

COVID-19 Mortality Rate Trends in Countries and US States

Joel Elvery

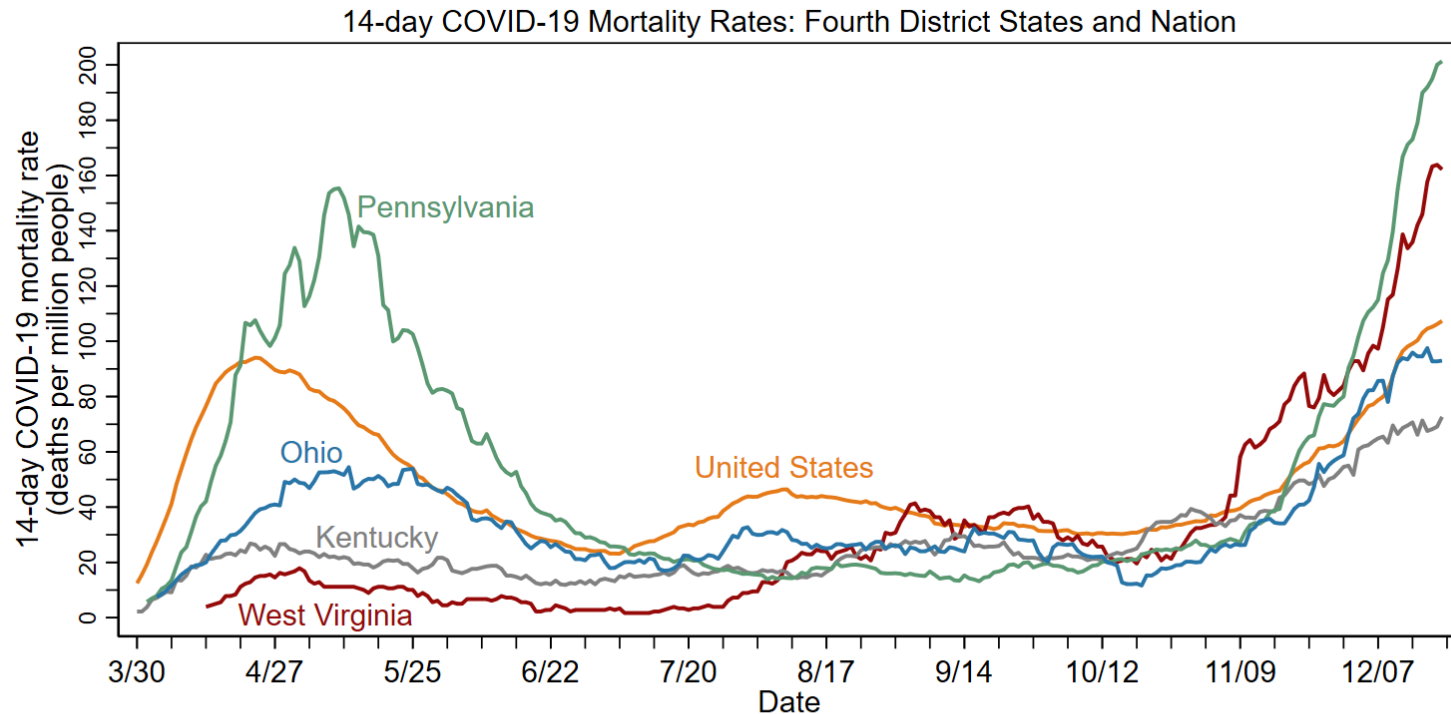
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- The charts in this presentation use the same data sources as the charts in two April 2020 District Data Briefs. Please see these reports for additional details.
 - [Getting to Accuracy: Measuring COVID-19 by Mortality Rates and Percentage Changes](#)
 - [A Speeding Rate Starts to Slow: COVID-19 Mortality Rates by State](#)
- Since those reports were completed, additional evidence shows that COVID-19 deaths have been underreported, both in other countries and in the United States. The following charts present the latest data from the Center for Systems Science and Engineering at Johns Hopkins University (CSSE) through December 20, with no attempt to further correct for underreporting.
 - Some large revisions in COVID-19 data have been smoothed. See slide 9 for details.
- The charts have been modified from those in the reports to better convey the current status of the COVID-19 epidemic in the United States.
- Hospitalization rate data comes from the COVID Tracking Project at *The Atlantic*.
- All dates in this presentation refer to the year 2020.

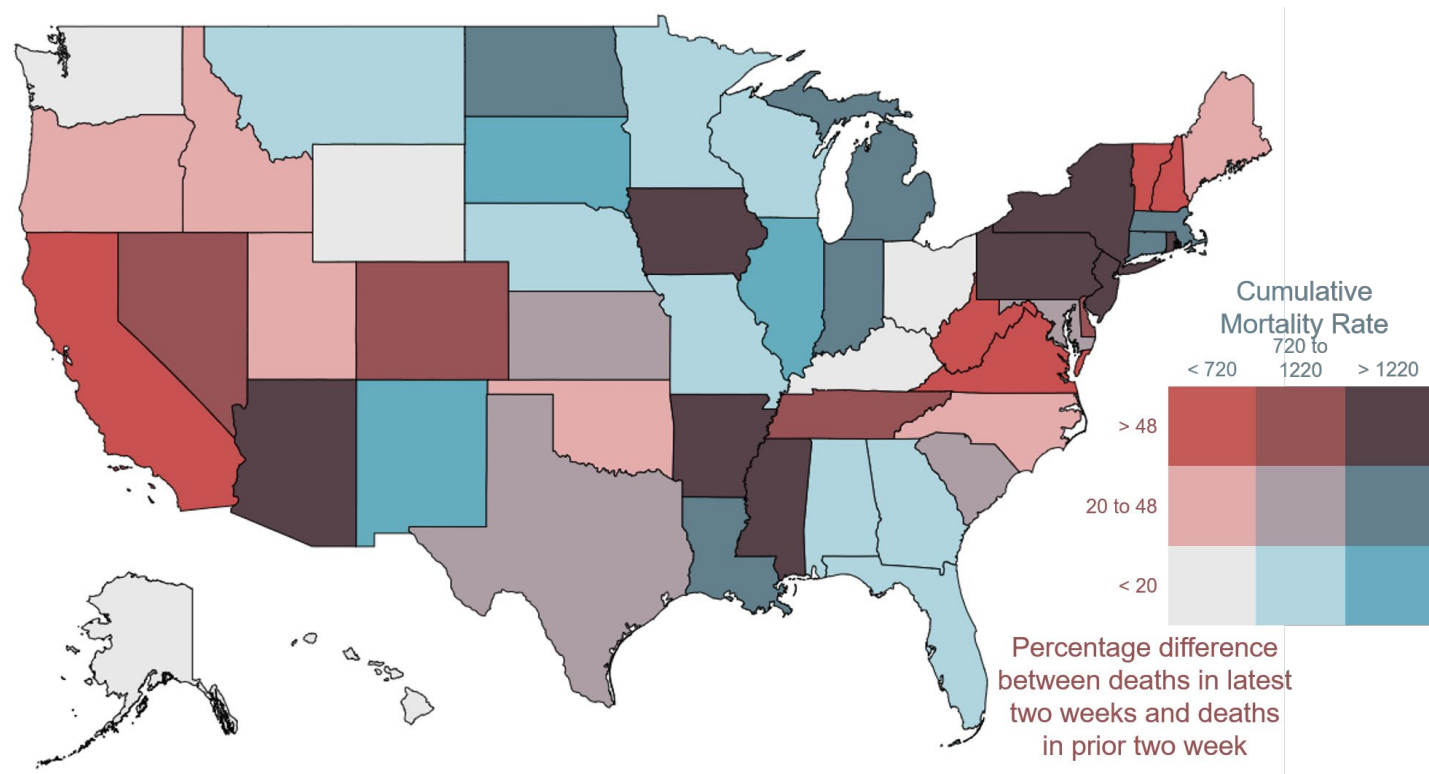
In the two weeks leading up to December 20, the 14-day COVID-19 mortality rate rose in all Fourth District states and in the United States as a whole – all reached new peak 14-day mortality rates.



Note: Data through December 20, 2020.

Sources: FRBC calculations, the Center for Systems Science and Engineering at Johns Hopkins University, and Bureau of Economic Analysis.

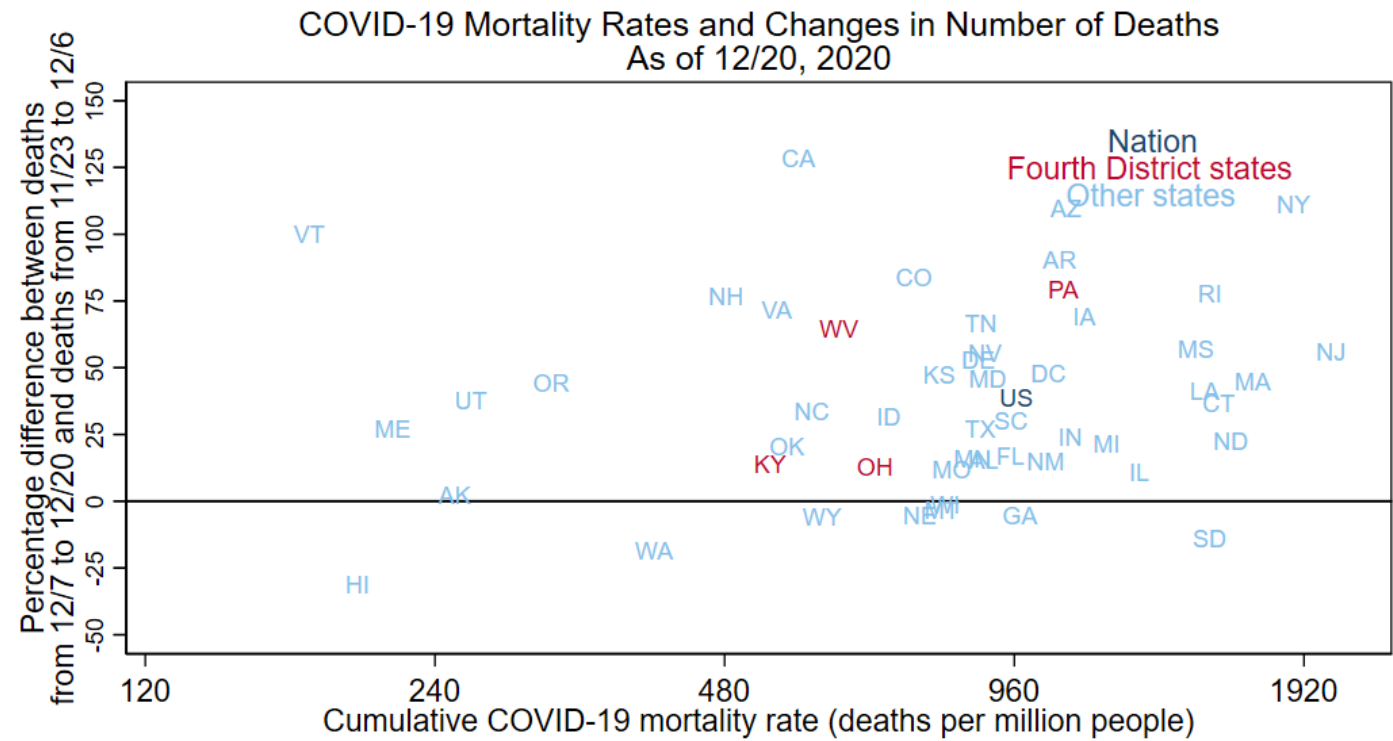
Between December 7 and December 20, the 14-day COVID-19 mortality rate fell in Georgia, Montana, Washington, and five other states. Every other state saw a rise.



Data for December 20, 2020, accessed on December 21, 2020.
“Latest two weeks” is 12/7 to 12/20, “prior two weeks” is 11/23 to 12/6.
Sources: FRBC calculations, CSSE, and BEA.

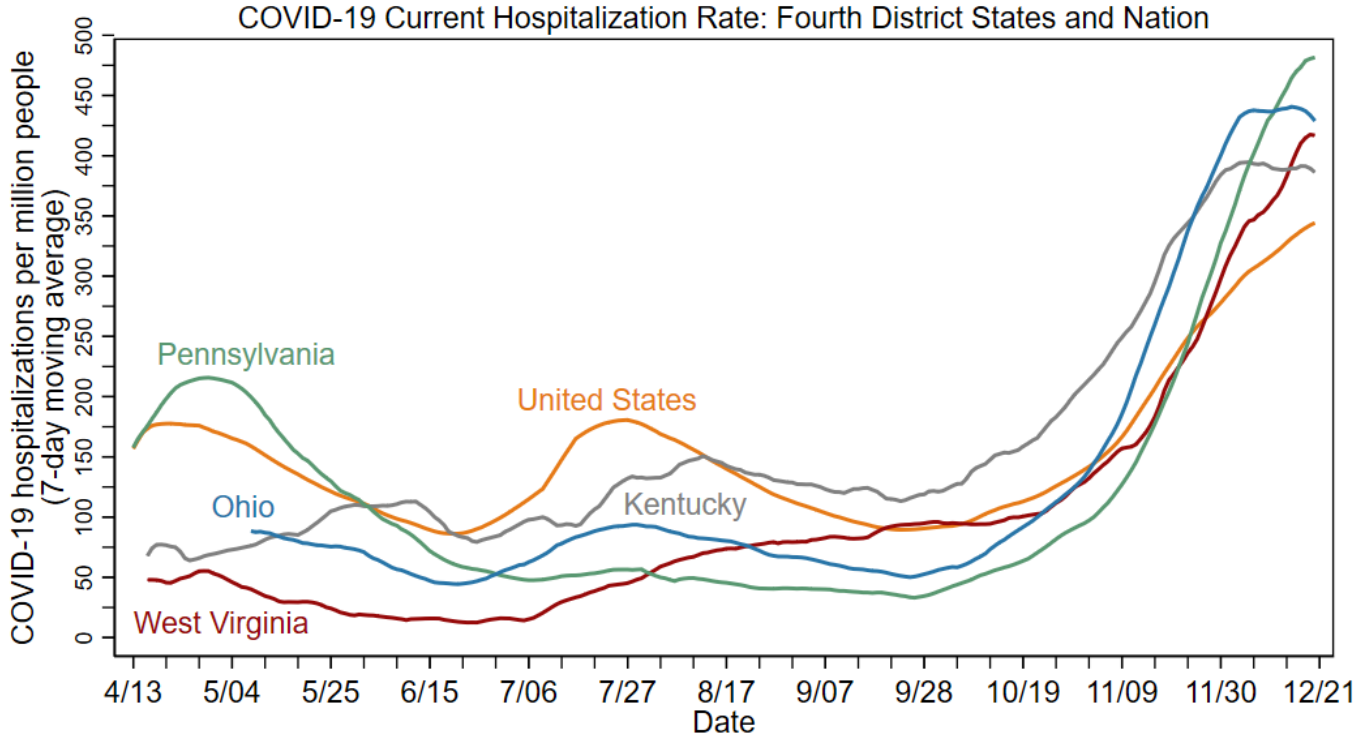
Notes: The District of Columbia is in the bin with the mortality rate 720 to 1220 and percentage difference > 48 percent. The color bins on this map are changed with each update to better represent the latest data.

This chart gives similar information to the map, but it is more precise and includes the nation as a whole.



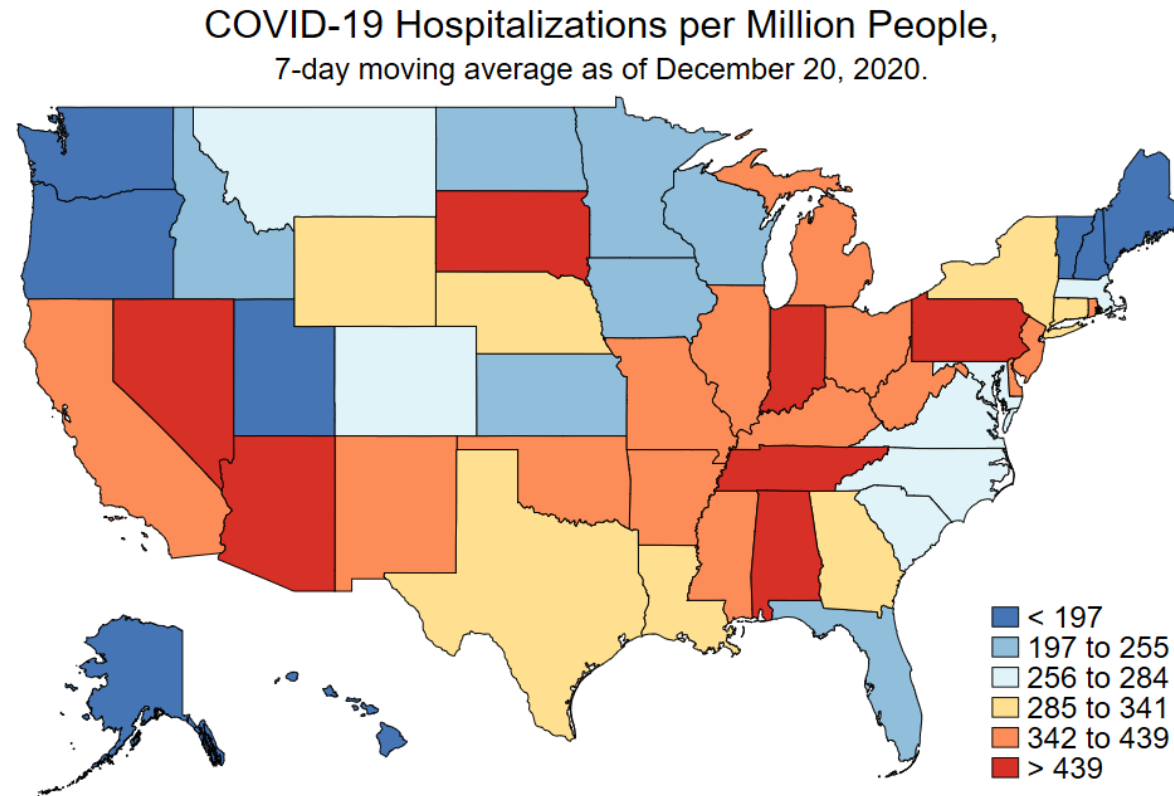
Notes: Horizontal axis has log scale.
Sources: FRBC calculations, the Center for Systems Science and Engineering at Johns Hopkins University, and Bureau of Economic Analysis.

COVID-19 hospitalizations tend to presage COVID-19 mortalities. The continued rise in hospitalization rates suggests that mortality rates will rise in Pennsylvania, West Virginia, and the United States in the weeks ahead.



Note: Data through December 20, 2020.
Sources: FRBC calculations, the COVID Tracking Project at *The Atlantic*, and BEA.

In the week leading up to December 20, hospitalization rates were highest in the Midwest and Southwest and lowest in the Northwest and along much of the East Coast.



Data for December 20, 2020, accessed on December 21, 2020.

Sources: FRBC calculations, the COVID Tracking Project at *The Atlantic*, and BEA.

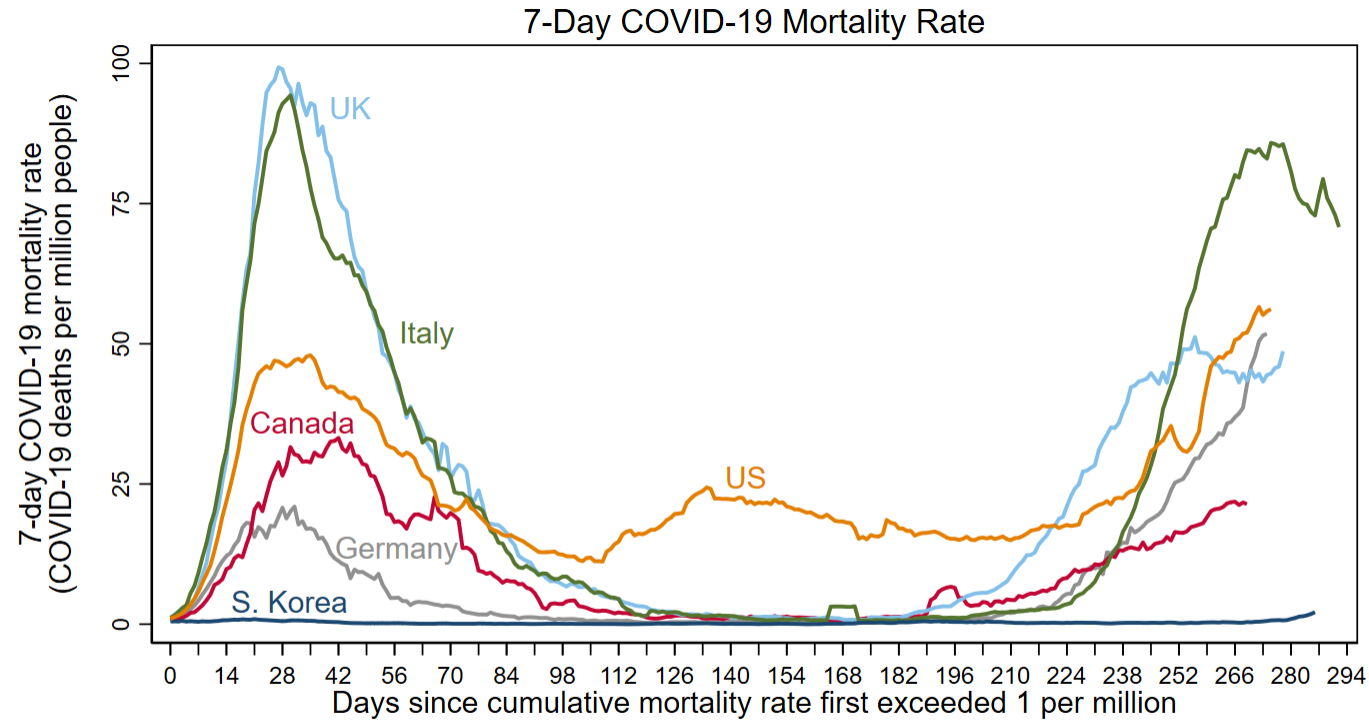
Notes: The District of Columbia is in the bin with a hospitalization rate of 342 and 439. The color bins on this map are changed with each update to better represent the latest data.

COVID-19 statistics for Fourth District states and the nation as a whole as of December 20.

COVID-19 Statistic	Kentucky	Ohio	Pennsylvania	West Virginia	United States
Levels					
Average daily deaths in past 2 weeks	23	78	184	21	2,523
Cumulative deaths	2,397	8,047	13,834	1,128	317,668
Average daily hospitalizations in past week	1,726	5,016	6,169	745	113,235
Rates (per million residents)					
14-day mortality rate	73	93	201	162	108
Cumulative mortality rate	536	688	1,080	631	971
Average daily hospitalization rate in past week	386	429	482	417	344

Sources: FRBC calculations, CSSE at Johns Hopkins University, the COVID Tracking Project at *The Atlantic*, and BEA.

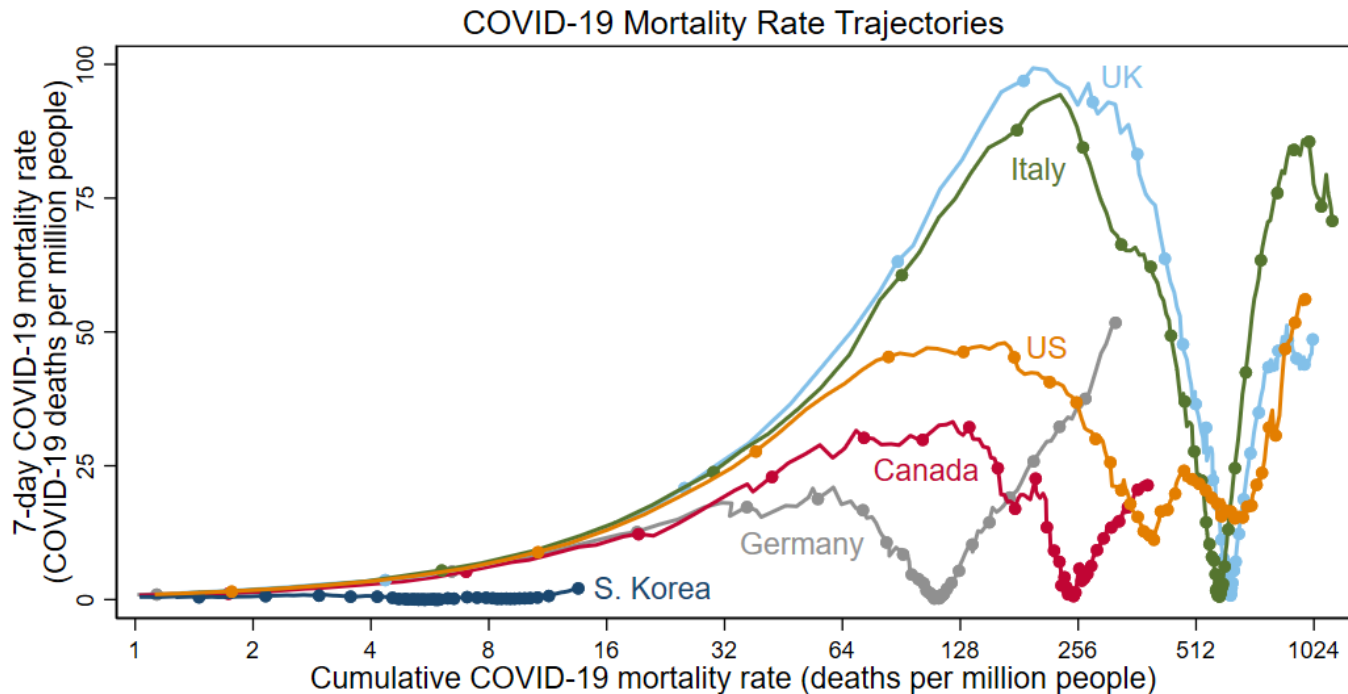
The 7-day COVID-19 mortality rate in the United States rose in the past week. The US 7-day mortality rate is above that of Germany and that of the UK.



Notes: 3/22/2020 was first day US rate > 1. Data through 12/20/2020.

Sources: FRBC calculations, the Center for Systems Science and Engineering at Johns Hopkins University, and the World Bank.

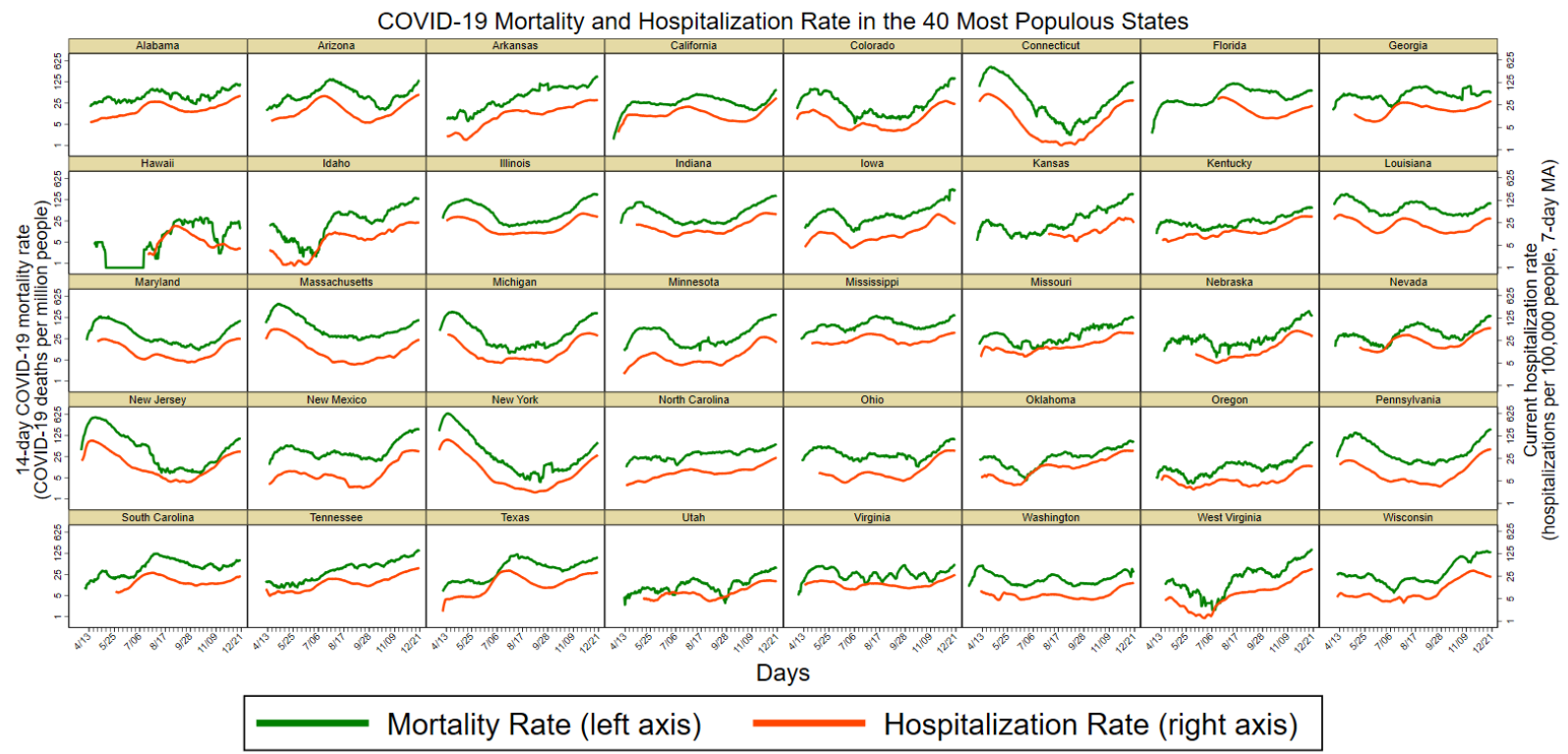
As of December 20, the cumulative COVID-19 mortality rate of the United States is 971 deaths per million people. This is more than double the mortality rate of Canada but below that of Italy and that of the UK.



Notes: Horizontal axis has log scale. Excluding days when mortality rate < 1. Dots on Sundays to show time. Data through December 20, 2020.

Sources: FRBC calculations, the Center for Systems Science and Engineering at Johns Hopkins University, and the World Bank.

This chart shows COVID-19 mortality and hospitalization rates for the 40 most populous US states.



Notes: Data from 1/22-12/20/2020. Both vertical axes have log scales.
Sources: FRBC calculations, the Center for Systems Science and Engineering at Johns Hopkins University, BEA, and the COVID Tracking Project at *The Atlantic*.

Appendix: Adjustments for data revisions

- Some significant revisions to the reported number of COVID-19 deaths cause large single-day jumps.
- We smooth some of these jumps by multiplying daily changes for a period of time by a scaling factor so that the adjusted series meets the post-revision series.
- We have used this approach for the following revisions and periods:
 - Spain revised deaths downward on May 25; data are adjusted from 3/3 to 5/24.
 - New Jersey revised deaths downward on June 25; data are adjusted from 3/10 to 6/24.
 - Illinois revised deaths upward on July 7; Illinois and United States are adjusted from 3/23 to 7/6.
 - New Jersey revised deaths downward on August 26; data are adjusted from 3/18 to 8/25.
- Other data cleaning
 - Ohio's reported cumulative deaths jumped up on August 29 and reversed on August 30. We set Ohio's cumulative deaths on August 29 to the midpoint of deaths on August 28 and 30 and incorporated this change into the US total for August 29.