Informe de resultados de COVID-19

Región de las Américas

13 de mayo de 2021

Este documento contiene información resumida sobre las últimas proyecciones del modelo IHME sobre COVID-19 en la Región de las Américas. El modelo se ejecutó el 12 de mayo de 2021 con datos hasta el 10 de mayo de 2021.

Situación actual

• Los casos notificados diariamente en la última semana disminuyeron a 170,800 por día en promedio en comparación con 190,700 la semana anterior (Figura 1).

• Las muertes diarias en la última semana disminuyeron a 6,400 por día en promedio en comparación con las 7,300 de la semana anterior (Figura 2). Esto convierte a COVID-19 en la principal causa de muerte en la Región de las Américas esta semana (Tabla 1).

• La tasa de mortalidad diaria es superior a 4 por millón en 13 países (Figura 3).

• Estimamos que el 35% de las personas en la Región de las Américas habían sido infectadas al 10 de mayo (Figura 5).

• La R efectiva, calculada utilizando casos, hospitalizaciones y muertes, es mayor que 1 en 11 países (Figura 6).

• La tasa de detección de infecciones en la Región de las Américas se acerca al 21% el 10 de mayo (Figura 7).

Tendencias en los impulsores de la transmisión

• La movilidad la semana pasada fue 21% más baja que la línea de base anterior a COVID-19 (Figura 10). La movilidad estuvo cerca de la línea de base (dentro del 10%) en El Salvador, Haití, Honduras y Nicaragua. La movilidad fue inferior a 30% de la línea de base en Argentina, Canadá, Chile, Costa Rica, Ecuador, Panamá, Perú y Trinidad y Tobago.

• Al 10 de mayo, estimamos que 74% de las personas siempre usaban una máscara al salir de casa, sin cambios en comparación con la semana pasada (Figura 12). El uso de mascarillas fue inferior a 50% en Barbados, Haití y Santa Lucía.

• Se realizaron 182 pruebas de diagnóstico por cada 100.000 personas el 10 de mayo (Figura 14).

• En la Región de las Américas, 80.7% de las personas dicen que aceptarían o probablemente aceptarían una vacuna para COVID-19. Esto es 0.1 puntos porcentuales más que la semana pasada. La fracción de la población que está dispuesta a recibir la vacuna COVID-19 oscila entre 41% en Haití y 92% en Brasil (Figura 18).

• En nuestro escenario de referencia actual, esperamos que 1, 068 millones de personas estén vacunadas para el 1 de septiembre (Figura 19).

Proyecciones

• En nuestro escenario de referencia, que representa lo que creemos que es más probable que suceda, nuestro modelo proyecta 3,194,000 muertes acumuladas el 1 de septiembre de 2021. Esto representa 529,000 muertes adicionales del 10 de mayo al 1 de septiembre (Figura 20). Se espera que las muertes diarias disminuyan de manera constante hasta el 1 de septiembre (Figura 21).

• Si se alcanzara la cobertura universal de mascarillas (95%) en la próxima semana, nuestro modelo proyecta 103.000 muertes acumulativas menos en comparación con el escenario de referencia el 1 de septiembre de 2021 (Figura 20).

• En nuestro peor escenario, nuestro modelo proyecta 3.634.000 muertes acumuladas el 1 de septiembre de 2021, 440.000 muertes adicionales en comparación con nuestro escenario de referencia (Figura 20).

• Para el 1 de septiembre, proyectamos que se salvarán 310,900 vidas gracias al lanzamiento proyectado de la vacuna.

• La Figura 23 compara nuestros pronósticos de escenarios de referencia con otros modelos archivados públicamente. Los pronósticos son muy divergentes.

• En algún momento, desde mayo hasta el 1 de septiembre, 17 países tendrán un estrés alto o extremo en las camas de hospital (Figura 24). En algún momento, desde mayo hasta el 1 de septiembre, 27 países tendrán un estrés alto o extremo en la capacidad de la UCI (Figura 25).

Actualizaciones de modelos

En la estimación del IHME de las infecciones, hospitalizaciones y muertes por COVID-19 hasta la fecha, hemos utilizado las muertes por COVID-19 notificadas oficialmente para casi todos los lugares. A partir de la semana pasada, estamos cambiando a un nuevo enfoque que se basa en la estimación de la mortalidad total por COVID-19. Varias son las razones que nos han llevado a adoptar este nuevo enfoque. Estas razones incluyen el hecho de que la capacidad de prueba varía notablemente entre países y dentro de los países a lo largo del tiempo, lo que significa que las muertes por COVID-19 reportadas como una proporción de todas las muertes por COVID-19 también varían notablemente entre países y dentro de los países a lo largo del tiempo. Además, en muchos países de ingresos altos, las muertes por COVID-19 en personas mayores, especialmente en centros de atención a largo plazo, no se registraron en los primeros meses de la pandemia. En otros países, como Ecuador, Perú y la Federación de Rusia, la discrepancia entre las muertes informadas y los análisis de las tasas de mortalidad en comparación con las tasas de muerte esperadas, a veces denominadas "exceso de mortalidad", sugiere que la tasa total de mortalidad por COVID-19 es muchos múltiplos más grandes que los informes oficiales. La estimación de la tasa total de mortalidad por COVID-19 es importante tanto para modelar la dinámica de

transmisión de la enfermedad a fin de hacer mejores pronósticos, como para comprender los impulsores de epidemias más grandes y más pequeñas en diferentes países.

Nuestro enfoque para estimar la tasa de mortalidad total de COVID-19 se basa en la medición de la tasa de mortalidad en exceso durante la pandemia semana a semana en comparación con lo que se habría esperado en función de las tendencias y la estacionalidad pasadas. Sin embargo, la tasa de muerte en exceso no es igual a la tasa de muerte total de COVID-19. El exceso de mortalidad está influenciado por seis factores de mortalidad por todas las causas que se relacionan con la pandemia y los mandatos de distanciamiento social que vinieron con la pandemia. Estos seis factores son: a) la tasa total de muerte por COVID-19, es decir, todas las muertes directamente relacionadas con la infección por COVID-19; b) el aumento de la mortalidad debido al retraso o aplazamiento de la atención médica necesaria durante la pandemia; c) el aumento de la mortalidad debido al aumento de los trastornos de salud mental, incluida la depresión, el aumento del consumo de alcohol y el aumento del uso de opioides; d) la reducción de la mortalidad debido a la disminución de las lesiones debido a las reducciones generales de la movilidad asociadas a los mandatos de distanciamiento social; e) la reducción de la mortalidad debido a la reducción de la transmisión de otros virus, en particular la influenza, el virus sincitial respiratorio y el sarampión; y f) las reducciones en la mortalidad debido a algunas afecciones crónicas, como las enfermedades cardiovasculares y las enfermedades respiratorias crónicas, que ocurren cuando las personas frágiles que habrían muerto a causa de estas afecciones fallecieron antes de COVID-19. Para estimar correctamente la mortalidad total por COVID-19, debemos tener en cuenta los seis factores de cambio en la mortalidad que han ocurrido desde el inicio de la pandemia.

Nuestro análisis sigue cuatro pasos clave. En primer lugar, para todos los lugares donde se ha informado de mortalidad semanal o mensual por todas las causas desde el inicio de la pandemia, estimamos cuánto aumentó la mortalidad en comparación con la tasa de mortalidad esperada. En otras palabras, estimamos el exceso de mortalidad en todas las localidades con datos suficientes. En segundo lugar, sobre la base de una variedad de estudios y la consideración de otra evidencia, estimamos la fracción de exceso de mortalidad que proviene del total de muertes por COVID-19 en comparación con los otros cinco factores que influyen en el exceso de mortalidad. En tercer lugar, construimos un modelo estadístico que predice la proporción semanal entre las muertes totales por COVID-19 y las muertes por COVID-19 informadas en función de las covariables y los efectos espaciales. En cuarto lugar, usamos esta relación estadística para predecir la proporción entre el total de muertes por COVID-19 reportadas en lugares sin datos sobre el total de muertes por COVID-19 y luego multiplicamos las muertes por COVID-19 reportadas por esta proporción para generar estimaciones del total de muertes por COVID-19. para todas las ubicaciones.

COVID-19 Results Briefing

The Region of the Americas

May 13, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 in the Region of the Americas. The model was run on May 12, 2021 with data through May 10, 2021.

Current situation

- Daily reported cases in the last week decreased to 170,800 per day on average compared to 190,700 the week before (Figure 1).
- Daily deaths in the last week decreased to 6,400 per day on average compared to 7,300 the week before (Figure 2). This makes COVID-19 the number 1 cause of death in the Region of the Americas this week (Table 1).
- The daily death rate is greater than 4 per million in 13 countries (Figure 3).
- We estimated that 35% of people in the Region of the Americas have been infected as of May 10 (Figure 5).
- Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 48 countries (Figure 6).
- The infection-detection rate in the Region of the Americas was close to 21% on May 10 (Figure 7).

Trends in drivers of transmission

- Mobility last week was 21% lower than the pre-COVID-19 baseline (Figure 10). Mobility was near baseline (within 10%) in El Salvador, Haiti, Honduras, and Nicaragua. Mobility was lower than 30% of baseline in Argentina, Canada, Chile, Costa Rica, Ecuador, Panama, Peru, and Trinidad and Tobago.
- As of May 10, we estimated that 74% of people always wore a mask when leaving their home compared to 74% last week (Figure 12). Mask use was lower than 50% in Barbados, Haiti, and Saint Lucia.
- There were 182 diagnostic tests per 100,000 people on May 10 (Figure 14).
- In the Region of the Americas 80.7% of people say they would accept or would probably accept a vaccine for COVID-19. This is up by 0.1 percentage points from last week. The fraction of the population who are open to receiving a COVID-19 vaccine ranges from 41% in Haiti to 92% in Brazil (Figure 18).
- In our current reference scenario, we expect that 1068.50 million people will be vaccinated by September 1 (Figure 19).

Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects 3,194,000 cumulative deaths on September 1, 2021. This represents 529,000 additional deaths from May 10 to September 1 (Figure 20). Daily deaths are expected to decline steadily until September 1 (Figure 21).
- If **universal mask coverage (95%)** were attained in the next week, our model projects 103,000 fewer cumulative deaths compared to the reference scenario on September 1, 2021 (Figure 20).
- Under our **worse scenario**, our model projects 3,634,000 cumulative deaths on September 1, 2021, an additional 440,000 deaths compared to our reference scenario (Figure 20).
- By September 1, we project that 310,900 lives will be saved by the projected vaccine rollout.
- Figure 23 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.
- At some point from May through September 1, 17 countries will have high or extreme stress on hospital beds (Figure 24). At some point from May through September 1, 27 countries will have high or extreme stress on ICU capacity (Figure 25).

Model updates

In the IHME estimation of COVID-19 infections, hospitalizations, and deaths to date, we have used officially reported COVID-19 deaths for nearly all locations. As of last week, we are switching to a new approach that relies on the estimation of total mortality due to COVID-19. There are several reasons that have led us to adopt this new approach. These reasons include the fact that testing capacity varies markedly across countries and within countries over time, which means that the reported COVID-19 deaths as a proportion of all deaths due to COVID-19 also vary markedly across countries and within countries over time. In addition, in many high-income countries, deaths from COVID-19 in older individuals, especially in long-term care facilities, went unrecorded in the first few months of the pandemic. In other countries, such as Ecuador, Peru, and the Russian Federation, the discrepancy between reported deaths and analyses of death rates compared to expected death rates, sometimes referred to as “excess mortality,” suggests that the total COVID-19 death rate is many multiples larger than official reports. Estimating the total COVID-19 death rate is important both for modeling the transmission dynamics of the disease to make better forecasts, and also for understanding the drivers of larger and smaller epidemics across different countries.

Our approach to estimating the total COVID-19 death rate is based on measurement of the excess death rate during the pandemic week by week compared to what would have been expected based on past trends and seasonality. However, the excess death rate does not equal the total COVID-19 death rate. Excess mortality is influenced by six drivers of all-cause mortality that relate to the pandemic and the social distancing mandates that came with the pandemic. These six drivers are: a) the total COVID-19 death rate, that is, all deaths directly related to COVID-19 infection; b) the increase in mortality due to needed health care being delayed or deferred during the pandemic; c) the increase in mortality due to increases in mental health disorders including depression, increased alcohol use, and increased opioid use; d) the reduction in mortality due to decreases in injuries because of general reductions in mobility associated with social distancing mandates; e) the reductions in mortality due to reduced transmission of other viruses, most notably influenza, respiratory syncytial virus, and measles; and f) the reductions in mortality due to some chronic conditions, such as cardiovascular disease and chronic respiratory disease, that occur when frail individuals who would have died from these conditions died earlier from COVID-19 instead. To correctly estimate the total COVID-19 mortality, we need to take into account all six of these drivers of change in mortality that have happened since the onset of the pandemic.

Our analysis follows four key steps. First, for all locations where weekly or monthly all-cause mortality has been reported since the start of the pandemic, we estimate how much mortality increased compared to the expected death rate. In other words, we estimate excess mortality in all locations with sufficient data. Second, based on a range of studies and consideration of other evidence, we estimate the fraction of excess mortality that is from total COVID-19 deaths as opposed to the five other drivers that influence excess mortality. Third, we build a statistical model that predicts the weekly ratio of total COVID-19 deaths to reported COVID-19 deaths based on covariates and spatial effects. Fourth, we use this statistical relationship to predict the ratio of total to reported COVID-19 deaths in places without data on total COVID-19 deaths and then multiply the reported COVID-19 deaths by this ratio to generate estimates of total COVID-19 deaths for all locations.

Figure 1. Reported daily COVID-19 cases

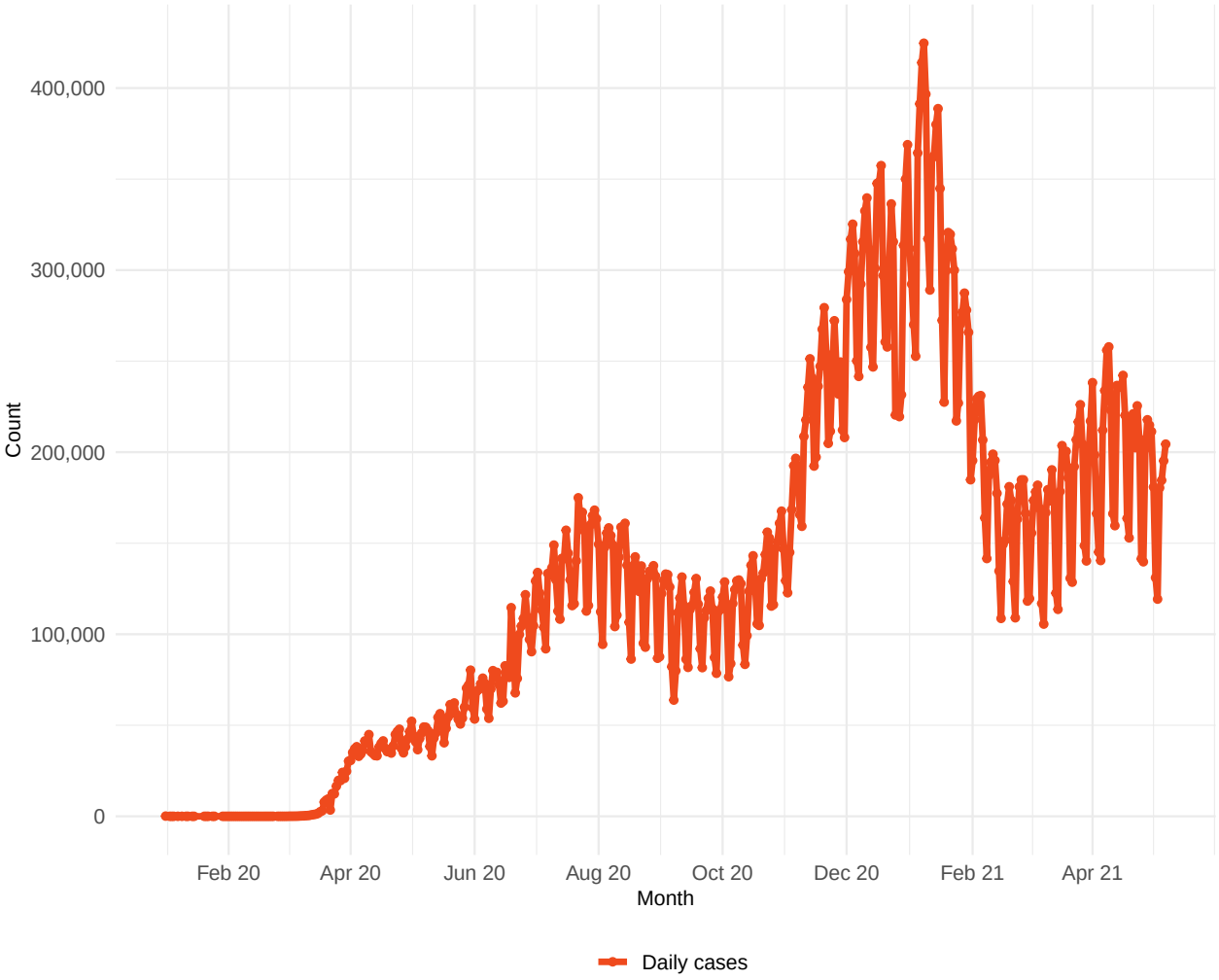


Table 1. Ranking of COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
COVID-19	45,094	1
Ischemic heart disease	22,182	2
Stroke	10,124	3
Chronic obstructive pulmonary disease	7,401	4
Tracheal, bronchus, and lung cancer	6,369	5
Lower respiratory infections	6,211	6
Chronic kidney disease	6,184	7
Alzheimer's disease and other dementias	5,890	8
Diabetes mellitus	5,822	9
Cirrhosis and other chronic liver diseases	4,153	10

Figure 2. Smoothed trend estimate of reported daily COVID-19 deaths (blue) and total daily COVID-19 deaths (orange).

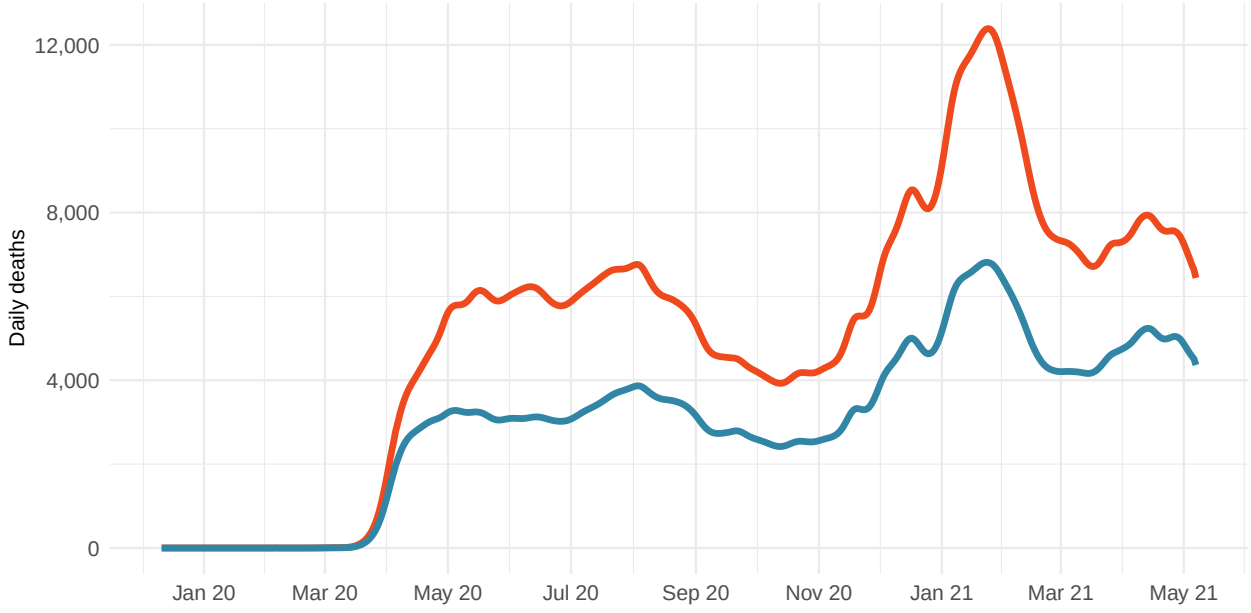


Figure 3. Daily COVID-19 death rate per 1 million on May 10, 2021

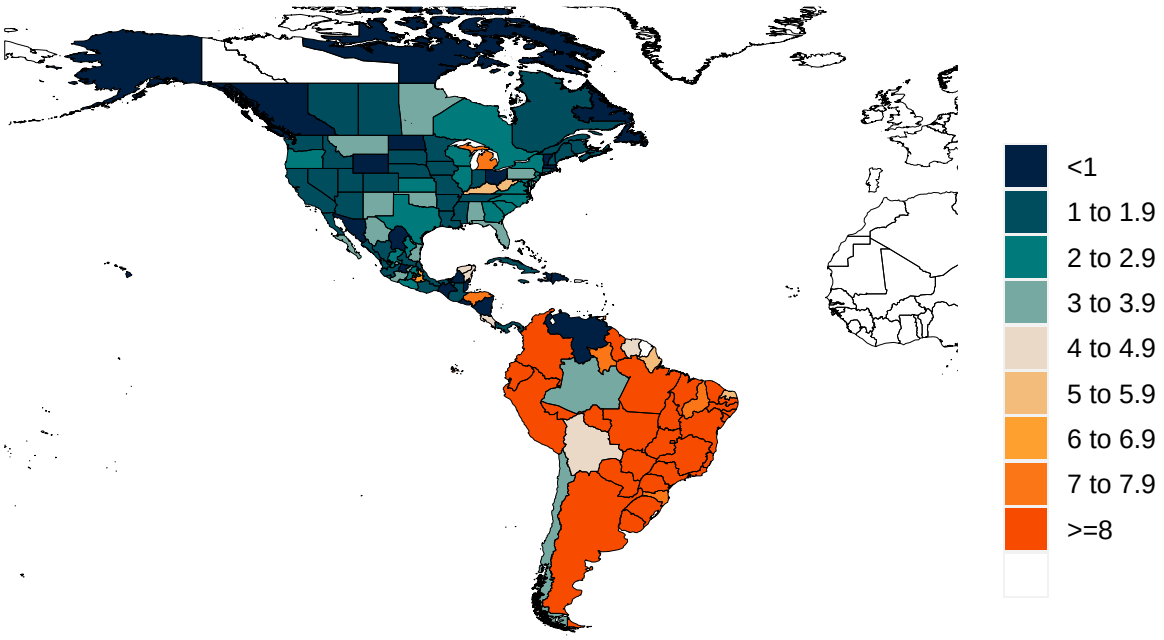


Figure 4. Cumulative COVID-19 deaths per 100,000 on May 10, 2021

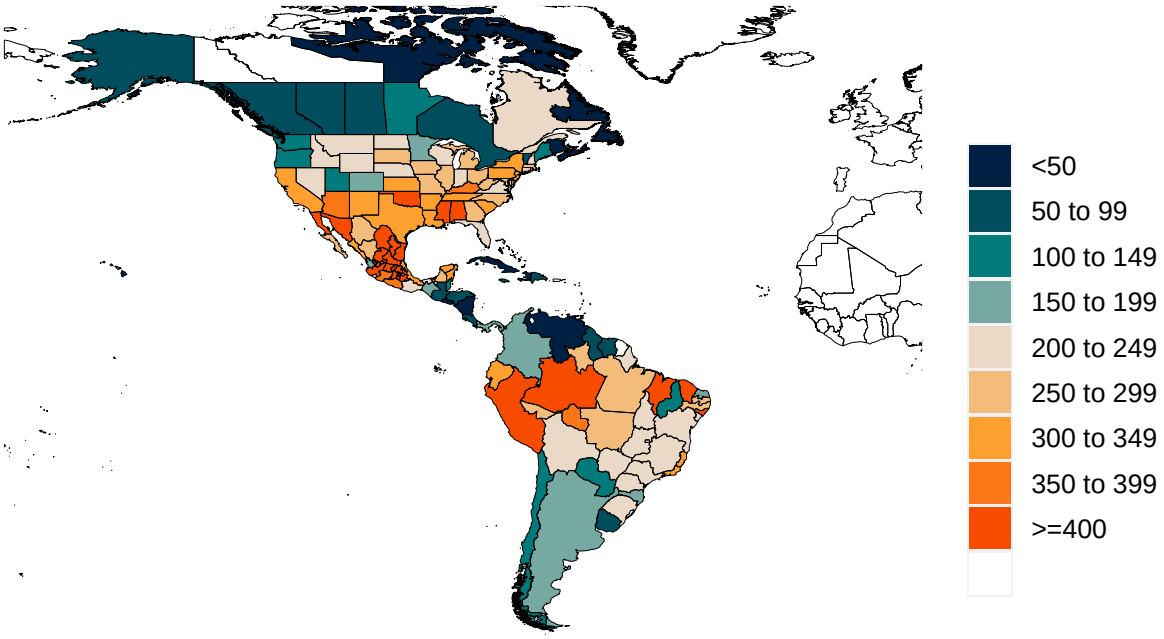


Figure 5. Estimated percent of the population infected with COVID-19 on May 10, 2021

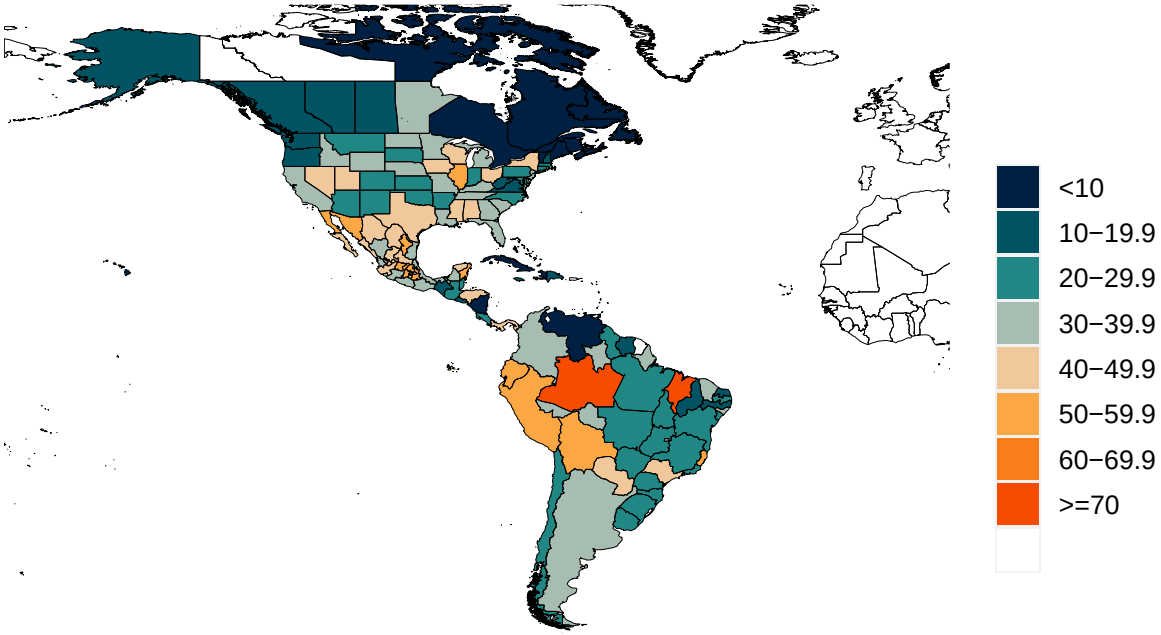


Figure 6. Mean effective R on April 29, 2021. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past. Effective R less than 1 means that transmission should decline, all other things being held the same.

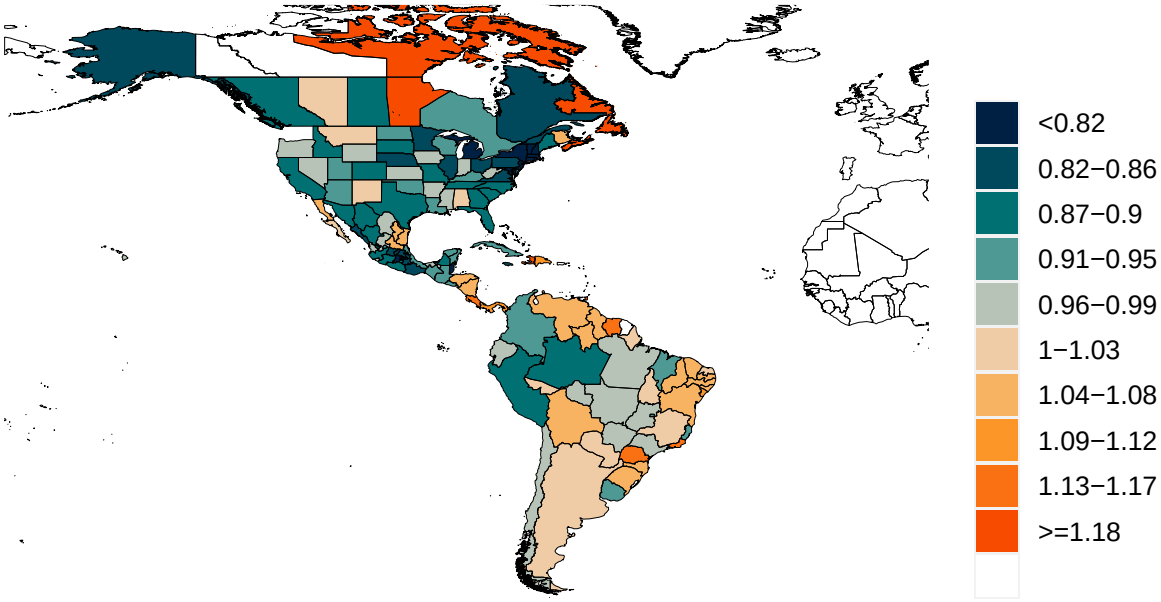
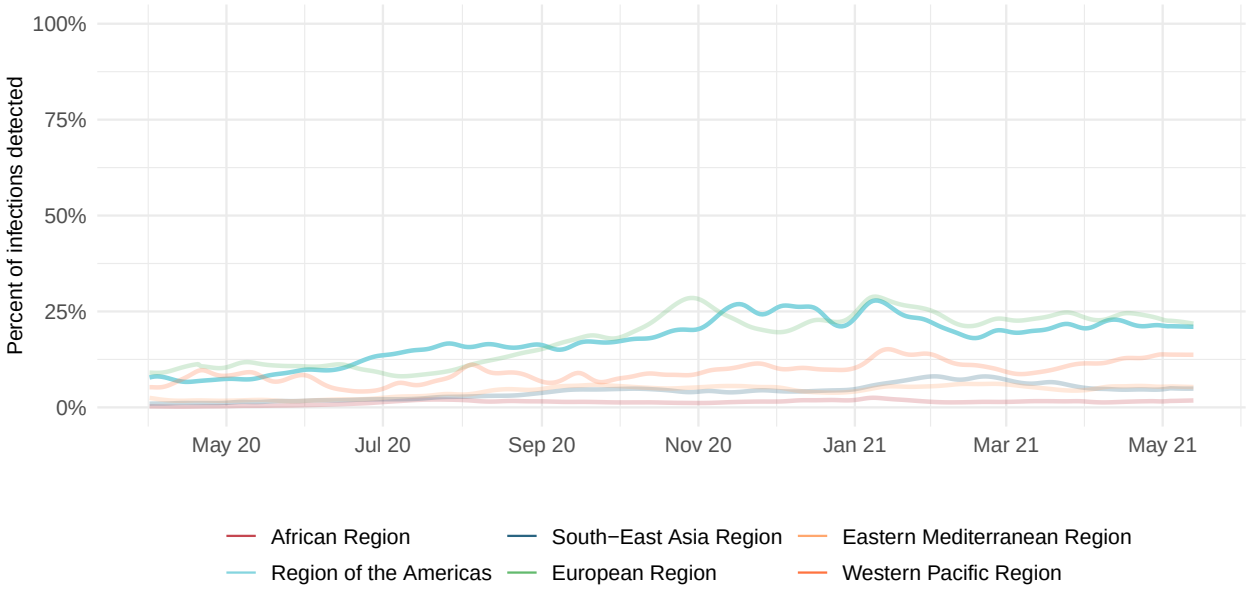


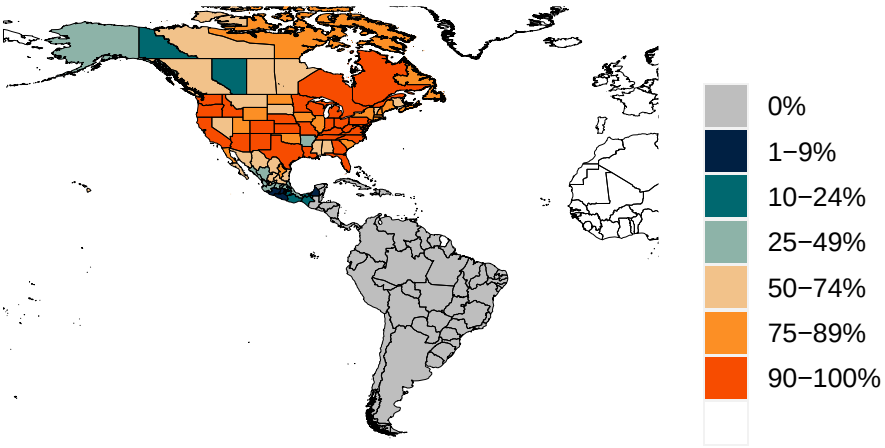
Figure 7. Percent of COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model.



*Due to measurement errors in cases and testing rates, the infection to detection rate (IDR) can exceed 100% at particular points in time.

Figure 8. Estimated percent of circulating SARS-CoV-2 for 3 primary variants on May 10, 2021.

A. Estimated percent B.1.1.7 variant



B. Estimated percent B.1.351 or B.1.617 variant

C. Estimated percent P.1 or P.3 variant

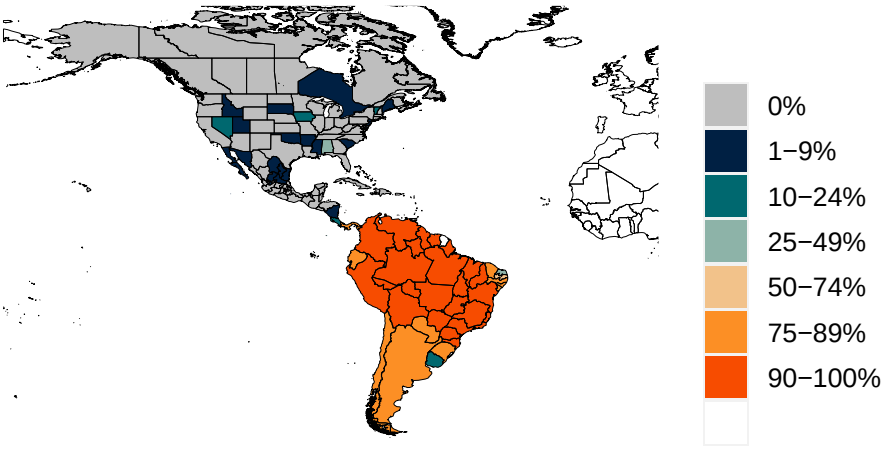
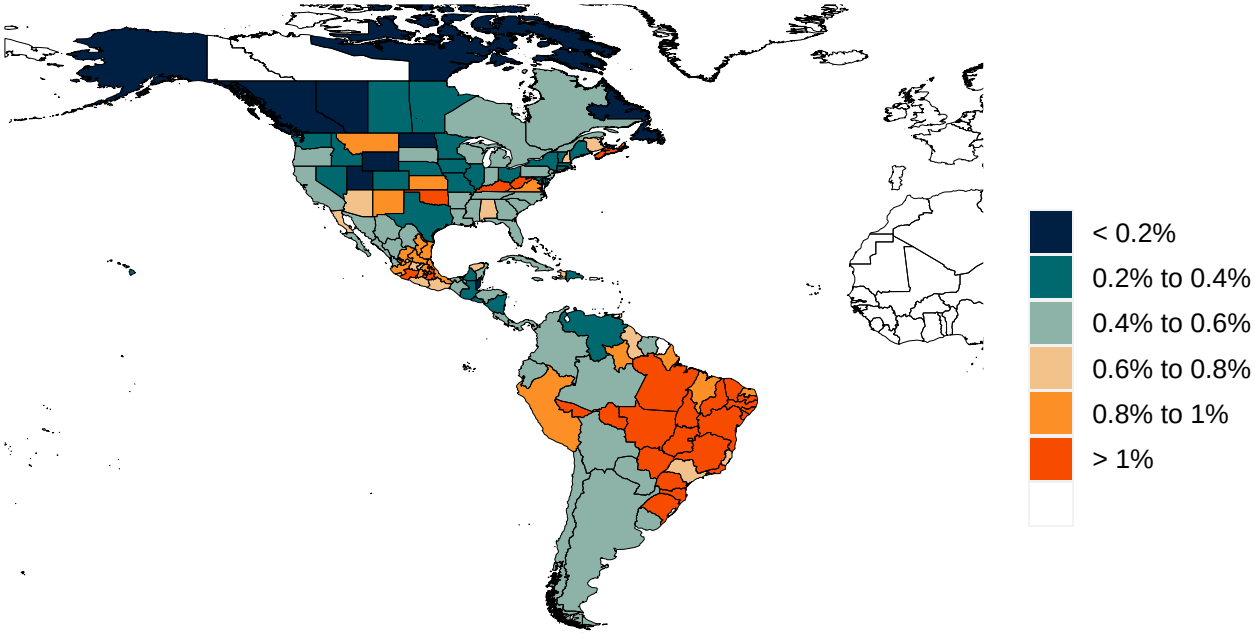


Figure 9. Infection fatality ratio on May 10, 2021. This is estimated as the ratio of COVID-19 deaths to infections based on the SEIR disease transmission model.



Critical drivers

Table 2. Current mandate implementation

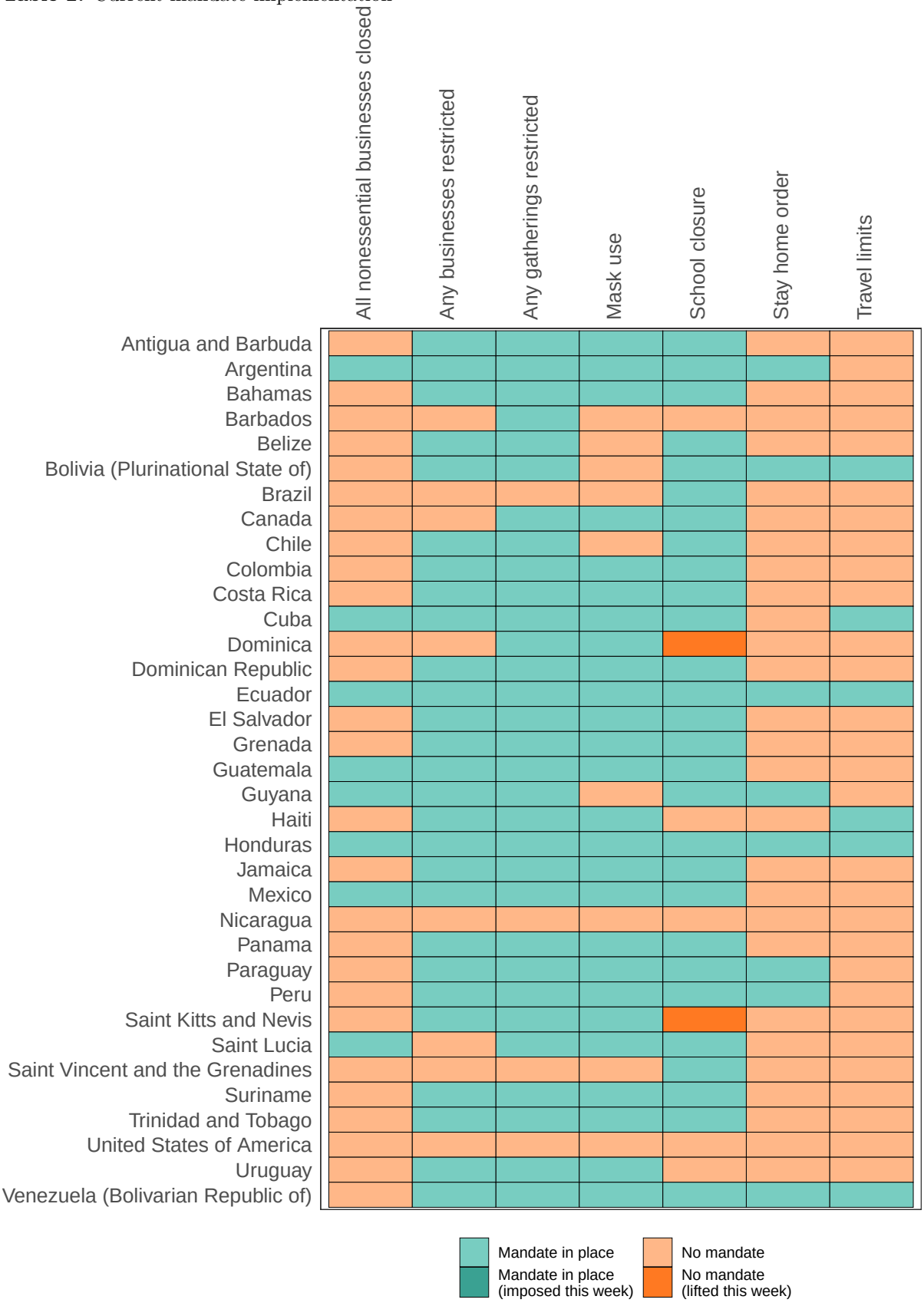


Figure 10. Trend in mobility as measured through smartphone app use compared to January 2020 baseline

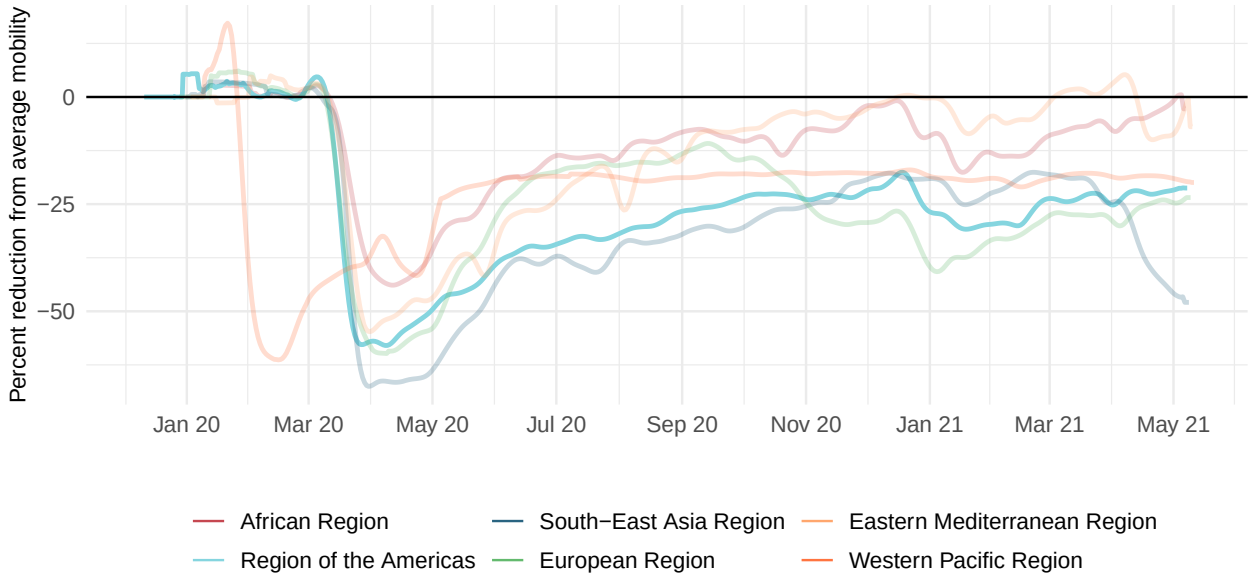


Figure 11. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on May 10, 2021

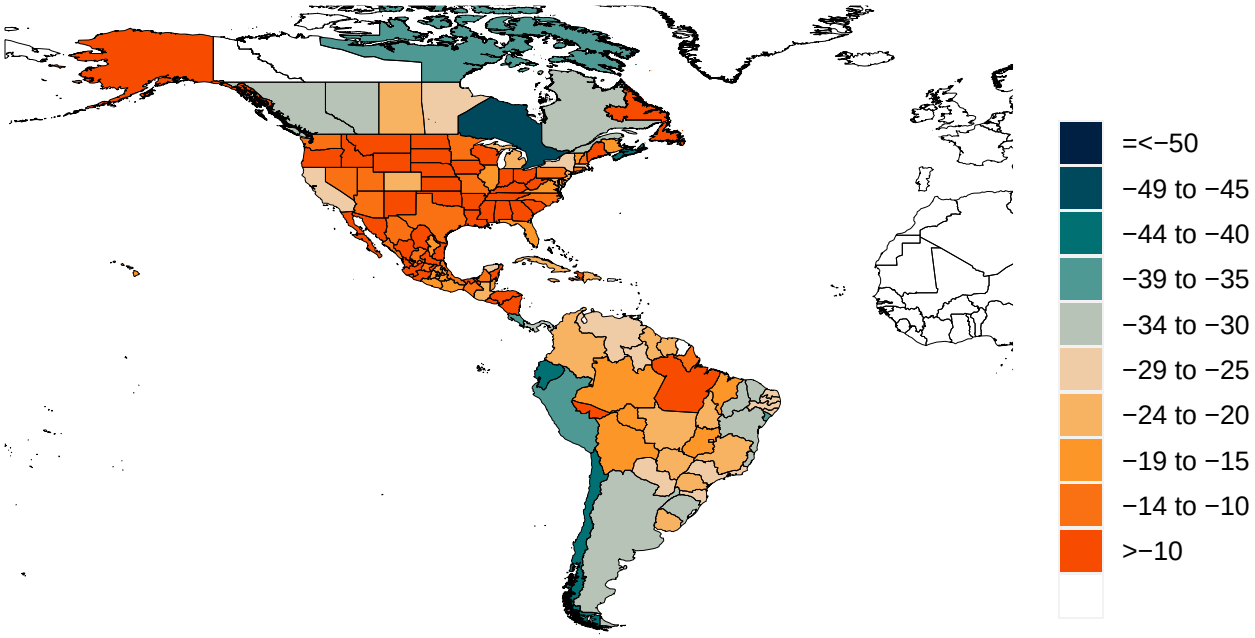


Figure 12. Trend in the proportion of the population reporting always wearing a mask when leaving home

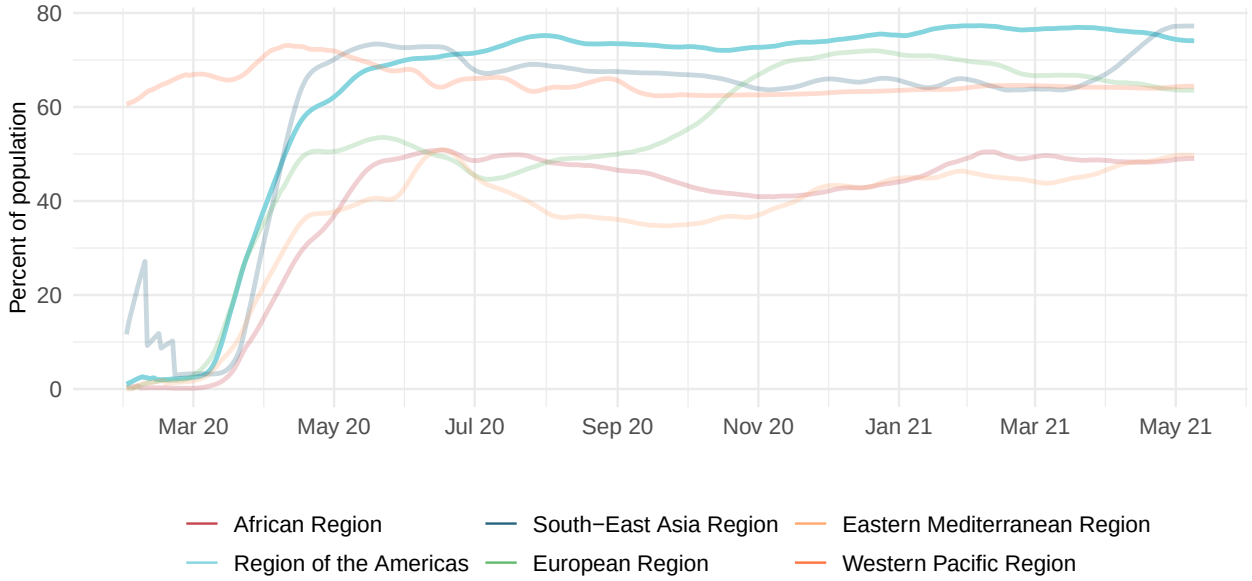


Figure 13. Proportion of the population reporting always wearing a mask when leaving home on May 10, 2021

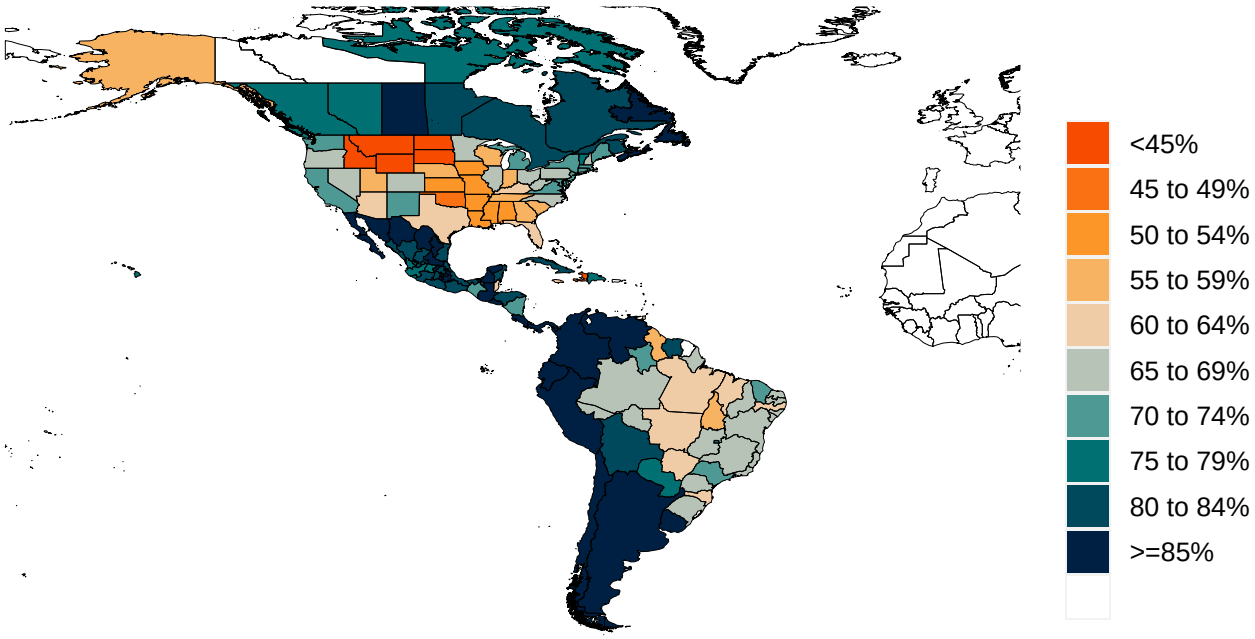


Figure 14. Trend in COVID-19 diagnostic tests per 100,000 people

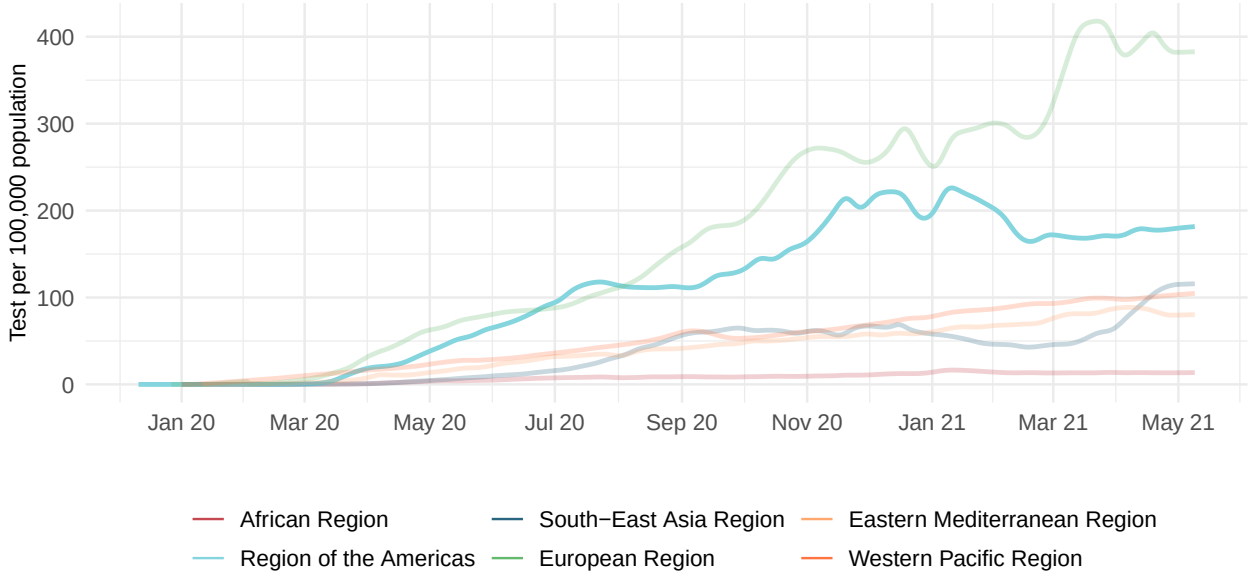


Figure 15. COVID-19 diagnostic tests per 100,000 people on May 02, 2021

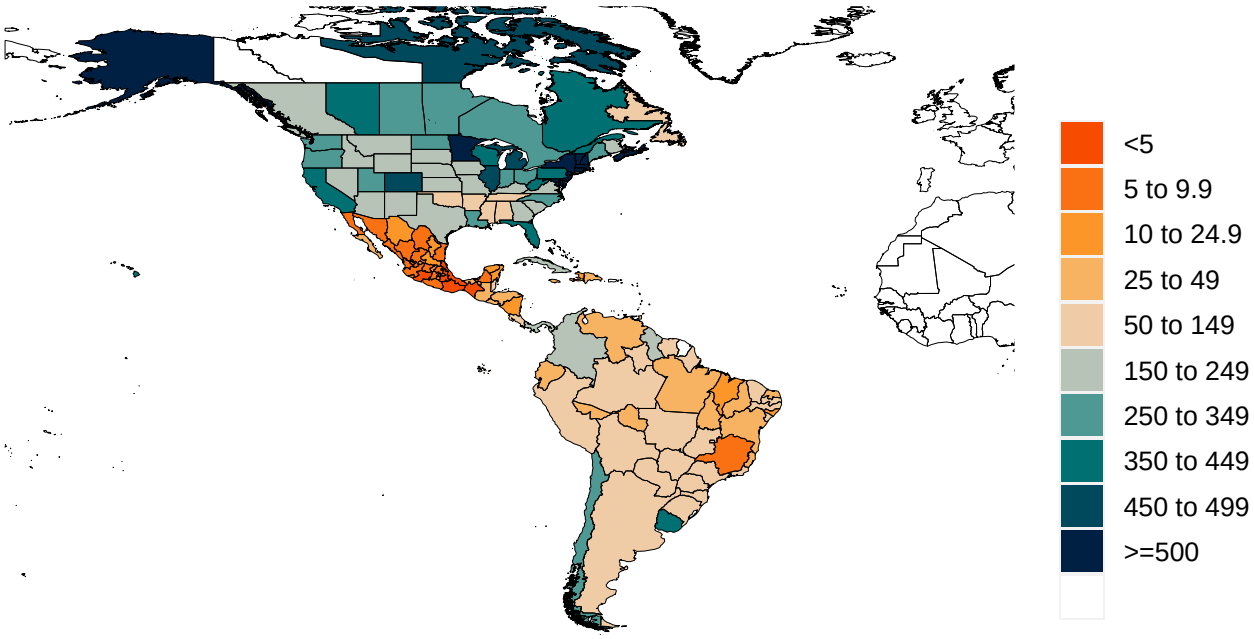


Figure 16. Increase in the risk of death due to pneumonia on February 1 2020 compared to August 1 2020

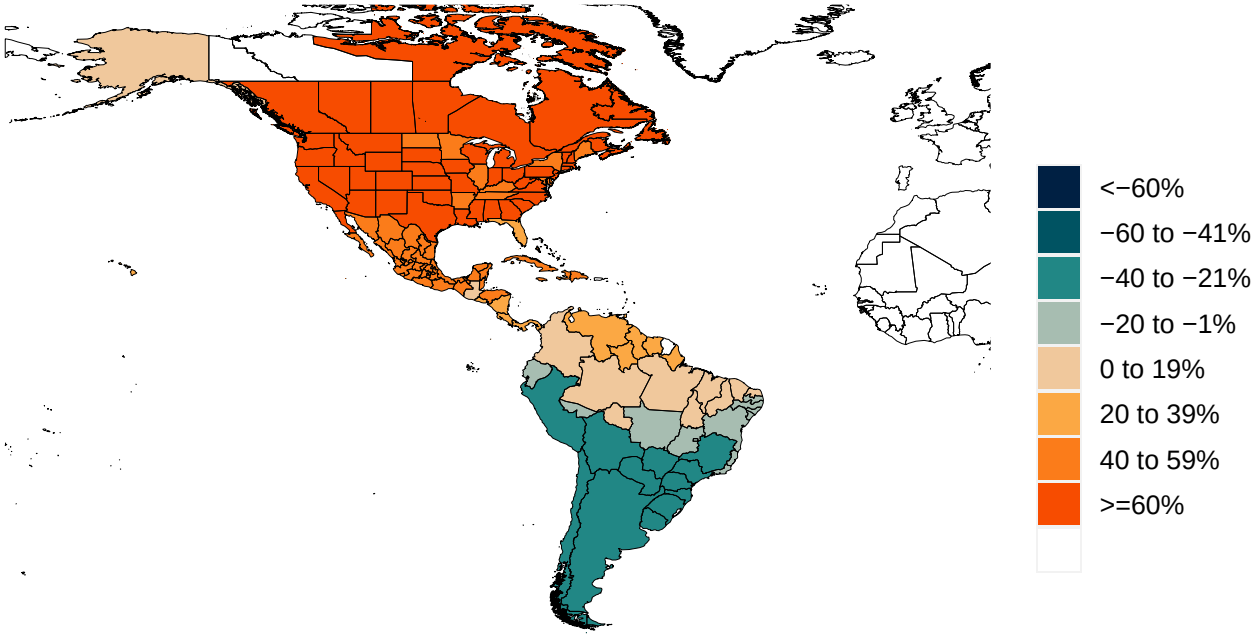


Table 3. The SEIR model uses variant-specific estimates of vaccine efficacy at preventing symptomatic disease and at preventing infection. We use data from clinical trials directly, where available, and make estimates otherwise. More information can be found on our website (http://www.healthdata.org/node/8584).

Vaccine	Efficacy at preventing disease: D614G & B.1.1.7	Efficacy at preventing infection: D614G & B.1.1.7	Efficacy at preventing disease: B.1.351 & P.1	Efficacy at preventing infection: B.1.351 & P.1
AstraZeneca	75%	52%	10%	6%
CoronaVac	50%	43%	38%	25%
Janssen	72%	72%	64%	42%
Moderna	94%	85%	72%	47%
Novavax	89%	77%	49%	32%
Pfizer/BioNTech	91%	86%	69%	45%
Sinopharm	73%	63%	56%	36%
Sputnik-V	92%	80%	70%	45%
Tianjin CanSino	66%	57%	50%	32%
Other vaccines	75%	65%	57%	37%
Other vaccines (mRNA)	95%	83%	72%	47%

Figure 17. Trend in the estimated proportion of the adult (18+) population that have been vaccinated or is open to receiving a COVID-19 vaccine based on Facebook survey responses (yes and yes, probably).

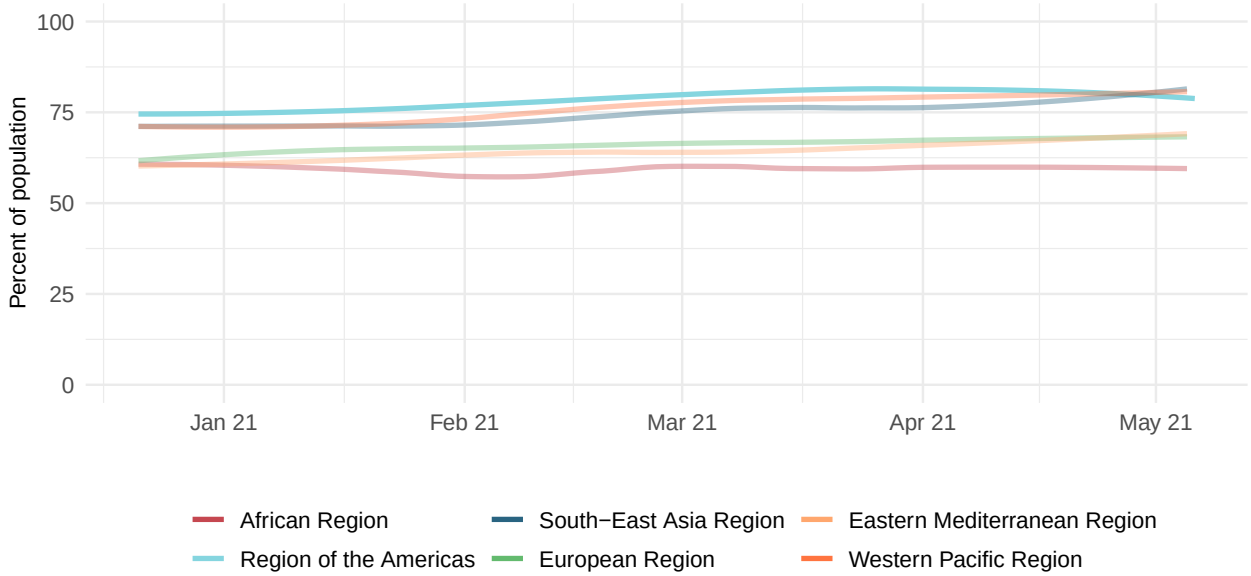


Figure 18. This figure shows the estimated proportion of the adult (18+) population that has been vaccinated or is open to receiving a COVID-19 vaccine based on Facebook survey responses (yes and yes, probably).

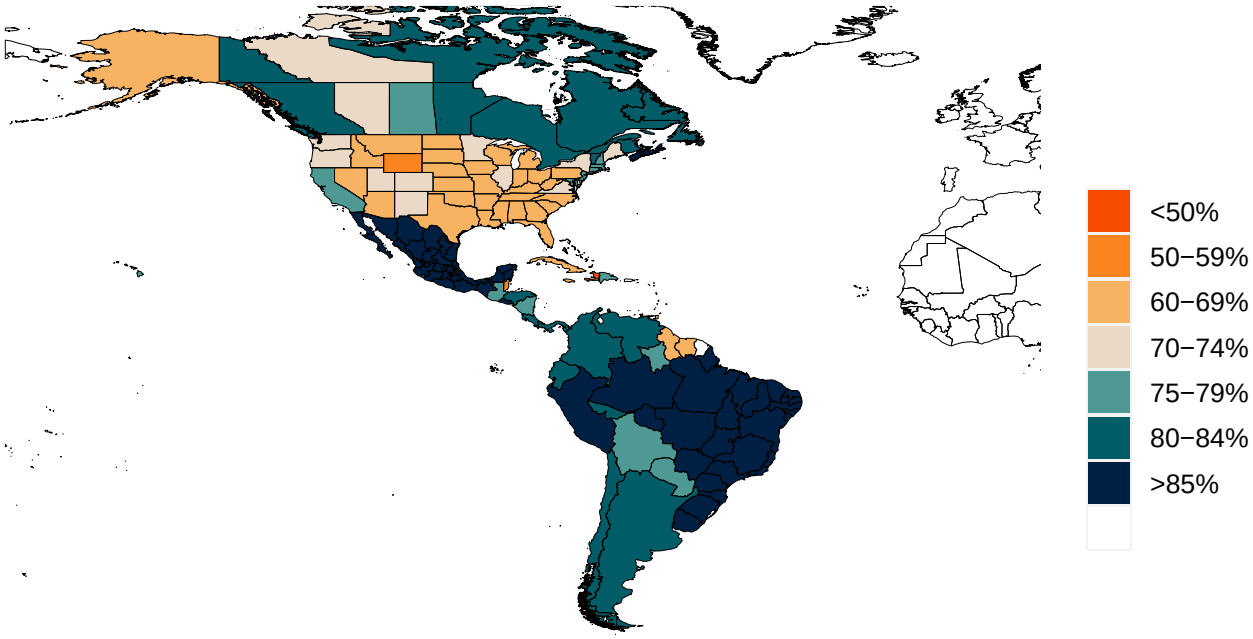
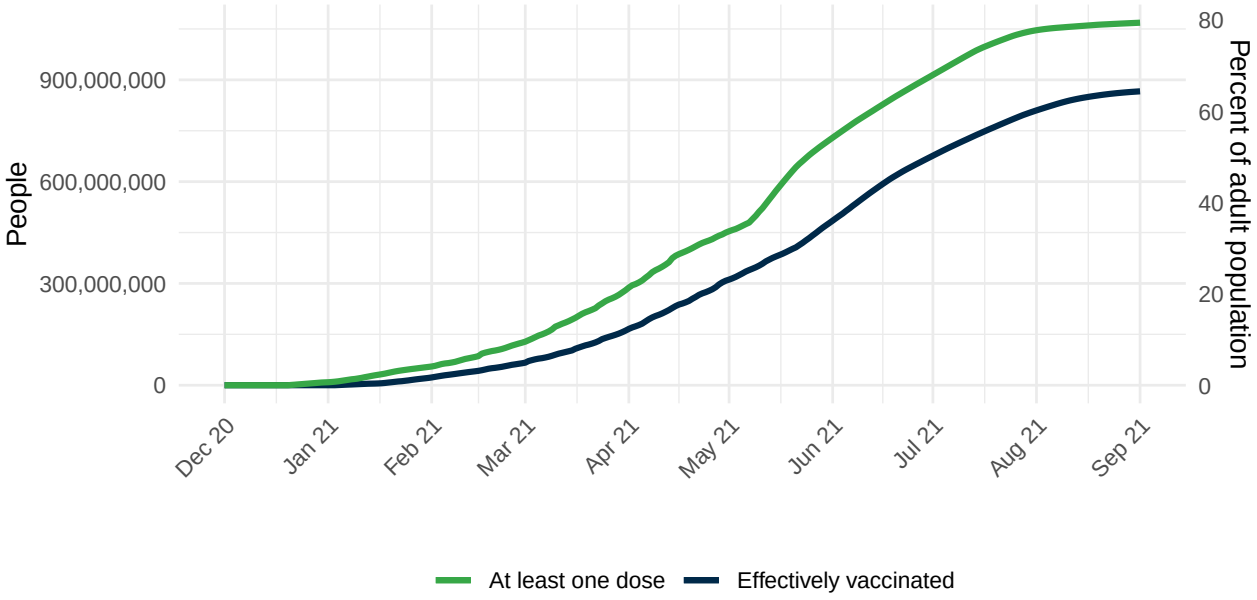


Figure 19. The number of people who receive any vaccine and those who are effectively vaccinated and protected against disease, accounting for efficacy, loss to follow up for two-dose vaccines, partial immunity after one dose, and immunity after two doses.



Projections and scenarios

We produce three scenarios when projecting COVID-19. The **reference scenario** is our forecast of what we think is most likely to happen:

- Vaccines are distributed at the expected pace.
- Governments adapt their response by re-imposing social distancing mandates for 6 weeks whenever daily deaths reach 8 per million, unless a location has already spent at least 7 of the last 14 days with daily deaths above this rate and not yet re-imposed social distancing mandates. In this case, the scenario assumes that mandates are re-imposed when daily deaths reach 15 per million.
- Variants B.1.1.7 (first identified in the UK), B.1.351 (first identified in South Africa), and P1 (first identified in Brazil) continue to spread from locations with (a) more than 5 sequenced variants, and (b) reports of community transmission, to adjacent locations following the speed of variant scale-up observed in the regions of the UK.
- In one-quarter of those vaccinated, mobility increases toward pre-COVID-19 levels.

The **worse scenario** modifies the reference scenario assumptions in three ways:

- First, it assumes that variants B.1.351 or P1 begin to spread within 3 weeks in adjacent locations that do not already have B.1.351 or P1 community transmission.
- Second, it assumes that all those vaccinated increase their mobility toward pre-COVID-19 levels.
- Third, it assumes that among those vaccinated, mask use starts to decline exponentially one month after completed vaccination.

The **universal masks scenario** makes all the same assumptions as the reference scenario but also assumes 95% of the population wear masks in public in every location.

Figure 20. Cumulative COVID-19 deaths until September 01, 2021 for three scenarios

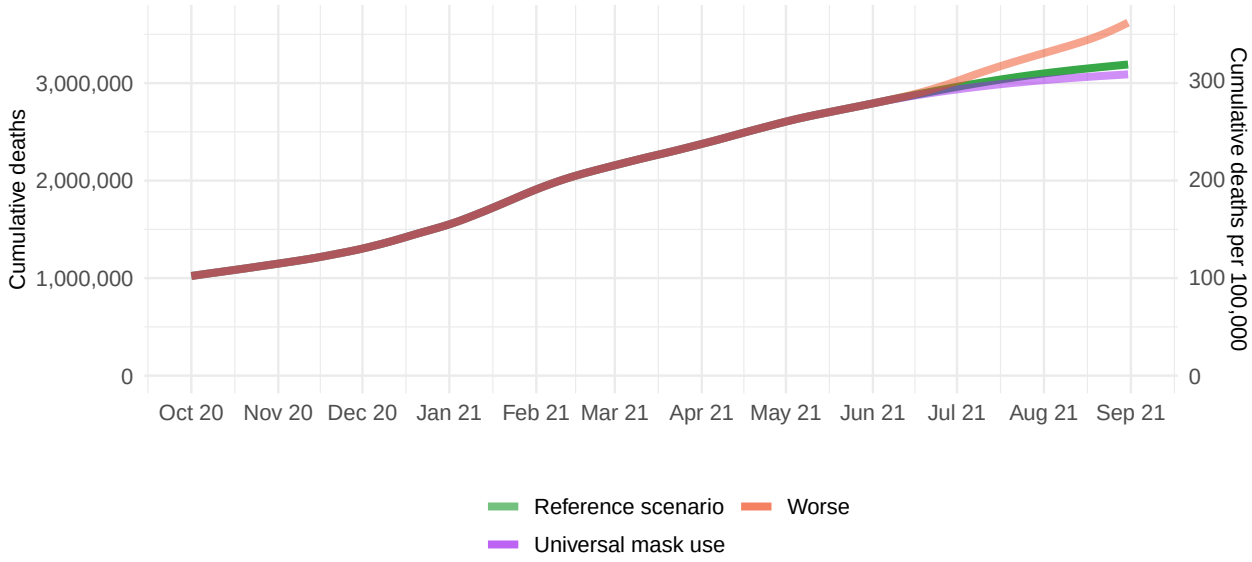


Figure 21. Daily COVID-19 deaths until September 01, 2021 for three scenarios,

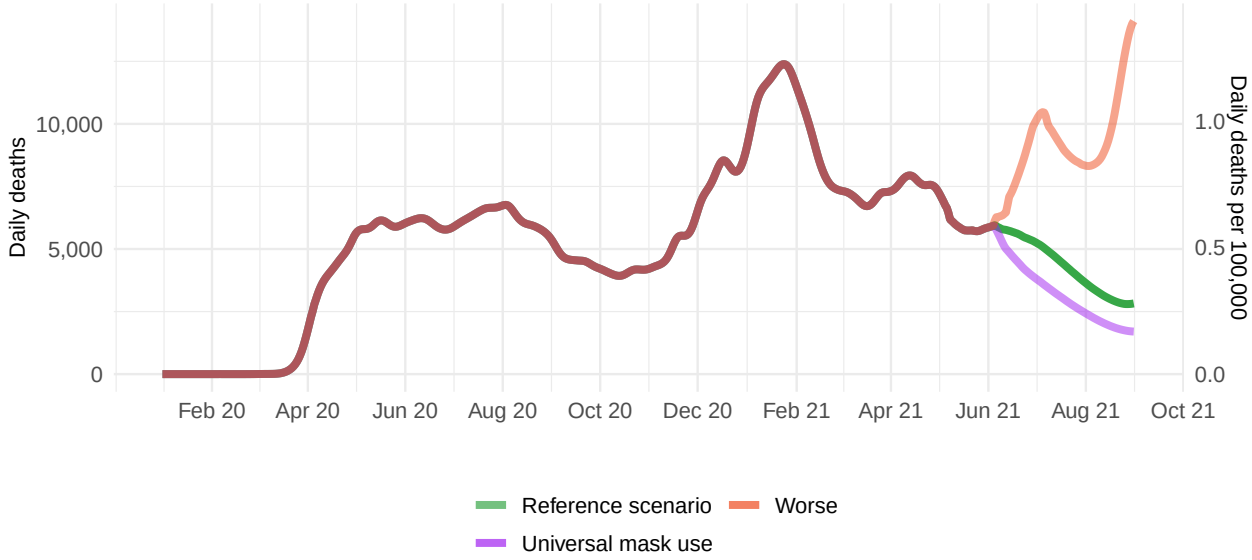


Figure 22. Daily COVID-19 infections until September 01, 2021 for three scenarios.

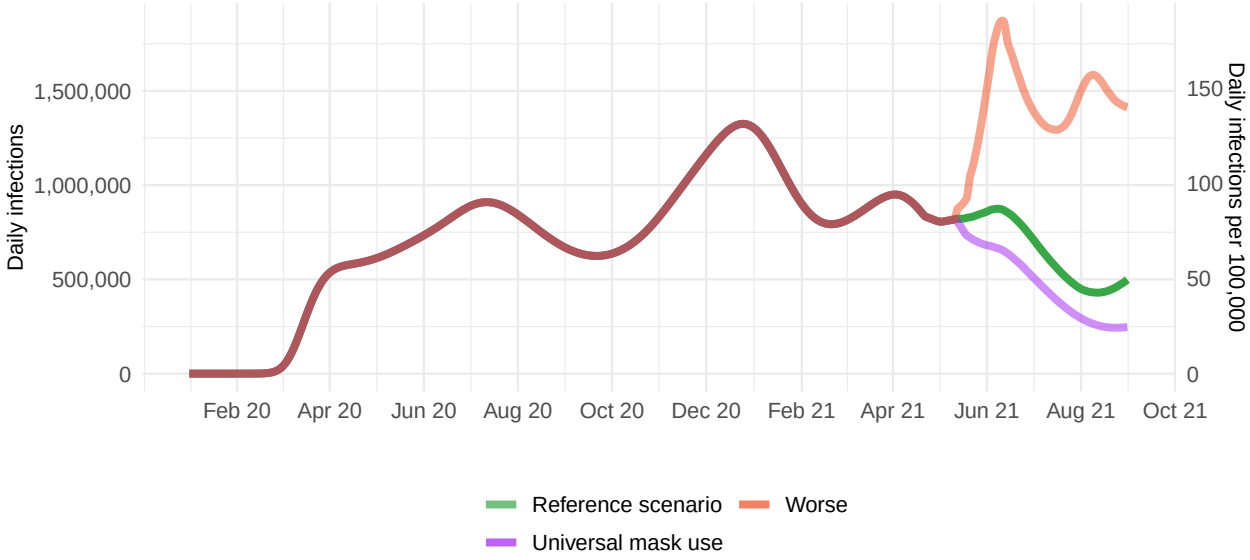


Figure 23. Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available: Delphi from the Massachussets Institute of Technology (Delphi; https://www.covidanalytics.io/home), Imperial College London (Imperial; https://www.covidsim.org), The Los Alamos National Laboratory (LANL; https://covid-19.bsvgateway.org/), and the SI-KJalpha model from the University of Southern California (SIKJalpha; https://github.com/scc-usc/ReCOVER-COVID-19). Daily deaths from other modeling groups are smoothed to remove inconsistencies with rounding. Regional values are aggregates from available locations in that region.

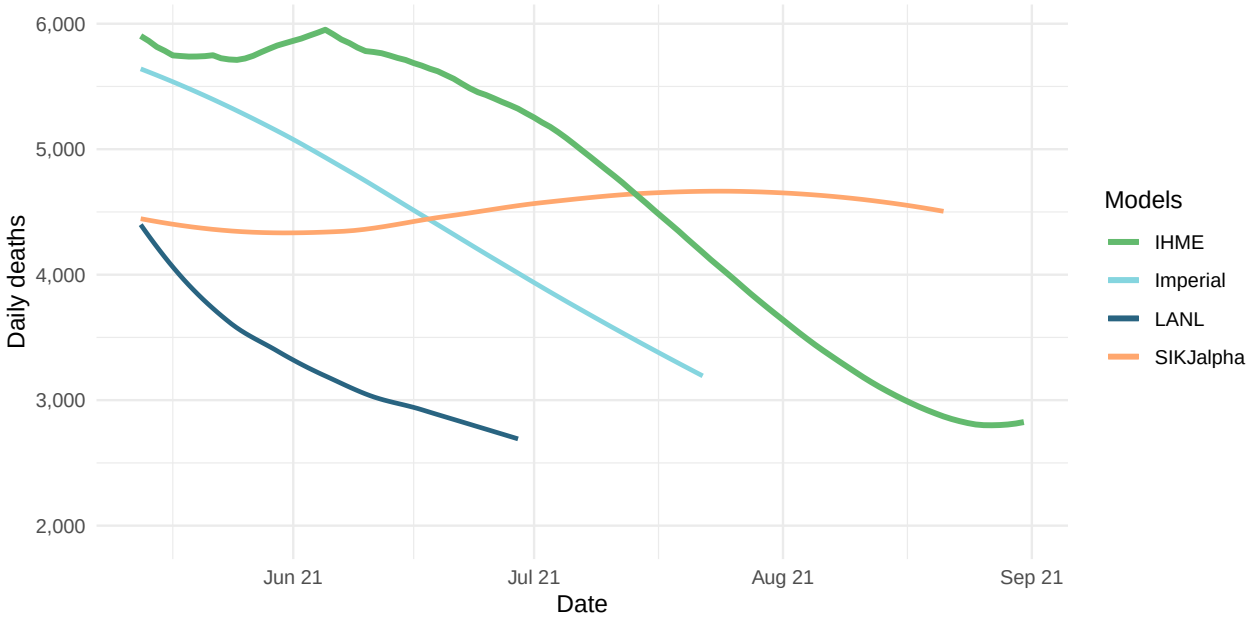


Figure 24. The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate stress*, 10-19% is considered *high stress*, and greater than 20% is considered *extreme stress*.

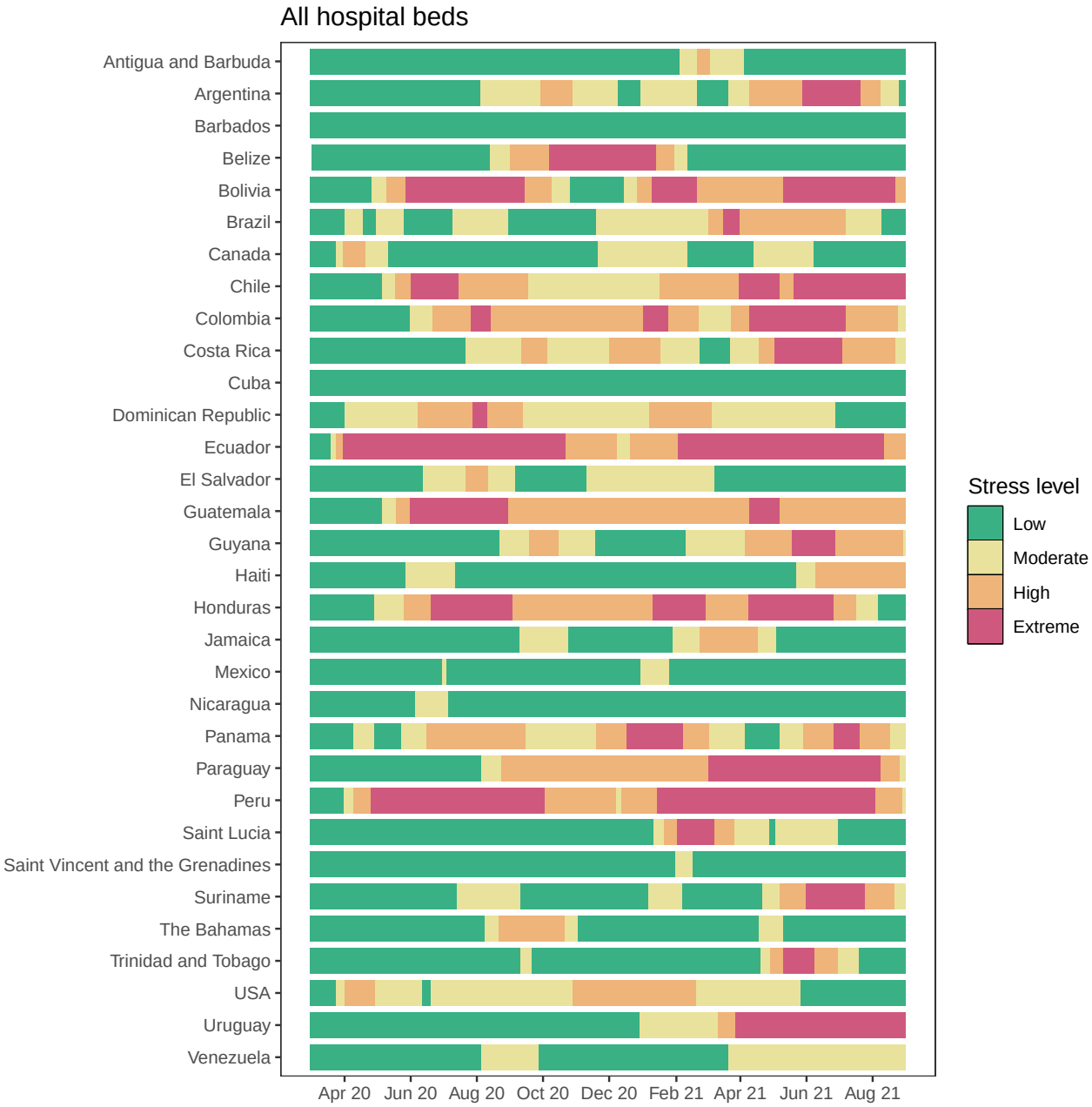
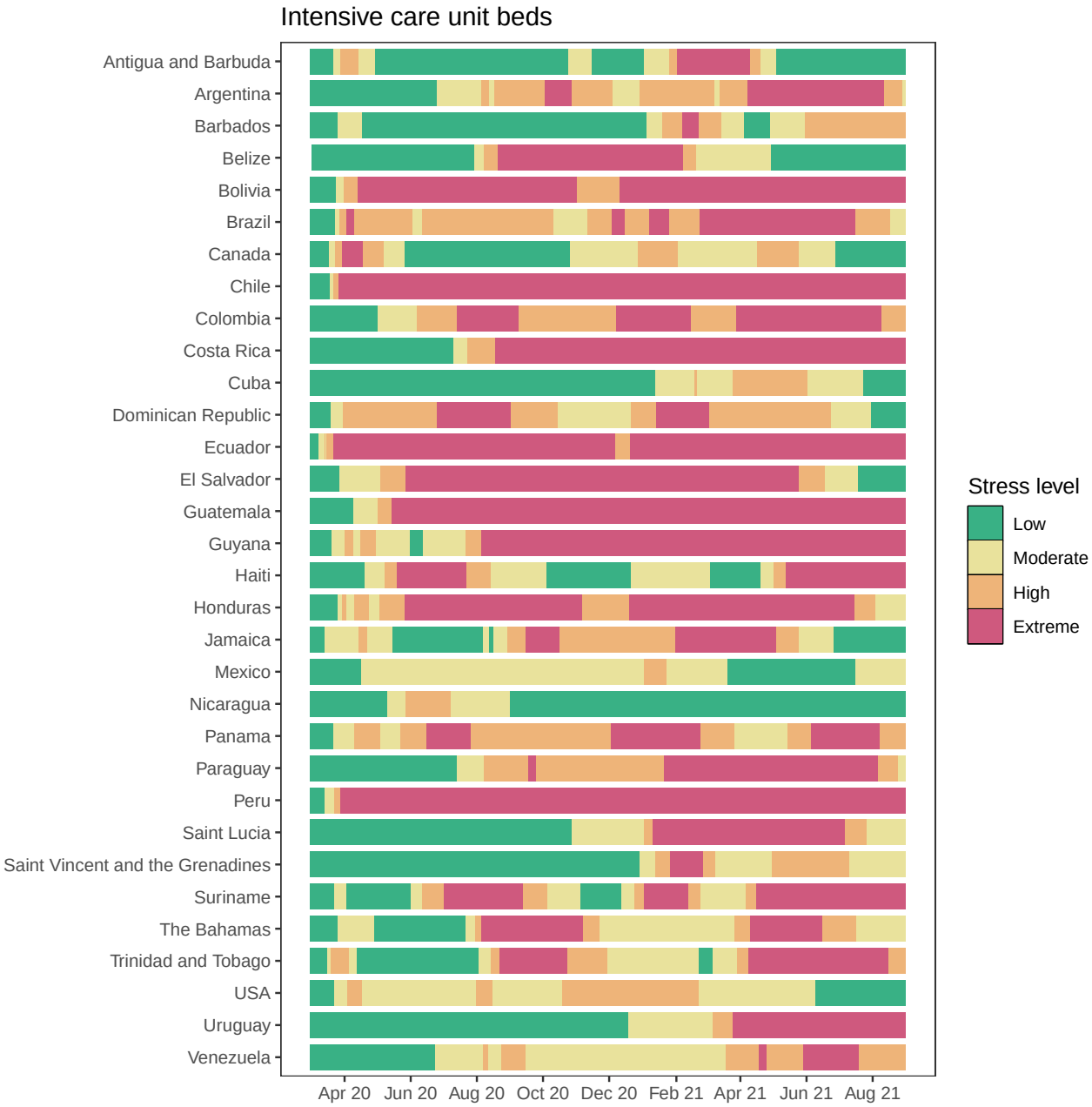


Figure 25. The estimated intensive care unit (ICU) usage is shown over time. The percent of ICU beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of ICU beds occupied by COVID-19 patients. Less than 10% is considered *low stress*, 10-29% is considered *moderate stress*, 30-59% is considered *high stress*, and greater than 60% is considered *extreme stress*.



More information

Data sources:

Mask use data sources include 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.

Vaccine hesitancy data are from the COVID-19 Beliefs, Behaviors, and Norms Study, a survey conducted on Facebook by the Massachusetts Institute of Technology (https://covidsurvey.mit.edu/).

Vaccine hesitancy data are from the Facebook Global Symptom Survey (This research is based on survey results from University of Maryland Social Data Science Center), the Facebook United States Symptom Survey (in collaboration with Carnegie Mellon University), and from the Facebook COVID-19 Beliefs, Behaviors, and Norms Study conducted by the Massachusetts Institute of Technology.

Genetic sequence and metadata are primarily from the GISAID Initiative. Further details available on the COVID-19 model FAQ page.

A note of thanks:

We wish to warmly acknowledge the support of these and others who have made our COVID-19 estimation efforts possible.

More information:

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.