COVID-19 Mortality Rate Trends in Countries and US States

Joel Elvery
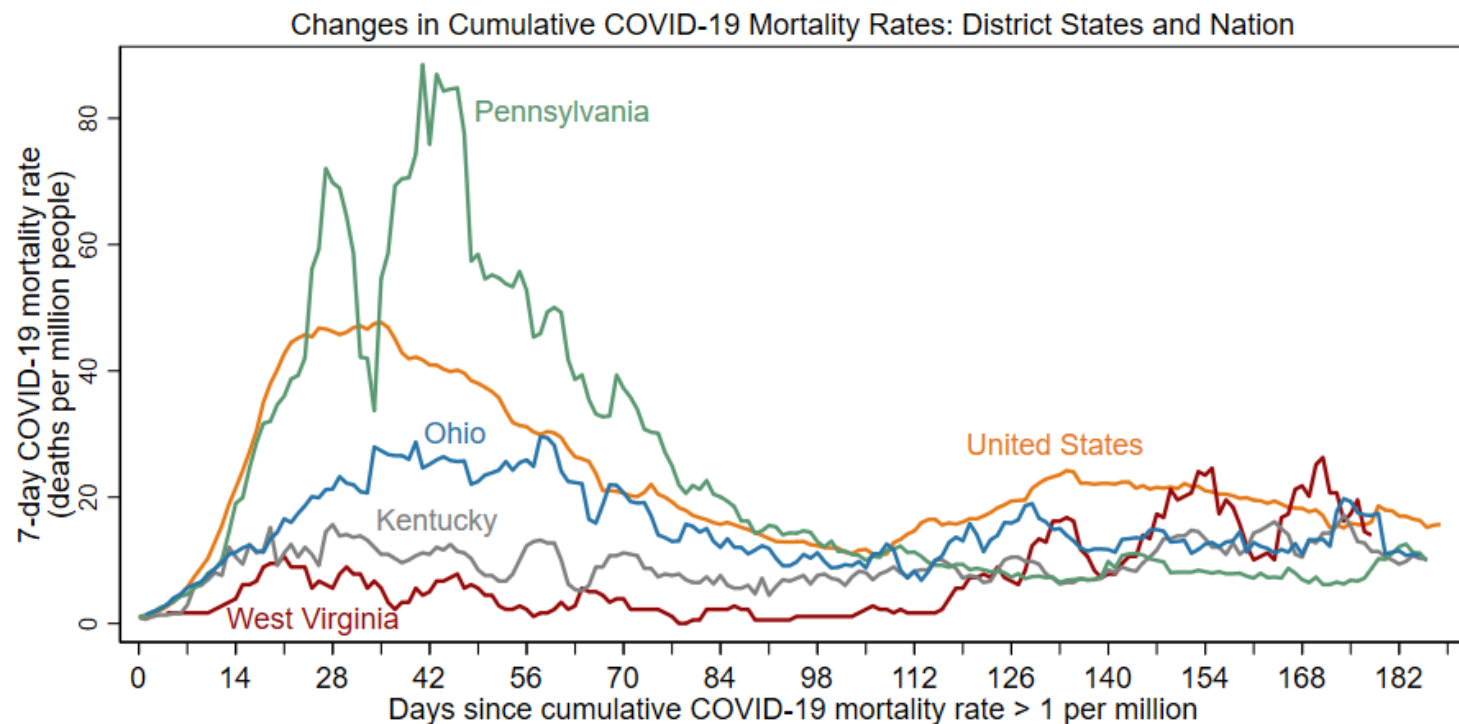
Mark Oleson

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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 the Center for Systems Science and Engineering at Johns Hopkins University (CSSE) data through September 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.

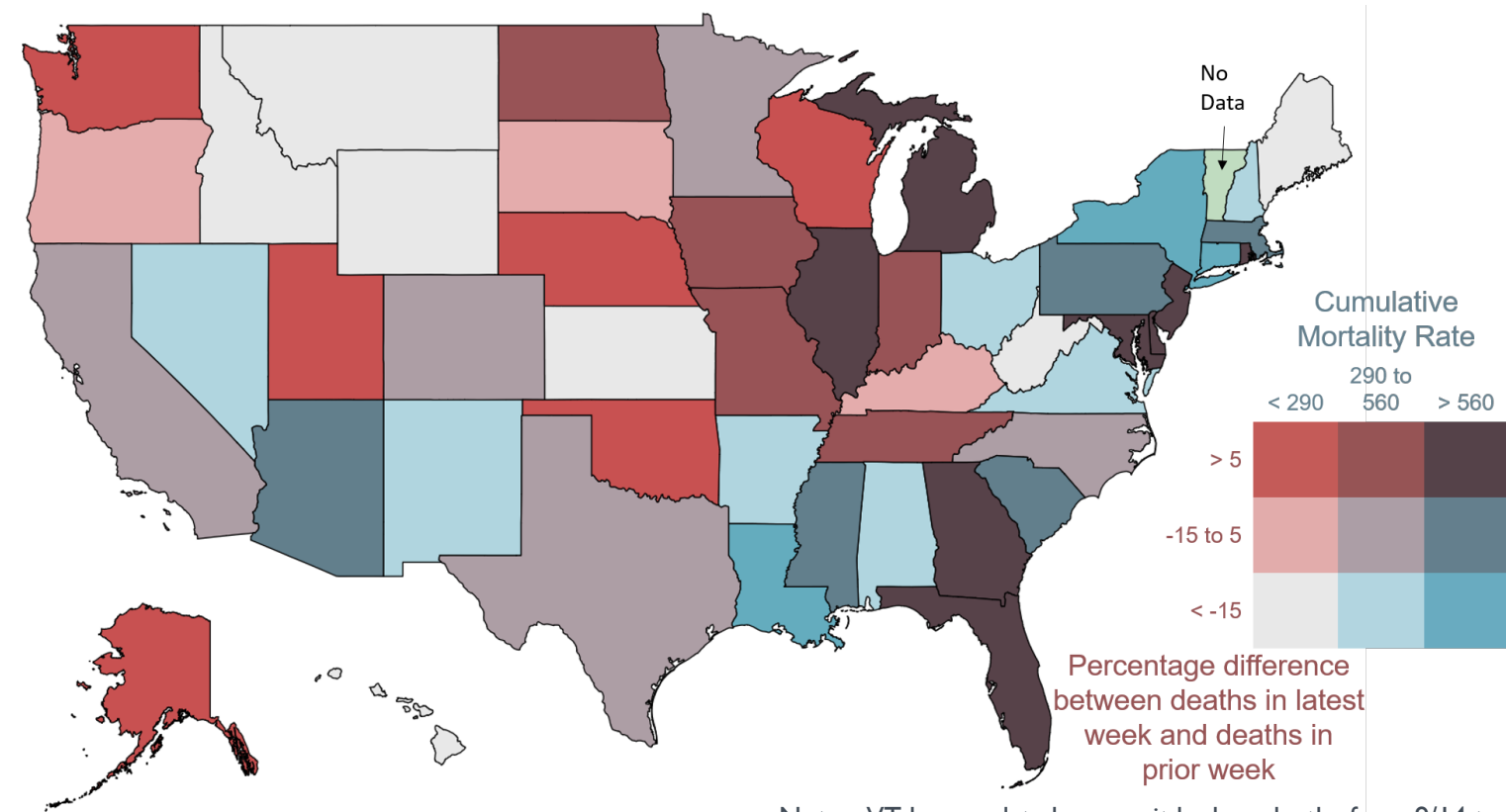- All dates in this presentation refer to the year 2020.

In the week leading up to September 27, the weekly COVID-19 mortality rate fell in all Fourth District states. The United States as a whole saw a modest decrease.

Changes in Cumulative COVID-19 Mortality Rates: District States and Nation

Note: Data through September 27, 2020.
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and Bureau of Economic Analysis.
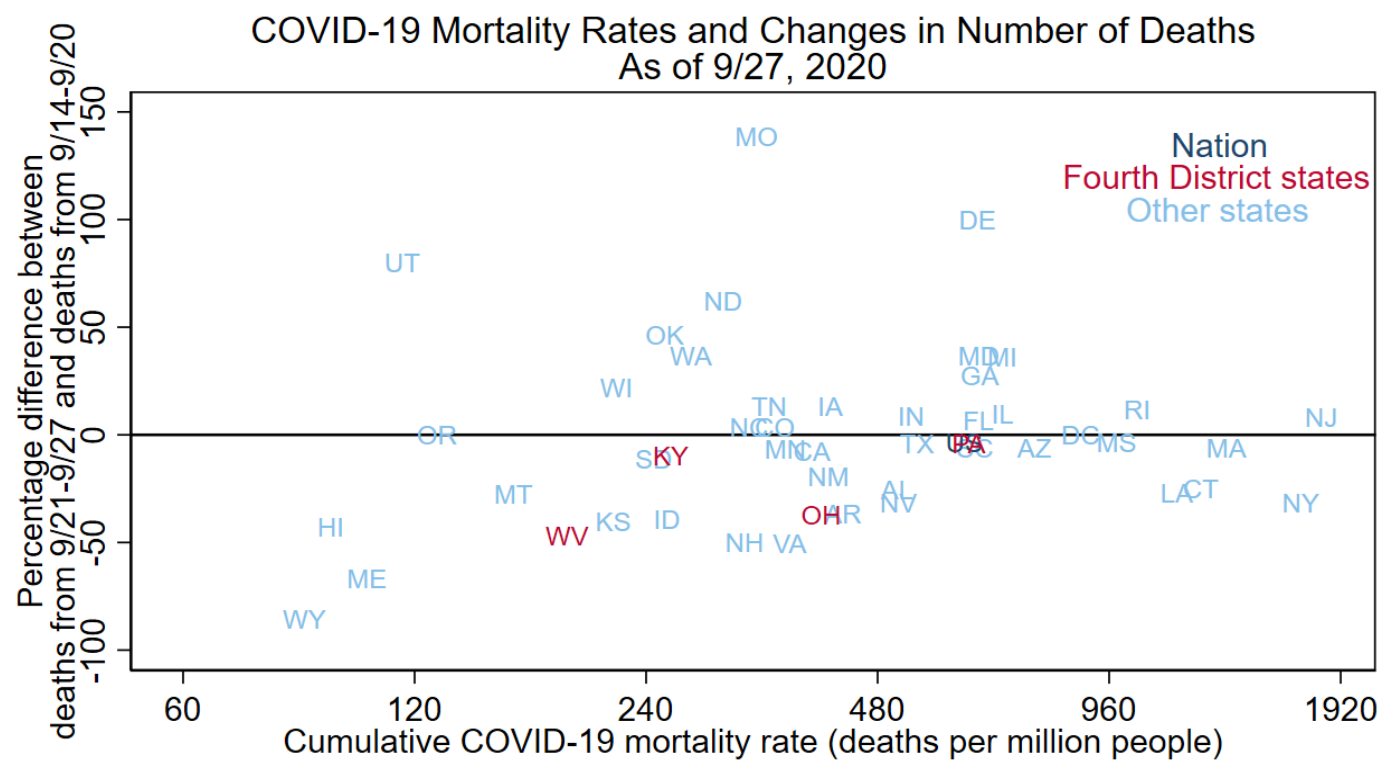
Between September 21 and September 27, the weekly COVID-19 mortality rate rose in 22 states, including Georgia and Michigan.

No Data

Cumulative Mortality Rate

	< 290	290 to 560	> 560
> 5			
-15 to 5			
< -15			

Percentage difference between deaths in latest week and deaths in prior week

Data for September 27, 2020, accessed on September 28, 2020
"Latest week" is 9/21 to 9/27, "prior week" is 9/14 to 9/20.
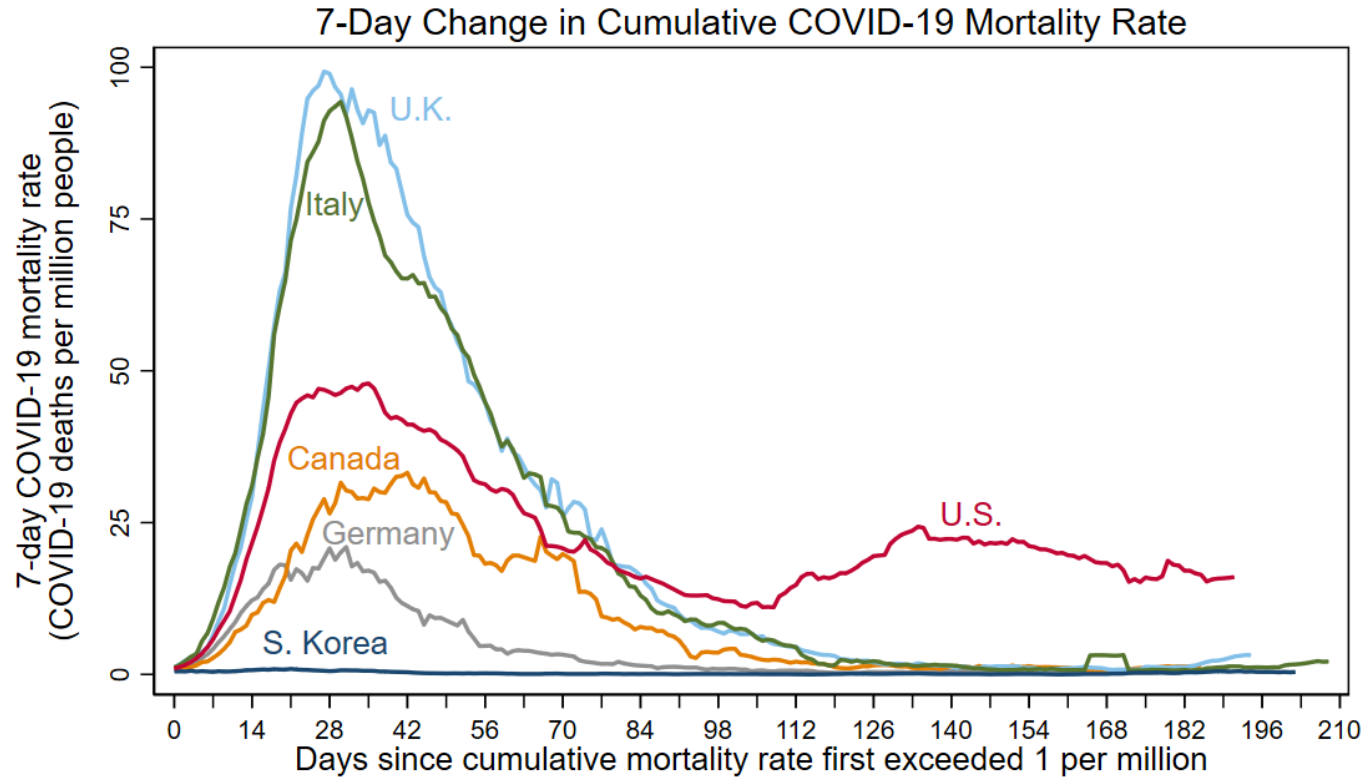Sources: FRBC calculations, CSSE, and BEA.

Notes: VT has no data because it had no deaths from 9/14 to 9/20. The District of Columbia is in the bin with mortality rate > 560 and percentage difference from -15 to 5. The color bins on this map are changed with each update to better represent the latest data.

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COVID-19 Mortality Rates and Changes in Number of Deaths
As of 9/27, 2020

Notes: Horizontal axis has log scale. VT is excluded because it had no COVID-19 deaths from 9/14 to 9/20. AK and NE are also excluded as each 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.
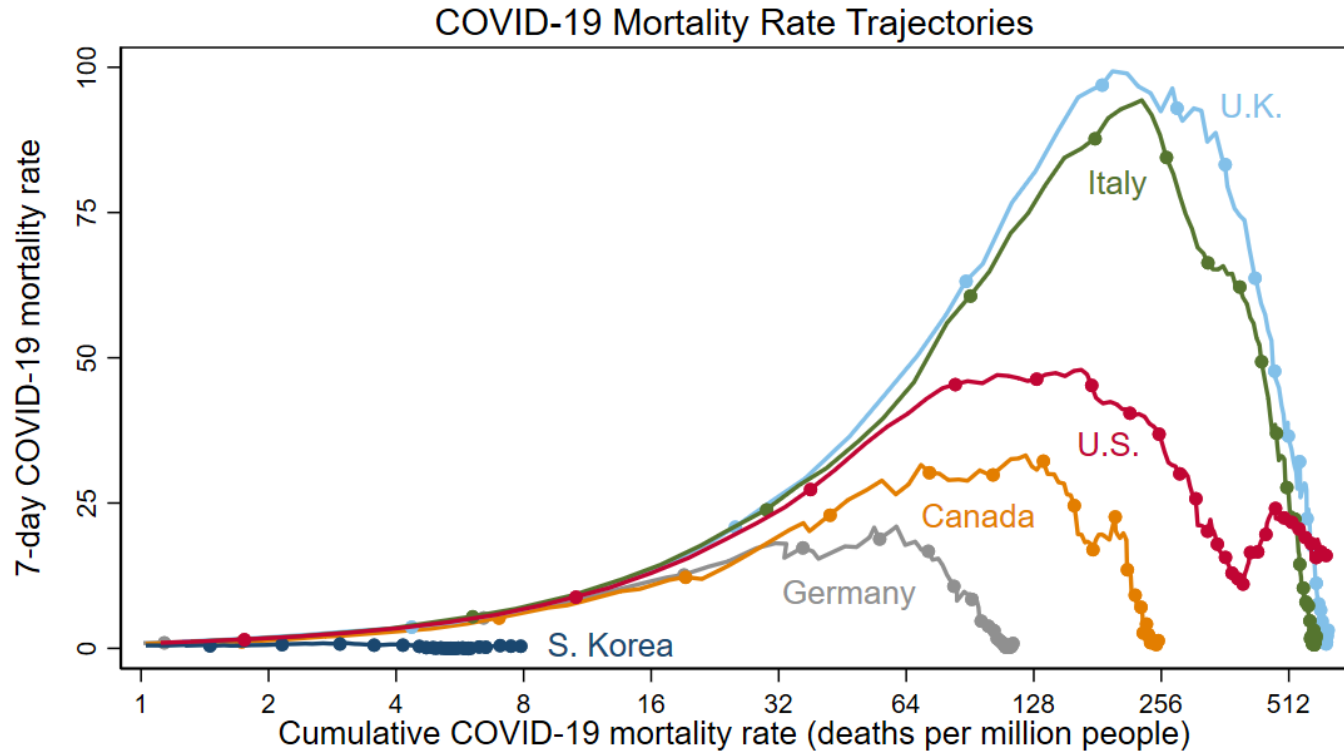
7-Day Change in Cumulative COVID-19 Mortality Rate

Notes: 3/22/2020 was first day US rate > 1. Data through 9/27/2020.
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and the World Bank
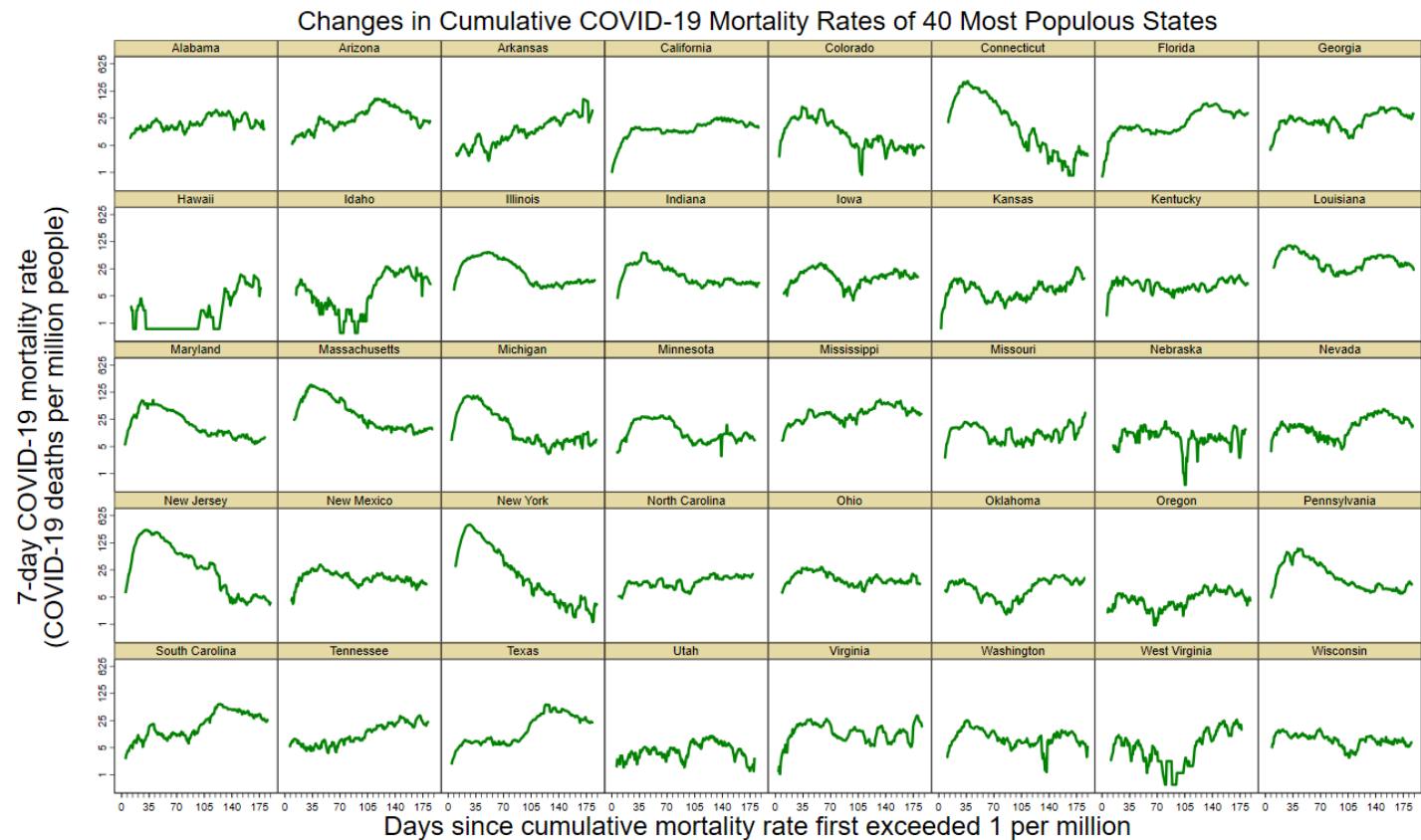
As of September 27, the cumulative COVID-19 mortality rate of the United States is 626 deaths per million people. This is between the rates of Italy and the UK (respectively, 593 and 633 deaths per million).

COVID-19 Mortality Rate Trajectories

Notes: Horizontal axis has log scale. Excluding days when mortality rate < 1. Dots on Sundays to show time.
Data through September 27, 2020.
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ.,
and the World Bank

Changes in Cumulative COVID-19 Mortality Rates of 40 Most Populous States

Notes: Data points excluded if cumulative mortality rate < 1. Data from 1/22-9/27/2020.
Sources: FRBC calculations, The Center for Systems Science and Engineering at Johns Hopkins Univ., and BEA

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- 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 mid-point of deaths on August 28 and 30 and incorporated this change into the US total for August 29.