Informe de resultados de COVID-19

México

20 de febrero de 2021

Este documento contiene información sobre las últimas proyecciones del modelo IHME sobre COVID-19 en México. El modelo se ejecutó el 20 de febrero de 2021 con datos hasta el 16 de febrero de 2021.

Situación actual

• Los casos notificados diariamente en la última semana disminuyeron a 7,100 por día en promedio en comparación con 9,700 la semana anterior (Figura 1).

• Las muertes diarias en la última semana disminuyeron a 1.100 por día en promedio en comparación con las 1.150 de la semana anterior (Figura 2). Esto mantiene a COVID-19 en la causa número 1 de muerte en México esta semana (Tabla 1).

• Ningún estado presenta R efectiva, calculada usando casos, hospitalizaciones y muertes, mayor que 1 (Figura 5).

• Estimamos que el 43% de las personas en México han sido infectadas al 16 de febrero (Figura 4).

• La tasa de mortalidad diaria es superior a 4 por un millón de habitantes en 26 estados (Figura 3).

Tendencias en impulsores de transmisión

• La movilidad la semana pasada fue 34% menor que la línea de base anterior a COVID-19 (Figura 7). Ningún estado presenta movilidad cercana a la línea de base (dentro del 10%). La movilidad fue inferior al 30% de la línea de base en 21 estados.

• Al 16 de febrero, estimamos que el 86% de las personas siempre usaban una máscara al salir de casa (Figura 9), sin cambios en comparación con la semana pasada. En ningún estado el uso de mascarillas es inferior al 50%.

• Se realizaron 7 pruebas de diagnóstico por cada 100,000 personas el 16 de febrero (Figura 11).

• En México, el 88.4% de las personas dicen que aceptarían o probablemente aceptarían una vacuna para COVID-19. La fracción de la población que está dispuesta a recibir la vacuna COVID-19 oscila entre el 83% en Baja California Sur y el 91% en Hidalgo (Figura 14).

• En nuestro escenario de referencia actual, esperamos que 22,36 millones estén vacunados para el 1 de junio (Figura 15).

Proyecciones

• En nuestro escenario de referencia, que representa lo que creemos que es más probable que suceda, nuestro modelo proyecta 206,000 muertes acumuladas el 1 de junio de 2021. Esto representa 30,000 muertes adicionales del 16 de febrero al 1 de junio (Figura 16). Las muertes diarias alcanzaron un máximo de 1,303 el 26 de enero de 2021 (Figura 17).

• Para el 1 de junio de 2021, proyectamos que el lanzamiento programado de vacunas salvará 900 vidas.

• Si la cobertura universal de la mascarilla (95%) se lograra en la próxima semana, nuestro modelo proyecta 1,500 muertes acumuladas menos en comparación con el escenario de referencia el 1 de junio de 2021 (Figura 16).

• En nuestro peor escenario, nuestro modelo proyecta 210,000 muertes acumuladas el 1 de junio de 2021 (Figura 16).

• La Figura 19 compara nuestros pronósticos de escenarios de referencia con otros modelos archivados públicamente. Los pronósticos son muy parecidos con excepción del modelo de la Universidad del Sur de California.

• En algún momento, desde febrero hasta el 1 de junio, 31 estados tendrán una presión alta o extrema en las camas de hospital (Figura 22). En algún momento, desde febrero hasta el 1 de junio, 32 estados tendrán una presión alta o extrema en la capacidad de la UCI (Figura 21).

Actualizaciones de modelos

Hemos actualizado nuestro modelo que predice la propagación de las nuevas variantes, que se utiliza en el escenario de referencia de dos formas. Primero, la velocidad de ampliación de las nuevas variantes ahora se basa en datos de más de 15 ubicaciones, mientras que anteriormente solo teníamos datos de Londres. En segundo lugar, ahora utilizamos datos observados sobre la presencia de nuevas variantes (B.1.1.7, B.1.351 o P1) en todas las ubicaciones con transmisión comunitaria informada y más de cinco casos de esas variantes secuenciadas.

COVID-19 Results Briefing

Mexico

February 20, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 in Mexico. The model was run on February 20, 2021 with data through February 16, 2021.

Current situation

- Daily reported cases in the last week decreased to 7,100 per day on average compared to 9,700 the week before (Figure 1).
- Daily deaths in the last week decreased to 1,100 per day on average compared to 1,150 the week before (Figure 2). This makes COVID-19 the number 1 cause of death in Mexico this week (Table 1).
- Effective R, computed using cases, hospitalizations, and deaths, is not greater than 1 in any states (Figure 5).
- We estimated that 43% of people in Mexico have been infected as of February 16 (Figure 4).
- The daily death rate is greater than 4 per million in 26 states (Figure 3).

Trends in drivers of transmission

- Mobility last week was 34% lower than the pre-COVID-19 baseline (Figure 7). Mobility was not near baseline (within 10%) in any states. Mobility was lower than 30% of baseline in 21 states.
- As of February 16 we estimated that 86% of people always wore a mask when leaving their home (Figure 9), the same as last week. Mask use was not lower than 50% in any states.
- There were seven diagnostic tests per 100,000 people on February 16 (Figure 11).
- In Mexico 88.4% of people say they would accept or would probably accept a vaccine for COVID-19. The fraction of the population who are open to receiving a COVID-19 vaccine ranges from 83% in Baja California Sur to 91% in Hidalgo (Figure 14).
- In our current reference scenario, we expect that 22.36 million will be vaccinated by June 1 (Figure 15).

Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects 206,000 cumulative deaths on June 1, 2021. This represents 30,000 additional deaths from February 16 to June 1 (Figure 16). Daily deaths peaked at 1,303 on January 26, 2021 (Figure 17).

- By June 1, 2021, we project that 900 lives will be saved by the projected vaccine rollout.
- If **universal mask coverage (95%)** were attained in the next week, our model projects 1,500 fewer cumulative deaths compared to the reference scenario on June 1, 2021 (Figure 16).
- Under our **worse scenario**, our model projects 210,000 cumulative deaths on June 1, 2021 (Figure 16).
- Figure 19 compares our reference scenario forecasts to other publicly archived models. Forecasts are very similar with exception of the forecast of University of Southern California.
- At some point from February through June 1, 31 states will have high or extreme stress on hospital beds (Figure 22). At some point from February through June 1, 32 states will have high or extreme stress on ICU capacity (Figure 21).

Model updates

We have updated our model that predicts the spread of the new variants, which is used in the reference scenario in two ways. First, the speed of scale-up of the new variants is now based on data from more than 15 locations, whereas previously we only had data from London. Second, we now use observed data on the presence of new variants (B.1.1.7, B.1.351, or P1) in all locations with reported community transmission and more than five cases of those variants sequenced.

Figure 1. Reported daily COVID-19 cases

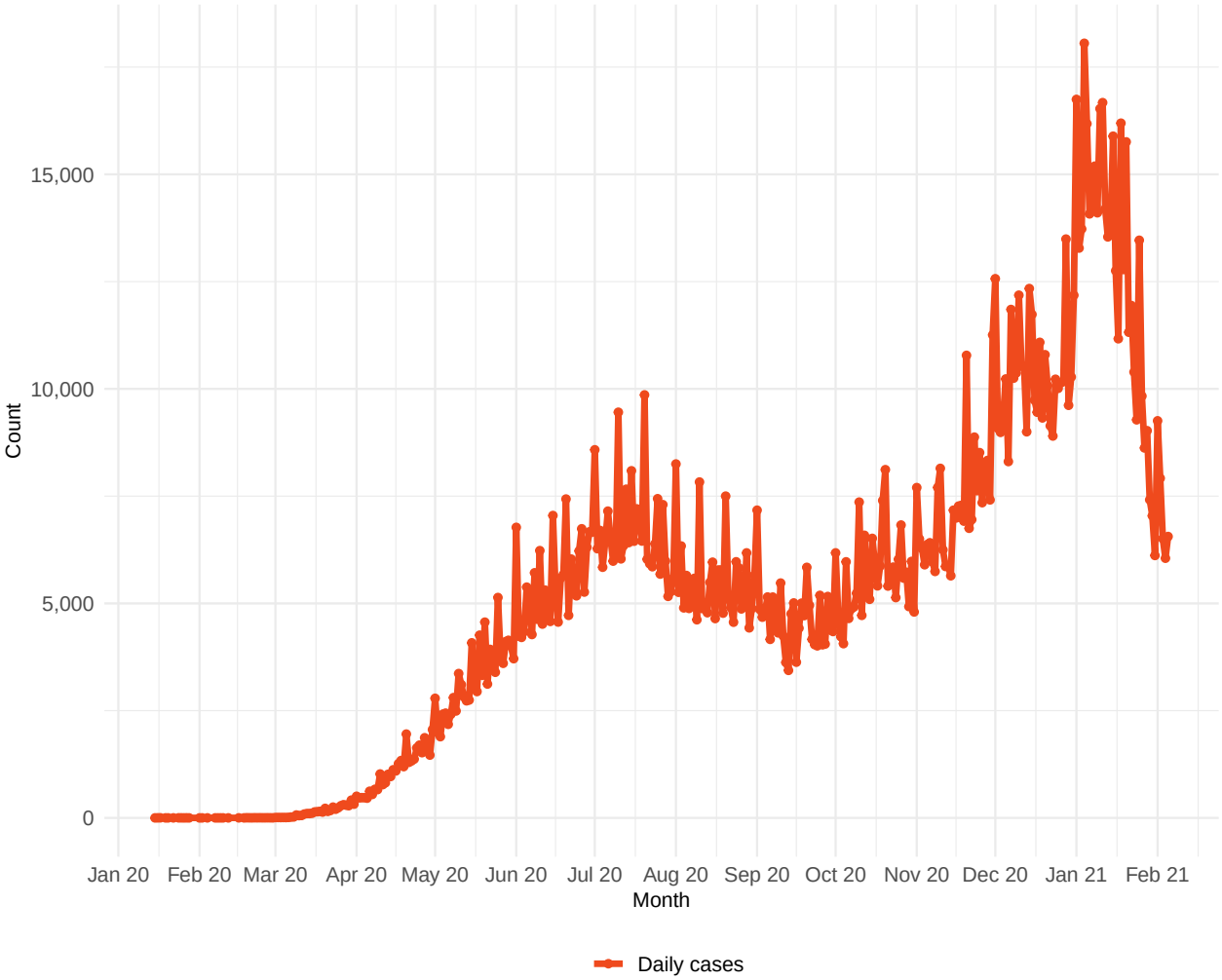


Table 1. Ranking of COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
COVID-19	7,711	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

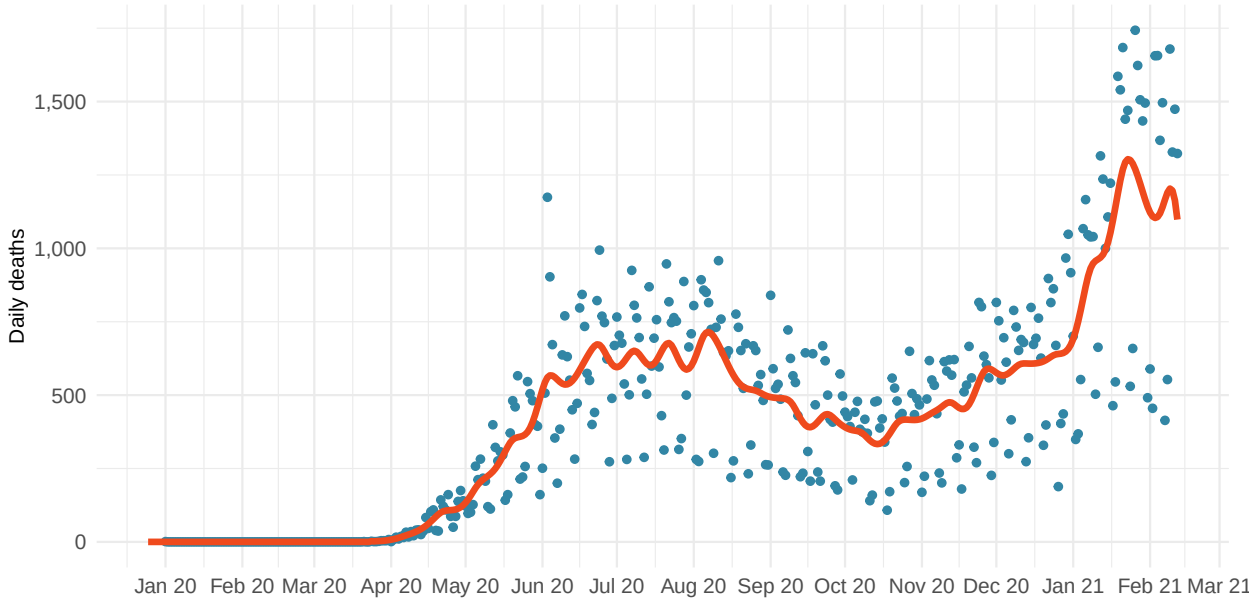


Figure 3. Daily COVID-19 death rate per 1 million on February 16, 2021

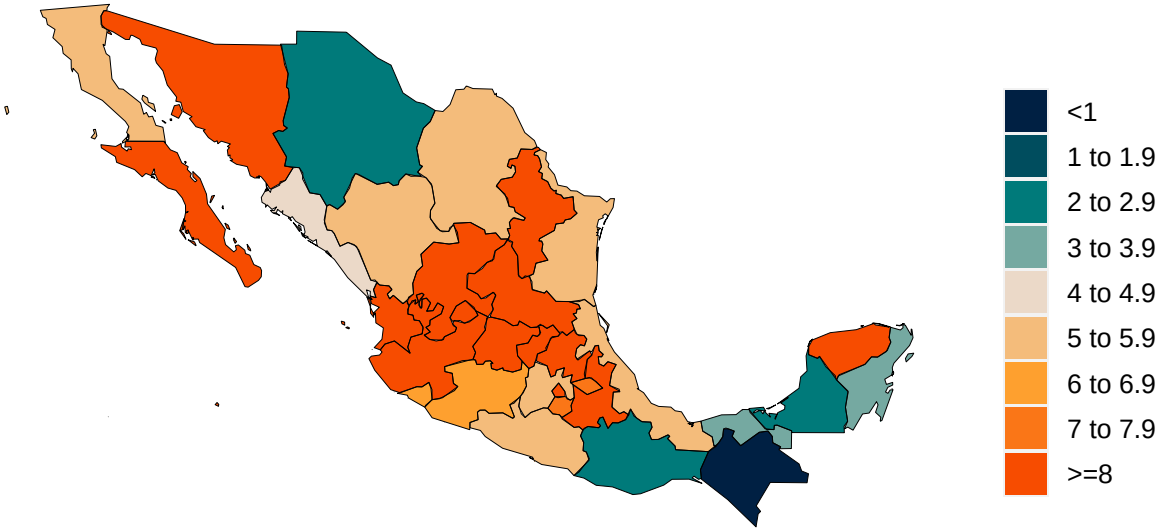


Figure 4. Estimated percent of the population infected with COVID-19 on February 16, 2021

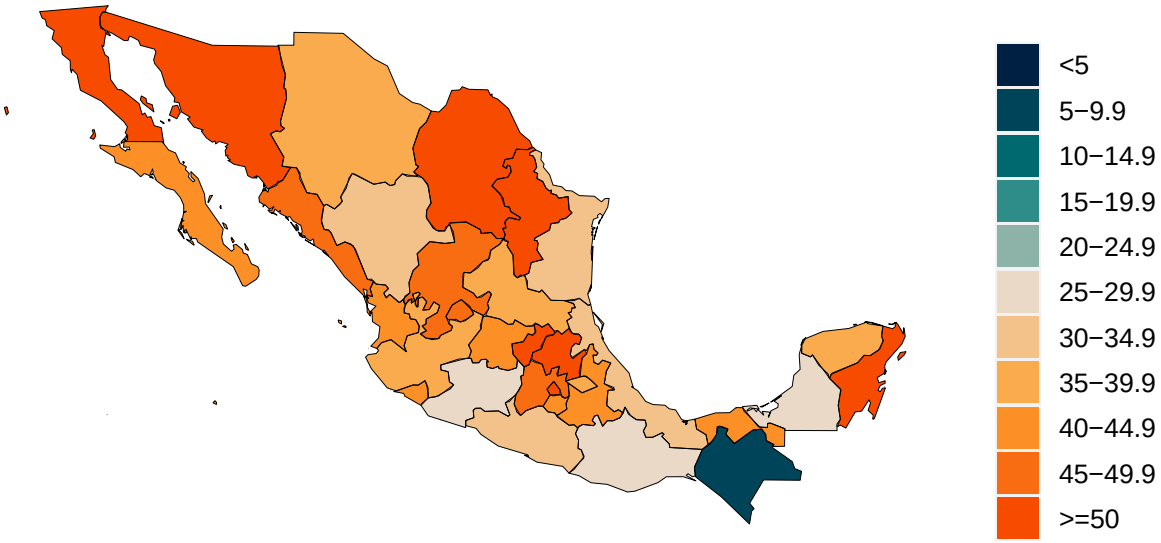


Figure 5. Mean effective R on February 05, 2021. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past. Effective R less than 1 means that transmission should decline, all other things being held the same.

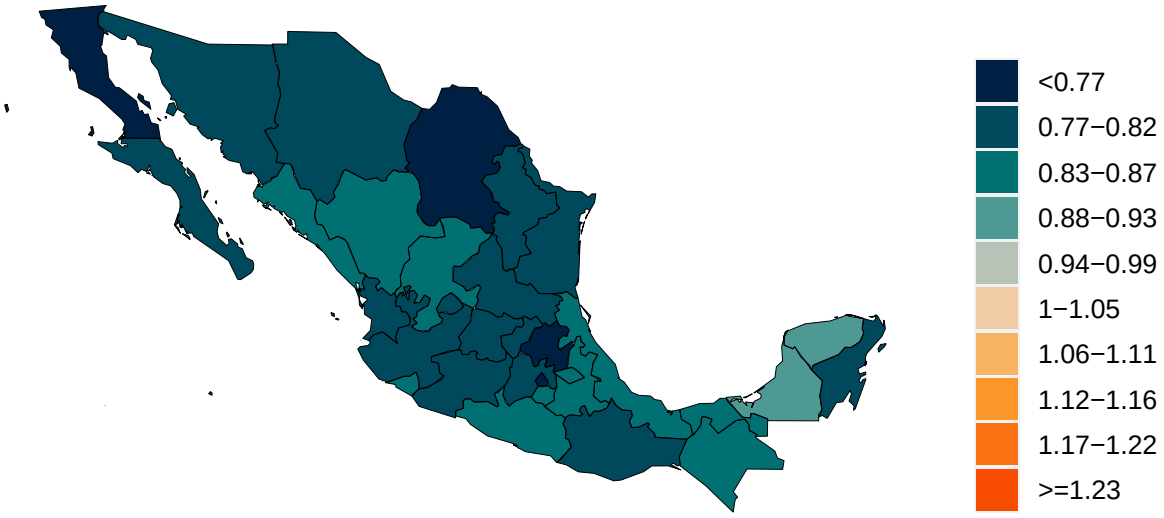
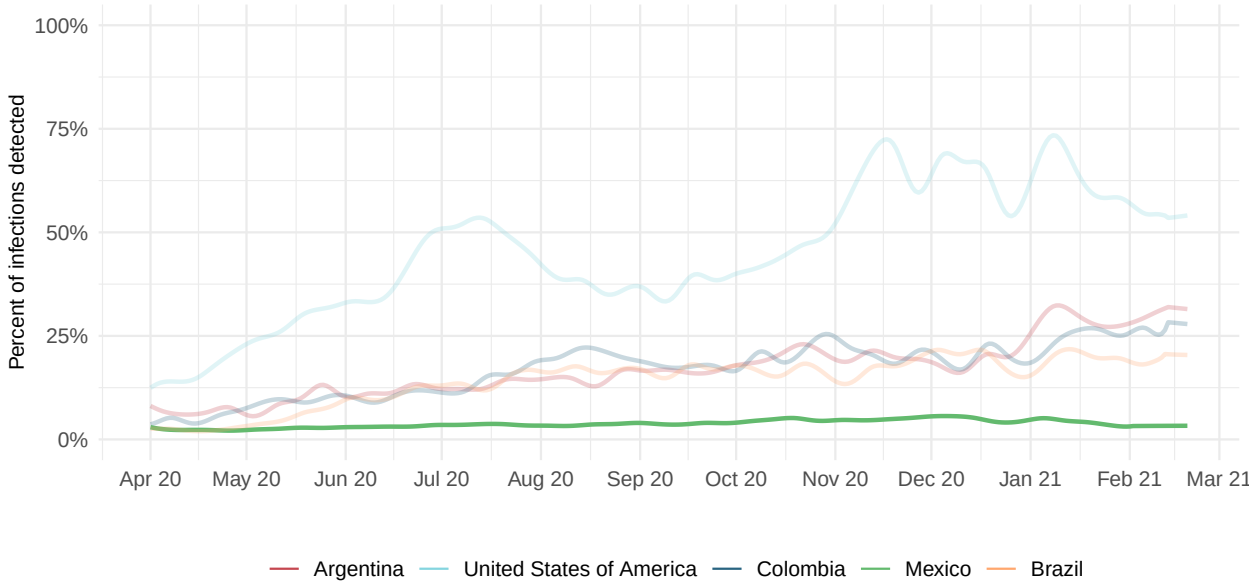


Figure 6. Percent of COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model.



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

Critical drivers

Table 2. Current mandate implementation

Figure 7. Trend in mobility as measured through smartphone app use compared to January 2020 baseline

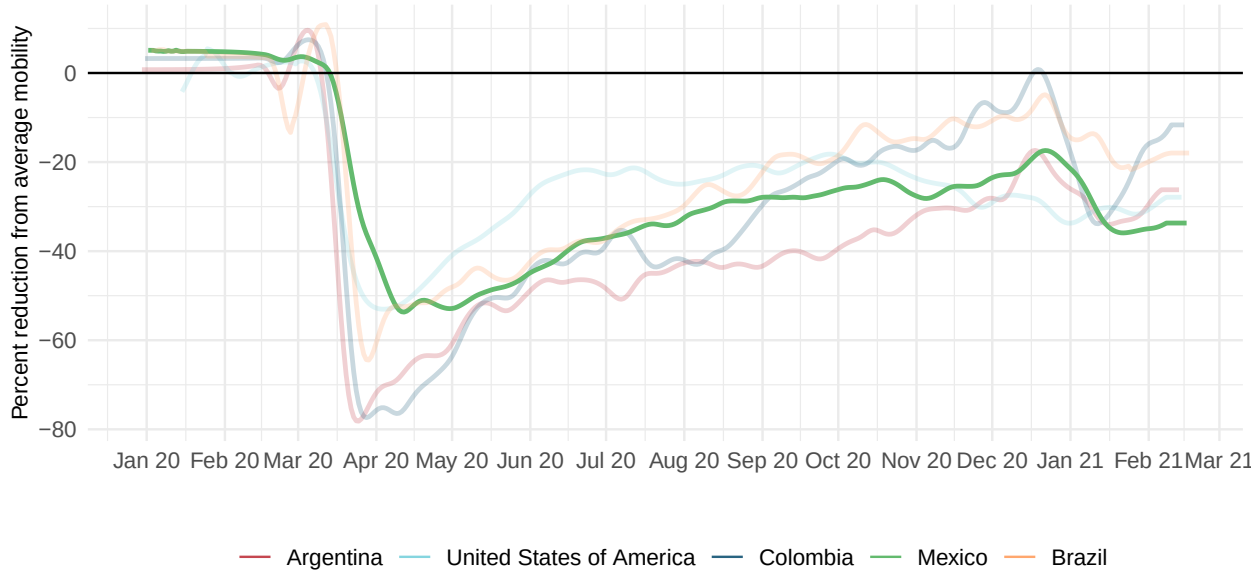


Figure 8. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on February 16, 2021

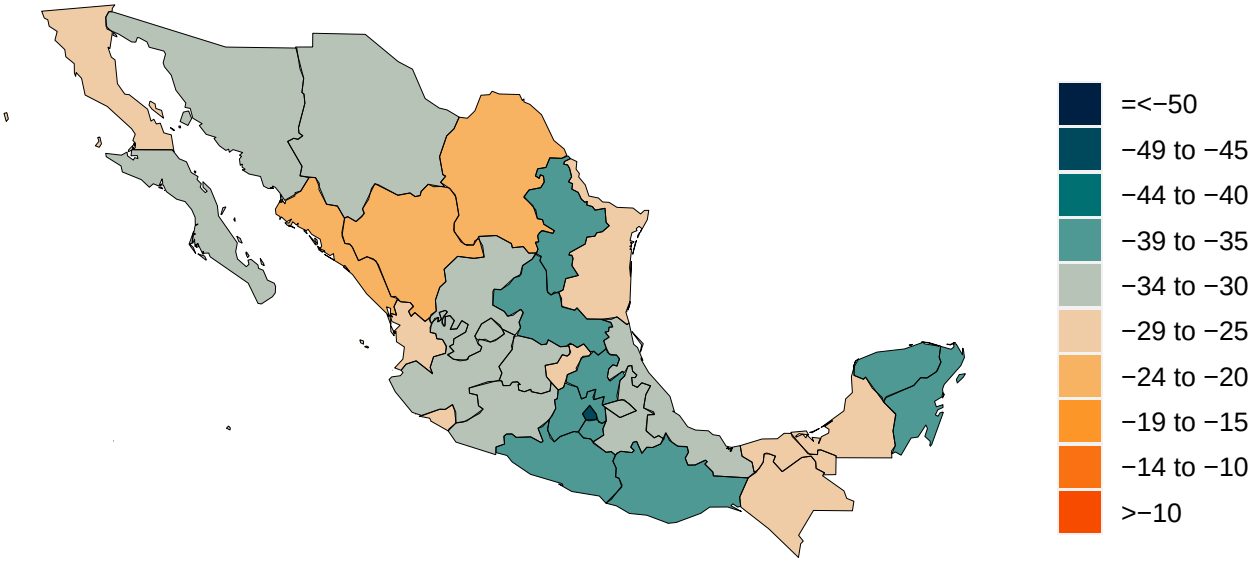


Figure 9. Trend in the proportion of the population reporting always wearing a mask when leaving home

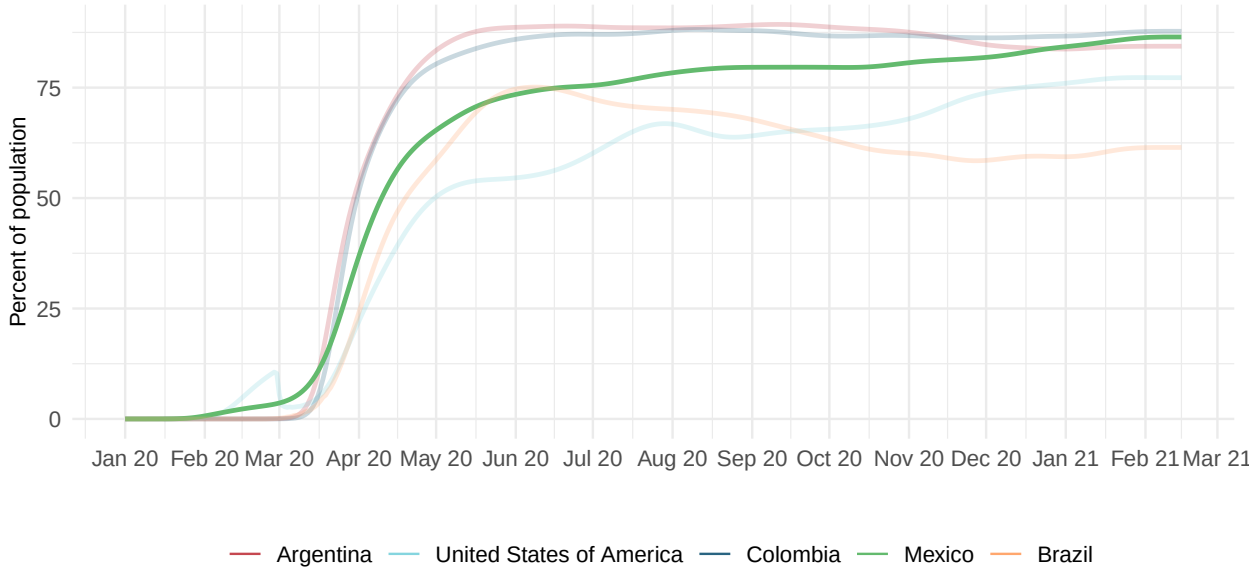


Figure 10. Proportion of the population reporting always wearing a mask when leaving home on February 16, 2021

Figure 11. Trend in COVID-19 diagnostic tests per 100,000 people

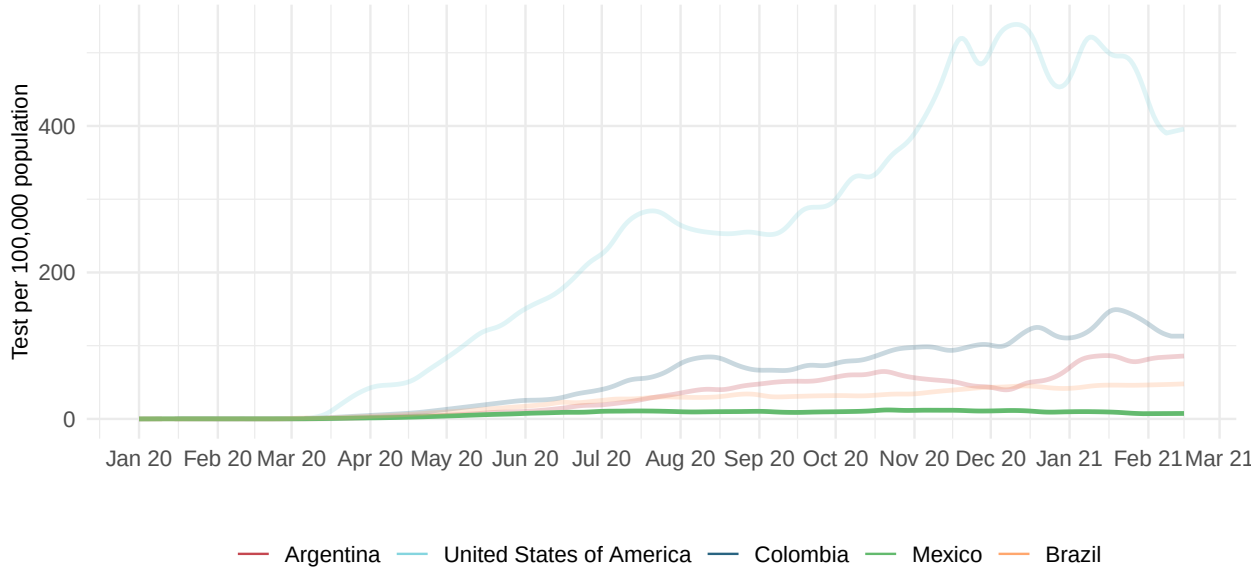


Figure 12. COVID-19 diagnostic tests per 100,000 people on January 30, 2021

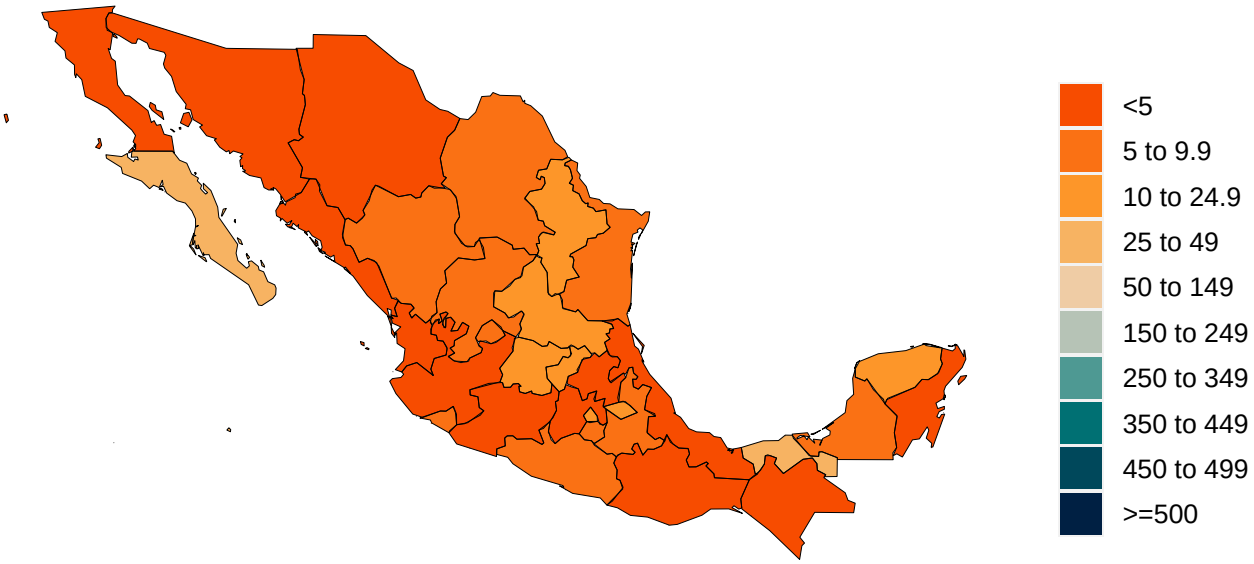
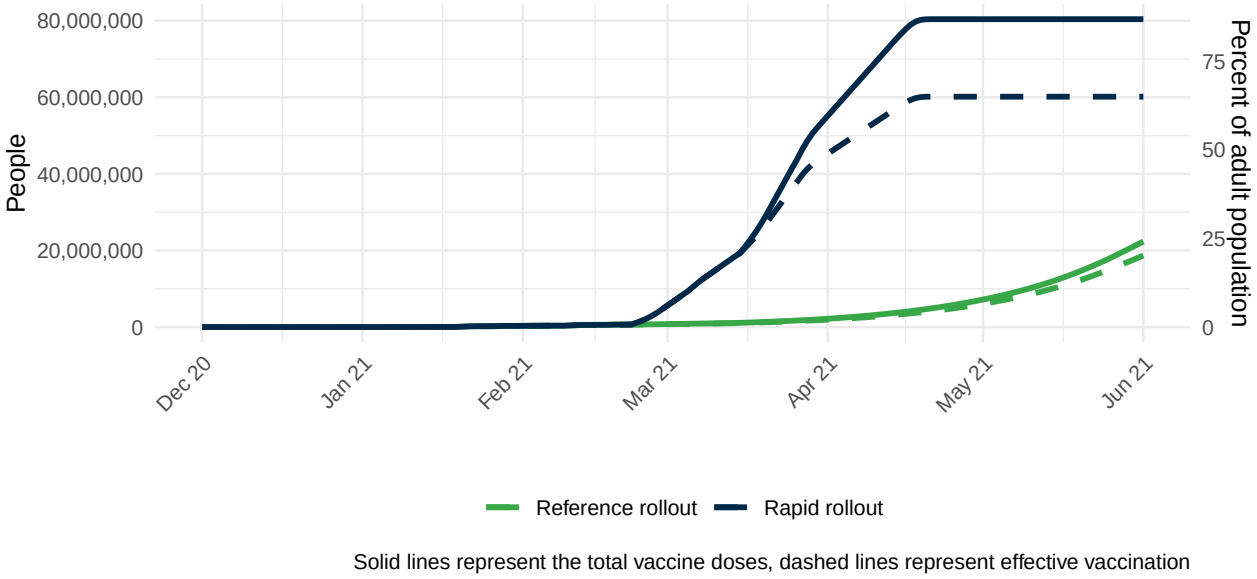


Figure 13 Increase in the risk of death due to pneumonia on February 1 2020 compared to August 1 2020

Figure 14. This figure shows the estimated proportion of the adult (18+) population that is open to receiving a COVID-19 vaccine based on Facebook survey responses (yes and yes, probably).

Figure 15. 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 two ways:

- First, it assumes that variants B.1.351 or P1 begin to spread within 2 weeks in all locations that do not already have B.1.351 or P1 community transmission.
- Second, it also assumes that all those vaccinated increase their mobility toward pre-COVID-19 levels.

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 16. Cumulative COVID-19 deaths until June 01, 2021 for three scenarios

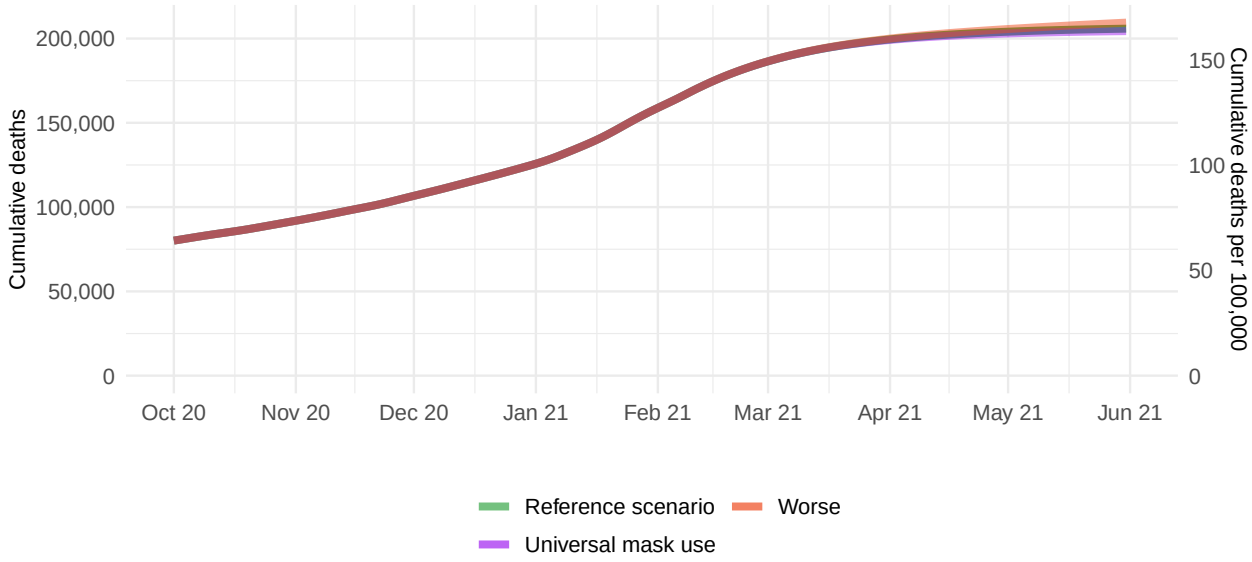


Figure 17. Daily COVID-19 deaths until June 01, 2021 for three scenarios

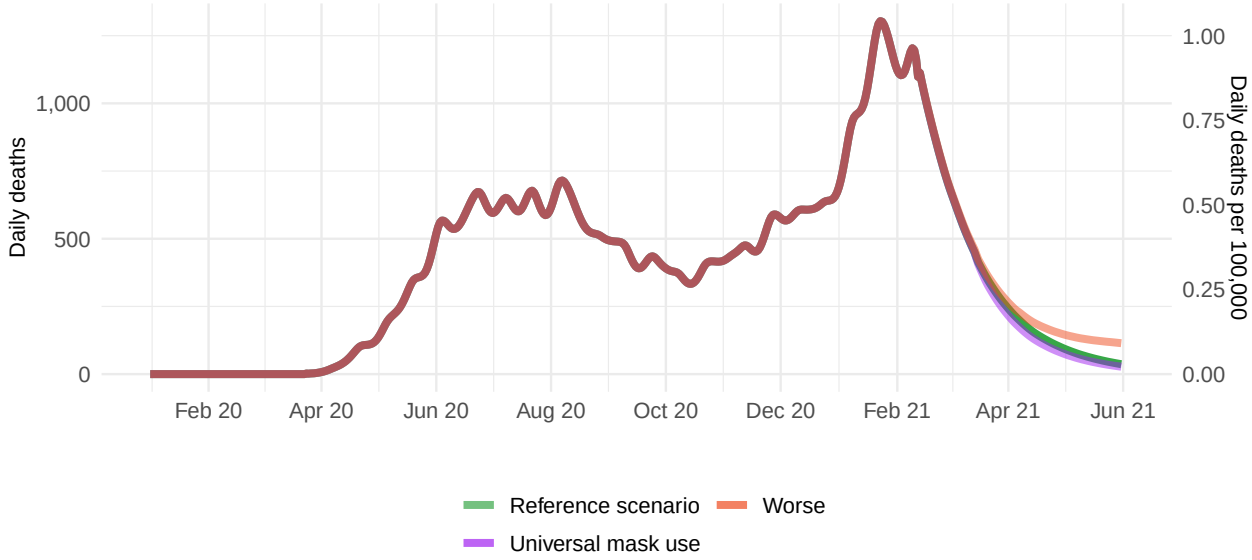


Figure 18. Daily COVID-19 infections until June 01, 2021 for three scenarios

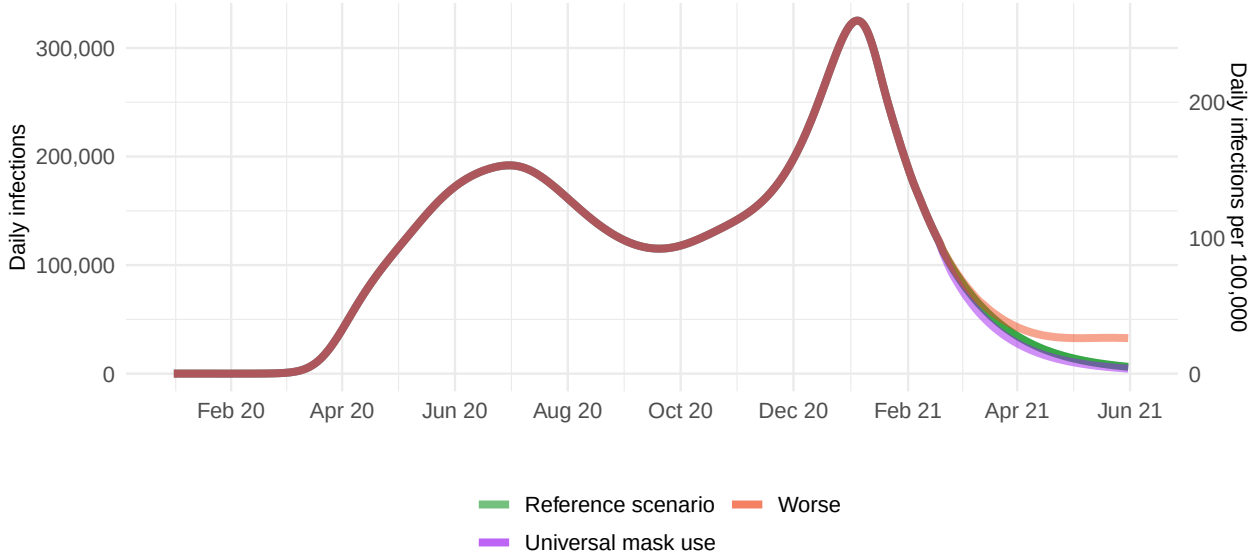


Figure 23. Forecasted percent infected with COVID-19 on June 01, 2021

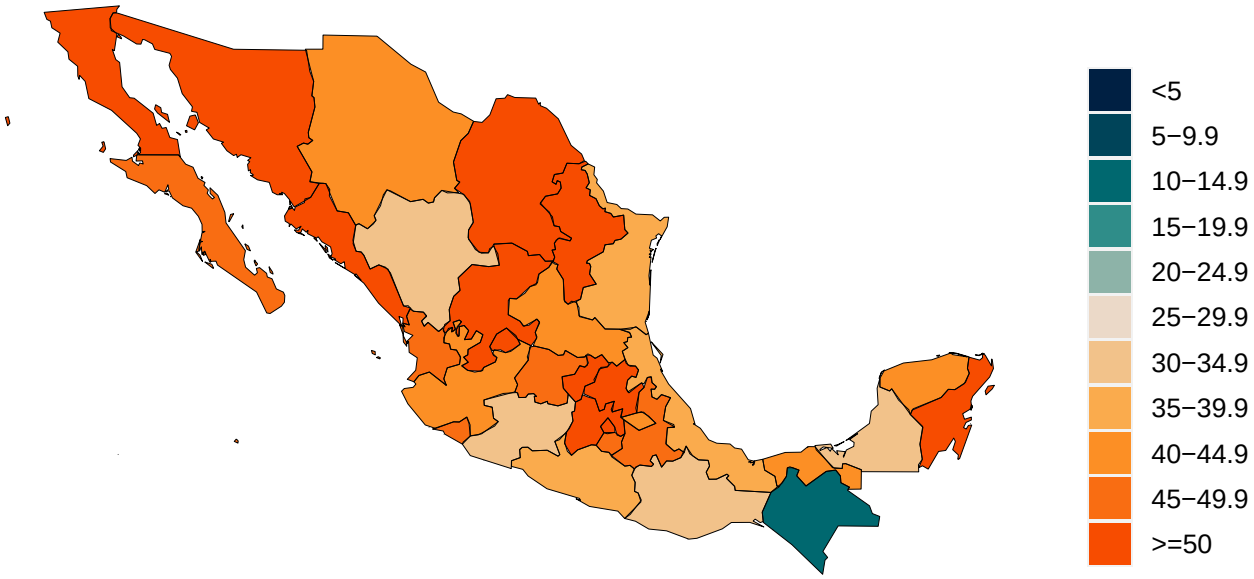


Figure 19. Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available: Delphi from the Massachussets Institute of Technology (Delphi; https://www.covidanalytics.io/home),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

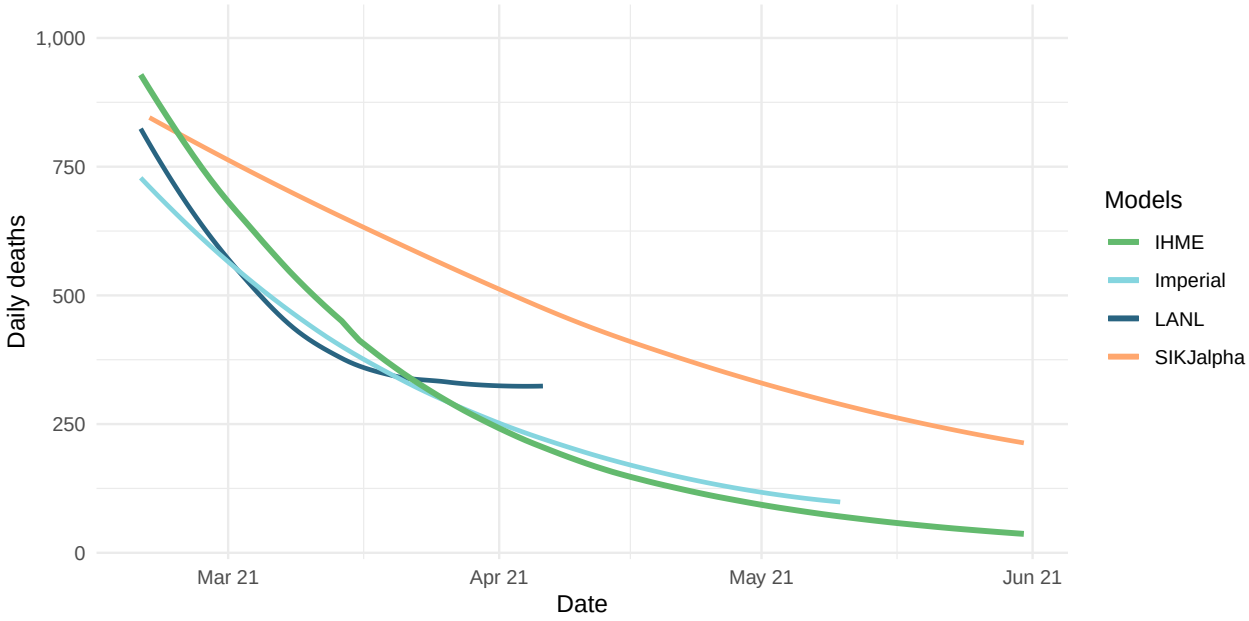


Figure 20. The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate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

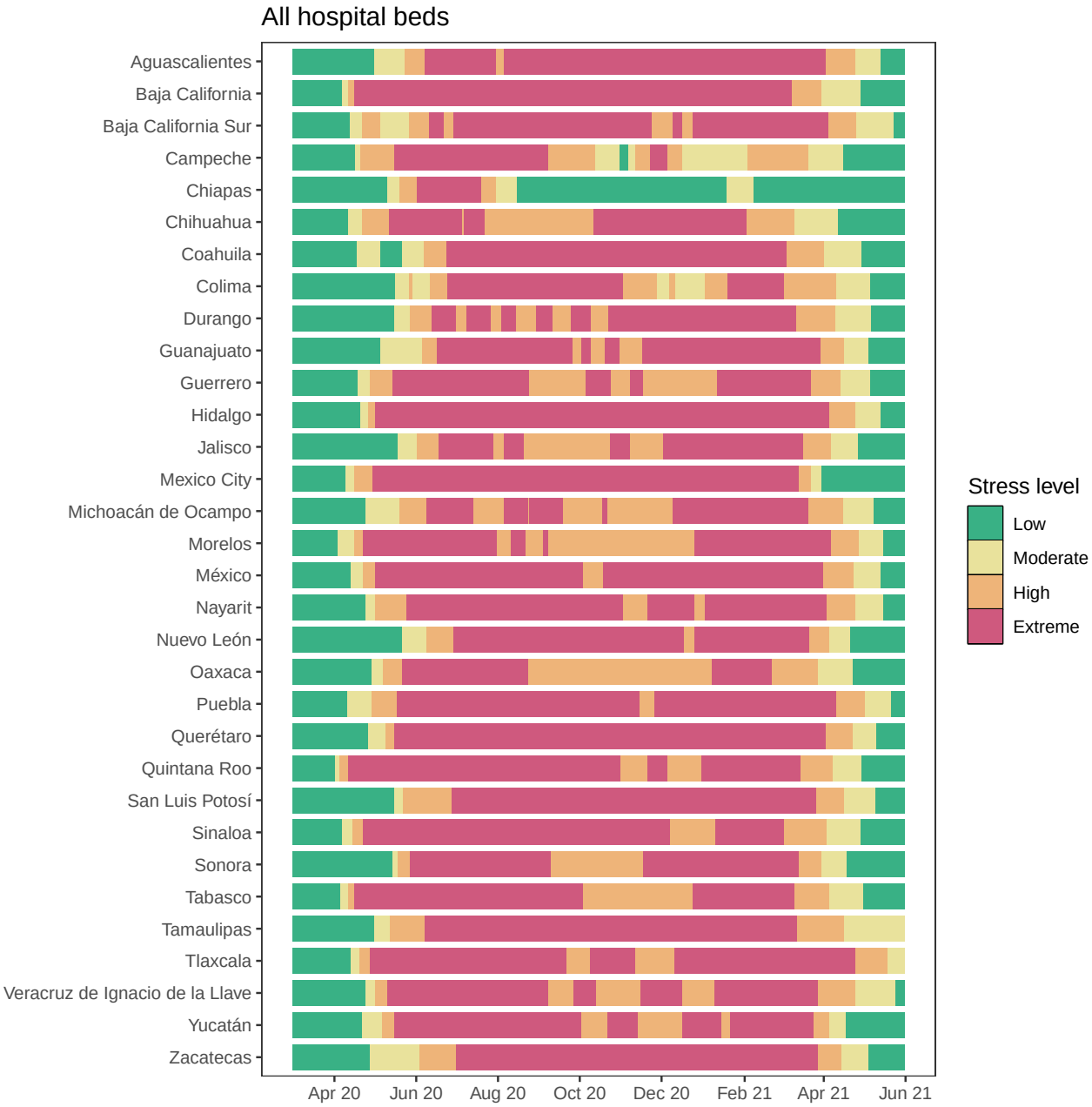
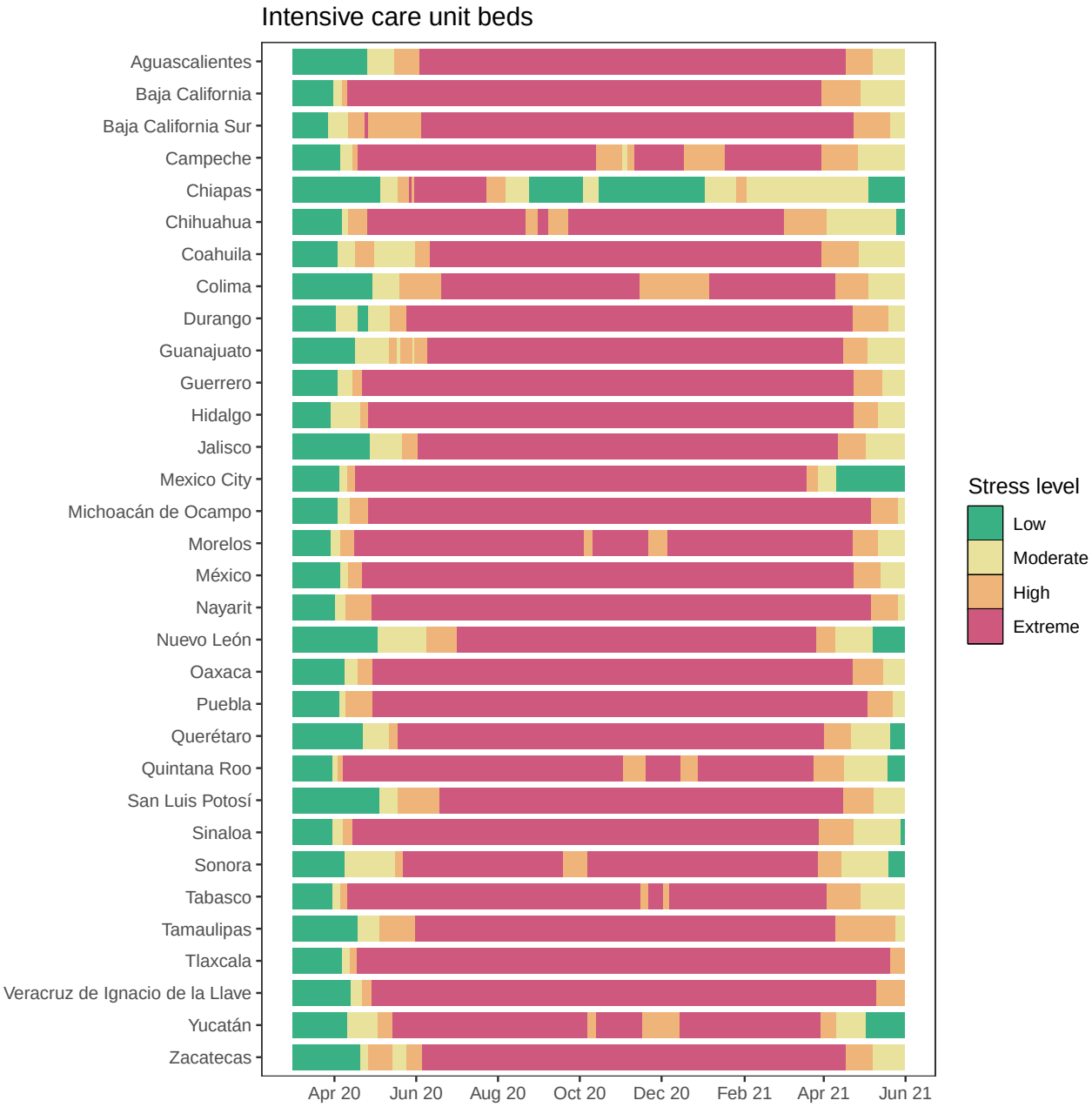


Figure 21. The estimated intensive care unit (ICU) usage is shown over time. The percent of ICU beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of ICU beds occupied by COVID-19 patients. Less than 10% is considered *low stress*, 10-29% is considered *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/).

Data on vaccine candidates, stages of development, manufacturing capacity, and pre-purchasing agreements are primarily from Linksbridge and supplemented by Duke University.

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.