

COVID-19 Mortality Rate Trends in Countries and US States

Joel Elvery

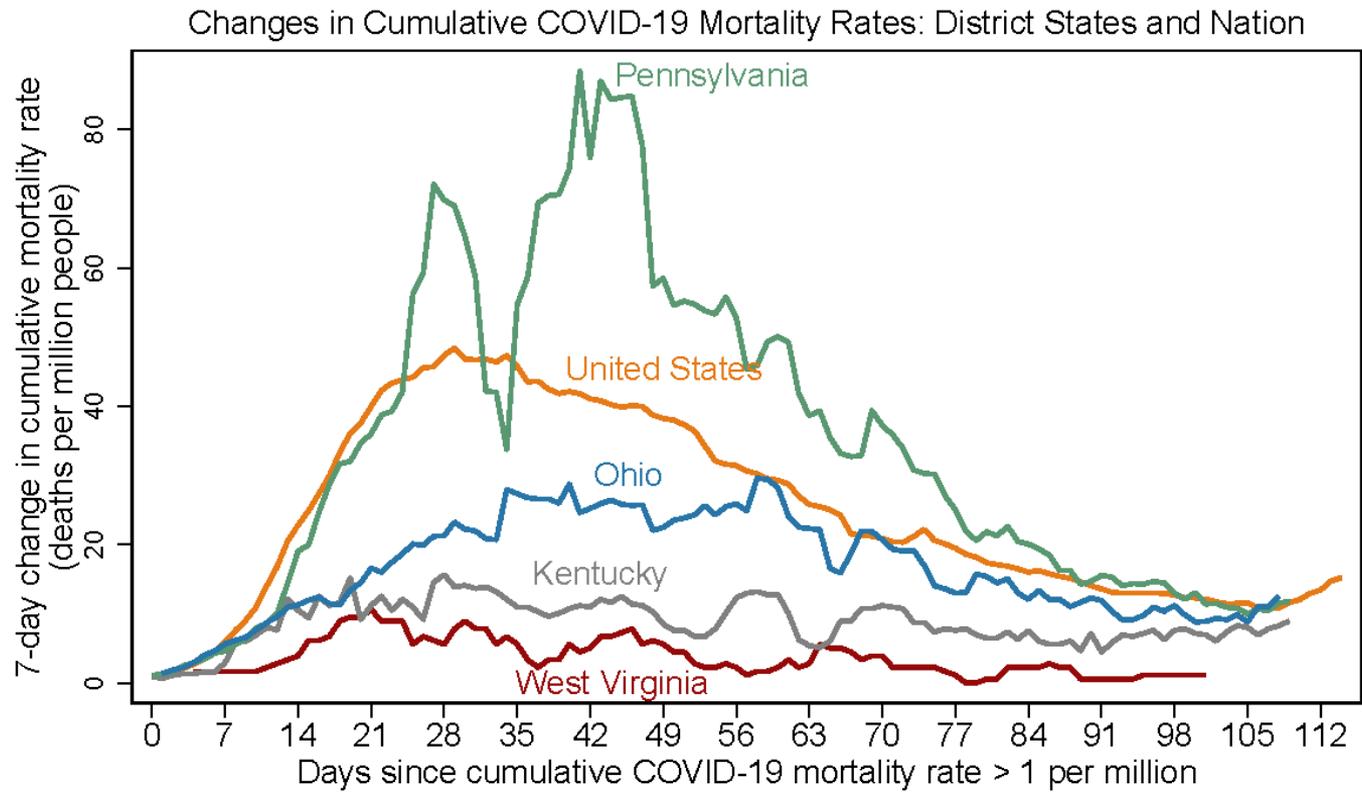
with assistance from Mark Oleson

Updated July 13, 2020

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

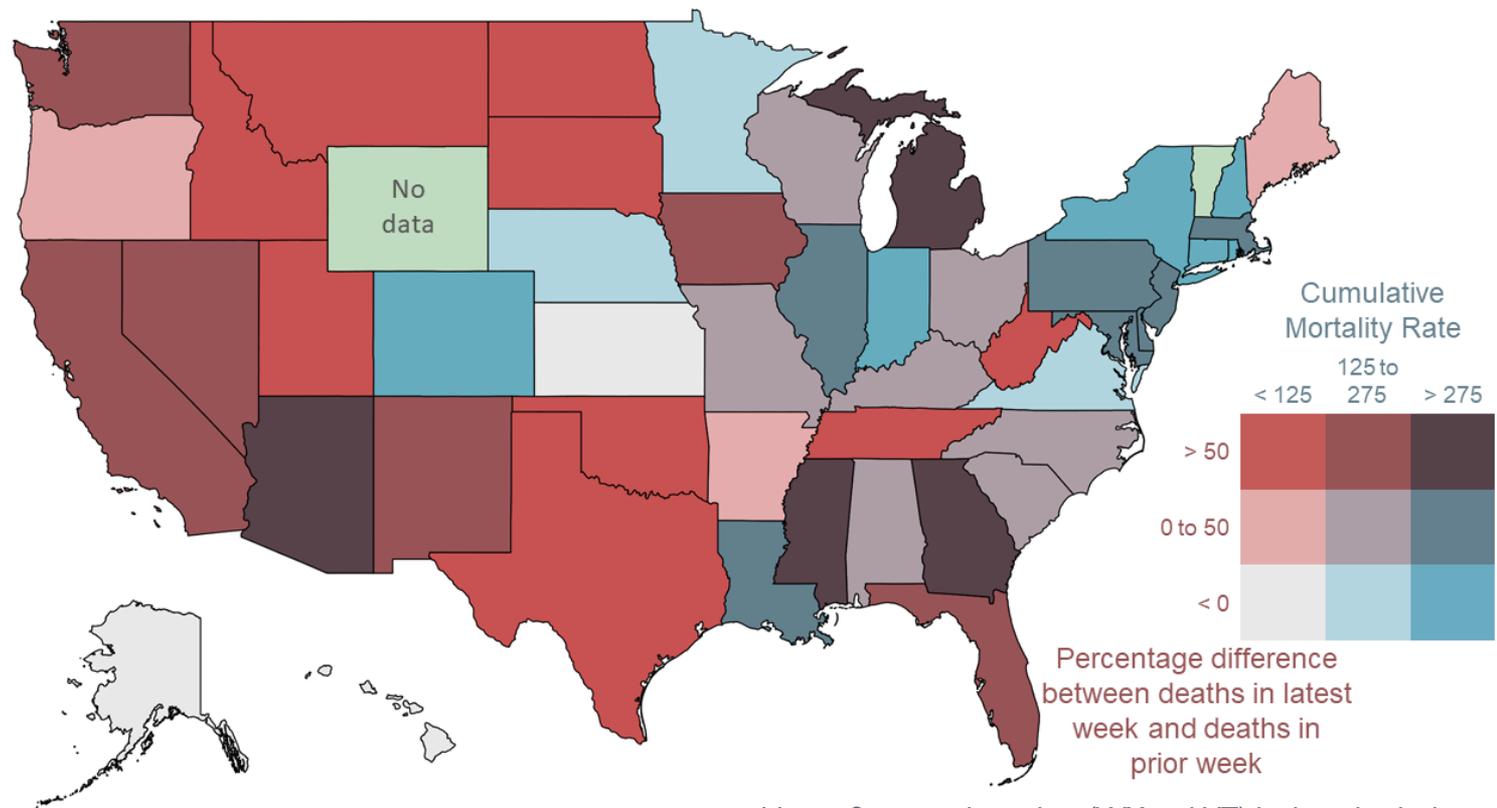
- The charts in this presentation use the same data sources as the charts in two April 2020 District Data Briefs. Please see these reports for additional details.
 - [Getting to Accuracy: Measuring COVID-19 by Mortality Rates and Percentage Changes](#)
 - [A Speeding Rate Starts to Slow: COVID-19 Mortality 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 July 12, 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 July 12, the population-adjusted number of COVID-19 deaths per week rose in KY, OH, PA, and WV and in the United States as a whole.



Note: Data through July 12, 2020.
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and Bureau of Economic Analysis.

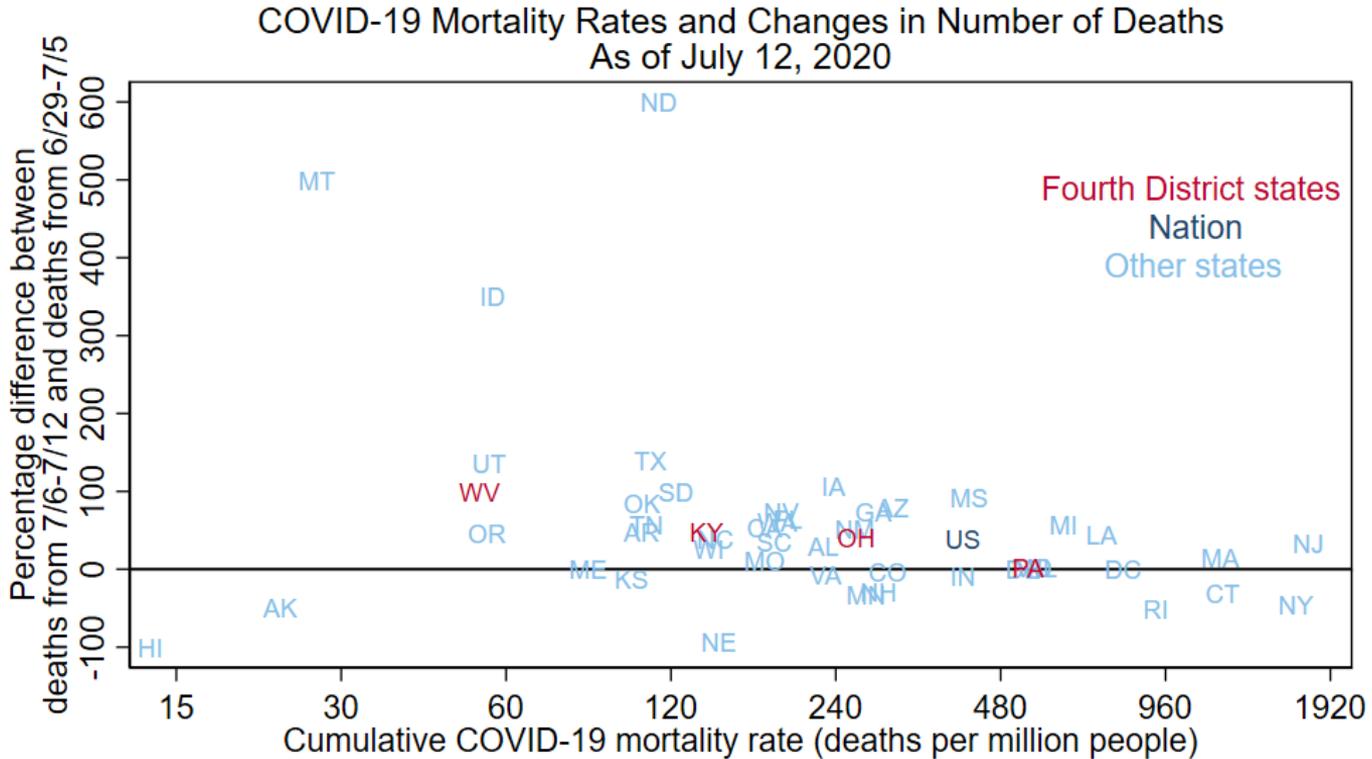
Between July 6 and July 12, the number of COVID-19 deaths per week fell in only 12 states; deaths per week rose by more than 50 percent in 19 states, including CA, FL, GA, MI, and TX.



Data for July 12, 2020, accessed on July 13, 2020
 "Latest week" is 7/6 to 7/12, "prior week" is 6/29 to 7/5.
 Sources: FRBC calculations, CSSE, and BEA

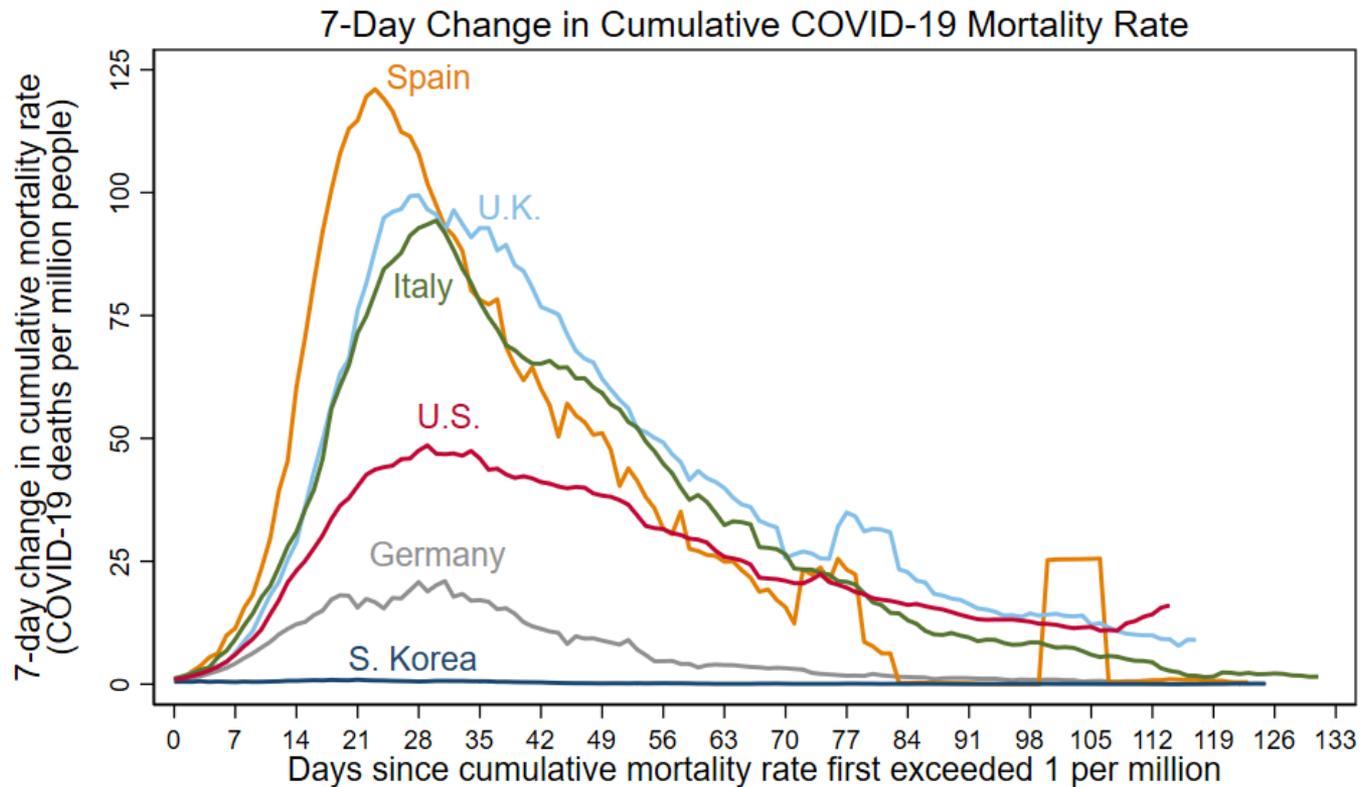
Notes: States with no data (WY and VT) had no deaths between 6/29 and 7/5. The District of Columbia is in the bin with mortality rate > 275 and percentage difference between 0 and 50. The color bins on this map are changed with each update to better represent the latest data.

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



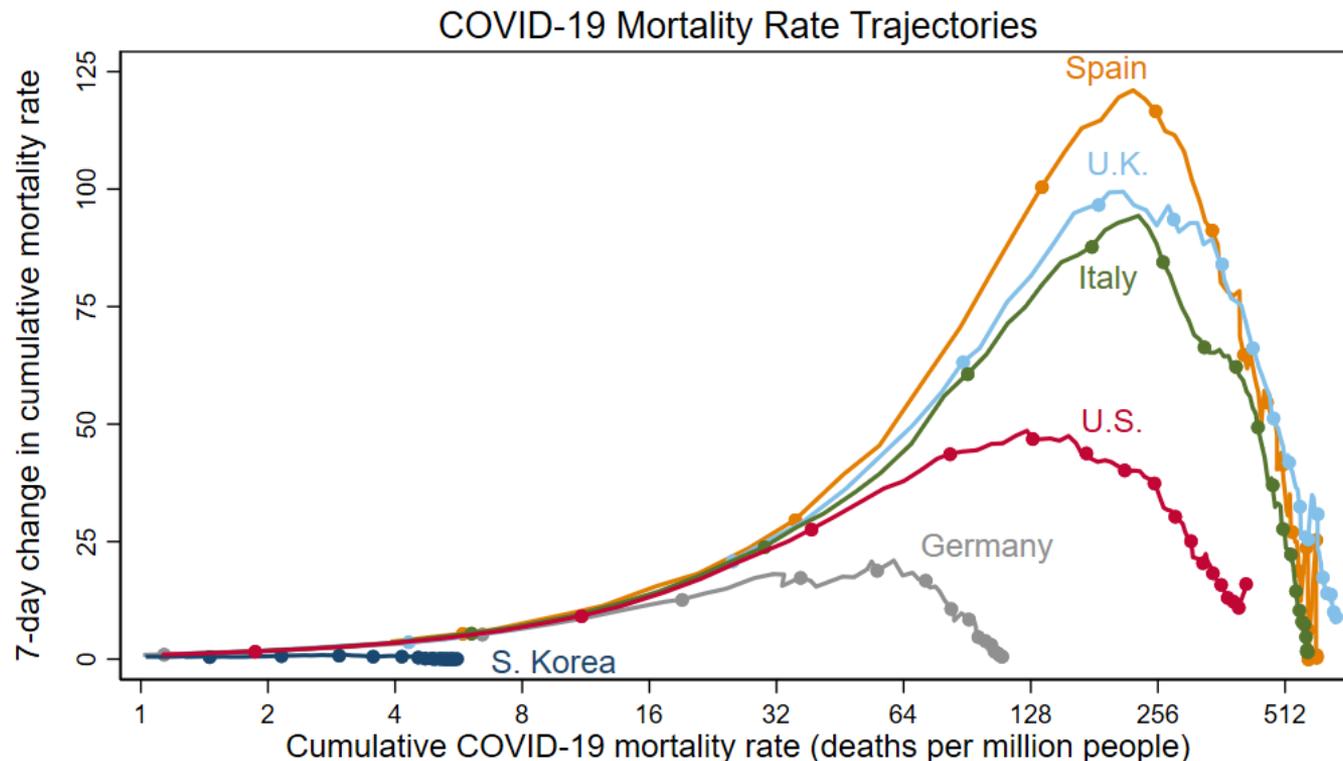
Notes: Horizontal axis has log scale. VT and WY excluded because they had no COVID-19 deaths from 6/29-7/5, 2020.
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and Bureau of Economic Analysis.

The number of deaths per week began rising again in the United States on July 8. In contrast, deaths per week fell during the comparable number of days into the epidemics in Germany, Italy, Spain, and UK.



Notes: 3/22/2020 was first day US rate > 1. Data through 7/12/2020.
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and the World Bank

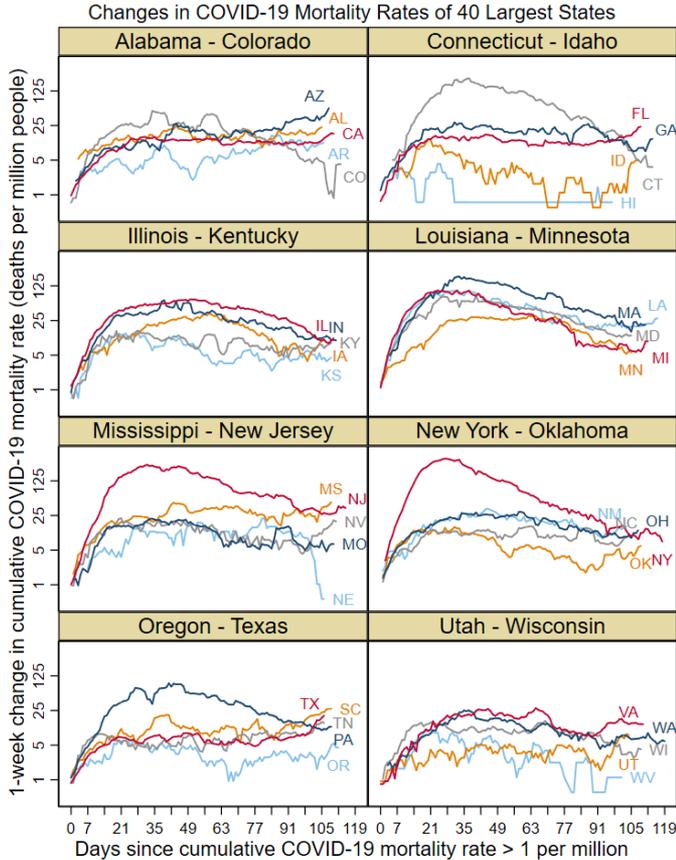
As of July 12, the cumulative COVID-19 mortality rate of the United States is 413 deaths per million people. This is more than triple that of Germany and more than half of those of Italy, Spain, and UK.



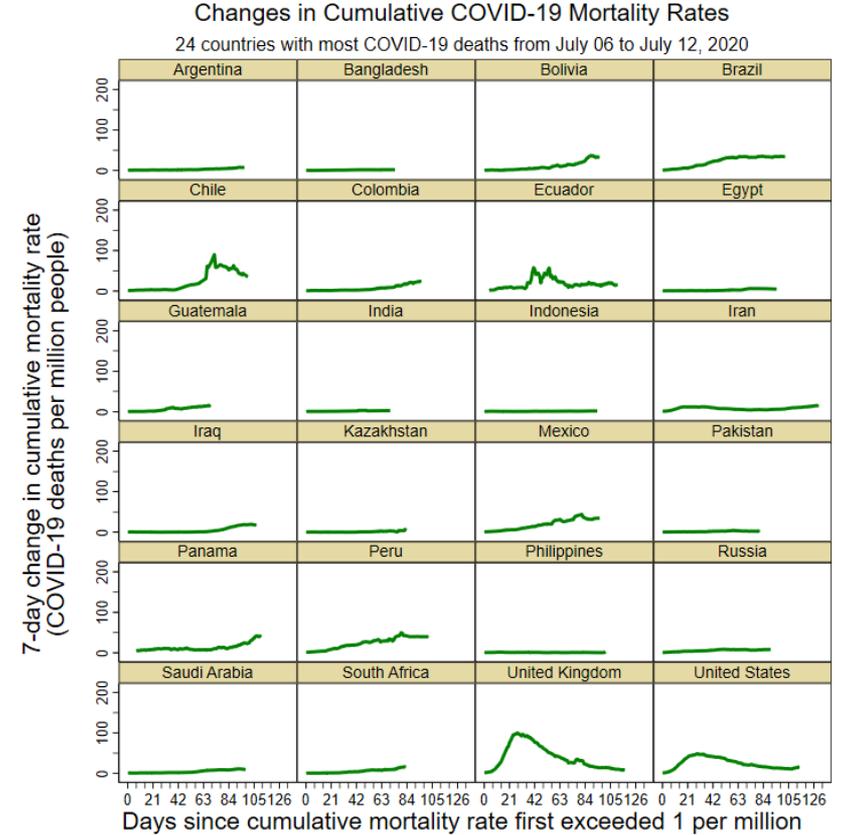
Notes: Horizontal axis has log scale. Excluding days when mortality rate < 1. Dots on Sundays to show time. Data through July 12, 2020.

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

These charts show the changes in COVID-19 mortality rates for the 40 largest US states (left) and the 24 countries with the highest number of COVID-19 deaths in the week leading up to July 12 (right).



Notes: Vertical axis uses a log scale. Number of days capped at 119. Data through July 12, 2020.
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and Bureau of Economic Analysis.



Notes: Data points excluded if cumulative mortality rate < 1. Data from 1/22-7/12/2020.
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and the World Bank

- Some large 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; NJ 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.