

# COVID-19 Mortality Rate Trends in Countries and US States

Joel Elvery

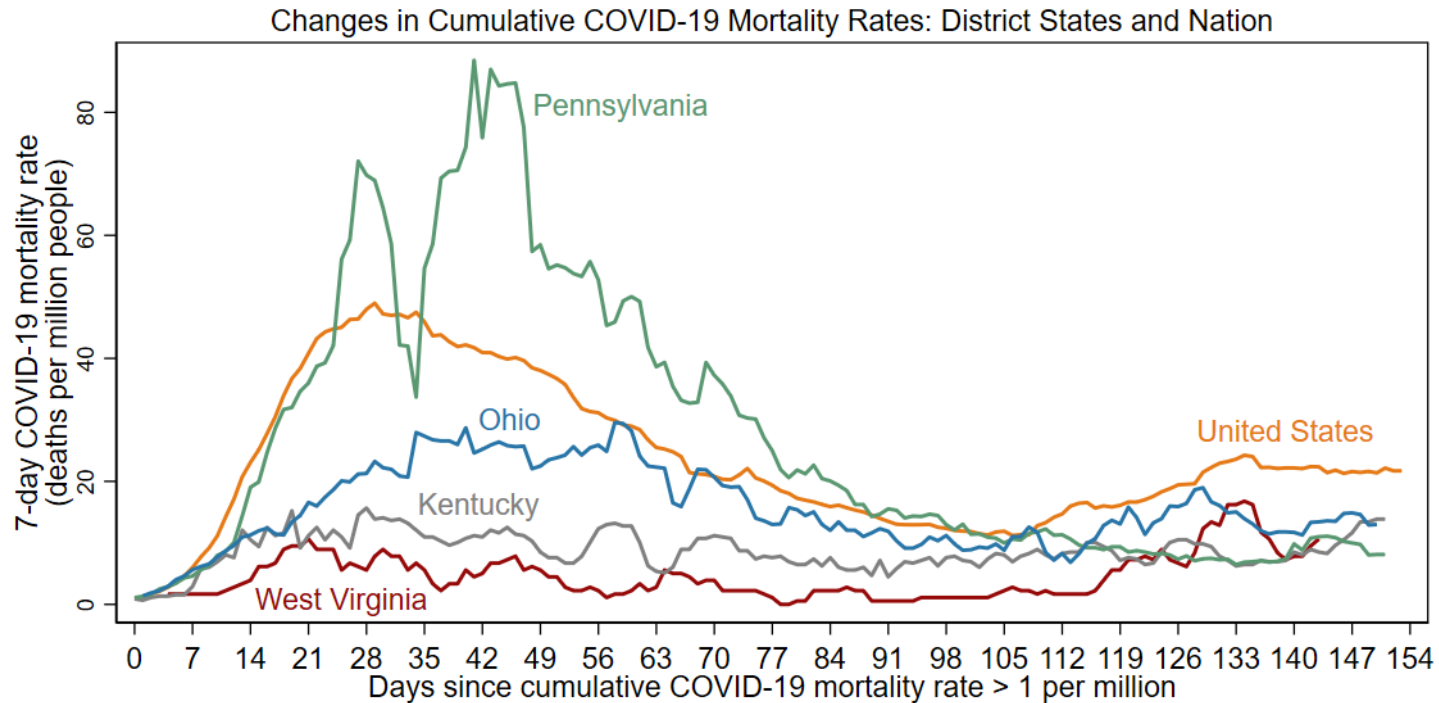
with assistance from Mark Oleson

Updated August 24, 2020

FEDERAL RESERVE BANK *of* CLEVELAND  
*Cleveland | Pittsburgh | Cincinnati*

- 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 the Center for Systems Science and Engineering at Johns Hopkins University (CSSE) data through August 23, 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.
- All dates in this presentation refer to the year 2020.

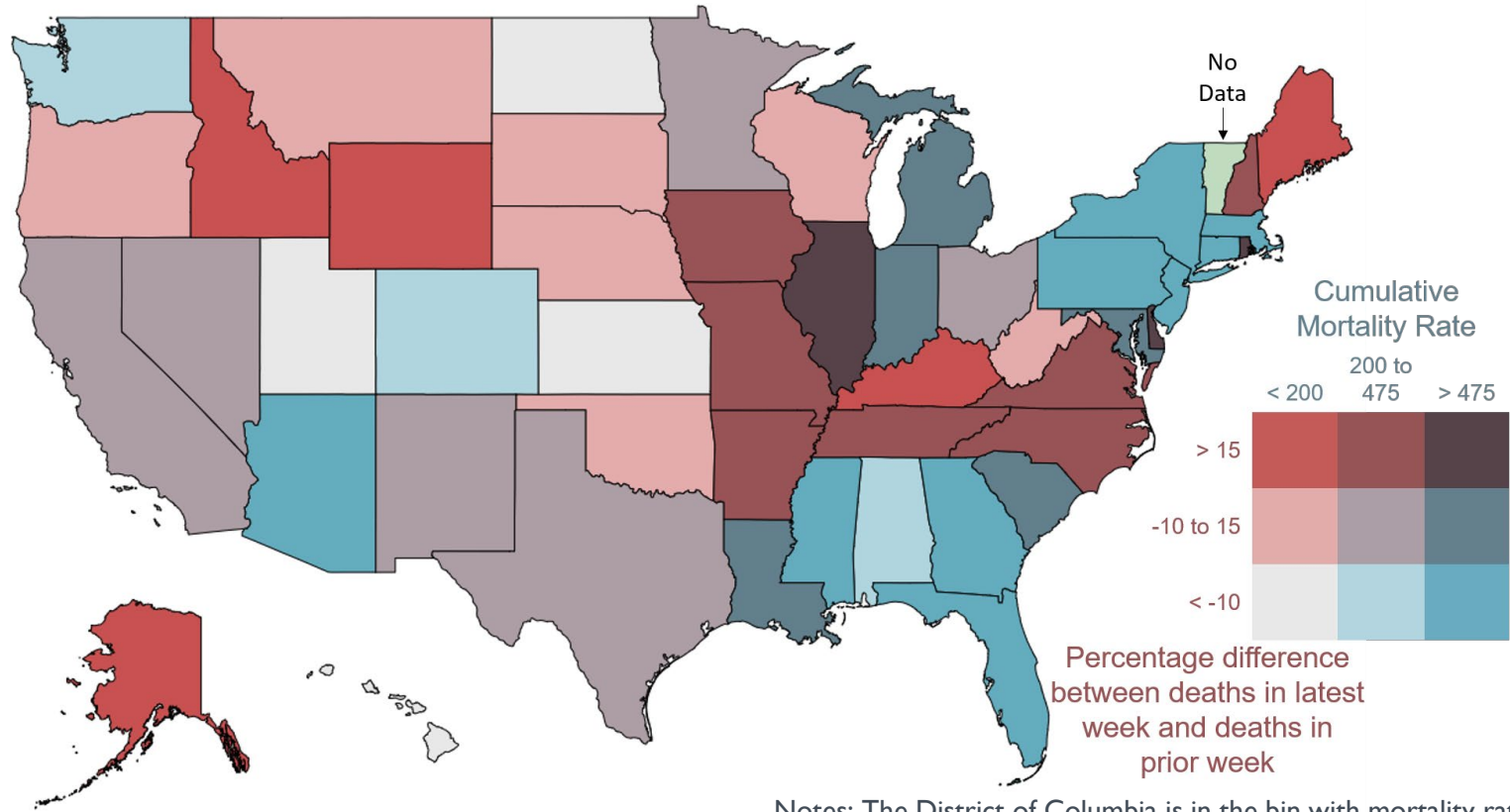
In the week leading up to August 23, the weekly COVID-19 mortality rate rose in Kentucky, fell in Pennsylvania and West Virginia, and slightly declined in Ohio and the United States as a whole.



Note: Data through August 23, 2020.

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

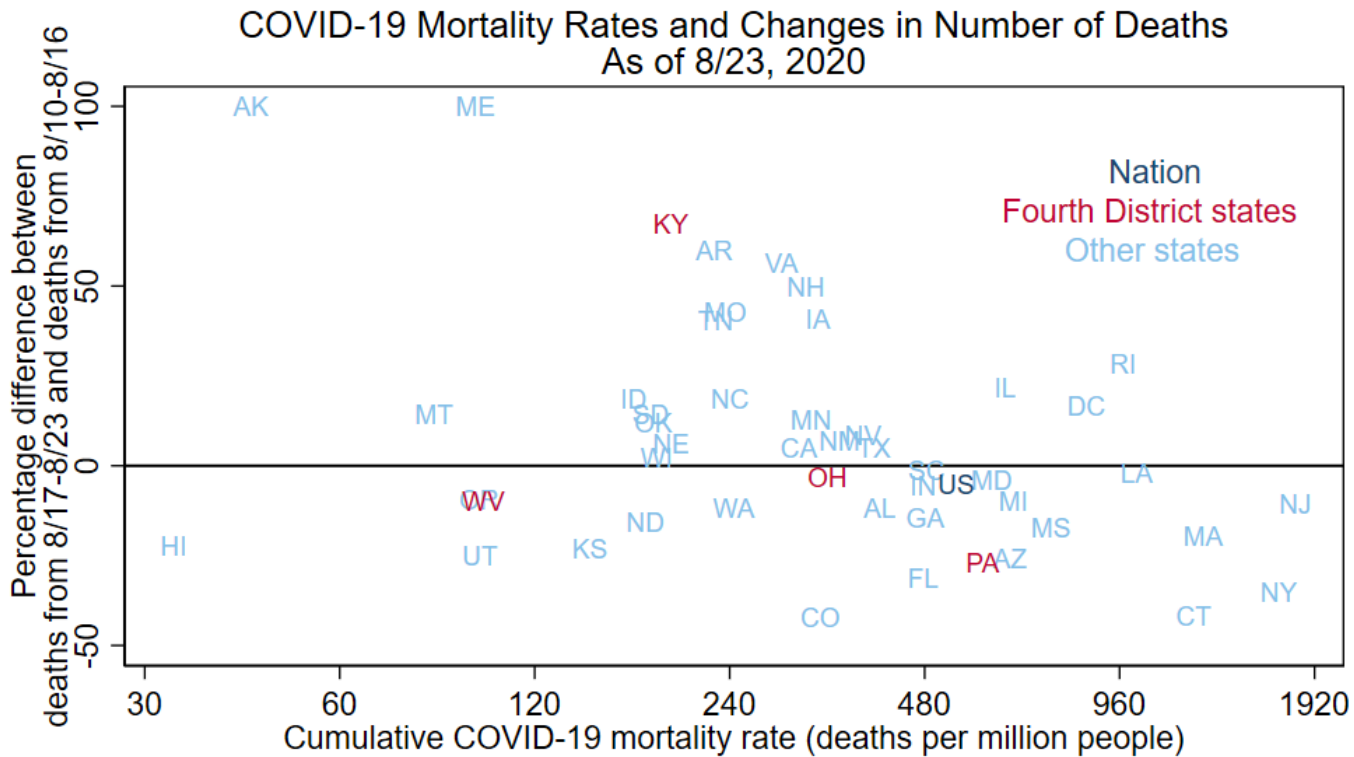
Between August 16 and August 23, the weekly COVID-19 mortality rate rose by more than 15 percent in 16 states, including Illinois, North Carolina, Tennessee, and Virginia.



Data for August 23, 2020, accessed on August 24, 2020  
“Latest week” is 8/17 to 8/23, “prior week” is 8/10 to 8/16.  
Sources: FRBC calculations, CSSE, and BEA

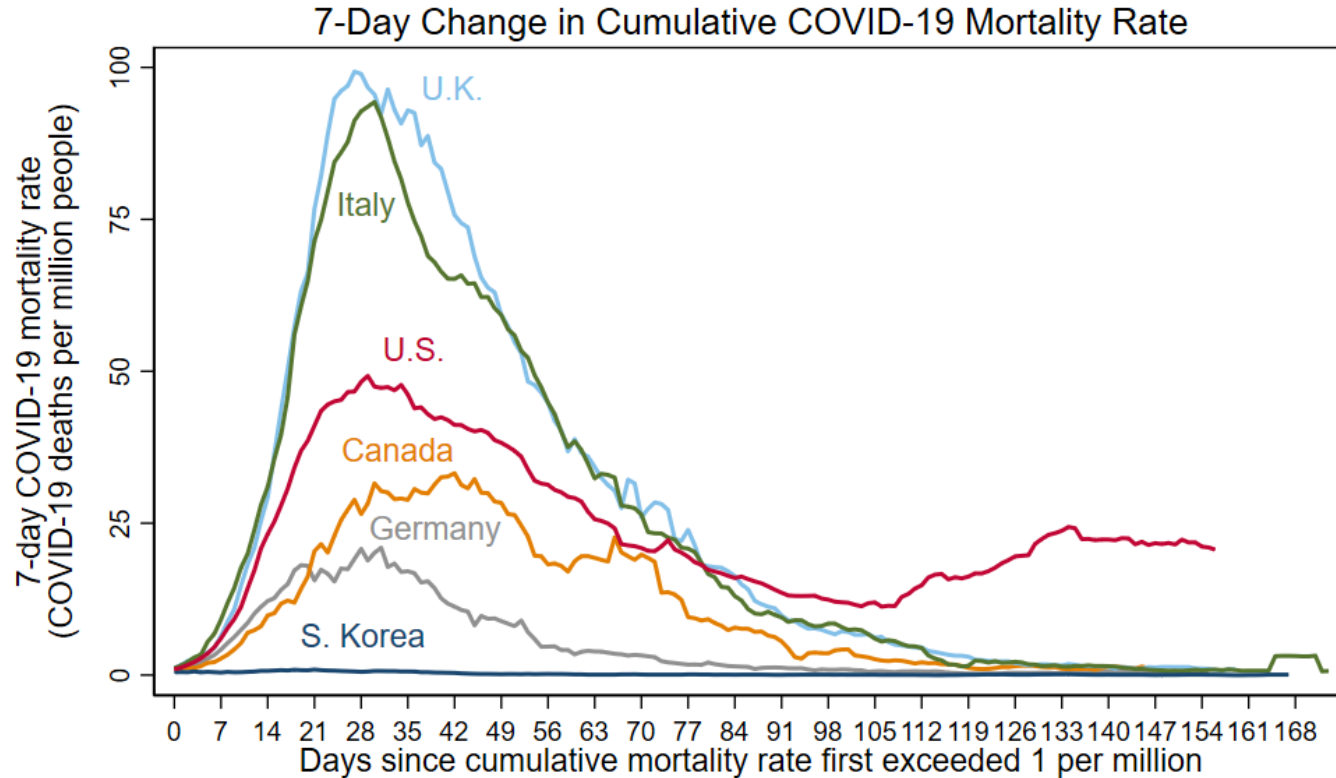
Notes: The District of Columbia is in the bin with mortality rate > 475 and percentage difference > 15. The color bins on this map are changed with each update to better represent the latest data.

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 excluded because it had no COVID-19 deaths from 8/10 to 8/16. WY and DE excluded as both had an almost 250% increase in deaths between the two weeks. Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and Bureau of Economic Analysis.

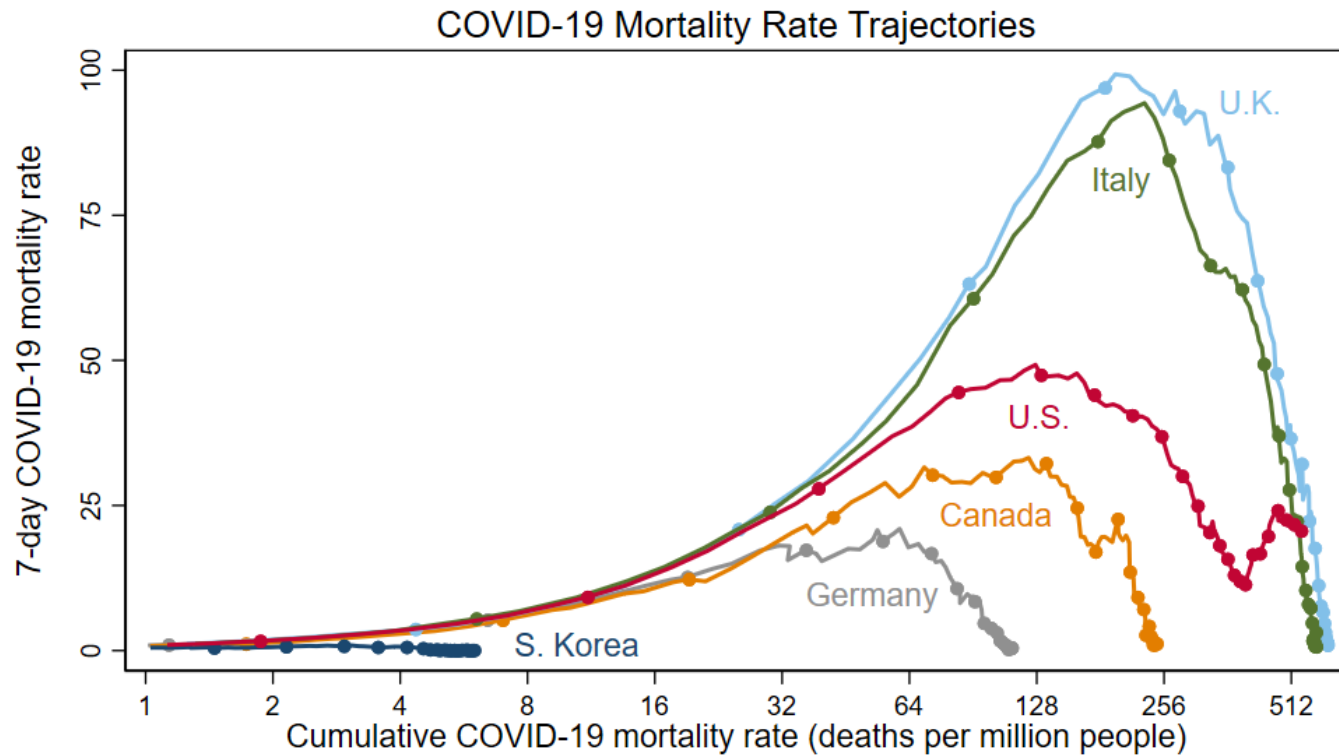
The 7-day COVID-19 mortality rate in the United States has drifted down in August, but remains high relative to those in Canada and European countries at comparable numbers of days into their epidemics.



Notes: 3/22/2020 was first day US rate > 1. Data through 8/23/2020.

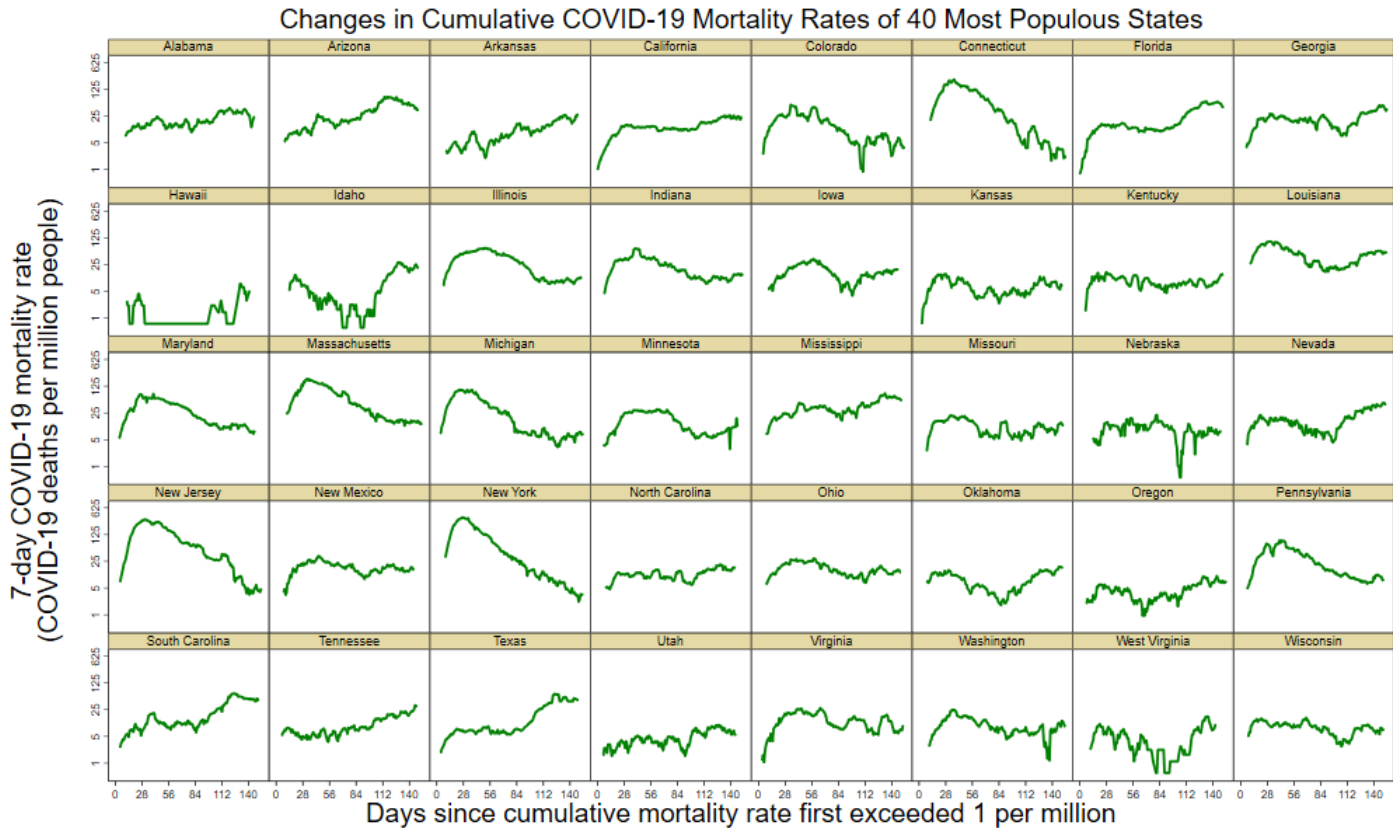
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and the World Bank

As of August 23, the cumulative COVID-19 mortality rate of the United States is 540 deaths per million people. This is more than four times that of Germany and more than twice that of Canada.



Notes: Horizontal axis has log scale. Excluding days when mortality rate < 1.  
Dots on Sundays to show time. Data through August 23, 2020.  
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and the World Bank

This chart show the changes in COVID-19 mortality rates for the 40 most populous US states.



Notes: Data points excluded if cumulative mortality rate < 1. Data from 1/22-8/23/2020.  
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and BEA



- Some significant revisions to the reported number of COVID-19 deaths cause large single-day jumps.
- I 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.
- I 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 upward on June 25; New Jersey and US data are adjusted from 3/10 to 6/24.
  - Illinois revised deaths upward on July 7; Illinois and US are adjusted from 3/23 to 7/6.