Informe de resultados de COVID-19

México

8 de enero de 2022

Este documento contiene información resumida sobre las últimas proyecciones del modelo IHME sobre COVID-19 en México. El modelo se ejecutó el 7 de enero de 2022, con datos hasta el 3 de enero de 2022.

Acumulando dos semanas más de datos sobre Omicron desde nuestra última publicación se confirma que Omicron tiene una fracción mucho mayor de infecciones asintomáticas, una fracción menor de casos diagnosticados que requieren hospitalización y una tasa de mortalidad dramáticamente menor entre los que han sido hospitalizados en comparación con la variante Delta. La transmisión extraordinariamente rápida y la prevalencia comunitaria extremadamente alta de la infección también están bien documentadas.

Nuestros modelos para México sugieren que las infecciones alcanzarán un pico de alrededor de 2 millones por día para finales de enero, aunque los picos en algunos estados variarán considerablemente. con picos posteriores a marzo en Campeche, Chiapas, Jalisco, Edo. de México y Tlaxcala. Esperamos que más del 55% de la población mexicana se infecte con Omicron en las próximas 6-8 semanas. La tasa de detección de infecciones (IDR) está disminuyendo, aunque la escasez de pruebas puede conducir a disminuciones más rápidas en la IDR de lo que actualmente modelamos. Por el momento los 32 estados del país presentan una R efectiva (calculada utilizando casos, hospitalizaciones y muertes) mayor que 1, aunque destacan Baja california Sur, Hidalgo, Quintana Roo, Tabasco y Yucatán con una R superior a 3. Esto en gran medida se explica porque en estos momentos los 32 estados registran la presencia tanto de la variante Delta como Omicron.

No obstante, esperamos que los casos notificados superen los 6.2 millones para la tercera semana de enero y luego disminuyan drásticamente. Las hospitalizaciones aumentarán a un pico que puede ser más bajo que el invierno pasado, pero similar a lo observado en agosto de 2021. Estas cifras, sin embargo, incluyen **admisiones incidentales**. Debido a que la prevalencia de la infección por Omicron es tan alta, muchas personas hospitalizadas por otras afecciones tendrán infecciones asintomáticas. Las admisiones accidentales pueden superar el 50% del total de admisiones COVID-19 en algunos estados. No se espera que las muertes diarias aumenten sustancialmente a nivel nacional debido a que el Omicron es menos severo y no reemplaza al Delta que es más severo. Este patrón depende de la medida en que los estados ya estaban experimentando una ola invernal de la variante Delta en diciembre.

Nuestros escenarios alternativos, que incluyen un aumento más rápido de los refuerzos para todos los que han sido vacunados previamente, el aumento del uso de mascarillas al 80% y la vacunación de los que dudan parcialmente, tienen un pequeño impacto en la trayectoria durante los próximos 4 meses. La intervención con mayor impacto es aumentar o en su caso mantener el uso de mascarillas al menos en 80% de la población; este impacto es mayor en aquellos estados que aún no han comenzado sus oleadas de Omicron. En

oleadas anteriores, la estrategia de control ha sido controlar la infección y así reducir la hospitalización y la muerte. Dado que hay pocas perspectivas de controlar la infección una vez que ha comenzado el aumento repentino, las estrategias deben centrarse en reducir el daño en la población vulnerable y minimizar los trastornos económicos, escolares y del sistema de salud. Se espera que aumente sustancialmente el número de personas que serán admitidas en el hospital con COVID-19, pero una fracción sustancial de este aumento se debe al COVID-19 incidental. Pero es probable que los hospitales se encuentren bajo presión debido a que los trabajadores de la salud dieron positivo en las pruebas y deben ponerse en cuarentena. Dada la gran cantidad de infecciones en la comunidad, las pruebas y la puesta en cuarentena de personas asintomáticas pueden no resultar útiles. Parece que no hay perspectivas de controlar la transmisión, aunque hay que considerar la interrupción de las escuelas y los servicios esenciales debido a la detección. Es posible que se consideren revisiones periódicas a las estrategias de pruebas diagnósticas y de cuarentena.

Sigue existiendo una considerable incertidumbre sobre el curso futuro de la onda Omicron. Primero, la tasa de detección de infecciones puede disminuir incluso más de lo que hemos estimado si la capacidad de prueba en los países se ve abrumada. Esto reduciría las tasas de casos notificados por debajo de los 57 mil que se han pronosticado por día. En segundo lugar, el tamizaje de las admisiones hospitalarias tendrá un impacto sustancial en las admisiones COVID-19 informadas. Si algunos hospitales se quedan sin capacidad de prueba y no evalúan todas las admisiones, entonces la tasa de admisiones incidentales de COVID-19 también puede disminuir. En tercer lugar, un factor crítico para comprender la trayectoria de Omicron es la fracción de infecciones que son asintomáticas. Basado en datos de Sudáfrica y el Reino Unido, actualmente estimamos que es de 80% a 90%. Los aumentos o disminuciones en esta fracción asintomática tienen un impacto importante en la trayectoria y severidad de la onda Omicron.

Para las personas en riesgo de malos resultados, en particular las que no están vacunadas y nunca se infectaron, las estrategias para reducir el riesgo permanecen: la vacunación, incluida una tercera dosis cuando corresponda, el uso de mascarillas de alta calidad y evitar entornos cerrados abarrotados de gente.

Situación actual

• Las infecciones diarias en la última semana aumentaron a 686,700 por día en promedio en comparación con 385,400 la semana anterior (Figura 1.1). El censo hospitalario diario de la última semana (hasta el 3 de enero) aumentó a 3500 por día en promedio en comparación con los 2900 de la semana anterior.

• Los casos notificados diariamente en la última semana aumentaron a 6,900 por día en promedio en comparación con los 3,400 de la semana anterior (Figura 2.1).

• Las muertes reportadas por COVID-19 en la última semana disminuyeron a 100 por día en promedio en comparación con 120 la semana anterior (Figura 3.1).

• El total de muertes por COVID-19 en la última semana disminuyó a 130 por día en promedio en comparación con 150 la semana anterior (Figura 3.1). Esto convierte al COVID-19 en la cuarta causa de muerte en México esta semana (Tabla 1). Las muertes

diarias totales estimadas por COVID-19 en la última semana fueron 1.3 veces mayores que el número de muertes reportadas.

• La tasa diaria de muertes reportadas por COVID-19 es mayor a 4 por millón en Chihuahua. (Figura 4.1).

• La tasa diaria de muertes totales por COVID-19 es superior a 4 por millón en 2 estados. (Figura 4.2).

• Estimamos que el 67% de las personas en México se han infectado al menos una vez hasta el 3 de enero (Figura 6.1). La R efectiva, calculada utilizando casos, hospitalizaciones y muertes, es mayor que 1 en 32 estados. (Figura 7.1).

• La tasa de detección de infecciones en México fue cercana al 4% el 3 de enero (Figura 8.1).

• Con base en el GISAID y varias bases de datos nacionales, combinado con nuestro modelo de dispersión de variantes, estimamos la prevalencia actual de variantes de interés (Figura 9.1-Figura 9.5). Estimamos que la variante Alpha, Beta y Gama no están circulando en el país; y que tanto la variante Delta como la Omicron están circulando en los 32 estados.

Tendencias en los impulsores de la transmisión

• La movilidad la semana pasada fue un 29% más alta que la línea de base anterior a COVID-19 (Figura 11.1). La movilidad fue inferior al 30% de la línea de base en ningún lugar.

• Al 3 de enero, en la Encuesta de Tendencias e Impacto de COVID-19, el 78% de las personas informan que siempre usaban una máscara al salir de casa en comparación con el 78% de la semana pasada (Figura 13.1).

• Se realizaron 11 pruebas de diagnóstico por cada 100.000 personas el 3 de enero (Figura 15.1).

• Al 3 de enero, 3 estados han alcanzado el 70% o más de la población que ha recibido al menos una dosis de vacuna y 0 estados han alcanzado el 70% o más de la población que está completamente vacunada (Figura 17.1). El 63% de las personas en México ha recibido al menos una dosis de vacuna y el 53% está completamente vacunada.

• En México, el 91.8% de la población de 12 años o más dice que aceptaría o probablemente aceptaría una vacuna para COVID-19. Tenga en cuenta que la aceptación de la vacuna se calcula utilizando datos de encuestas de la población mayor de 18 años. Esto es 0 puntos porcentuales más que la semana pasada. La proporción de la población que está dispuesta a recibir la vacuna COVID-19 oscila entre el 84% en Chiapas y el 99% en la Ciudad de México (Figura 19.1).

• En nuestro escenario de referencia actual, esperamos que 85.0 millones de personas sean vacunadas con al menos una dosis para el 1 de mayo (Figura 20.1). Esperamos que el 62% de la población esté completamente vacunada para el 1 de mayo.

Proyecciones

Infecciones

• Las infecciones diarias estimadas en el **escenario de referencia**, que representa lo que creemos que es más probable que suceda, aumentarán a 1,954,960 para el 24 de enero de 2022 (Figura 21.1).

• Las infecciones diarias estimadas en el **escenario de alta gravedad de Omicron** aumentarán a 1.971.170 para el 25 de enero de 2022 (Figura 21.1).

• Las infecciones diarias estimadas en el **escenario de cobertura de mascarilla del 80%** aumentarán a 1,907,900 para el 24 de enero de 2022 (Figura 21.1).

• Las infecciones diarias estimadas en el **escenario de colocar la tercera dosis de vacuna** aumentarán a 1.810.110 para el 25 de enero de 2022 (Figura 21.1).

• Las infecciones diarias estimadas en el escenario de **reducir la resistencia a la vacuna** aumentarán a 1.821.650 para el 25 de enero de 2022 (Figura 21.1).

Casos

• Los casos diarios en el escenario de referencia subirán a 56,850 al 3 de febrero de 2022 (Figura 21.2).

• Los casos diarios en el **escenario de alta severidad de Omicron** aumentarán a 57,020 para el 3 de febrero de 2022 (Figura 21.2).

• Los casos diarios en el **escenario de cobertura de mascarilla del 80%** aumentarán a 55,870 para el 3 de febrero de 2022 (Figura 21.2).

• Los casos diarios en el **escenario de colocar la tercera dosis de vacuna** aumentarán a 52 400 para el 4 de febrero de 2022 (Figura 21.2).

• Los casos diarios en el escenario de **reducir la resistencia a la vacuna** aumentarán a 52,730 para el 4 de febrero de 2022 (Figura 21.2).

Hospitalizaciones

• El censo hospitalario diario en el **escenario de referencia** aumentará a 30,990 al 13 de febrero de 2022 (Figura 21.3).

• El censo hospitalario diario en el **escenario de alta gravedad de Omicron** aumentará a 62,100 para el 14 de febrero de 2022 (Figura 21.3).

• El censo hospitalario diario en el **escenario de cobertura de mascarilla del 80%** aumentará a 30,260 para el 13 de febrero de 2022 (Figura 21.3).

• El censo hospitalario diario en el **escenario de colocar la tercera dosis de vacuna** aumentará a 26,750 para el 13 de febrero de 2022 (Figura 21.3).

• El censo hospitalario diario en el escenario de **reducir la resistencia a la vacuna** aumentará a 27,050 para el 13 de febrero de 2022 (Figura 21.3).

Fallecidos

• En nuestro **escenario de referencia**, nuestro modelo proyecta 428,000 muertes acumuladas reportadas por COVID-19 el 1 de mayo. Esto representa 16,000 muertes adicionales del 3 de enero al 1 de mayo. Las muertes por COVID-19 reportadas diariamente en el escenario de referencia aumentarán a 260 en febrero 17 de 2022 (Figura 21.4).

• Bajo **nuestro escenario de referencia**, nuestro modelo proyecta 575,000 muertes totales acumuladas debido a COVID-19 el 1 de mayo. Esto representa 21,000 muertes adicionales del 3 de enero al 1 de mayo (Figura 24.2).

• En nuestro **escenario de alta severidad de Omicron,** nuestro modelo proyecta 435,000 muertes acumuladas reportadas por COVID-19 el 1 de mayo. Esto representa 23,000 muertes adicionales del 3 de enero al 1 de mayo. Muertes por COVID-19 reportadas diariamente en el **escenario de alta severidad de Omicron** aumentará a 400 para el 19 de febrero de 2022 (Figura 21.4).

• En nuestro **escenario de cobertura de 80% con mascar**illa, nuestro modelo proyecta 428.000 muertes acumuladas reportadas por COVID-19 el 1 de mayo. Esto representa 15.000 muertes adicionales del 3 de enero al 1 de mayo. Muertes por COVID-19 reportadas diariamente en el **escenario de cobertura de 80% con mascarilla** aumentará a 260 para el 16 de febrero de 2022 (Figura 21.4).

• En nuestro **escenario de colocar la tercera dosis de vacuna**, nuestro modelo proyecta 425,000 muertes acumuladas reportadas por COVID-19 el 1 de mayo. Esto representa 13,000 muertes adicionales del 3 de enero al 1 de mayo. Las muertes por COVID-19 reportadas diariamente en el **escenario de colocar la tercera dosis de vacuna** aumentarán a 210 para el 16 de febrero de 2022 (Figura 21.4).

• En nuestro escenario **reducir la resistencia a la vacuna**, nuestro modelo proyecta 425,000 muertes reportadas acumuladas debido a COVID-19 el 1 de mayo. Esto representa 13,000 muertes adicionales del 3 de enero al 1 de mayo. Las muertes por COVID-19 reportadas diariamente en el escenario de **reducir la resistencia a la vacuna** aumentarán a 220 para el 16 de febrero de 2022 (Figura 21.4).

• La Figura 22.1 compara nuestros pronósticos de escenarios de referencia con otros modelos archivados públicamente. Los pronósticos son muy divergentes.

• En algún momento, desde enero hasta el 1 de mayo, 31 estados tendrán una presión alta o extrema en las camas de hospital (Figura 23.1). En algún momento, desde enero hasta el 1 de mayo, 31 estados tendrán una presión alta o extrema en la capacidad de la unidad de cuidados intensivos (UCI) (Figura 24.1).

Actualizaciones de modelos

En la actualización de esta semana, hemos realizado cambios en los parámetros clave de Omicron basados en datos de Sudáfrica, el Reino Unido y los EE. UU. Primero, basándonos en un análisis de las encuestas de prevalencia de infección de la Oficina de Estadísticas Nacionales del Reino Unido, hemos revisado el rango de infección asintomática del 90% al 80% –90%. En segundo lugar, el grado de transmisibilidad de Omicron en comparación con las variantes ancestrales aumentó de 1,5 a 2,5 a 2 a 3. Este ajuste se basó en hacer coincidir las curvas de ampliación para Omicron del análisis de la base de datos GISAID. En tercer lugar, la tasa de infección-hospitalización de Omicron en relación con Delta se ha incrementado de una media de 0,07 a una media de 0,125 (rango 0,0625-0,1875) según datos del Reino Unido, Estados Unidos y Sudáfrica. En cuarto lugar, la tasa de infección-hospitalización se redujo de una media de 0,02 a 0,01875 (rango 0,009375 a 0,028125) según estudios publicados sobre la tasa de letalidad hospitalaria, la tasa de casos de hospitalización y la fracción asintomática. Quinto, basándonos en el momento de los aumentos repentinos de Omicron, hemos ajustado la fecha de llegada de Omicron para varios países para que coincida con el momento de los aumentos en los casos notificados, teniendo en cuenta el retraso desde la introducción hasta el aumento exponencial de los casos notificados. En sexto lugar, en el escenario de gravedad alta, hemos utilizado valores de IFR y IHR que son el doble de los rangos utilizados en el escenario de referencia.

COVID-19 Results Briefing

Mexico

January 8, 2022

This document contains summary information on the latest projections from the IHME model on COVID-19 in Mexico. The model was run on January 7, 2022, with data through January 3, 2022.

Accumulating two more weeks of data on Omicron since our last publication confirms that Omicron has a much higher fraction of asymptomatic infections, a smaller fraction of diagnosed cases requiring hospitalization, and a dramatically lower mortality rate among those who have been hospitalized compared to the Delta variant. The extraordinarily rapid transmission and extremely high community prevalence of the infection are also well documented.

Our models for Mexico suggest that infections will peak at around 2 million per day by the end of January, although the peaks in some states will vary considerably, with peaks after March in Campeche, Chiapas, Jalisco, and Edo from Mexico and Tlaxcala. We expect that more than 55% of the Mexican population will be infected with Omicron in the next 6–8 weeks. The infection-detection rate (IDR) is declining, although the paucity of tests may lead to faster declines in the IDR than we currently model. At the moment, the 32 states of the country present an effective R (calculated using cases, hospitalizations, and deaths) greater than 1, although Baja California Sur, Hidalgo, Quintana Roo, Tabasco, and Yucatán stand out with an R greater than 3. This is largely explained by the presence of both the Delta and Omicron variants in 32 states at the moment.

However, we expect reported cases to exceed 6.2 million by the third week of January and then decline dramatically. Hospitalizations will rise to a peak that may be lower than last winter, but similar to what was observed in August 2021. These figures, however, include incidental admissions. Because the prevalence of Omicron infection is so high, many people hospitalized for other conditions will have asymptomatic infections. Incidental admissions can exceed 50% of total COVID-19 admissions in some states. Daily fatalities are not expected to increase substantially nationally because Omicron is less severe and does not replace the more severe Delta. This pattern depends on the extent to which states were already experiencing a winter wave of the Delta variant in December.

Our alternative scenarios, which include a more rapid increase in boosters for all who have been previously vaccinated, increasing mask use to 80%, and vaccinating those who are partially hesitant, have little impact on trajectory over the next four months. The intervention with the greatest impact is to increase or, where appropriate, maintain the use of masks in at least 80% of the population. This impact is greatest in those states that have not yet started their Omicron waves. In previous waves, the control strategy has been to control infection and thus reduce hospitalization and death. Since there is little prospect of controlling the infection once the surge has started, strategies should focus on reducing damage to the vulnerable population and minimizing economic, school, and health system disruptions. The number of people who will be admitted to hospital with COVID-19 is expected to increase significantly, but a substantial fraction of this increase is due to incidental COVID-19. But hospitals are likely to be under pressure as health care workers test positive and must self-quarantine. Given the large number of infections in the community, testing and quarantining asymptomatic people may not be helpful. There appears to be no prospect of controlling transmission, although the disruption of schools and essential services due to detection must be considered. Periodic reviews of diagnostic testing and quarantine strategies may be considered.

Considerable uncertainty remains about the future course of the Omicron wave. First, the infection-detection rate may decline even more than we have estimated if testing capacity in countries is overwhelmed. This would reduce reported case rates below the 57,000 predicted per day. Second, screening of hospital admissions will have a substantial impact on reported COVID-19 admissions. If some hospitals run out of testing capacity and do not screen all admissions, then the rate of incidental admissions for COVID-19 may also decline. Third, a critical factor in understanding Omicron's trajectory is the fraction of infections that are asymptomatic. Based on data from South Africa and the UK, we currently estimate it to be 80% to 90%. Increases or decreases in this asymptomatic fraction have an important impact on the trajectory and severity of the Omicron wave.

For people at risk of poor outcomes, particularly those who are unvaccinated and never infected, risk reduction strategies remain: vaccination, including a third dose when appropriate, use of high-quality masks, and avoiding closed environments crowded with people.

Current situation

- Daily infections in the last week increased to 686,700 per day on average compared to 385,400 the week before (Figure 1.1). Daily hospital census in the last week (through January 3) increased to 3,500 per day on average compared to 2,900 the week before.
- Daily reported cases in the last week increased to 6,900 per day on average compared to 3,400 the week before (Figure 2.1).
- Reported deaths due to COVID-19 in the last week decreased to 100 per day on average compared to 120 the week before (Figure 3.1).
- Total deaths due to COVID-19 in the last week decreased to 130 per day on average compared to 150 the week before (Figure 3.1). This makes COVID-19 the number 4 cause of death in Mexico this week (Table 1). Estimated total daily deaths due to COVID-19 in the past week were 1.3 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 Chihuahua. (Figure 4.1).
- The daily rate of total COVID-19 deaths is greater than 4 per million in two states. (Figure 4.2).
- We estimate that 67% of people in Mexico have been infected at least once as of January 3 (Figure 6.1). Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 32 states. (Figure 7.1).
- The infection-detection rate in Mexico was close to 4% on January 3 (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 (Figure 9.1-Figure 9.5). We estimate that the Delta variant is circulating in 32 states and that the Omicron variant is circulating in 32 states.

Trends in drivers of transmission

- Mobility last week was 29% higher than the pre-COVID-19 baseline (Figure 11.1). Mobility was lower than 30% of baseline in no locations.
- As of January 3, in the COVID-19 Trends and Impact Survey, 78% of people self-report that they always wore a mask when leaving their home, the same percentage as last week (Figure 13.1).
- There were 11 diagnostic tests per 100,000 people on January 3 (Figure 15.1).
- As of January 3, three states have reached 70% or more of the population who have received at least one vaccine dose and 0 states have reached 70% or more of the population who are fully vaccinated (Figure 17.1). 63% of people in Mexico have received at least one vaccine dose and 53% are fully vaccinated.
- In Mexico, 91.8% of the population that is 12 years and older say they would accept or would probably accept a vaccine for COVID-19. Note that vaccine acceptance is calculated using survey data from the 18+ population. This percentage is the same as last week. The proportion of the population who are open to receiving a COVID-19 vaccine ranges from 84% in Chiapas to 99% in Mexico City (Figure 19.1).
- In our current reference scenario, we expect that 85.0 million people will be vaccinated with at least one dose by May 1 (Figure 20.1). We expect that 62% of the population will be fully vaccinated by May 1.

Projections

Infections

- Daily estimated infections in the **reference scenario**, which represents what we think is most likely to happen, will rise to 1,954,960 by January 24, 2022 (Figure 21.1).
- Daily estimated infections in the **high severity of Omicron scenario** will rise to 1,971,170 by January 25, 2022 (Figure 21.1).

- Daily estimated infections in the **80% mask coverage scenario** will rise to 1,907,900 by January 24, 2022 (Figure 21.1).
- Daily estimated infections in the **third dose scenario** will rise to 1,810,110 by January 25, 2022 (Figure 21.1).
- Daily estimated infections in the **reduced vaccine hesitancy scenario** will rise to 1,821,650 by January 25, 2022 (Figure 21.1).

Cases

- Daily cases in the **reference scenario** will rise to 56,850 by February 3, 2022 (Figure 21.2).
- Daily cases in the **high severity of Omicron scenario** will rise to 57,020 by February 3, 2022 (Figure 21.2).
- Daily cases in the **80% mask coverage scenario** will rise to 55,870 by February 3, 2022 (Figure 21.2).
- Daily cases in the **third dose scenario** will rise to 52,400 by February 4, 2022 (Figure 21.2).
- Daily cases in the **reduced vaccine hesitancy scenario** will rise to 52,730 by February 4, 2022 (Figure 21.2).

Hospitalizations

- Daily hospital census in the **reference scenario** will rise to 30,990 by February 13, 2022 (Figure 21.3).
- Daily hospital census in the **high severity of Omicron scenario** will rise to 62,100 by February 14, 2022 (Figure 21.3).
- Daily hospital census in the **80% mask coverage scenario** will rise to 30,260 by February 13, 2022 (Figure 21.3).
- Daily hospital census in the **third dose scenario** will rise to 26,750 by February 13, 2022 (Figure 21.3).
- Daily hospital census in the **reduced vaccine hesitancy scenario** will rise to 27,050 by February 13, 2022 (Figure 21.3).

Deaths

- In our **reference scenario**, our model projects 428,000 cumulative reported deaths due to COVID-19 on May 1. This represents 16,000 additional deaths from January 3 to May 1. Daily reported COVID-19 deaths in the **reference scenario** will rise to 260 by February 17, 2022 (Figure 21.4).
- Under our **reference scenario**, our model projects 575,000 cumulative total deaths due to COVID-19 on May 1. This represents 21,000 additional deaths from January 3 to May 1 (Figure 24.2).

- In our **high severity of Omicron scenario**, our model projects 435,000 cumulative reported deaths due to COVID-19 on May 1. This represents 23,000 additional deaths from January 3 to May 1. Daily reported COVID-19 deaths in the **high severity of Omicron scenario** will rise to 400 by February 19, 2022 (Figure 21.4).
- In our **80% mask coverage scenario**, our model projects 428,000 cumulative reported deaths due to COVID-19 on May 1. This represents 15,000 additional deaths from January 3 to May 1. Daily reported COVID-19 deaths in the **80% mask coverage scenario** will rise to 260 by February 16, 2022 (Figure 21.4).
- In our **third dose scenario**, our model projects 425,000 cumulative reported deaths due to COVID-19 on May 1. This represents 13,000 additional deaths from January 3 to May 1. Daily reported COVID-19 deaths in the **third dose scenario** will rise to 210 by February 16, 2022 (Figure 21.4).
- In our **reduced vaccine hesitancy scenario**, our model projects 425,000 cumulative reported deaths due to COVID-19 on May 1. This represents 13,000 additional deaths from January 3 to May 1. Daily reported COVID-19 deaths in the **reduced vaccine hesitancy scenario** will rise to 220 by February 16, 2022 (Figure 21.4).
- Figure 22.1 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.
- At some point from January through May 1, 31 states will have high or extreme stress on hospital beds (Figure 23.1). At some point from January through May 1, 31 states will have high or extreme stress on intensive care unit (ICU) capacity (Figure 24.1).

Model updates

In this week's update, we have made changes to key Omicron parameters based on data from South Africa, the United Kingdom, and the US. First, based on an analysis of the UK Office of National Statistics prevalence of infection surveys, we have revised the range of asymptomatic infection from 90% to 80%–90%. Second, the degree of transmissibility of Omicron compared to ancestral variants was increased from 1.5–2.5 to 2–3. This adjustment was based on matching the scale-up curves for Omicron from the analysis of the GISAID database. Third, the infection-hospitalization rate for Omicron relative to Delta has been increased from a mean of 0.07 to a mean of 0.125 (range 0.0625–0.1875) based on data from the UK, US, and South Africa. Fourth, the infection-hospitalization rate has been decreased from a mean of 0.02 to 0.01875 (range 0.009375–0.028125) based on published studies of the hospital-fatality rate, the case-hospitalization rate, and the fraction asymptomatic. Fifth, based on the timing of Omicron surges, we have adjusted the date of Omicron arrival for a number of countries to match the timing of increases in reported cases, taking into account the lag from introduction to the exponential rise in reported cases. Sixth, in the high-severity scenario, we have used IFR and IHR values that are double the ranges used in the reference scenario.

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

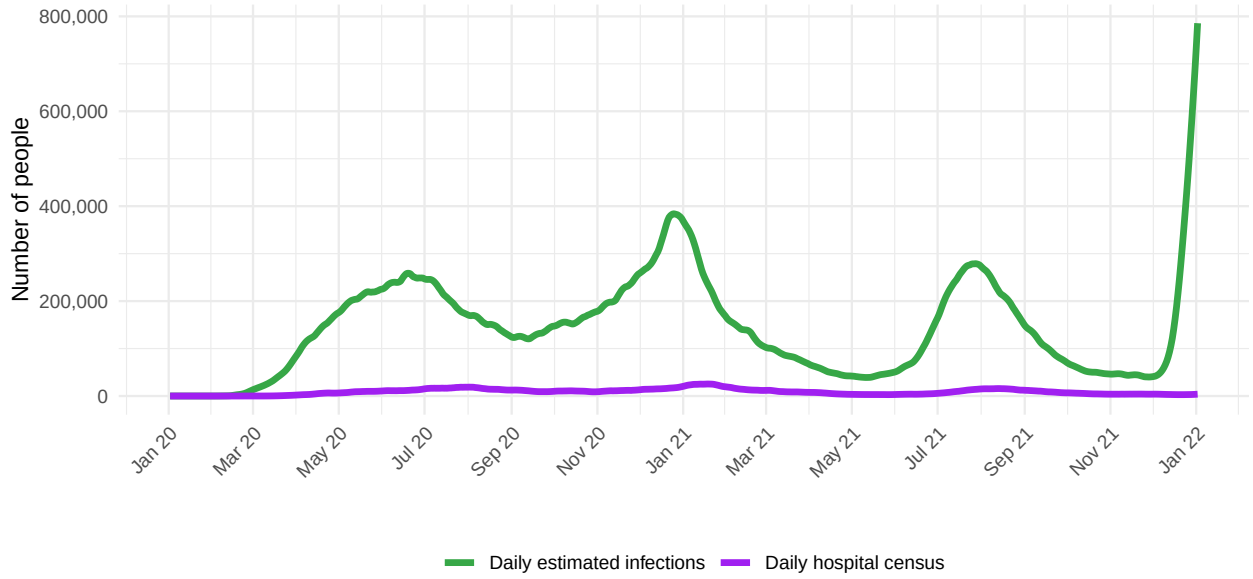


Figure 2.1. Reported daily COVID-19 cases, moving average

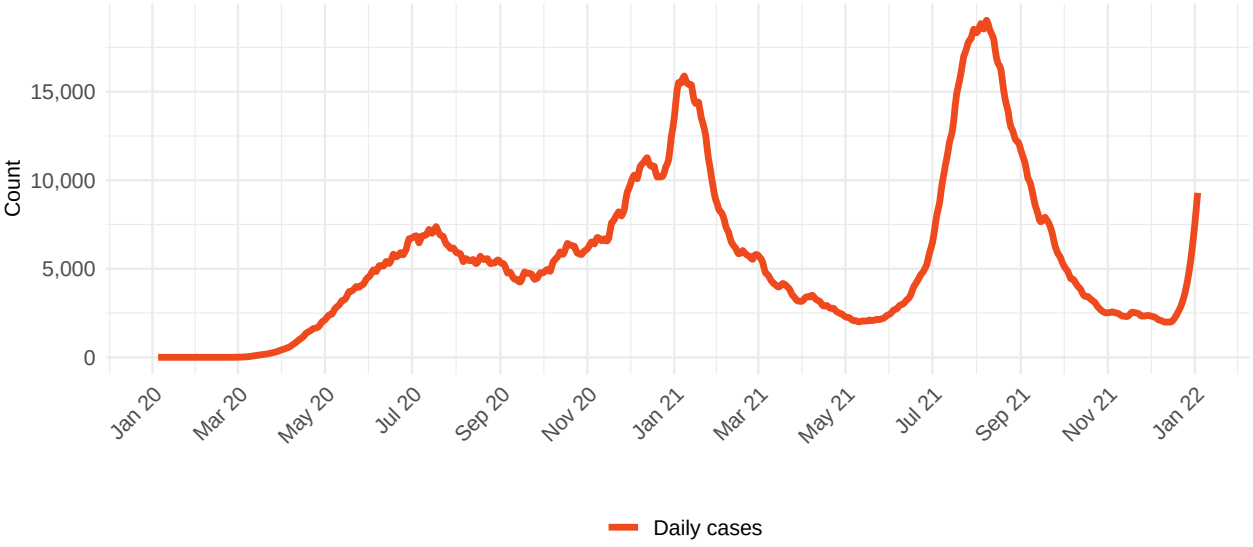
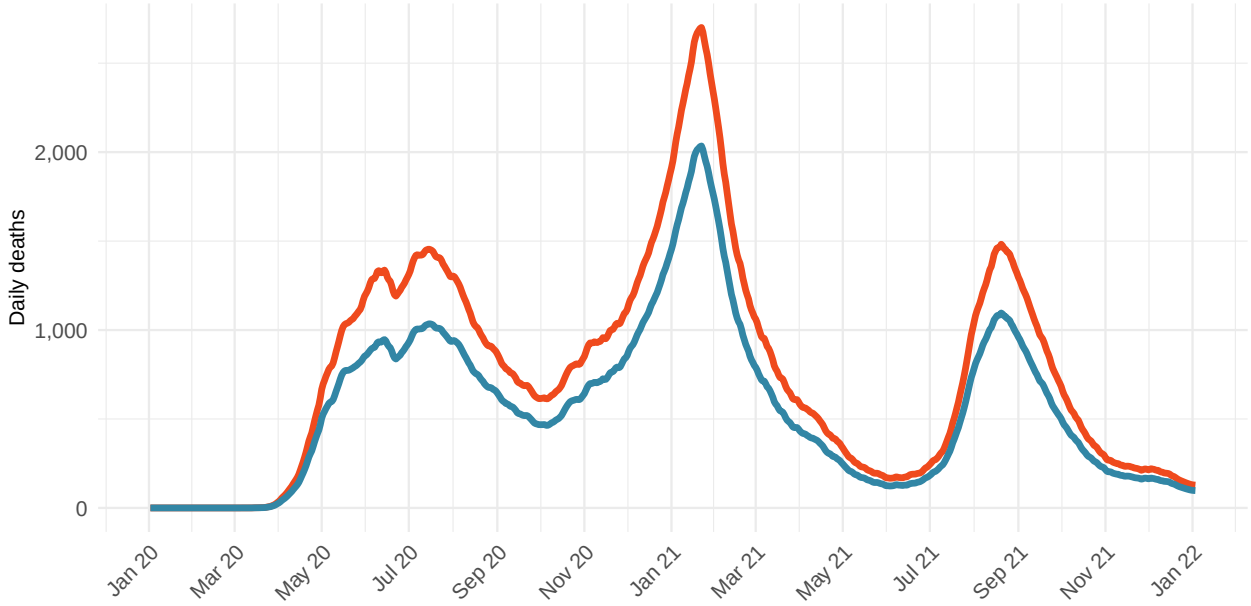


Table 1. Ranking of total deaths due to COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
Ischemic heart disease	2,044	1
Diabetes mellitus	1,420	2
Chronic kidney disease	1,395	3
COVID-19	928	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

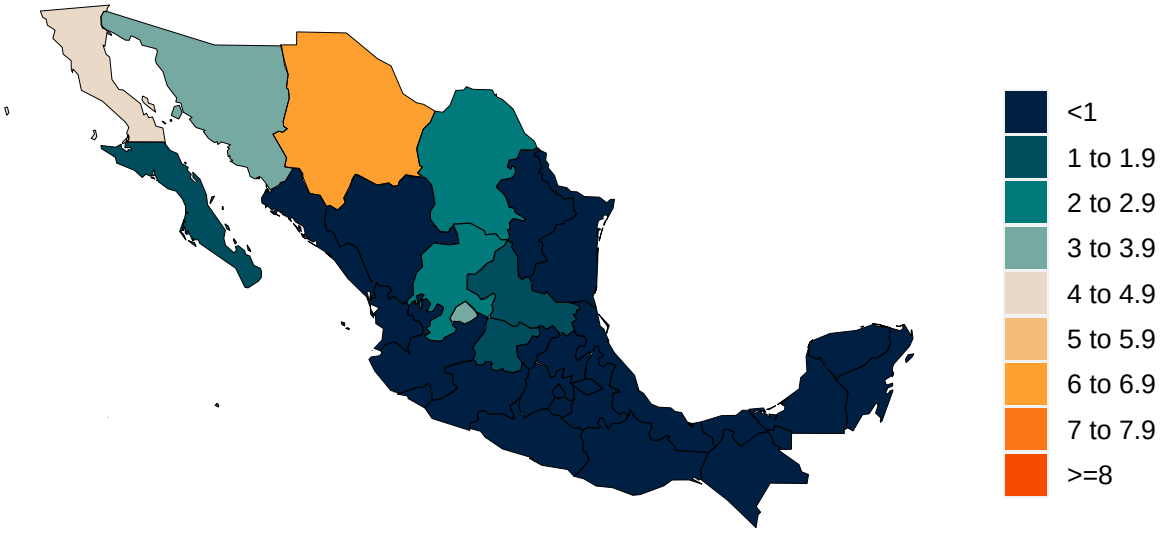
Figure 3.1. Smoothed trend estimate of reported daily COVID-19 deaths (blue) and total daily deaths due to COVID-19 (orange)



Daily COVID-19 death rate per 1 million on January 3, 2022

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

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



Cumulative COVID-19 deaths per 100,000 on January 3, 2022

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

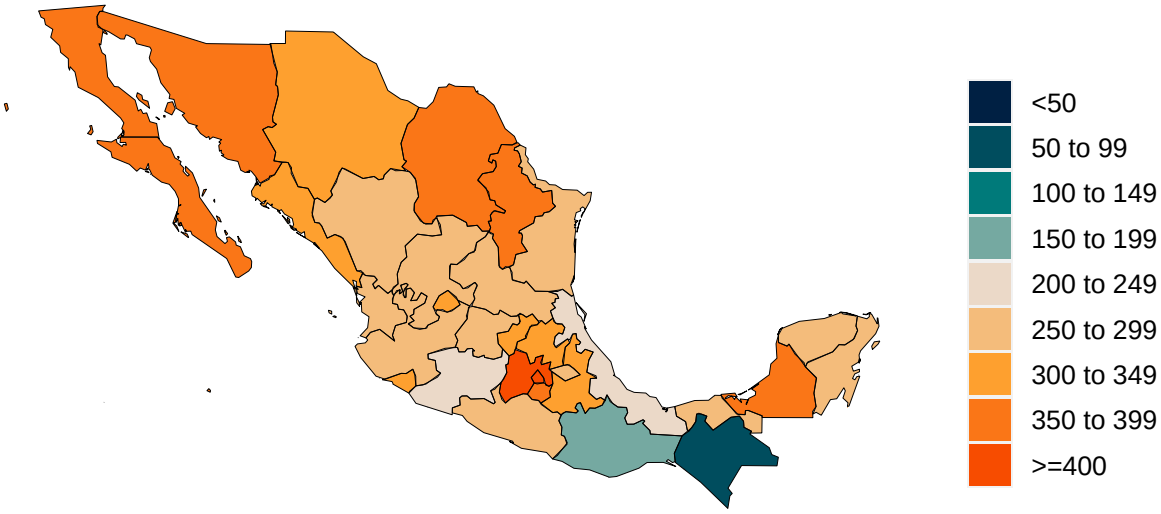


Figure 5.2 Total cumulative COVID-19 deaths per 100,000

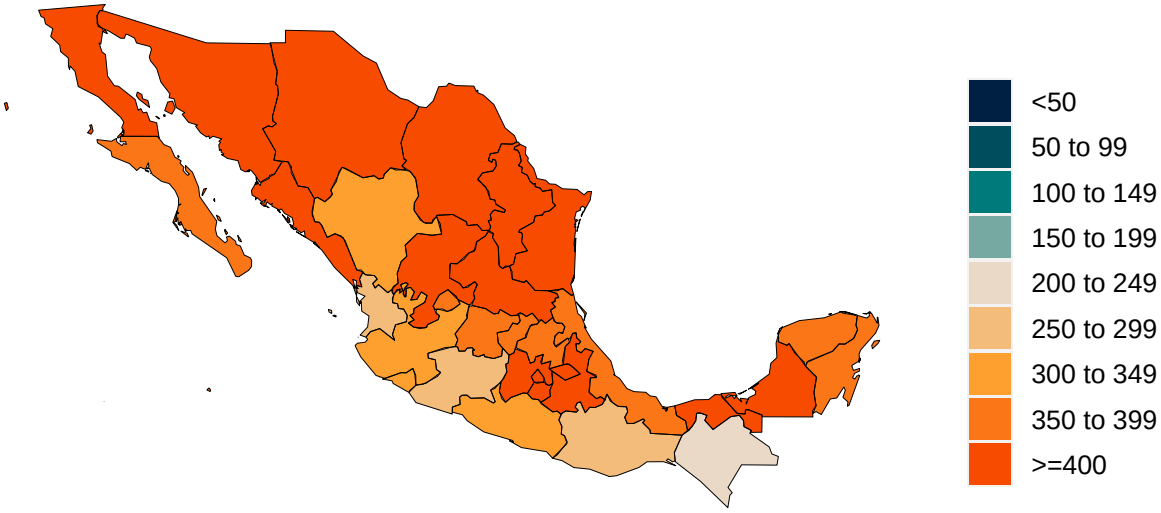


Figure 6.1. Estimated percent of the population infected with COVID-19 on January 3, 2022

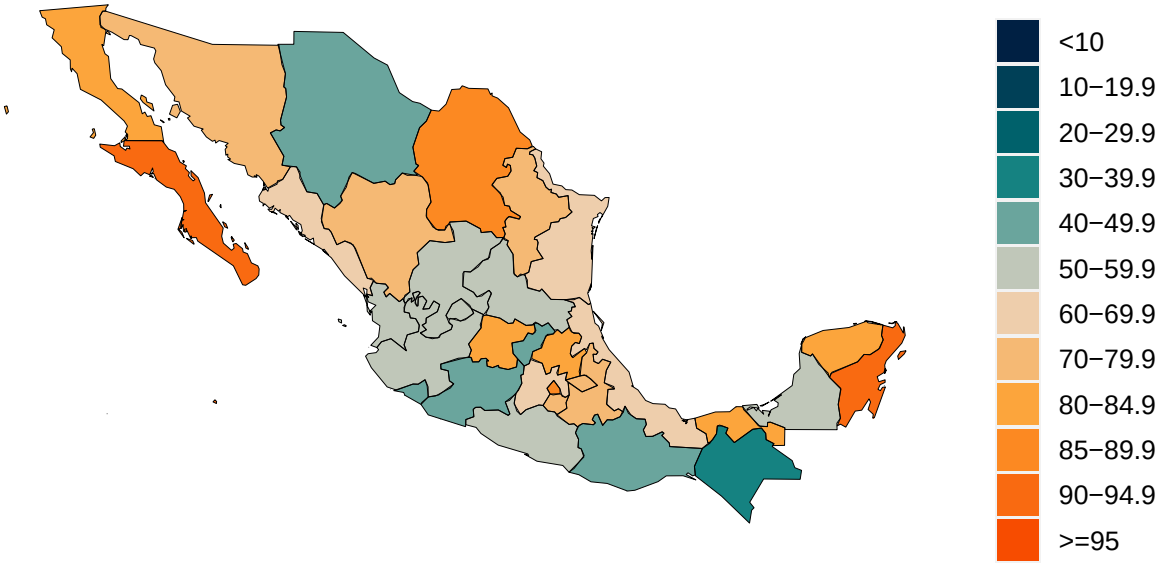


Figure 7.1. Mean effective R on December 23, 2021. Effective R less than 1 means that transmission should decline, all other things being held the same. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past.

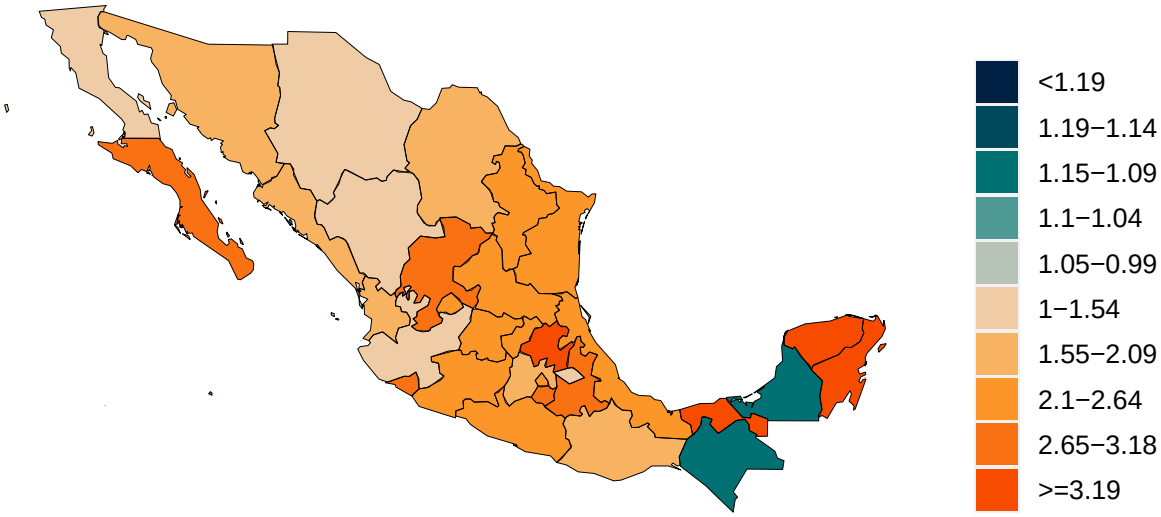
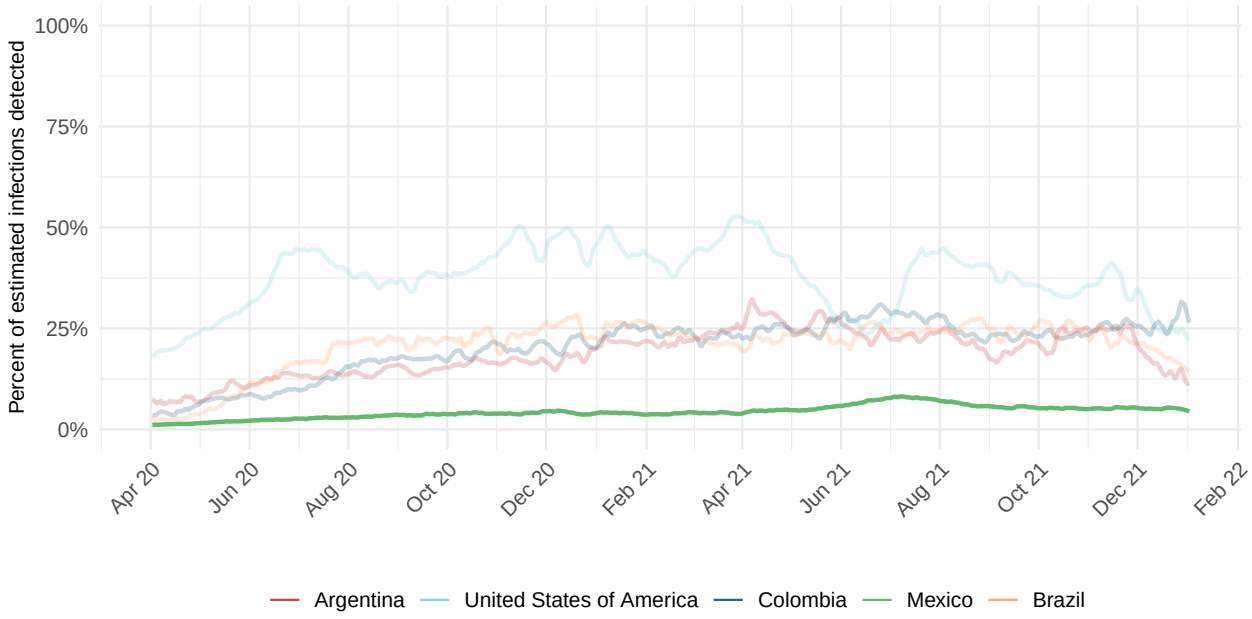


Figure 8.1. Percent of estimated COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model. Due to measurement errors in cases and testing rates, the infection-detection rate can exceed 100% at particular points in time.



Estimated percent of circulating SARS-CoV-2 for primary variant families on January 3, 2022

Figure 9.1 Estimated percent of new infections that are Alpha variant

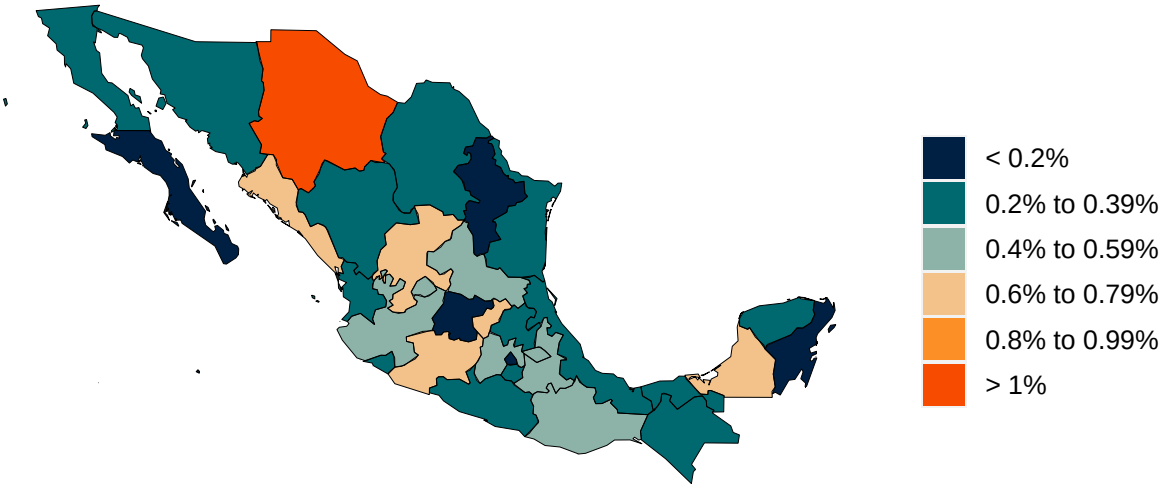
Figure 9.2 Estimated percent of new infections that are Beta variant

Figure 9.3 Estimated percent of new infections that are Delta variant

Figure 9.4 Estimated percent of new infections that are Gamma variant

Figure 9.5 Estimated percent of new infections that are Omicron variant

Figure 10.1. Infection-fatality rate on January 3, 2022. This is estimated as the ratio of COVID-19 deaths to estimated daily COVID-19 infections.



Critical drivers

Table 2. Current mandate implementation

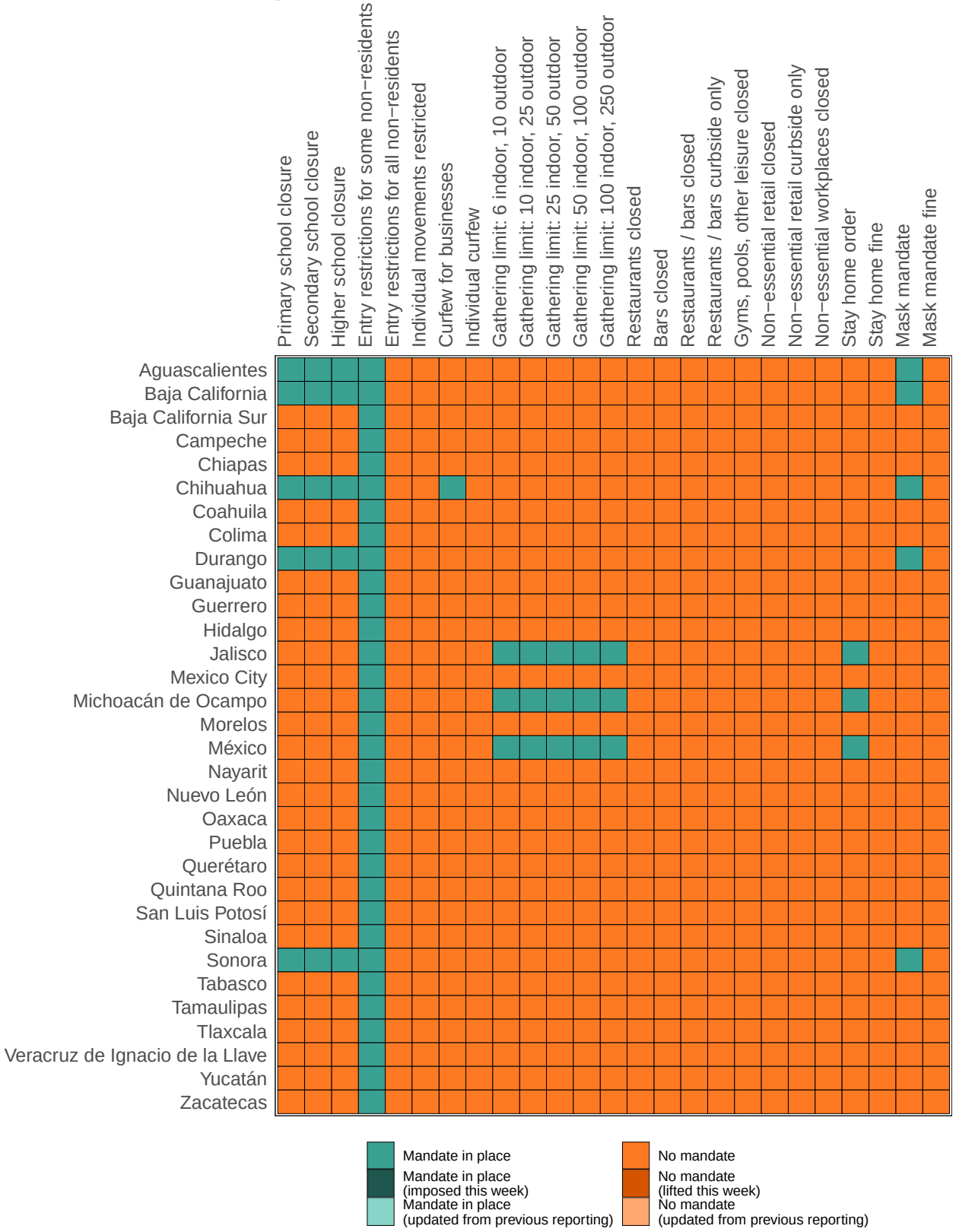


Figure 11.1. Trend in mobility as measured through smartphone app use, compared to January 2020 baseline

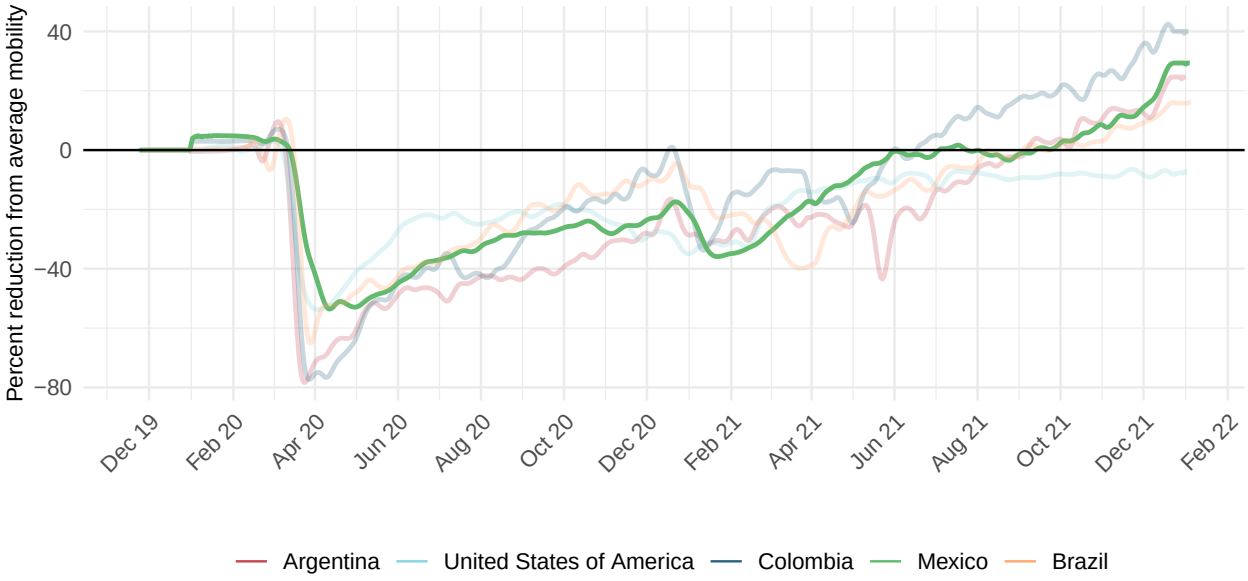


Figure 12.1. Mobility level as measured through smartphone app use, compared to January 2020 baseline (percent) on January 3, 2022

Figure 13.1. Trend in the proportion of the population reporting always wearing a mask when leaving home

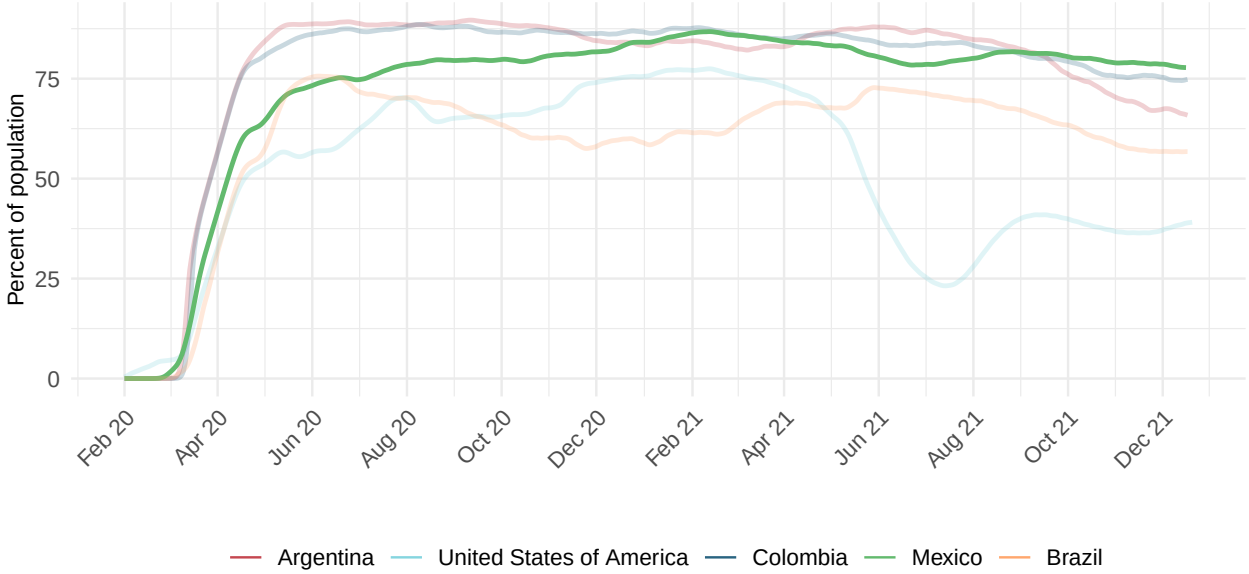


Figure 14.1. Proportion of the population reporting always wearing a mask when leaving home on January 3, 2022

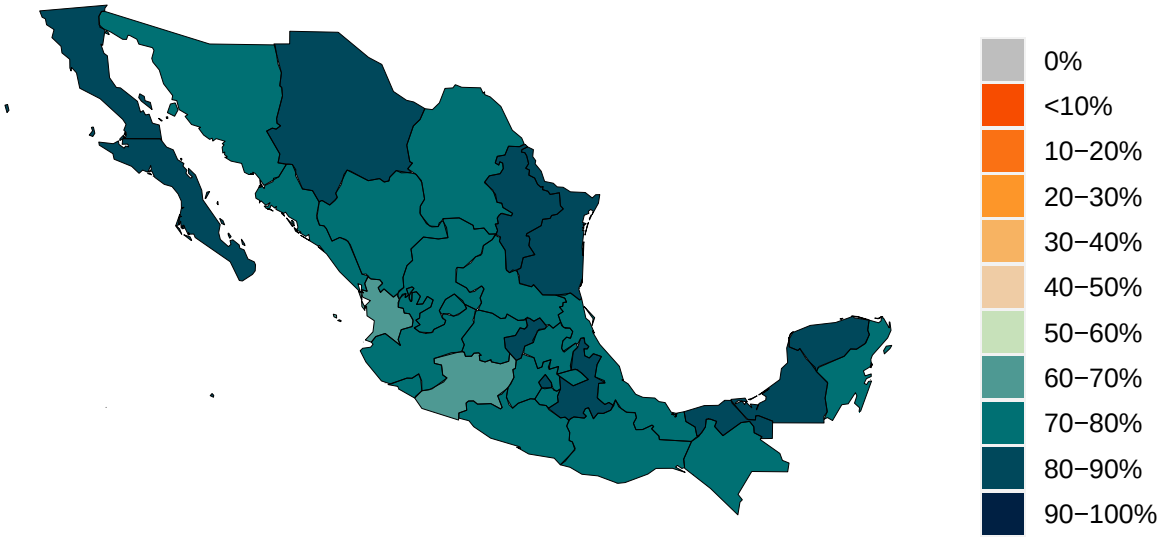


Figure 15.1. Trend in COVID-19 diagnostic tests per 100,000 people

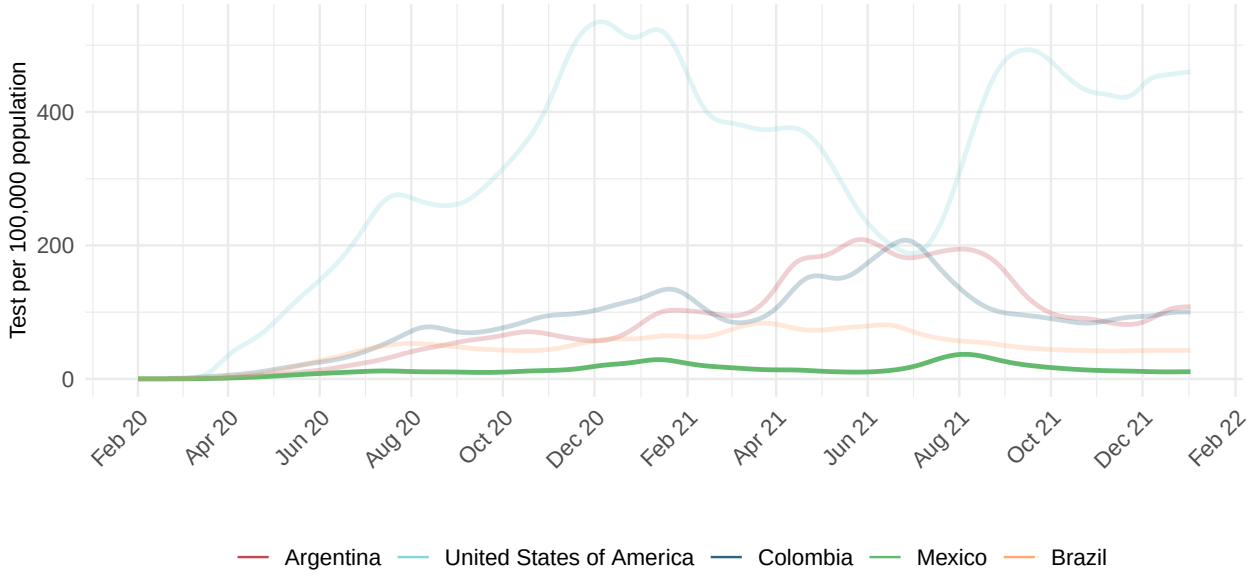


Figure 16.1. COVID-19 diagnostic tests per 100,000 people on January 3, 2022

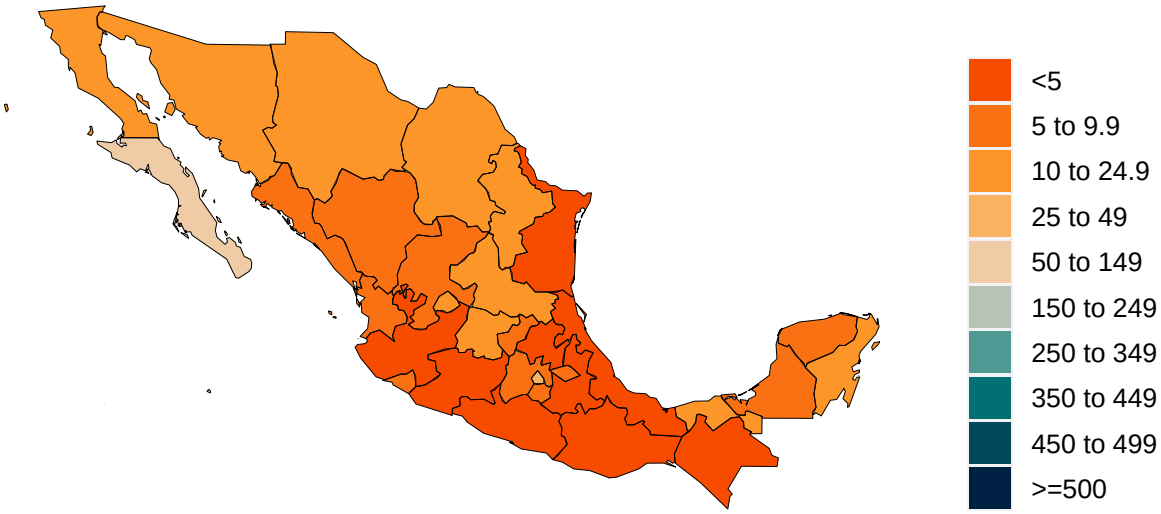


Table 3. Estimates of vaccine effectiveness for specific vaccines used in the model at preventing severe disease and infection. We use data from clinical trials directly, where available, and make estimates otherwise. More information can be found on our website.

	Effectiveness at preventing											
	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%

Percent of the population having received at least one dose (17.1) and fully vaccinated against SARS-CoV-2 (17.2) by January 3, 2022

Figure 17.1 Percent of the population having received one dose of a COVID-19 vaccine

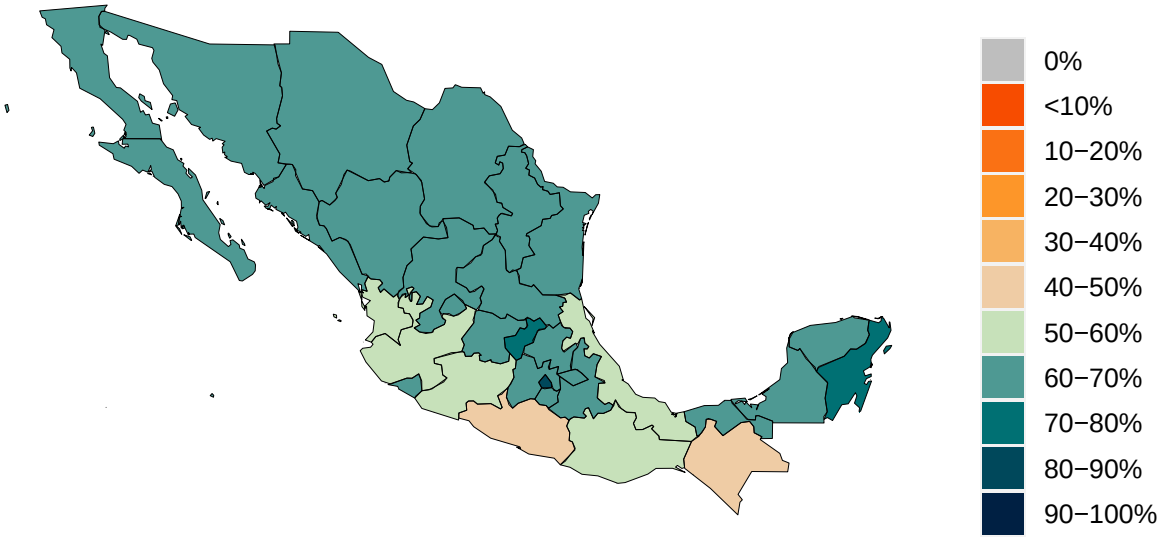


Figure 17.2 Percent of the population fully vaccinated against SARS-CoV-2

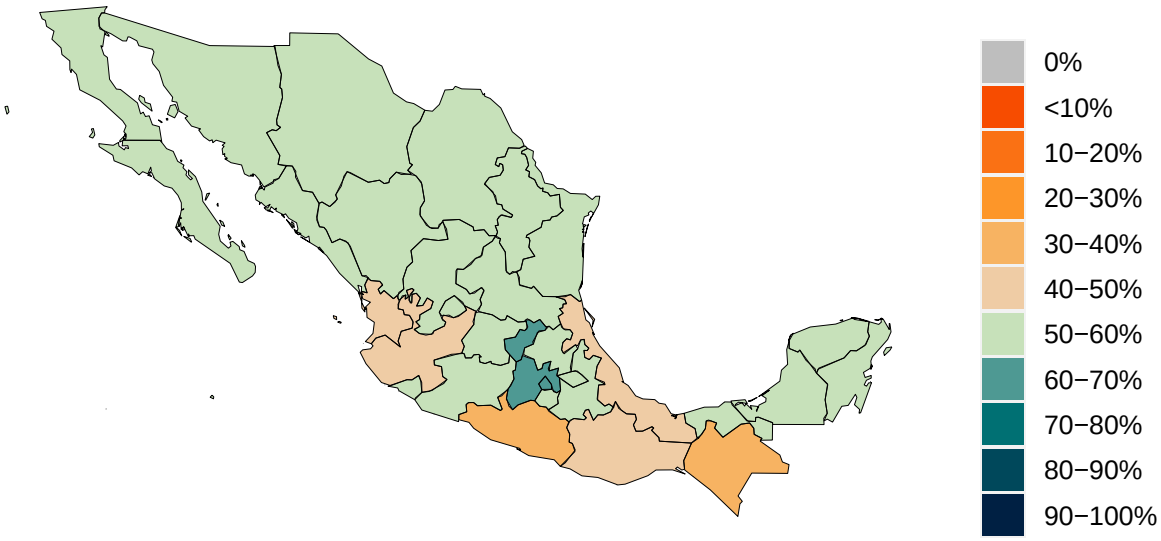


Figure 18.1. Trend in the estimated proportion of the population that is 12 years and older that has been vaccinated or would probably or definitely receive the COVID-19 vaccine if available. Note that vaccine acceptance is calculated using survey data from the 18+ population.

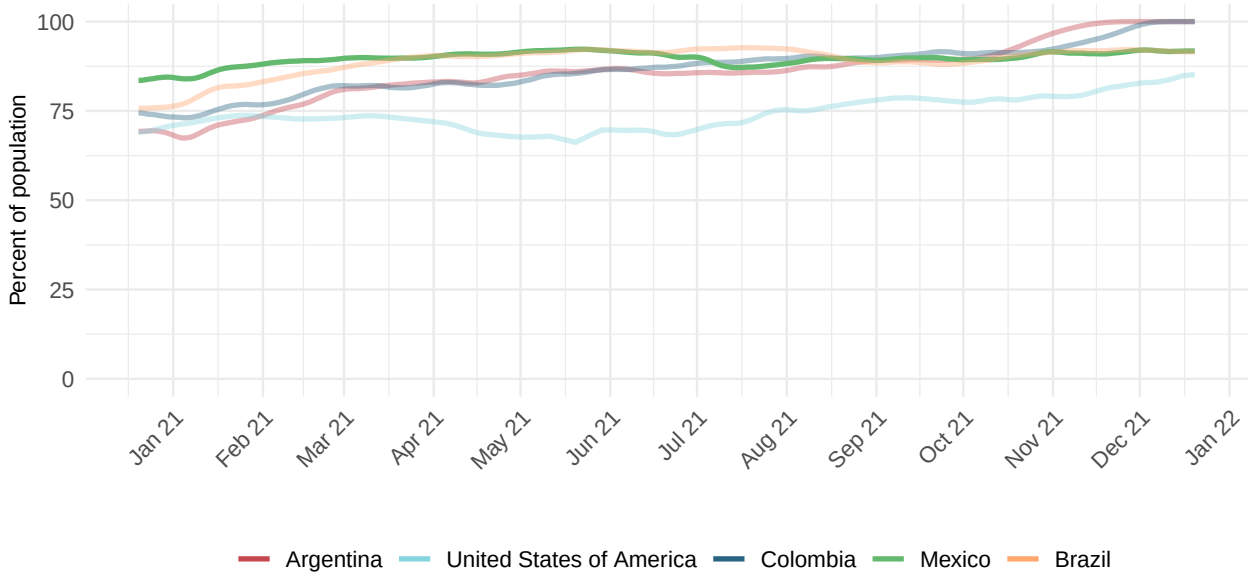


Figure 19.1. Estimated proportion of the population that is 12 years and older that has been vaccinated or would probably or definitely receive the COVID-19 vaccine if available. Note that vaccine acceptance is calculated using survey data from the 18+ population.

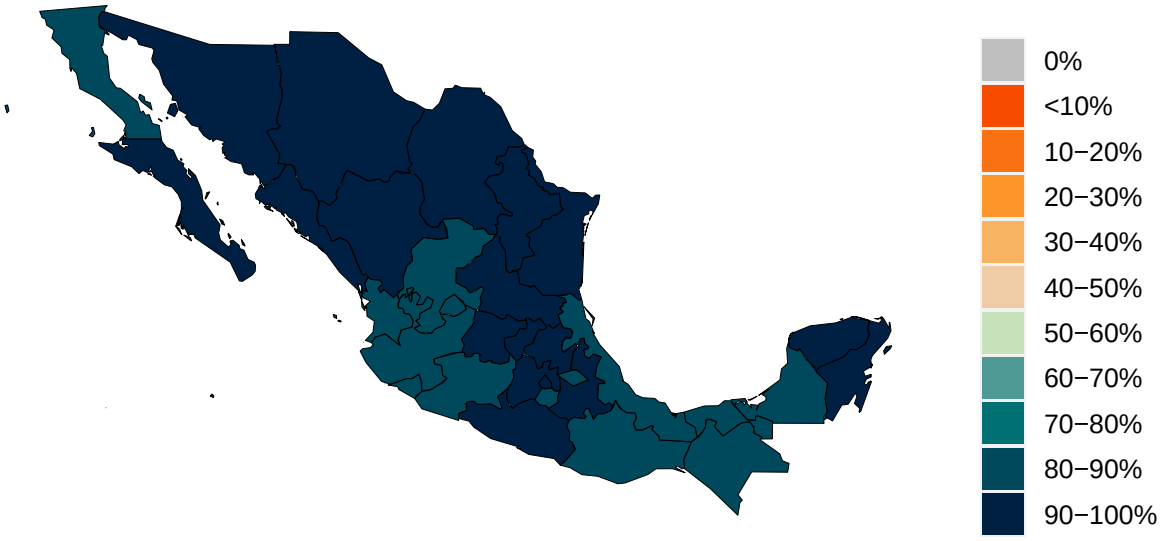
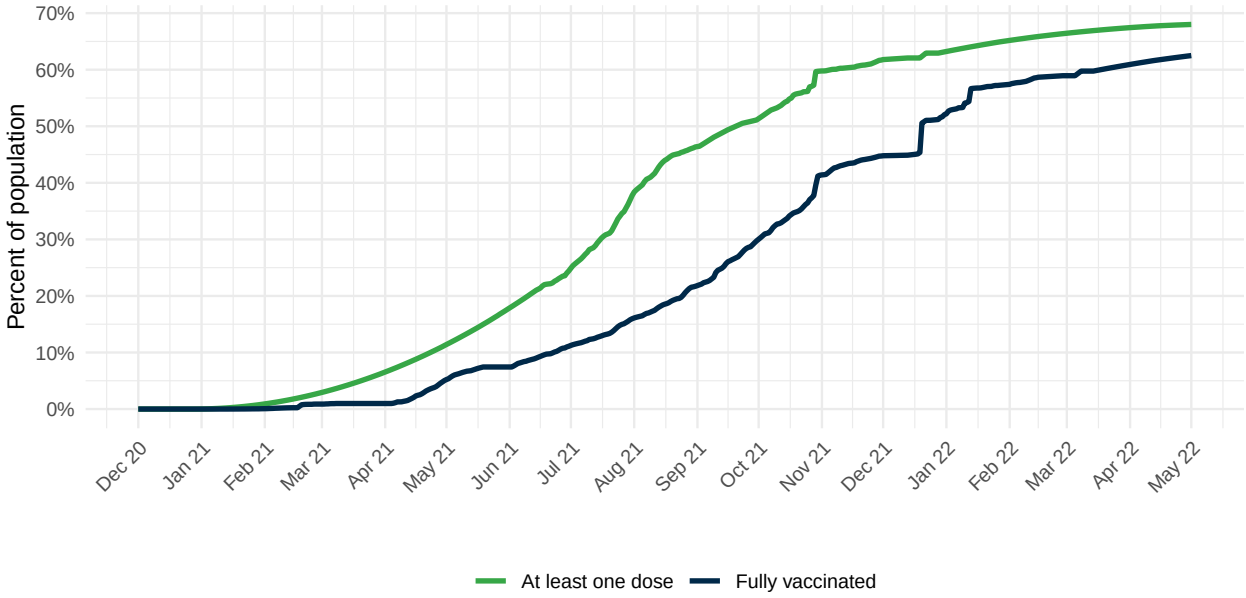


Figure 20.1. Percent of people who receive at least one dose of a COVID-19 vaccine and those who are fully vaccinated



Projections and scenarios

We produce five 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 is the mean of mask use over the last 7 days.
- Mobility increases as vaccine coverage increases.
- Omicron variant spreads according to our flight and local spread model.

- 80% of those who have had two doses of vaccine (or one dose for Johnson & Johnson) receive a third dose at 6 months after their second dose.

The **high severity of Omicron scenario** modifies the reference scenario assumption in two ways:

- The infection-hospitalization ratio for Omicron is 2.3 times as high as compared to the reference scenario.
- The infection-fatality rate is 4.6 times as high as compared to the reference scenario.

The **80% mask use scenario** makes all the same assumptions as the reference scenario but assumes all locations reach 80% mask use within 7 days. If a location currently has higher than 80% use, mask use remains at the current level.

The **third dose scenario** is the same as the reference scenario but assumes that 100% of those who have received two doses of vaccine will get a third dose at 6 months.

The **reduced vaccine hesitancy scenario** assumes that those in each location who respond on surveys that they probably will not receive a vaccine are persuaded or mandated to receive a vaccine.

Figure 21.1. Daily COVID-19 infections until May 01, 2022 for five scenarios

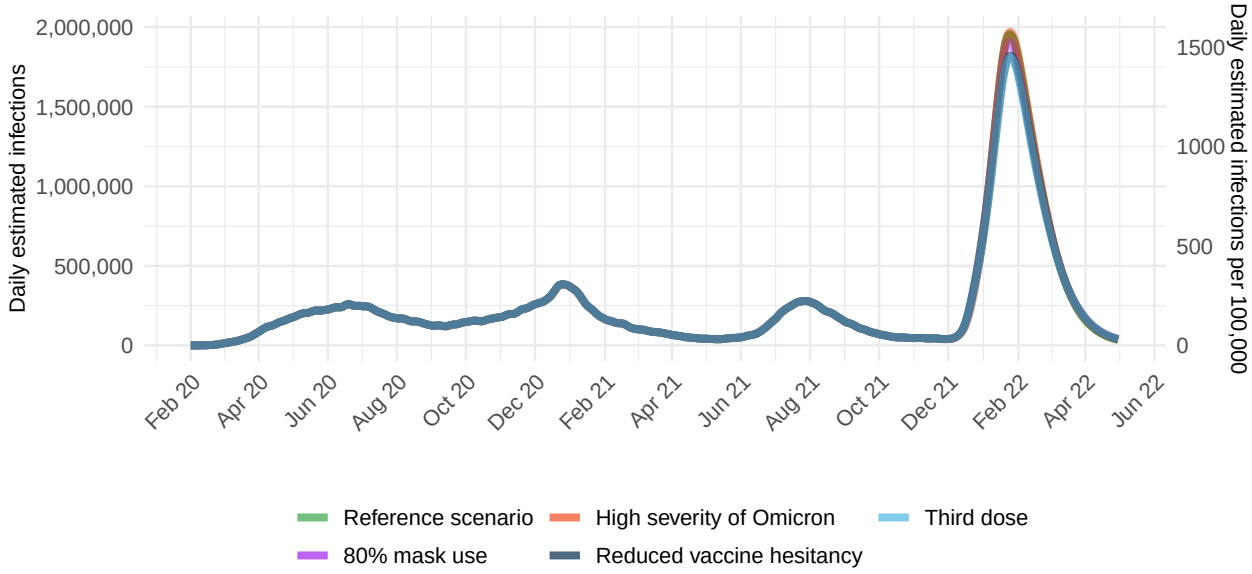


Figure 21.2. Daily COVID-19 reported cases until May 01, 2022 for five scenarios

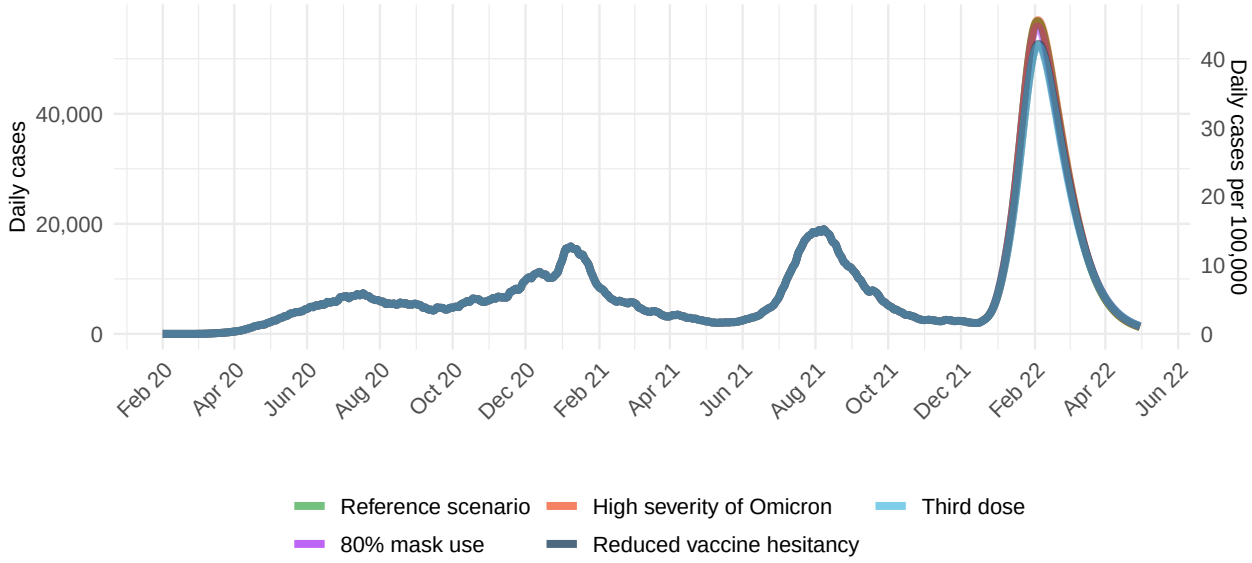


Figure 21.3. Daily COVID-19 hospital census until May 01, 2022 for five scenarios

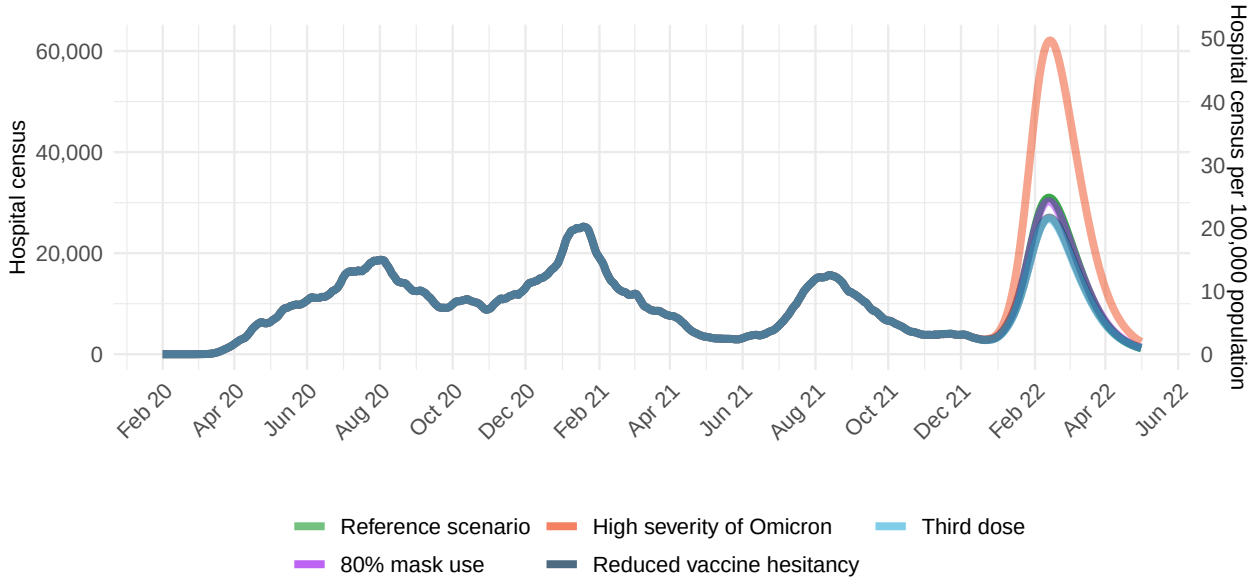


Figure 21.4 Reported daily COVID-19 deaths per 100,000

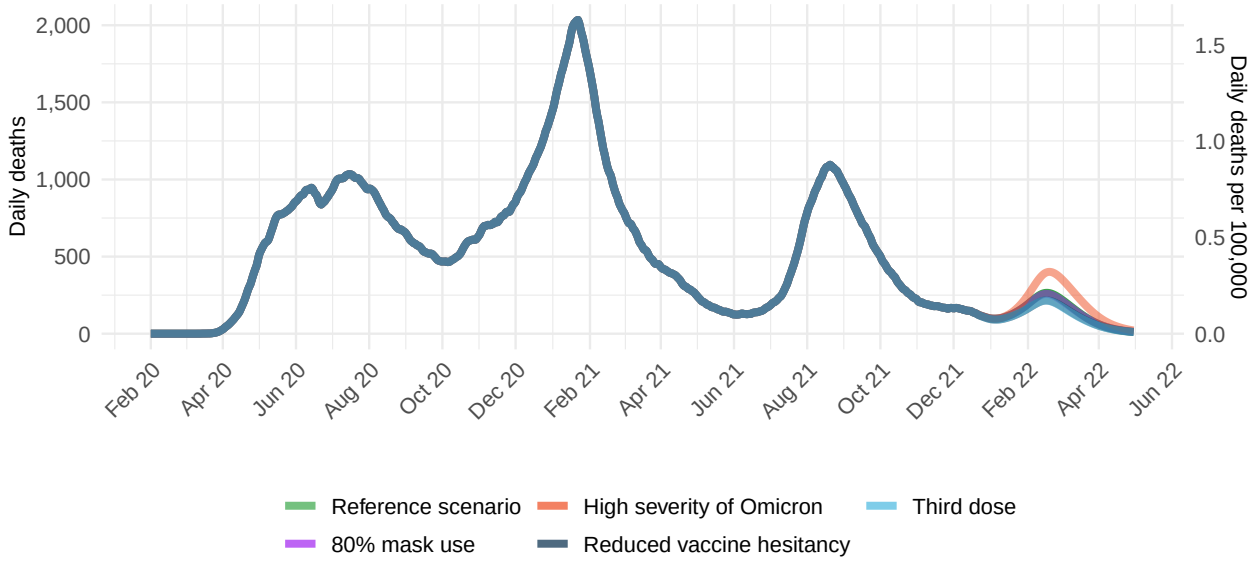


Figure 21.5 Total daily COVID-19 deaths per 100,000

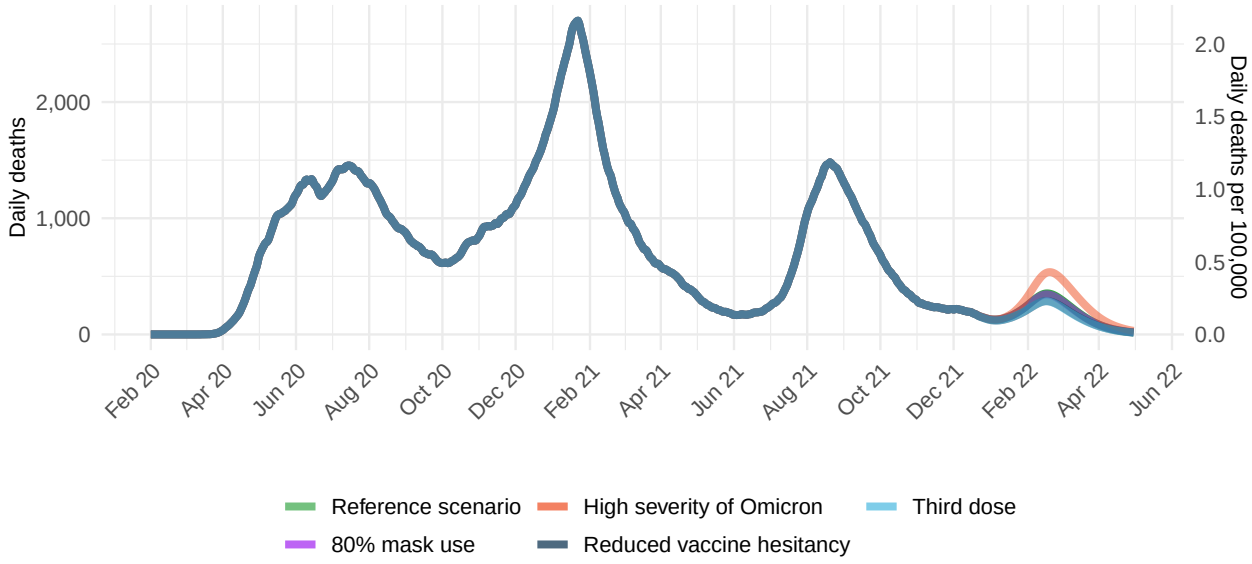


Figure 22.1. Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available, last model update in brackets: Delphi from the Massachusetts Institute of Technology (Delphi) [January 7, 2022], Imperial College London (Imperial) [December 13, 2021], the SI-KJalpha model from the University of Southern California (SIKJalpha) [January 4, 2022]. Daily deaths from other modeling groups are smoothed to remove inconsistencies with rounding. Regional values are aggregates from available locations in that region.

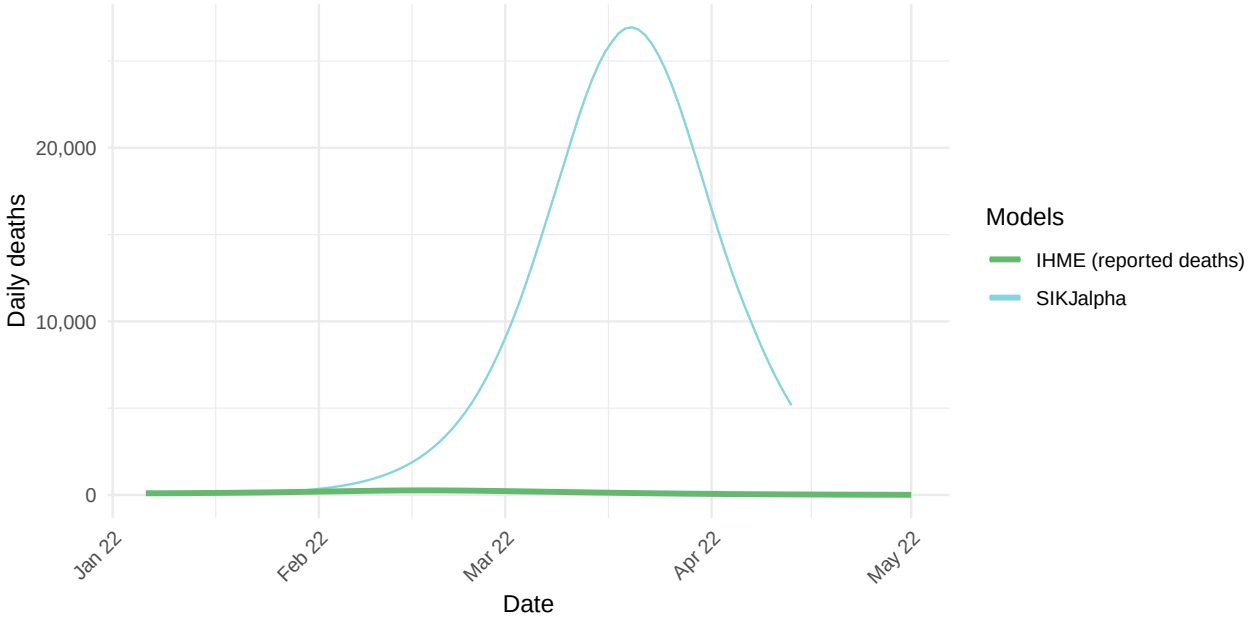


Figure 23.1. The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color-coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate stress*, 10-19% is considered *high stress*, and 20% or greater is considered *extreme stress*.

Figure 24.1. 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.