

COVID-19 Mortality Rate Trends in Countries and US States

Joel Elvery

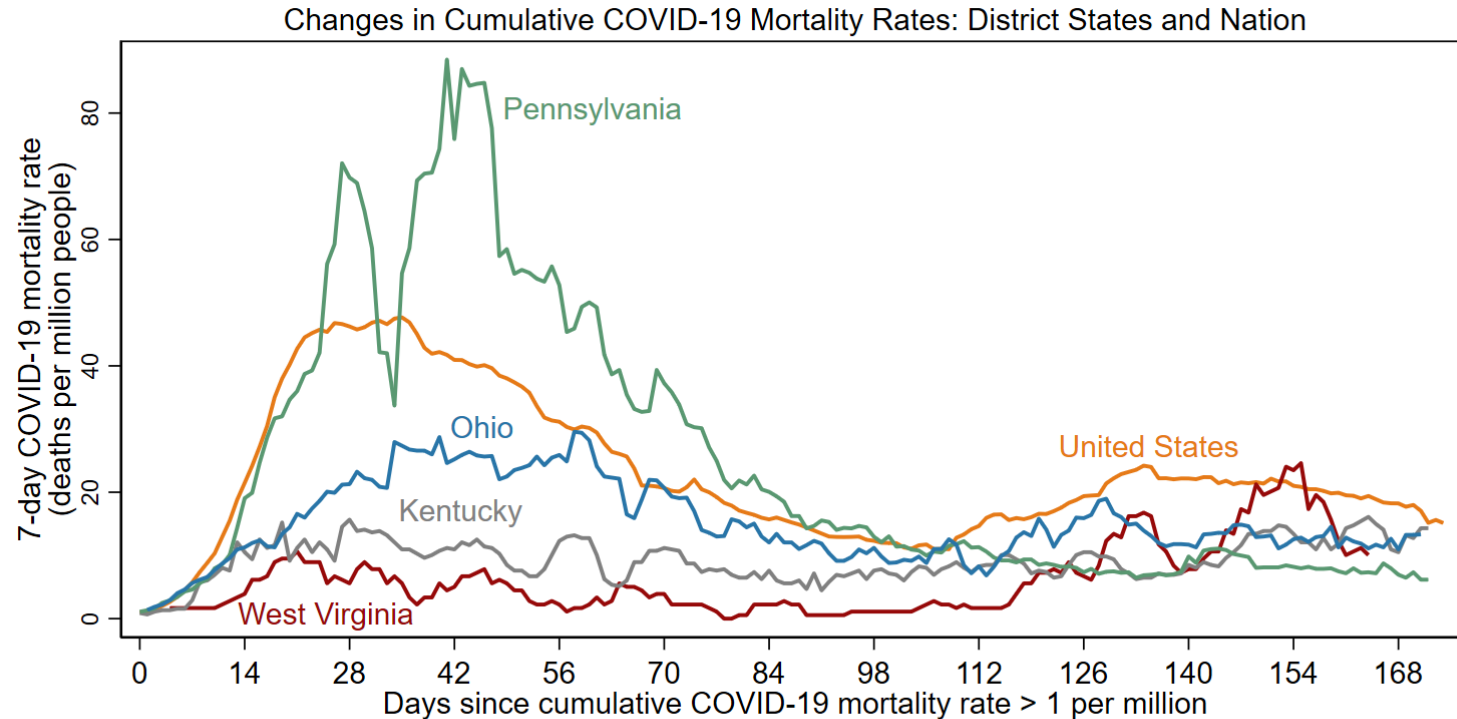
Mark Oleson

Updated September 14, 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 September 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.
- All dates in this presentation refer to the year 2020.

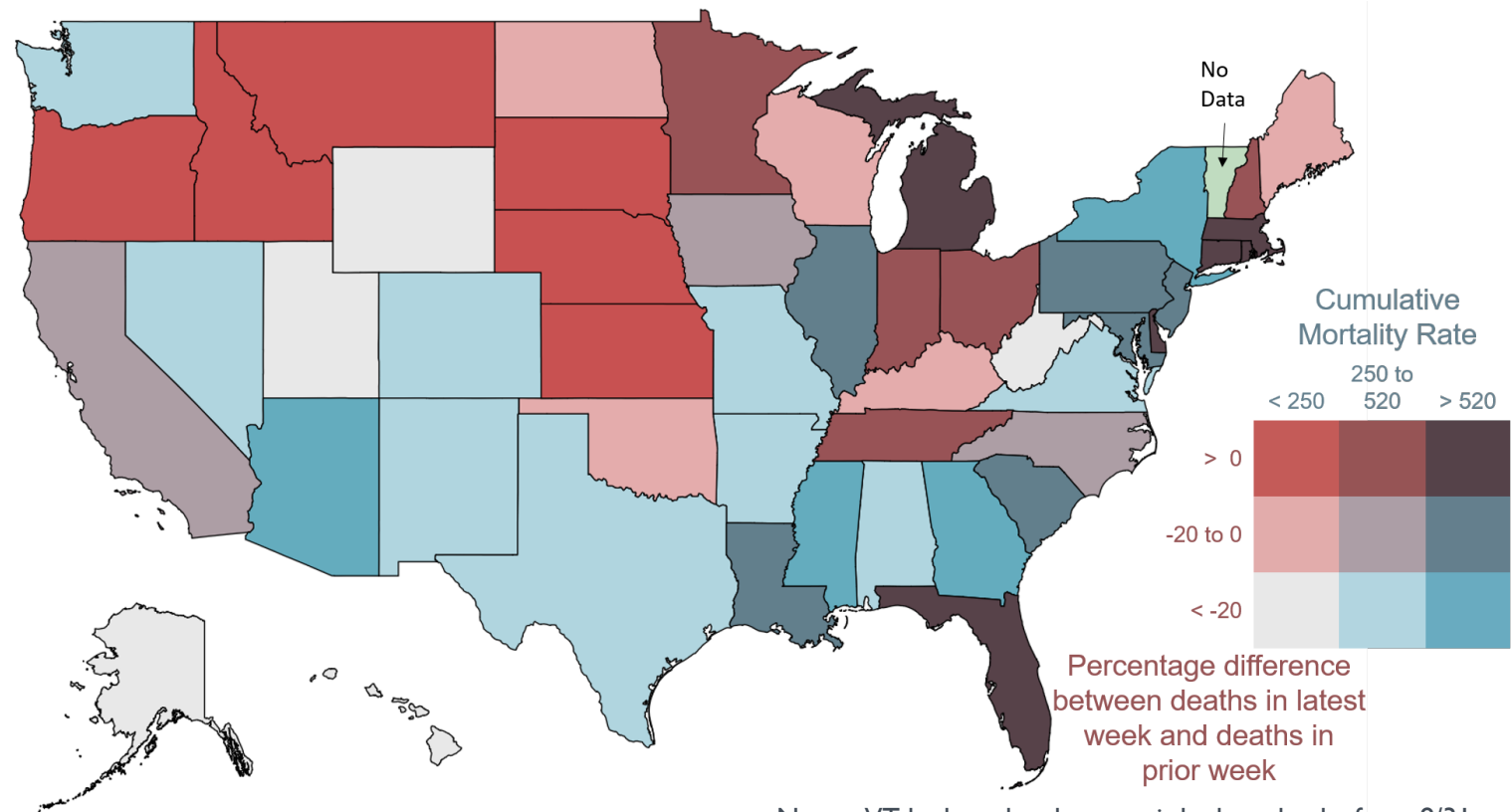
In the week leading up to September 13, the weekly COVID-19 mortality rate rose in Ohio, fell sharply in West Virginia, and fell modestly in Kentucky, Pennsylvania, and the United States as a whole.



Note: Data through September 13, 2020.

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

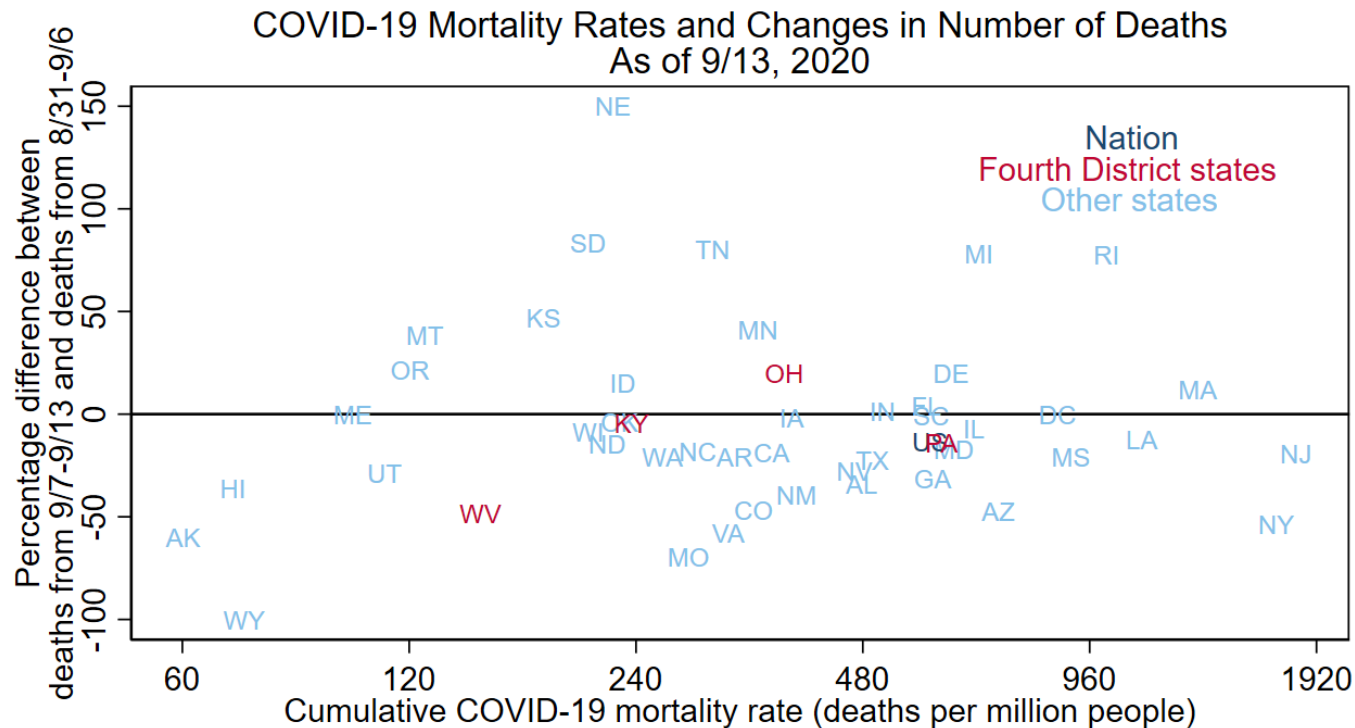
Between September 6 and September 13, the weekly COVID-19 mortality rate rose in 19 states, including Ohio, Indiana, and Michigan.



Data for September 13, 2020, accessed on September 14, 2020
“Latest week” is 9/7 to 9/13, “prior week” is 8/31 to 9/6.
Sources: FRBC calculations, CSSE, and BEA.

Notes: VT had no data because it had no deaths from 8/31 to 9/6. The District of Columbia is in the bin with mortality rate > 520 and percentage difference between -20 and 0 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.



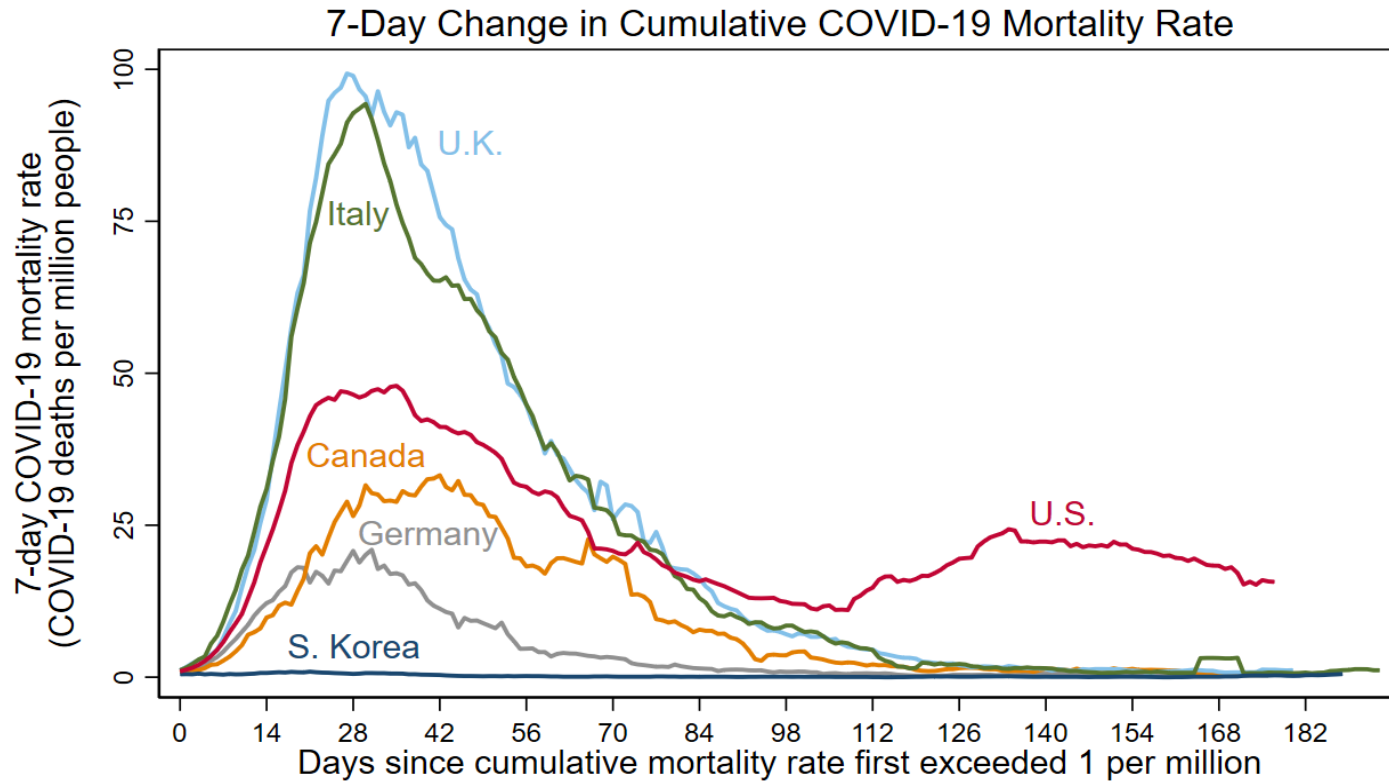
Notes: Horizontal axis has log scale.

VT is excluded because it had no COVID-19 deaths from 8/31 to 9/6.

CT and NH are also excluded as both states' weekly deaths increased by more than 200 percent.

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

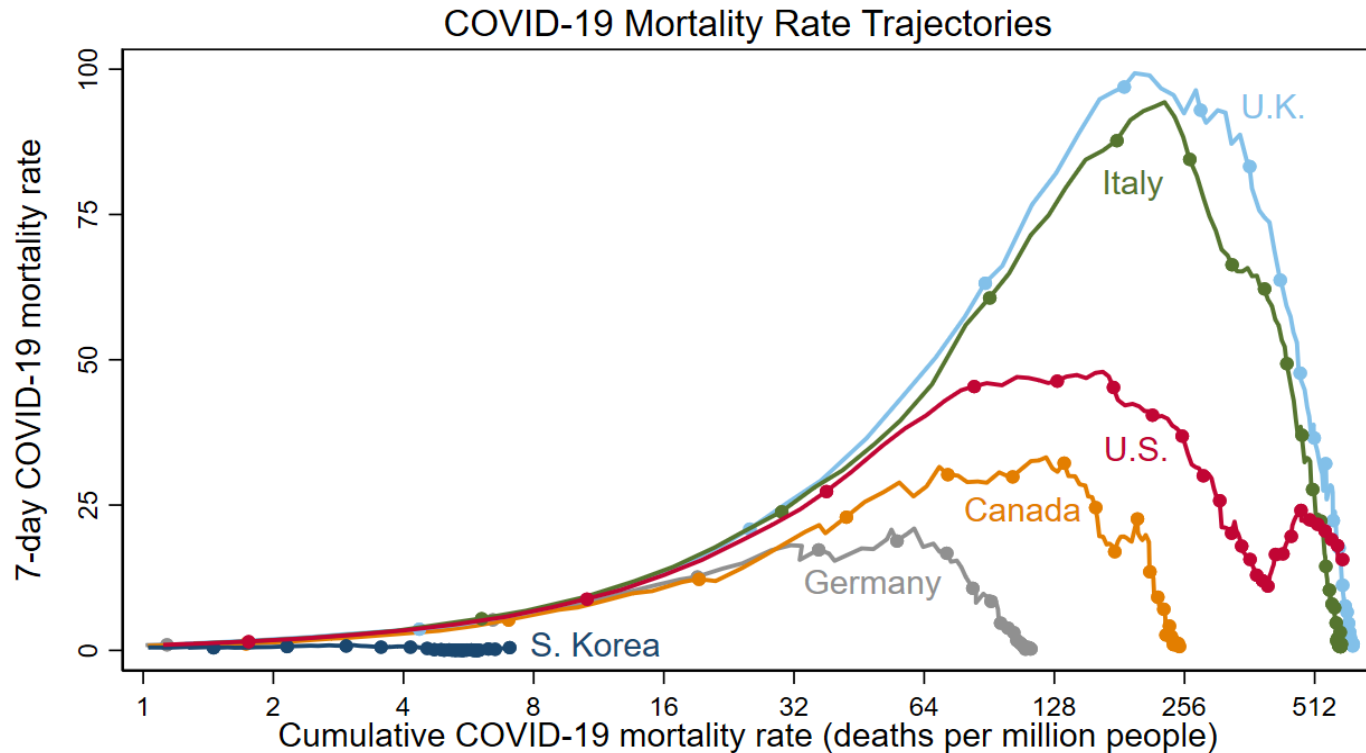
The 7-day COVID-19 mortality rate in the United States has continued to decline, but it remains high relative to those in Canada and European countries at comparable numbers of days into their epidemics.



Notes: 3/22/2020 was first day US rate > 1. Data through 9/13/2020.

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

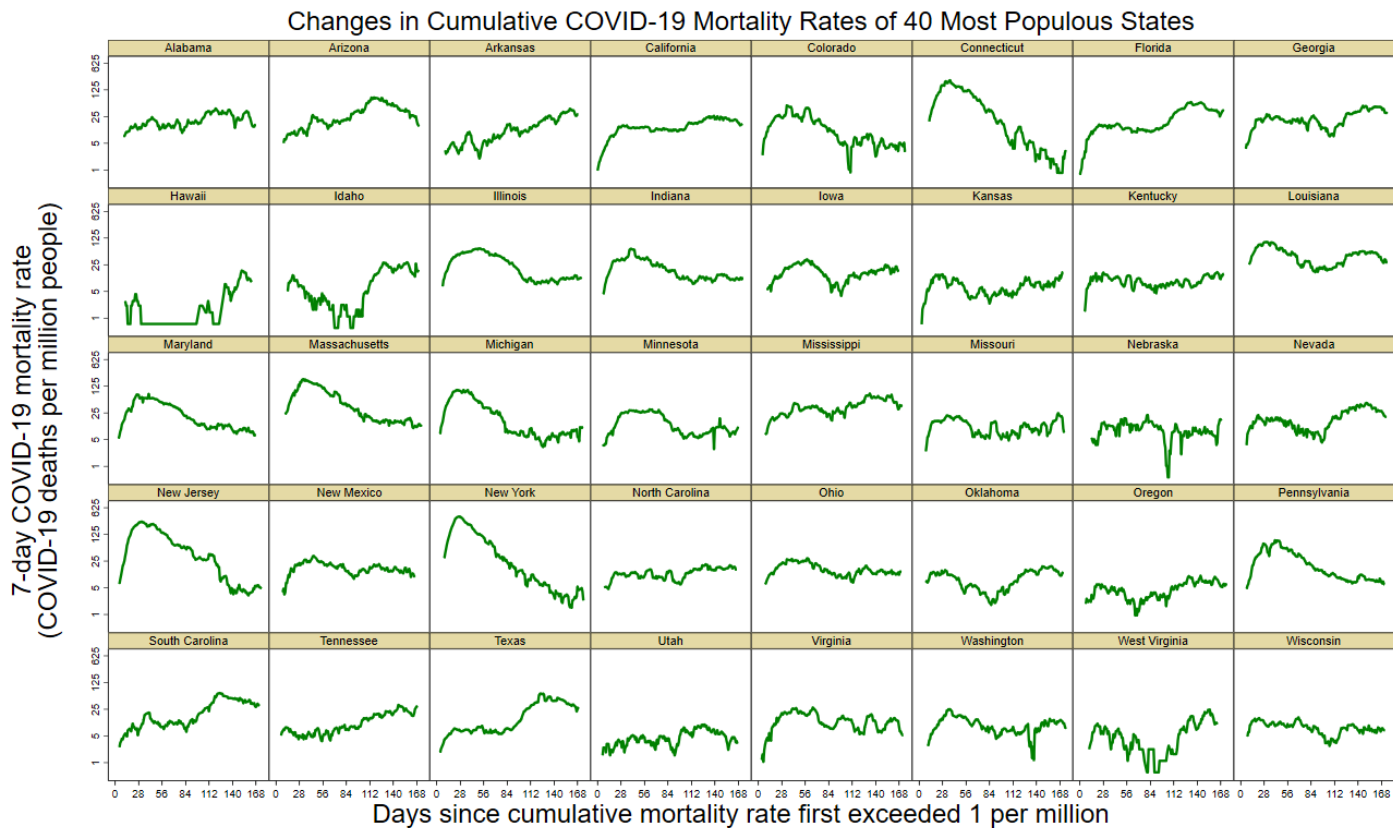
As of September 13, the cumulative COVID-19 mortality rate of the United States is 593 deaths per million people. This is five times that of Germany and just above that of Italy (589 deaths per million).



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

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

This chart shows 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 1/22-9/13/2020.
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and BEA

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 US are adjusted from 3/23 to 7/6.
 - New Jersey revised deaths downward on August 26; data are adjusted from 3/18 to 8/26.
- 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 mid-point of deaths on August 28 and 30 and incorporated this change into the US total for August 29.