

COVID-19 Mortality Rate Trends in Countries and US States

Joel Elvery

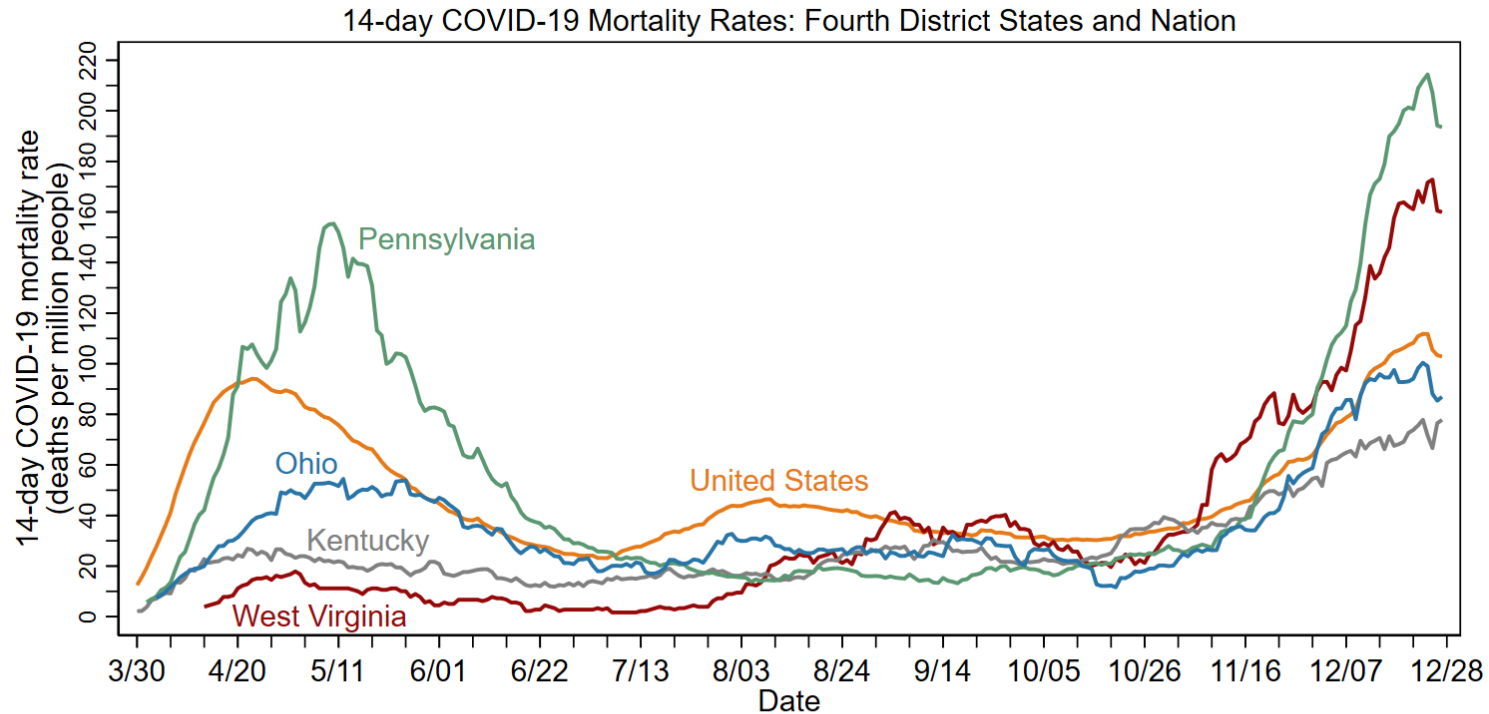
Mark Oleson

Updated December 28, 2020

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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 27, 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.

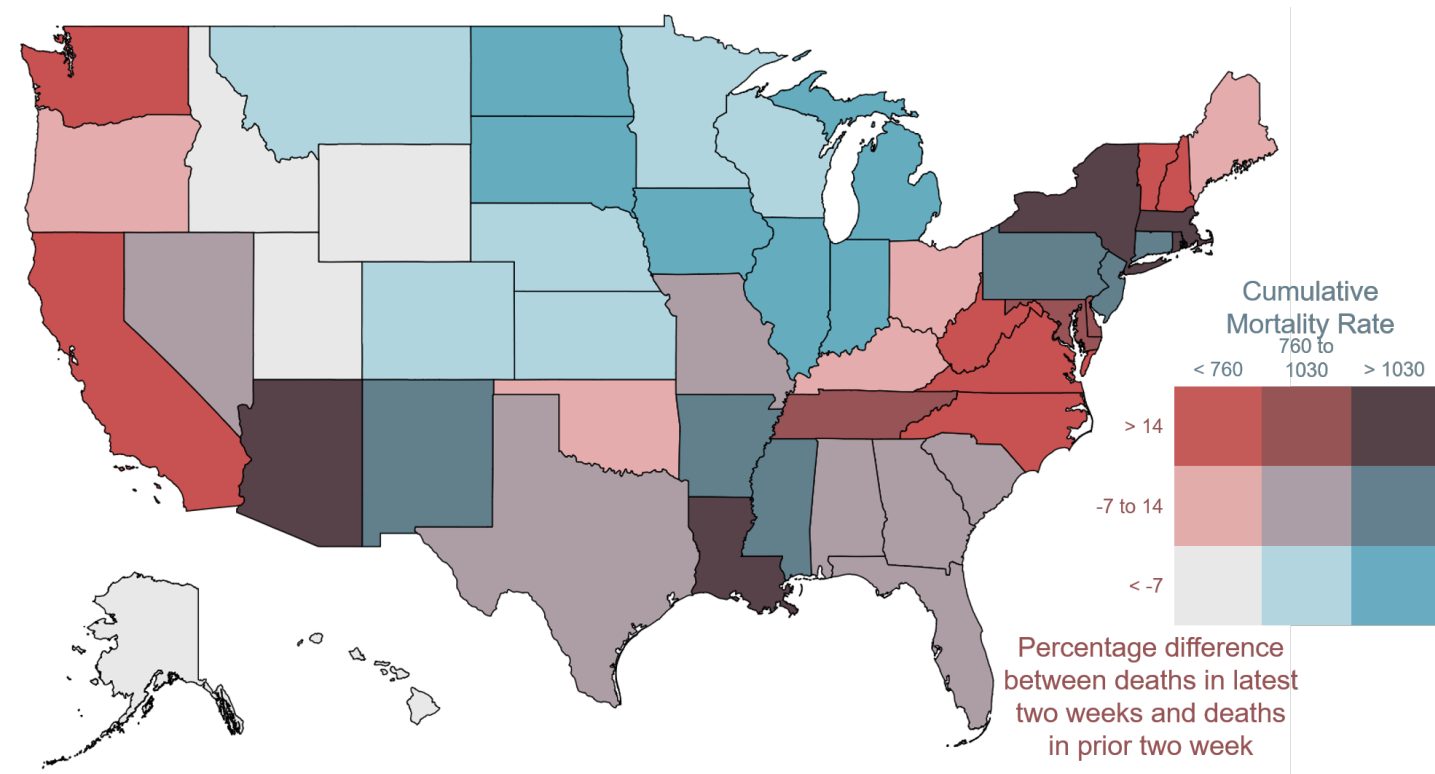
In the two weeks leading up to December 27, the 14-day COVID-19 mortality rate fell in Ohio and rose in all other Fourth District states and in the United States as a whole.



Note: Data through December 27, 2020.

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

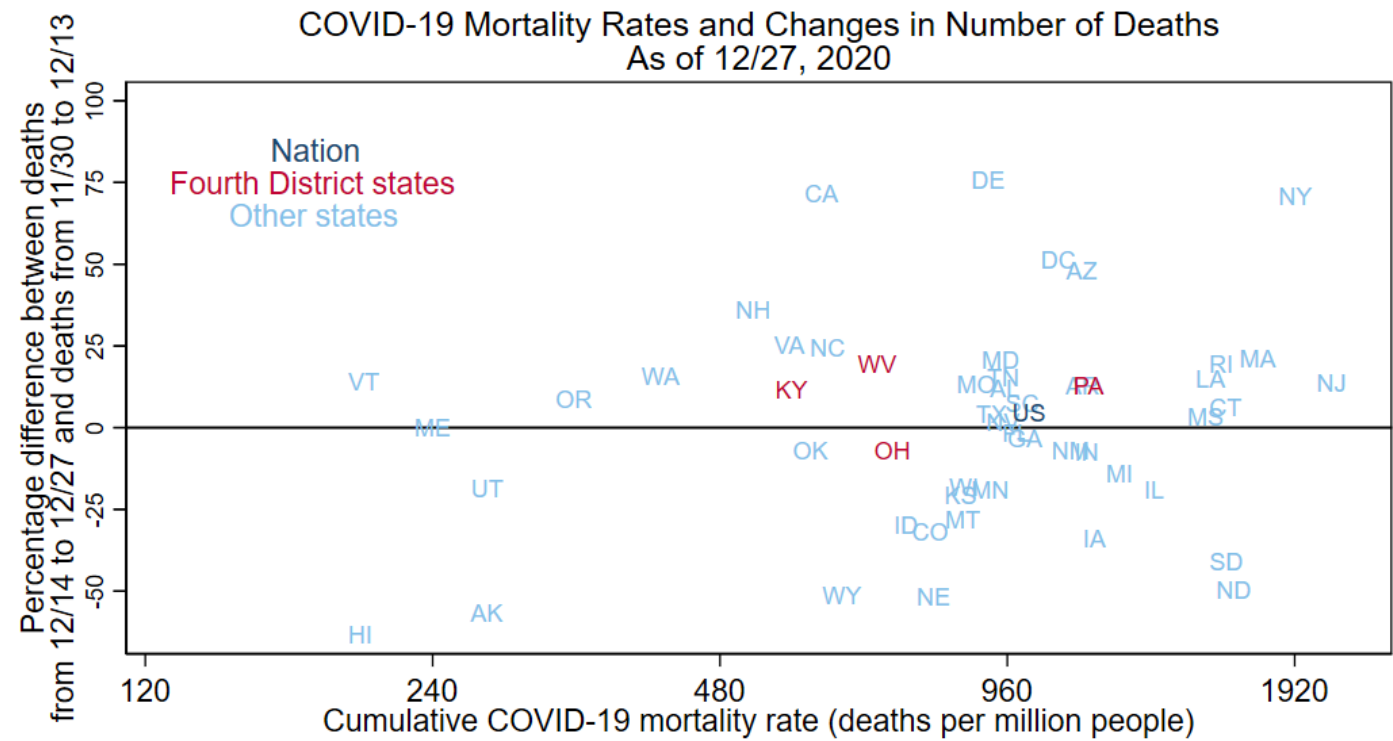
Between December 14 and December 27, the 14-day COVID-19 mortality rose along much of the East and West Coasts. The 14-day rate fell in many of the Great Plains states.



Data for December 27, 2020, accessed on December 28, 2020.
“Latest two weeks” is 12/14 to 12/27, “prior two weeks” is 11/30 to 12/13.
Sources: FRBC calculations, CSSE, and BEA.

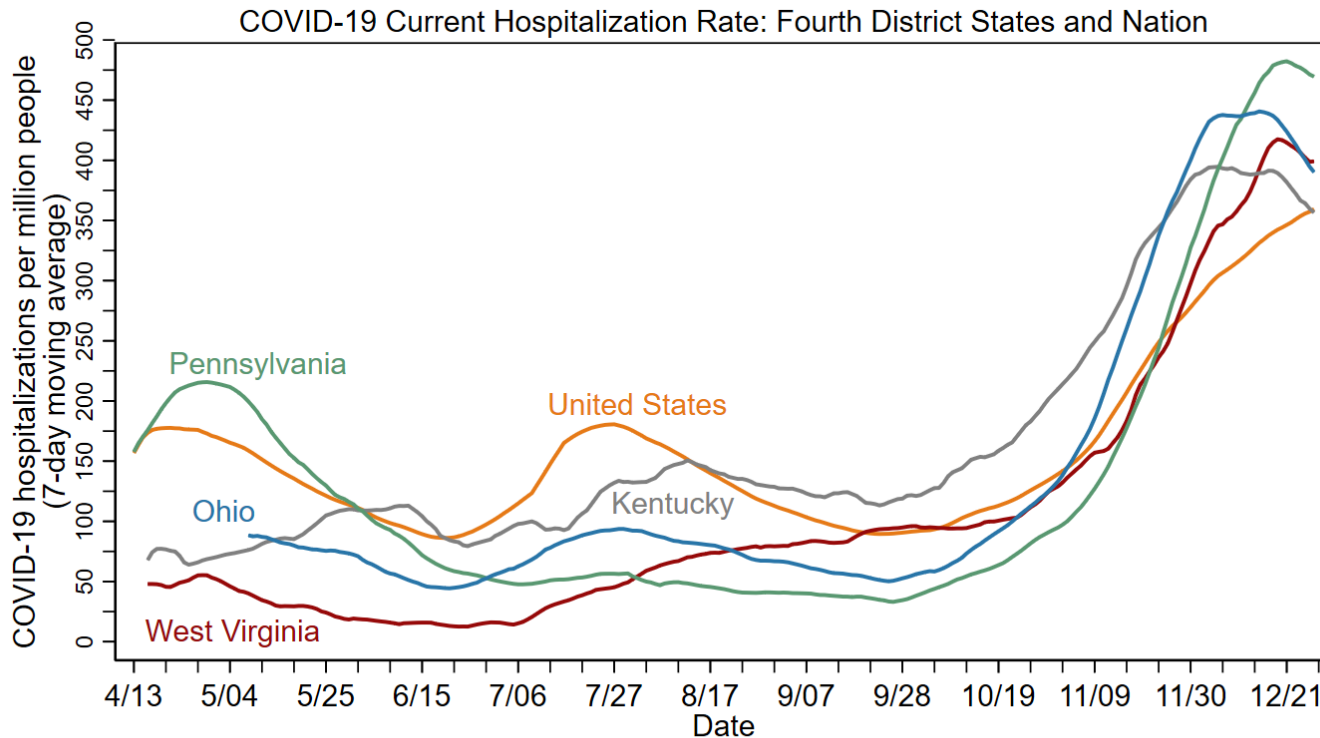
Notes: The District of Columbia is in the bin with mortality rate > 1030 and percentage difference > 14 percent. The color bins on this map are changed with each update to better represent the latest data.

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.

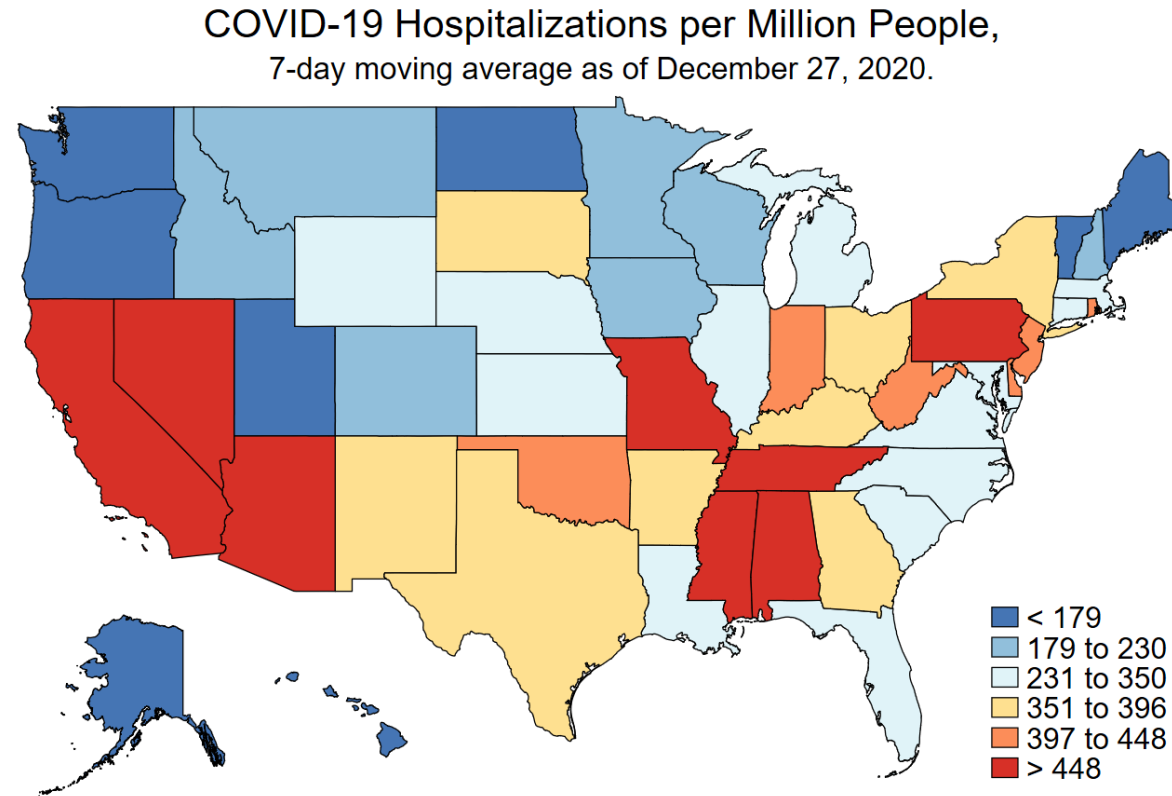
COVID-19 hospitalizations tend to presage COVID-19 mortalities. Hospitalization rates suggests that mortality rates will begin to fall in Fourth District states but will rise in the United States overall.



Note: Data through December 27, 2020.

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

In the week leading up to December 27, hospitalization rates were highest in the Southwest and Southeast states and lowest in the Northwest and the Great Plains states.



Data for December 27, 2020, accessed on December 28, 2020.

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

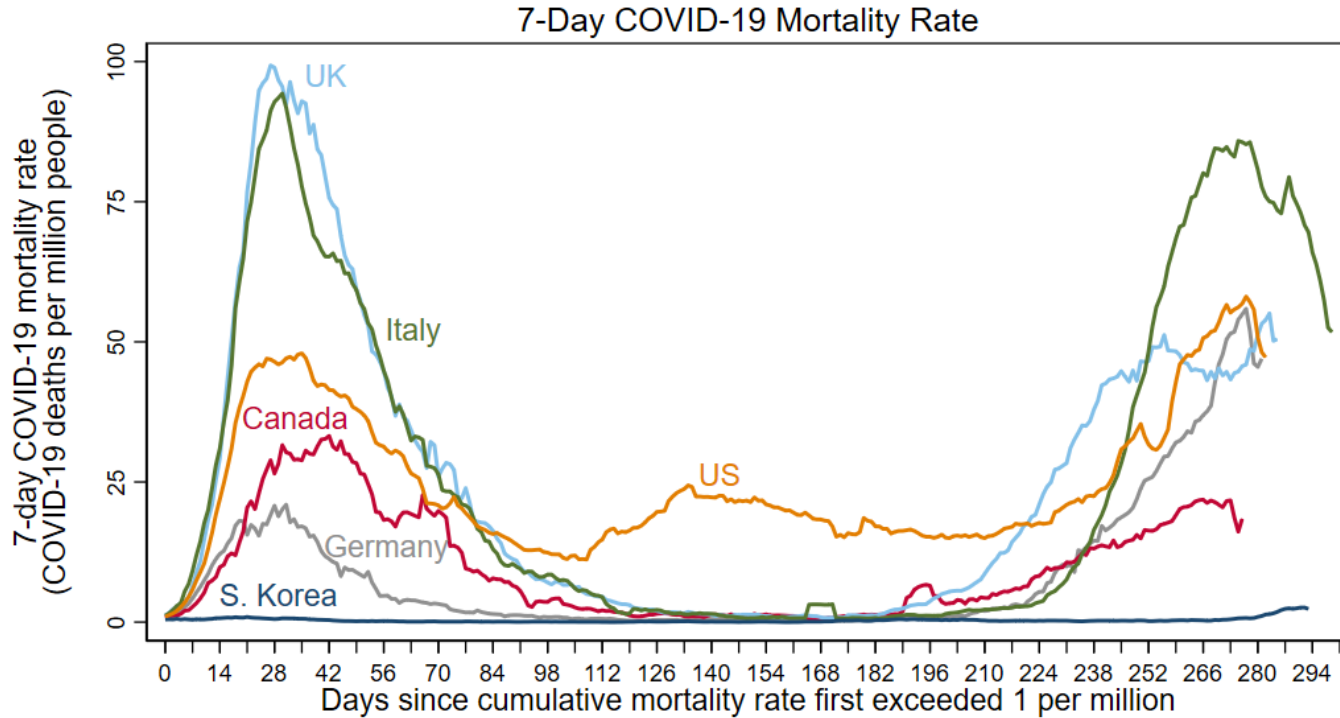
Notes: The District of Columbia is in the bin with a hospitalization rate between 231 and 350. The color bins on this map are changed with each update to better represent the latest data.

COVID-19 statistics for Fourth District states and the nation as of December 27

COVID-19 Statistic	Kentucky	Ohio	Pennsylvania	West Virginia	United States
Levels					
Average daily deaths in past 2 weeks	25	73	177	20	2416
Cumulative deaths	2555	8509	14969	1254	333118
Average daily hospitalizations in past week	1594	4563	6014	714	118248
Rates (per million residents)					
14-day mortality rate	78	87	194	160	103
Cumulative mortality rate	571	727	1169	701	1018
Average daily hospitalization rate in past week	357	390	470	399	359

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

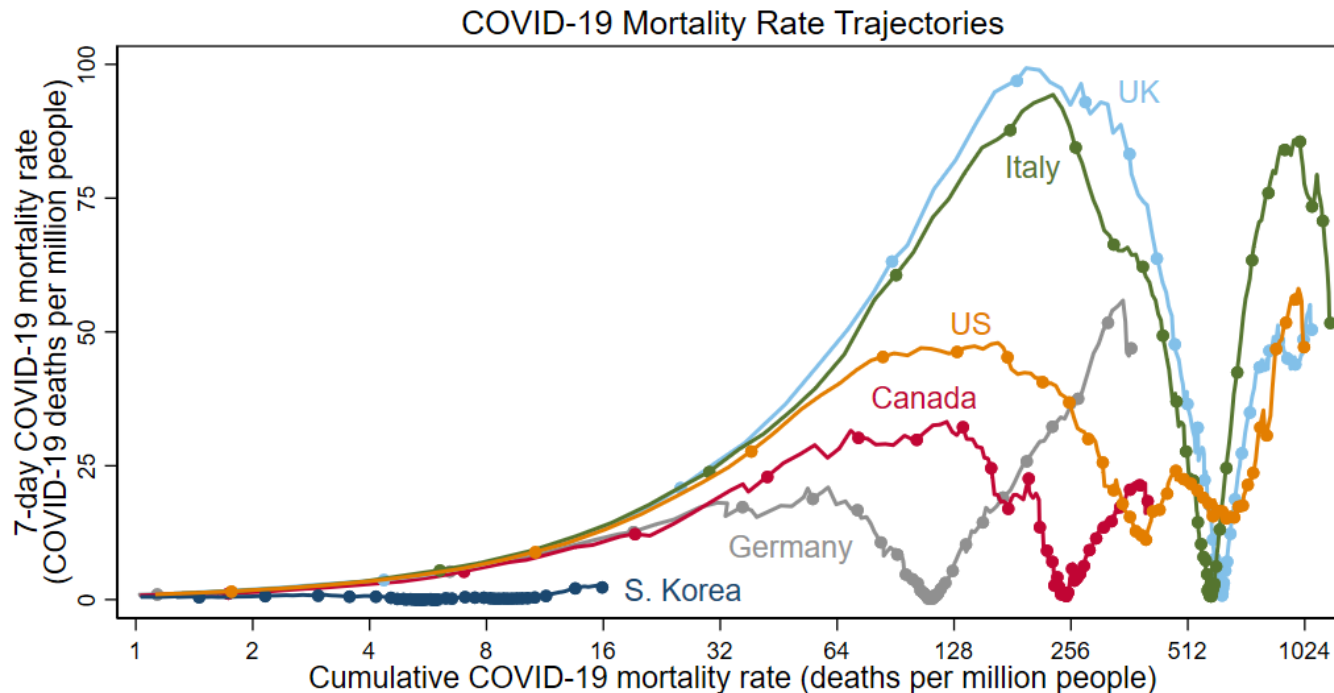
The 7-day COVID-19 mortality rate in the United States fell in the past week. The US 7-day mortality rate is above that of Germany but below that of the UK.



Notes: 3/22/2020 was first day US rate > 1. Data through 12/27/2020.

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

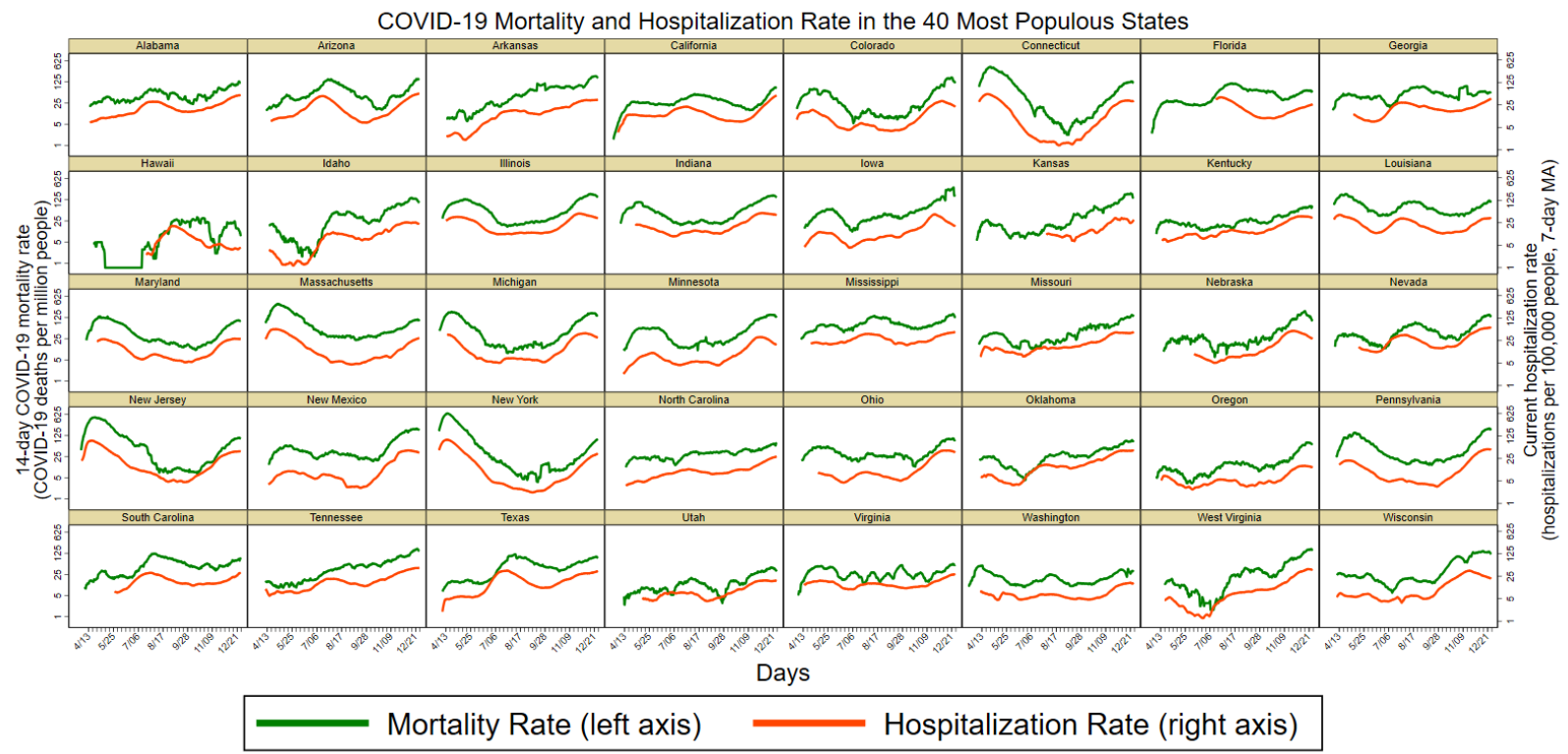
As of December 27, the cumulative COVID-19 mortality rate of the United States is 1,018 deaths per million people. This is more than double the mortality rate of Canada but below that of Italy and that of the UK.



Notes: Horizontal axis has log scale. Excluding days when mortality rate < 1. Dots on Sundays to show time. Data through December 27, 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 1/22-12/27/2020. 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.