Informe de resultados de COVID-19

México

08 de abril de 2021

Este documento contiene información resumida sobre las últimas proyecciones del modelo IHME sobre COVID-19 en México. El modelo se ejecutó el 6 de abril de 2021 con datos hasta el 5 de abril de 2021.

Situación actual

• Los casos notificados diariamente en la última semana disminuyeron a 3,400 por día en promedio en comparación con 3,800 la semana anterior (Figura 1).

• Las muertes diarias en la última semana disminuyeron a 440 por día en promedio en comparación con 480 la semana anterior (Figura 2). Esto convierte a COVID-19 en la causa número 1 de muerte en México esta semana (Tabla 1).

• La tasa de mortalidad diaria es superior a 4 por millón en Baja California Sur, Ciudad de México, Morelos, Puebla, Querétaro, San Luis Potosí, Sinaloa, Sonora, Tabasco y Yucatán (Figura 3).

• Estimamos que 36% de las personas en México han sido infectadas al 5 de abril (Figura 4).

• La R efectiva, calculada usando casos, hospitalizaciones y muertes, es mayor que 1 en 4 estados: Baja California Sur, Chihuahua, Tabasco y Quintana Roo (Figura 5).

• La tasa de detección de infecciones en México se acerca a 5% el 5 de abril (Figura 6).

Tendencias en los impulsores de la transmisión

• La movilidad la semana pasada fue 14% más baja que la línea de base anterior a COVID-19 (Figura 9). La movilidad estuvo cerca de la línea de base (dentro del 10%) en Baja California, Baja California Sur, Coahuila, Durango, Jalisco, Querétaro y Tlaxcala. Ningún estado presenta movilidad inferior a 30%.

• Al 5 de abril estimamos que 85% de las personas siempre usaban una mascarilla al salir de casa, sin cambios en comparación con la semana pasada (Figura 11). En ningún estado el uso de mascarillas fue inferior a 50%.

• Se realizaron 14 pruebas de diagnóstico por cada 100,000 personas el 5 de abril (Figura 13).

• En México, 89.8% 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 84%en Colima y 93% en Campeche (Figura 17).

• En nuestro escenario de referencia actual, esperamos que 83,17 millones estén vacunados para el 1 de agosto (Figura 18).

Proyecciones

• En nuestro escenario de referencia, que representa lo que creemos que es más probable que suceda, nuestro modelo proyecta 226,000 muertes acumuladas el 1 de agosto de 2021. Esto representa 21,000 muertes adicionales del 5 de abril al 1 de agosto (Figura 19). Se espera que las muertes diarias disminuyan de manera constante hasta el 1 de agosto (Figura 20).

• Si se alcanzara la cobertura universal de mascarillas (95%) en la próxima semana, nuestro modelo proyecta 1,800 muertes menos en comparación con el escenario de referencia el 1 de agosto de 2021 (Figura 19).

• En nuestro peor escenario, nuestro modelo proyecta 234,000 muertes acumuladas el 1 de agosto de 2021; 8,400 muertes adicionales en comparación con nuestro escenario de referencia (Figura 19).

• Para el 1 de agosto, proyectamos que se salvarán 11,300 vidas gracias al lanzamiento proyectado de la vacuna.

• La Figura 22 compara nuestros pronósticos de escenarios de referencia con otros modelos publicados. Aunque en los cuatro la tendencia es la misma son muy divergentes los resultados.

• En algún momento, desde abril hasta el 1 de agosto, ningún estado tendrán una presión alta o extrema en las camas de hospital (Figura 23), ni en camas de las UCI (Figura 24).

Actualizaciones de modelos

No hay actualizaciones importantes en el modelo esta semana.

COVID-19 Results Briefing

Mexico

April 08, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 in Mexico. The model was run on April 6, 2021, with data through April 5, 2021.

Current situation

- Daily reported cases in the last week decreased to 3,400 per day on average compared to 3,800 the week before (Figure 1).
- Daily deaths in the last week decreased to 440 per day on average compared to 480 the week before (Figure 2). This makes COVID-19 the number 1 cause of death in Mexico this week (Table 1).
- The daily death rate is greater than 4 per million in Baja California Sur, Mexico City, Morelos, Puebla, Querétaro, San Luis Potosí, Sinaloa, Sonora, Tabasco, and Yucatán (Figure 3).
- We estimated that 36% of people in Mexico have been infected as of April 5 (Figure 4).
- Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 4 states: Baja California Sur, Chihuahua, Tabasco, and Quintana Roo (Figure 5).
- The infection detection rate in Mexico was close to 5% on April 5 (Figure 6).

Trends in drivers of transmission

- Mobility last week was 14% lower than the pre-COVID-19 baseline (Figure 9). Mobility was near baseline (within 10%) in Baja California, Baja California Sur, Coahuila, Durango, Jalisco, Querétaro, and Tlaxcala. Mobility was lower than 30% of baseline in no locations.
- As of April 5, we estimated that 85% of people always wore a mask when leaving their home, unchanged from last week (Figure 11). Mask use was lower than 50% in no states.
- There were 14 diagnostic tests per 100,000 people on April 5 (Figure 13).
- In Mexico, 89.8% 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 84% in Colima to 93% in Campeche (Figure 17).
- In our current reference scenario, we expect that 83.17 million will be vaccinated by August 1 (Figure 18).

Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects 226,000 cumulative deaths on August 1, 2021. This represents 21,000 additional deaths from April 5 to August 1 (Figure 19). Daily deaths are expected to decline steadily until August 1 (Figure 20).
- If **universal mask coverage (95%)** were attained in the next week, our model projects 1,800 fewer cumulative deaths compared to the reference scenario on August 1, 2021 (Figure 19).
- Under our **worse scenario**, our model projects 234,000 cumulative deaths on August 1, 2021, an additional 8,400 deaths compared to our reference scenario (Figure 19).
- By August 1, we project that 11,300 lives will be saved by the projected vaccine rollout.
- Figure 22 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.
- At some point from April through August 1, one state will have high or extreme stress on hospital beds (Figure 23). Between April and August 1, no states will have high or extreme stress on ICU capacity (Figure 24).

Model updates

There are no major updates in the model this week.

Figure 1. Reported daily COVID-19 cases

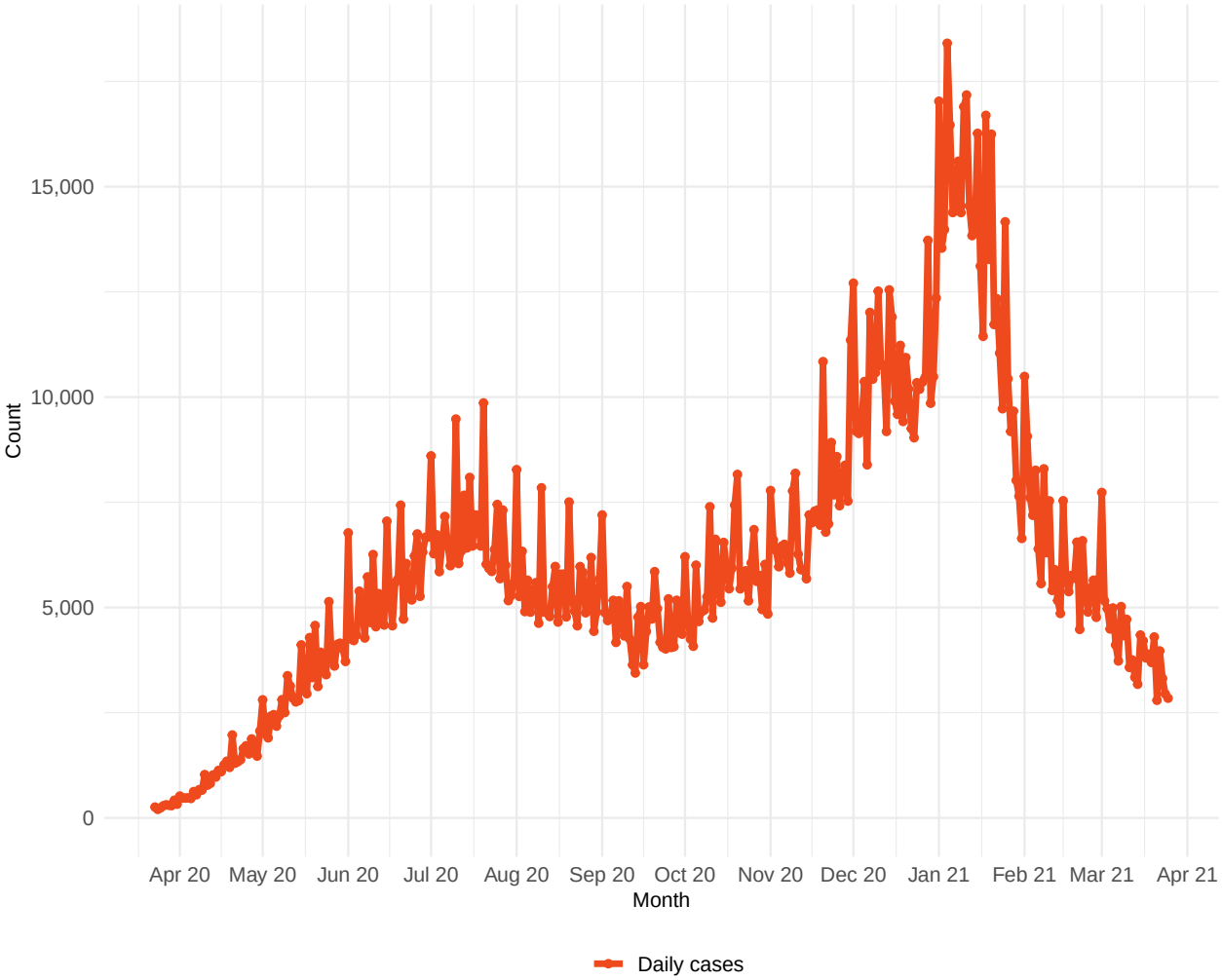


Table 1. Ranking of COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
COVID-19	3,076	1
Ischemic heart disease	2,044	2
Diabetes mellitus	1,420	3
Chronic kidney disease	1,395	4
Cirrhosis and other chronic liver diseases	891	5
Stroke	729	6
Chronic obstructive pulmonary disease	630	7
Interpersonal violence	590	8
Alzheimer's disease and other dementias	455	9
Lower respiratory infections	434	10

Figure 2. Reported daily COVID-19 deaths

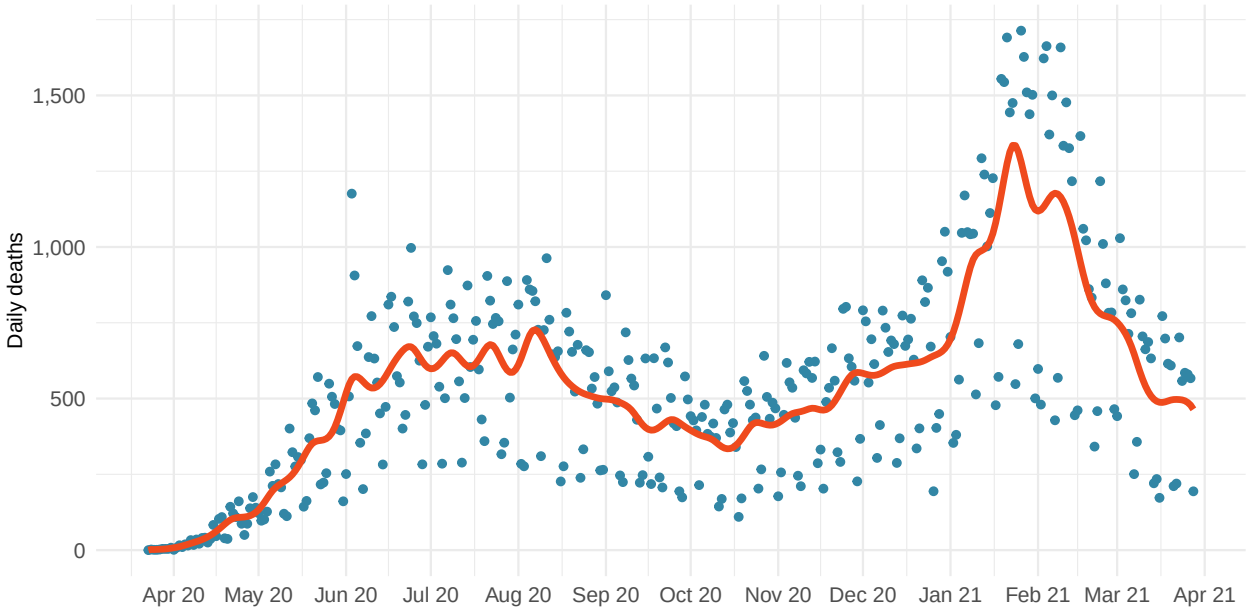


Figure 3. Daily COVID-19 death rate per 1 million on April 05, 2021

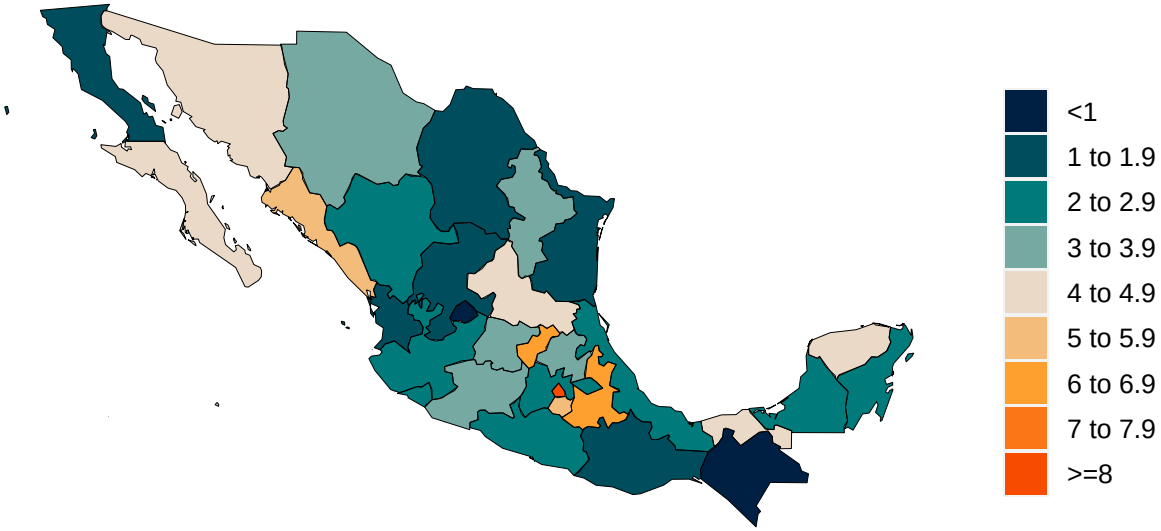


Figure 4. Estimated percent of the population infected with COVID-19 on April 05, 2021

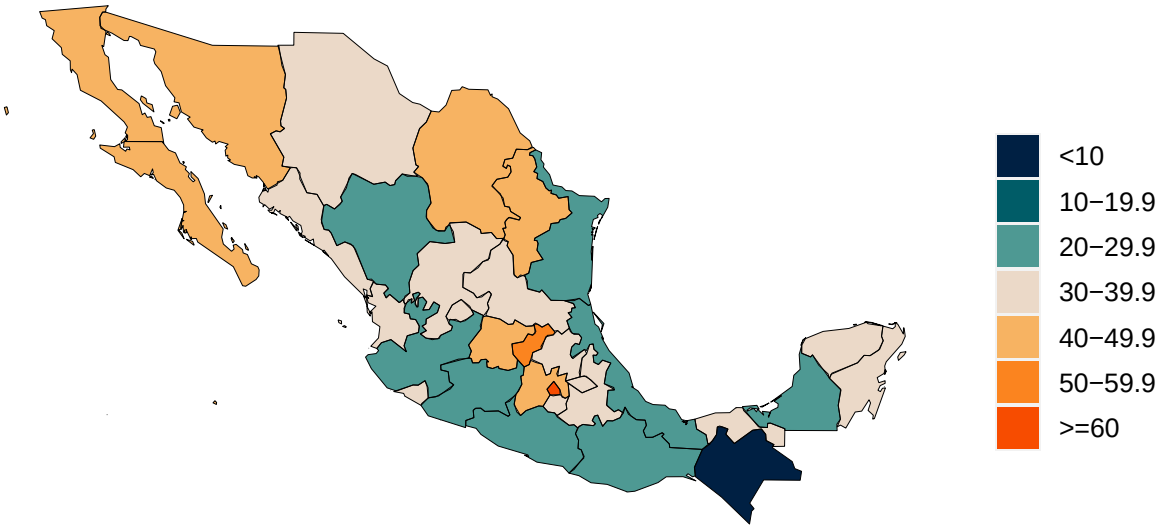


Figure 5. Mean effective R on March 25, 2021. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past. Effective R less than 1 means that transmission should decline, all other things being held the same.

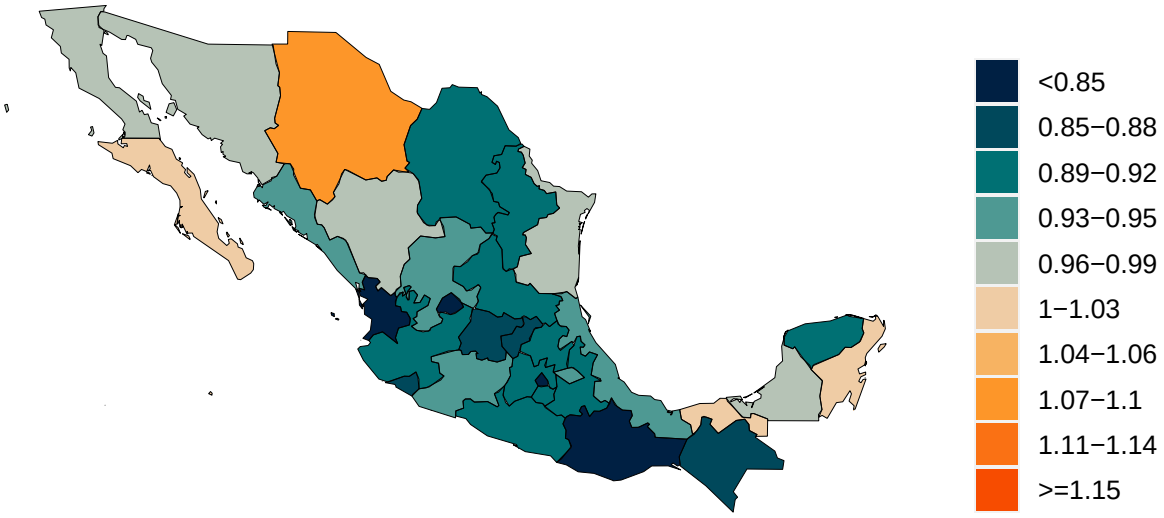
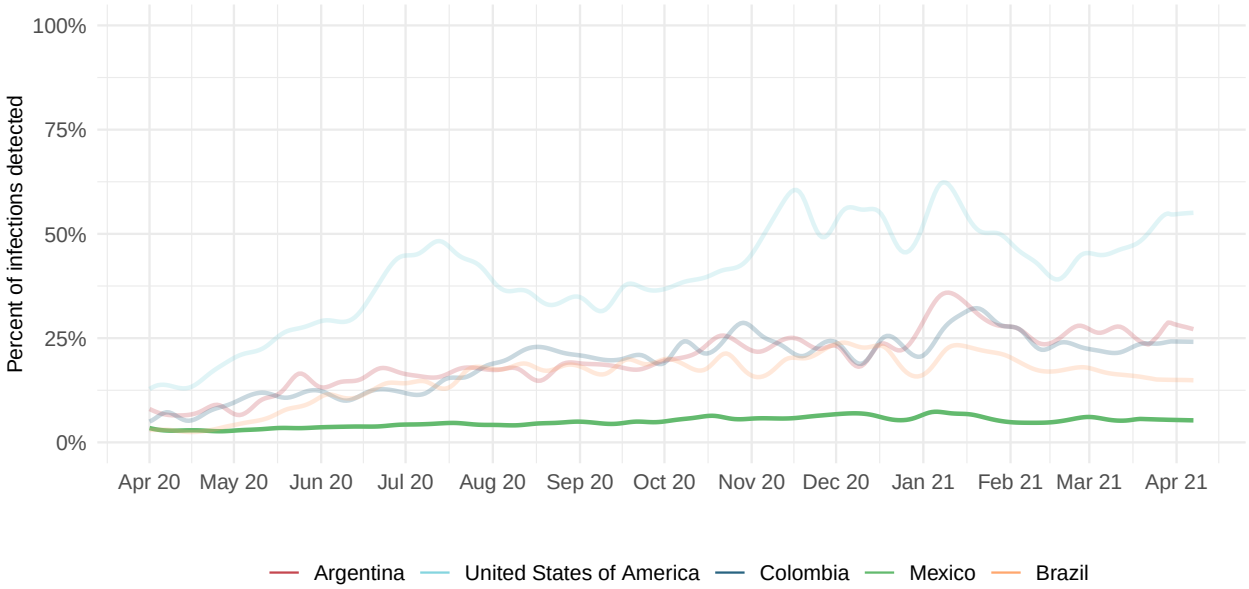


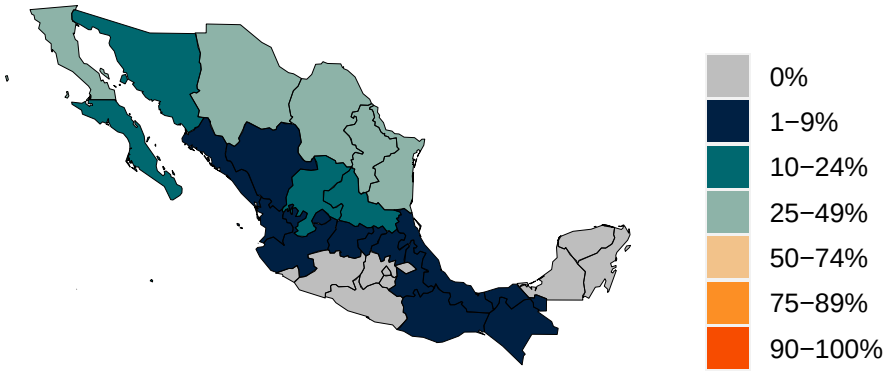
Figure 6. Percent of COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model.



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

Figure 7. Percent of circulating SARS-CoV-2 for 3 primary variants on April 5, 2021.

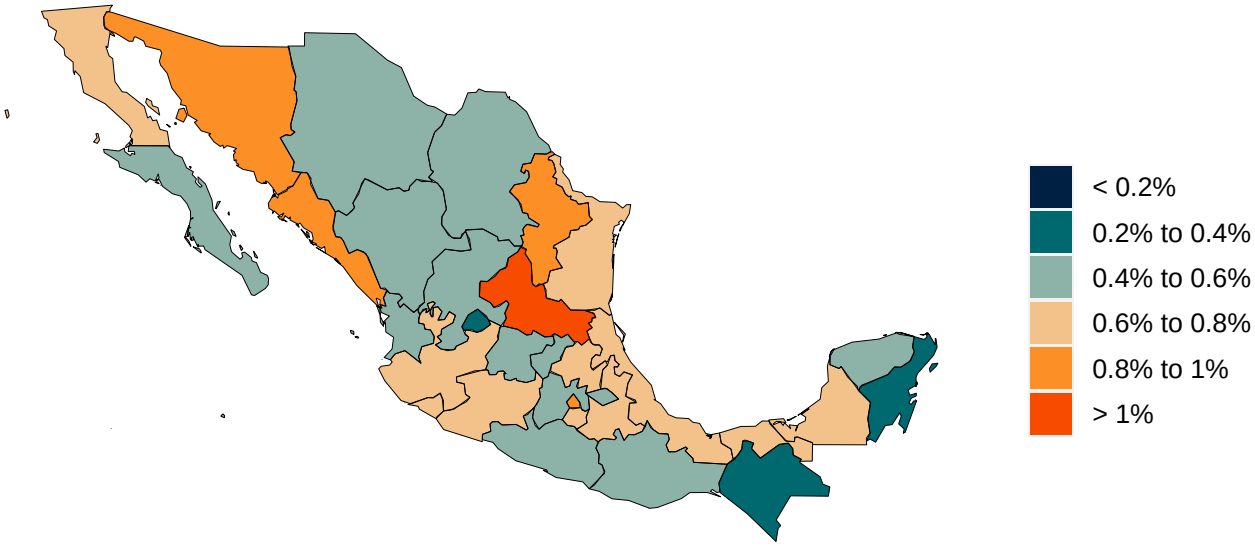
A. Percent B.1.1.7 variant



B. Percent B.1.351 variant

C. Percent P1 variant

Figure 8. Infection fatality ratio on April 05, 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

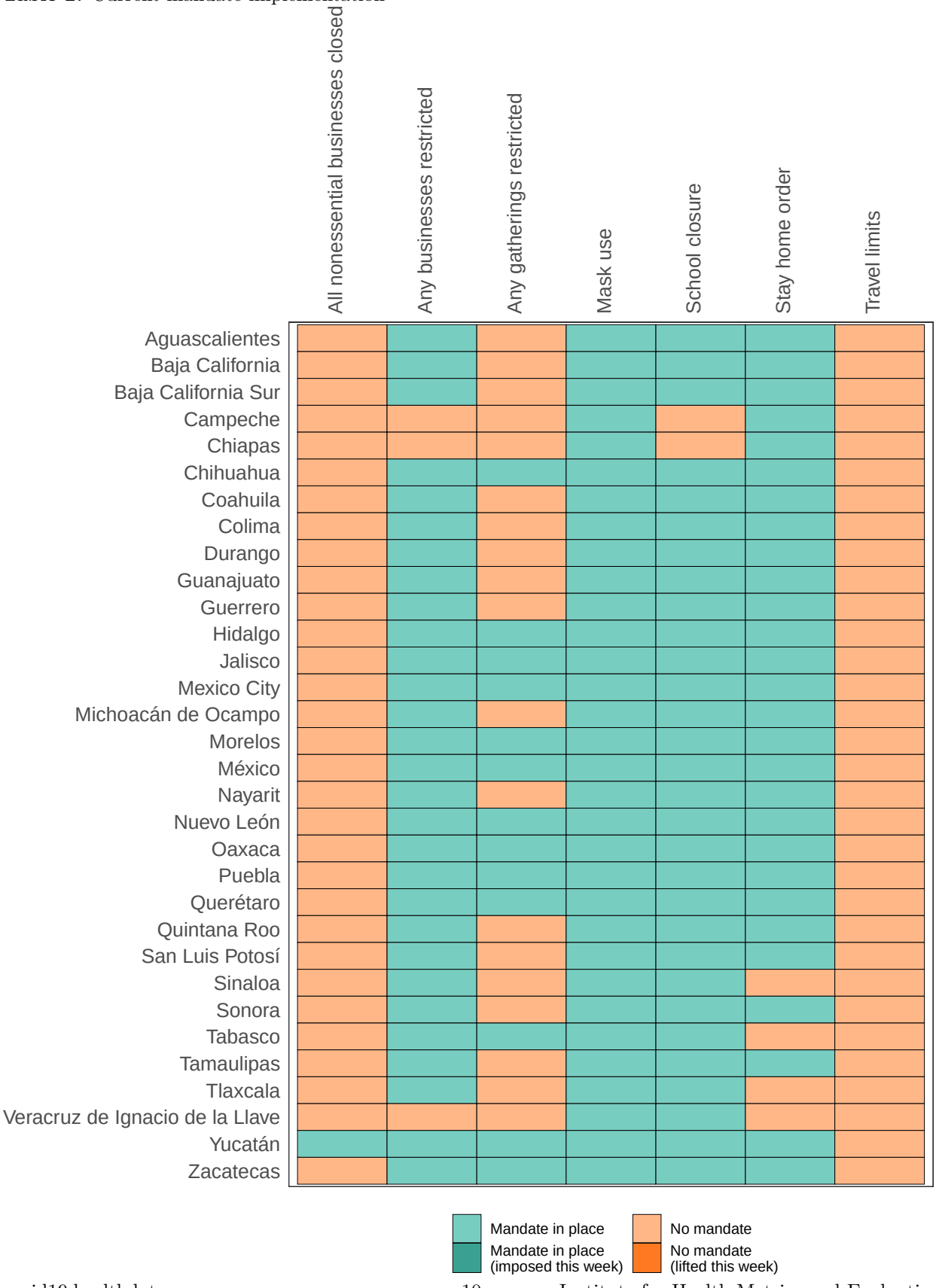


Figure 9. Trend in mobility as measured through smartphone app use compared to January 2020 baseline

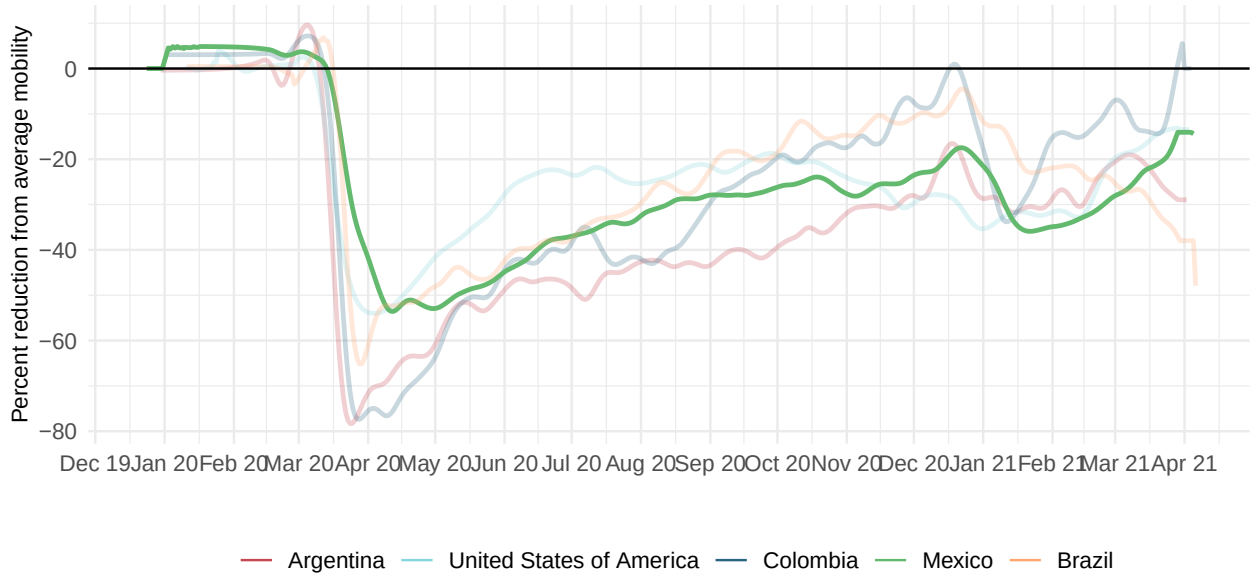


Figure 10. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on April 05, 2021

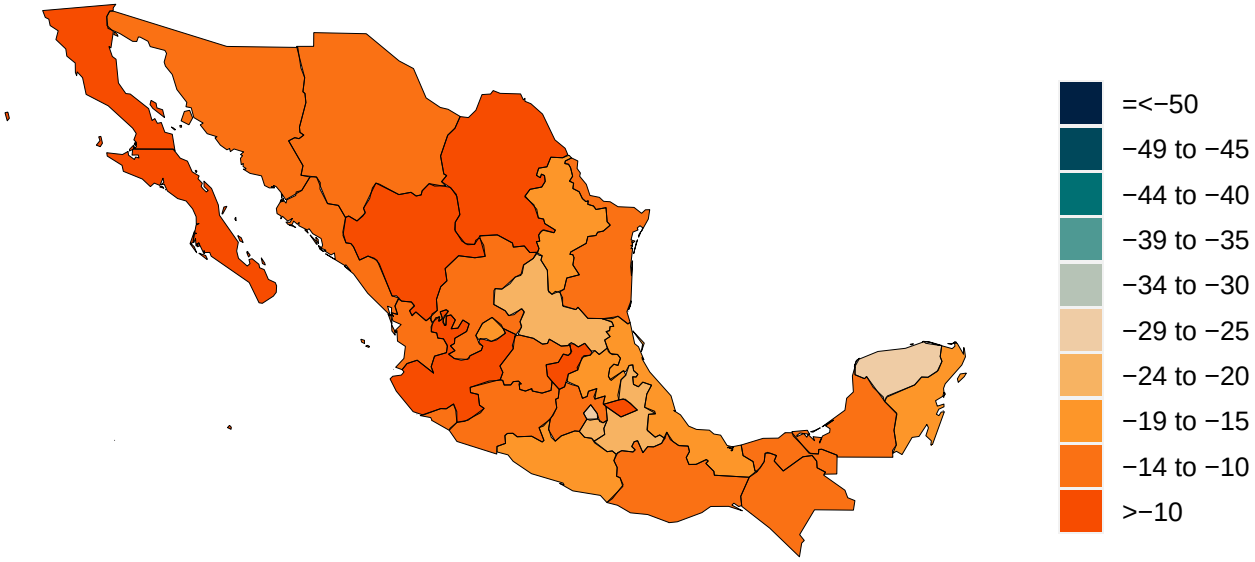


Figure 11. Trend in the proportion of the population reporting always wearing a mask when leaving home

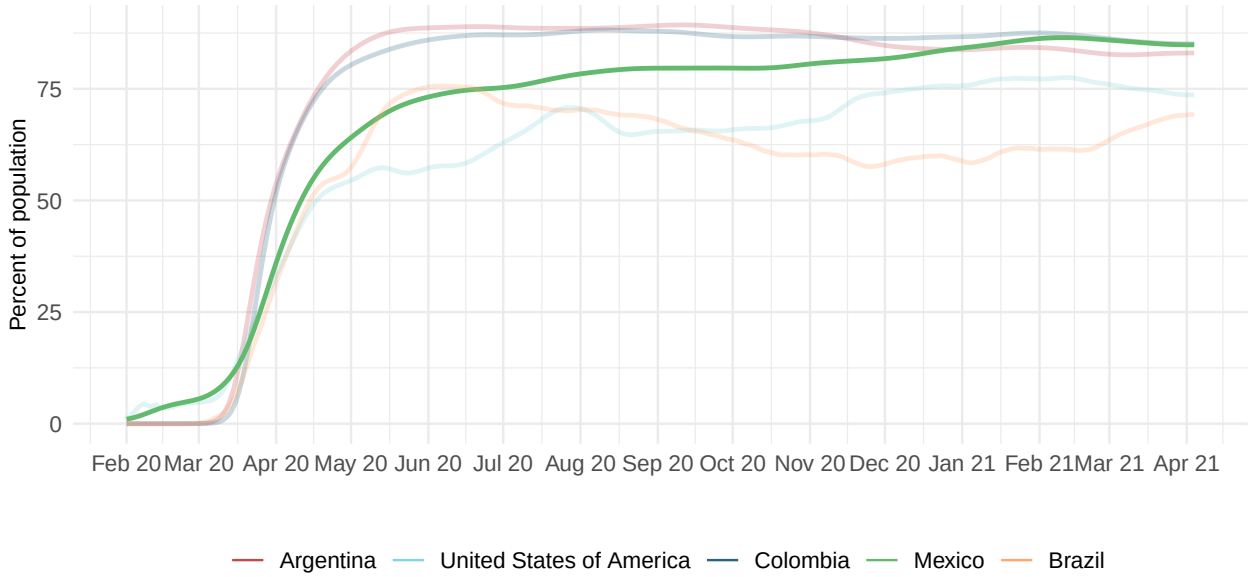


Figure 12. Proportion of the population reporting always wearing a mask when leaving home on April 05, 2021

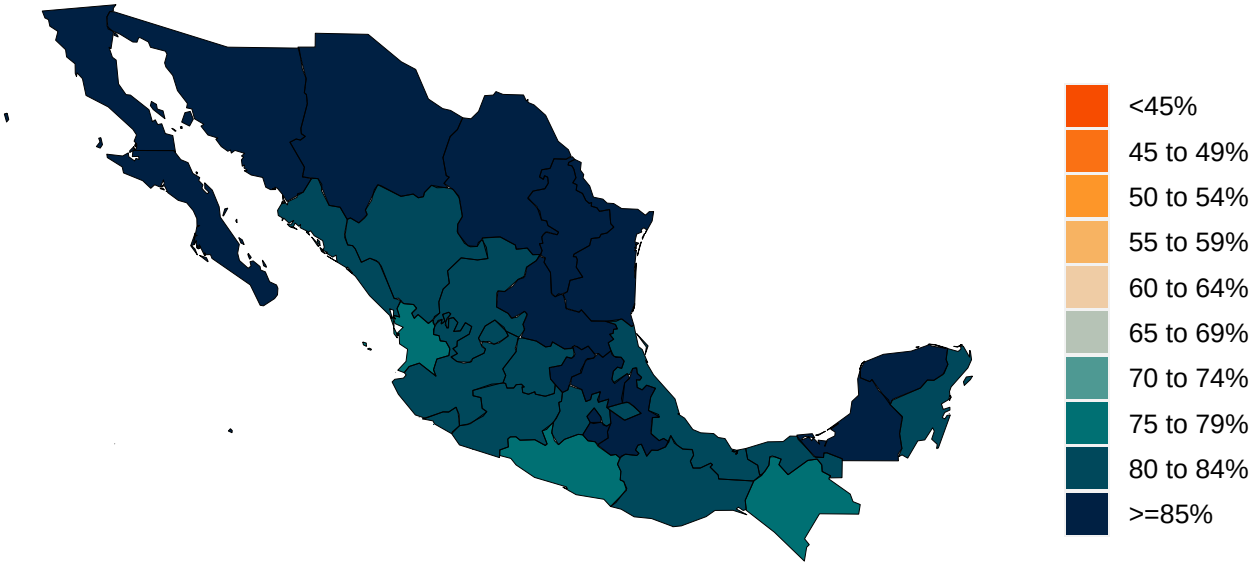


Figure 13. Trend in COVID-19 diagnostic tests per 100,000 people

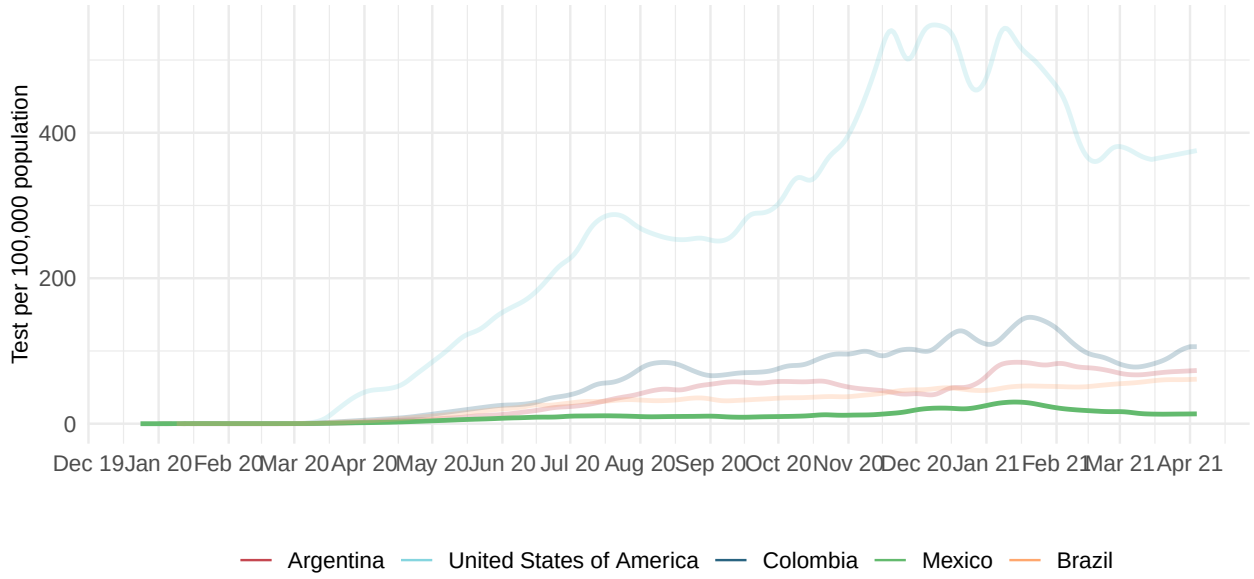


Figure 14. COVID-19 diagnostic tests per 100,000 people on March 20, 2021

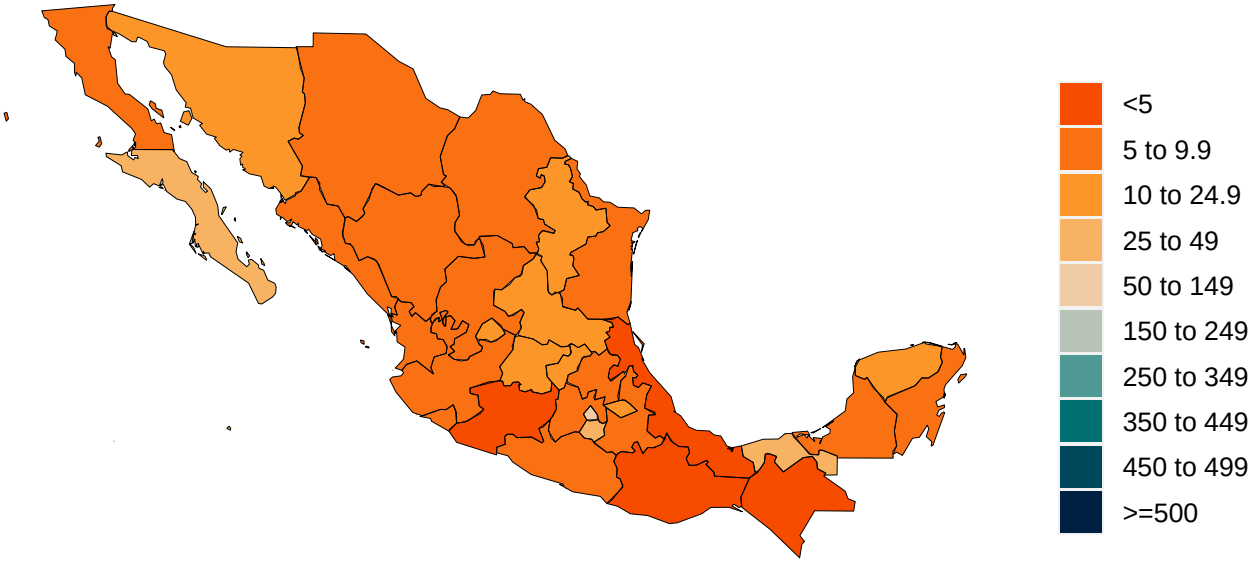


Figure 15. Increase in the risk of death due to pneumonia on February 1 2020 compared to August 1 2020

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%	7%
CanSinoBio	66%	57%	50%	44%
CoronaVac	50%	43%	38%	33%
Johnson & Johnson	72%	72%	64%	56%
Moderna	94%	85%	72%	62%
Novavax	89%	77%	49%	43%
Pfizer/BioNTech	91%	86%	69%	61%
Sinopharm	73%	63%	56%	48%
Sputnik V	92%	80%	70%	61%
Other mRNA vaccines	95%	83%	72%	63%
All other vaccines	75%	65%	57%	50%

Figure 16. 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).

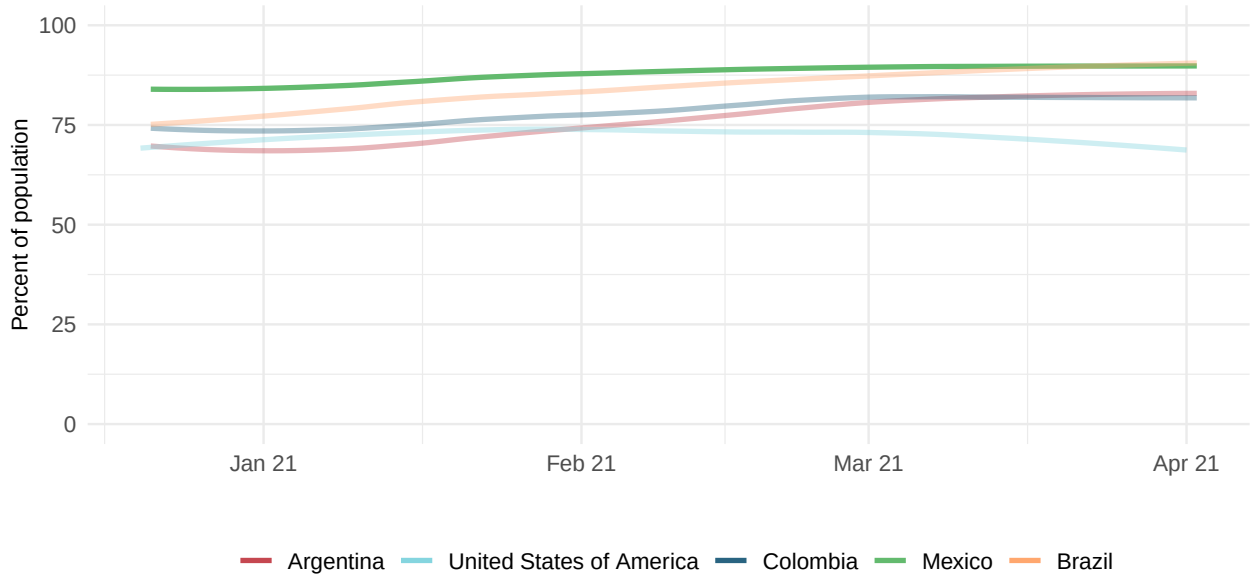
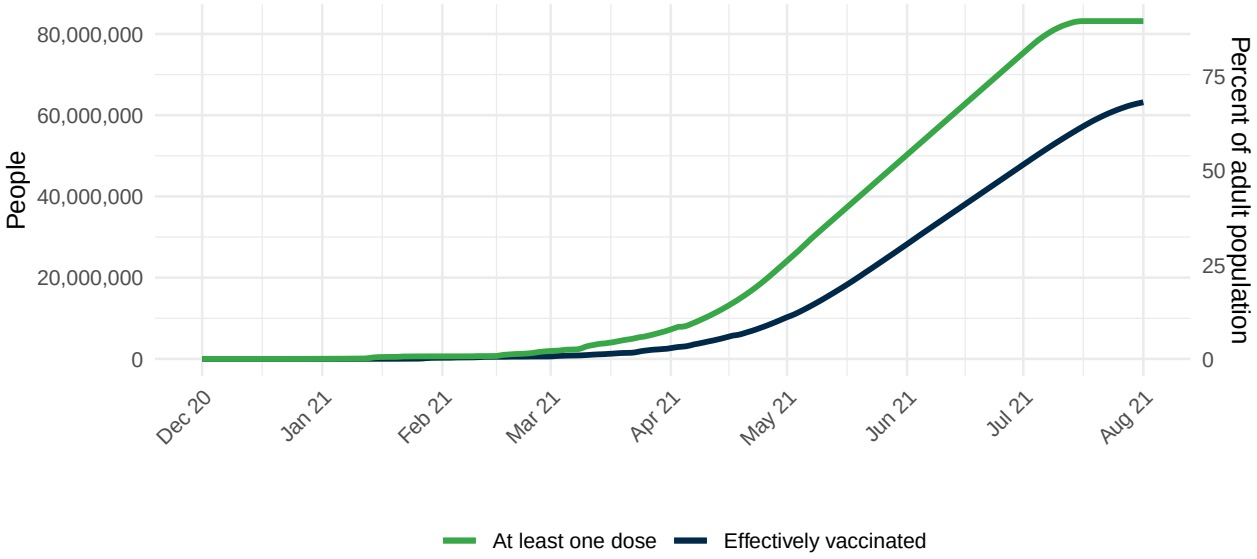


Figure 17. This figure shows the estimated proportion of the adult (18+) population that has been vaccinated or is open to receiving a COVID-19 vaccine based on Facebook survey responses (yes and yes, probably).

Figure 18. 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 19. Cumulative COVID-19 deaths until August 01, 2021 for three scenarios

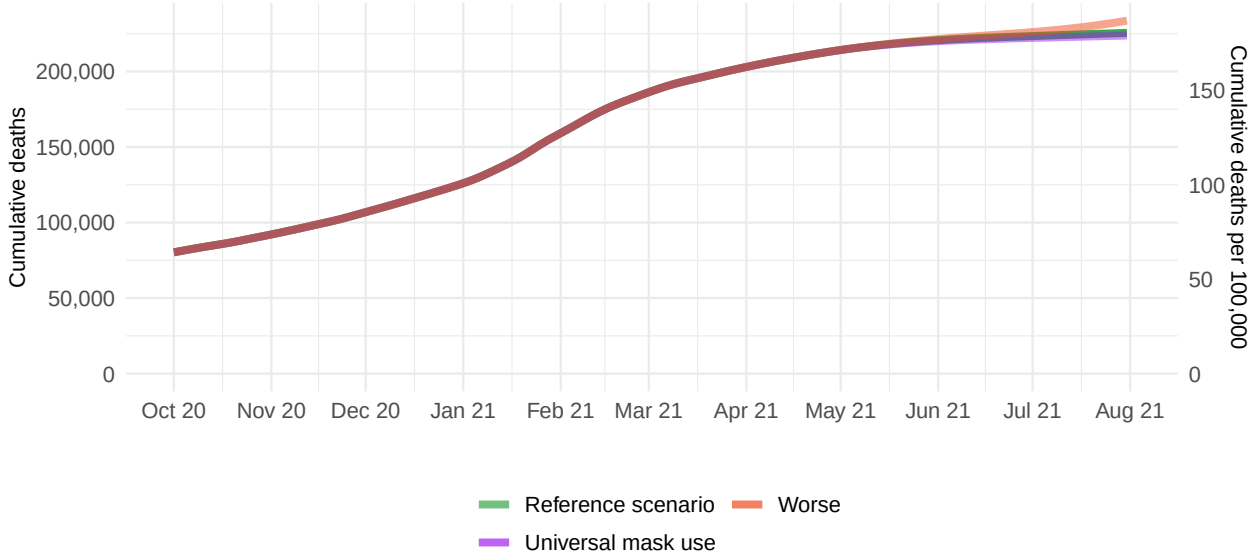


Figure 20. Daily COVID-19 deaths until August 01, 2021 for three scenarios,

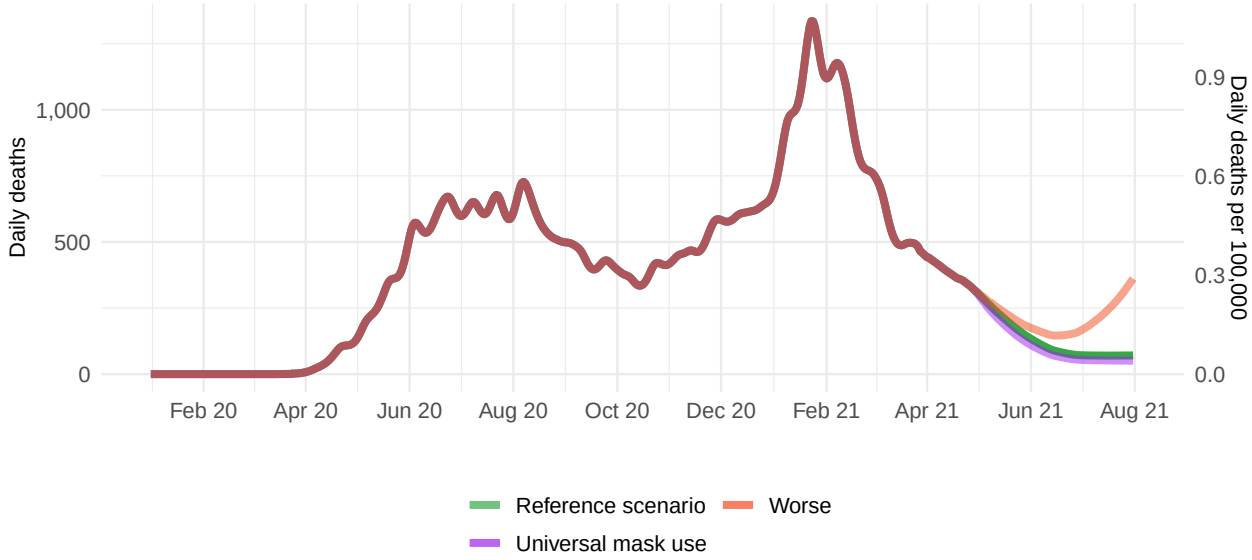


Figure 21. Daily COVID-19 infections until August 01, 2021 for three scenarios.

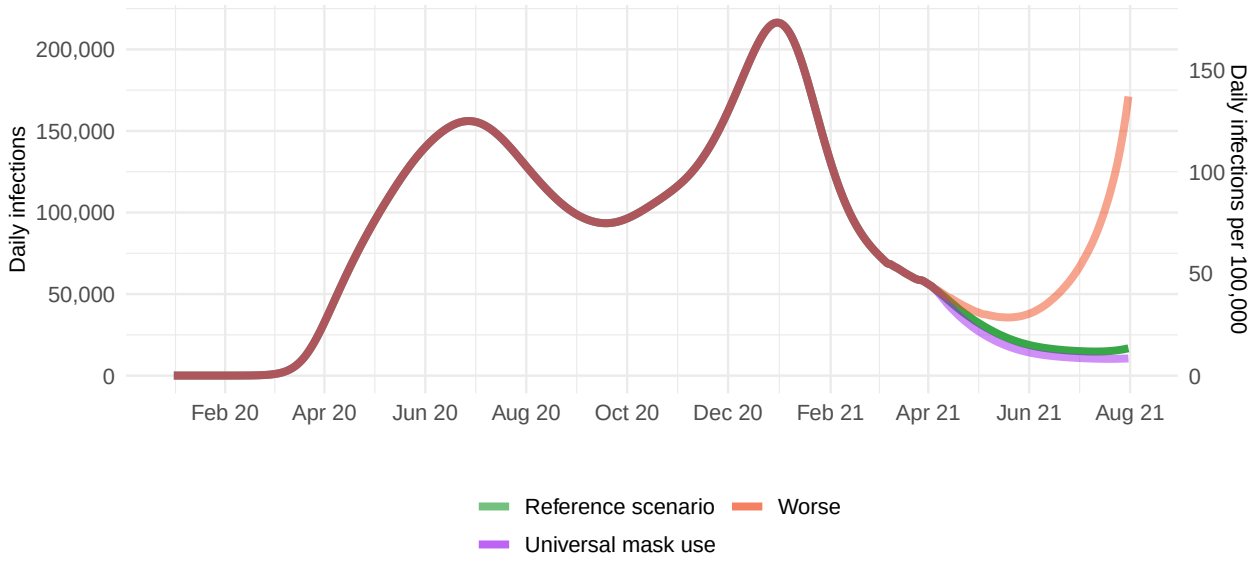


Figure 22. Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available: Delphi from the Massachussets Institute of Technology (Delphi; https://www.covidanalytics.io/home), 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 availble locations in that region.

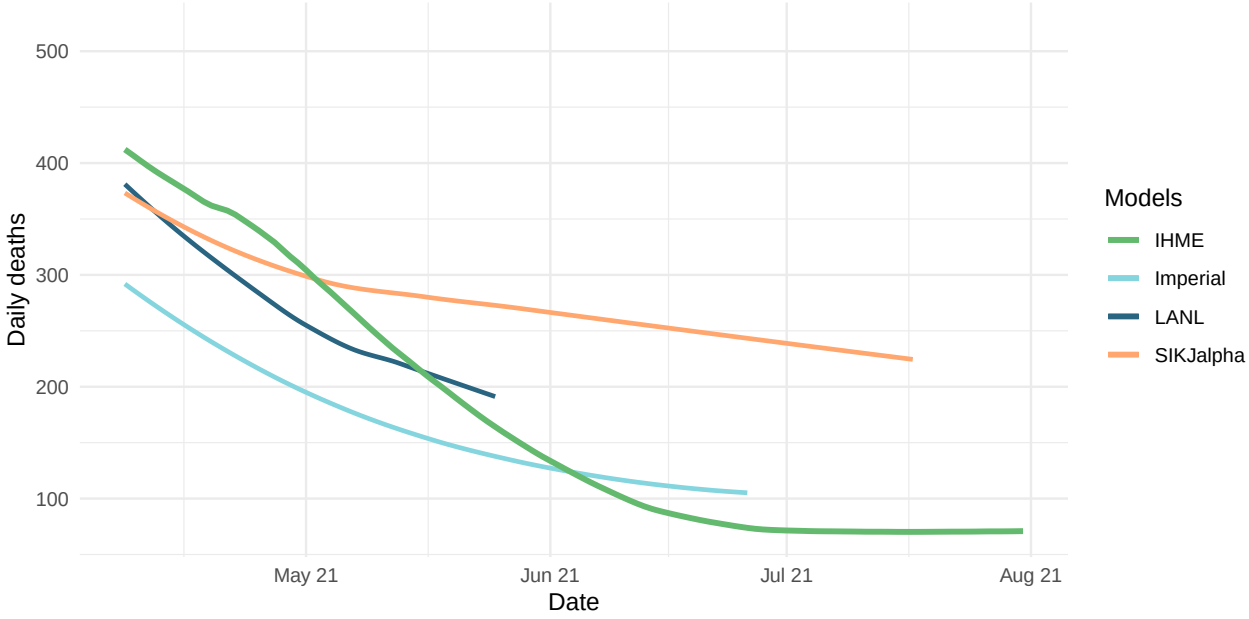


Figure 23. The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate stress*, 10-19% is considered *high stress*, and greater than 20% is considered *extreme stress*.

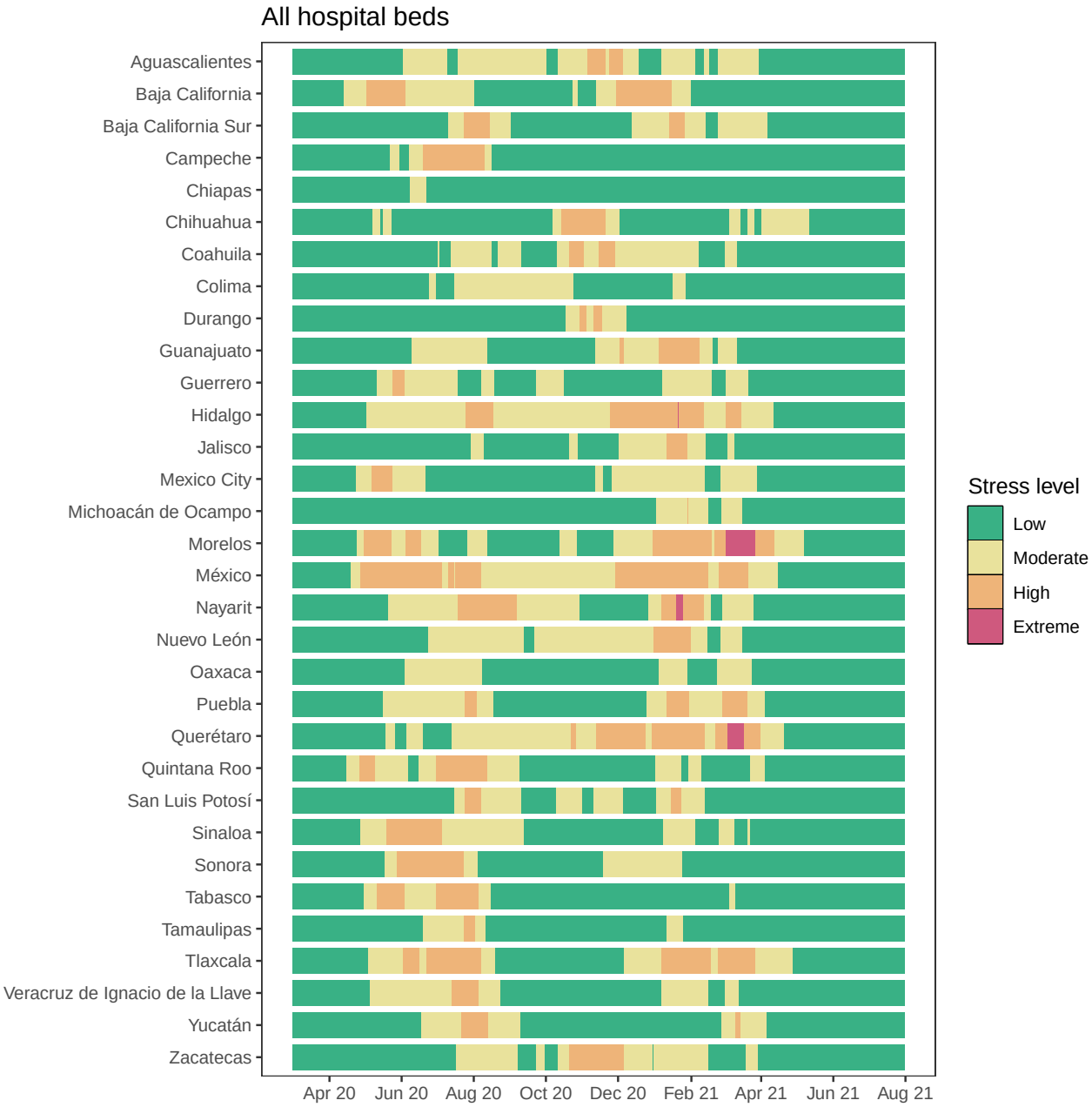
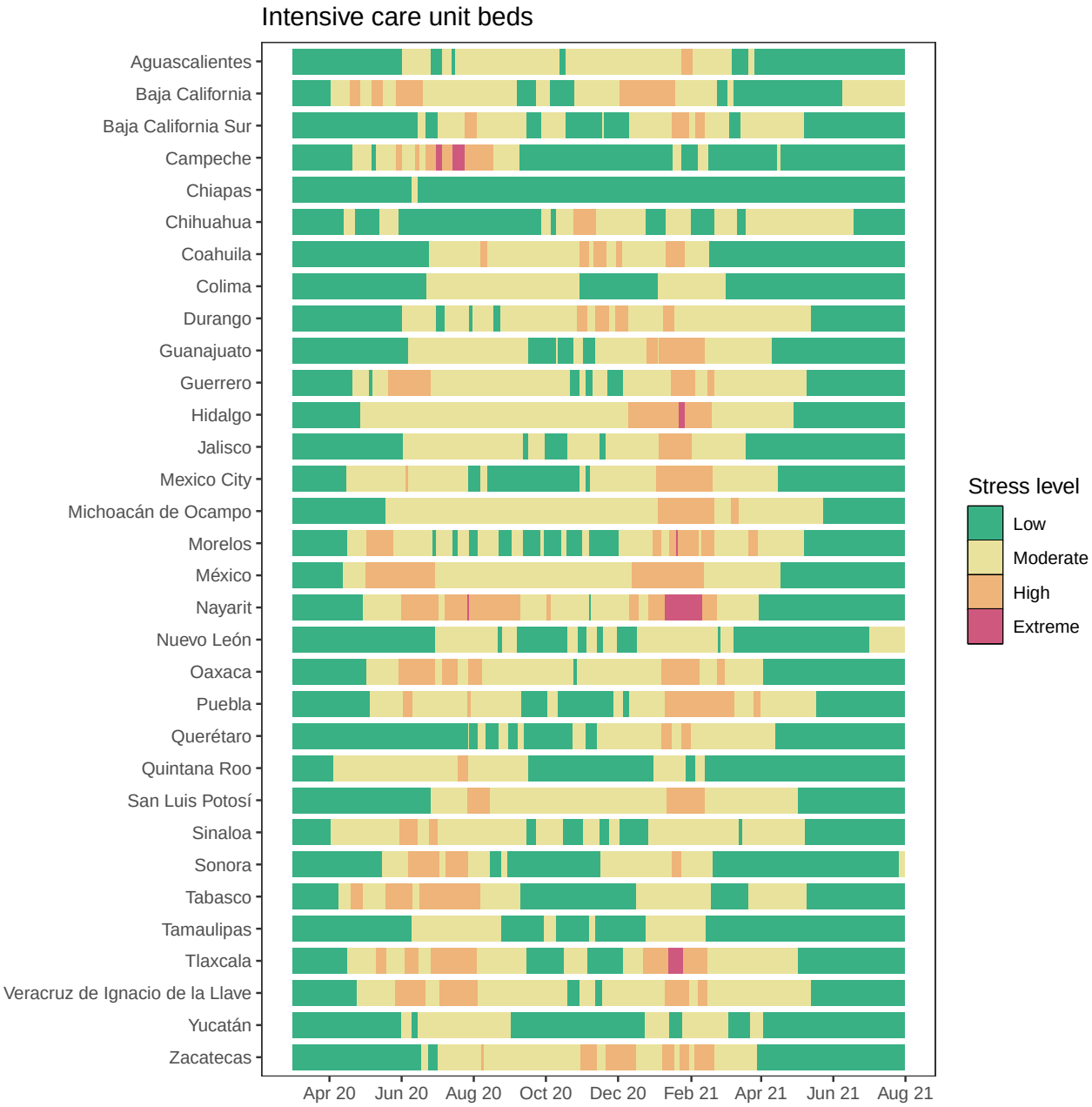


Figure 24. The estimated intensive care unit (ICU) usage is shown over time. The percent of ICU beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of ICU beds occupied by COVID-19 patients. Less than 10% is considered *low stress*, 10-29% is considered *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.