COVID-19: What's New for June 10, 2020

Main updates on IHME COVID-19 predictions since June 8, 2020

Generating US COVID-19 projections to October 2020

SARS-CoV-2 continues to spread globally, and for many locations, rising rates of COVID-19 infections, hospitalizations, and deaths are now occurring in the wake of eased or ended distancing policies. It is increasingly clear that COVID-19's toll will extend beyond the summer months in the Northern Hemisphere, and current epidemics could easily worsen as the Southern Hemisphere nears its winter season. We, collectively, must equip ourselves for epidemic response and mitigation strategies beyond the world's first phases of this pandemic.

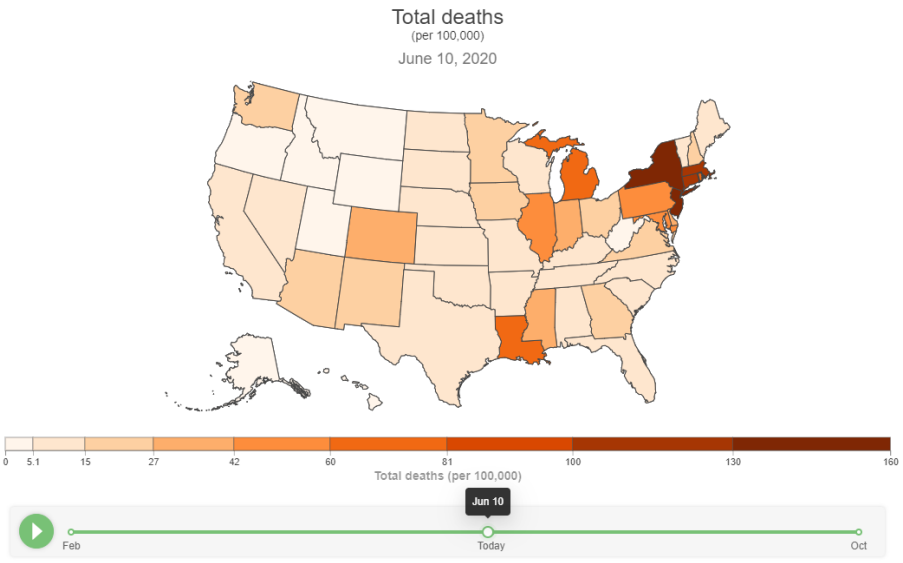
With today's release, we publish a first set of US COVID-19 projections to October 1, 2020. These predictions are based on our current knowledge of COVID-19 and key drivers in the US, as well as some model parameter updates to inform estimates beyond August (e.g., resumption of in-person instruction at previously closed educational facilities). We anticipate more data to become available on reopening plans beyond June and July, as well as the potential for locations to reinstate prior distancing policies or implement new ones amid shifting COVID-19 trends. We will continue to update model inputs and parameters as new information emerges, and we will communicate these changes accordingly.

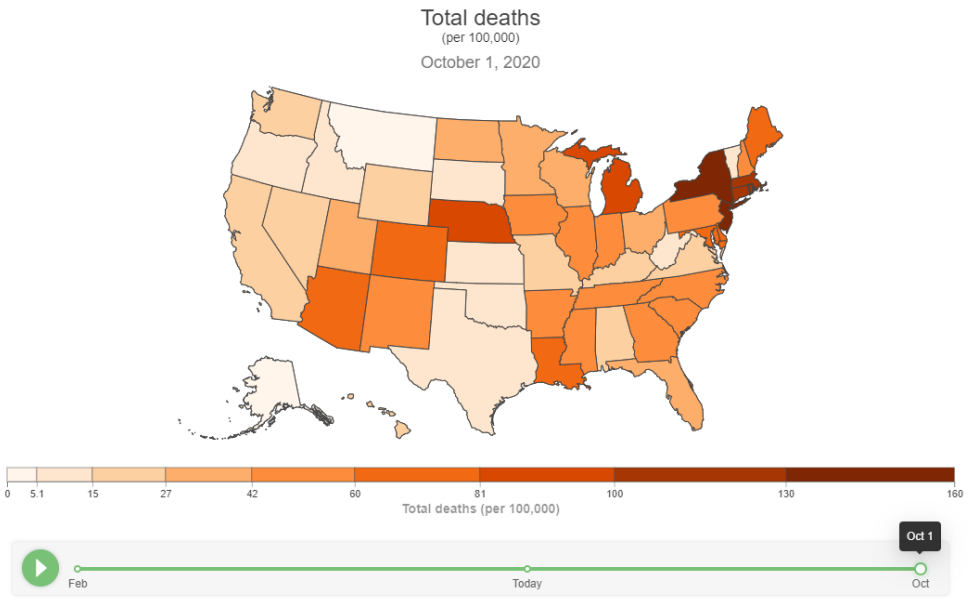
We summarize US results below, which can be further examined online: https://covid19.healthdata.org/united-states-of-america. All other currently included locations still have COVID-19 projections to August 2020; our team is actively working on incorporating extended predictions for the broader location set and releasing estimates for additional locations.

Key US findings from today's release (June 10)

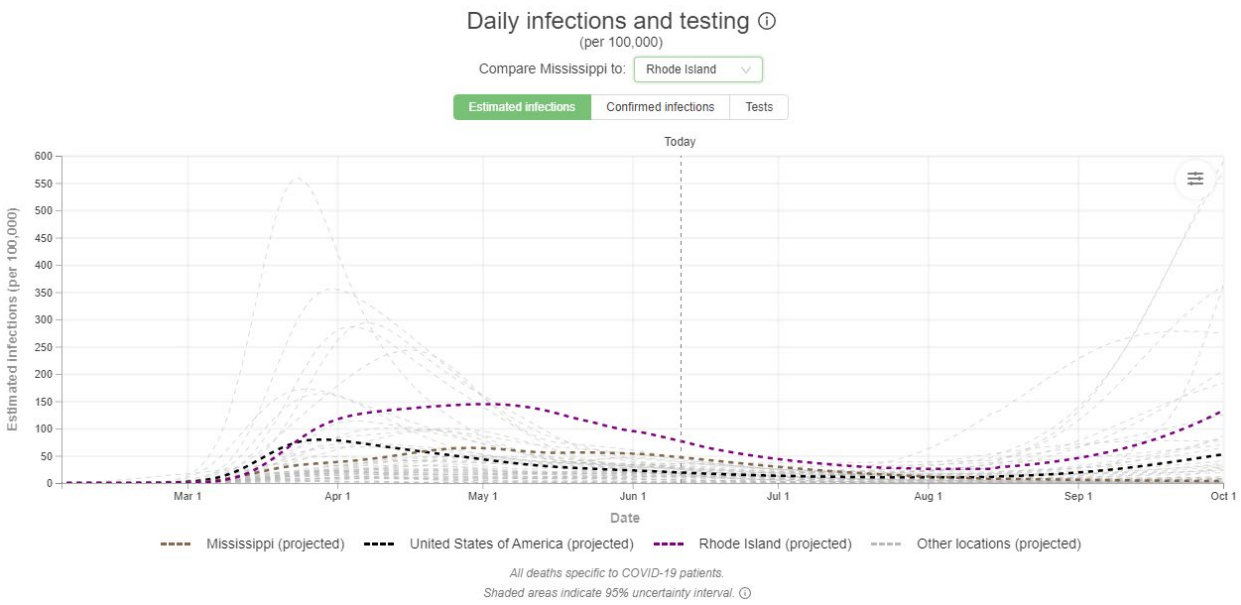
- By October 2020, cumulative COVID-19 deaths could reach 169,890 (estimate range of 133,201 to 290,222) in the US. In terms of the mean projection, this represents a potential 30,610 additional cumulative COVID-19 deaths between August – the previous time period for cumulative death estimation – and October 2020.

- Comparing cumulative COVID-19 deaths per 100,000 people as of June 10 to projections in October 2020 can provide insights into where epidemic trajectories may worsen unless more robust mitigation strategies are implemented. As shown in the first map screenshot below, seven states – Connecticut, Louisiana, Massachusetts, Michigan, New Jersey, New York, and Rhode Island – had cumulative COVID-19 death rates of 50 per 100,000 or more as of June 10. By October 2020, current projections suggest that an additional 15 states could have COVID-19 death rates of 50 per 100,000 or higher: Arizona, Arkansas, Colorado, Delaware, Georgia, Illinois, Iowa, Maryland, Maine, Mississippi, North Carolina, Nebraska, New Mexico, Pennsylvania, and Tennessee.





- As of June 10, estimated COVID-19 infections per 100,000 people were highest in Rhode Island, Mississippi, the District of Columbia, and Arizona. Projections for most locations suggest that COVID-19 infections could rise between August and September, assuming that schools begin reopening for in-person instruction during this time. For some states (e.g., Georgia, North Carolina, Tennessee, Utah), such upward trajectories could be particularly pronounced by September to October in the absence of stronger health and safety measures.

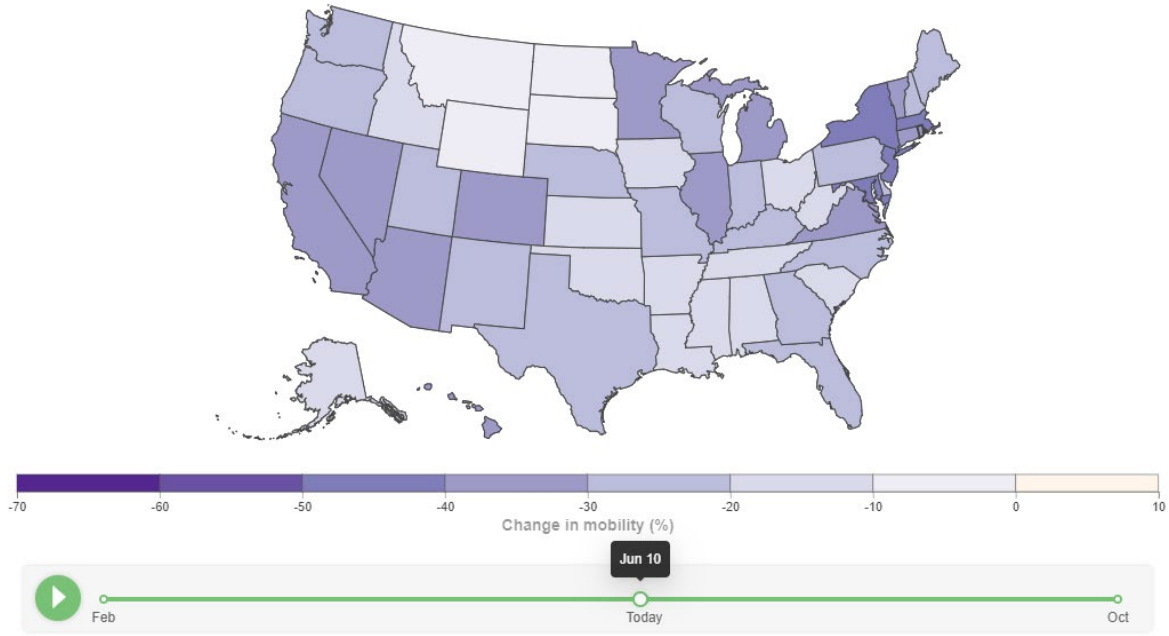


- By October 2020, projected mobility patterns could resemble baseline levels – approximately pre-pandemic movement – in at least 20 states (second map screenshot below). This represents rising mobility across the US relative to levels on June 10 (first map screenshot below), though levels generally still remain at least somewhat lower than baseline mobility in most states.

  Increased mobility does not inherently equate to higher COVID-19 infections, especially if people consistently adhere to health and safety measures (e.g., wearing masks or cloth face coverings outside their residences, maintaining physical distancing among groups, handwashing and sanitation practices). Nonetheless, as highlighted by self-report surveys and data collection platforms like Premise, their uptake and continuance is highly variable across the US. Especially as states plan to reopen educational facilities and further ease currently implemented restrictions on business operations and gatherings, further improving health and safety measures will be crucial to reducing the risk of widespread resurgence.

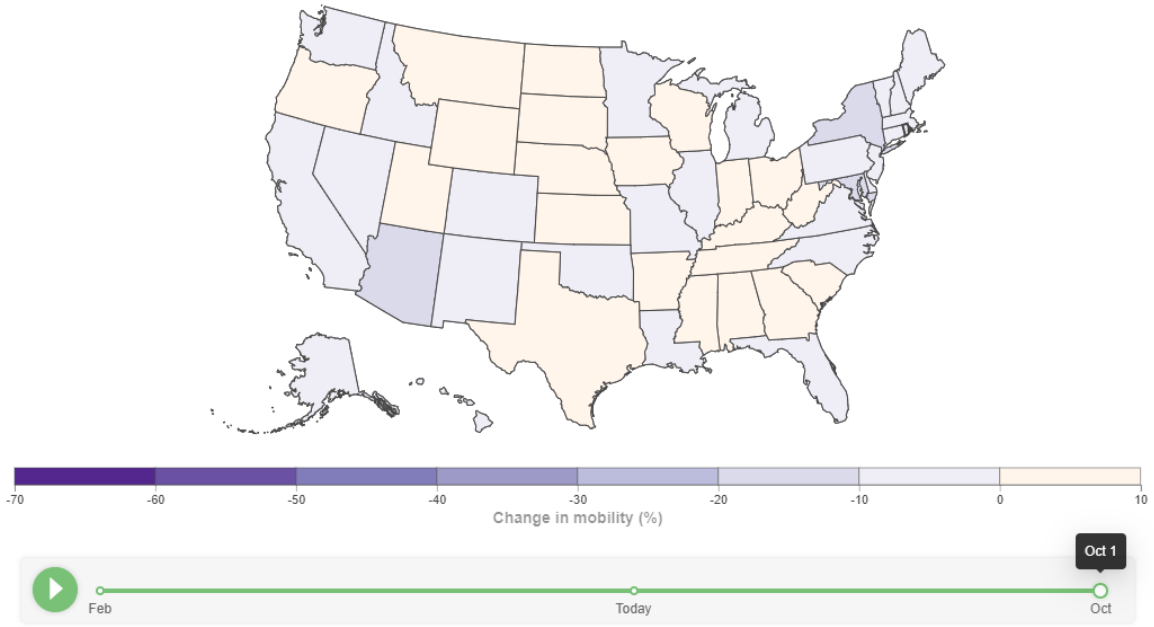
Social distancing ⓘ

June 10, 2020



Social distancing ⓘ

October 1, 2020



Data updates since our last release on June 8, 2020

Data and locations

- For the US, reported data on COVID-19 deaths, cases, hospitalization, testing, and mobility, as well as available information on social distancing policies, have been added through at least June 7; some states include data through June 8.

- For all other currently included locations, the equivalent of reported data types has been updated through June 3. For some locations, if updated data have not been reported or publicly released since June 3, earlier dates may be shown in our visualization tool.

- Currently included locations are the US (nationally) and 50 states plus the District of Columbia, Puerto Rico, four provinces in Canada, European Economic Area (EEA) countries plus Switzerland, Argentina, 27 locations in Brazil, Bolivia, Chile, Colombia, Cuba, the Dominican Republic, Ecuador, Egypt, Honduras, Israel, Japan, Malaysia, 32 locations in Mexico, Moldova, Panama, Peru, the Philippines, Russia, Serbia, South Korea, Turkey, and Ukraine. Three EEA countries – Germany, Italy, and Spain – also have subnational estimates at the first administrative level.

Methods updates

- **Mobility predictions and reopening of educational facilities.** As mentioned above, a key aspect of making COVID-19 projections to October 2020 involves capturing potential effects of reopening educational facilities for the 2020–2021 academic year. In the US, start dates for schools are extremely variable: they differ by education level (primary, secondary, and higher education), school type (public versus non-public), and even by school district. For our current model, we have decided to use August 15 to reflect a time when many schools might otherwise resume instruction, or at least many educational facilities may be actively preparing for the new school year and thus some combination of staff and students may be interacting with each other again. At this date, we assume locations that have not already eased or ended school closures will do so. This distancing policy status update is then propagated through mobility predictions and thus informs the transmission dynamics component of our broader modeling platform. The May 4 estimation update provides additional detail on this process to date.

- **Temperature covariate.** We no longer use temperature as a predictor in our model's transmission dynamics component. Trends in pneumonia mortality, as drawn from the Global Burden of Disease (GBD) study, have been shown to be a much better predictor of seasonal patterns of disease transmission.

What's in the development pipeline for IHME COVID-19 predictions

Before we introduce new model components or improvements to our current analytical platform for predictions, IHME's COVID-19 development team members test these additions or changes.

Based on currently available data and model testing progress, our immediate- and medium-term priorities are as follows:

- **COVID-19 projections for the world.** Data collation and processing for all locations and countries worldwide continue, and we are conducting development model runs for a global location set, which we hope to release soon.

- **Additional potential epidemic drivers**. In addition to the covariates now incorporated into our models, we are exploring the inclusion of indicators such as human contact rates, use of public transit, household size, humidity, air pollution, and smoking.

A note of thanks

We would like to extend a special thanks to the Pan American Health Organization (PAHO) for key data sources; our partners and collaborators in Argentina, Brazil, Bolivia, Chile, Colombia, Cuba, the Dominican Republic, Ecuador, Egypt, Honduras, Israel, Japan, Malaysia, Mexico, Moldova, Panama, Peru, the Philippines, Russia, Serbia, South Korea, Turkey, and Ukraine for their support and expert advice; and to the tireless data collection and collation efforts of individuals and institutions throughout the world.

In addition, we wish to express our gratitude for efforts to collect social distancing policy information in Latin America to University of Miami Institute for Advanced Study of the Americas (Felicia Knaul, Michael Touchton), with data published here http://observcovid.miami.edu/; Fundación Mexicana para la Salud with support from the GDS Services International: Tómatelo a Pecho A.C.; and Centro de Investigaciones en Ciencias de la Salud, Universidad Anáhuac (Héctor Arreola-Ornelas); Lab on Research, Ethics, Aging and Community-Health at Tufts University (REACH Lab) and the University of Miami Institute for Advanced Study of the Americas (Thalia Porteny).

Further, IHME is grateful to the Microsoft AI for Health program for their support in hosting our COVID-19 data visualizations on the Azure Cloud.

For all COVID-19 resources at IHME, visit http://www.healthdata.org/covid.
Questions? Requests? Feedback? Please contact us here.