COVID-19 Results Briefing: Global

November 12, 2020

This document contains summary information on the latest global projections from the IHME model on COVID-19. The model was run on November 11, 2020.

Driven by a broad-based Northern Hemisphere fall/winter surge, global cases and deaths are rising faster than at any time since April. In the Southern Hemisphere and equatorial regions, cases and deaths are either stable or declining. Based on both individual patient level data and a systematic analysis of seroprevalence surveys, we believe that the infection-fatality rate (IFR) has declined by 30% since April. Despite this revision downwards in the IFR, the fall/winter surge is expected to increase daily deaths to nearly double what was observed in March/April by January. Re-imposition of social distancing mandates in Europe have already led to slowing or reversing the rise in cases suggesting that mandates remain highly effective in controlling transmission. Expanding mask use remains a powerful tool for delaying the imposition of mandates and potentially saving more than half a million lives by March 1.

Current situation

- Daily reported cases in the last week increased to 458,000 on average compared to 426,000 the week before, a 7% increase (Figure 1).
- Daily deaths in the last week increased to 7,660 per day on average compared to 6,760 the week before, an 11% increase (Figure 2). This makes COVID-19 the number 4 cause of death globally this week (Table 1).
- Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in most of the Northern Hemisphere and remains over 1 in some countries in sub-Saharan Africa.
- We estimated that 5% of people globally have been infected as of November 9 (Figure 4).
- The daily death rate is greater than 4 per million in Argentina, France, Iran, Italy, Poland, Spain, the United Kingdom, several states in Mexico, and three states in the United States (Figure 6).

Trends in drivers of transmission

- New mandates were introduced in several countries and regions in Europe. Other regions stayed the same (Table 2).
- Global mobility stayed largely constant at around 20% below the pre-COVID-19 baseline. Declines in mobility were recorded in several countries in Europe, and increases have occurred in the Southern Hemisphere.

- Mask use has remained constant at 60% (Figure 9). Mask use was highest in Italy, the Republic of Korea, and Spain. Mask use was lower than 50% in Afghanistan, Algeria, Bangladesh, Cameroon, the Democratic Republic of the Congo, Egypt, Ethiopia, Ghana, Iraq, Kenya, Nigeria, Pakistan, Sudan, Uganda, the United Republic of Tanzania, Vietnam, and Yemen.
- There were 130 diagnostic tests per 100,000 people on November 9 (Figure 10).

Projections

- In our **reference scenario**, which represents what we think is most likely to happen, daily deaths will reach over 15,000 a day in mid-January and decline to under 13,000 by March 1. Daily infections will reach 4 million per day in January.
- Cumulative deaths in the reference scenario will reach 2.8 million by March 1, 2021. We estimate that about 10% of the world will have been infected by March 1, 2021.
- If **universal mask coverage** (95%) were attained in the next week, our model projects 571,000 lives could be saved by March 1, 2021.
- Under our **mandates easing scenario**, which assumes that no new mandates or measures are put in place to affect transmission, our model projects 4,140,000 cumulative deaths on March 1, 2021.

Model updates

We have substantially revised the infection-fatality rate (IFR) used in the model. To date, we had used an IFR that was derived from an analysis of population-representative antibody surveys where we disaggregated prevalence by age and matched COVID-19 death rates. The age-specific IFR from this analysis was assumed to be the same across locations and time.

We have now accumulated considerable empirical evidence that suggests that 1) the IFR has been declining since March/April due to improvements in the clinical management of patients, and 2) the IFR varies as a function of the level of obesity in a community. The evidence supporting these observations includes:

- An analysis of detailed clinical records of more than 15,000 individuals from a COVID-19 registry organized by the American Heart Association. This registry covers patients in more than 150 hospitals. Our analysis suggests that after controlling for age, sex, comorbidities, and disease severity at admission, the hospital-fatality rate has declined by about 30% since March/April.
- An analysis of more than 250,000 individuals admitted to hospitals in Brazil with COVID-19 shows that after controlling for age, sex, obesity, and oxygenation at admission, the hospital-fatality rate has declined by about 30% since March/April.

- An analysis of age-standardized IFRs from more than 300 surveys also suggests that the population-level trends in the IFR are consistent with a 30% decline since March/April. These data also suggest that the prevalence of obesity at the population level is associated with a higher IFR and that the magnitude of the effect is similar to that found in the individual-level analysis.

Based on these empirical findings, we have switched to a new estimated IFR. The new IFR varies over time (declining since March/April by approximately 0.19% per day until the beginning of September), varies across locations as a function of obesity prevalence, and varies across locations (as before) as a function of the population distribution by age. The implication of lower IFRs over time is that for a given number of observed deaths there are more cumulative infections.

For all COVID-19 resources at IHME, visit http://www.healthdata.org/covid.

Questions? Requests? Feedback? Please contact us at https://www.healthdata.org/covid/contact-us.

Current situation

Figure 1. Reported daily COVID-19 cases

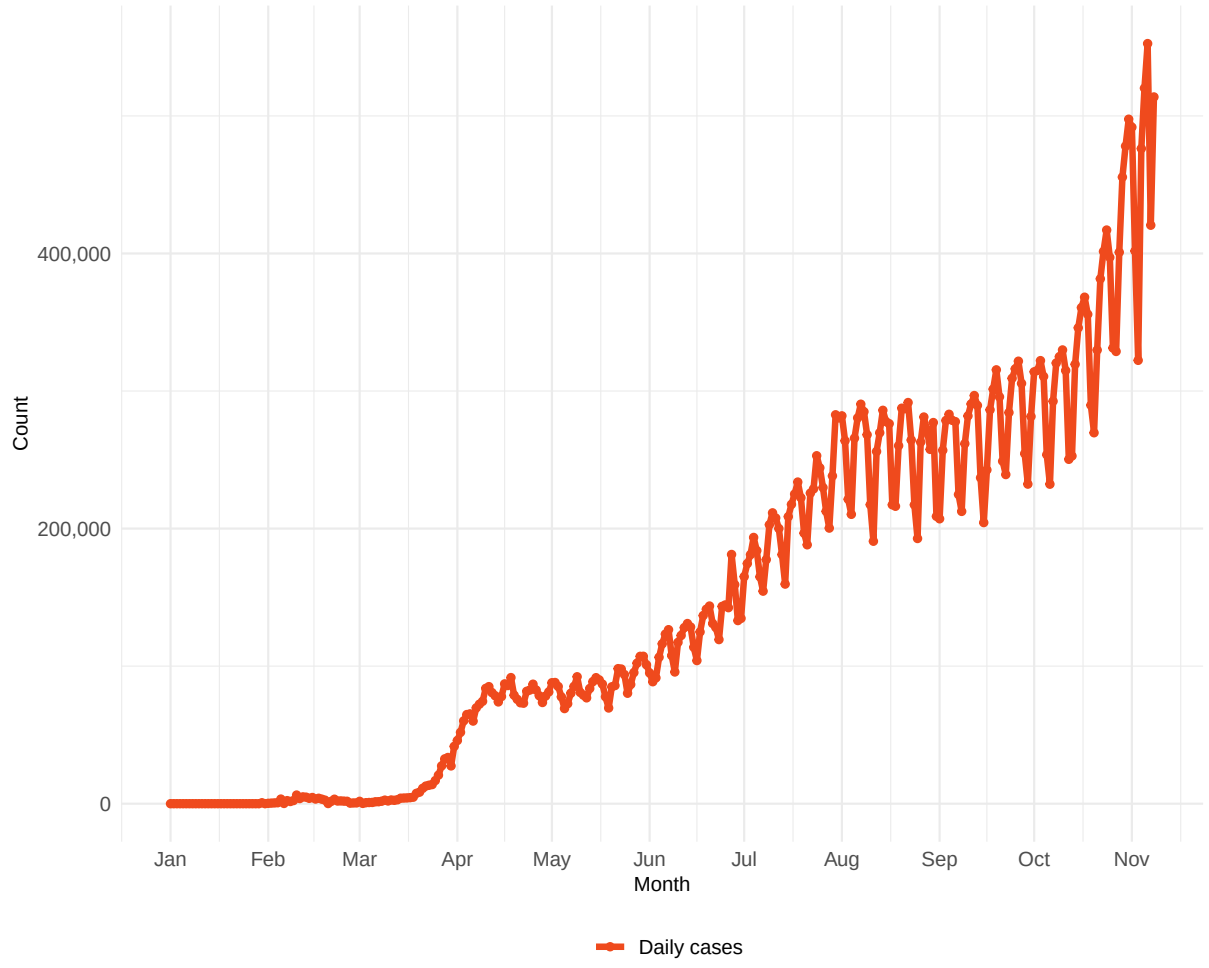


Table 1. Ranking of COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
Ischemic heart disease	175,727	1
Stroke	126,014	2
Chronic obstructive pulmonary disease	63,089	3
COVID-19	53,503	4
Lower respiratory infections	47,946	5
Tracheal, bronchus, and lung cancer	39,282	6
Neonatal disorders	36,201	7
Alzheimer's disease and other dementias	31,217	8
Diabetes mellitus	29,830	9
Diarrheal diseases	29,509	10

Figure 2a. Reported daily COVID-19 deaths and smoothed trend estimate.

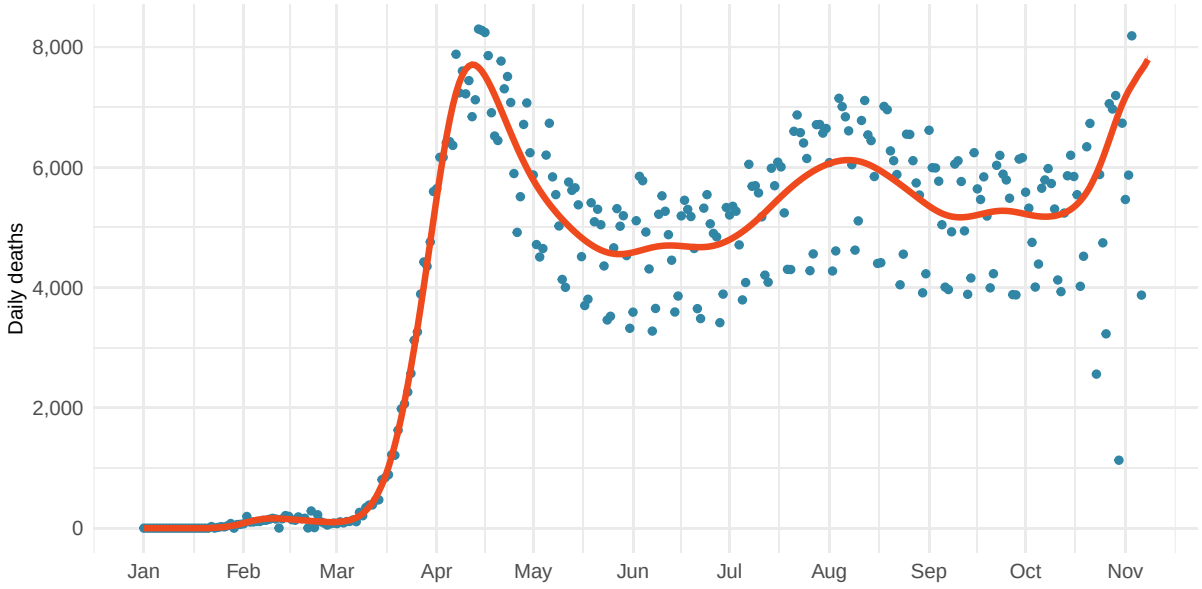


Figure 2b. Estimated cumulative deaths by age group

Figure 3. Mean effective R on October 29, 2020. The estimate of effective R is based on the combined analysis of deaths, case reporting and hospitalizations where available. Current reported cases reflect infections 11-13 days prior so estimates of effective R can only be made for the recent past. Effective R less than 1 means that transmission should decline all other things being held the same.

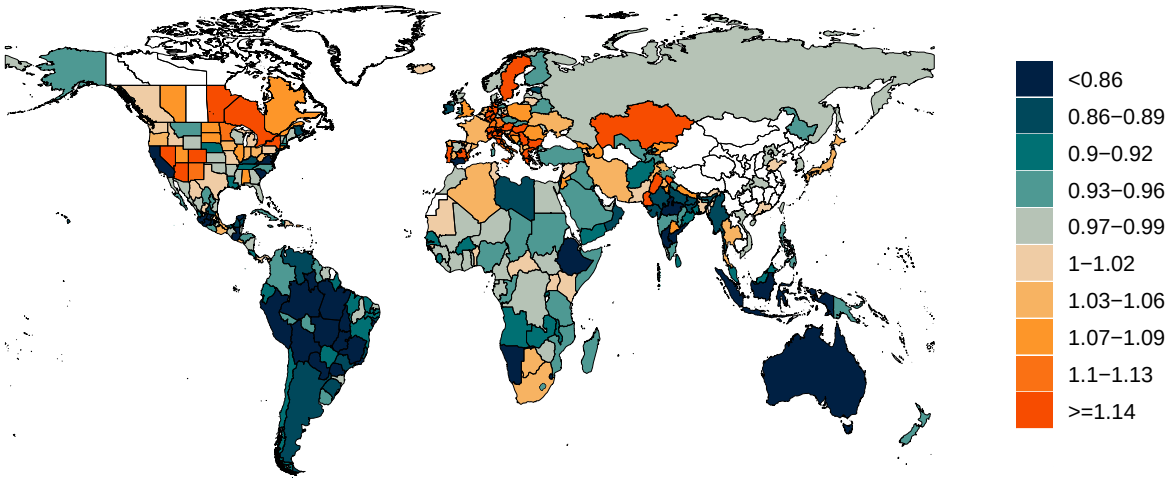


Figure 4. Estimated percent infected with COVID-19 on November 09, 2020

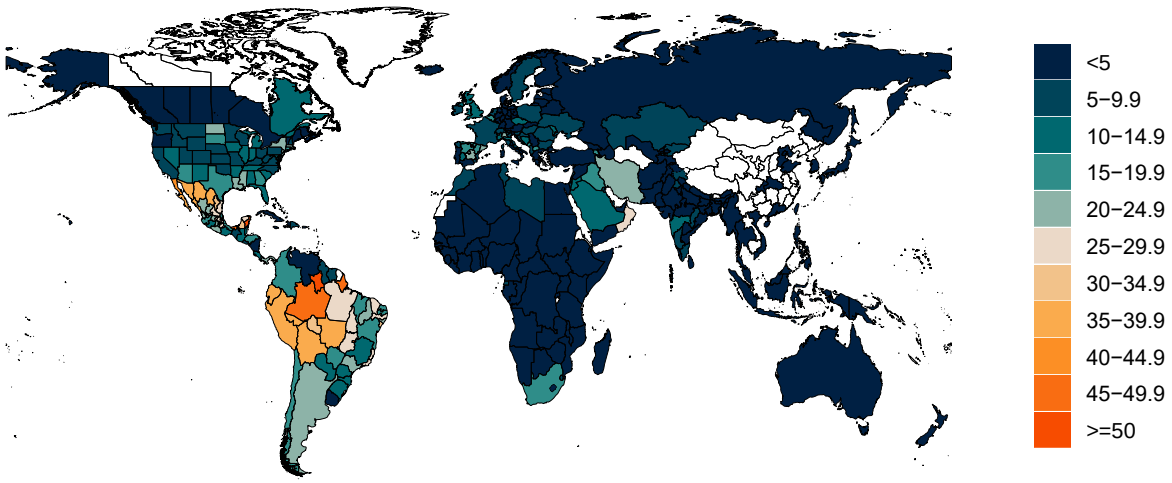


Figure 5. Percent of COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model.

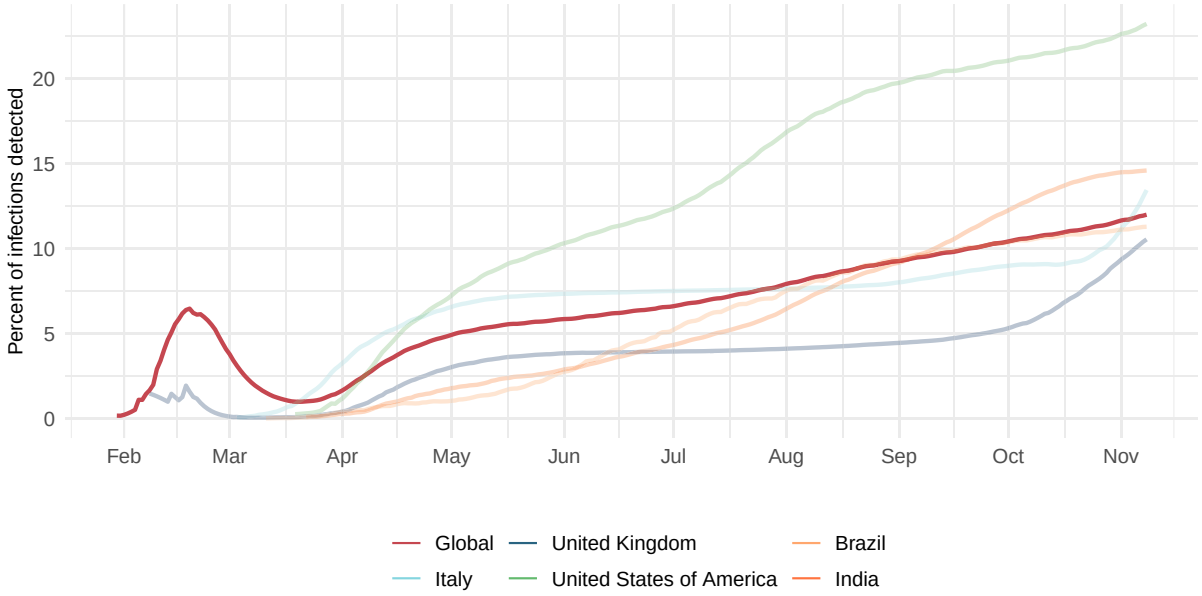
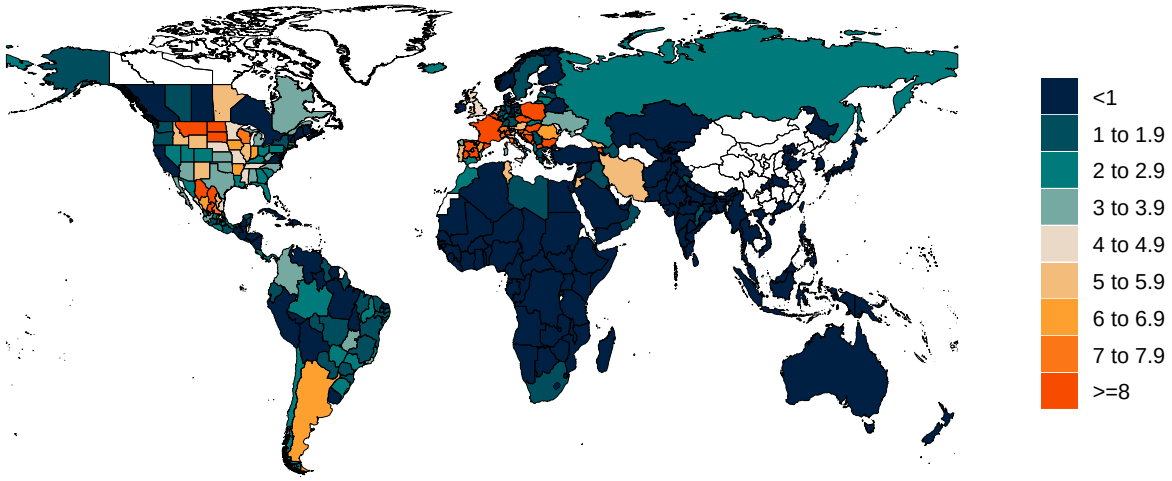


Figure 6. Daily COVID-19 death rate per 1 million on November 09, 2020



Critical drivers

Figure 7. Total number of mandates

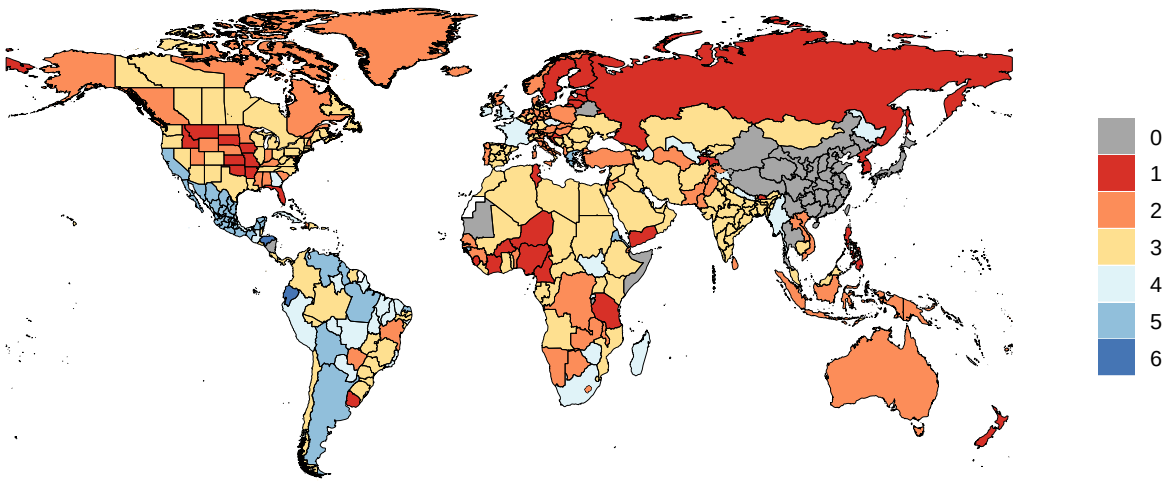


Figure 8a. Trend in mobility as measured through smartphone app use compared to January 2020 baseline

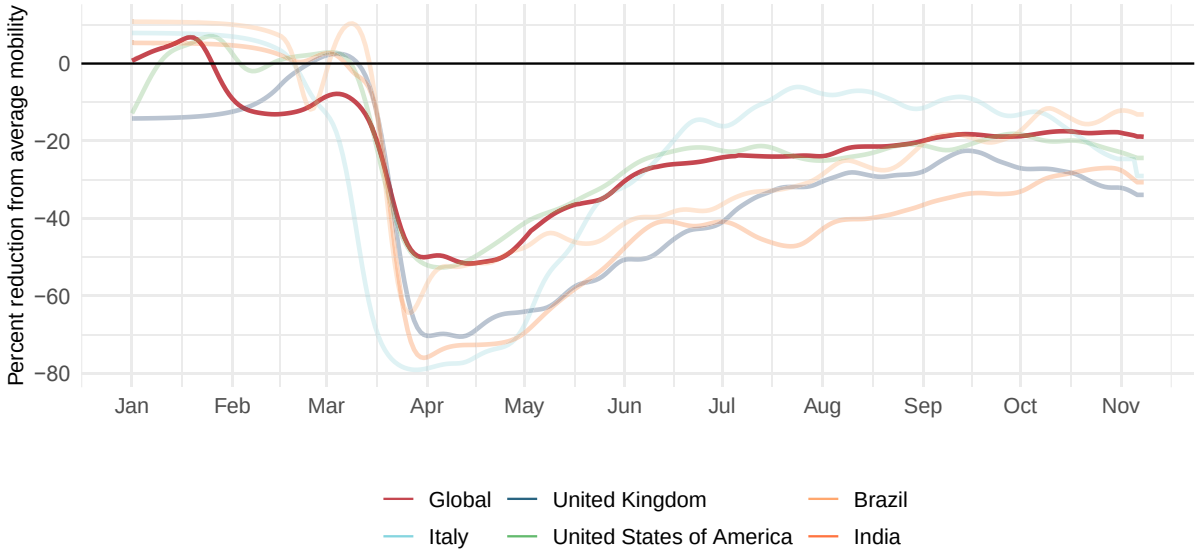


Figure 8b. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent)

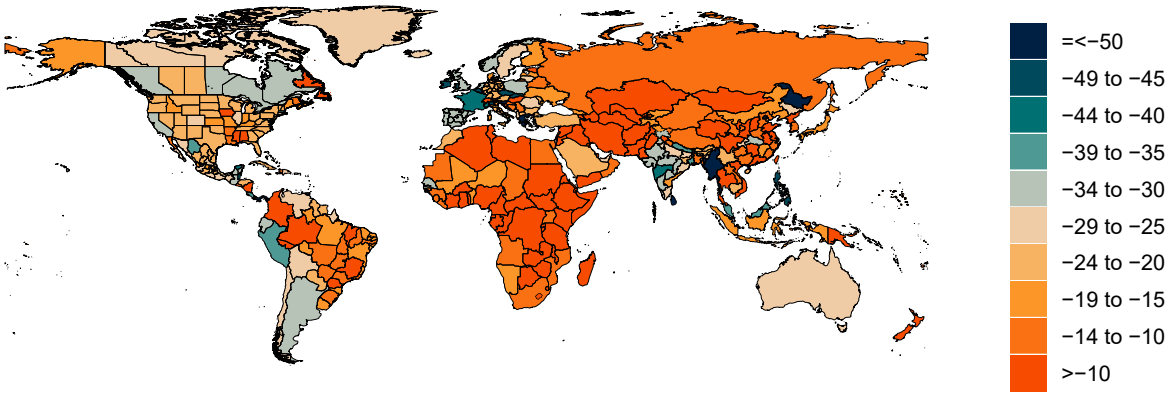


Figure 9a. Trend in the proportion of the population reporting always wearing a mask when leaving home

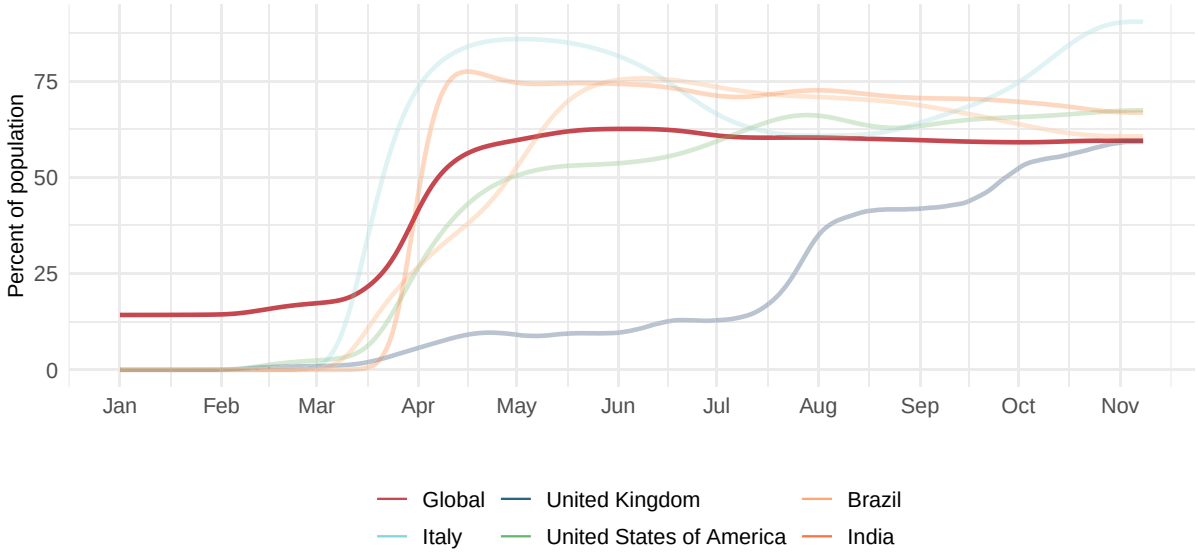


Figure 9b. Proportion of the population reporting always wearing a mask when leaving home on November 09, 2020

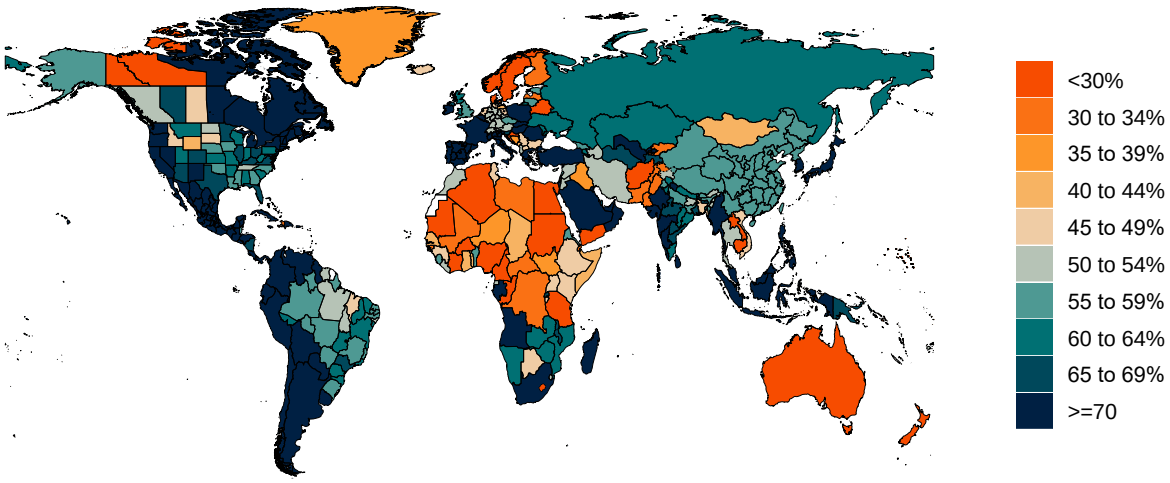


Figure 10a. Trend in COVID-19 diagnostic tests per 100,000 people

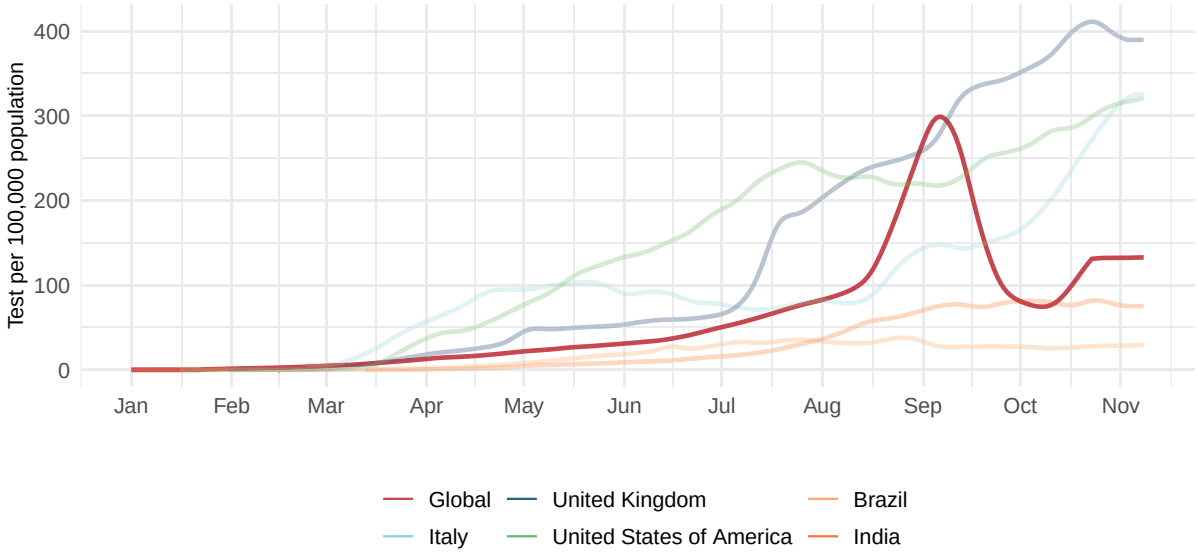


Figure 10b. COVID-19 diagnostic tests per 100,000 people on November 09, 2020

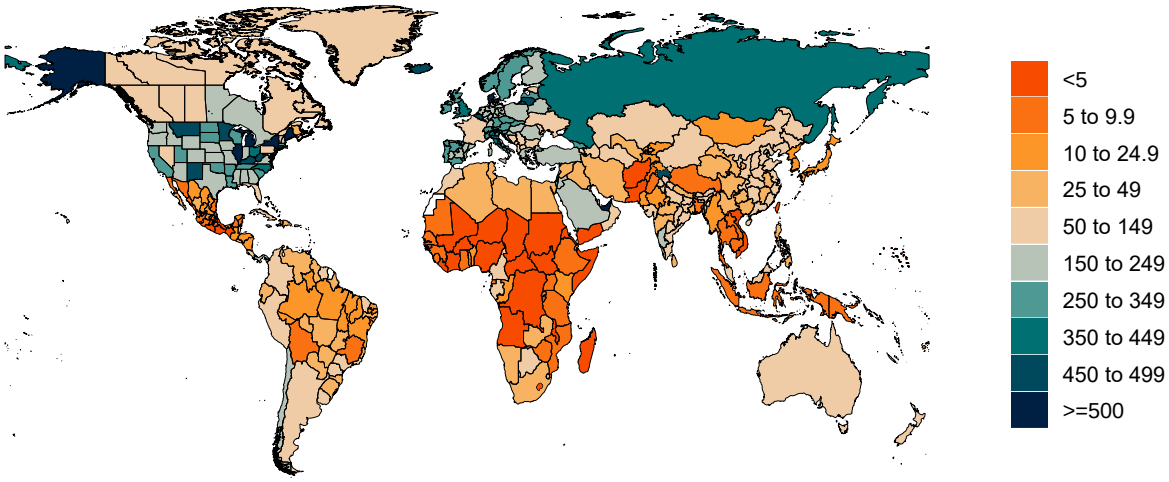
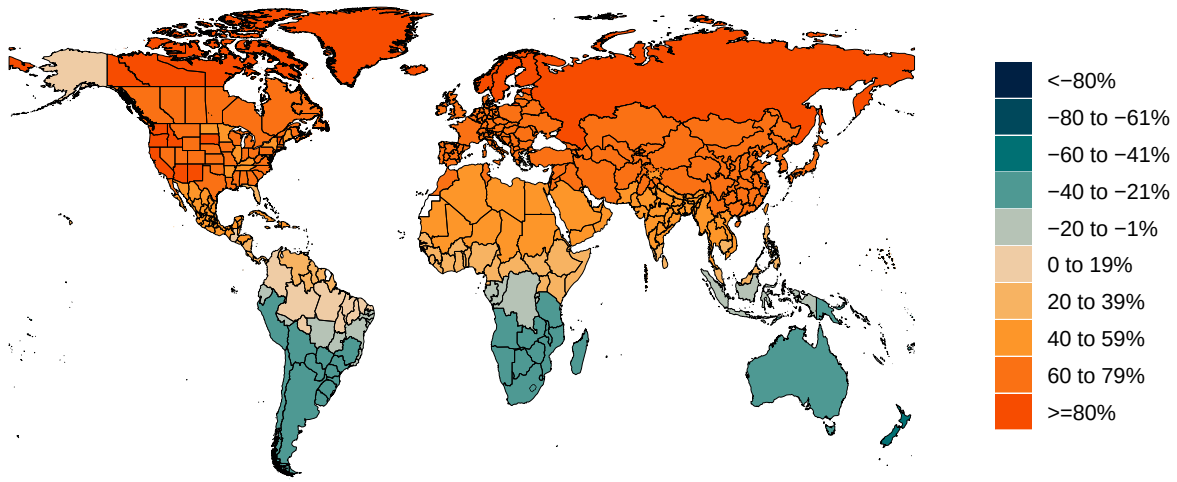


Figure 11. Increase in the risk of death due to pneumonia on February 1 compared to August 1



Projections and scenarios

Figure 12. Cumulative COVID-19 deaths until March 01, 2021 for three scenarios. The reference scenario is our forecast of what we think is most likely to happen. The mandate easing scenario is what would happen if governments continue to ease social distancing mandates. The universal mask mandate scenario is what would happen if mask use increased immediately to 95%.

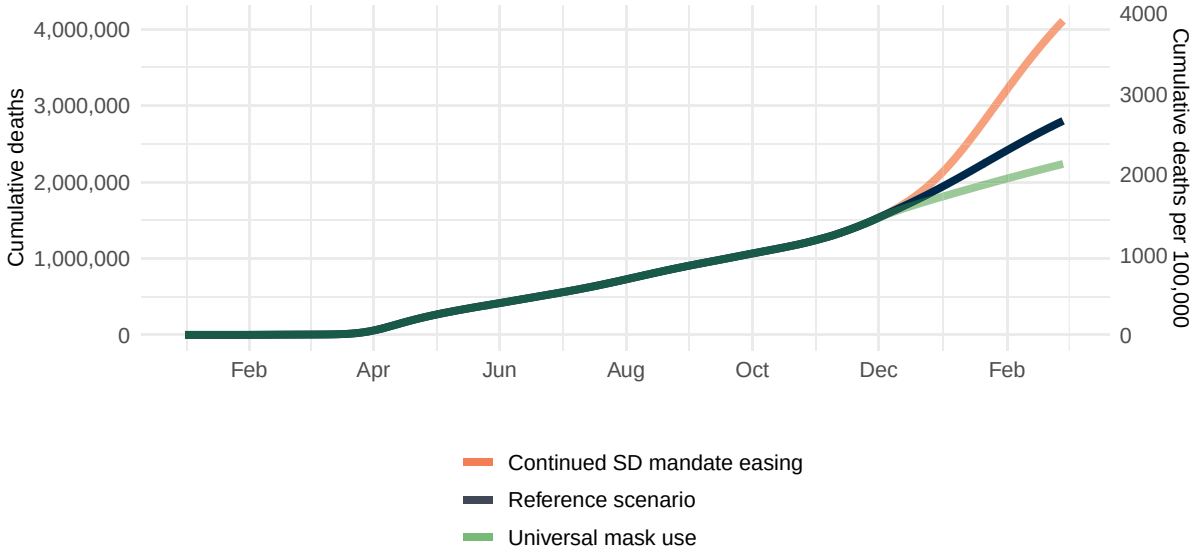


Fig 13. Daily COVID-19 deaths until March 01, 2021 for three scenarios. The reference scenario is our forecast of what we think is most likely to happen. The mandate easing scenario is what would happen if governments continue to ease social distancing mandates. The universal mask mandate scenario is what would happen if mask use increased immediately to 95%.

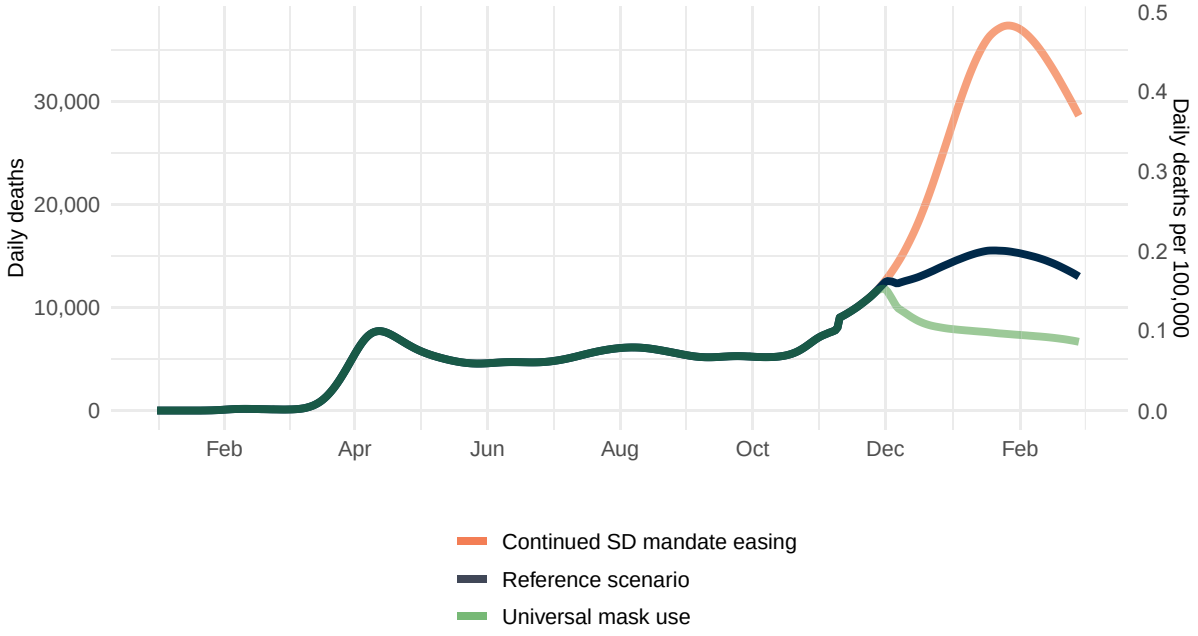


Fig 14. Daily COVID-19 infections until March 01, 2021 for three scenarios. The reference scenario is our forecast of what we think is most likely to happen. The mandate easing scenario is what would happen if governments continue to ease social distancing mandates. The universal mask mandate scenario is what would happen if mask use increased immediately to 95%.

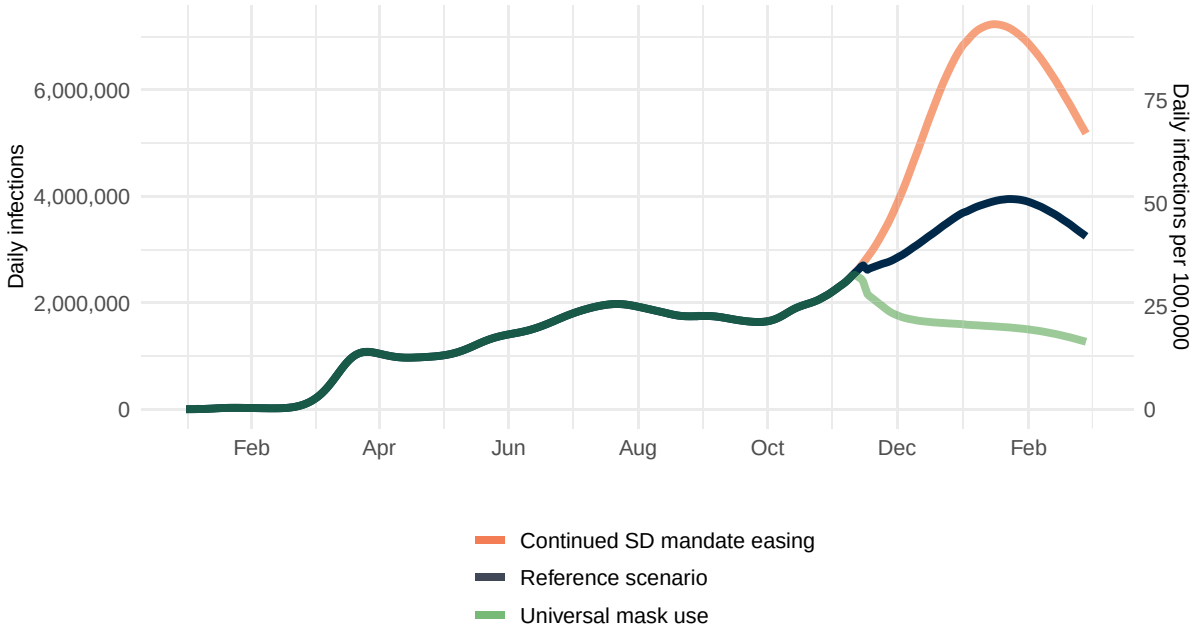


Fig 15. Month of assumed mandate re-implementation. (Month when daily death rate passes 8 per million, when model assumes mandates will be re-imposed.)

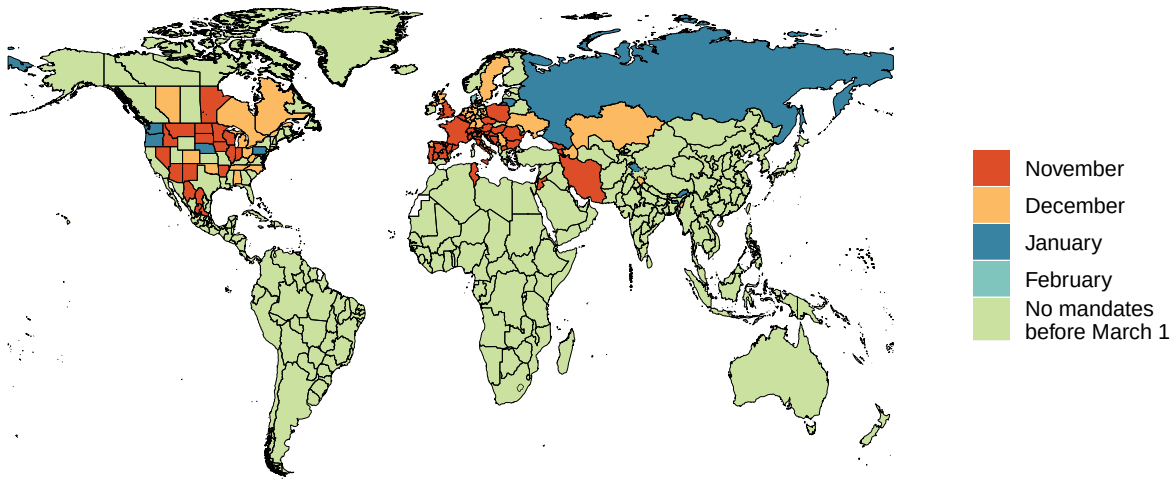


Figure 16. Forecasted percent infected with COVID-19 on March 01, 2021

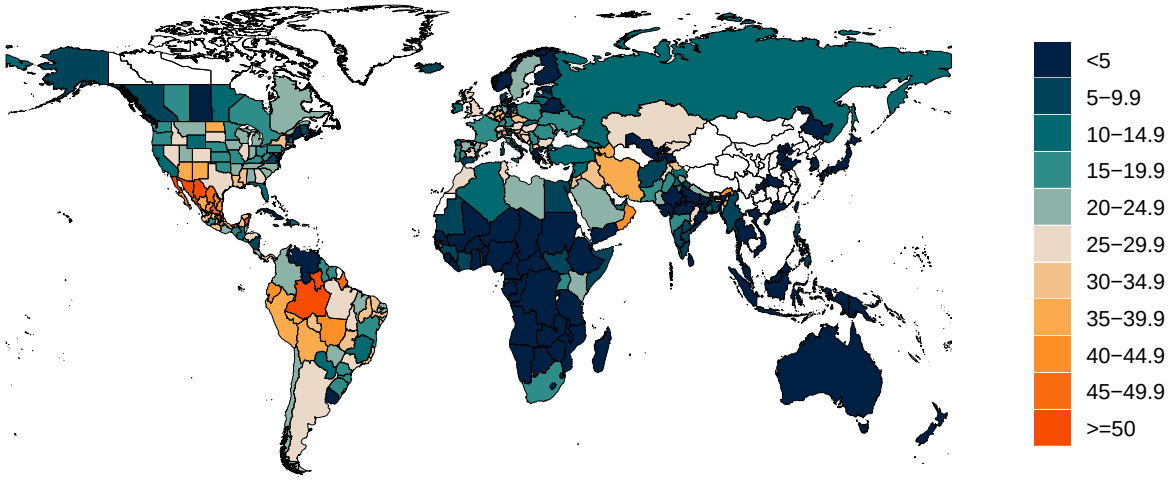


Figure 17. Daily COVID-19 deaths per million forecasted on March 01, 2021 in the reference scenario

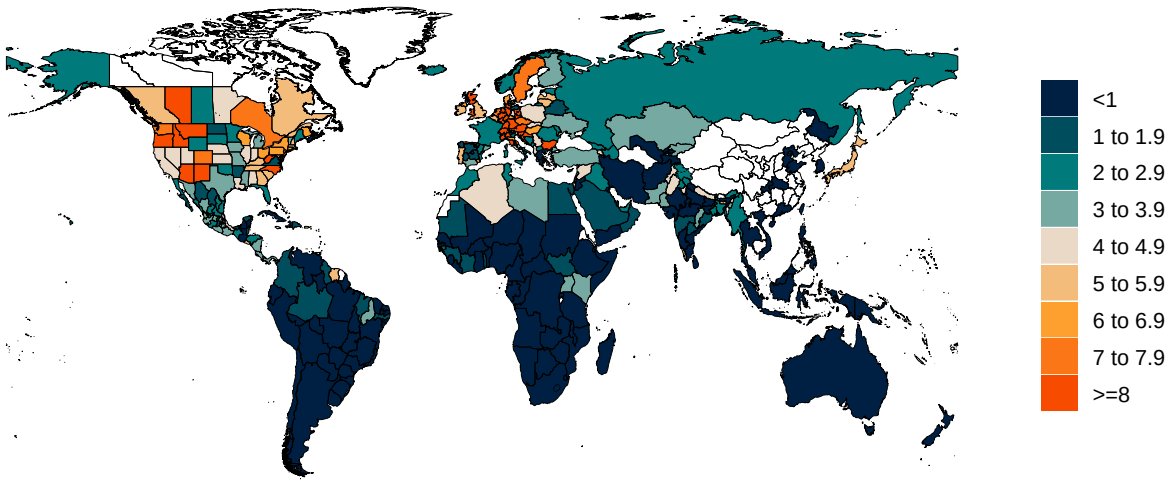


Table 2. Ranking of COVID-19 among the leading causes of mortality in the full year 2020. Deaths from COVID-19 are projections of cumulative deaths on Jan 1, 2021 from the reference scenario. Deaths from other causes are from the Global Burden of Disease study 2019 (rounded to the nearest 100).

Cause name	Annual deaths	Ranking
Ischemic heart disease	9,137,800	1
Stroke	6,552,700	2
Chronic obstructive pulmonary disease	3,280,600	3
Lower respiratory infections	2,493,200	4
Tracheal, bronchus, and lung cancer	2,042,600	5
COVID-19	1,943,458	6
Neonatal disorders	1,882,400	7
Alzheimer's disease and other dementias	1,623,300	8
Diabetes mellitus	1,551,200	9
Diarrheal diseases	1,534,400	10

Recognition and thanks

Mask data sources:

PREMISE; Facebook Global symptom survey (This research is based on survey results from University of Maryland Social Data Science Center) and the Facebook United States symptom survey (in collaboration with Carnegie Mellon University); Kaiser Family Foundation; YouGov COVID-19 Behaviour Tracker survey.

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 (Héctor Arreola-Ornelas) 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. We would like to also extend a warm thank you to the many others who have made our COVID-19 estimation efforts possible.