

COVID-19 Mortality Rate Trends in Countries and US States

Joel Elvery

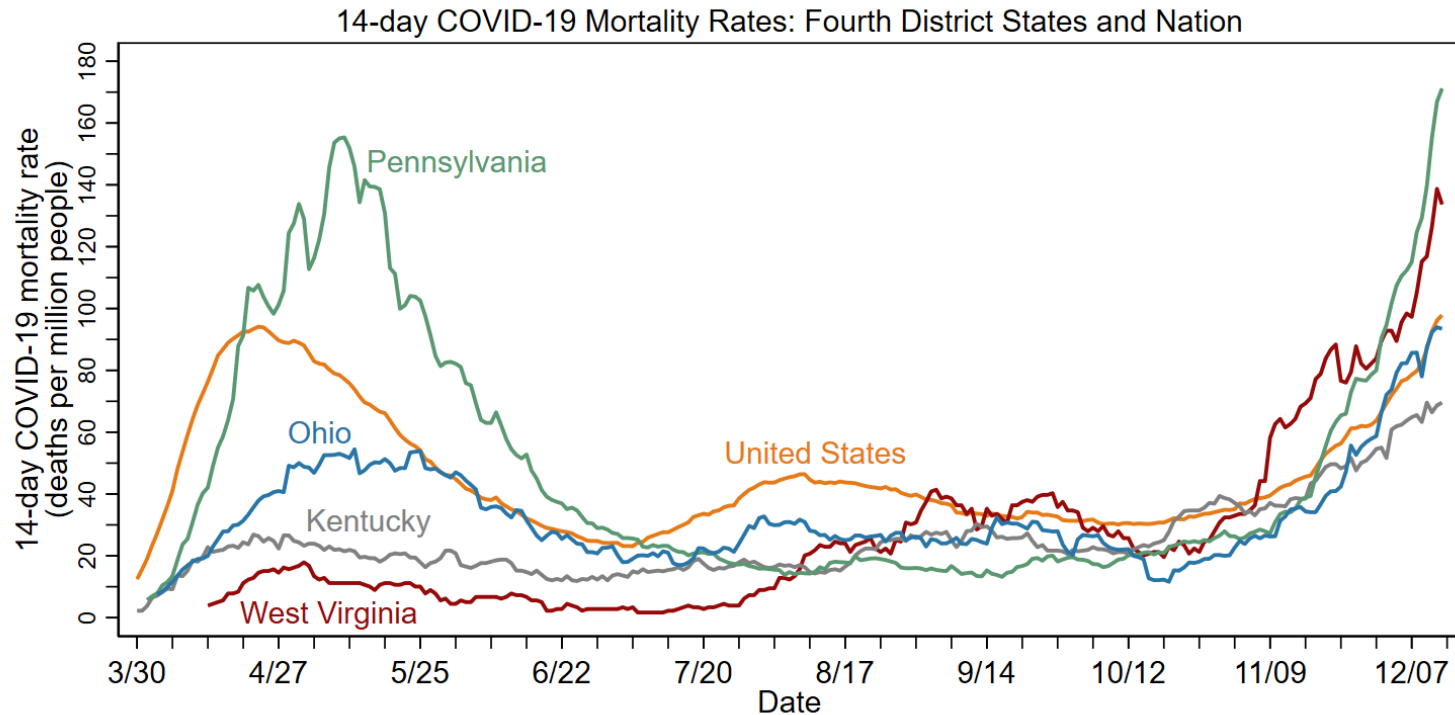
Mark Oleson

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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 13, 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.

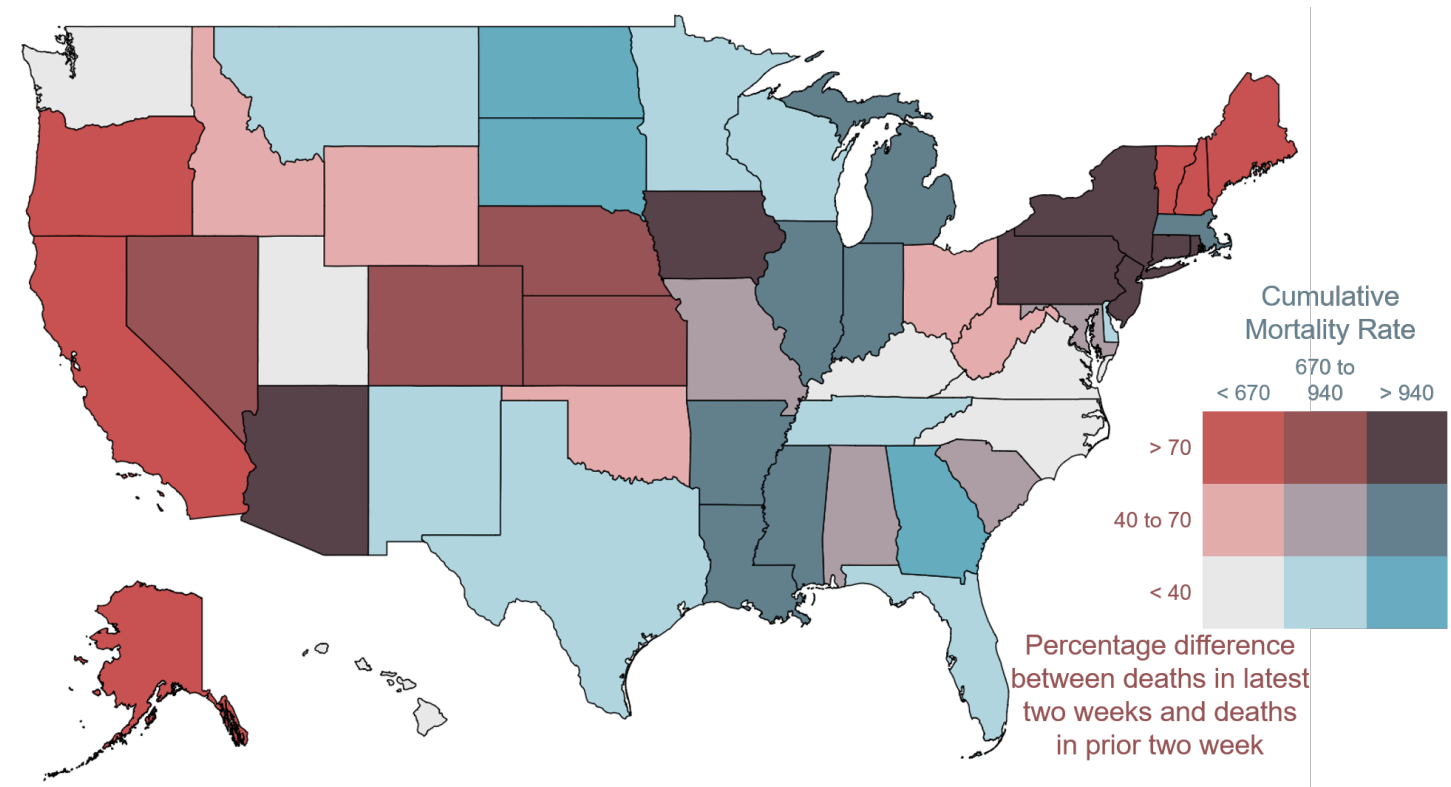
In the two weeks leading up to December 13, the 14-day COVID-19 mortality rate rose in all Fourth District states and in the United States as a whole – all reached new peak 14-day mortality rates.



Note: Data through December 13, 2020.

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

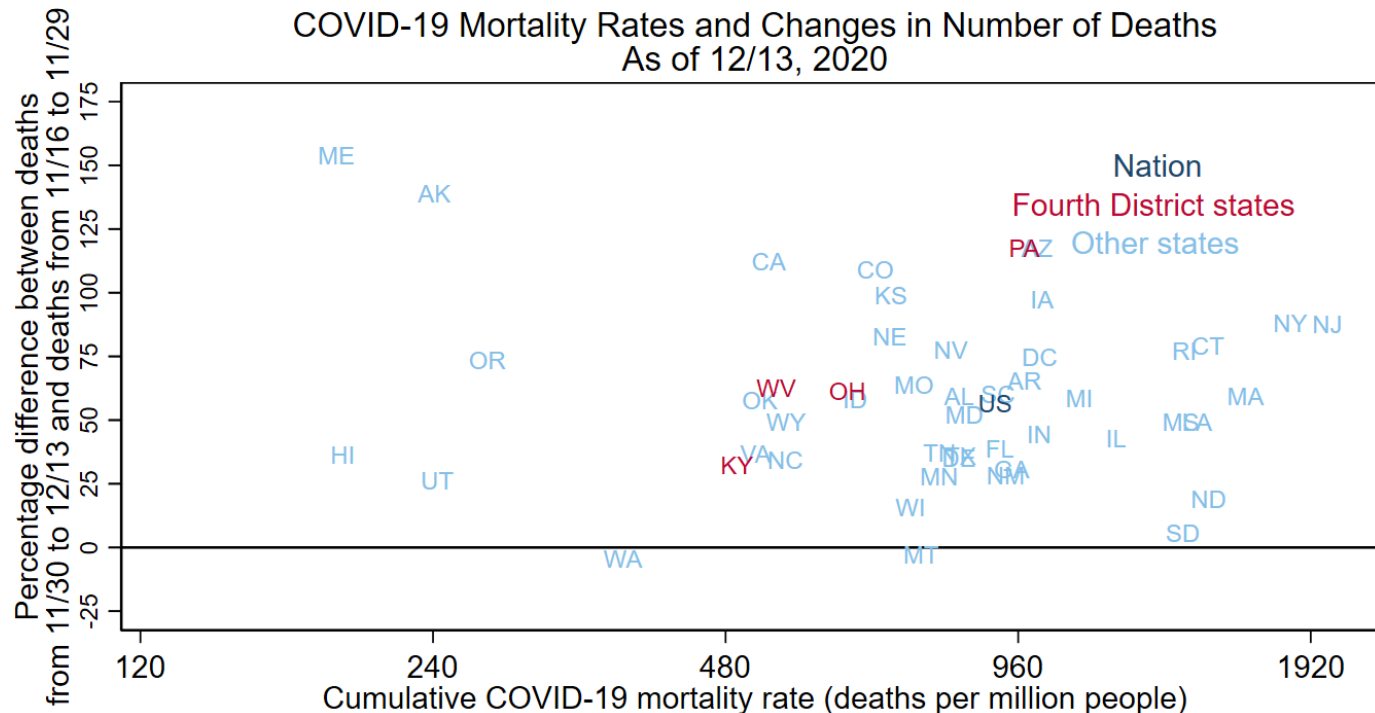
Between November 30 and December 13, the 14-day COVID-19 mortality rate fell in Montana and Washington, but it rose in every other state.



Data for December 13, 2020, accessed on December 14, 2020.
“Latest two weeks” is 11/30 to 12/13, “prior two weeks” is 11/16 to 11/29.
Sources: FRBC calculations, CSSE, and BEA.

Notes: The District of Columbia is in the bin with mortality rate > 940 and percentage difference > 70 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.

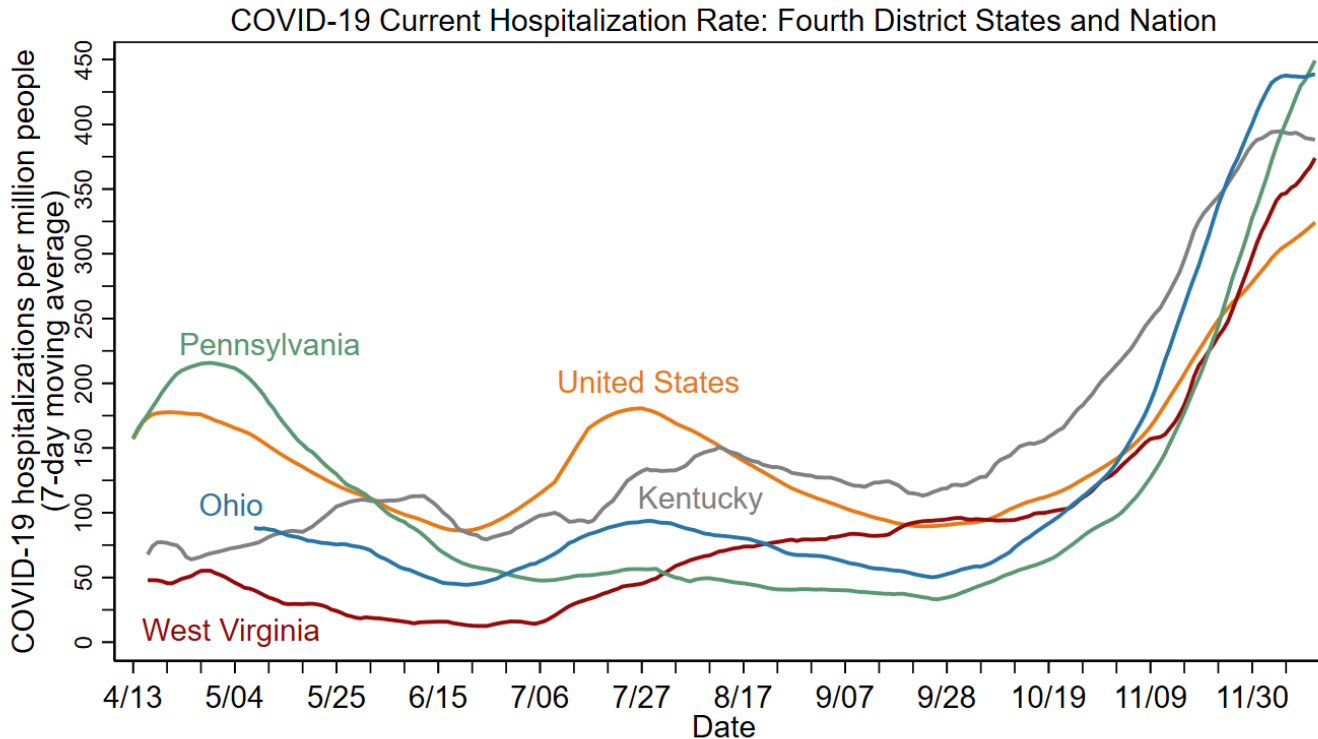


Notes: Horizontal axis has log scale.

VT and NH are excluded as the states' two-week deaths increased by more than 175 percent.

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 Fourth District states and the United States in the weeks ahead.

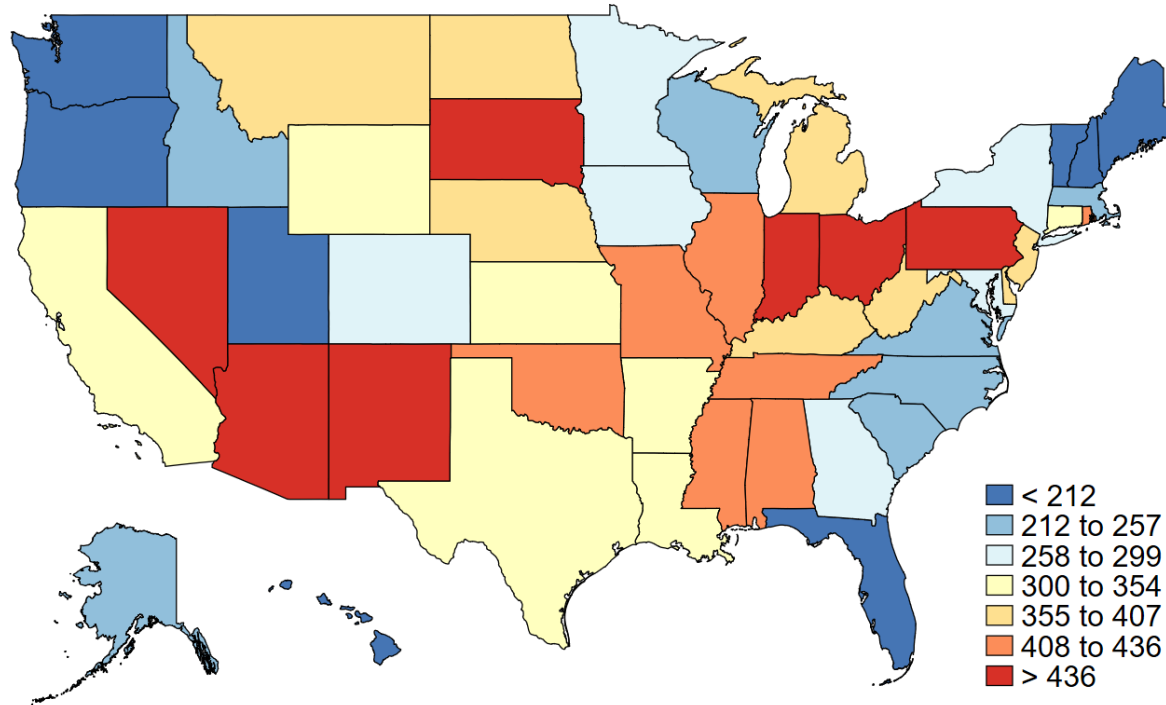


Note: Data through December 13, 2020.

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

In the week leading up to December 13, hospitalization rates were highest in the Midwest and Southwest states and lowest in the Northwest and along much of the East coast.

COVID-19 Hospitalizations per Million People,
7-day moving average as of December 13, 2020.



Data for December 13, 2020, accessed on December 14, 2020.

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

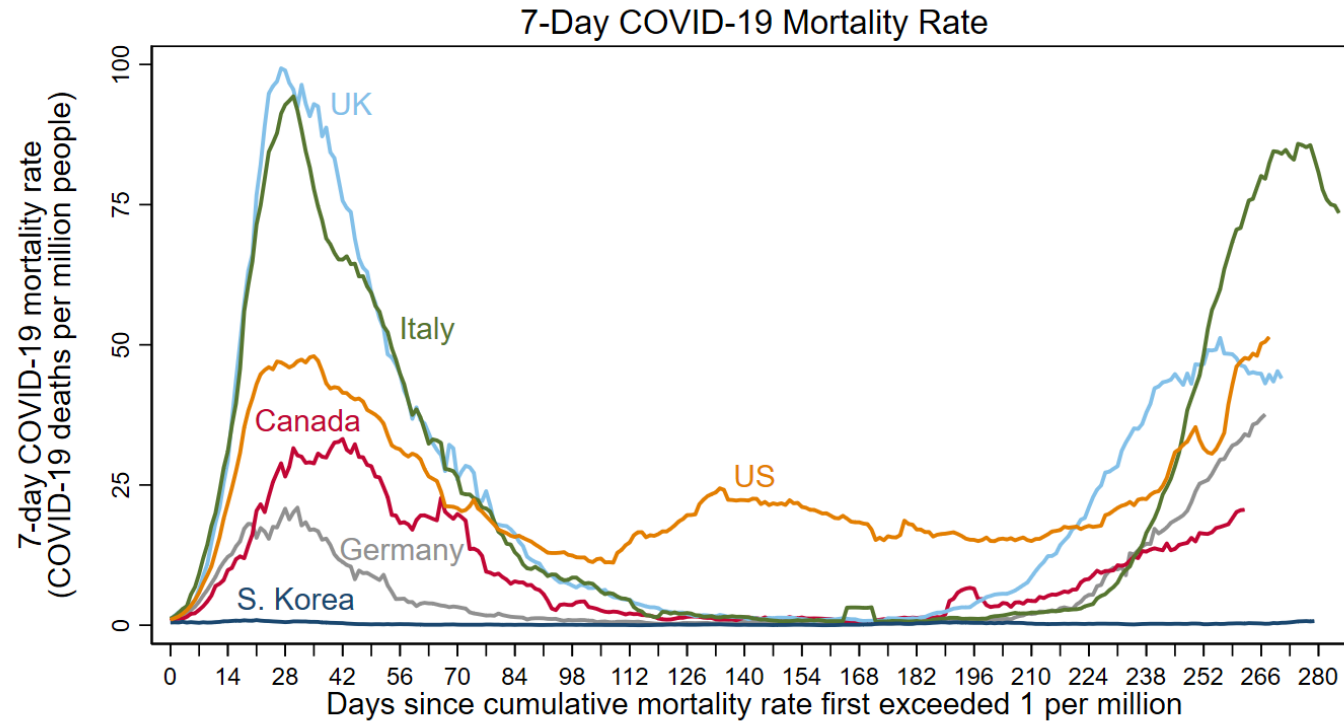
Notes: The District of Columbia is in the bin with a hospitalization rate between 258 and 299. The color bins on this map are changed with each update to better represent the latest data.

COVID-19 statistics for Fourth District states and the nation as of December 13.

COVID-19 Statistic	Kentucky	Ohio	Pennsylvania	West Virginia	United States
Levels					
Average daily deaths in past 2 weeks	22	78	157	17	2,300
Cumulative deaths	2,207	7,492	12,490	968	299,168
Average daily hospitalizations in past week	1,735	5,133	5,756	669	106,668
Rates (per million residents)					
14-day mortality rate	70	93	171	134	98
Cumulative mortality rate	494	641	975	541	914
Average daily hospitalization rate in past week	388	439	449	374	324

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

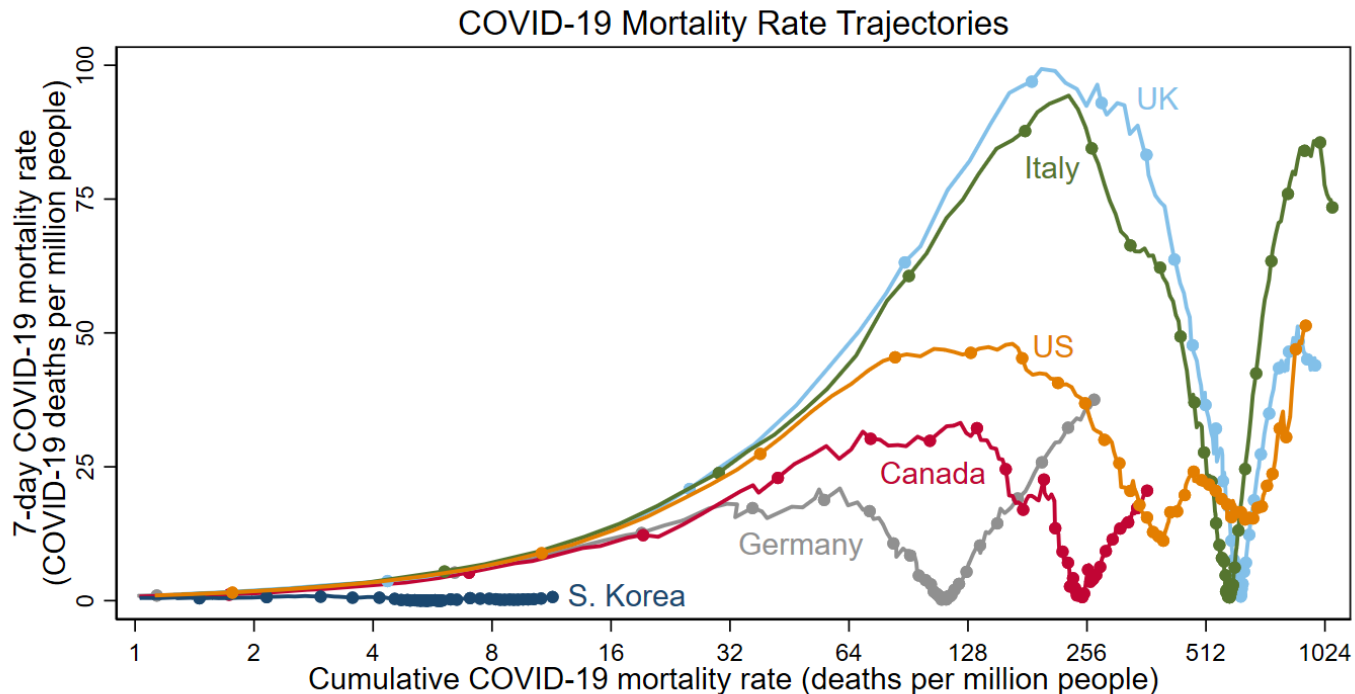
The 7-day COVID-19 mortality rate in the United States rose in the past week. The US 7-day mortality rate is above that of Germany and that of the UK.



Notes: 3/22/2020 was first day US rate > 1. Data through 12/13/2020.

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

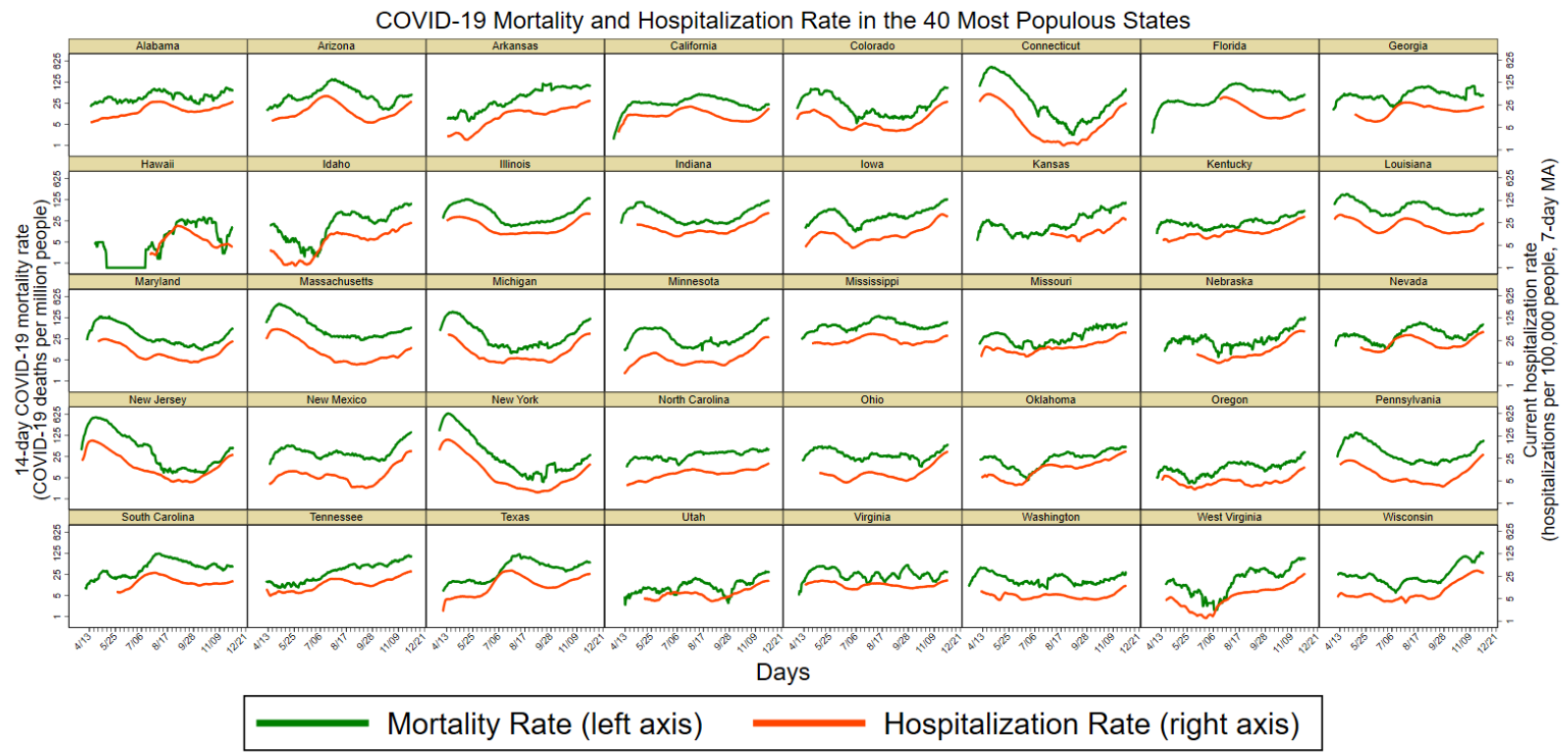
As of December 13, the cumulative COVID-19 mortality rate of the United States is 914 deaths per million people. This is more than double the mortality rate of Canada but below that of Italy and that of the UK.



Notes: Horizontal axis has log scale. Excluding days when mortality rate < 1. Dots on Sundays to show time. Data through December 13, 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 1/22-12/13/2020. 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.