

COVID-19 Update: Key Statistics on Cases, Deaths and Hospitalizations



August 25, 2020



COVID-19 Update: Key Statistics on Cases, Deaths and Hospitalizations

August 25, 2020

AUTHOR Lisa A. Schilling, FSA, EA, FCA, MAAA

REVIEWERS R. Dale Hall, FSA, MAAA, CERA, CFA
J. Patrick Wiese, ASA

Caveat and Disclaimer

This study is published by the Society of Actuaries (SOA) and contains information from a variety of sources. The study is for informational purposes only and should not be construed as professional or financial advice. The SOA does not recommend or endorse any use of the information provided in this study. The SOA makes no warranty, express or implied, or representation whatsoever and assumes no liability in connection with the use or misuse of this study.

Links to research by other organizations are being provided for informational purposes only. The content in these third-party links do not necessarily reflect the opinions of Society of Actuaries. The Society of Actuaries is not responsible for the reliability, accuracy or content of the third-party site(s). If you have questions about the content on such sites, please contact the site directly.

Copyright © 2020 by the Society of Actuaries. All rights reserved.

Contents

Contents	3
Introduction.....	4
Worldwide.....	4
Reported Cases	4
Reported Deaths	7
Cases Per Million Compared to Deaths Per Million	10
Canada	12
Reported Cases	12
Reported Deaths	13
Cases Per Million Compared to Deaths Per Million	14
Hospitalizations.....	15
United States	17
Reported Cases	17
Reported Deaths	20
Cases Per Million Compared to Deaths Per Million	24
Hospitalizations.....	25
Florida	27
New York City	28
Wrap-Up.....	29
About The Society of Actuaries	30

COVID-19 Update: Key Statistics on Cases, Deaths and Hospitalizations

August 25, 2020

Introduction

The COVID-19 pandemic that began in December 2019 continues, although the number of new reported cases worldwide seems to be levelling off. 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. 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. Other parts of the world have begun to experience the pandemic only more recently.

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 included a section of Key Statistics. This report provides updates to some of the data from the Key Statistics section of the brief and additional related data, organized by geography.

On a cautionary note: data from a specific location are instrumental to understanding the COVID-19 situation in that specific locale. Experience in other locations may differ, depending on many factors including, population density, availability of medical resources, the degree to which movement was allowed and the degree to which social distancing was observed, among other things.

Worldwide

REPORTED CASES

Across countries, confirmed cases are a function of the ability for any public health agency 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.

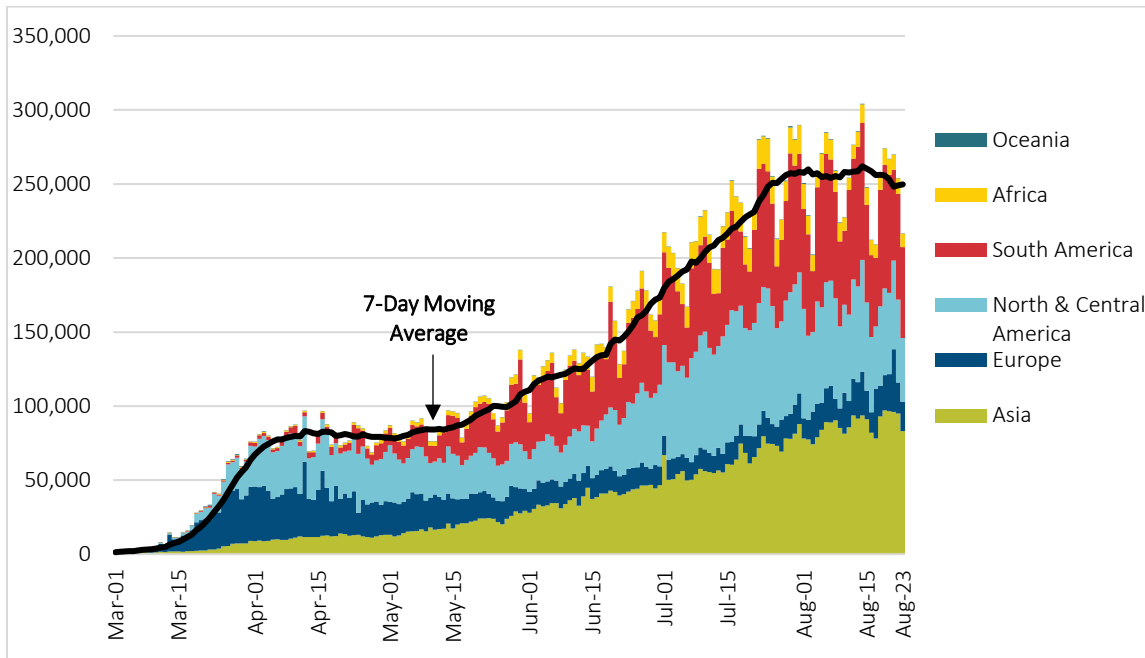
After the number of daily new reported COVID-19 cases held steady from mid-April to mid-May, new reported COVID-19 cases rose steeply until late July. Since late July, daily new reported confirmed cases appear to have leveled off (Figure 1). Through August 23, 2020, 23.4 million cases had been reported 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 23, 2020, the U.S. had reported 24% 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 9 of the top 15 have reported 70% or more of their cases since the start of June.

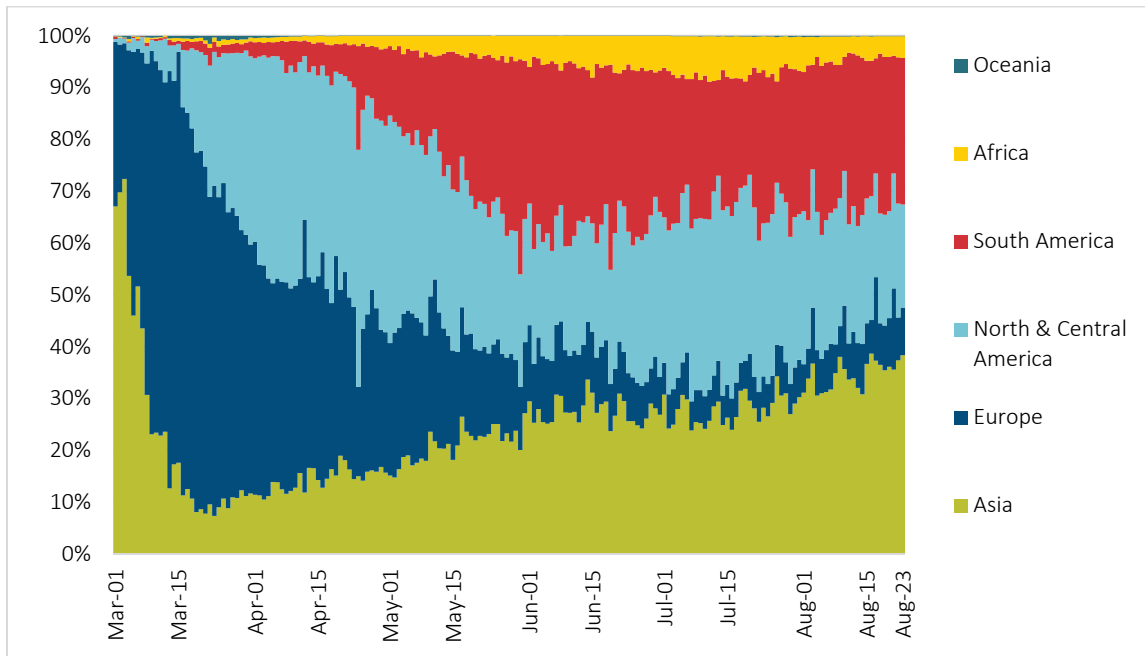
Figure 1

WORLDWIDE REPORTED CONFIRMED DAILY NEW COVID-19 CASES BY CONTINENT, AUGUST 23, 2020



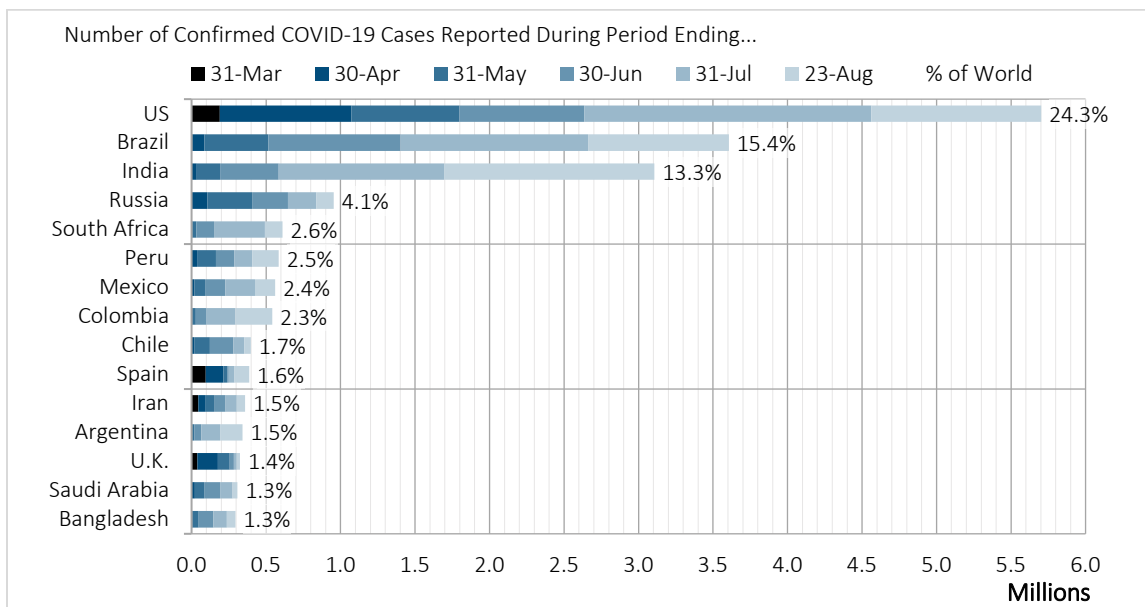
Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

Figure 2
PERCENTAGE OF WORLDWIDE DAILY REPORTED NEW COVID-19 DEATHS BY CONTINENT, AUGUST 23, 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 23, 2020

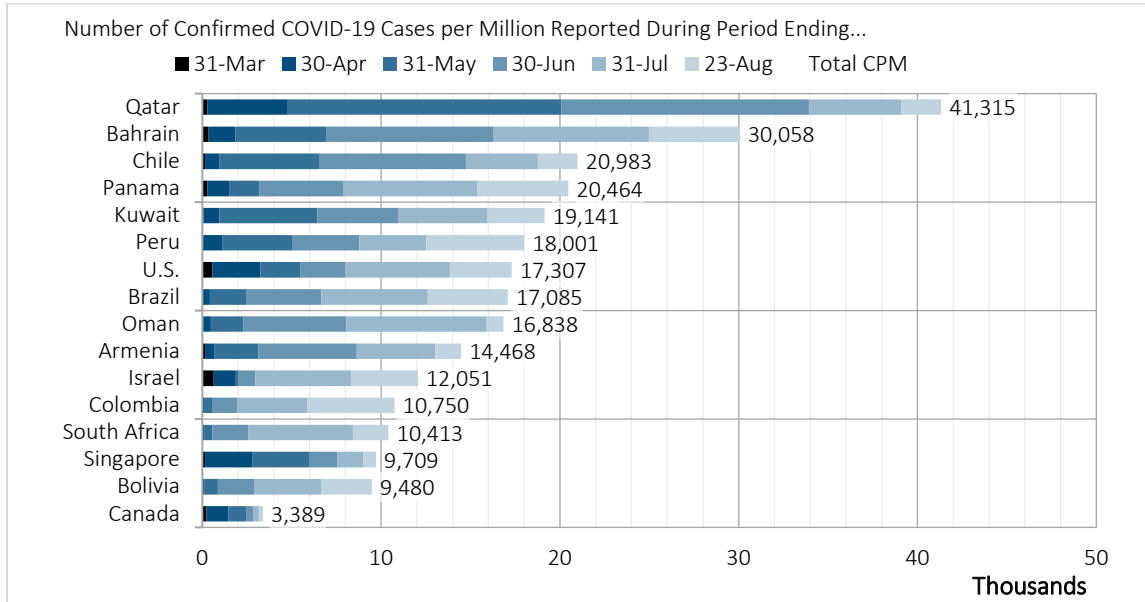


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

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). While the U.S. ranks first in the number of cases, with greater than 17,300 reported COVID-19 cases per million, it ranks seventh in the number of cases per million. Qatar, with greater than 41,300 reported COVID-19 cases per million of population, continues to rank first in number of cases per

million, far outpacing second place Bahrain and third place Chile. Canada—included as a point of reference—reports about 3,400 cases per million and ranks 53rd in cases per million worldwide.

Figure 4
TOP 15 COUNTRIES FOR NUMBER OF REPORTED CONFIRMED COVID-19 CASES PER MILLION, AUGUST 23, 2020

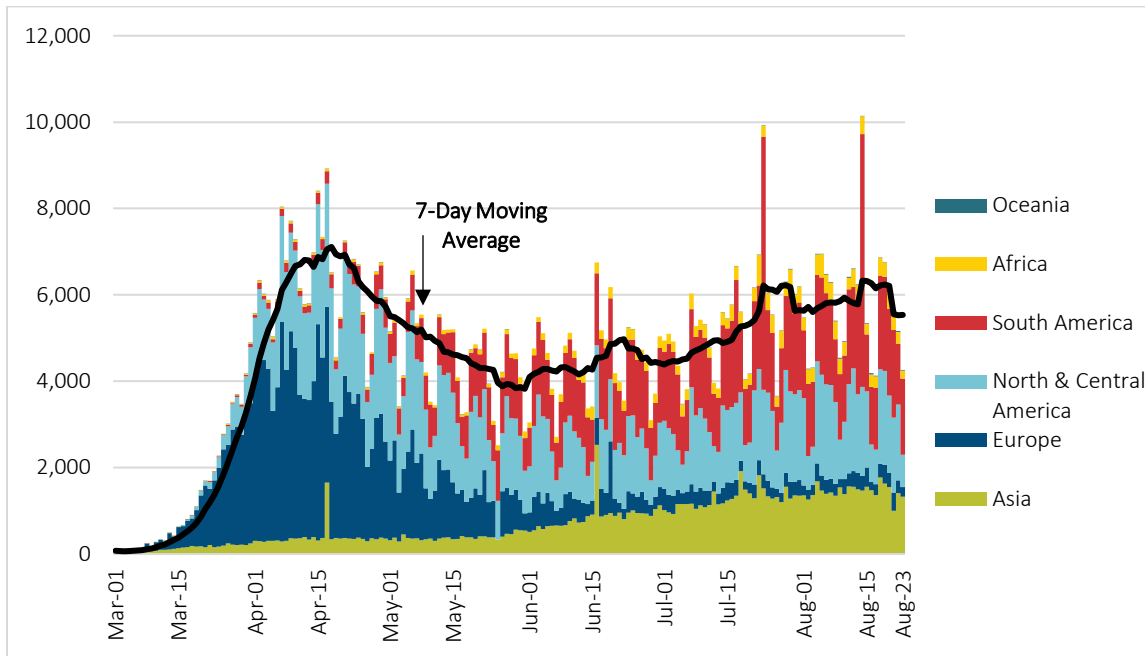


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

REPORTED DEATHS

As of August 23, 2020, approximately 809,000 deaths due to COVID-19 had been reported worldwide. The number of reported new COVID-19 deaths slowed from mid-April through the end of May before slowly rising again until mid August. Absent the effect of reporting corrections, it appears that in mid-August the number of new deaths may have begun leveling off (Figure 5). 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 the Americas and Asia have held roughly steady or increased.

Figure 5
WORLDWIDE DAILY REPORTED NEW COVID-19 DEATHS BY CONTINENT, AUGUST 23, 2020

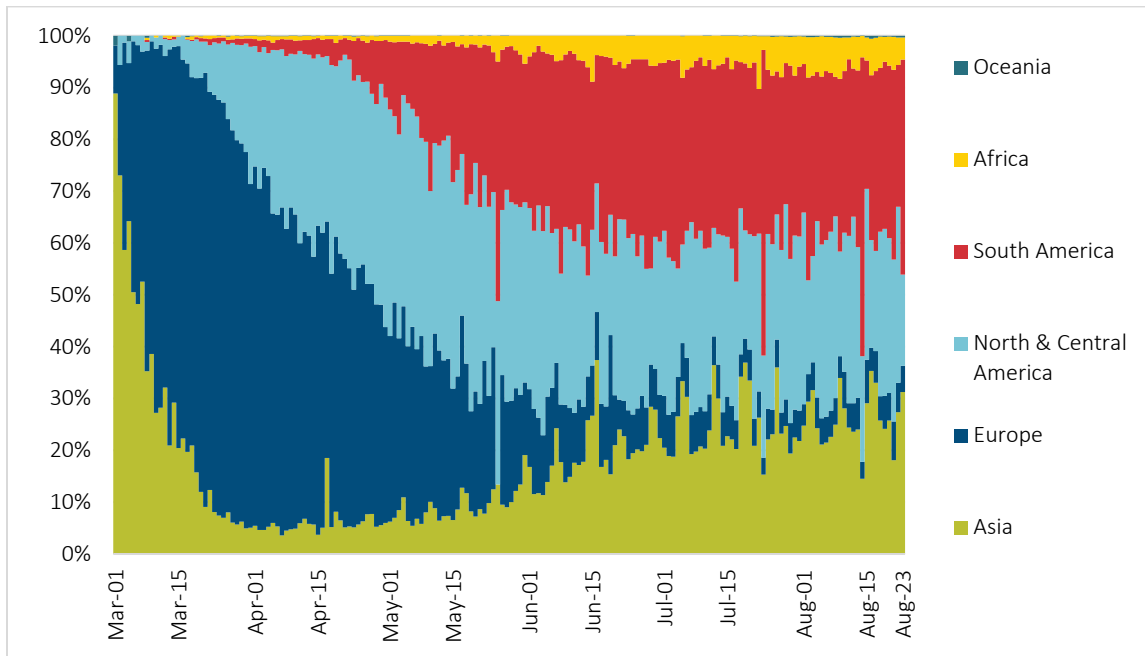


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations. The spike in new deaths on July 23, 2020, reflects Peru's revised tally of deaths to include deaths that had previously been excluded.¹

The distribution of deaths across continents is more clearly illustrated in Figure 6. While the number of deaths in very early March was relatively small and not clearly visible in Figure 5, Figure 6 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. Since early July, approximately one-third of the world's daily new reported COVID-19 deaths have occurred in South America, about 30% of the world's daily new reported COVID-19 deaths have occurred in Asia, and roughly 30% have been in North and Central 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>.

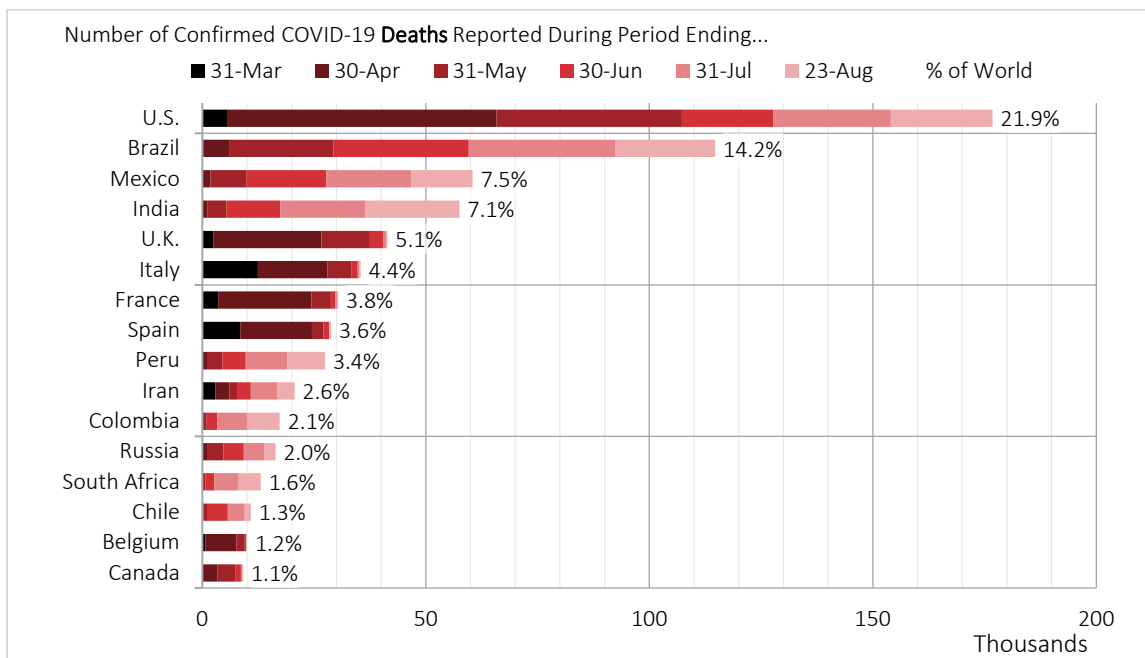
Figure 6
PROPORTION OF DAILY REPORTED NEW COVID-19 DEATHS BY CONTINENT, AUGUST 23, 2020



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

Through the same date, roughly half (50.7%) of the reported COVID-19 deaths have occurred in four countries: the U.S., Brazil, Mexico and India. (Figure 7). Canada ranks 18th and is included in the graph as a point of reference.

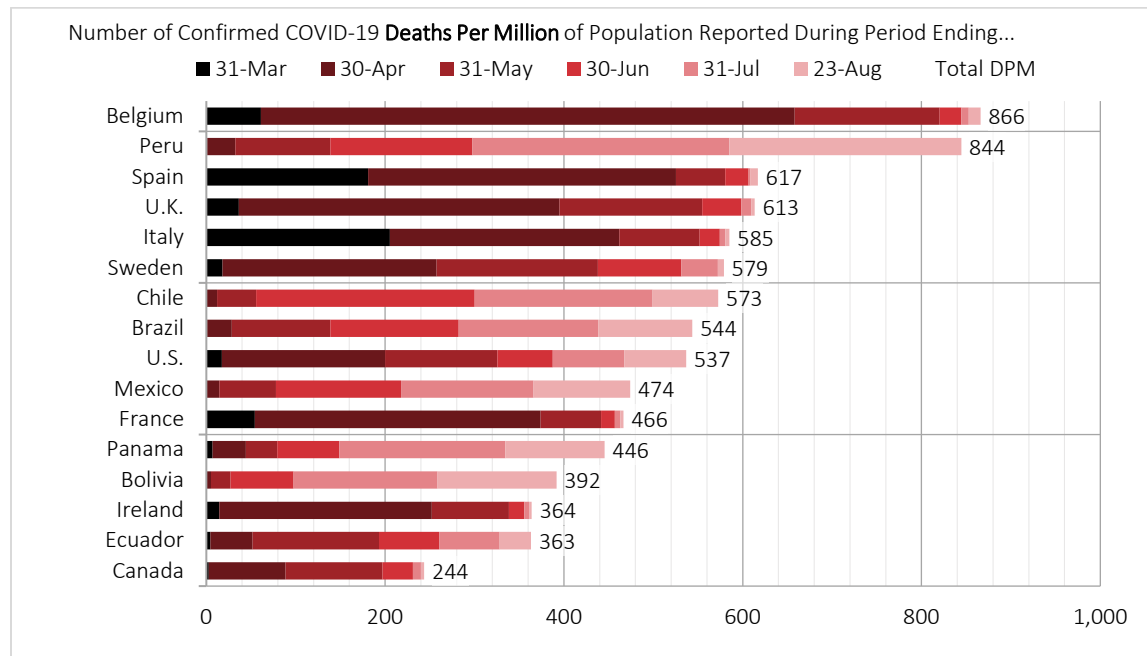
Figure 7
TOP 15 COUNTRIES FOR NUMBER OF REPORTED COVID-19 DEATHS, AUGUST 23, 2020



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

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 8). While the U.S. ranks first in the number of deaths through August 23, 2020, it ranks ninth in the number of deaths per million of population. Belgium, with 866 deaths per million, ranks first, followed by Peru with 844, Spain with 617 and the U.K. with 613. At 244 deaths per million, Canada ranks 22nd in deaths per million.

Figure 8
TOP 16 COUNTRIES FOR NUMBER OF REPORTED CONFIRMED COVID-19 DEATHS PER MILLION, AUGUST 23, 2020

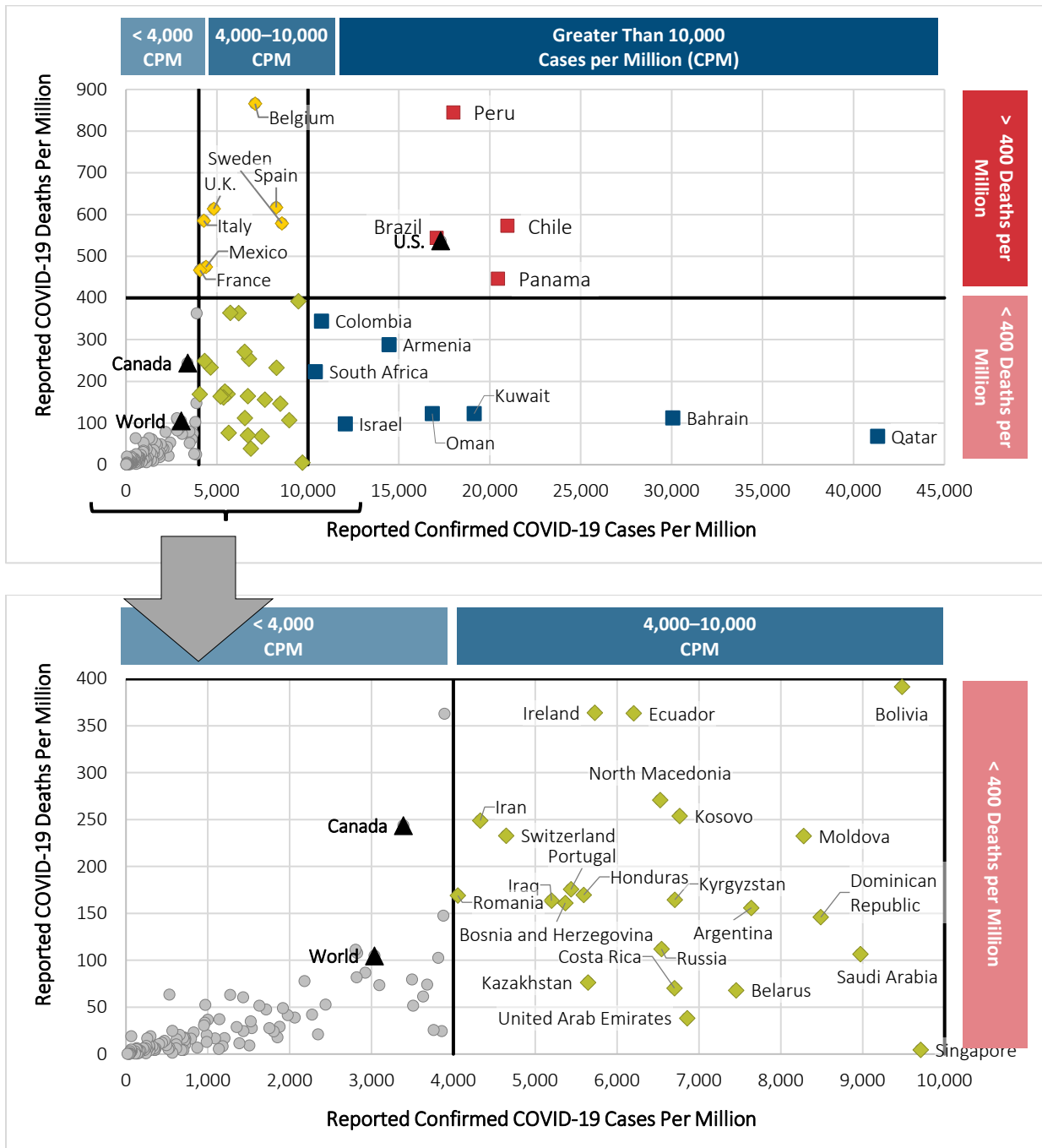


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

CASES PER MILLION COMPARED TO DEATHS PER MILLION

Countries with the greatest number of reported COVID-19 deaths per million are not always the countries with the greatest number of reported confirmed COVID-19 cases per million. In Figure 9 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 23, 2020, Qatar stands out with an exceptionally high number of cases per million (41,315) but a low number of deaths per million (68). Belgium stands out with the highest number of deaths per million (866), although its number of cases per million (7,101) is more moderate relative to other countries. Analysis of the reasons that regions have high or low cases per million or deaths per million is beyond the scope of this study.

Figure 9
COVID-19 CASES PER MILLION AND DEATHS PER MILLION BY COUNTRY, AUGUST 23, 2020



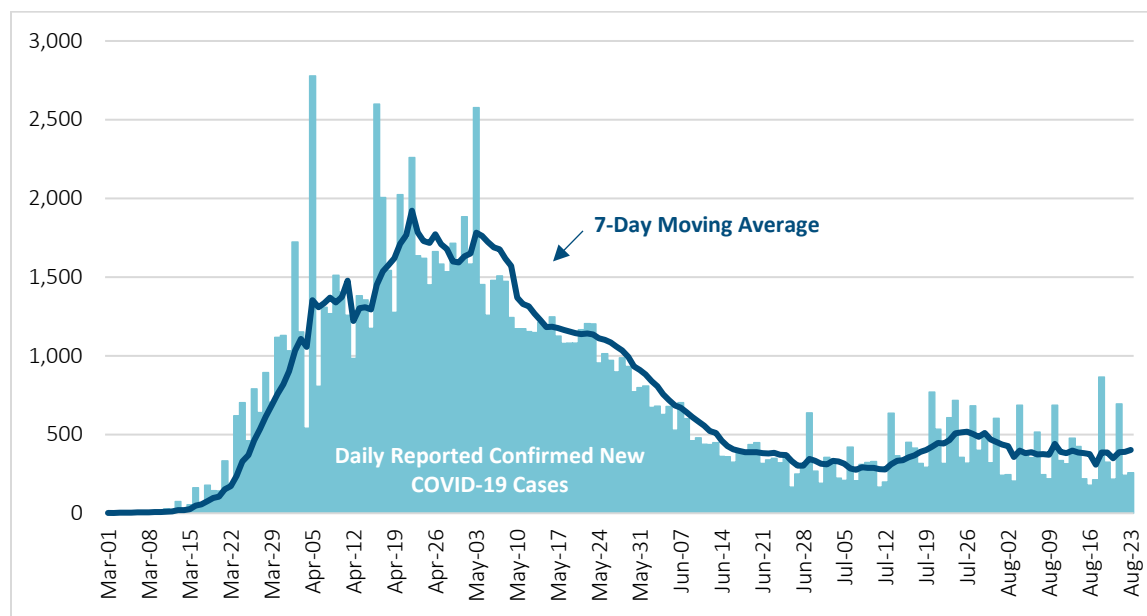
Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

Canada

REPORTED CASES

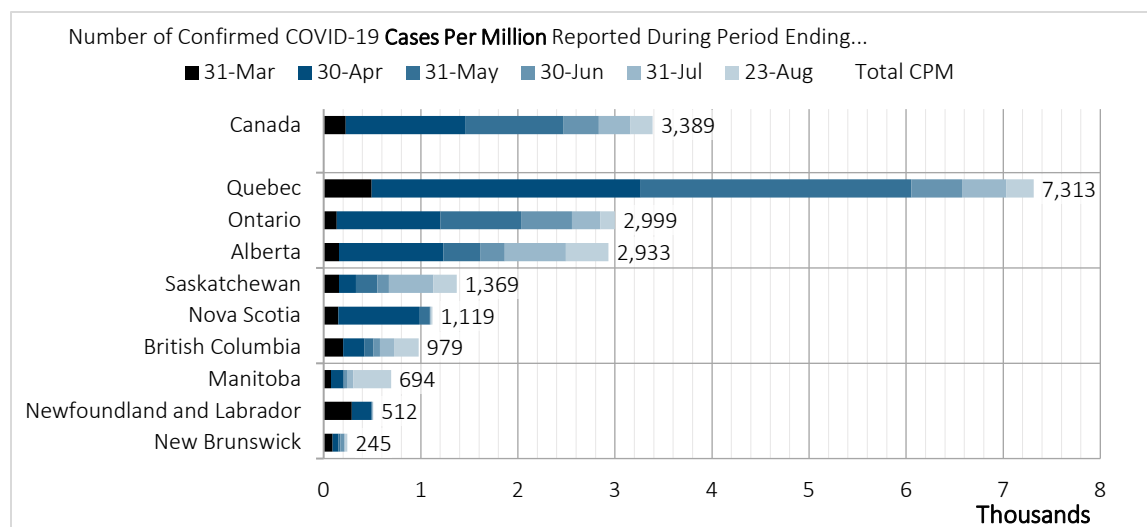
In Canada, the number of daily new reported confirmed COVID-19 cases fell steadily from early May through June, then slowly rose through most of July before slowly declining again and leveling off starting in early August (Figure 10). Quebec continues to show more than double the number of reported confirmed COVID-19 cases per million than the respective number for Canada as a whole (Figure 11).

Figure 10
CANADIAN REPORTED CONFIRMED NEW COVID-19 CASES, AUGUST 23, 2020



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

Figure 11
NUMBER OF REPORTED CONFIRMED COVID-19 CASES PER MILLION BY PROVINCE, AUGUST 23, 2020

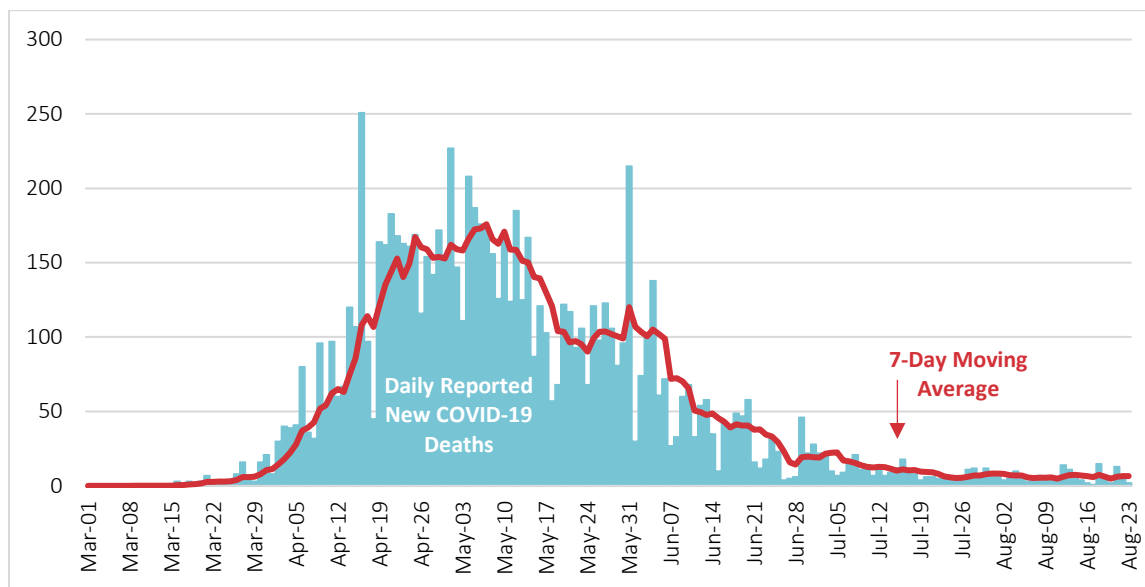


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

REPORTED 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 12).

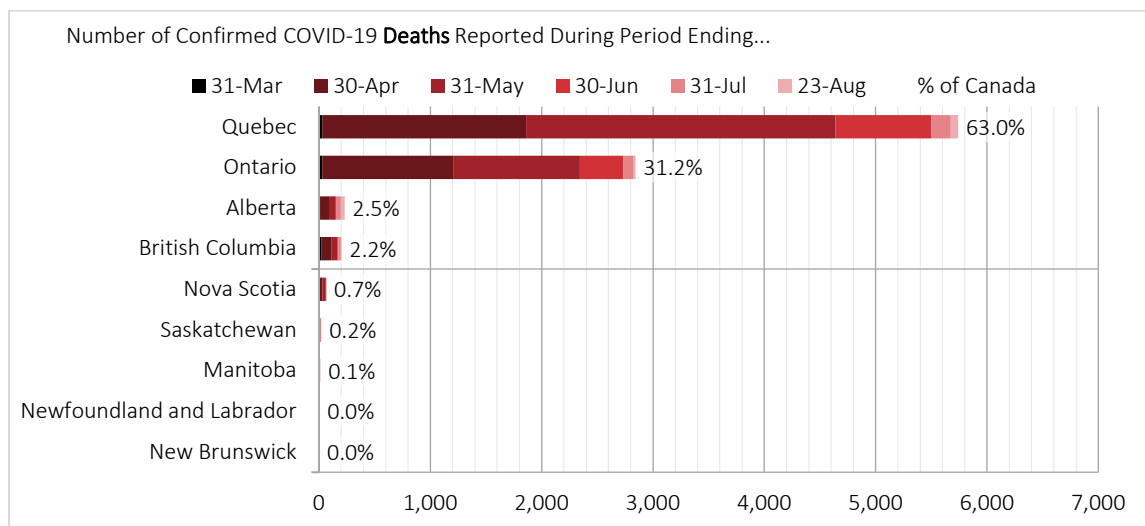
Figure 12
CANADIAN REPORTED NEW COVID-19 DEATHS, AUGUST 23, 2020



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

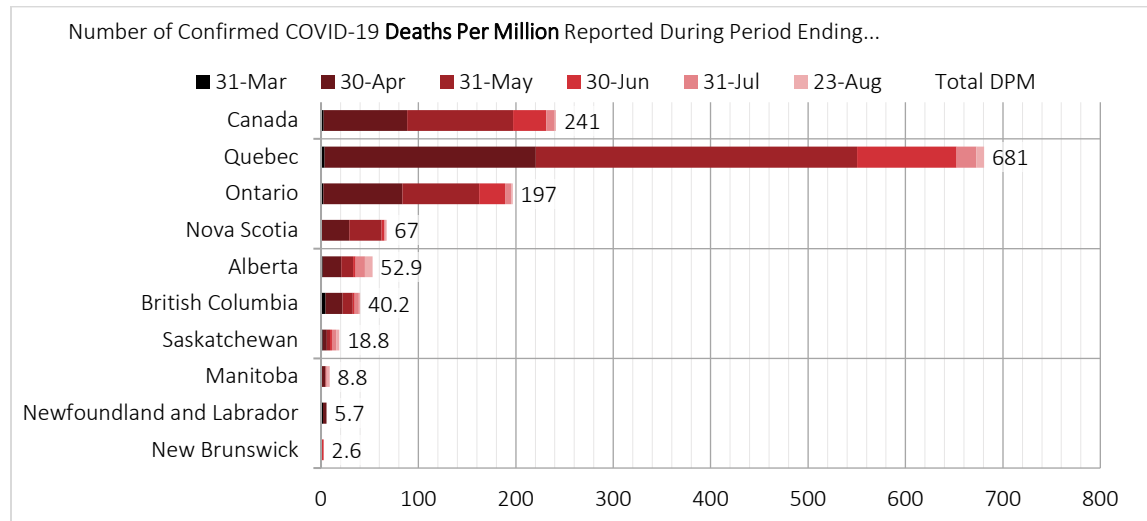
Through August 23, 2020, 94% of Canadian COVID-19 deaths have occurred in Quebec and Ontario (Figure 13). While Quebec has experienced about double the number of deaths as Ontario, Quebec is less populous. Quebec's number of COVID-19 deaths per million is about 3.5 times that of Ontario (Figure 14).

Figure 13
NUMBER OF REPORTED COVID-19 DEATHS BY PROVINCE, AUGUST 23, 2020



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

Figure 14
NUMBER OF REPORTED COVID-19 DEATHS PER MILLION BY PROVINCE, AUGUST 23, 2020



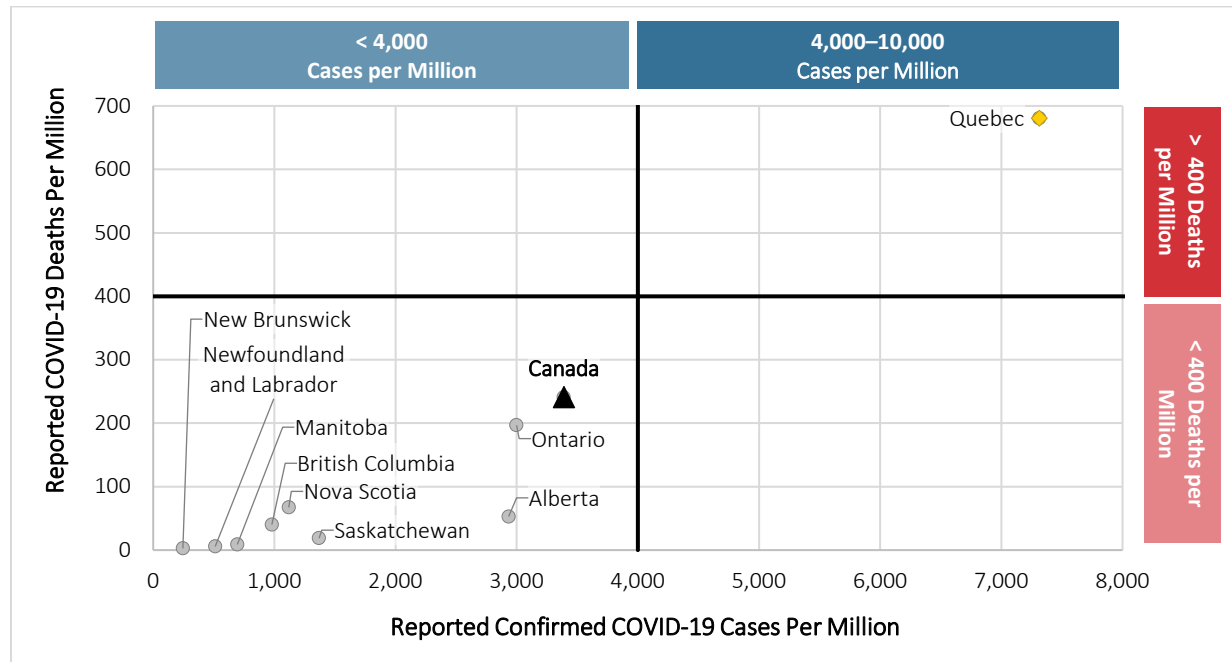
Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

CASES PER MILLION COMPARED TO DEATHS PER MILLION

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 15). As of August 23, 2020, Canada's national COVID-19 reported confirmed cases per million and reported deaths per million were 3,389 and 241, respectively. The only province that exceeds either metric is Quebec, at 7,313 and 681, 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: 2,247 cases per million and 113 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—2,933 and 2,999, respectively. And only Ontario has a greater number of deaths per million, 197.

Figure 15
COVID-19 REPORTED CONFIRMED CASES PER MILLION AND DEATHS PER MILLION BY PROVINCE, AUGUST 23, 2020



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

HOSPITALIZATIONS

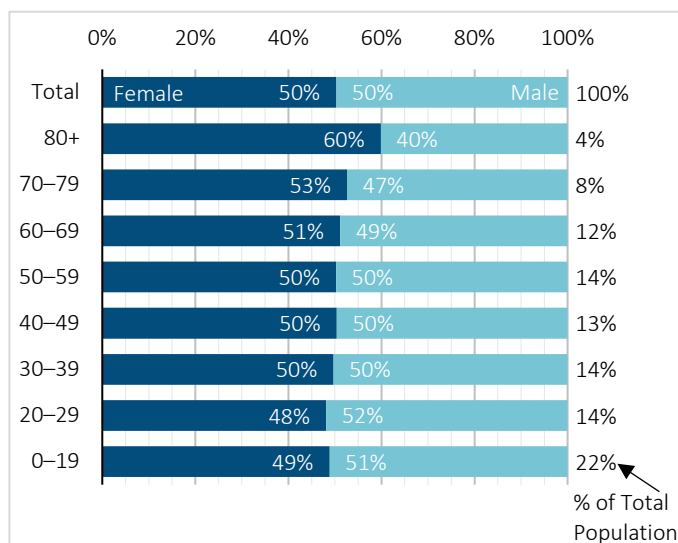
The Government of Canada reports that through August 23, 2020, the distribution of Canada's COVID-19 reported cases vary somewhat across age groups (Figure 17), but hospitalization rates significantly increase with age (Figure 18). For comparison to the proportions of gender by age in Canada's general population, refer to Figure 16.

In addition, COVID-19 hospitalization experience differs by gender in Canada (Figure 19). In general, males have been hospitalized more frequently than females. While 45% of the reported cases are males, 51% of hospitalizations are male.

Canadians aged 80 and older represent 4% of Canada's population but 15% of reported COVID-19 cases and 33% of COVID-19 hospitalizations. Males represent 40% of Canadians aged 80 and older but 45% of reported COVID-19 cases for that age group

and 51% of the age's groups hospitalizations. Canadians aged 70–79 are 8% of Canada's total population and 7% of its reported COVID-19 cases but 21% of its COVID-19 hospitalizations.

Figure 16
CANADIAN POPULATION GENDER SPLIT, JULY 1, 2019



Data source: Statistics Canada, "Population Estimates on July 1st, by Age and Sex," <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710000501>, Accessed August 13, 2020, and author's tabulations.

Figure 17
PERCENT OF CANADIAN REPORTED COVID-19 CASES BY AGE, THROUGH AUGUST 23, 2020

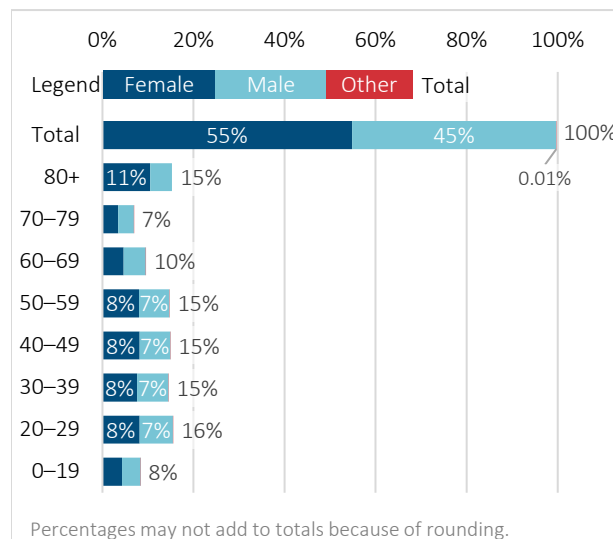
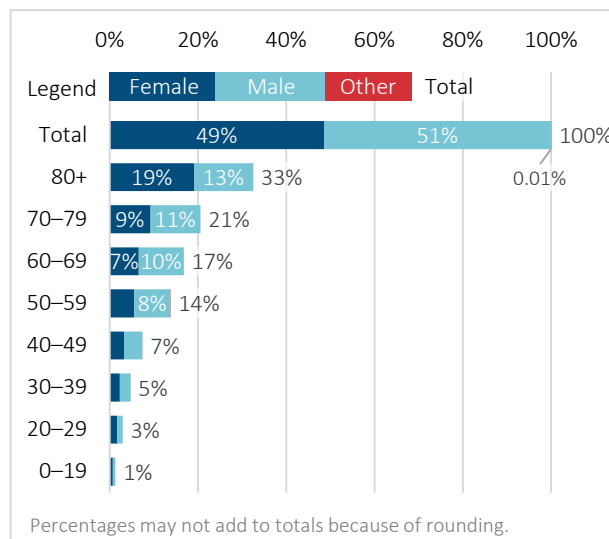


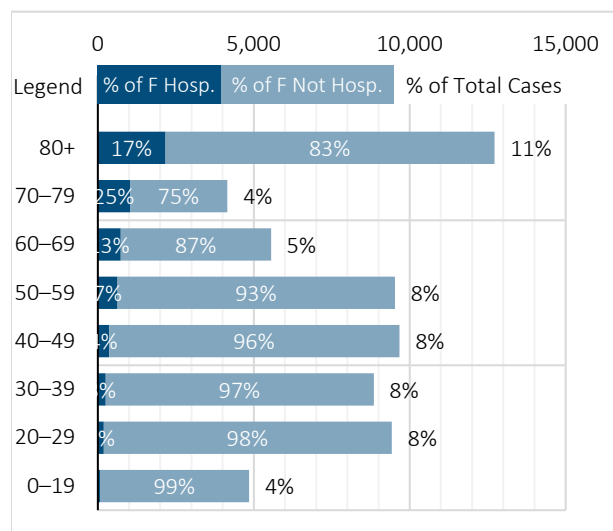
Figure 18
PERCENT OF CANADIAN HOSPITALIZED COVID-19 PATIENTS BY AGE, THROUGH AUGUST 23, 2020



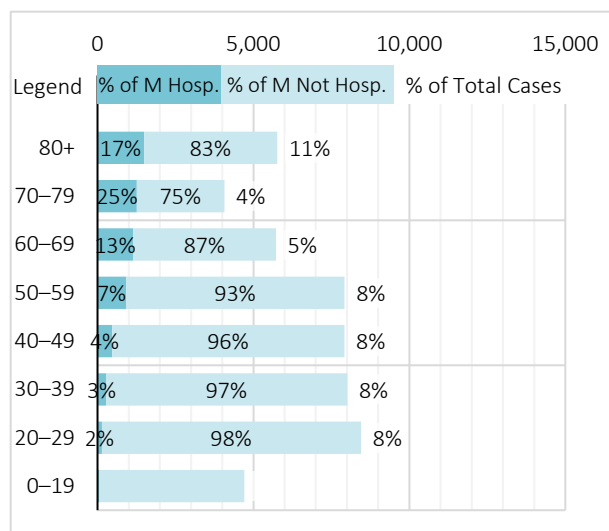
Data source: Government of Canada, *Coronavirus Disease 2019 (COVID-19): Epidemiology Update*, "Figure 3. Age by Gender Distribution of COVID-19 Cases in Canada as of August 23, 2020," and "Figure 4. Age and Gender Distribution of COVID-19 Cases Hospitalized in Canada as of August 23, 2020," <https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html>, Accessed August 24, 2020, and author's tabulations.

Figure 19
PERCENT OF CANADIAN COVID-19 PATIENTS WITH CASE REPORTS WHO HAVE BEEN HOSPITALIZED, BY AGE AND GENDER, THROUGH AUGUST 23, 2020

FEMALE



MALE



Data source: Government of Canada, *Coronavirus Disease 2019 (COVID-19): Epidemiology Update*, "Figure 3. Age by Gender Distribution of COVID-19 Cases in Canada as of August 23, 2020," <https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html>, and author's tabulations.

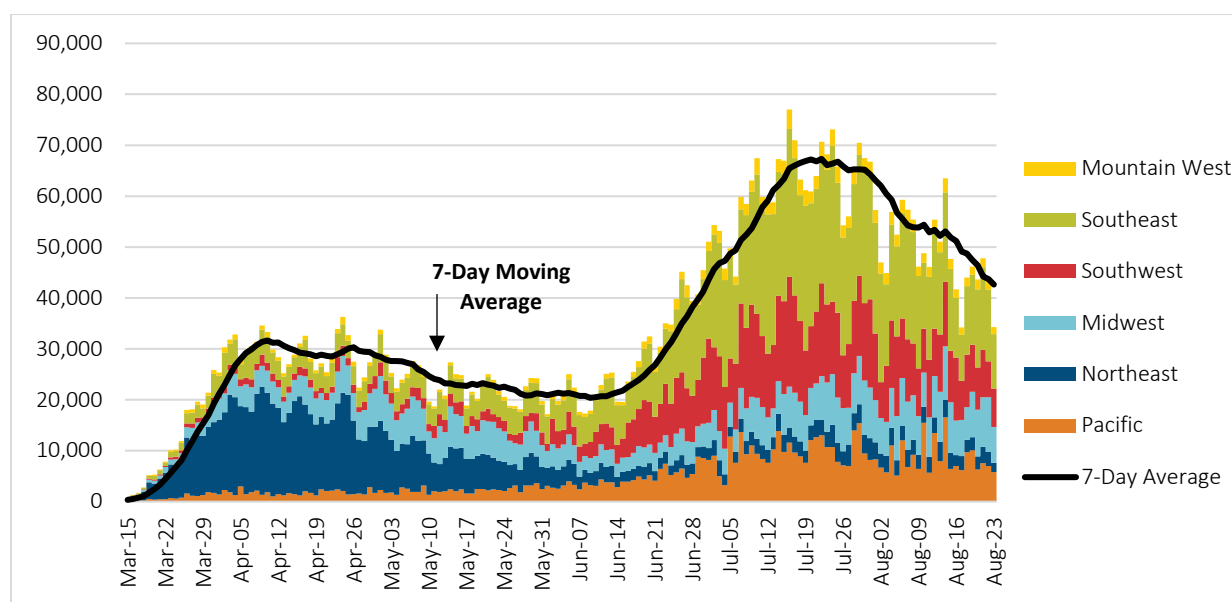
United States

REPORTED 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 20); states are identified with corresponding colors by region in Figure 21. 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 above the peak levels in the spring. As of August 23, 2020, the U.S. has reported a total of 5.7 million cases; the 7-day rolling average of daily new cases is 42,638, which is 35% greater than its April 10 level of 31,628, which was its greatest level prior to June 24.

Figure 20

U.S. DAILY REPORTED CONFIRMED NEW COVID-19 CASES BY REGION, AUGUST 23, 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 22. 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. From mid June through early to mid August, roughly 60% of daily new cases were attributable to Southeastern and Southwestern states. Since mid-August, new cases in those regions have slowed somewhat, although the proportion of new cases from the Midwest has increased somewhat.

Figure 21
U.S. REGIONS

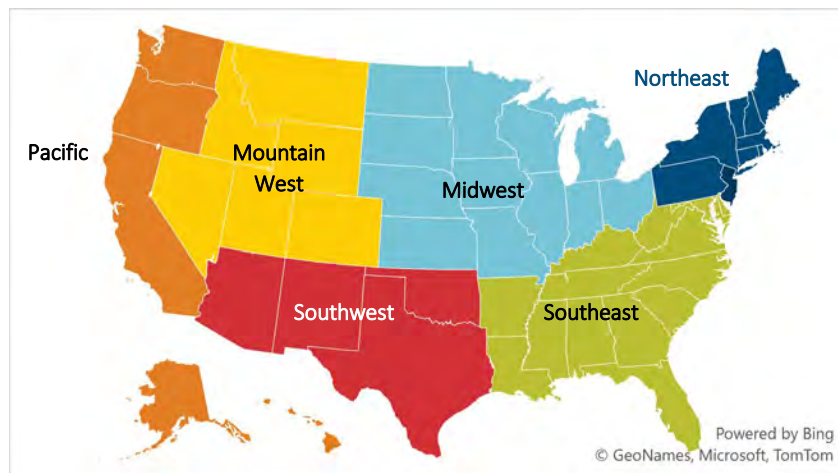
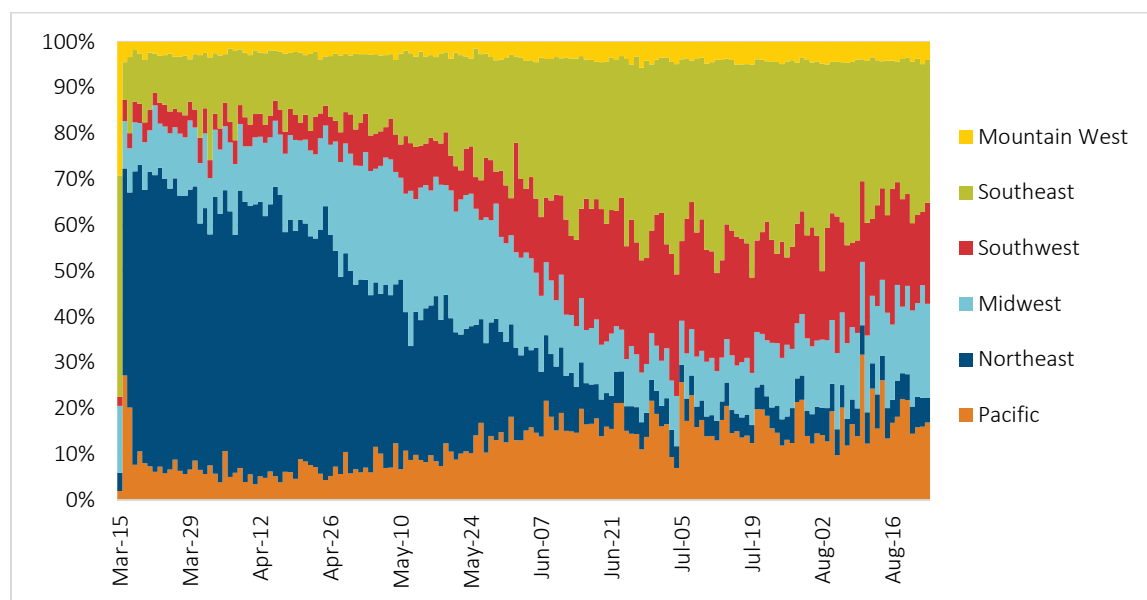


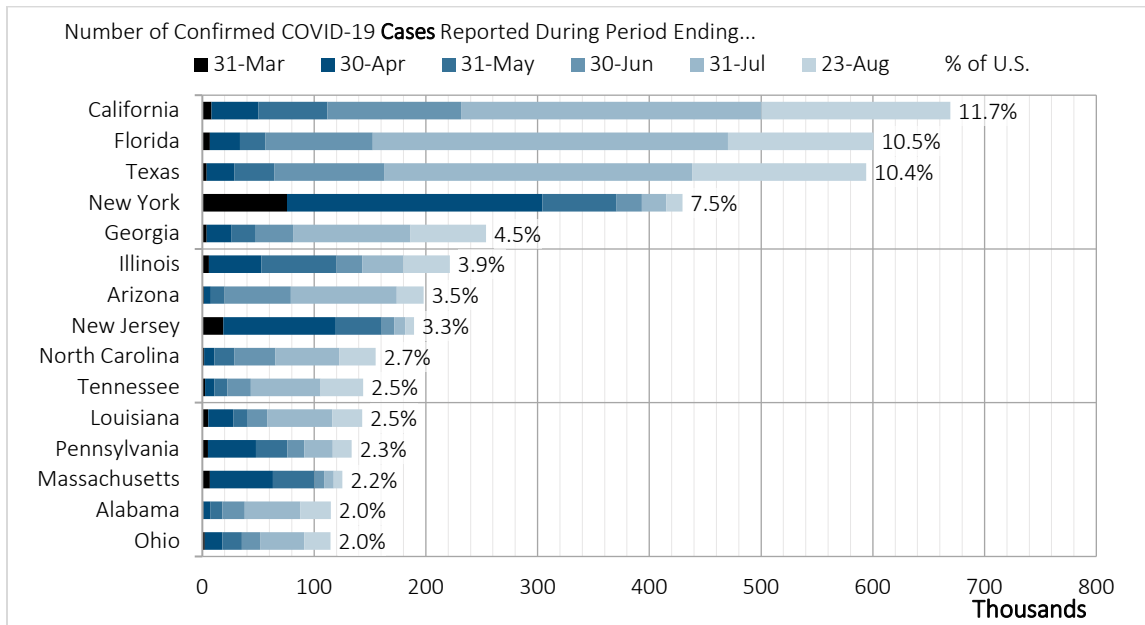
Figure 22
PROPORTION OF U.S. DAILY REPORTED CONFIRMED NEW COVID-19 CASES BY REGION, AUGUST 23, 2020



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

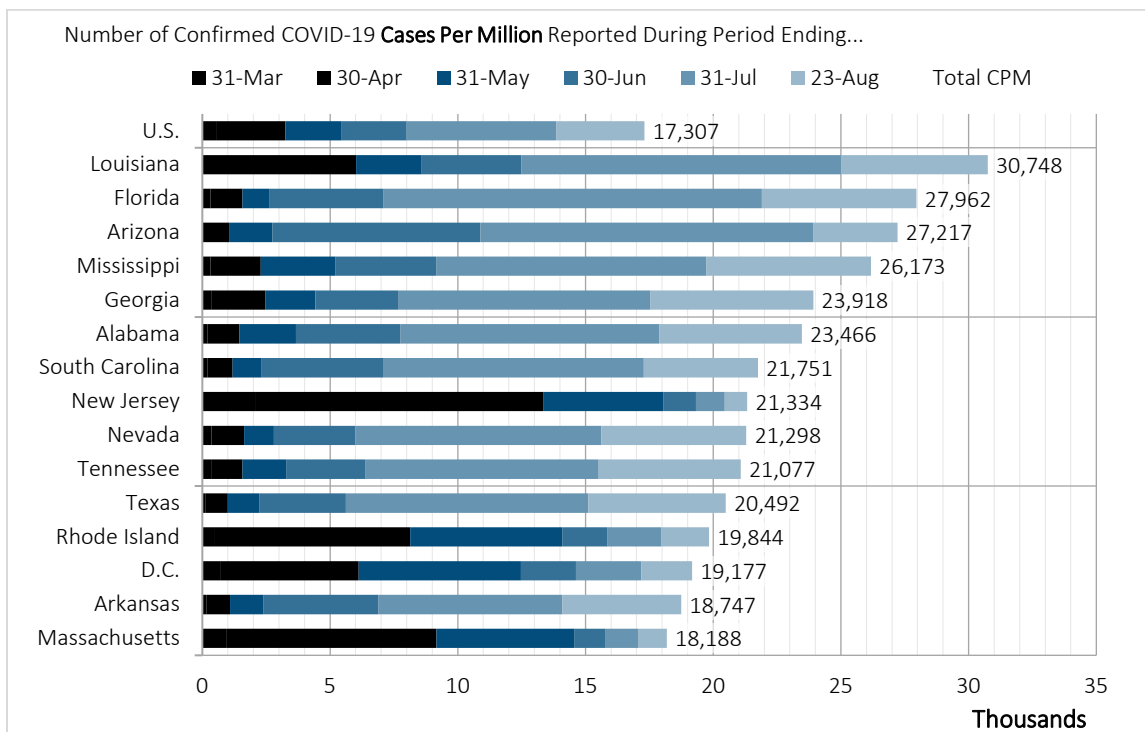
Through the spring, New York and New Jersey each reported more confirmed COVID-19 cases than any other state. Now California, Florida and Texas all report more cases than New York (Figure 23), and Georgia, Illinois, and Arizona each report more cases than New Jersey. Similarly, in the spring, New Jersey and Massachusetts had led the nation in reported COVID-19 cases per million. As of August 23, Louisiana, Florida and Arizona lead the U.S. in cases per million, while New Jersey ranks eighth (Figure 24).

Figure 23
TOP 15 STATES FOR NUMBER OF REPORTED CONFIRMED COVID-19 CASES, AUGUST 23, 2020



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

Figure 24
TOP 15 STATES FOR NUMBER OF REPORTED CONFIRMED COVID-19 CASES PER MILLION, AUGUST 23, 2020

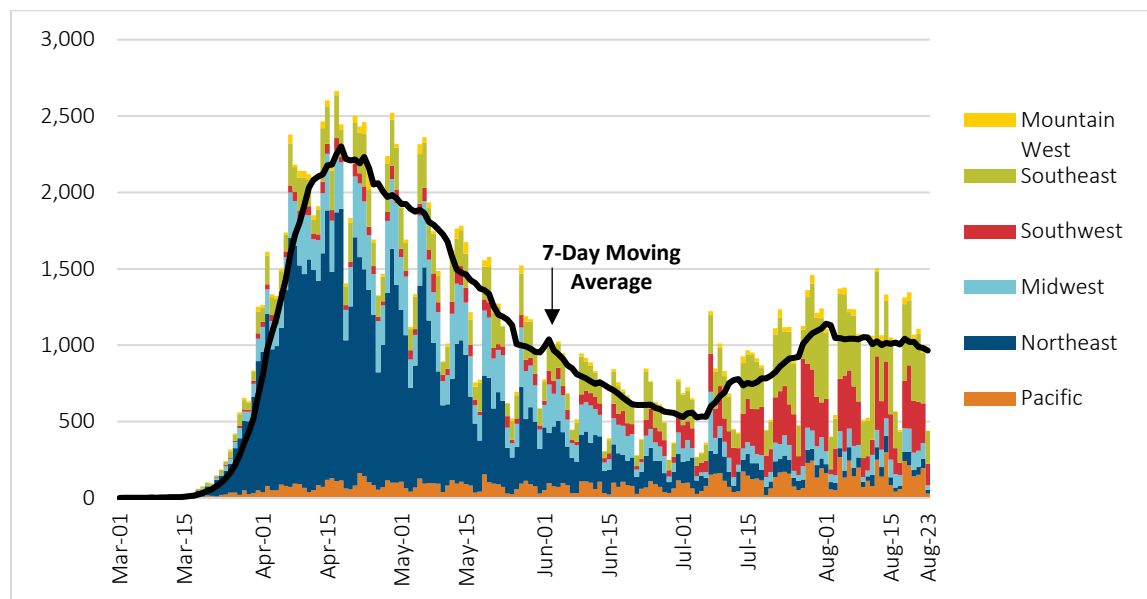


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

REPORTED 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 25). Throughout July, daily reported new COVID-19 deaths steadily increased before leveling off.

Figure 25
U.S. DAILY REPORTED NEW COVID-19 DEATHS BY REGION, AUGUST 23, 2020

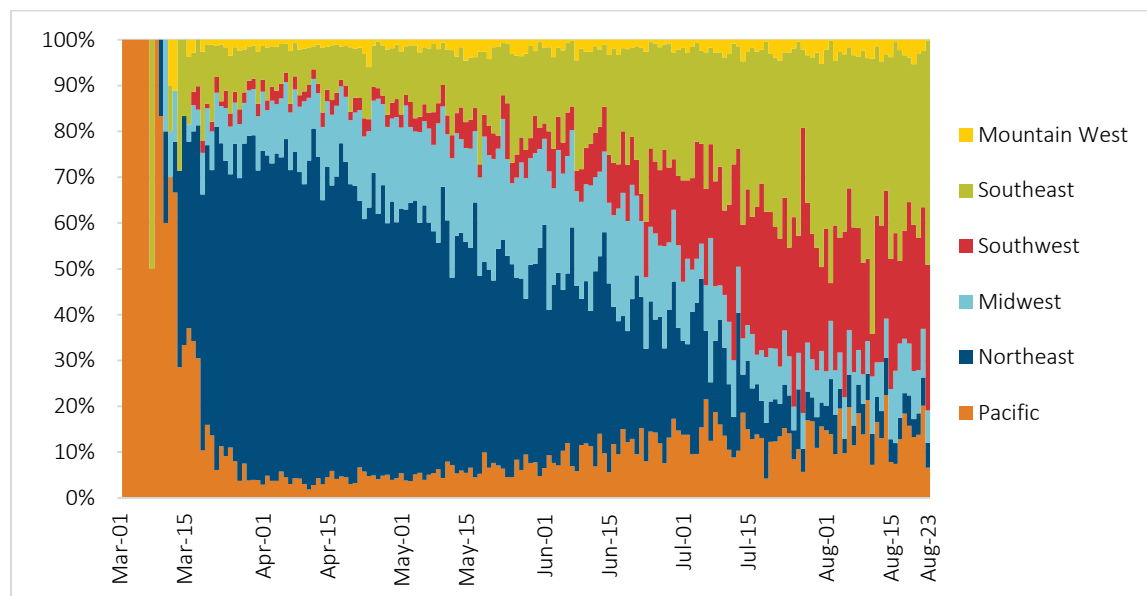


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

As the concentration of COVID-19 cases has shifted across regions, COVID-19 deaths have also shifted, which is especially apparent in Figure 26. 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.

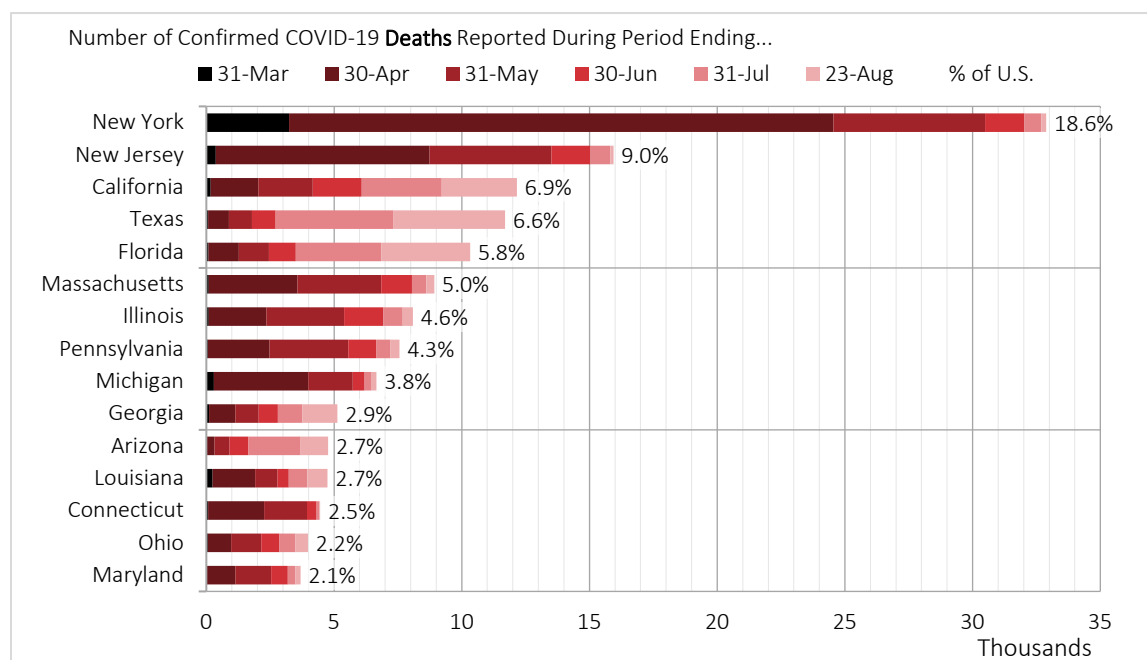
Figure 26
PROPORTION OF U.S. DAILY REPORTED NEW COVID-19 DEATHS BY REGION, AUGUST 23, 2020



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

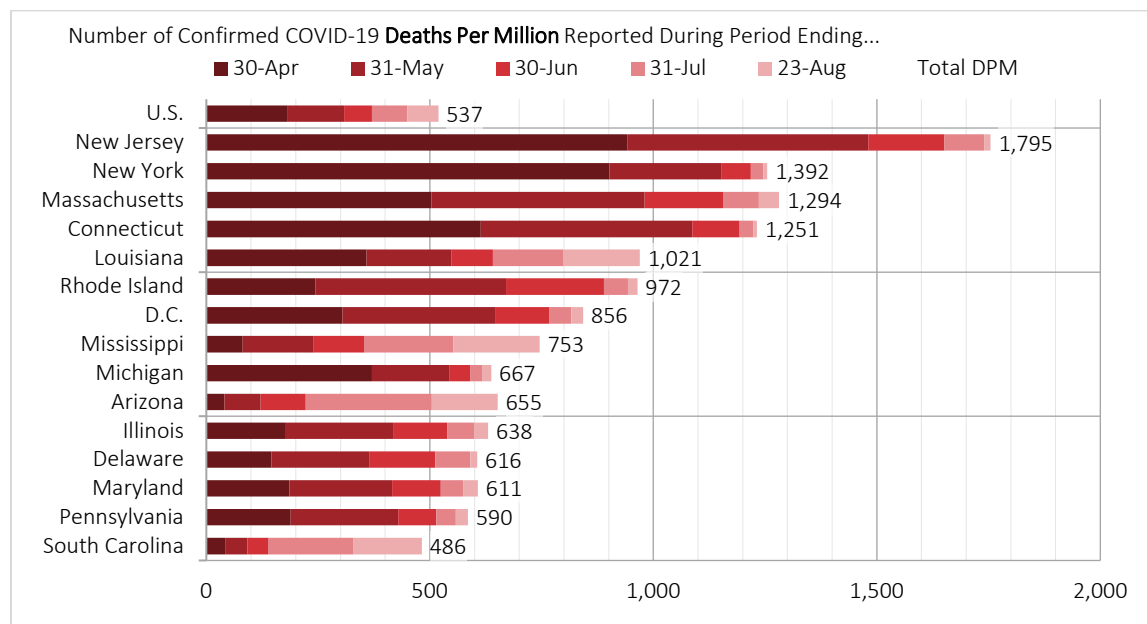
Several states have surpassed New York and New Jersey in the number of reported confirmed COVID-19 cases, but New York and New Jersey continue to lead the U.S. in number of COVID-19 deaths, although by decreasing margins (Figure 27). New York, New Jersey and other Northeastern states continue to lead in numbers of COVID-19 deaths per million (Figure 28). California, Texas and Florida—which rank third through fifth in number of deaths—are not among the top 15 states for deaths per million.

Figure 27
TOP 15 STATES FOR NUMBER OF REPORTED CONFIRMED COVID-19 DEATHS, AUGUST 23, 2020



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

Figure 28
TOP 15 STATES FOR NUMBER OF REPORTED COVID-19 DEATHS PER MILLION, AUGUST 23, 2020

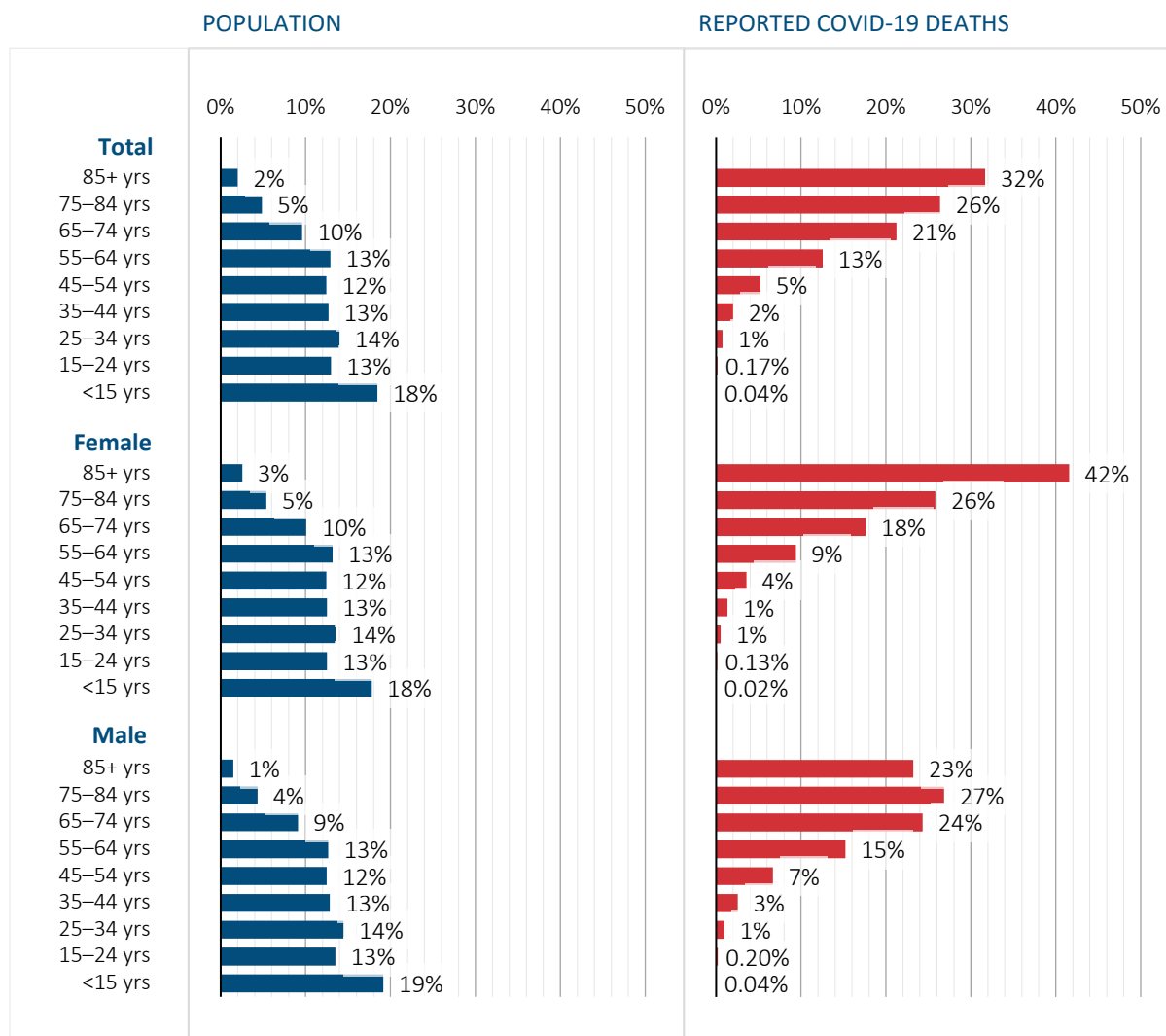


Data source: Johns Hopkins University Coronavirus Resource Center <https://coronavirus.jhu.edu/map.html> and authors' calculations.

The proportion of reported COVID-19 deaths increases with age, yet the proportion of the population generally decreases with age (Figure 29). Through August 15, 2020, persons aged 85 or older comprise 2% of the population, but 32% of reported COVID-19 deaths. While persons age 65–74 are 10% of the population, they comprise 21% of the reported COVID-19 deaths. Persons aged 44 or younger represent 45% of the population, they account for only 3% of reported COVID-19 deaths.

Among females, increased proportions of reported COVID-19 deaths with age are more pronounced than among males. Females age 85 or more represent only 3% of the female population but 42% of the reported female COVID-19 deaths. Females aged 65–74 make up 10% of the female population but 18% of reported female COVID-19 deaths. And females aged 44 and younger represent 44% of the female population but only 2% of reported female COVID-19 deaths. Males aged 44 and younger represent 47% of the male population and 4% of reported male COVID-19 deaths.

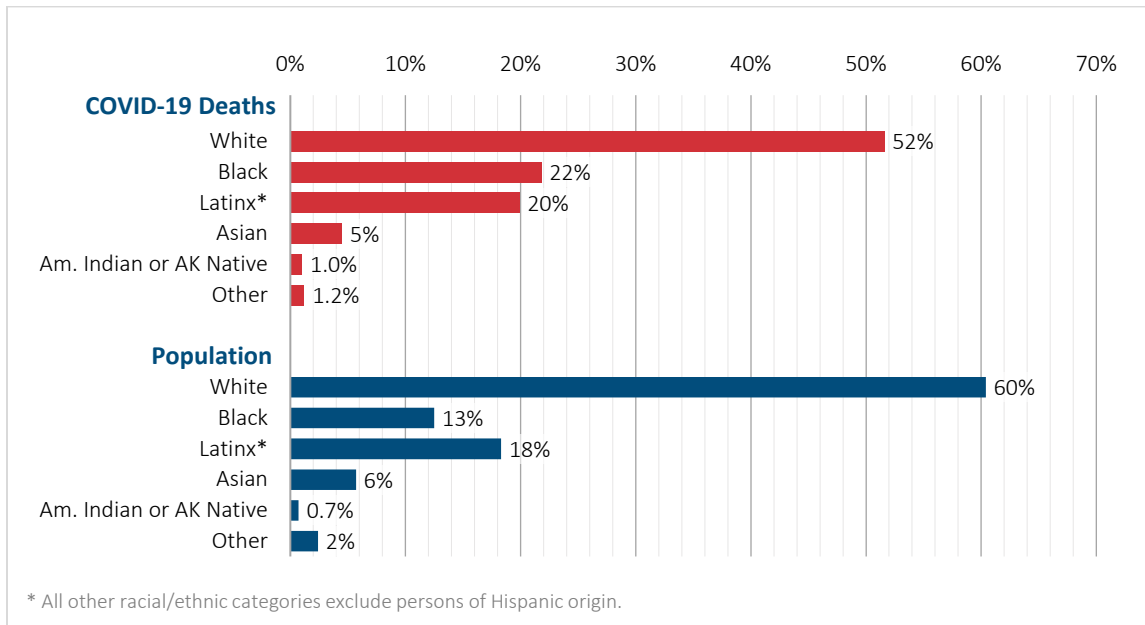
Figure 29
DISTRIBUTION OF U.S. COVID-19 DEATHS AND POPULATION BY AGE, AUGUST 15, 2020



Data source: CDC, "Provisional COVID-19 Death Counts by Sex, Age, and Week," August 19, 2020, <https://data.cdc.gov/NCHS/Provisional-COVID-19-Death-Counts-by-Sex-Age-and-W/vsak-wrfj>; U.S. Census Bureau, "Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States: April 1, 2010 to July 1, 2019 (NC-EST2019-AGESEX)," June 2020, https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html#par_textimage_98372960.

COVID-19 mortality also varies across racial and ethnic groups (Figure 30). While whites represent 60% of the population, through August 15, 2020, only 52% of reported COVID-19 deaths are attributable to whites. And while blacks comprise only 13% of the U.S. population, blacks represent 22% of reported COVID-19 deaths.

Figure 30
DISTRIBUTIONS OF U.S. REPORTED COVID-19 DEATHS AND POPULATION BY RACE/ETHNICITY, AUGUST 15, 2020



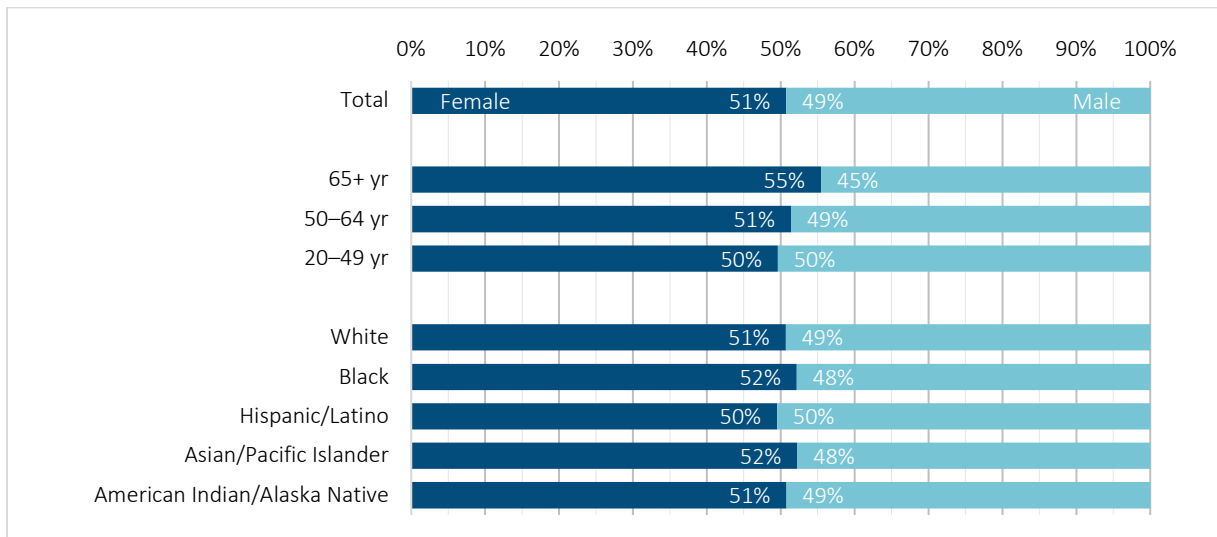
Data source: CDC, "Provisional Death Counts for Coronavirus Disease (COVID-19): Weekly State-Specific Data Updates," August 19, 2020, <https://data.cdc.gov/NCHS/Provisional-Death-Counts-for-Coronavirus-Disease-C/pj7m-y5uh>, U.S. Census Bureau, "Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States: April 1, 2010 to July 1, 2019 (NC-EST2019-AGESEX)," June 2020, https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html#par_textimage_98372960.

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 31 shows that as of August 23, 2020, the U.S. national number of reported confirmed COVID-19 cases per million was 17,307, and the number of COVID-19 deaths per million was 537. The number of cases per million by state ranged from 2,495 in Vermont to 30,748 in Louisiana, while the number of deaths per million ranged from 33 in Hawaii to 1,795 in New Jersey.

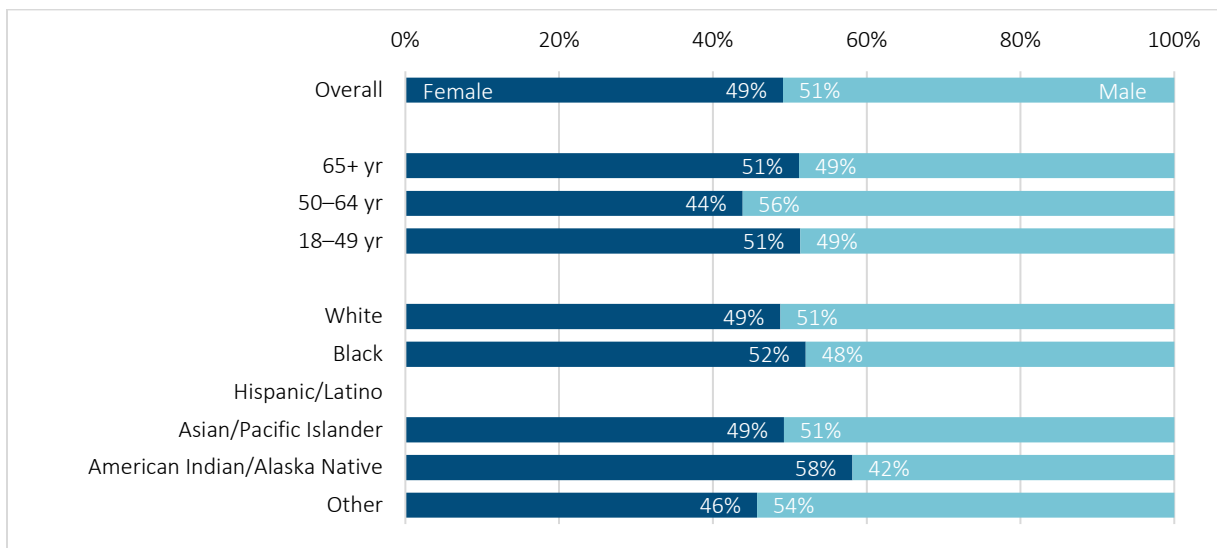
the same ages. However, while 49% of persons age 50–64 are male, 56% of COVID-19 hospitalizations for the same age group have been male.

Figure 32
U.S. POPULATION GENDER SPLIT, JULY 1, 2019



Data source: U.S. Census Bureau Population Division, “Annual Estimates of the Resident Population for Selected Age Groups by Sex: April 1, 2010 to July 1, 2019 (NC-EST2019-AGESEX),” and : Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for the United States: April 1, 2010 to July 1, 2019 (NC-EST2019-SR11H),” <https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html>, and author’s tabulations.

Figure 33
GENDER SPLIT OF U.S. HOSPITALIZED COVID-19 PATIENTS BY CHARACTERISTIC, THROUGH AUGUST 15, 2020



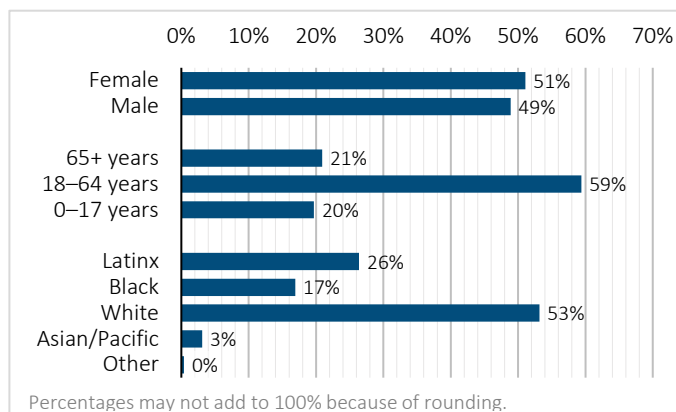
Data source: CDC “Characteristics of COVID-19-Associated Hospitalizations from the COVID-NET Network,” https://gis.cdc.gov/grasp/COVIDNet/COVID19_5.html, Accessed August 24, 2020, and author’s tabulations.

Florida

As of August 23, 2020, Floridian males and females are reported to be equally likely to contract COVID-19, but males are more likely to die from it. The proportion of population that is female (Figure 34) approximately mirrors the population of reported COVID-19 cases that are female (Figure 35): 51%. However, only 45% of reported COVID-19 deaths are female.

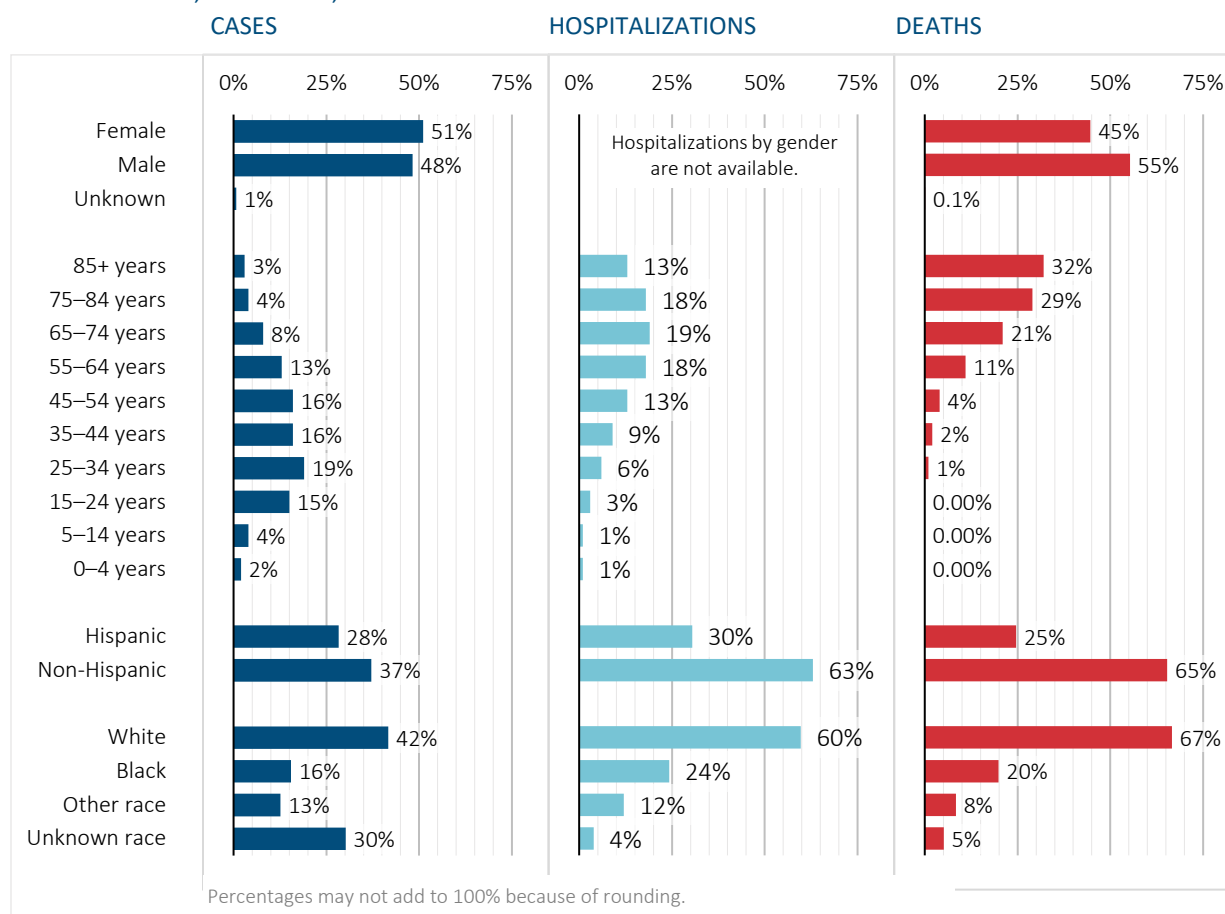
The percentage of COVID-19 cases who are hospitalized increases with age, as does the percentage of COVID-19 cases who die. For examples, persons aged 75–84 represent only 4% of COVID-19 cases, but 13% of its hospitalizations and 33% of its deaths.

Figure 34
ESTIMATED FLORIDA POPULATION PROPORTIONS, JULY 1, 2019



Data source: U.S. Census Bureau, “Quick Facts: Florida,” Accessed August 19, 2020, <https://www.census.gov/quickfacts/fact/table/FL/PST045219>.

Figure 35
PERCENT OF FLORIDA CUMULATIVE REPORTED COVID-19 CASES, HOSPITALIZATIONS AND DEATHS BY CHARACTERISTIC, AUGUST 23, 2020



Data source: Florida Department of Health, “State-Reports_20200824,” and author’s tabulations, http://ww11.doh.state.fl.us/comm/_partners/covid19_report_archive/state_reports_20200824.pdf.

Whites in Florida are more likely to be hospitalized and to die of COVID-19 than persons of other races. While 53% of Florida’s population is white, 60% of COVID-19 hospitalizations are white and 67% of reported COVID-19 deaths are white.

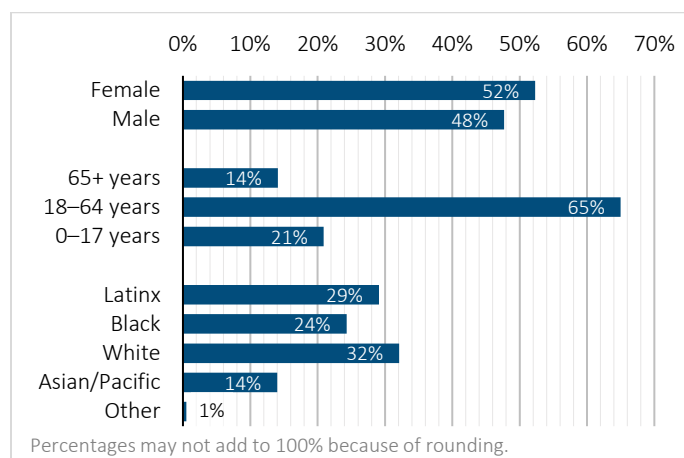
A greater proportion of Floridian blacks with COVID-19 have been hospitalized with COVID-19 than have Floridian whites. Blacks represent 17% of Floridians but 24% of COVID-19 hospitalizations, while whites represent 53% of Floridians but 60% of COVID-19 hospitalizations. However, Floridian blacks are less likely to die from COVID-19 than Floridian white. Blacks represent only 20% of Florida’s COVID-19 deaths, while whites represent 67% of them.

Because roughly one-third of Florida COVID-19 cases do not report race or ethnicity, one cannot draw conclusions about the incidence of COVID-19 and race and ethnicity. Similarly, because ethnicity is not reported for a significant portion of Florida’s COVID-19 deaths, one cannot draw conclusions by ethnicity about COVID-19 hospitalizations and deaths.

New York City

Figure 36 shows the distribution of New York City’s population by various characteristics for context against subsequent COVID-19 statistics.

Figure 36
ESTIMATED NEW YORK CITY POPULATION PROPORTIONS BY CHARACTERISTIC, JULY 1, 2019



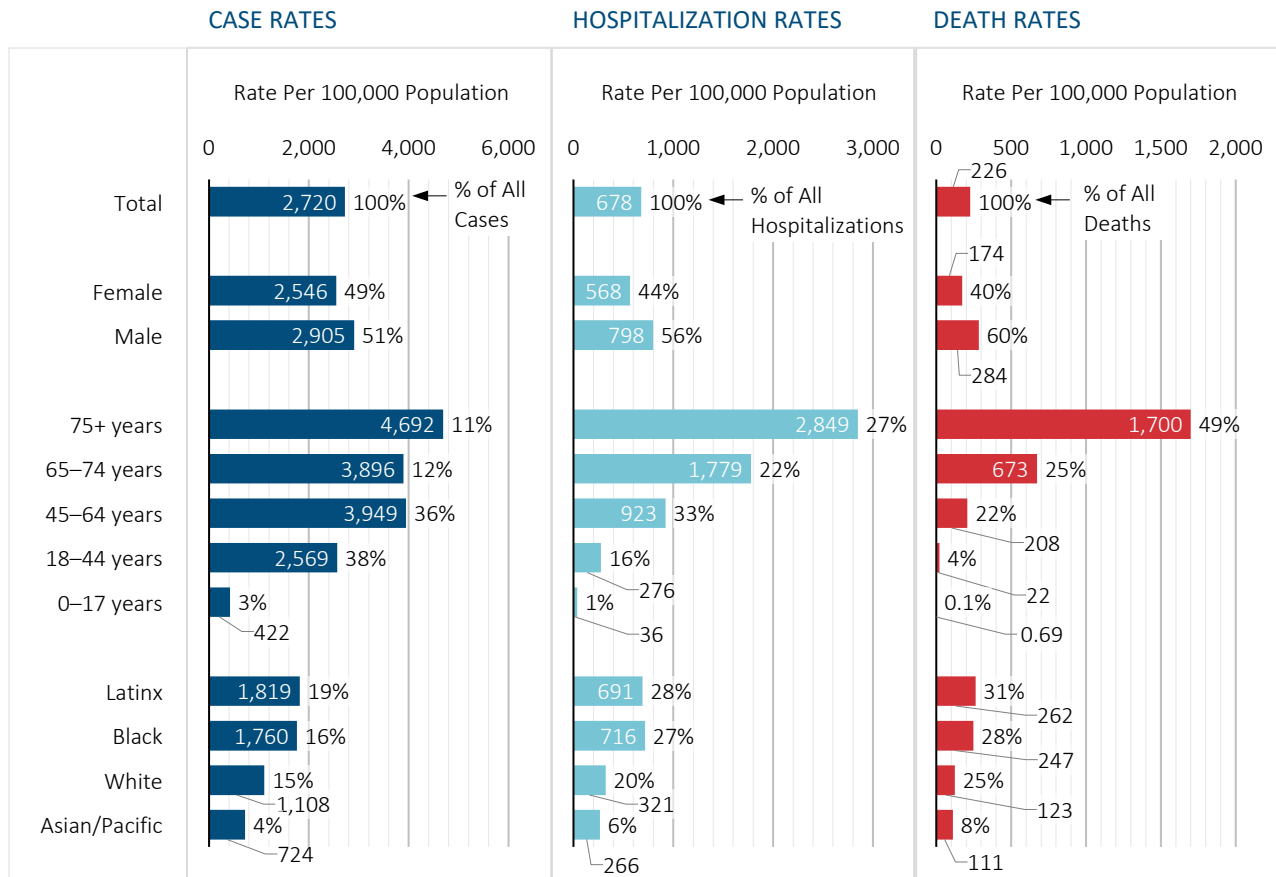
Data source: U.S. Census Bureau, “Quick Facts: New York City, New York,” Accessed August 17, 2020, <https://www.census.gov/quickfacts/newyorkcitynewyork>.

While 48% of New York City’s population is male, the city reports that males comprise 51% of COVID-19 cases, 56% of COVID-19 hospitalizations and 60% of COVID-19 deaths. This observation is consistent with reported experience in other locations.

Also, as in other locations, reported rates of COVID-19 cases, hospitalization and death in New York City increase with age (Figure 37). Compared to other age groups in New York City, persons aged 75 or more have the greatest rates of reported COVID-19 cases, hospitalizations and deaths.

In New York City, COVID-19 has generally hit people of color harder than it has hit whites. At 32% of the population of New York City’s population, whites comprise the largest racial group. However, whites represent only 15%, 20% and 25% of New York City’s reported COVID-19 cases, hospitalizations and deaths, respectively—very different observations from Florida’s experience.

Figure 37
NEW YORK CITY CUMULATIVE REPORTED COVID-19 CASES, HOSPITALIZATIONS AND DEATHS, BY CHARACTERISTIC, AUGUST 23, 2020



Data source: New York City Department of Health, Accessed August 17, 2020, "Case, Hospitalization and Death Rates," "Daily Counts," and author's tabulations, <https://www1.nyc.gov/site/doh/covid/covid-19-data.page>.

Wrap-Up

In the end, actuaries in all practice areas will need to determine how to best reflect the impact of the COVID-19 pandemic into their specific work products. The information provided in this report is intended to pull together a variety of statistics that may help provide context to the challenge.

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.

Society of Actuaries
475 N. Martingale Road, Suite 600
Schaumburg, Illinois 60173
www.SOA.org