COVID-19 Mortality Rate Trends in Countries and US States

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Introduction

- 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 February 14, with no attempt to further correct for underreporting.
 - Some large revisions in COVID-19 data have been smoothed. See the appendix for details.
- The design of some 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 come from the COVID Tracking Project at *The Atlantic*.

In the two weeks leading up to February 14, the 14-day COVID-19 mortality rate fell in Kentucky, Ohio, Pennsylvania, West Virginia, and (to a lesser degree) in the United States as a whole.



Note: Data through February 14, 2021. Sources: FRBC calculations, the Center for Systems Science and Engineering at Johns Hopkins University, and Bureau of Economic Analysis. Between January 31 and February 14, the 14-day COVID-19 mortality rate rose in only 10 states. This is the third week in a row that 14-day mortality rates have fallen in more than half of all states.



Data for February 14, 2021, accessed on February 16, 2021. "Latest two weeks" is 2/1/21 to 2/14/21, "prior two weeks" is 1/18/20 to 1/31/21. Sources: FRBC calculations, CSSE, and BEA. Note: The District of Columbia is in the bin with the mortality rate from 1,140 to 1,600 and percentage difference > -8. The color bins on this map are changed with each update to better represent the latest data.



and Bureau of Economic Analysis.

The cumulative COVID-19 mortality rates of Blacks and Whites are more similar in Kentucky, Ohio, and Pennsylvania than they are in the nation as a whole. In Ohio, this mortality rate is now higher for Whites than for Blacks.

COVID-19 Cumulative Mortality Rate by Race



Notes: WV is excluded because race is missing in the data for a relatively high share of WV's COVID-19 deaths. Data from 4/12/2020 to 2/14/2021. Sources: FRBC calculations, Census Bureau's 2019 ACS 5-Year estimates, and the COVID Tracking Project at *The Atlantic*.

In recent months, the 4-week mortality rate of Whites has been greater than the rates of Asians, Blacks, and Hispanics.

Four-Week COVID-19 Mortality Rate by Race



Notes: WV is excluded because race is missing in the data for a relatively high share of WV's COVID-19 deaths. Data from 5/10/2020 to 2/14/2021. Sources: FRBC calculations, Census Bureau's 2019 ACS 5-Year estimates, and the COVID Tracking Project at *The Atlantic*.

The trends in COVID-19 hospitalizations suggest that in the weeks ahead, mortality rates will continue to fall in all Fourth District states and in the United States as a whole.



Note: Data through February 14, 2021. Sources: FRBC calculations, the COVID Tracking Project at *The Atlantic*, and BEA.

As of February 14, 7-day hospitalization rates were highest in the Southwest and Southeast and lowest in the Northwest and the Great Plains. Hospitalizations are also elevated in New York and New Jersey.



Data for February 14, 2021, accessed on February 16, 2021.

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

Note: The District of Columbia is in the bin with a hospitalization rate > 278. 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 February 14, 2021.

	COVID-19 Statistic	Kentucky	Ohio	Pennsylvania	West Virginia	United States
Lev	els					
	Average daily deaths in past 2 weeks	38	86	103	13	3,040
	Cumulative deaths	4,282	16,346	23,065	2,210	485,336
	Average daily hospitalizations in the past week	1,120	1,847	2,656	356	74,034
Rat	es (per million residents)					
	I4-day mortality rate	120	103	113	104	130
	Cumulative mortality rate	958	1,397	1,801	1,236	1,483
	Average daily hospitalization rate in the past week	251	158	207	199	225
Fou	r-week mortality rate by race					
	Asian	46	97	140		170
	Black	201	178	219	194	231
	Hispanic	74	151	146		252
	White	250	260	343	219	266
Cu	nulative mortality rate by race					
	Asian	337	449	846		853
	Black	922	1,284	I,942	537	1,693
	Hispanic	405	668	1,000		1,391
	White	898	1,364	1,850	929	1,367

Notes: West Virginia's data are missing race for a relatively high share of COVID-19 deaths, and the state reports COVID-19 deaths by race for only Blacks and Whites. Sources: FRBC calculations, CSSE at Johns Hopkins University, the COVID Tracking Project at *The Atlantic*, and BEA. The rapid increases in weekly mortality rates in Germany and the UK in recent months are largely due to new variants of the coronavirus. These variants have just begun to spread in the United States.



Note: For more information on the new coronavirus variants, please see this <u>report</u> from the Centers for Disease Control and Prevention.

As of February 14, the cumulative COVID-19 mortality rate of the United States is 1,483 deaths per million people. This is more than double the mortality rate of Canada but below that of Italy and that of the UK.



COVID-19 Mortality Rate Trajectories

Data through February 14, 2021.

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.



Sources: FRBC calculations, the Center for Systems Science and Engineering at Johns Hopkins University, BEA, and the COVID Tracking Project at The Atlantic.

Notes: Data from 4/13/2020-2/14/2021. Both vertical axes have log scales.

- 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 in 2020:
 - 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 the 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.
 - US revised deaths up on October 21 for all race categories; data adjusted from 6/6 to 10/18.
- Other data cleaning in 2020
 - 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.

- Other data cleaning in 2020 (continued)
 - Ohio's reported cumulative deaths for Hispanic citizens jumped up on August 5 and reversed on August 9. We set Ohio's cumulative deaths on August 5 to the average between August 2 and August 9, given data are only available every Sunday and Wednesday.
- Data cleaning in 2021
 - West Virginia's reported cumulative deaths for Black citizens fell on January 3 and January 6 and reversed on January 10. We set West Virginia's cumulative deaths on January 3 and January 6 to the average between December 30 and January 10, excluding January 3 and January 6.
 - On February 10, Ohio announced that it underreported COVID-19 deaths in November and December and adjusted the data. We smooth this jump by multiplying daily changes from November to February 14 by a scaling factor so that the adjusted series meets the post-revision series. This process was repeated for race-level data.