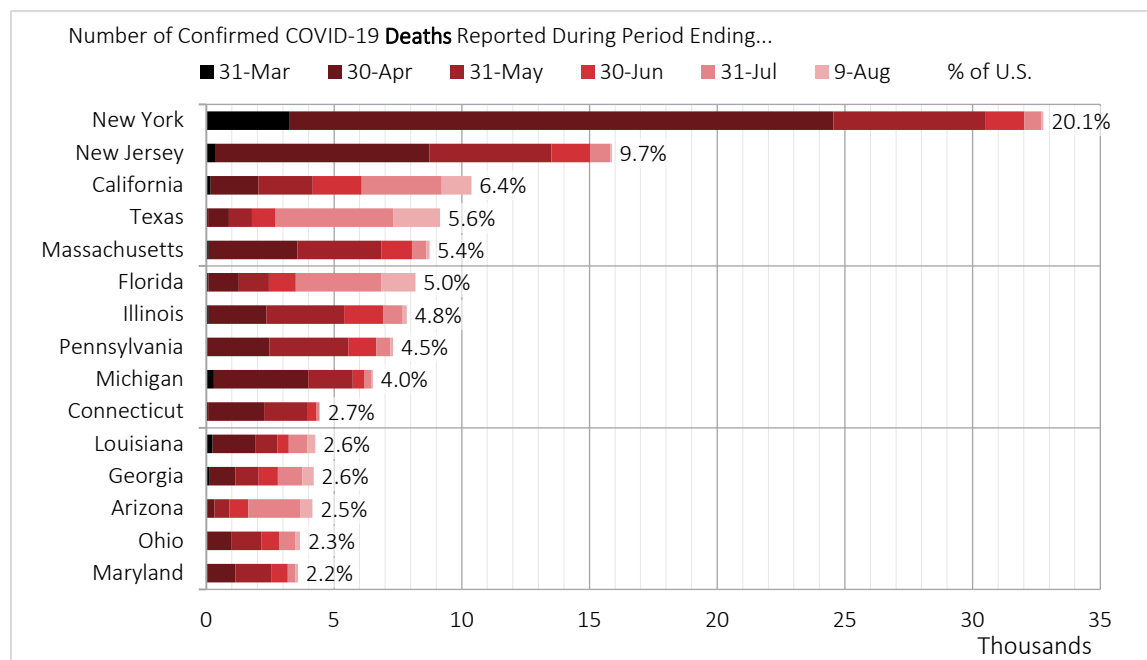
Figure 18
PROPORTION OF U.S. DAILY REPORTED NEW COVID-19 DEATHS BY REGION, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

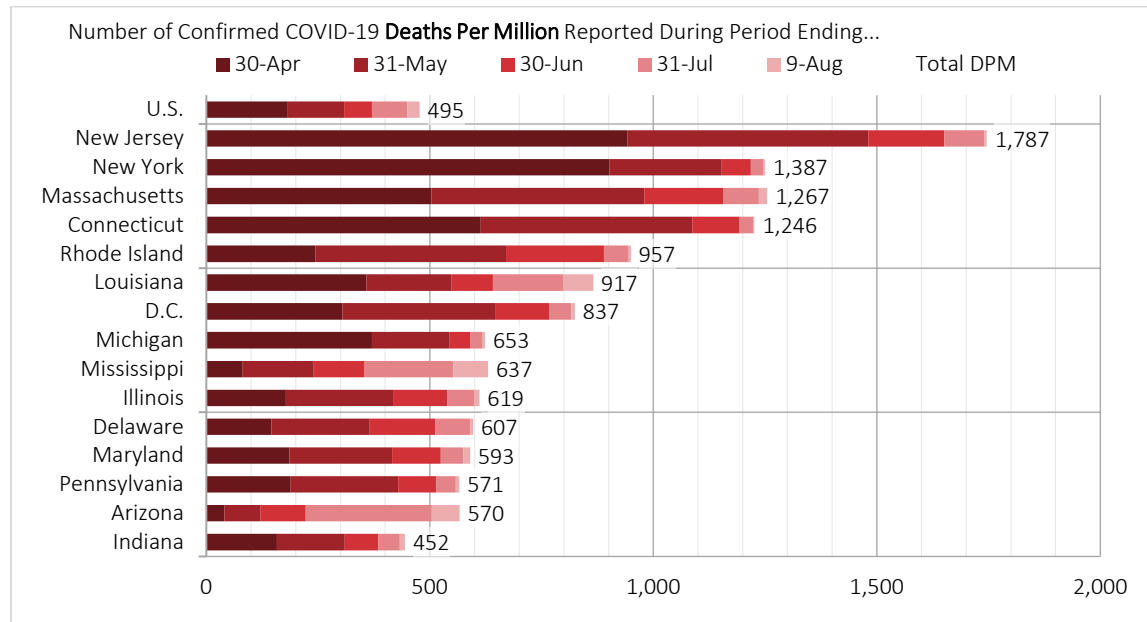
Several states have surpassed New York and New Jersey in the number of reported confirmed COVID-19 cases, but New York and New Jersey continue to lead the U.S. in number of COVID-19 deaths, although by decreasing margins (Figure 19). New York and New Jersey also lead in numbers of COVID-19 deaths per million (Figure 20), but California and Texas—which rank third and fourth in number of deaths—do not appear in the list of top 15 states for deaths per million. Massachusetts, Connecticut and Rhode Island fill out the top 5 states for deaths per million.

Figure 19
TOP 15 STATES FOR NUMBER OF REPORTED CONFIRMED COVID-19 DEATHS, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

Figure 20
TOP 15 STATES FOR NUMBER OF REPORTED COVID-19 DEATHS PER MILLION, AUGUST 9, 2020

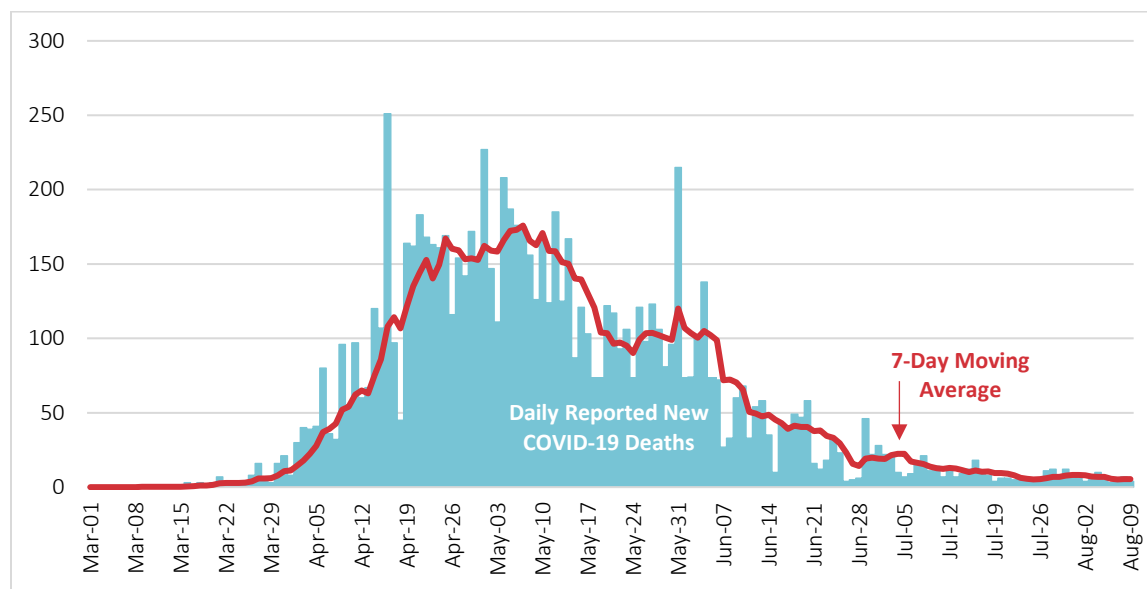


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

CANADIAN DEATHS

In Canada, the number of daily new reported COVID-19 deaths saw a general downward trend from early May through July, after which deaths have essentially leveled off (Figure 21).

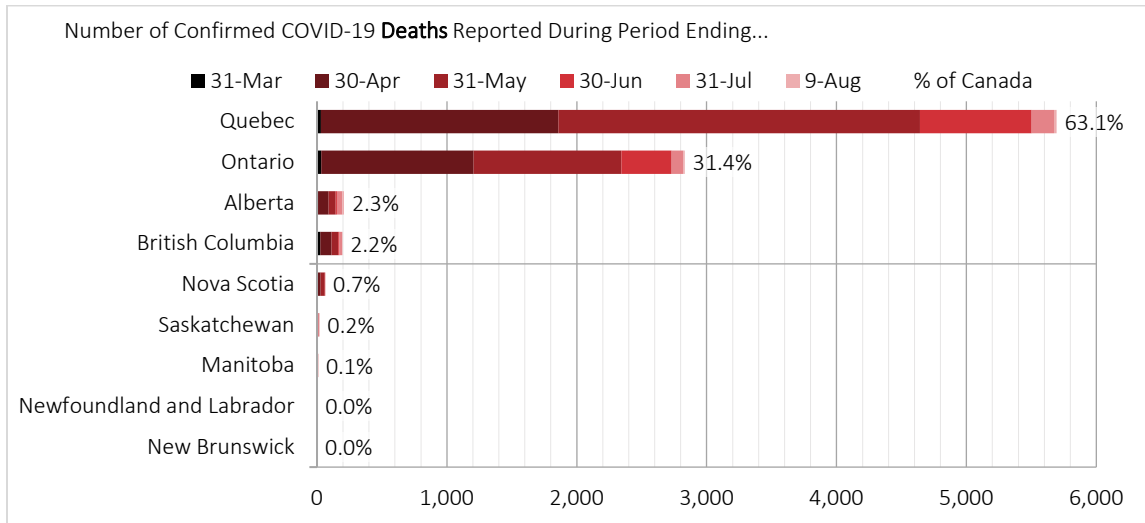
Figure 21
CANADIAN REPORTED NEW COVID-19 DEATHS, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

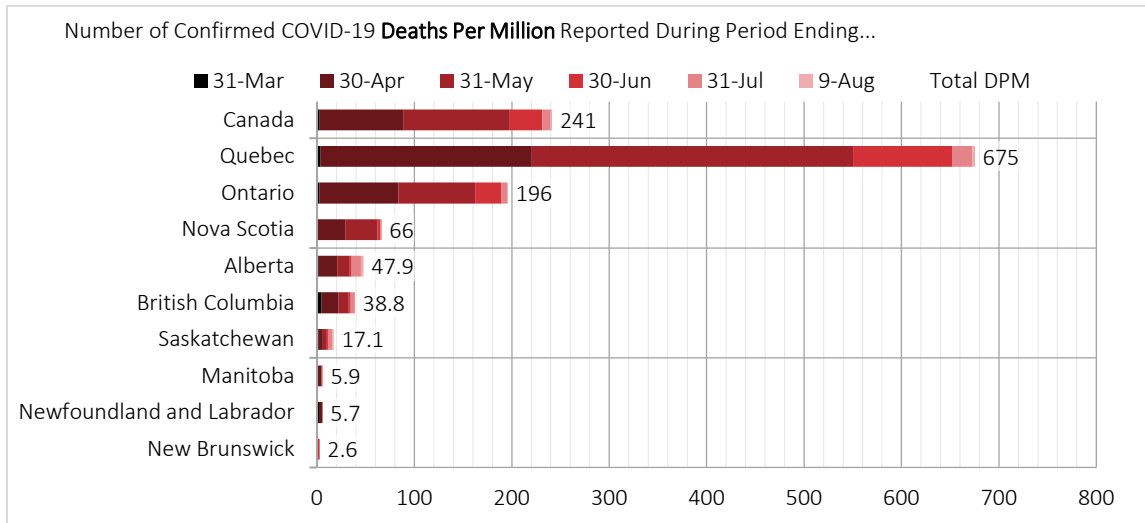
Through August 9, 2020, approximately 95% of Canadian COVID-19 deaths have occurred in Quebec and Ontario (Figure 22). While Quebec has experienced about double the number of deaths as Ontario, Quebec is less populous. Quebec’s number of COVID-19 deaths per million is about 3.5 times that of Ontario (Figure 23).

Figure 22
NUMBER OF REPORTED COVID-19 DEATHS BY PROVINCE, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors’ calculations.

Figure 23
NUMBER OF REPORTED COVID-19 DEATHS PER MILLION BY PROVINCE, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors’ calculations.

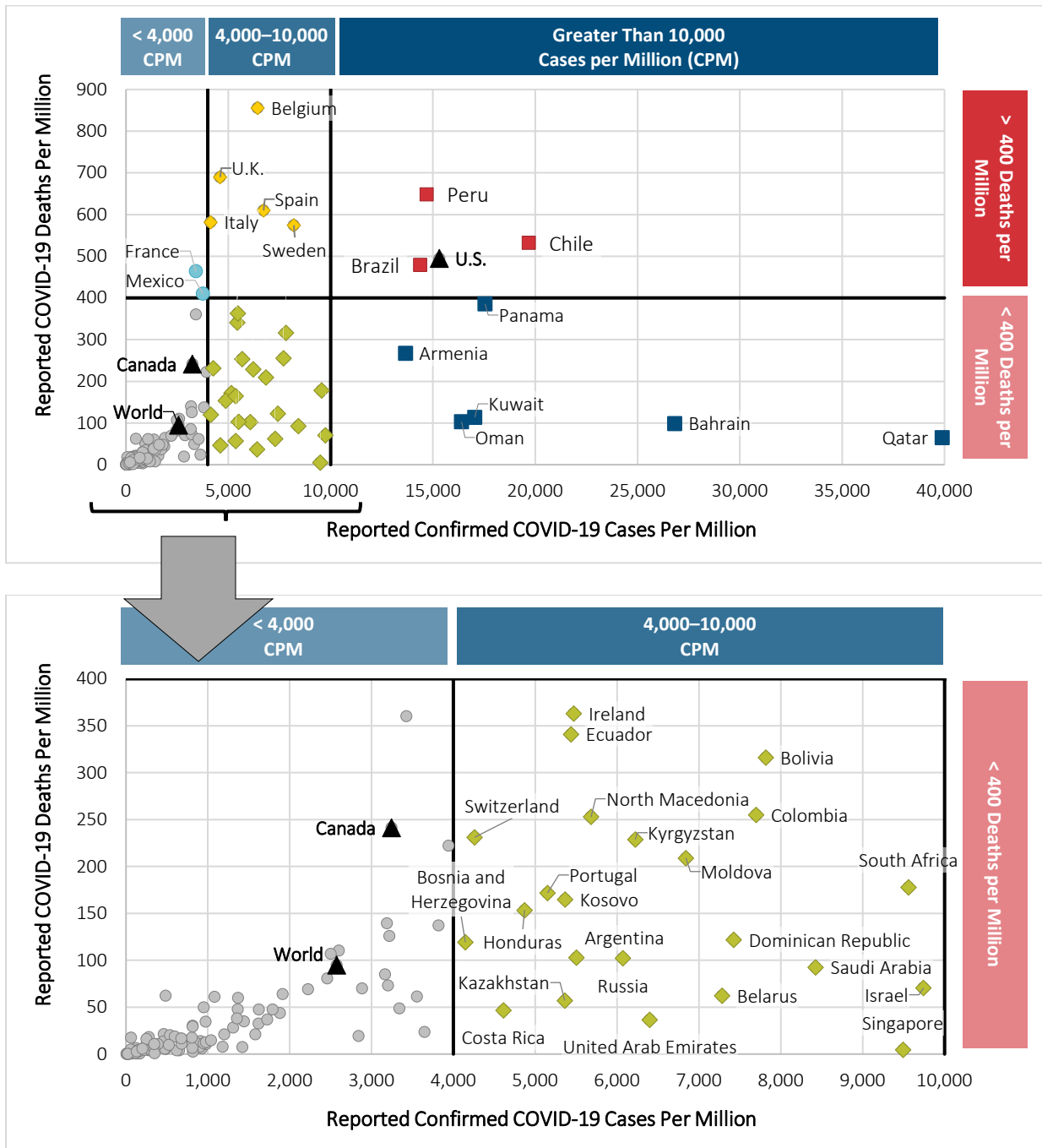
Cases Per Million Compared to Deaths Per Million

Locations with the greatest number of reported COVID-19 deaths per million are not always the locations with the greatest number of reported confirmed COVID-19 cases per million. This section of the report looks more closely at the relationship between these two metrics. Analysis of the reasons that regions have high or low cases per million or deaths per million is beyond the scope of this study.

WORLDWIDE CASES PER MILLION COMPARED TO DEATHS PER MILLION

In Figure 24 reported COVID-19 deaths per million by country are plotted along the vertical axis against reported confirmed COVID-19 cases per million along the horizontal axis. Countries with fewer than 4,000 cases per million and 400 deaths per million are not identified, except for Canada as a point of reference. As of August 9, 2020, Qatar stands out with an exceptionally high number of cases per million (39,881) but a low number of deaths per million (65). Belgium stands out with the highest number of deaths per million (856), although its number of cases per million (6,426) is more moderate relative to other countries.

Figure 24
 COVID-19 CASES PER MILLION AND DEATHS PER MILLION BY COUNTRY, AUGUST 9, 2020

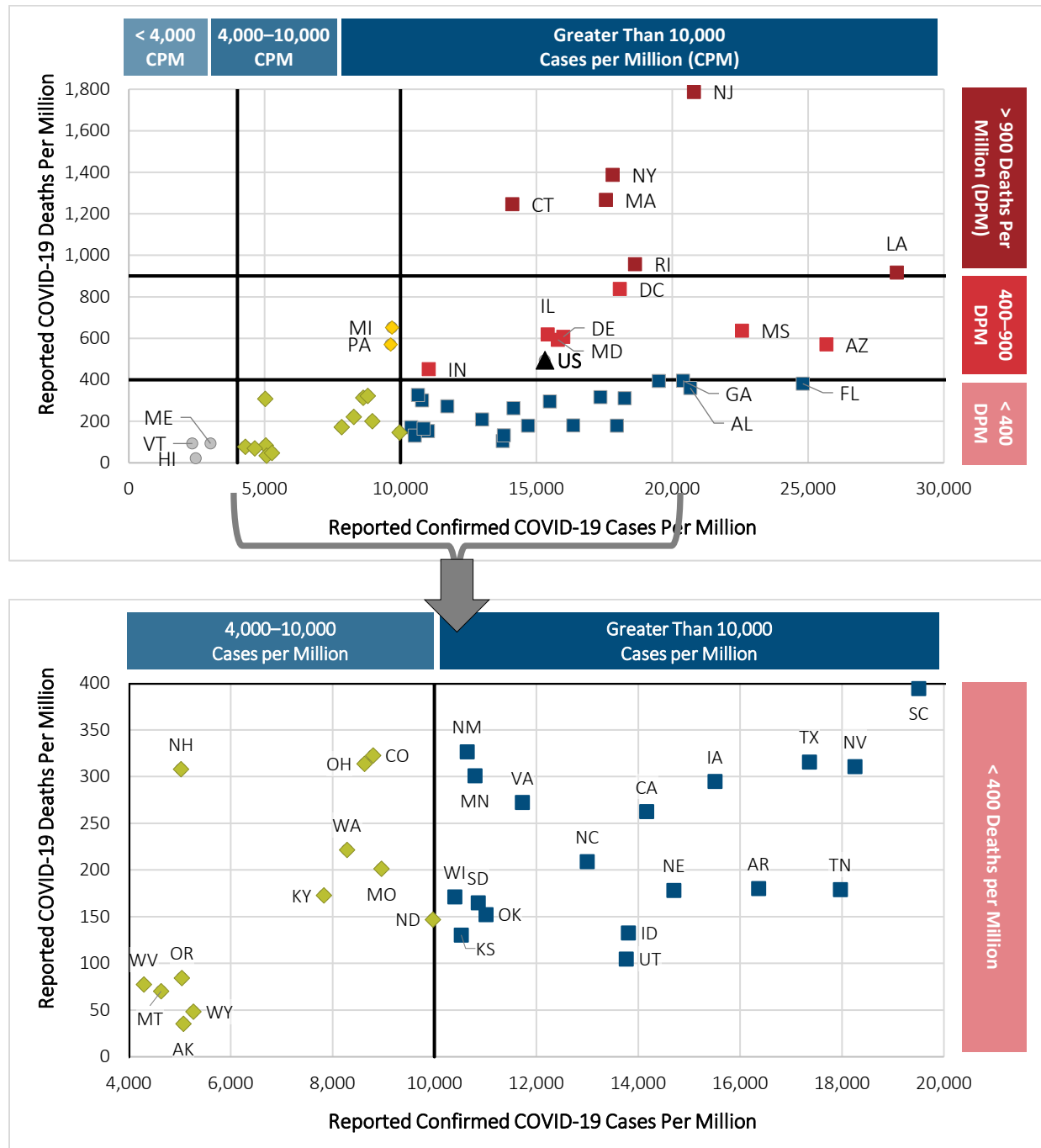


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

U.S. CASES PER MILLION COMPARED TO DEATHS PER MILLION

Within the U.S., the numbers of both cases per million and deaths per million for some states far exceed any country's national metrics. Figure 25 shows that as of August 9, 2020, the U.S. national number of reported confirmed COVID-19 cases per million was 15,313, and the number of COVID-19 deaths per million was 495. The number of cases per million by state ranged from 2,338 in Vermont to 28,265 in Louisiana, while the number of deaths per million ranged from 22 in Hawaii to 1,787 in New Jersey.

Figure 25
COVID-19 REPORTED CONFIRMED CASES PER MILLION AND DEATHS PER MILLION BY STATE, AUGUST 9, 2020



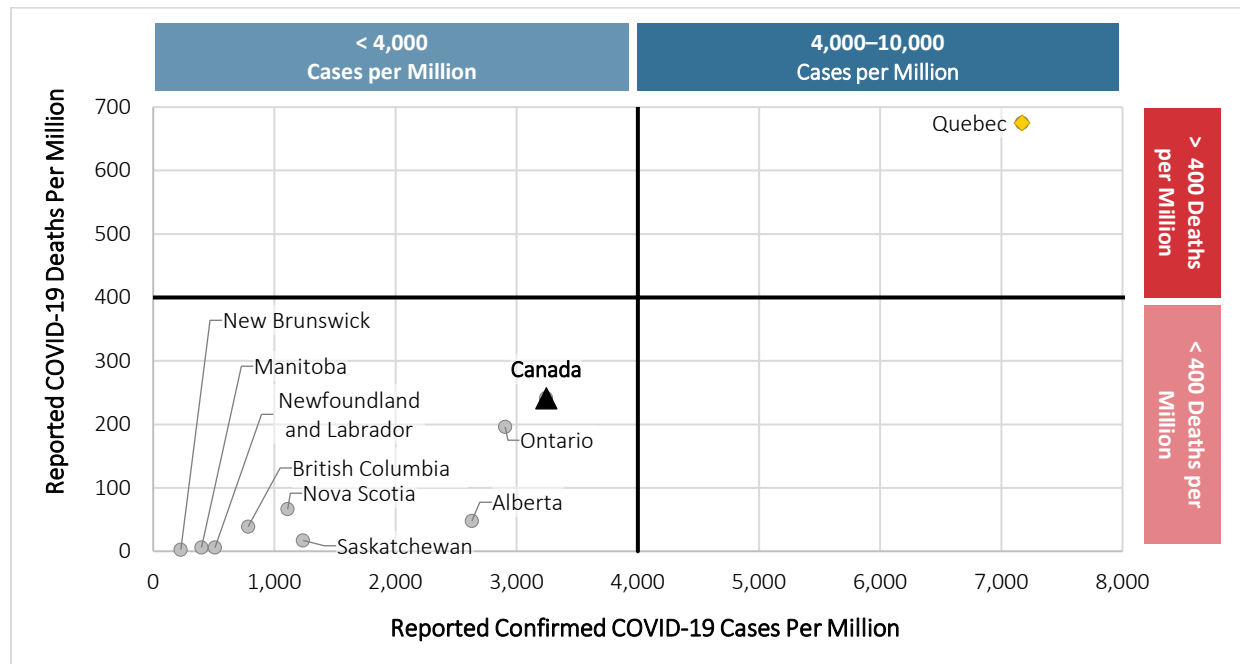
Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

CANADIAN CASES PER MILLION COMPARED TO DEATHS PER MILLION

The plot of Canadian COVID-19 reported confirmed cases per million against reported deaths per million shows that Quebec and Ontario experience have heavily skewed the national statistics for Canada, but especially Quebec (Figure 26). As of August 9, 2020, Canada's national COVID-19 reported confirmed cases per million and reported deaths per million were 3,244 and 241, respectively. The only province that exceeds either metric is Quebec, at 7,171 and 675, respectively.

To understand the degree to which Quebec's metrics influence the national metrics, one can compare the national metric to the recomputed national metric excluding Quebec: 2,101 cases per million and 115 deaths per million, both much lower than the metrics including Quebec. Within this subset of provinces, only Alberta and Ontario have greater numbers of cases per million—2,630 and 2,905, respectively. And only Ontario has a greater number of deaths per million, 166.

Figure 26
COVID-19 REPORTED CONFIRMED CASES PER MILLION AND DEATHS PER MILLION BY PROVINCE, AUGUST 9, 2020



Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

About The Society of Actuaries

With roots dating back to 1889, the *Society of Actuaries* (SOA) is the world's largest actuarial professional organizations with more than 31,000 members. Through research and education, the SOA's mission is to advance actuarial knowledge and to enhance the ability of actuaries to provide expert advice and relevant solutions for financial, business and societal challenges. The SOA's vision is for actuaries to be the leading professionals in the measurement and management of risk.

The SOA supports actuaries and advances knowledge through research and education. As part of its work, the SOA seeks to inform public policy development and public understanding through research. The SOA aspires to be a trusted source of objective, data-driven research and analysis with an actuarial perspective for its members, industry, policymakers and the public. This distinct perspective comes from the SOA as an association of actuaries, who have a rigorous formal education and direct experience as practitioners as they perform applied research. The SOA also welcomes the opportunity to partner with other organizations in our work where appropriate.

The SOA has a history of working with public policymakers and regulators in developing historical experience studies and projection techniques as well as individual reports on health care, retirement and other topics. The SOA's research is intended to aid the work of policymakers and regulators and follow certain core principles:

Objectivity: The SOA's research informs and provides analysis that can be relied upon by other individuals or organizations involved in public policy discussions. The SOA does not take advocacy positions or lobby specific policy proposals.

Quality: The SOA aspires to the highest ethical and quality standards in all of its research and analysis. Our research process is overseen by experienced actuaries and nonactuaries from a range of industry sectors and organizations. A rigorous peer-review process ensures the quality and integrity of our work.

Relevance: The SOA provides timely research on public policy issues. Our research advances actuarial knowledge while providing critical insights on key policy issues, and thereby provides value to stakeholders and decision makers.

Quantification: The SOA leverages the diverse skill sets of actuaries to provide research and findings that are driven by the best available data and methods. Actuaries use detailed modeling to analyze financial risk and provide distinct insight and quantification. Further, actuarial standards require transparency and the disclosure of the assumptions and analytic approach underlying the work.

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