

COVID-19: What's New for May 25, 2020

Main updates on IHME COVID-19 predictions

First set of COVID-19 projections for 11 more states in Brazil

Today's release involves the first set of estimates for 11 more states in Brazil: Acre, Alagoas, Amapá, Espírito Santo, Goiás, Minas Gerais, Pará, Paraíba, Rio Grande do Norte, Rio Grande do Sul, and Santa Catarina. Brazil estimates now include a total of 19 states, as our [May 12 release](#) provided an initial set of estimates for Amazonas, Bahia, Ceará, Maranhão, Paraná, Pernambuco, Rio de Janeiro, and São Paulo. Note that estimates reported for Brazil represent the aggregate of these states' estimates, not national-level projections.

In addition, we are pleased to include COVID-19 projections for five more countries: Cuba, Honduras, Japan, Russia, and Serbia.

We provide a more in-depth look at these locations' estimates below, and they can be explored further via our online visualization tool:

- Brazil (*select subnational locations from the drop-down*): <https://covid19.healthdata.org/brazil>
- Cuba: <https://covid19.healthdata.org/cuba>
- Honduras: <https://covid19.healthdata.org/honduras>
- Japan: <https://covid19.healthdata.org/japan>
- Russia: <https://covid19.healthdata.org/russian-federation>
- Serbia: <https://covid19.healthdata.org/serbia>

Today's release also includes updated results for previous locations, incorporating the latest available data on COVID-19 deaths and cases, testing, and other key factors like changes in mobility and implementation status of social distancing policies. We would like to highlight [our visualization tool's](#) new settings, which now allow for examining these trends and patterns:

- In counts (total) or rates (per 100,000 population)
- With or without uncertainty
- For different periods of time (e.g., between March and May to date, or through August)
- For a single location or multiple locations at the same time
- Geographically via map options

Key findings from today's release (May 25, 2020)

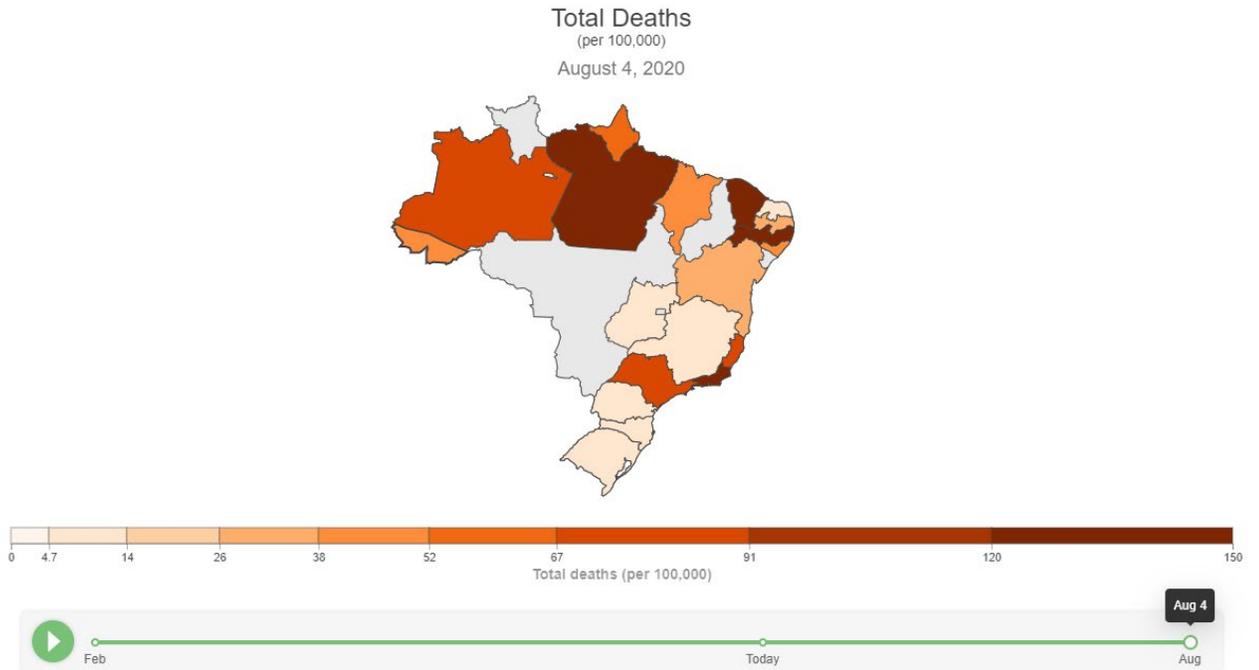
A focus on Brazil

- By August, cumulative COVID-19 deaths could reach 125,833 (estimate range of 68,311 to 221,078) across the 19 currently included states in Brazil. May 12's release included a first set of estimates for eight states in Brazil, as summarized in the table below. While some states saw fairly large changes since their first set of estimates, their uncertainty intervals still overlapped considerably across iterations. These changes represent the incorporation of new input data since May 10.

Location	Predictions for cumulative COVID-19 deaths through August from our May 25 release (today)	First set of predictions (May 12 release)	Change of average values since the May 12 release*
Brazil (aggregated across states)	125,833 (68,311 to 221,078)	88,305 (30,302 to 193,786)	↑ 37,528 deaths
Acre	422 (188 to 917)	-	-
Alagoas	1,788 (937 to 3,759)	-	-
Amapá	529 (314 to 958)	-	-
Amazonas	3,194 (2,508 to 4,781)	5,039 (1,859 to 9,383)	↓ 1,845 deaths
Bahia	5,848 (1,853 to 15,940)	2,443 (529 to 8,429)	↑ 3,405 deaths
Ceará	15,154 (8,287 to 22,183)	8,679 (2,894 to 18,593)	↑ 6,475 deaths
Espirito Santo	2,853 (1,194 to 6,418)	-	-
Goiás	893 (31 to 2,565)	-	-
Maranhão	3,625 (2,199 to 6,912)	4,613 (868 to 12,661)	↓ 988 deaths
Minas Gerais	2,371 (1,007 to 6,252)	-	-
Pará	13,524 (7,704 to 19,827)	-	-
Paraíba	1,142 (564 to 2,739)	-	-
Paraná	626 (350 to 1,382)	245 (170 to 397)	↑ 381 deaths
Pernambuco	13,946 (7,700 to 22,042)	9,401 (2,468 to 23,027)	↑ 4,545 deaths
Rio de Janeiro	25,755 (11,711 to 46,520)	21,073 (5,966 to 51,901)	↑ 4,682 deaths
Rio Grande do Norte	492 (270 to 1,136)	-	-
Rio Grande do Sul	1,165 (417 to 3,453)	-	-
Santa Catarina	464 (284 to 873)	-	-
São Paulo	32,043 (19,391 to 56,138)	36,811 (11,097 to 81,774)	↓ 4,769 deaths
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*Change estimates do not include uncertainty; they are only based on the average value. If prediction values' uncertainty intervals (the numbers reported in parentheses) overlap a lot across different releases, changes in these estimates are not considered substantively different.

- As shown in the [map setting in our visualization tool](#) (and option to view indicators in rates per 100,000 population), four of the 19 currently included states – Ceará, Pará, Pernambuco, and Rio de Janeiro – could have projected cumulative COVID-19 death rates exceeding 120 deaths per 100,000 people by August.



- Many Brazilian states are experiencing demands for hospital resources surpassing their current capacities, with predicted trends potentially worsening in the coming weeks. Such gaps between what COVID-19 patients need in terms of hospital beds, and in particular ICU beds, are particularly large in Amapá, Amazonas, Ceará, Pará, and Pernambuco.
- Estimated infections appear to exceed testing rates in most of the currently included states in Brazil, underscoring a vital need to rapidly scale up COVID-19 testing. This is especially important given the country's escalating death toll and health system strains.

A focus on new locations in Latin America: Cuba and Honduras

- Honduras could experience 906 cumulative COVID-19 deaths (estimate range of 625 to 1,516) by August, while COVID-19's toll could reach 82 cumulative deaths (estimate range of 78 to 100) in Cuba.

Location	Predictions for cumulative COVID-19 deaths through August from our May 25 release (today)
Cuba	82 (78 to 100)
Honduras	906 (625 to 1,516)
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- In terms of predicted hospital resource need, Honduras may be experiencing ICU bed demands that exceed its present capacities. With an estimated nine ICU beds available, a projected 61 ICU beds (estimate range of 49 to 98) are needed currently to support COVID-19 patients in Honduras. Conversely, in Cuba, need for total hospital beds and those in the ICU appear to have not surpassed the country’s capacities during its epidemic.
- COVID-19 testing levels continue to lag behind estimated infections in Honduras, highlighting a need to further scale up testing to ensure the timely detection of COVID-19 infections and strengthen efforts to curb transmission. Cuba’s testing levels began surpassing estimated infections in early to mid-April, and remain high, highlighting the country’s response.
- Similar to most other currently included locations, human mobility has at least somewhat drifted upward after drastic reductions between March and April. This trend has occurred amid the continuation of implemented social distancing policies in Cuba and Honduras; however, especially in Honduras, mobility remains approximately 60% to 70% lower than baseline levels.

A focus on new global locations: Japan, Russia, and Serbia

- Projections indicate Russia could have 7,201 cumulative COVID-19 deaths (estimate range of 4,832 to 14,243) by August. Japan’s cumulative COVID-19 death toll may be 1,221 deaths (estimate range of 970 to 1,873), while Serbia’s current prediction is 267 cumulative COVID-19 deaths (estimate range of 266 to 269).

Location	Predictions for cumulative COVID-19 deaths through August from our May 25 release (today)
Japan	1,221 (970 to 1,873)
Russia	7,201 (4,832 to 14,243)
Serbia	267 (266 to 269)
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- For hospital resource predictions, estimates for Japan and Russia suggest that national-level hospital capacities in terms of total and ICU beds were not exceeded by COVID-19 patient demands. Need for ICU beds in Serbia may have surpassed hospital capacities in early May.
- Japan substantially scaled up COVID-19 testing rates during the end of April, while Russia appears to have brought up and maintained levels of testing above estimated infections since the end of March. Serbia’s testing rates began to consistently exceed estimated infections after mid-April.
- In both Russia and Serbia, human mobility patterns began increasing after falling to their lowest levels in early to mid-April. This is particularly pronounced in Serbia, which is now experiencing

mobility at 25% lower levels than baseline; on April 18, mobility was 71% lower than baseline. Japan’s mobility patterns somewhat differ, with gradually decreasing mobility until early May.

A focus on new locations introduced on May 12

Latin America and the Caribbean

- In terms of cumulative death projections, Peru could see 19,722 total COVID-19 deaths (estimate range of 9,965 to 35,471) by August. These projections are higher than those published in the first set of estimates for Peru on May 12 (6,428 cumulative deaths, with an estimate range of 2,731 to 21,724); this is mainly due to the use of excess mortality estimates to inform Peru’s COVID-19 projections, as well as updated input data.

Location	Predictions for cumulative COVID-19 deaths through August from our May 25 release (today)
Argentina	5,295 (1,969 to 16,066)
Chile	11,970 (4,050 to 31,118)
Colombia	4,359 (2,113 to 8,697)
Dominican Republic	599 (563 to 652)
Ecuador	5,742 (5,624 to 5,923)
Mexico*	6,859 (3,576 to 16,795)
Panama	506 (442 to 628)
Peru	19,722 (9,965 to 35,471)
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*Estimates for Mexico reflect the aggregation of currently included states (Baja California, Mexico City, Puebla, Quintana Roo, Sinaloa, the state of México, and Tabasco). Mexico’s national-level predictions are likely much higher than what is captured across these seven states.

- Based on the latest available data, demand for ICU beds in Peru is likely to be greatly exceeding the country’s current capacities. With an estimated 88 available ICU beds, average demand for COVID-19 patients has surpassed at least 1,500 ICU beds each day in May and is currently estimated at 1,990 (estimate range 1,165 to 3,765). Ecuador’s massive gaps between estimated ICU bed availability and need have declined since the country’s predicted peak in hospital use in early April. However, given Ecuador’s proximity to other countries still experiencing a rise in COVID-19 infections, the country’s current downward epidemic trajectory could easily shift if efforts to scale up testing and curb transmission are eased.

- While the country’s testing rates are currently similar to the rate of estimated infections, changes in human mobility and temperature (i.e., the Southern Hemisphere is nearing its winter season) could contribute to higher risk for transmission.

Other new global locations

- Based on the latest available data, Egypt’s projected cumulative COVID-19 deaths could reach 1,588 (estimate range of 1,163 to 2,909) by August. Turkey’s predictions indicate a cumulative COVID-19 death toll of 4,759 (estimate range 4,631 to 5,037) during that time.

Location	Predictions for cumulative COVID-19 deaths through August from our May 25 release (today)
Egypt	1,588 (1,163 to 2,909)
Israel	352 (287 to 693)
Malaysia	116 (116 to 116)
Moldova	345 (308 to 415)
Philippines	970 (874 to 1,184)
South Korea	263 (262 to 274)
Turkey	4,759 (4,631 to 5,037)
Ukraine	905 (801 to 1,170)
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- South Korea’s testing rates recently surged in response to an uptick in COVID-19 infections, while other recently included locations have generally maintained fairly high levels of testing. The Philippines is the main exception, where testing was scaled up during May, now surpassing estimated infections. In terms of human movement patterns, most countries have seen mobility rising, and for some, accelerating in their increases since early May.

A focus on Puerto Rico and Canada

Puerto Rico

- By August, cumulative COVID-19 deaths could reach 124 (estimate range of 122 to 126) in Puerto Rico. This is lower than previous releases, reflecting updated input data on COVID-19 cases and deaths, as well as key drivers.
- By early to mid-April, Puerto Rico appeared to start narrowing gaps between levels of testing and estimated COVID-19 infections. Changes in mobility reached their lowest levels at a similar point (i.e., a 62% reduction on April 9), and have slightly increased since (i.e., 44% reduction in mobility relative to baseline on May 18).

Canada

- Across the four currently included provinces (Alberta, British Columbia, Ontario, and Quebec), a projected 8,148 cumulative COVID-19 deaths (estimate range of 7,533 to 9,179) could occur by August in Canada. This is somewhat lower since our May 12 release, when the aggregate projection was 9,945 cumulative COVID-19 deaths (estimate range of 6,647 to 20,645). Since no methods updates have occurred since moving to our multi-stage hybrid model, these revised estimates reflect the effects of incorporating updated data inputs and their subsequent effects on future estimates.

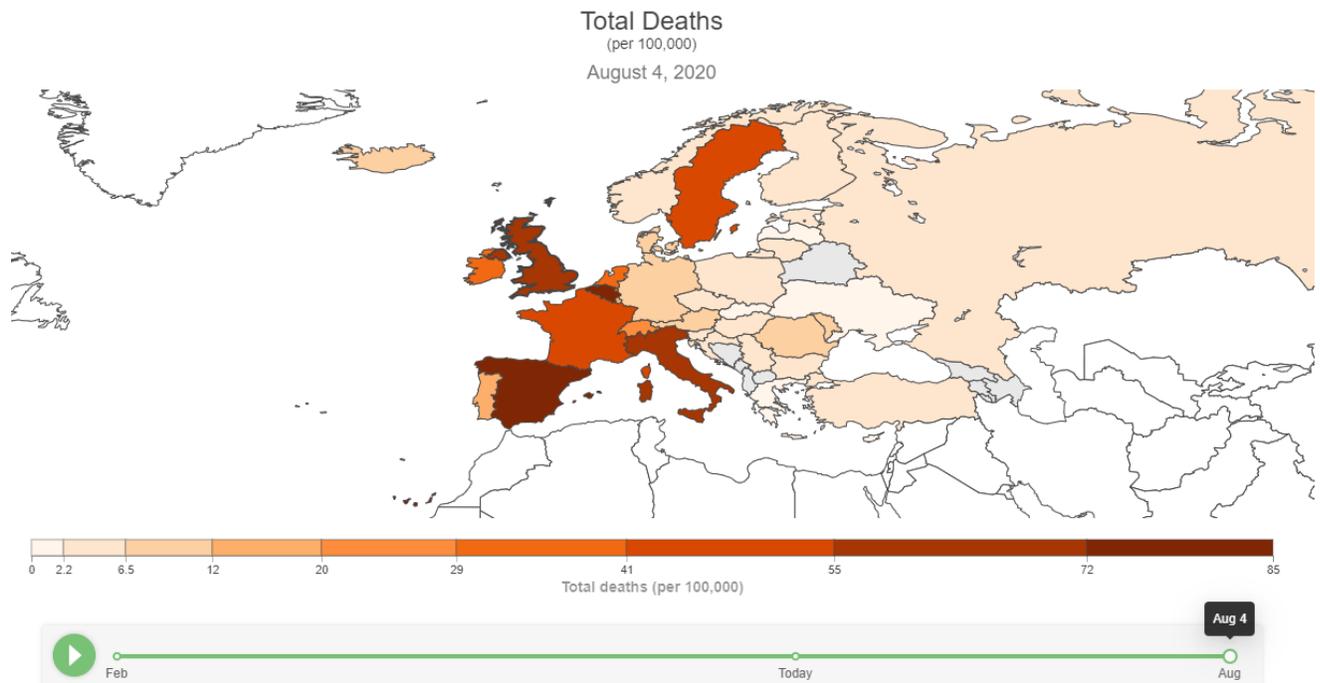
Location	Predictions for cumulative COVID-19 deaths through August from our May 25 release (today)
Canada (aggregated across provinces)	8,148 (7,533 to 9,179)
Alberta	159 (148 to 180)
British Columbia	225 (191 to 238)
Ontario	2,489 (2,345 to 2,804)
Quebec	5,275 (4,847 to 5,854)

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- Testing levels have improved across provinces, though Quebec only more recently closed gaps between estimated infections and testing. In terms of changes in human mobility, all four provinces recorded declines of 50% or more by early to mid-April relative to baseline levels of movement. However, since then, mobility patterns have drifted upward, even before a subset of distancing policies have been eased in most provinces.

A focus on Europe

- Today's release indicates that the United Kingdom (UK) could experience 44,389 cumulative COVID-19 deaths (estimate range 42,284 to 47,610) by August. With the [new map setting in our visualization tool](#) (and option to view indicators in rates per 100,000 population), more in-depth examination of country-level patterns can occur. As shown in the screenshot below, Belgium, Spain, and Italy could each have cumulative COVID-19 death rates exceeding 70 deaths per 100,000 people by August.



- At the national level, most European countries appeared to have rapidly scaled up testing during or prior to rising estimated infections. Yet some countries have more recently closed gaps between estimated infections and testing (e.g., Sweden), indicating a potential need to further accelerate testing progress. This is particularly important as countries move to ease previously implemented social distancing policies and more travel resumes within or across locations.
- Similar to patterns seen in the US and elsewhere, a number of locations saw rising mobility before distancing policies were being considered for easement. For some countries, such increases have rapidly accelerated since early May: for instance, in Switzerland, mobility was only 5% lower than baseline levels as of May 18. As more people resume their typical movement and travel patterns, it will be critical to continue monitoring testing rates and tracking the uptake of other types of prevention measures (e.g., mask use in public settings, especially indoors) to reduce the risk of transmission.

Data and methods updates since our last release on May 18, 2020

Data updates

- For all included locations, we have added reported data points on COVID-19 deaths, cases, mobility, and testing rates, as well as available information on social distancing policies through May 23.

Methods updates

- We continue to use the multi-stage hybrid model, as [introduced on May 4](#), for currently included locations. Ecuador and now Peru are the main exceptions, where we use all-cause mortality and compute excess mortality to then estimate COVID-19 deaths; more detail is provided in the [May 12 estimation update](#).

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:

- **Model updates.** Our team is working on model improvements across our COVID-19 estimation platform, particularly in terms of the death model and the transmission dynamics component of our broader modeling approach. We hope to introduce these modeling updates soon.
- **Initial COVID-19 projections for additional countries.** Data collation and processing for a wider set of locations and countries worldwide are in progress. We are currently working on adapting our prediction model to countries which have experienced more than 50 total COVID-19 deaths to date. With the increasing recognition of under-counting of COVID-19 deaths in many locations, we are exploring methods that can approximate excess mortality and incorporate such estimates into our COVID-19 models.
- **Additional key epidemic drivers.** Pending data availability across currently included locations, we are exploring how to incorporate additional model covariates such as mask or facial covering use by the broader public, human contact rates, household size, and use of public transit, as well as exploring whether trends in diseases such as pneumonia can be used to predict trends in COVID-19. As discussed in our [May 18 estimation update](#), we have made progress in estimating mask use in the US; work is ongoing to further improve its measurement and identify data sources for additional locations.

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, 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); 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

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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](#).