

COVID-19: What's New for June 5, 2020

Main updates on IHME COVID-19 predictions since May 29, 2020

Updated IHME COVID-19 Projections

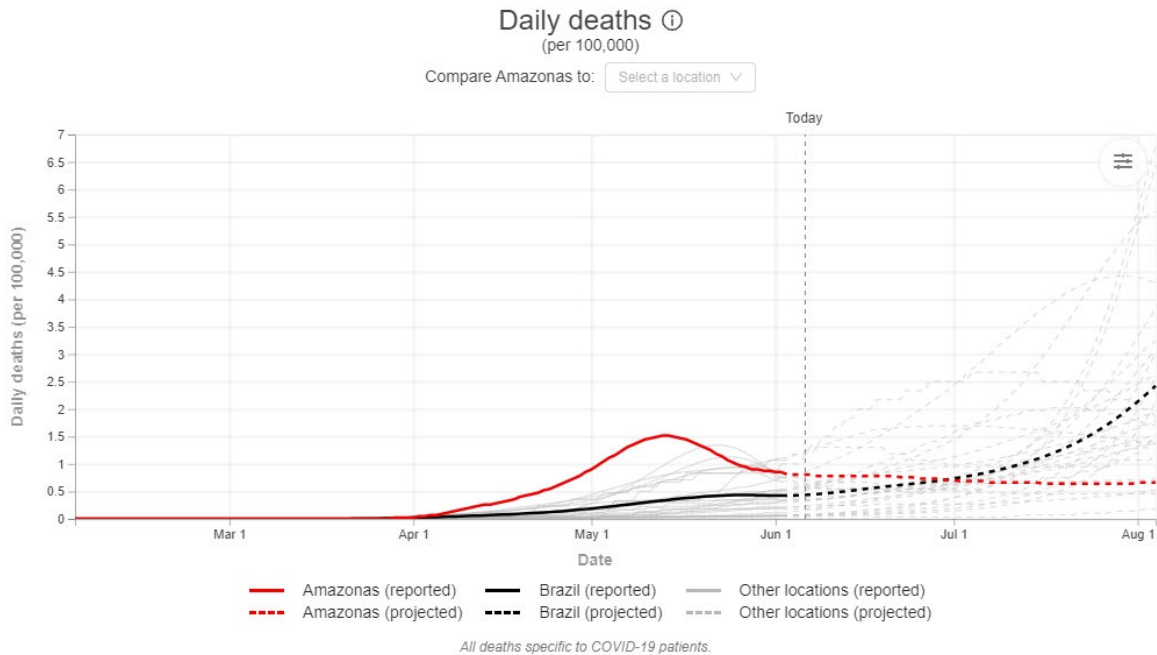
Today's update involves applying the new death model to all currently included locations as well as expanding our location set to include 27 subnational locations in Brazil and 32 in Mexico. This means that we are now producing national COVID-19 predictions for Brazil and Mexico; prior releases for each country had focused on subnational locations with the most severe epidemics to date.

Our [online visualization tool](#) provides the most up-to-date estimates for currently included locations; we focus on summarizing key results for Brazil and Mexico below.

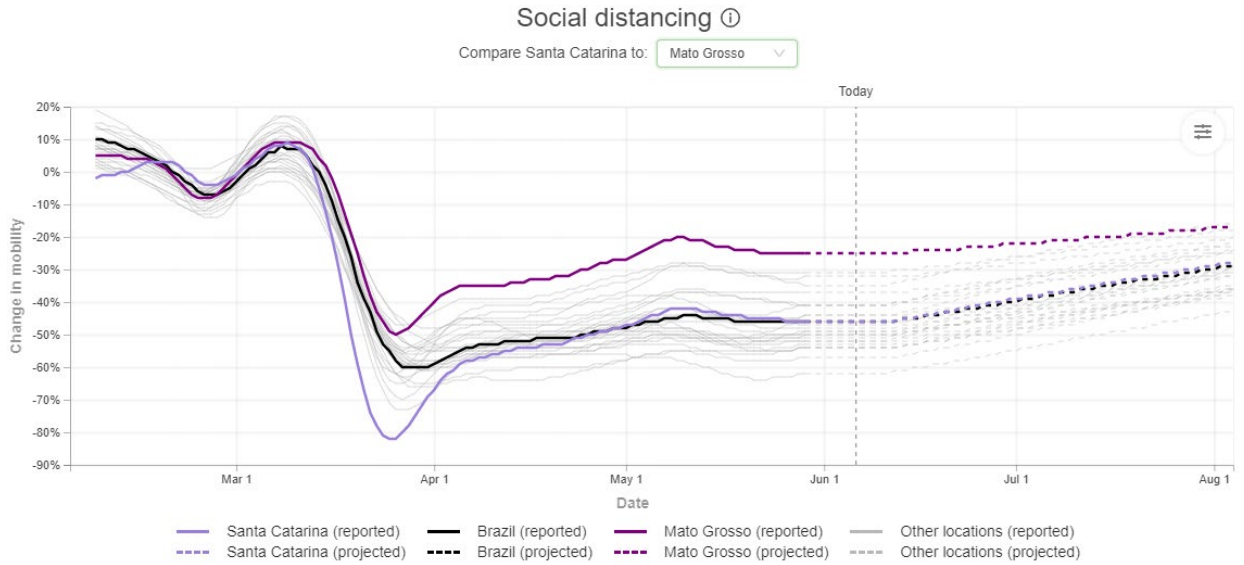
Key findings from [release \(June 5\)](#)

A focus on Brazil

- Nationally, cumulative COVID-19 projections indicate 165,960 deaths (estimate range of 113,673 to 253,131) could occur in Brazil by August. Based on the latest data and disease patterns, the country's epidemic curve suggests that COVID-19 deaths will continue escalating in the coming weeks or months.
- Current predictions point to Brazil having among the worst COVID-19 epidemics in the world. The US has the next highest projected COVID-19 death toll through August, at 140,496 cumulative deaths (estimate range of 134,395 to 146,999); however, the US has about 100 million more people than Brazil. This means, relative to each country's population size, Brazil's COVID-19 epidemic could be the largest and most lethal globally.
- In terms of daily COVID-19 death rates in Brazil, some places (e.g., Amazonas, Para) may have experienced their predicted peaks (see screenshot below); however, their downward epidemic trajectories are much more gradual, and thus daily COVID-19 deaths could remain fairly high for weeks ahead. Unless concerted action occurs, any other locations in Brazil are currently predicted to have rising daily COVID-19 death rates through June and beyond.

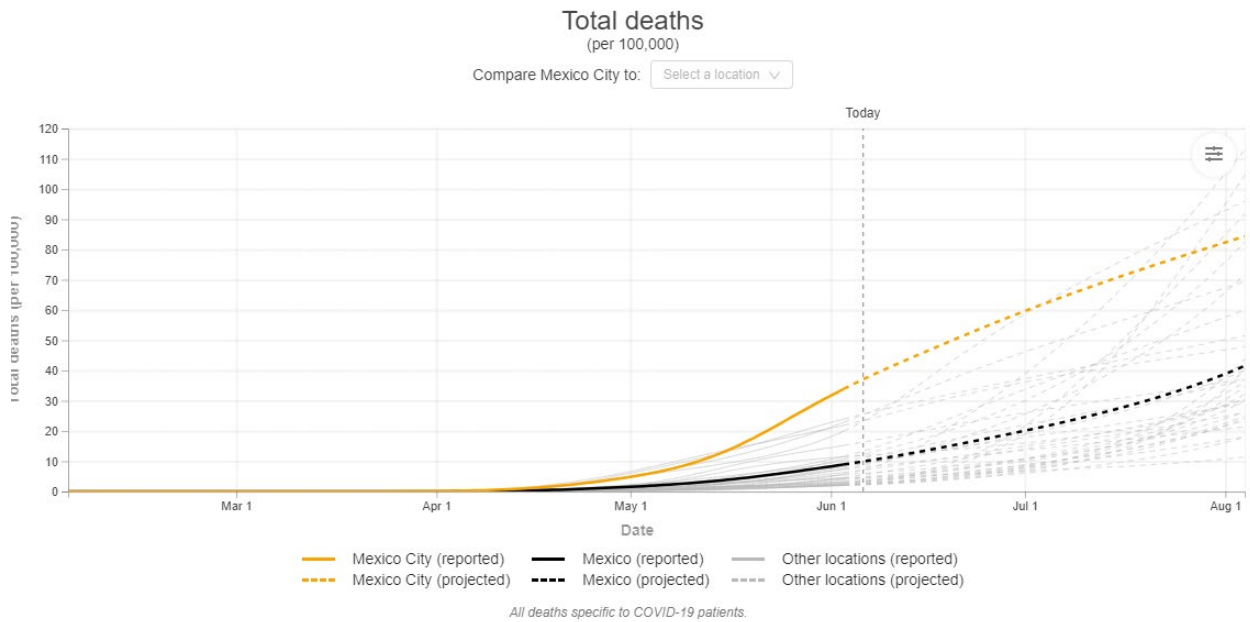


- A similar pattern emerges for estimated infections, which were 277,277 (estimate range of 215,742 to 364,573) on June 5 at the national level. Testing rates remain quite low throughout Brazil, likely contributing to the challenges in rapidly identifying and responding to COVID-19 infections.
- Estimated hospital resource demands are far exceeding most locations' capacities in Brazil, particularly for ICU beds. As of June 5, an estimated 10,692 (9,534 to 12,165) ICU beds were needed to support COVID-19 patients across Brazil; in contrast, the country has an estimated 4,060 ICU beds available. Nearly every state is likely facing such acute resource gaps – and could easily experience a widening chasm between capacity and patient need if current trends continue in the future.
- After most locations in Brazil sharply reduced mobility patterns by late March, most locations have seen mobility gradually increase. Santa Catarina saw the largest decline, with mobility falling more than 80% relative to baseline levels. Since April, Moto Grosso has generally experienced the least relative change in mobility across Brazilian locations; nonetheless, the state is currently averaging mobility patterns that are more than 20% lower than baseline levels.



A focus on Mexico

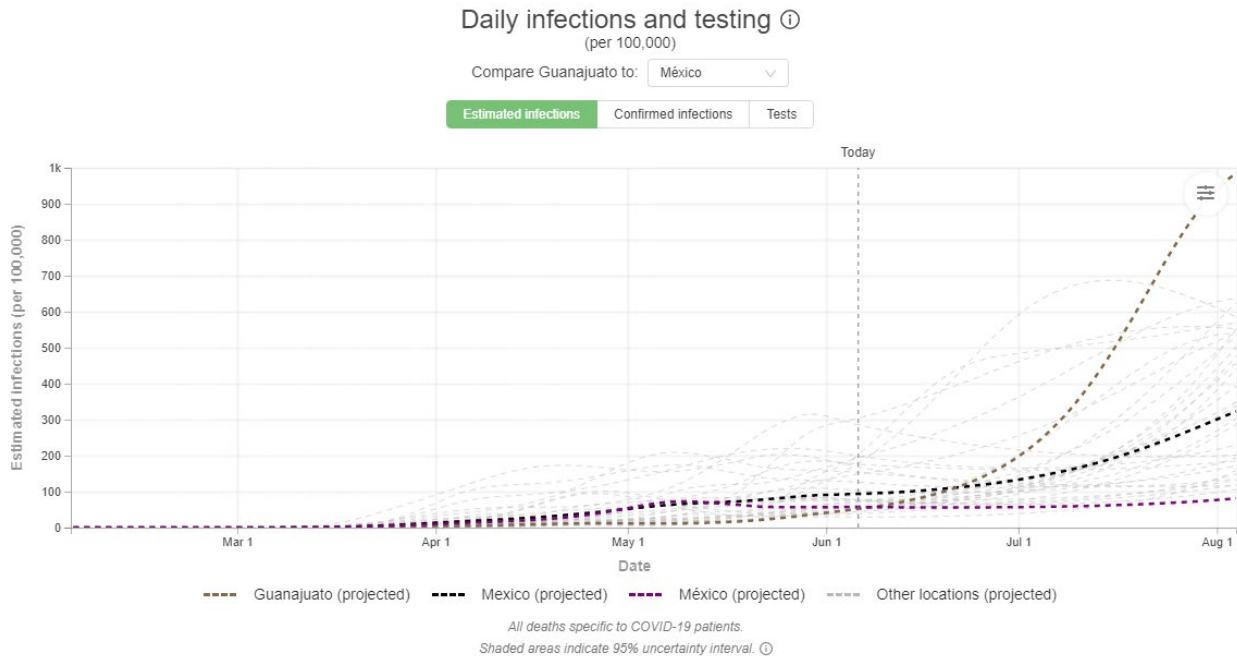
- Based on estimates across Mexican locations, the country's cumulative death toll from COVID-19 could reach 51,912 (estimate range of 37,397 to 75,516) by August. As of June 5, Mexico City had among the highest COVID-19 death rates in Mexico, at 36.1 deaths per 100,000 people (estimate range of 35.5 to 36.8). In the absence of stronger containment and epidemic response, a number of states could reach cumulative COVID-19 death rates exceeding 90 to 100 deaths per 100,000 people; these include Nayarit, Durango, and Sinaloa.



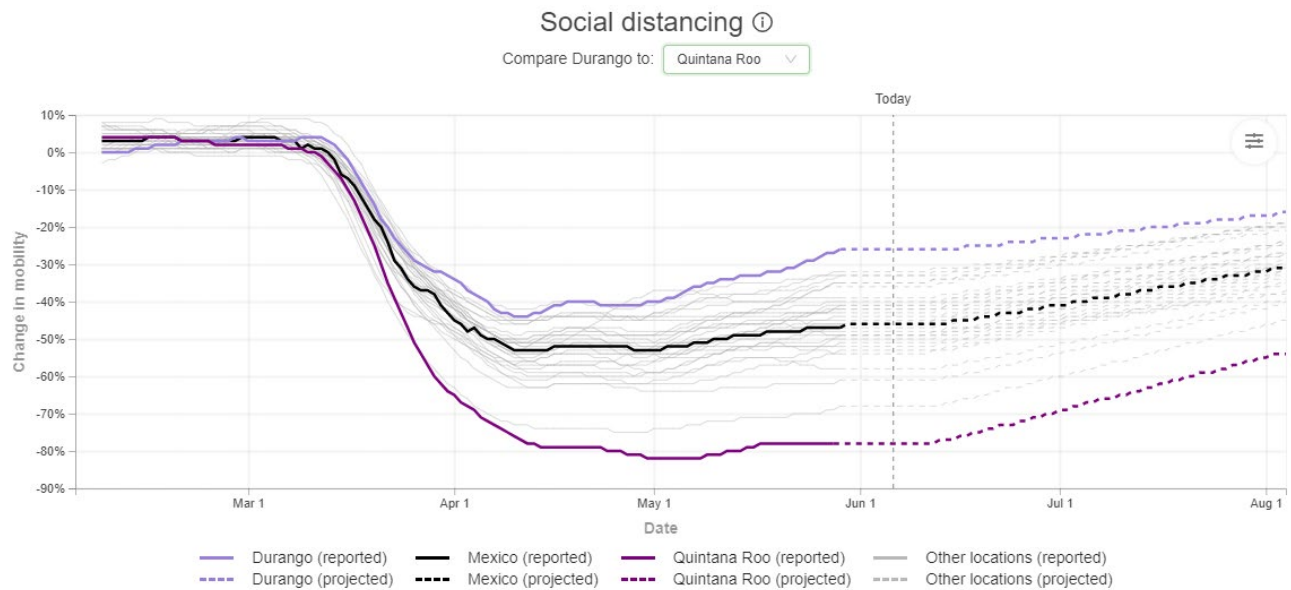
- Daily COVID-19 death rate predictions are highly variable across Mexico. While some states could be on a gradual decline in daily COVID-19 deaths (e.g., Mexico City, state of México),

others have projections of increasing COVID-19 death rates well beyond June. Such trends could change pending stronger containment strategies (i.e., widespread testing, case-based isolation) and prevention measures (e.g., mask use, adhering to physical distancing whenever possible) – or potentially worsen if health systems continue to be overwhelmed with patients and undetected transmission continues.

- On June 5, Mexico had an estimated 116,524 COVID-19 infections (91,402 to 151,978), far exceeding estimated tests administered (8,320). Projections to August suggest that most states are likely to see rising rates of estimated COVID-19 infections, underscoring the urgent need to scale up testing throughout the country.



- At the national level, estimated ICU bed need for COVID-19 patients has exceeded availability since late April. As of June 5, an estimated 4,701 ICU beds (4,343 to 5,092) were in demand to support COVID-19 patients in Mexico – the country has an estimated 1,238 ICU beds in total. Mexico City, the state of México, Sinaloa, and Veracruz de Ignacio de la Llave are among the states currently experiencing some of the largest absolute gaps between ICU bed demand and availability; present projections indicate widening gaps in more states are likely to occur in the coming weeks or months unless capacity increases and/or demand decreases.
- Overall, Mexico’s mobility patterns have not changed as much over the last few weeks; however, most states also did not record declines that were as rapid or abrupt as other locations (e.g., much of Brazil). The main exception was Quintana Roo, where mobility reductions of 75% or more have occurred since early April.



Data updates since our last release on May 29, 2020

Data and locations

- For all currently included locations, we have added reported data points on COVID-19 deaths, cases, hospitalization, testing, and mobility, as well as available information on social distancing policies, through June 3.
- Currently included locations are the United States (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

- As mentioned in previous updates, our team has been collating data on and testing the inclusion of more covariates as potential drivers related to SARS-CoV-2 transmission. In addition to our previous covariates (i.e., temperature, proportion of people living in dense areas, testing, and changes in mobility associated with social distancing policies), we now also use estimates of self-reported mask use and trends in pneumonia as a proxy for seasonal patterns in disease transmission. We also now use a modified mobility measure; further detail on the data sources, processing, and trend estimation approaches for these new covariates will be provided in the near future.

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](#).