Informe de resultados de COVID-19

México

9 de junio de 2022

Este documento es un resumen de información sobre las últimas proyecciones del modelo IHME sobre el COVID-19 en México. El modelo se ejecutó el 8 de junio de 2022, con datos hasta el 6 de junio de 2022.

La nueva ola Omicrón se está expresando más en algunos estados que en otros. En algunos de ellos como Baja California y Yucatán, los aumentos son mayores en los ingresos hospitalarios que en los casos notificados y menores en las muertes diarias. Es probable que los aumentos más grandes en las admisiones hospitalarias se deban a dos factores: 1) las bajas tasas de informes de pruebas rápidas de antígenos en el hogar a las autoridades de salud, lo que reduce la tasa de detección de infecciones, y 2) el problema continuo de informar hospitalizaciones incidentales, a saber, admisiones como COVID-19, cuando no es el caso. Esperamos que este patrón se desarrolle en el país., de modo que los casos notificados a nivel nacional deberían disminuir hasta junio y permanecer relativamente bajos hasta el otoño, a menos que surja una nueva variante.

La trayectoria de Omicrón más adelante en el verano y en el otoño estará determinada por el patrón de disminución de la inmunidad de la vacunación y la infección. Estudios más recientes sugieren que Omicrón brinda una protección considerable contra infecciones posteriores de Omicrón, incluso de otras subvariantes. Después de que la ola secundaria de Omicrón disminuya, no esperamos que las infecciones vuelvan a aumentar hasta finales de septiembre. Los modelos de rango más largo sugieren aumentos adicionales en el otoño. La combinación de refuerzos de cuarta dosis y el uso más amplio de antivirales según sea necesario debería mantener el número de muertes en el invierno a niveles muy por debajo del invierno pasado.

El reto para los próximos meses no es Omicrón sino la posible aparición de una nueva variante. Tres aspectos determinarán el impacto de una nueva variante: transmisibilidad, escape inmunológico y gravedad. Los aumentos adicionales en la transmisibilidad sobre BA.4 o BA.5 tendrán un impacto muy limitado si la inmunidad de la variante de Omicrón cruzado se mantiene tan alta como la observada para BA.2 versus BA1. Un problema mucho mayor es la aparición de una variante con un escape inmune considerable. Sin embargo, incluso una variante con un escape inmunitario sustancial solo causará un riesgo importante para el país, si se asocia con aumentos considerables en la gravedad en comparación con Omicrón. La combinación de escape inmunológico y mayor gravedad es ciertamente posible. Los esfuerzos de vigilancia para ayudar a detectar la aparición de nuevas variantes con escape inmunológico y mayor gravedad deben mantenerse y fortalecerse en todo el mundo. Los informes hospitalarios y de muerte para pacientes positivos para COVID-19 deben desglosarse por diagnóstico con informes separados de ingresos hospitalarios y muertes con síndrome respiratorio. De esta forma, los ingresos y las muertes incidentales pueden eliminarse del análisis de tendencias. Las jurisdicciones deben

tener cuidado de no reaccionar exageradamente a la ola Omicrón secundaria dado que no hay evidencia de aumentos sustanciales en las muertes hasta la fecha.

Las estrategias efectivas para manejar este estado de la pandemia incluyen la vigilancia global continua para identificar una nueva variante con escape inmunológico y mayor gravedad lo antes posible; asegurar el acceso a los antivirales para las poblaciones de alto riesgo y considerar más adelante en el verano o principios del otoño un cuarto refuerzo para aquellos que probablemente tengan una inmunidad menguante. No parece apropiado en este momento usar mandatos de distanciamiento social para controlar la transmisión de Omicrón. Se debe reconsiderar la flexibilización de los mandatos si surge una nueva variante con escape inmune y mayor gravedad. Incluso entonces, la consideración de la tasa de mortalidad por infección con el uso de antivirales puede llevar a algunas jurisdicciones a no implementar los mandatos incluso con la propagación de una nueva variante.

Situación actual

- Las infecciones diarias en la última semana aumentaron a 144.000 por día en promedio en comparación con las 132.000 de la semana anterior (Figura 1.1). El censo diario de hospitales en la última semana (hasta el 6 de junio) aumentó a 640 por día en promedio en comparación con los 430 de la semana anterior.
- Los casos diarios notificados en la última semana aumentaron a 2.100 por día en promedio en comparación con los 1.700 de la semana anterior (Figura 2.1).
- Las muertes reportadas por COVID-19 en la última semana aumentaron a 21 por día en promedio en comparación con las 12 de la semana anterior (Figura 3.1).
- El total de muertes por COVID-19 en la última semana aumentó a 32 por día en promedio en comparación con las 18 de la semana anterior (Figura 3.1). Esto convierte al COVID-19 en la causa número 12 de muerte en México esta semana (Cuadro 1). El total estimado de muertes diarias debido a COVID-19 en la última semana fue 1,6 veces mayor que el número de muertes informado.
- Ningún estado presenta una tasa diaria de muertes reportadas por COVID-19 superior a 4 por millón (Figura 4.1).
- Ningún estado presenta una tasa diaria de muertes totales por COVID-19 superior a 4 por millón (Figura 4.2).
- Estimamos que 91% de las personas en México se han infectado al menos una vez al 6 de junio (Figura 6.1). La tasa R efectiva, calculada usando casos, hospitalizaciones y muertes, es mayor que 1 en 25 estados (Figura 7.1).
- La tasa de detección de infecciones en México fue cercana a 2% el 6 de junio (Figura 8.1).
- Con base en GISAID y varias bases de datos nacionales, combinados con nuestro modelo de dispersión de variantes, estimamos la prevalencia actual de las variantes de interés (Figuras 9.1-9.5). Estimamos que la variante Alpha circula en 10 estados; que la variante Beta no circula en ningún estado; que la variante Delta circula en 32 estados; que la variante Gamma circula en 12 estados y que la variante Omicrón circula en 32 estados.

Tendencias en los impulsores de la transmisión

- La movilidad la semana pasada fue 22% más alta que la línea de base anterior a la COVID-19 (Figura 11.1). Ningún estado presente una movilidad inferior a 15% del valor a inicios de la pandemia (Figura 12.1).
- A partir del 29 de mayo, en la Encuesta de Tendencias e Impacto de COVID-19, 60% de las personas informaron que siempre usaban una máscara al salir de su hogar, lo cual no representa cambios en comparación con la semana anterior (Figura 13.1).
- Se realizaron cuatro pruebas diagnósticas por cada 100.000 habitantes el 6 de junio (Figura 15.1).
- Al 6 de junio, en siete estados, 70% o más de la población han recibido al menos una dosis de vacuna, y un estado ha alcanzado 70% o más de la población que está completamente vacunada (Figuras 17.1 y 17.2). 71% de las personas en México ha recibido al menos una dosis de vacuna y el 67% está completamente vacunado.
- En México, el 90,2% de la población de 12 años y más dice que aceptaría una vacuna para el COVID-19 (Gráfico 18.1). Esto es lo mismo que la semana anterior. La proporción de la población que está abierta a recibir una vacuna contra el COVID-19 oscila entre 79% en Guerrero y 98% en la Ciudad de México (Figura 19.1). Hay que tener en cuenta que la aceptación de la vacuna se calcula utilizando datos de encuestas de la población mayor de 18 años.
- Al 30 de mayo de 2022, el 2% de la población en México dice que aceptaría una vacuna contra el COVID-19 pero aún no se ha vacunado.
- En nuestro escenario de referencia actual, esperamos que 88.5 millones de personas estén vacunadas con al menos una dosis para el 1 de octubre (Figura 21.1). Esperamos que el 67% de la población esté completamente vacunada para el 1 de octubre.

Proyecciones y escenarios

Producimos tres escenarios al proyectar COVID-19. **El escenario de referencia** es nuestro pronóstico de lo que creemos que es más probable que suceda:

- Las vacunas se distribuyen al ritmo esperado. La eficacia de la vacuna específica de marca y variante se actualiza utilizando la última información disponible de publicaciones revisadas por pares y otros informes.
- El uso futuro de mascarillas disminuirá a 50% del nivel mínimo que alcanzó entre el 1 de enero de 2021 y el 1 de mayo de 2022. Esta disminución comienza después del último punto de datos observado en cada ubicación y pasa linealmente al mínimo durante un período de seis semanas.
- La movilidad aumenta a medida que aumenta la cobertura de vacunación.
- 80% de los que han recibido dos dosis de la vacuna (o una dosis para Johnson & Johnson) reciben una tercera dosis a los seis meses después de la segunda dosis.
- La utilización de antivirales para la prevención del riesgo de COVID-19 en poblaciones de alto riesgo alcanzará el 80 % entre el 15 de junio de 2022 y el 31 de julio de 2022. Esto se aplica en países de ingresos altos, pero no en países de ingresos

bajos y medianos, y esto el supuesto de implementación sigue un patrón similar al de las implementaciones mundiales de vacunas.

El **escenario de uso de mascarillas del 80%** hace las mismas suposiciones que el escenario de referencia, pero asume que todas las ubicaciones alcanzan el uso de mascarillas del 80% en siete días. Si una ubicación actualmente tiene un uso superior al 80%, el uso de mascarillas permanece en el nivel actual.

El **escenario de acceso a antivirales** hace todos los mismos supuestos que el escenario de referencia, pero asume antivirales distribuidos globalmente y extiende la cobertura a todos los países de bajos y medianos ingresos entre el 15 de agosto de 2022 y el 30 de septiembre de 2022.

Infecciones

- Los contagios diarios estimados en el **escenario de referencia** ascenderán a 254.850 al 1 de octubre de 2022 (Gráfico 23.1).
- Las infecciones diarias estimadas en el **escenario de uso de mascarillas del 80**% disminuirán a 58.720 para el 14 de agosto de 2022 (Figura 23.1).
- Las infecciones diarias estimadas en el **escenario de acceso a antivirales** aumentarán a 254.850 para el 1 de octubre de 2022 (Figura 23.1).

Casos

- Los casos diarios estimados en el **escenario de referencia** ascenderán a 3.440 al 4 de agosto de 2022 (Figura 23.2).
- Los casos diarios estimados en el **escenario de uso de mascarillas del 80%** aumentarán a 2.440 para el 15 de junio de 2022 (Figura 23.2).
- Los casos diarios estimados en el **escenario de acceso antivirales** aumentarán a 3.440 para el 4 de agosto de 2022 (Figura 23.2).

Hospitalizaciones

- El censo hospitalario diario en el **escenario de referencia** ascenderá a 2.880 al 1 de octubre de 2022 (Gráfico 23.3). En algún momento entre junio y el 1 de octubre, ningún estado tendrá una presión alta o extrema en las camas de los hospitales (Figura 25.1). En algún momento entre junio y el 1 de octubre, ningún estado tendrá una presión alta o extrema en la capacidad de las unidades de cuidados intensivos (UCI) (Figura 26.1).
- El censo hospitalario diario en el **escenario de uso de mascarillas del 80%** aumentará a 1.600 para el 25 de junio de 2022 (Figura 23.3).
- El censo diario de hospitales en el **escenario de acceso a antivirales** ascenderá a 2.680 al 25 de agosto de 2022 (Figura 23.3).

Fallecidos

- En nuestro **escenario de referencia**, nuestro modelo proyecta 464.000 muertes acumuladas notificadas debido a la COVID-19 el 1 de octubre. Esto representa 9.500 muertes adicionales del 6 de junio al 1 de octubre. Las muertes diarias reportadas por la COVID-19 en el **escenario de referencia** aumentarán a 100 en octubre 1 de 2022 (Figura 23.4).
- Bajo nuestro **escenario de referencia**, nuestro modelo proyecta 760.000 muertes totales acumuladas por COVID-19 el 1 de octubre. Esto representa 15.000 muertes adicionales del 6 de junio al 1 de octubre (Figura 23.5).
- En nuestro **escenario de uso de mascarillas del 80%,** nuestro modelo proyecta 459.000 muertes acumuladas notificadas debido a la COVID-19 el 1 de octubre. Esto representa 4.600 muertes adicionales del 6 de junio al 1 de octubre. aumentará a 60 el 29 de junio de 2022 (Figura 23.4).
- En nuestro **escenario de acceso antivirales**, nuestro modelo proyecta 464.000 muertes acumuladas reportadas debido a COVID-19 el 1 de octubre. Esto representa 9.300 muertes adicionales del 6 de junio al 1 de octubre. Las muertes diarias reportadas por COVID-19 en el escenario de acceso antiviral aumentarán a 100 para el 7 de septiembre de 2022 (Figura 23.4).
- La Figura 24.1 compara nuestros pronósticos de escenarios de referencia con otros modelos archivados públicamente. Las previsiones son muy divergentes.

Actualizaciones del modelo

Este mes, hemos realizado tres modificaciones a nuestros supuestos de referencia en el modelo. En primer lugar, esperamos que la reciente implementación de los tratamientos con Paxlovid en entornos de altos ingresos reduzca en gran medida la enfermedad grave y los resultados de muerte. Actualmente no tenemos datos para informar los niveles de cobertura, por lo que hemos introducido un modelo de ampliación simple que supone que las personas mayores de 65 años serán el objetivo del tratamiento, y el acceso al tratamiento entre este grupo aumentará del 0% en el 15 de enero de 2022, hasta un máximo de 80% el 31 de julio de 2022. Los ensayos clínicos sugieren que Paxlovid proporciona una reducción del 88% en el riesgo de hospitalización y muerte https://www.pfizer.com/news/press-release/press-release-detail/pfizer-announces-additional-phase-23-study-results entre las personas tratadas dentro de los cinco días posteriores al inicio de los síntomas. Tomando un supuesto un poco más conservador de que las tasas de hospitalización y muerte se reducirán en 80% para tener en cuenta las variaciones en el momento del tratamiento y la adherencia del paciente en un entorno real.

En segundo lugar, los datos de la encuesta sugieren que el uso de mascarillas sigue disminuyendo en la mayoría de los lugares del mundo. Hemos actualizado nuestro pronóstico de uso de máscaras de referencia para introducir una disminución lineal en la prevalencia del uso de máscaras hasta el 50% del nivel mínimo de uso entre el 1 de enero de 2021 y el 1 de mayo de 2022, en cada ubicación. Hemos mantenido nuestro supesto anterior de que el uso de mascarillas continuará en los niveles actuales en China, Corea del Sur, Japón, Taiwán, Singapur y Sudáfrica, ya que los datos actuales no sugieren una reducción inminente.

Finalmente, de manera similar al uso de máscaras, la movilidad observada continúa aumentando en gran parte del mundo. Hemos reemplazado nuestro escenario de referencia anterior que asumía que los niveles actuales de movilidad persistirían indefinidamente con un escenario en el que la movilidad aumenta para igualar la cobertura de vacunas.

Continuamos produciendo tres escenarios al proyectar COVID-19, pero hemos reemplazado el escenario de mayor cobertura de refuerzo de vacunas con un escenario de acceso a los antivirales que examina el impacto de una distribución más equitativa de Paxlovid a países de ingresos bajos y medianos (LMIC).

COVID-19 Results Briefing

Mexico

June 9, 2022

This document contains summary information on the latest projections from the IHME model on COVID-19 in Mexico. The model was run on June 8, 2022, with data through June 6, 2022.

The new wave of Omicron is expressing itself more in some states than in others. In some of them, such as Baja California and Yucatán, the increases are higher in hospital admissions than in reported cases and lower in daily deaths. The largest increases in hospital admissions are likely to be due to two factors: 1) low rates of reporting of rapid home antigen tests to health authorities, which lowers the infection-detection rate, and 2) the continuing problem of reporting incidental hospitalizations, namely admissions like COVID-19, when this is not the case. We expect this pattern to play out across the country, so nationally reported cases should decline through June and remain relatively low through the fall unless a new variant emerges.

Omicron's trajectory later in the summer and fall will be determined by the pattern of declining immunity from vaccination and infection. Studies that are more recent suggest that Omicron provides considerable protection against subsequent Omicron infections, including other subvariants. After Omicron's secondary wave subsides, we do not expect infections to pick up again until the end of September. Longer-range models suggest additional increases in the fall. The combination of fourth-dose boosters and the broader use of antivirals as needed should keep the winter death toll at levels well below last winter.

The challenge for the coming months is not Omicron but the possible appearance of a new variant. Three factors will determine the impact of a new variant: transmissibility, immune escape, and severity. Further increases in transmissibility over BA.4 or BA.5 will have very limited impact if cross-omicron variant immunity remains as high as that seen for BA.2 versus BA1. A much bigger problem is the appearance of a variant with a considerable immune escape. However, even a variant with a substantial immune escape will only cause a significant risk to the country if it is associated with significant increases in severity compared to Omicron. The combination of immune escape and increased severity is certainly possible. Surveillance efforts to help detect the emergence of new, more severe immune-escape variants must be maintained and strengthened worldwide. Hospital and death reports for COVID-19-positive patients should be broken down by diagnosis with separate reports of hospital admissions and respiratory syndrome deaths. In this way, admissions and incidental deaths can be removed from the trend analysis. Jurisdictions should be careful not to overreact to the secondary Omicron wave, as there is no evidence of substantial increases in fatalities to date.

Effective strategies to manage this state of the pandemic include continued global surveillance to identify a new immune-escaping variant of increased severity as soon as possible; ensure access to antivirals for high-risk populations and consider later in the summer or early fall a fourth booster for those likely to have waning immunity. It does not seem appropriate at this time to use social distancing mandates to control Omicron transmission. Relaxation of mandates should be reconsidered if a new variant with immune escape and higher severity emerges. Even then, consideration of the infection-fatality rate with antiviral use may lead some jurisdictions not to implement the mandates even with the spread of a new variant.

Current situation

- Daily infections in the last week increased to 144,000 per day on average compared to 132,000 the week before (Figure 1.1). Daily hospital census in the last week (through June 6) increased to 640 per day on average compared to 430 the week before.

- Daily reported cases in the last week increased to 2,100 per day on average compared to 1,700 the week before (Figure 2.1).

- Reported deaths due to COVID-19 in the last week increased to 21 per day on average compared to 12 the week before (Figure 3.1).

- Total deaths due to COVID-19 in the last week increased to 32 per day on average compared to 18 the week before (Figure 3.1). This makes COVID-19 the number 12 cause of death in Mexico this week (Table 1). Estimated total daily deaths due to COVID-19 in the past week were 1.6 times larger than the reported number of deaths.

- The daily rate of reported deaths due to COVID-19 is greater than 4 per million in no states (Figure 4.1).

- The daily rate of total deaths due to COVID-19 is greater than 4 per million in no states (Figure 4.2).

- We estimate that 91% of people in Mexico have been infected at least once as of June 6 (Figure 6.1). Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 25 states (Figure 7.1).

- The infection-detection rate in Mexico was close to 2% on June 6 (Figure 8.1).

- Based on the GISAID and various national databases, combined with our variant spread model, we estimate the current prevalence of variants of concern (Figures 9.1–9.5). We estimate that the Alpha variant is circulating in 10 states, that the Beta variant is circulating in no states, that the Delta variant is circulating in 32 states, that the Gamma variant is circulating in 12 states, and that the Omicron variant is circulating in 32 states.

Trends in drivers of transmission

- Mobility last week was 22% higher than the pre-COVID-19 baseline (Figure 11.1). Mobility was lower than 15% of baseline in no states (Figure 12.1).

- As of May 29, in the COVID-19 Trends and Impact Survey, 60% of people self-reported that they always wore a mask when leaving their home, which is the same as last week (Figure 13.1).

- There were four diagnostic tests per 100,000 people on June 6 (Figure 15.1).

- As of June 6, seven states have reached 70% or more of the population who have received at least one vaccine dose, and one state has reached 70% or more of the population who are fully vaccinated (Figures 17.1 and 17.2). 71% of people in Mexico have received at least one vaccine dose, and 67% are fully vaccinated.

- In Mexico, 90.2% of the population that is 12 years and older say they would accept a vaccine for COVID-19 (Figure 18.1). This is the same as the previous week. The proportion of the population who are open to receiving a COVID-19 vaccine ranges from 79% in Guerrero to 98% in Mexico City (Figure 19.1). Note that vaccine acceptance is calculated using survey data from the 18+ population.

- As of May 30, 2022, 2% of the population in Mexico say they would accept a vaccine for COVID-19 but have not yet been vaccinated.

- In our current reference scenario, we expect that 88.5 million people will be vaccinated with at least one dose by October 1 (Figure 21.1). We expect that 67% of the population will be fully vaccinated by October 1.

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. Brand- and variant-specific vaccine efficacy is updated using the latest available information from peer-reviewed publications and other reports.

- Future mask use will decline to 50% of the minimum level it reached between January 1, 2021, and May 1, 2022. This decline begins after the last observed data point in each location and transitions linearly to the minimum over a period of six weeks.

- Mobility increases as vaccine coverage increases.

- 80% of those who have had two doses of vaccine (or one dose for Johnson & Johnson) receive a third dose at six months after their second dose.

- Antiviral utilization for COVID-19 risk prevention in high-risk populations will reach 80% between June 15, 2022, and July 31, 2022. This applies in high-income countries, but not low- and middle-income countries, and this rollout assumption follows a similar pattern to global vaccine rollouts.

The **80% mask use scenario** makes all the same assumptions as the reference scenario but assumes all locations reach 80% mask use within seven days. If a location currently has higher than 80% use, mask use remains at the current level.

The **antiviral access scenario** makes all the same assumptions as the reference scenario but assumes globally distributed antivirals and extends coverage to all low- and middle-income countries between August 15, 2022, and September 30, 2022.

Infections

- Daily estimated infections in the **reference scenario** will rise to 254,850 by October 1, 2022 (Figure 23.1).

- Daily estimated infections in the **80% mask use scenario** will decline to 58,720 by August 14, 2022 (Figure 23.1).

- Daily estimated infections in the **antiviral access scenario** will rise to 254,850 by October 1, 2022 (Figure 23.1).

Cases

- Daily estimated cases in the **reference scenario** will rise to 3,440 by August 4, 2022 (Figure 23.2).

- Daily estimated cases in the **80% mask use scenario** will rise to 2,440 by June 15, 2022 (Figure 23.2).

- Daily estimated cases in the **antiviral access scenario** will rise to 3,440 by August 4, 2022 (Figure 23.2).

Hospitalizations

- Daily hospital census in the **reference scenario** will rise to 2,880 by October 1, 2022 (Figure 23.3). At some point from June through October 1, no states will have high or extreme stress on hospital beds (Figure 25.1). At some point from June through October 1, no states will have high or extreme stress on intensive care unit (ICU) capacity (Figure 26.1).

- Daily hospital census in the **80% mask use scenario** will rise to 1,600 by June 25, 2022 (Figure 23.3).

- Daily hospital census in the **antiviral access scenario** will rise to 2,680 by August 25, 2022 (Figure 23.3).

Deaths

- In our **reference scenario**, our model projects 464,000 cumulative reported deaths due to COVID-19 on October 1. This represents 9,500 additional deaths from June 6 to October 1. Daily reported COVID-19 deaths in the **reference scenario** will rise to 100 by October 1, 2022 (Figure 23.4).

- Under our **reference scenario**, our model projects 760,000 cumulative total deaths due to COVID-19 on October 1. This represents 15,000 additional deaths from June 6 to October 1 (Figure 23.5).

- In our **80% mask use scenario**, our model projects 459,000 cumulative reported deaths due to COVID-19 on October 1. This represents 4,600 additional deaths from June 6 to October 1. Daily reported COVID-19 deaths in the **80% mask use scenario** will rise to 60 by June 29, 2022 (Figure 23.4).

- In our **antiviral access scenario**, our model projects 464,000 cumulative reported deaths due to COVID-19 on October 1. This represents 9,300 additional deaths from June 6 to October 1. Daily reported COVID-19 deaths in the **antiviral access scenario** will rise to 100 by September 7, 2022 (Figure 23.4).

- Figure 24.1 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.

Model updates

This month, we have made three alterations to our reference assumptions in the model. First, we expect the recent rollout of Paxlovid treatments in high-income settings to greatly reduce severe disease and death outcomes. We do not currently have data to inform levels of coverage, so we have introduced a simple scale-up model that assumes individuals over the age of 65 will be targeted for treatment, and access to treatment among this group will rise from 0% on June 15, 2022, to a maximum of 80% on July 31, 2022. Clinical trials suggest a Paxlovid provides an 88% reduction in the risk of hospitalization and death https://www.pfizer.com/news/press-release/press-release-detail/pfizer-announces-additional-phase-23-study-results among people treated within five days of symptom onset. We make a slightly more conservative assumption that the hospitalization and death rates will be reduced by 80% to account for variations in treatment timing and patient adherence in a real-world setting.

Second, survey data suggest that mask use is continuing to decline in most world locations. We have updated our reference mask use forecast to introduce a linear decline in mask use prevalence down to 50% of the minimum use level between January 1, 2021, and May 1, 2022, in each location. We have kept our previous assumption that mask use will continue at current levels in China, South Korea, Japan, Taiwan, Singapore, and South Africa, as current data do not suggest an imminent reduction.

Finally, similar to mask use, observed mobility continues to increase in much of the world. We have replaced our previous reference scenario that assumed current levels of mobility would persist indefinitely with a scenario that has mobility increase to match vaccine coverage. We continue to produce three scenarios when projecting COVID-19, but we have replaced the increased booster coverage scenario with an antiviral access scenario that examines the impact of more equitable distribution of Paxlovid to low- and middle-income countries (LMICs).

Figure 1.1: Daily COVID-19 hospital census and estimated infections

Daily estimated infections ▬ Daily hospital census
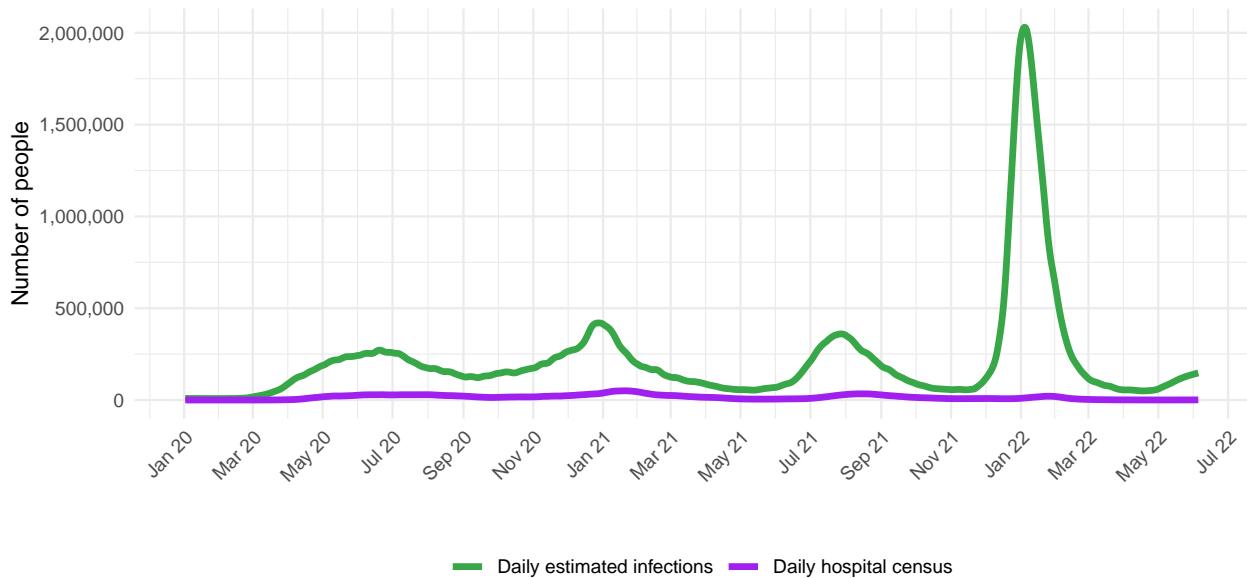
Figure 2.1: Reported daily COVID-19 cases, moving average
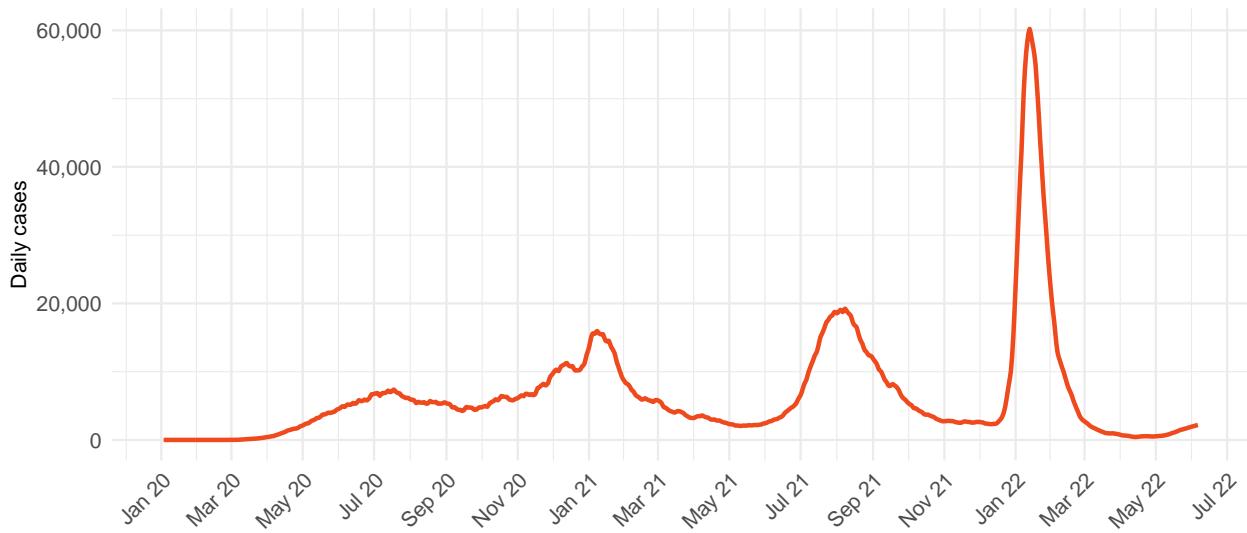
Table 1: Ranking of total deaths due to COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
Ischemic heart disease	2,044	1
Diabetes mellitus	1,420	2
Chronic kidney disease	1,395	3
Cirrhosis and other chronic liver diseases	891	4
Stroke	729	5
Chronic obstructive pulmonary disease	630	6
Interpersonal violence	590	7
Alzheimer's disease and other dementias	455	8
Lower respiratory infections	434	9
Road injuries	406	10
COVID-19	227	12

Figure 3.1: Smoothed trend estimate of daily COVID-19 deaths
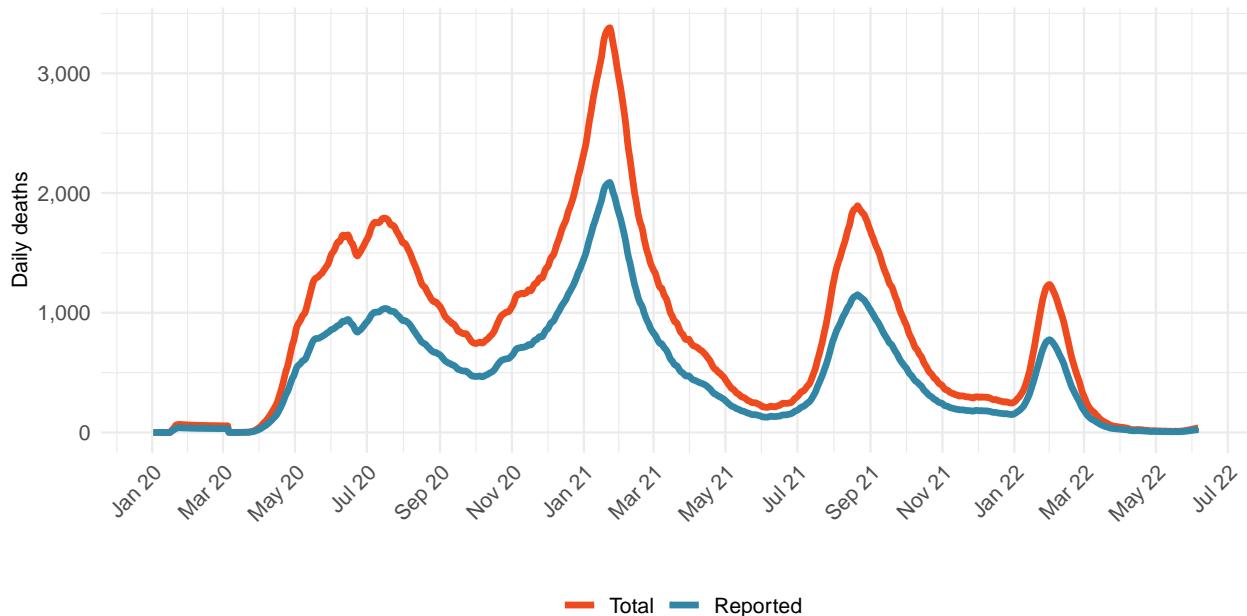
Daily COVID-19 death rate per 1 million on June 6, 2022

Figure 4.1: Daily reported COVID-19 death rate per 1 million

	<1
	1 to 1.9
	2 to 2.9
	3 to 3.9
	4 to 4.9
	5 to 5.9
	6 to 6.9
	7 to 7.9
	>=8

Figure 4.2: Daily total COVID-19 death rate per 1 million

	<1
	1 to 1.9
	2 to 2.9
	3 to 3.9
	4 to 4.9
	5 to 5.9
	6 to 6.9
	7 to 7.9
	>=8

Cumulative COVID-19 deaths per 100,000 on June 6, 2022

Figure 5.1: Reported cumulative COVID-19 deaths per 100,000

	<50
	50 to 99
	100 to 149
	150 to 199
	200 to 249
	250 to 299
	300 to 349
	350 to 399
	>=400
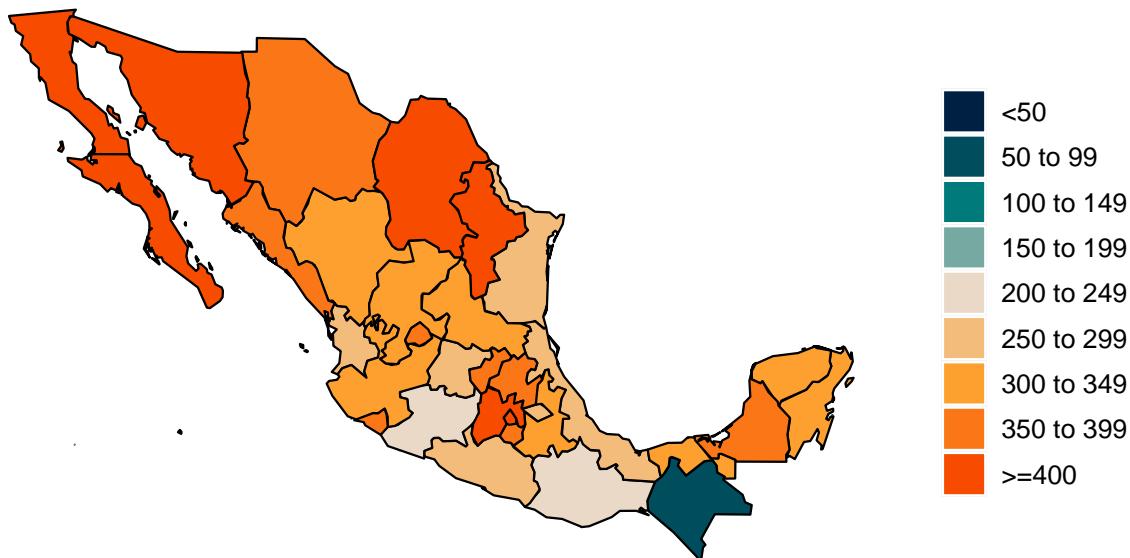
Figure 5.2: Total cumulative COVID-19 deaths per 100,000

	<50
	50 to 99
	100 to 149
	150 to 199
	200 to 249
	250 to 299
	300 to 349
	350 to 399
	>=400
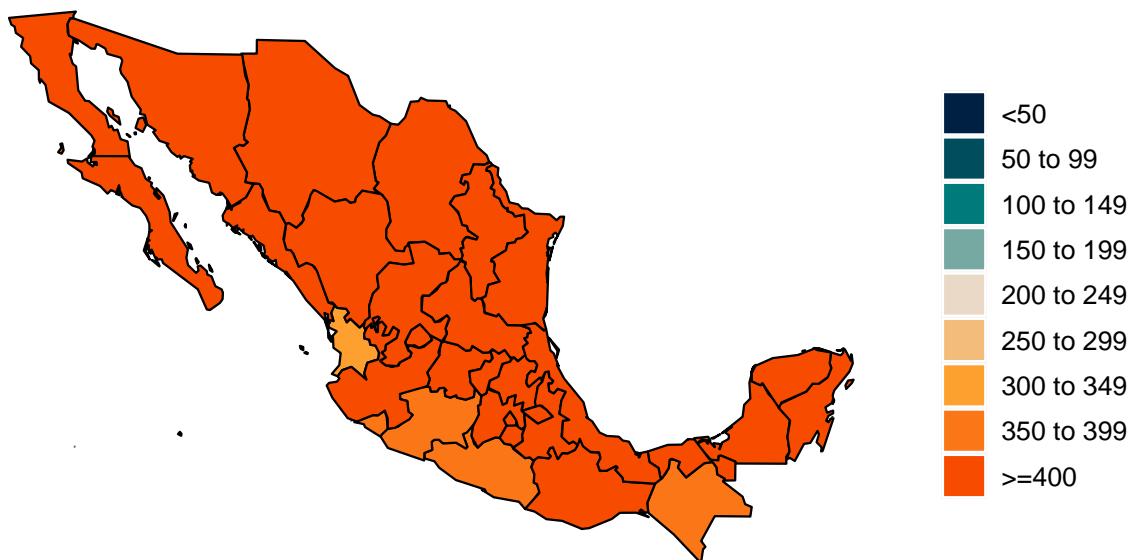
Figure 6.1: Estimated percent of the population infected with COVID-19 on June 6, 2022

	<10
	10 to 19.9
	20 to 29.9
	30 to 39.9
	40 to 49.9
	50 to 59.9
	60 to 69.9
	70 to 79.9
	80 to 89.9
	>=90
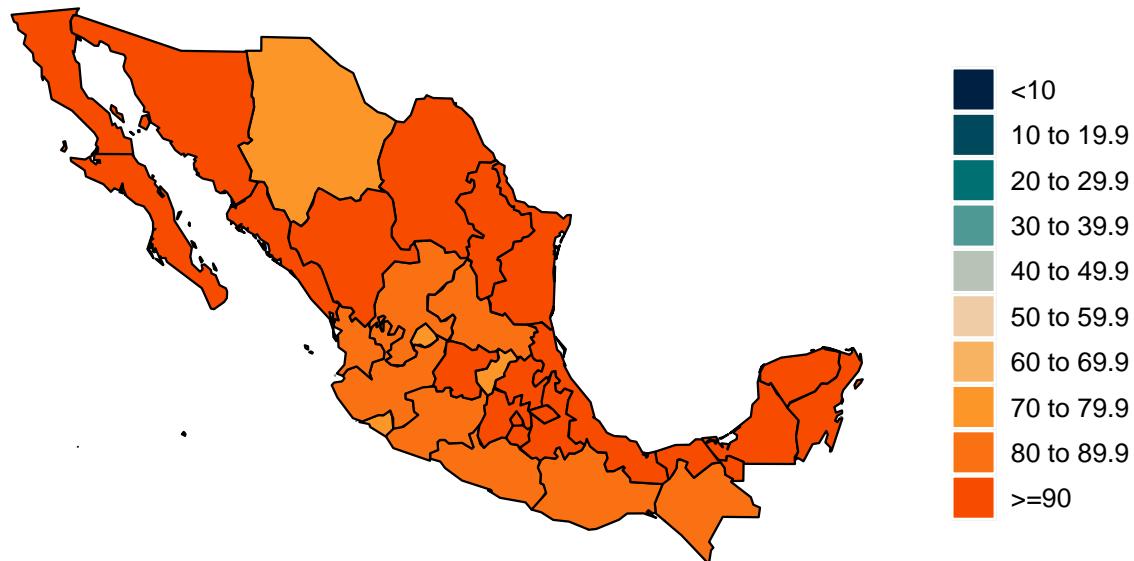
Figure 7.1: Mean effective R on May 26, 2022. Effective R less than 1 means that transmission should decline, all other things being held the same. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past.

	<0.88
	0.88 to 0.9
	0.91 to 0.93
	0.94 to 0.96
	0.97 to 0.99
	1 to 1.04
	1.05 to 1.09
	1.1 to 1.14
	1.15 to 1.18
	>=1.19
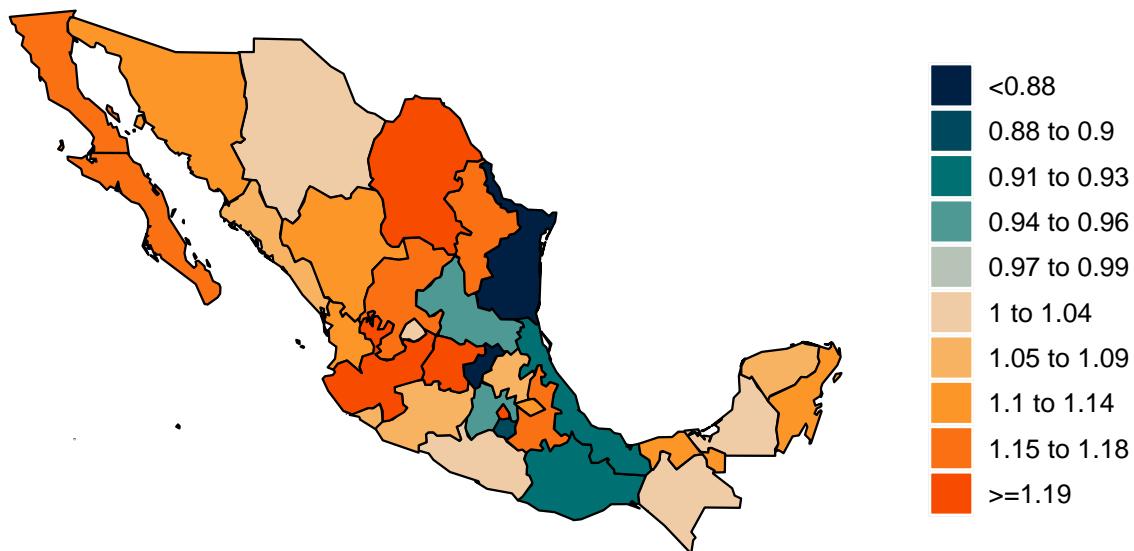
Figure 8.1: Percent of estimated COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model. Due to measurement errors in cases and testing rates, the infection-detection rate can exceed 100% at particular points in time.
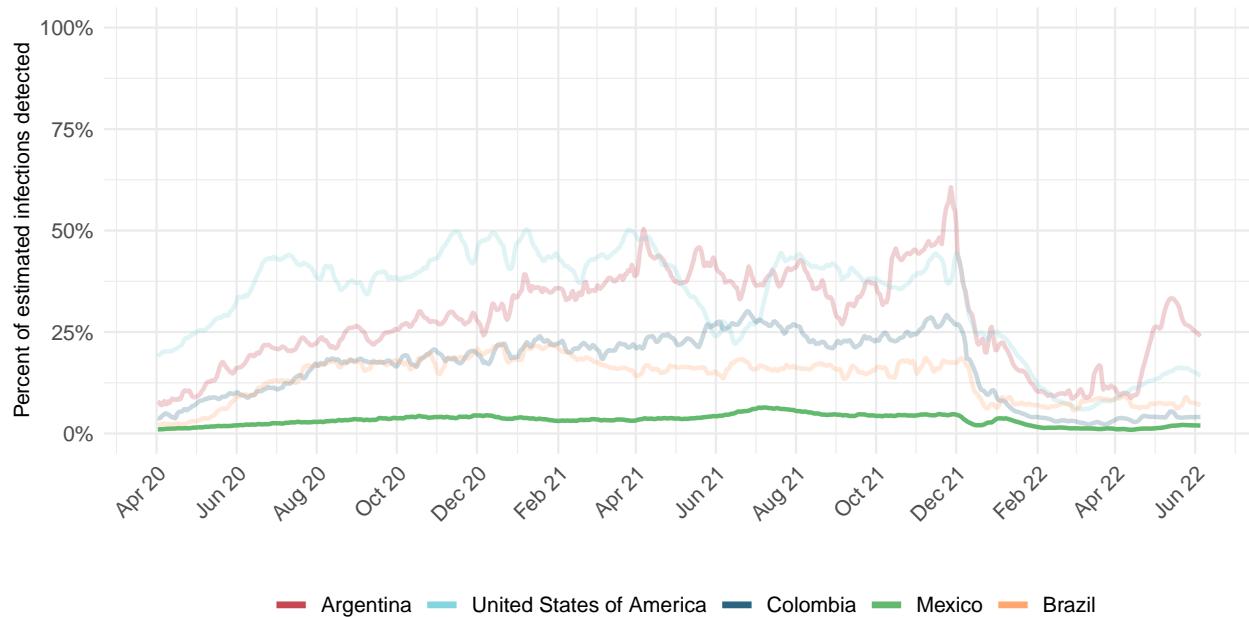
Estimated percent of circulating SARS-CoV-2 for primary variant families on June 6, 2022

Figure 9.1: Estimated percent of new infections that are Alpha variant

Figure 9.2: Estimated percent of new infections that are Beta variant

Figure 9.3: Estimated percent of new infections that are Delta variant

⬜	0%
⬛	1–9%
🟩	10–24%
🟩	25–49%
🟧	50–74%
🟧	75–89%
🟥	90–100%

Figure 9.4: Estimated percent of new infections that are Gamma variant

⬜	0%
⬛	1–9%
🟩	10–24%
🟩	25–49%
🟧	50–74%
🟧	75–89%
🟥	90–100%

Figure 9.5: Estimated percent of new infections that are Omicron variant

	0%
	1–9%
	10–24%
	25–49%
	50–74%
	75–89%
	90–100%

Figure 10.1: Infection-fatality rate on June 6, 2022. This is estimated as the ratio of COVID-19 deaths to estimated daily COVID-19 infections.

■	< 0.2%
■	0.2% to 0.39%
■	0.4% to 0.59%
■	0.6% to 0.79%
■	0.8% to 0.99%
■	> 1%

Critical drivers

Table 2: Current mandate implementation

Columns:
Primary school closure, Secondary school closure, Higher school closure, Entry restrictions for some non–residents, Entry restrictions for all non–residents, Individual movements restricted, Curfew for businesses, Individual curfew, Gathering limit: 6 indoor, 10 outdoor, Gathering limit: 10 indoor, 25 outdoor, Gathering limit: 25 indoor, 50 outdoor, Gathering limit: 50 indoor, 100 outdoor, Gathering limit: 100 indoor, 250 outdoor, Restaurants closed, Bars closed, Restaurants / bars closed, Restaurants / bars curbside only, Gyms, pools, other leisure closed, Non–essential retail closed, Non–essential retail curbside only, Non–essential workplaces closed, Stay home order, Stay home fine, Mask mandate, Mask mandate fine

Rows: Aguascalientes, Baja California, Baja California Sur, Campeche, Chiapas, Chihuahua, Coahuila, Colima, Durango, Guanajuato, Guerrero, Hidalgo, Jalisco, Mexico City, Michoacán de Ocampo, Morelos, México, Nayarit, Nuevo León, Oaxaca, Puebla, Querétaro, Quintana Roo, San Luis Potosí, Sinaloa, Sonora, Tabasco, Tamaulipas, Tlaxcala, Veracruz de Ignacio de la Llave, Yucatán, Zacatecas

Legend:
- Mandate in place
- Mandate in place (imposed this week)
- Mandate in place (updated from previous reporting)
- No mandate
- No mandate (lifted this week)
- No mandate (updated from previous reporting)

**Figure 11.1: Trend in mobility as measured through smartphone app use, compared to January 2020 baseline**
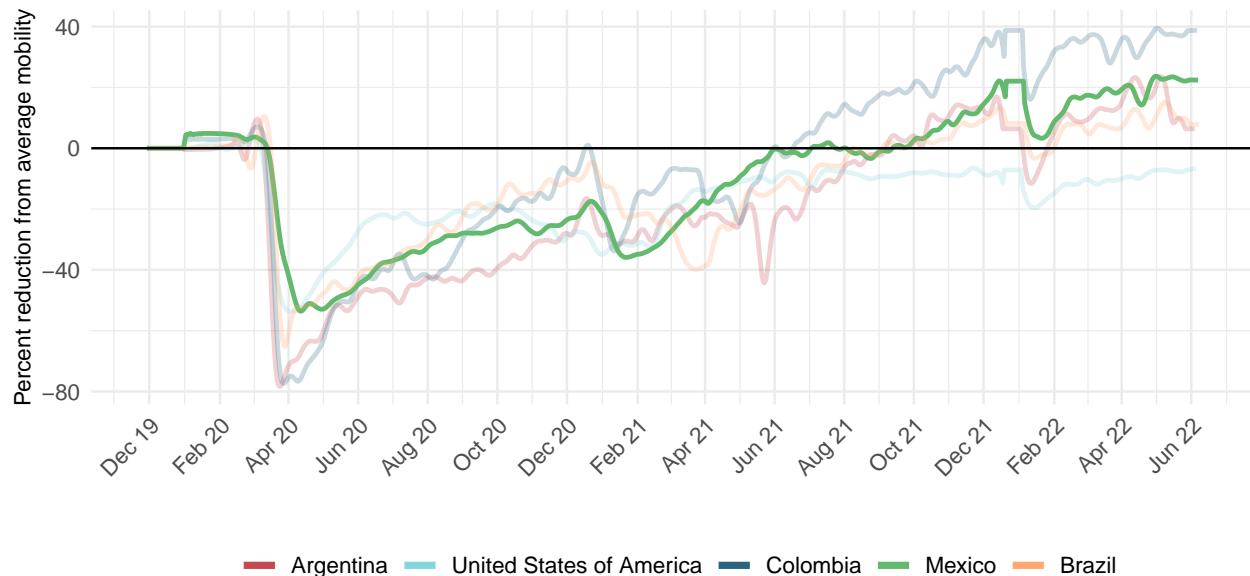
Figure 12.1: Mobility level as measured through smartphone app use, compared to January 2020 baseline (percent) on June 6, 2022

	=<−50
	−49 to −45
	−44 to −40
	−39 to −35
	−34 to −30
	−29 to −25
	−24 to −20
	−19 to −15
	−14 to −10
	>−10

Figure 13.1: Trend in the proportion of the population reporting always wearing a mask when leaving home
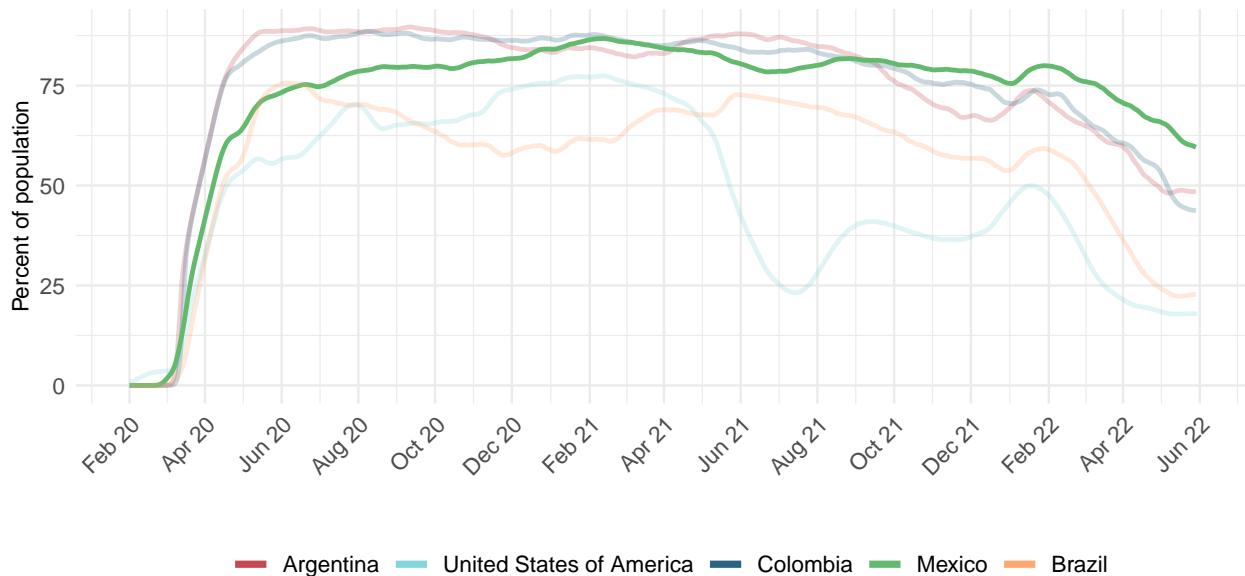
Figure 14.1: Proportion of the population reporting always wearing a mask when leaving home on June 6, 2022
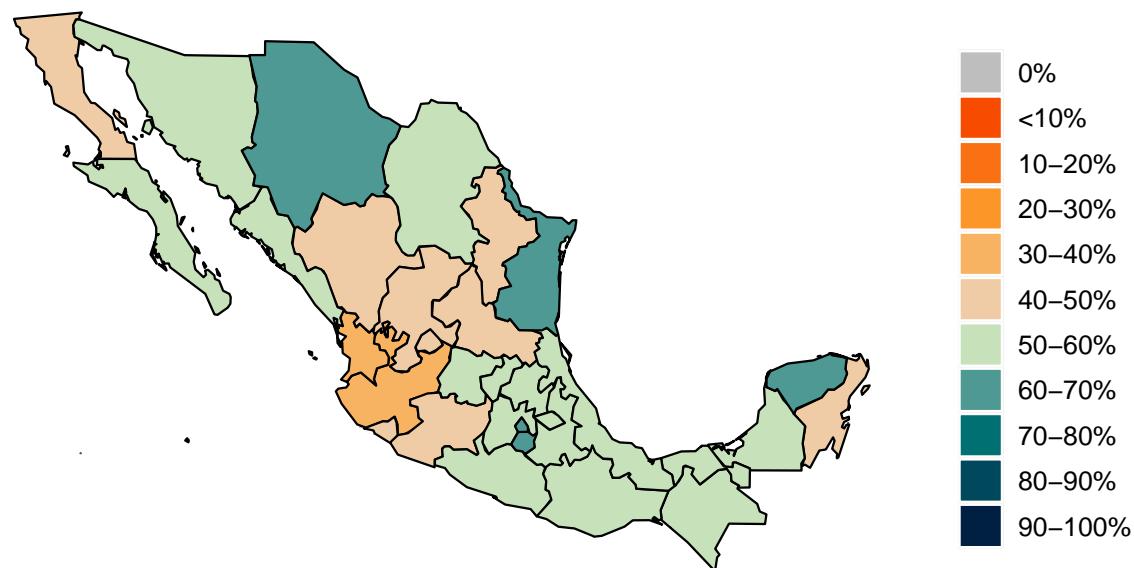
Figure 15.1: Trend in COVID-19 diagnostic tests per 100,000 people
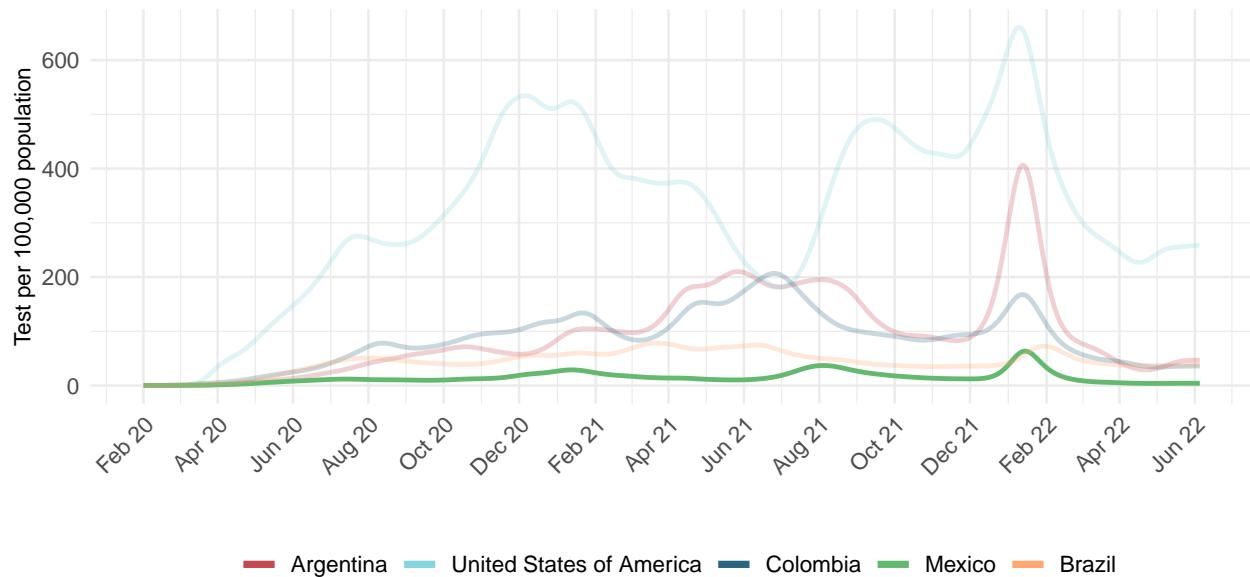
Figure 16.1: COVID-19 diagnostic tests per 100,000 people on June 6, 2022
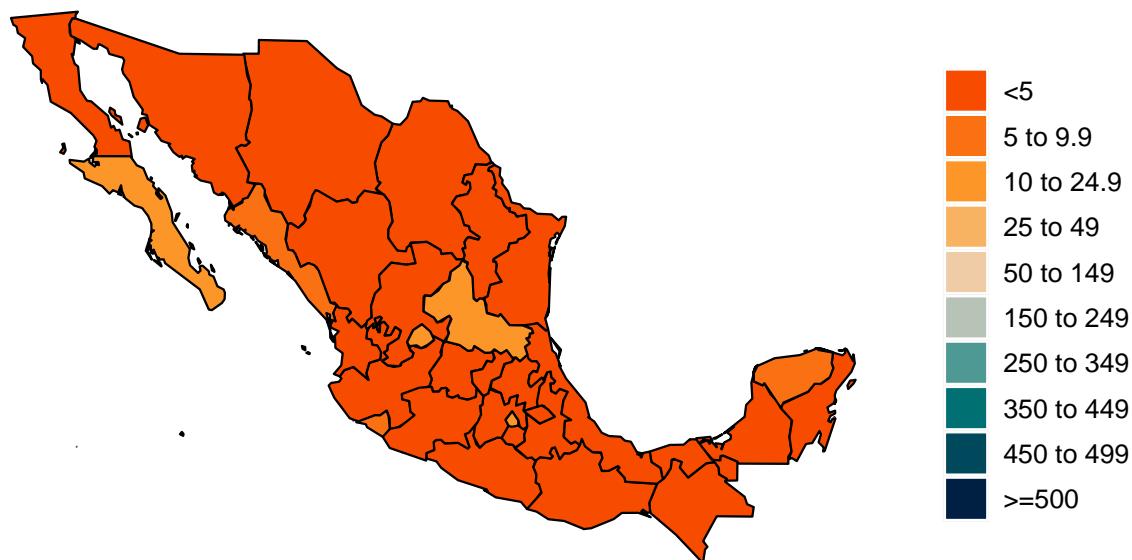
Table 3: Estimates of vaccine effectiveness for specific vaccines used in the model at preventing severe disease and infection. We use data from clinical trials directly, where available, and make estimates otherwise. More information can be found on our website.

	Ancestral		Alpha		Beta		Gamma		Delta		Omicron	
Vaccine	**Severe disease**	**Infection**	**Severe disease**	**Infection**	**Severe disease**	**Infection**	**Severe disease**	**Infection**	**Severe disease**	**Infection**	**Severe disease**	**Infection**
AstraZeneca	94%	63%	94%	63%	94%	69%	94%	69%	94%	69%	71%	36%
CanSino	66%	62%	66%	62%	64%	61%	64%	61%	64%	61%	48%	32%
CoronaVac	50%	47%	50%	47%	49%	46%	49%	46%	49%	46%	37%	24%
Covaxin	78%	73%	78%	73%	76%	72%	76%	72%	76%	72%	57%	38%
Johnson & Johnson	86%	72%	86%	72%	76%	64%	76%	64%	76%	64%	57%	33%
Moderna	97%	92%	97%	92%	97%	91%	97%	91%	97%	91%	73%	48%
Novavax	89%	83%	89%	83%	86%	82%	86%	82%	86%	82%	65%	43%
Pfizer/BioNTech	95%	86%	95%	86%	95%	84%	95%	84%	95%	84%	72%	44%
Sinopharm	73%	68%	73%	68%	71%	67%	71%	67%	71%	67%	53%	35%
Sputnik-V	92%	86%	92%	86%	89%	85%	89%	85%	89%	85%	67%	44%
Other vaccines	75%	70%	75%	70%	73%	69%	73%	69%	73%	69%	55%	36%
Other vaccines (mRNA)	91%	86%	91%	86%	88%	85%	88%	85%	88%	85%	67%	45%

Effectiveness at preventing

Percent of the population having received at least one dose (17.1) and fully vaccinated against SARS-CoV-2 (17.2) by June 6, 2022

**Figure 17.1: Percent of the population having received one dose of a COVID-19 vaccine**
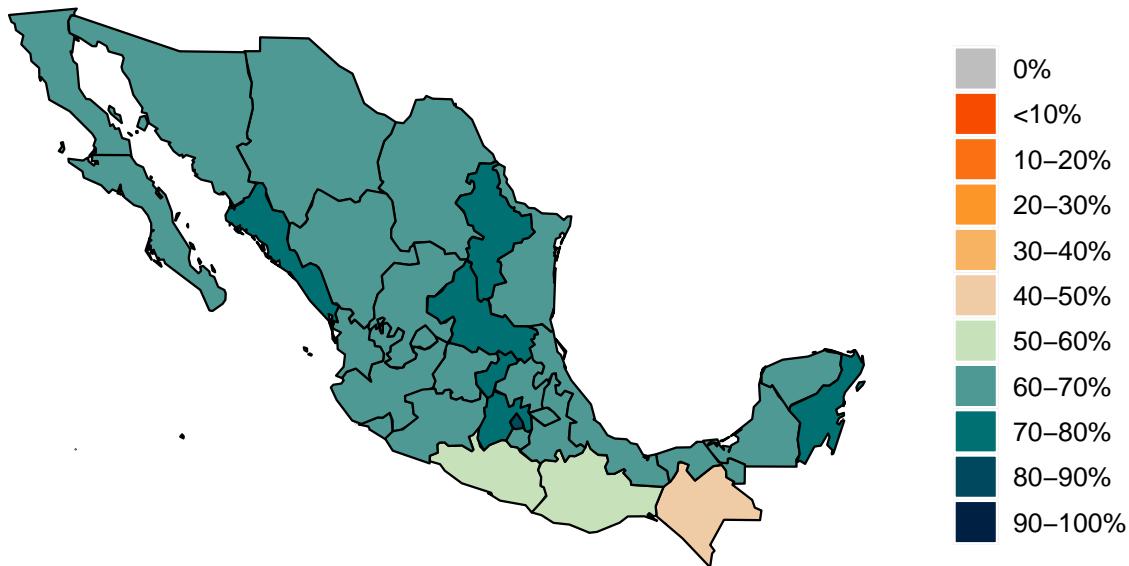
Figure 17.2: Percent of the population fully vaccinated against SARS-CoV-2
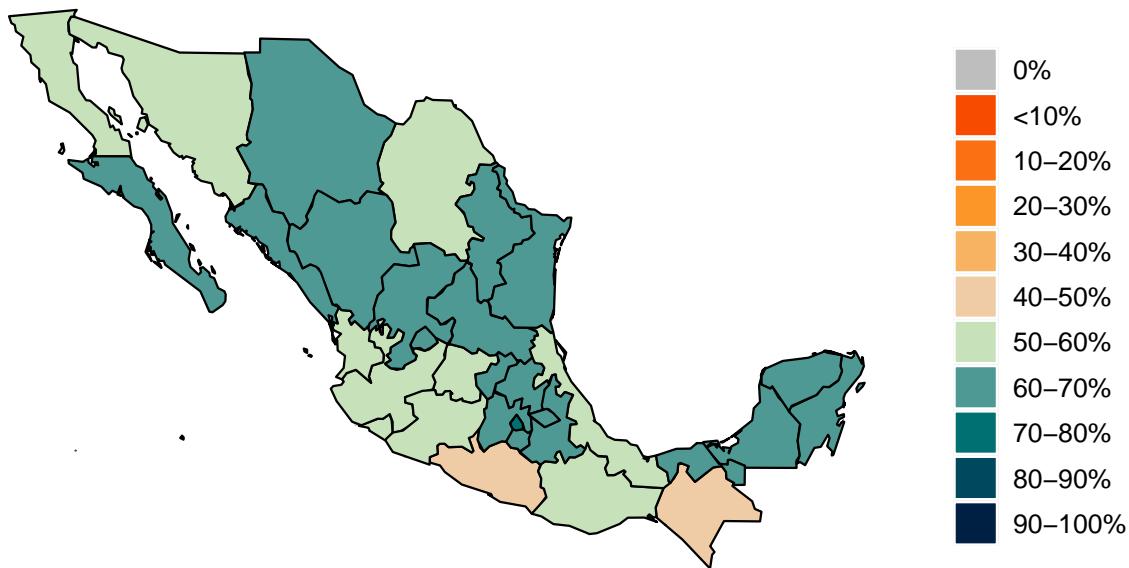
Figure 18.1: Trend in the estimated proportion of the population that is 12 years and older that has been vaccinated or would definitely receive the COVID-19 vaccine if available. Note that vaccine acceptance is calculated using survey data from the 18+ population.
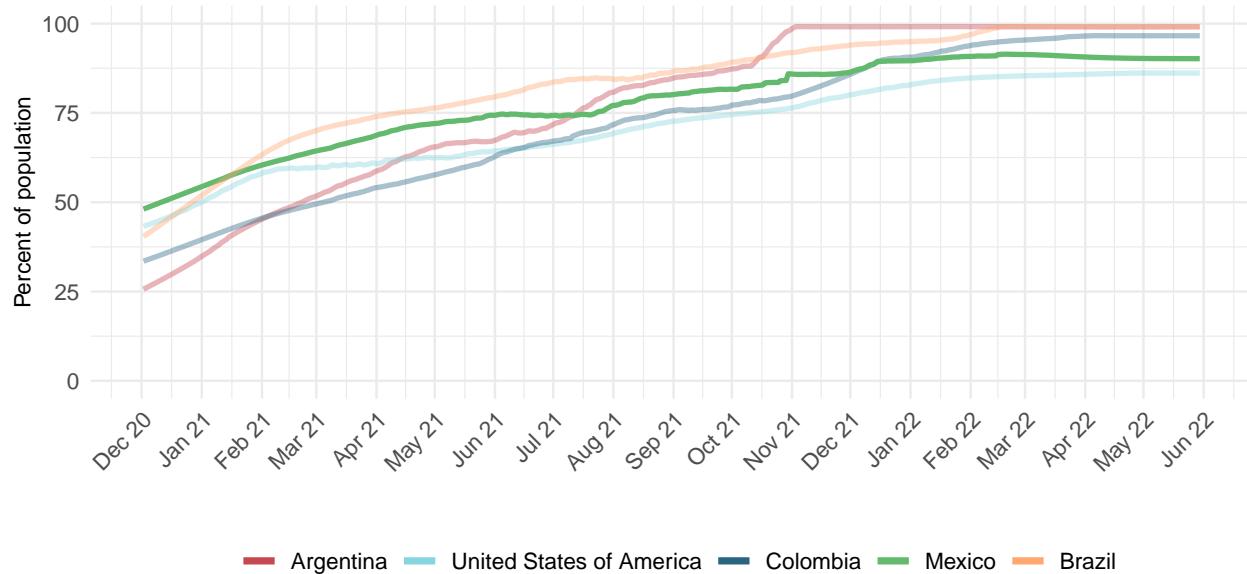

Figure 19.1: Estimated proportion of the population that is 12 years and older that has been vaccinated or would definitely receive the COVID-19 vaccine if available. Note that vaccine acceptance is calculated using survey data from the 18+ population.
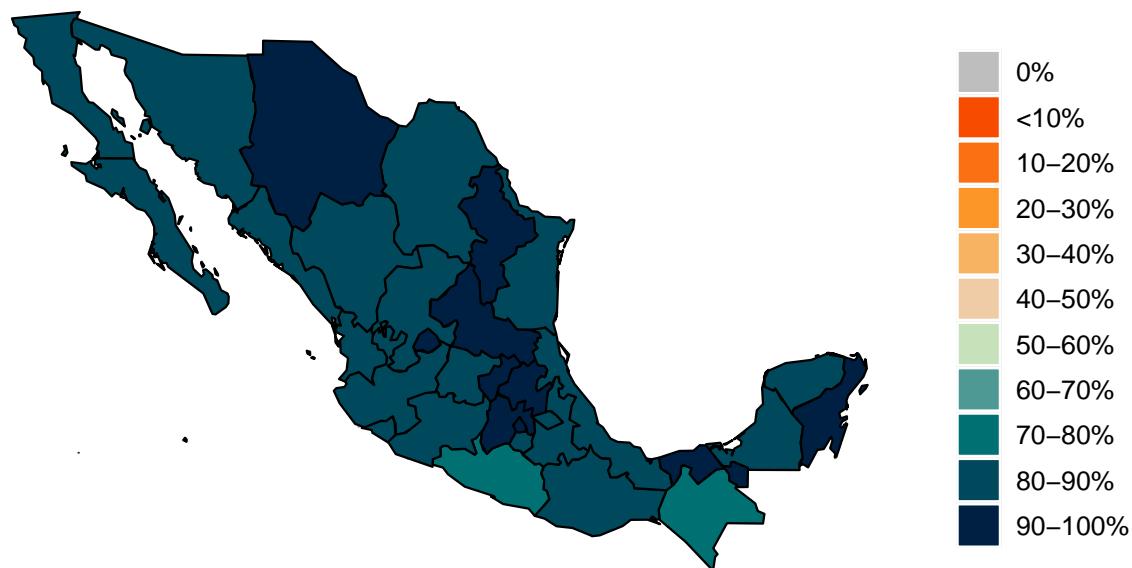
Figure 20.1: Estimated proportion of the total population that is not vaccinated but willing to be vaccinated as of May 30, 2022

Figure 21.1: Percent of people who receive at least one dose of a COVID-19 vaccine and those who are fully vaccinated

Legend: At least one dose — Fully vaccinated
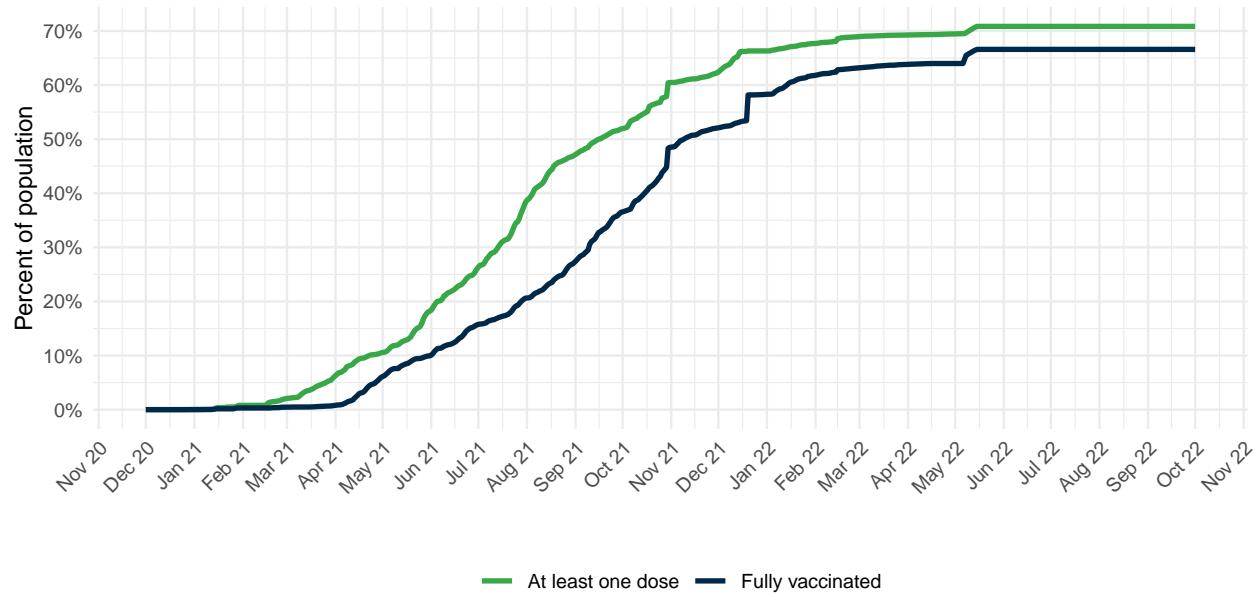
Figure 22.1: Percent of people who are immune to Delta or Omicron. Immunity is based on protection due to prior vaccination and infection(s). Moreover, variant-specific immunity is also based on variant-variant specific protection.


Legend: Delta — Omicron
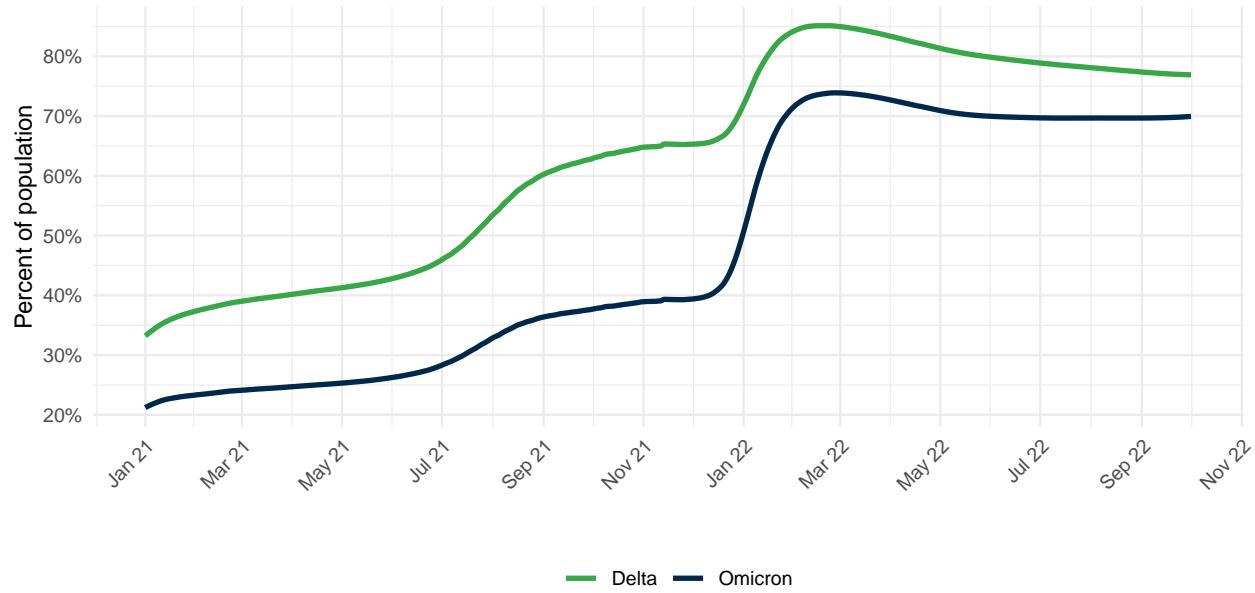
Projections and scenarios

Figure 23.1: Daily COVID-19 infections until October 01, 2022 for three scenarios
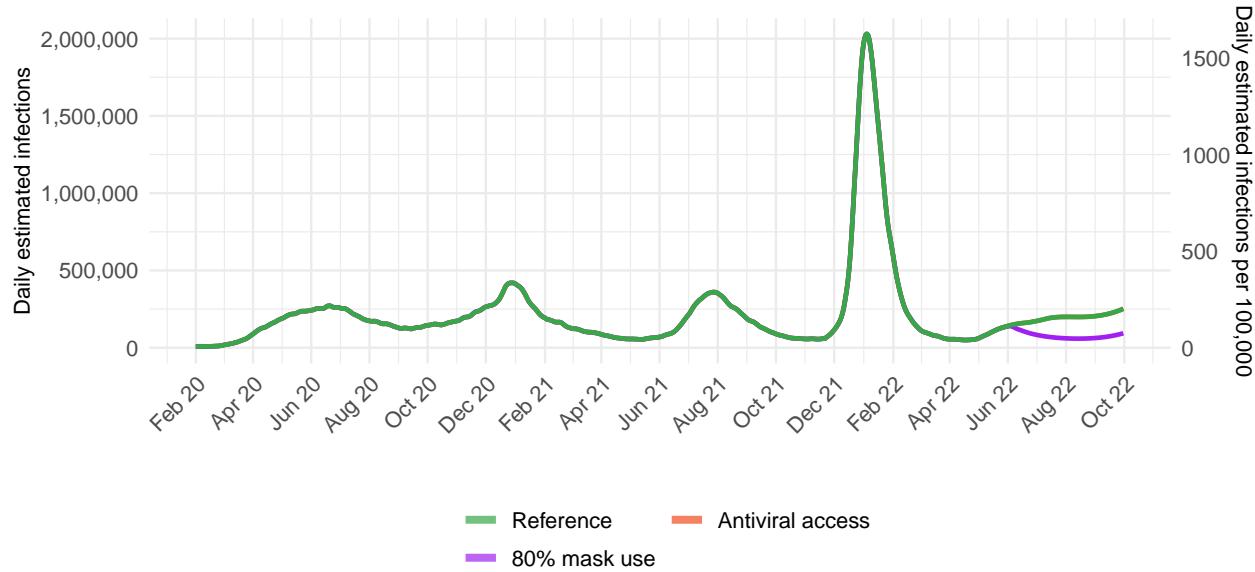
Figure 23.2: Daily COVID-19 reported cases until October 01, 2022 for three scenarios
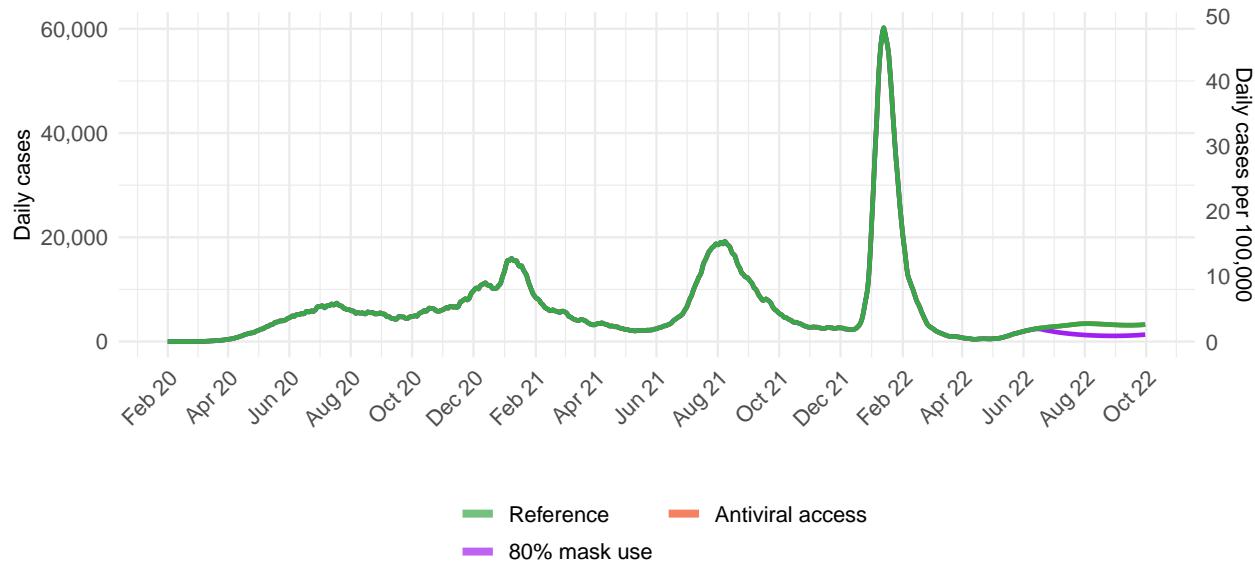
Figure 23.3: Daily COVID-19 hospital census until October 01, 2022 for three scenarios
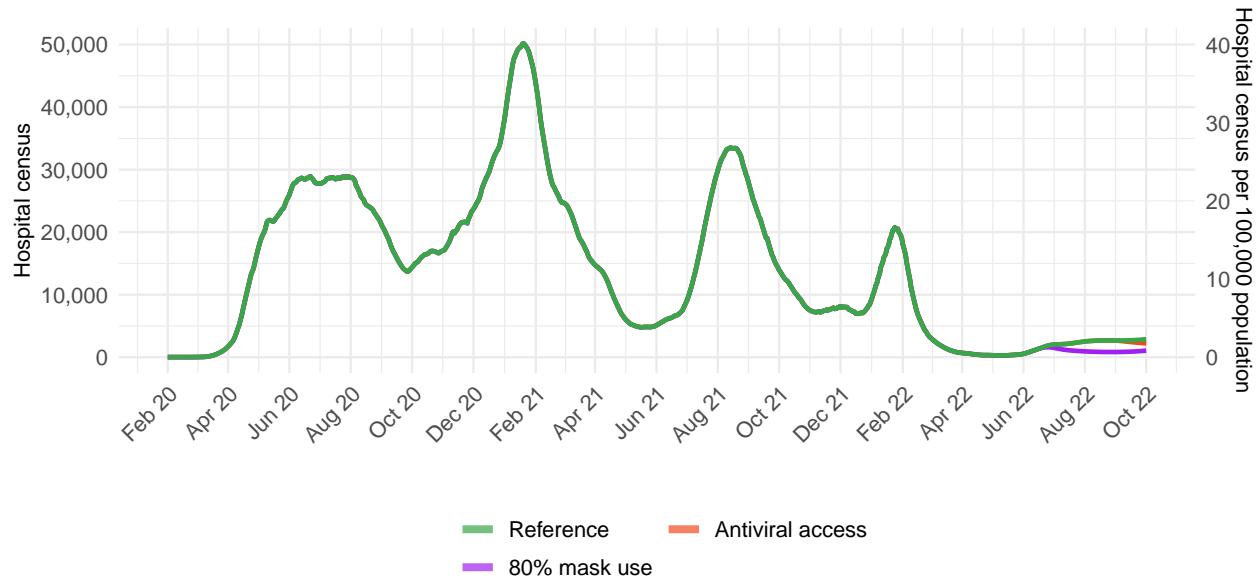
**Figure 23.4: Reported daily COVID-19 deaths per 100,000**
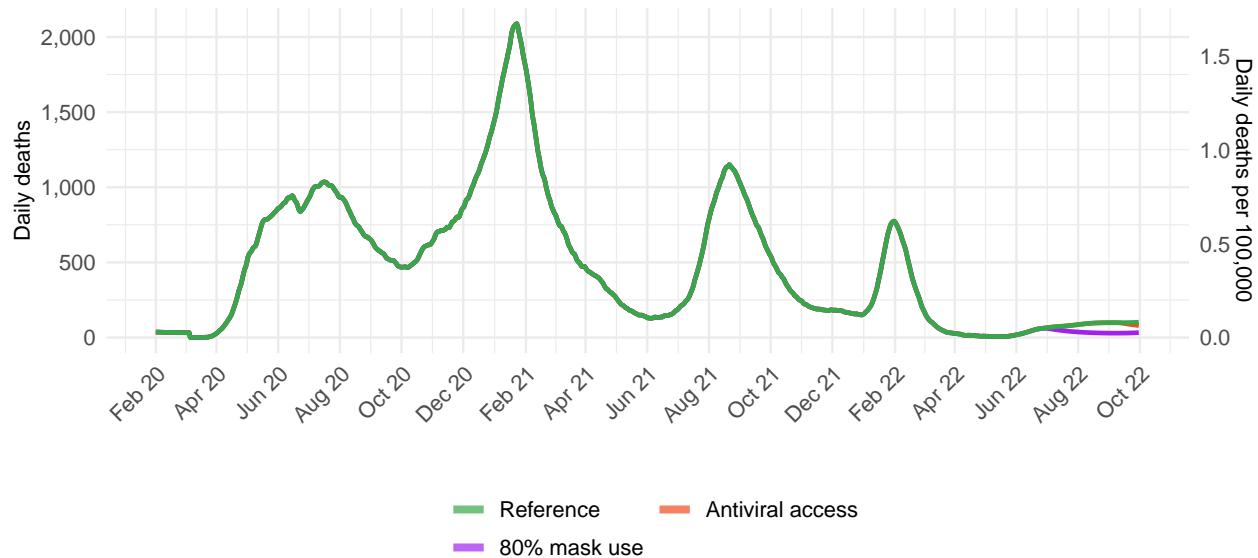
Figure 23.5: Total daily COVID-19 deaths per 100,000
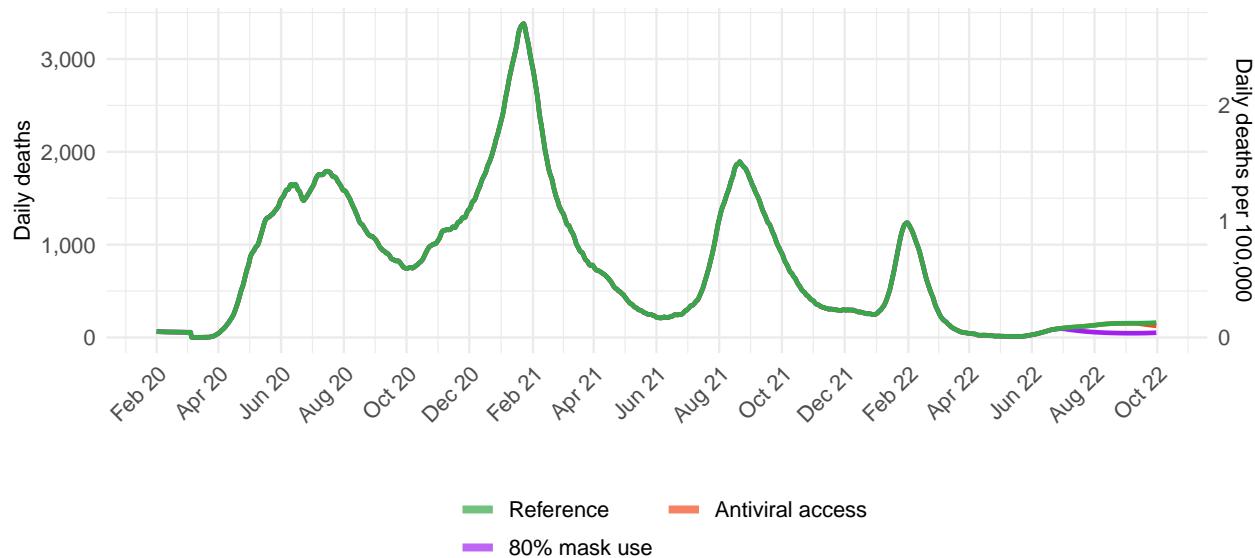
**Figure 24.1: Comparison of reference model projections with other COVID modeling groups.**
For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available, last model update in brackets: the SI-KJalpha model from the University of Southern California (SIKJalpha) [June 9, 2022]. Regional values are aggregates from available locations in that region.
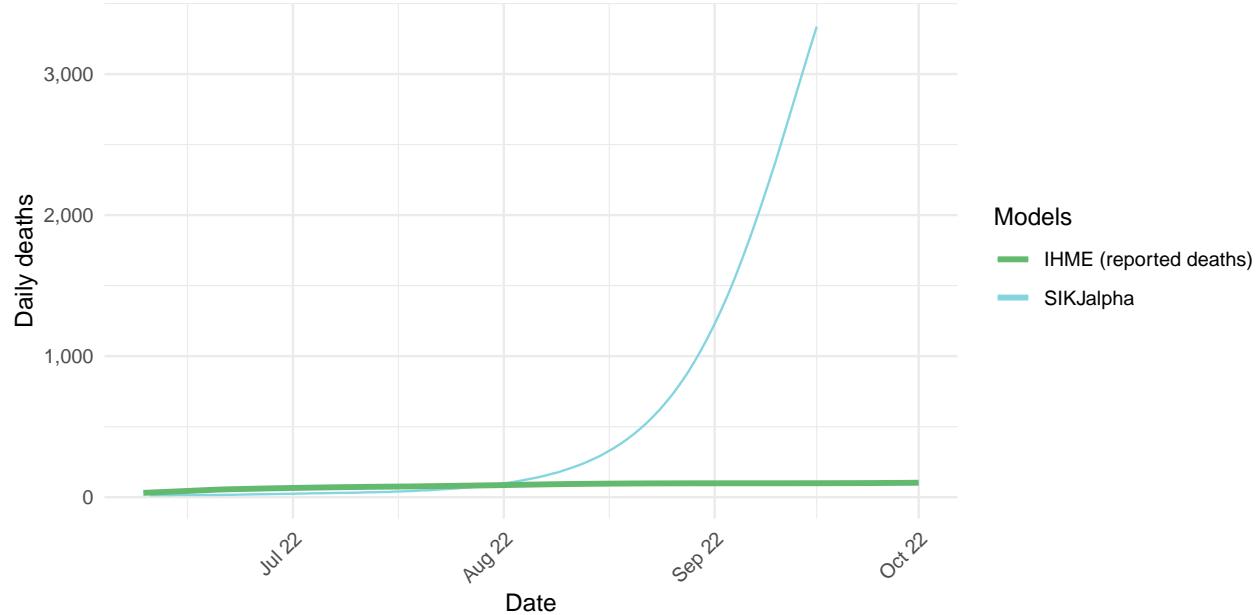
**Figure 25.1: The estimated inpatient hospital usage is shown over time.** The percent of hospital beds occupied by COVID-19 patients is color-coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate stress*, 10-19% is considered *high stress*, and 20% or greater is considered *extreme stress*.
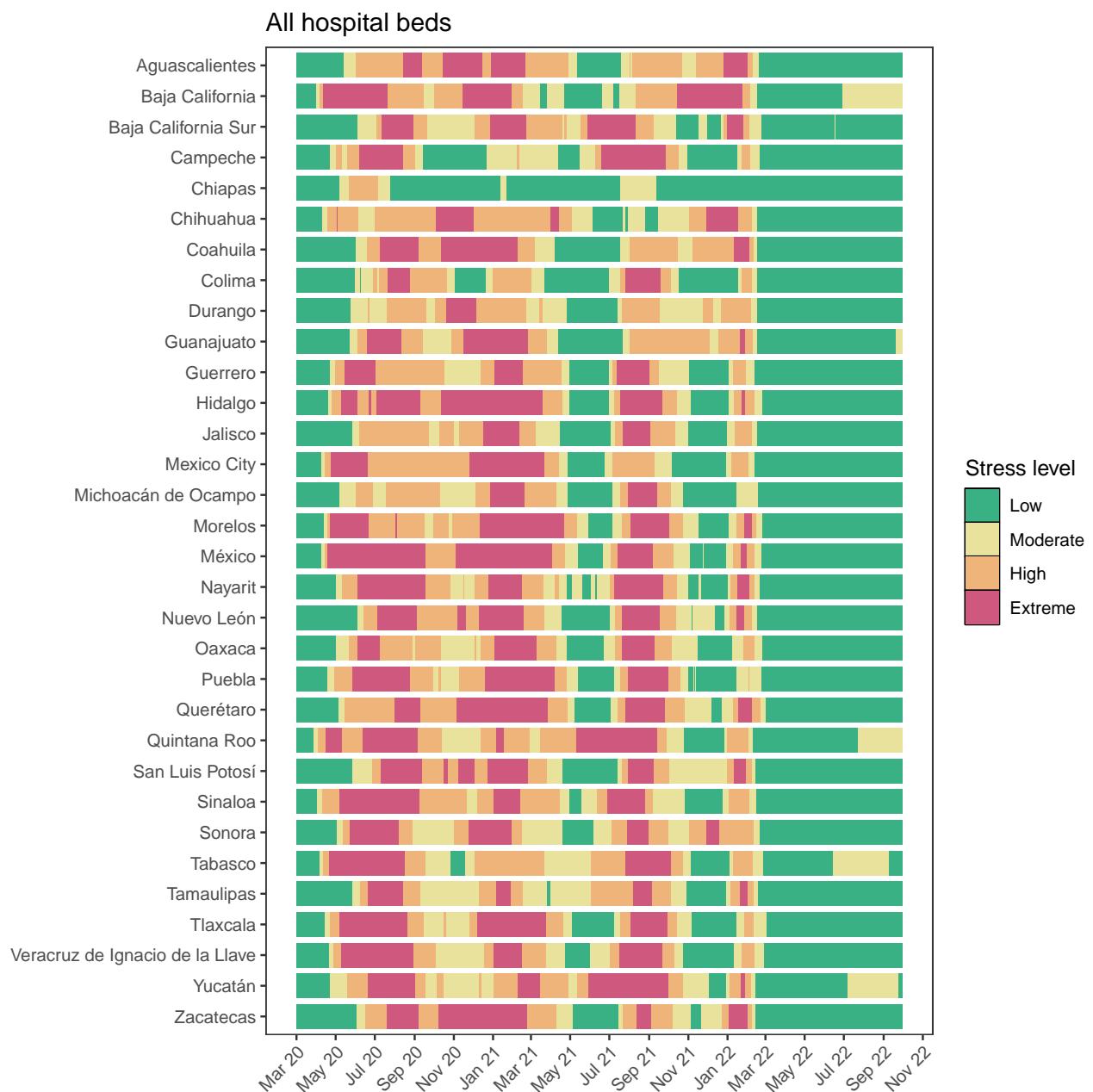
Figure 26.1: The estimated intensive care unit (ICU) usage is shown over time. The percent of ICU beds occupied by COVID-19 patients is color-coded based on observed quantiles of the maximum proportion of ICU beds occupied by COVID-19 patients. Less than 10% is considered *low stress*, 10-29% is considered *moderate stress*, 30-59% is considered *high stress*, and 60% or greater is considered *extreme stress*.
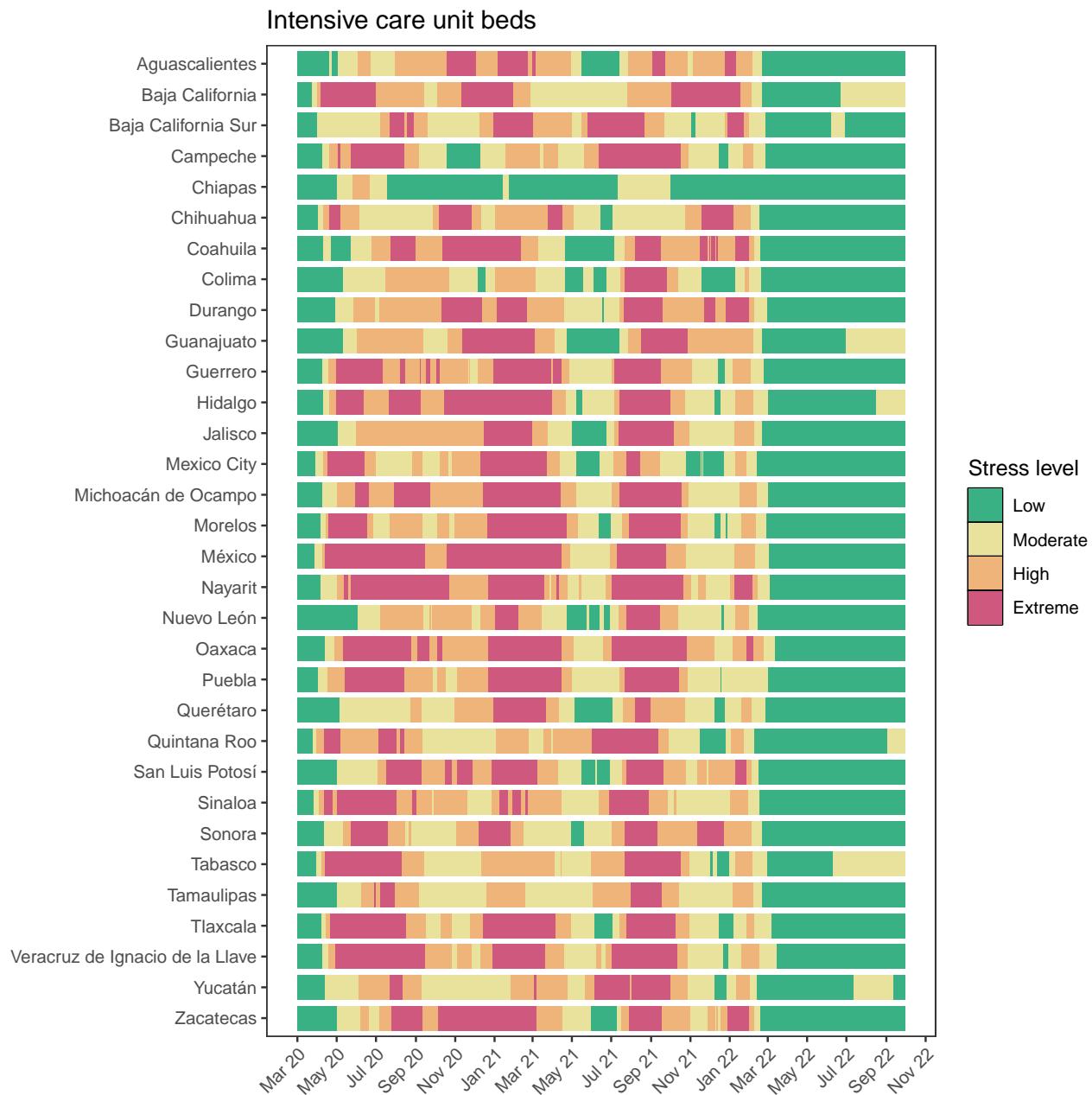
More information

Data sources:

Mask use and vaccine confidence data are from the The Delphi Group at Carnegie Mellon University and University of Maryland COVID-19 Trends and Impact Surveys, in partnership with Facebook. Mask use data are also from Premise, the Kaiser Family Foundation, and the YouGov COVID-19 Behaviour Tracker survey.

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.

To download our most recent results, visit our Data downloads page.

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