



## COVID-19 Results Briefing

### Iran (Islamic Republic of)

**July 22, 2021**

This document contains summary information on the latest projections from the IHME model on COVID-19 in Iran (Islamic Republic of). The model was run on July 20, 2021, with data through July 19, 2021.

#### Current situation

- Daily reported cases in the last week (through July 19) increased to 22,100 per day on average compared to 17,600 the week before (Figure 1).
- Reported deaths due to COVID-19 in the last week increased to 190 per day on average compared to 160 the week before (Figure 2).
- Excess deaths due to COVID-19 in the last week increased to 450 per day on average compared to 370 the week before (Figure 2). This makes COVID-19 the number 1 cause of death in Iran (Islamic Republic of) this week (Table 1). Estimated excess daily deaths due to COVID-19 were 2.4 times larger than the reported number of deaths.
- The daily reported COVID-19 death rate is greater than 4 per million in Tunisia (Figure 3).
- The daily rate of excess deaths due to COVID-19 is greater than 4 per million in Afghanistan, Iran (Islamic Republic of), Kuwait, Oman, and Tunisia (Figure 3).
- We estimated that 85% of people in Iran (Islamic Republic of) have been infected as of July 19 (Figure 5).
- Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 16 countries (Figure 6). The Effective R in Iran (Islamic Republic of) on July 8 was 1.16.
- The infection-detection rate in Iran (Islamic Republic of) was close to 11% on July 19 (Figure 7).
- Based on the GISAID and various national databases, combined with our variant spread model, we estimate the current prevalence of variants of concern (Figure 8). We estimate that B.1.351 is circulating in 6 countries, that B.1.617 is circulating in 13 countries, and that P.1 is circulating in 1 countries.

#### Trends in drivers of transmission

- Mobility last week was 4% higher than the pre-COVID-19 baseline (Figure 10). Mobility was near baseline (within 10%) in 19 countries. Mobility was lower than 30% of baseline in no locations.
- As of July 19, in the COVID-19 Trends and Impact Survey, 46% of people self-report that they always wore a mask when leaving their home compared to 47% last week (Figure 12).
- There were 101 diagnostic tests per 100,000 people on July 19 (Figure 14).
- In Iran (Islamic Republic of) 66.9% of people say they would accept or would probably accept a vaccine for COVID-19. This is up by 0.4 percentage points from last week. The fraction of the population who are open to receiving a COVID-19 vaccine ranges from 50% in Sudan to 98% in United Arab Emirates (Figure 18).
- In our current reference scenario, we expect that 10.0 million people will be vaccinated by November 1 (Figure 19).
- In our current reference scenario, we expect that by November 1, 84% of people will be immune to non-escape variants and 69% of people will be immune to escape variants (Figure 20).

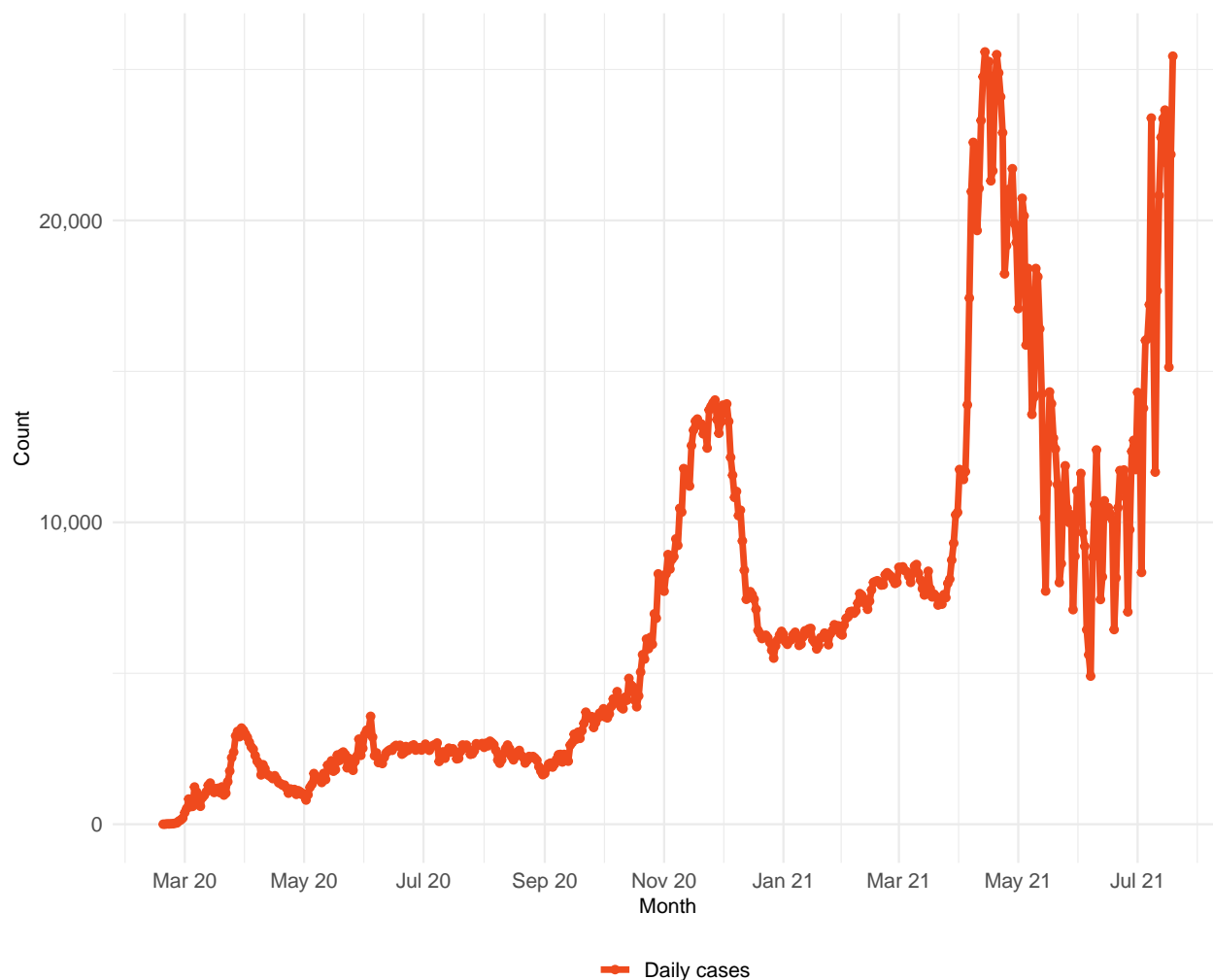
## Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects 105,000 cumulative reported deaths due to COVID-19 on November 1. This represents 17,000 additional deaths from July 19 to November 1. Daily reported deaths will rise to 300 by August 9, 2021 (Figure 21).
- Under our **reference scenario**, our model projects 250,000 cumulative excess deaths due to COVID-19 on November 1. This represents 42,000 additional deaths from July 19 to November 1. Daily excess deaths due to COVID-19 will rise to 720 by August 9, 2021 (Figure 21).
- If **universal mask coverage (95%)** were attained in the next week, our model projects 6,100 fewer cumulative reported deaths compared to the reference scenario on November 1.
- If **universal mask coverage (95%)** were attained in the next week, our model projects 15,000 fewer cumulative excess deaths due to COVID-19 compared to the reference scenario on November 1.
- Under our **worse scenario**, our model projects 105,000 cumulative reported deaths on November 1, an additional 650 deaths compared to our reference scenario. Daily reported deaths in the worse scenario will rise to 310 by August 10, 2021 (Figure 21).
- Under our **worse scenario**, our model projects 252,000 cumulative excess deaths due to COVID-19 on November 1, an additional 1,600 deaths compared to our reference scenario. Daily excess deaths due to COVID-19 in the worse scenario will rise to 730 by August 10, 2021 (Figure 21).
- Daily infections in the reference scenario will decline to 28,250 on November 1, 2021 (Figure 26). Daily infections in the worse scenario will decline to 30,570 on November 1, 2021 (Figure 26).
- By November 1, we project that 3,500 lives will be saved by the projected vaccine rollout. This does not include lives saved through vaccination that has already been delivered.
- Figure 23 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.
- At some point from July through November 1, 13 countries will have high or extreme stress on hospital beds (Figure 24). At some point from July through November 1, 15 countries will have high or extreme stress on intensive care unit (ICU) capacity (Figure 25).

## Model updates

Our mobility covariate that is used in the projections of COVID infections and deaths was updated to account for observed sustained levels of high mobility. Specifically, the mobility forecasts used in both the *reference* and *universal mask coverage* projection scenarios were adjusted upward according to vaccine uptake. This is equivalent to what was previously used in the *worse* projection scenario. To produce vaccine-adjusted mobility forecasts, we assume that social distancing mandates decline exponentially with respect to increasing vaccine uptake such that all mandates are lifted 30 days after vaccine coverage reaches 75%. In locations where vaccine uptake is already high, projected mandates are ramped down linearly from the current value to the vaccine-adjusted value over a 30-day period. As a final change, for locations whose last day of data indicates mobility levels above baseline (defined as average mobility during the period 1/3/2020 to 2/6/2020), we no longer cap forecasted mobility at zero. The variant spread model was updated to allow for spread to have occurred in the past in locations with some variant surveillance when there was little to no sequence data to confirm or reject the potential invasion.

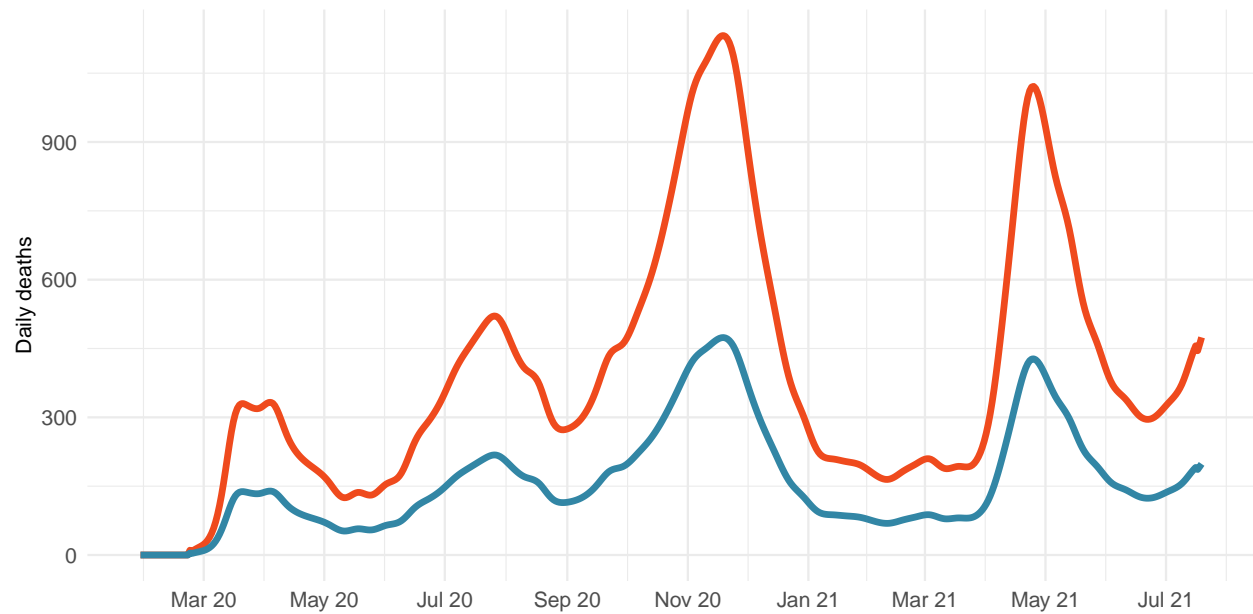
**Figure 1.** Reported daily COVID-19 cases



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

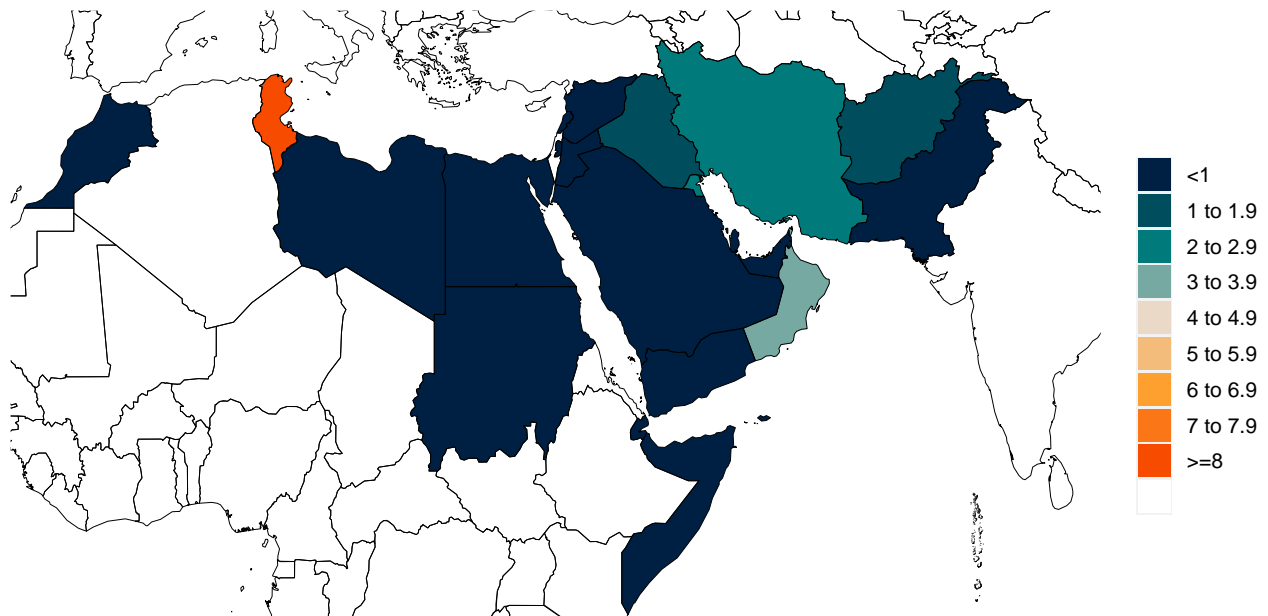
Cause name	Weekly deaths	Ranking
COVID-19	3,133	1
Ischemic heart disease	1,977	2
Stroke	787	3
Road injuries	406	4
Hypertensive heart disease	355	5
Diabetes mellitus	283	6
Alzheimer's disease and other dementias	268	7
Chronic obstructive pulmonary disease	241	8
Chronic kidney disease	241	9
Stomach cancer	211	10

**Figure 2.** Smoothed trend estimate of reported daily COVID-19 deaths (blue) and excess daily deaths due to COVID-19 (orange)

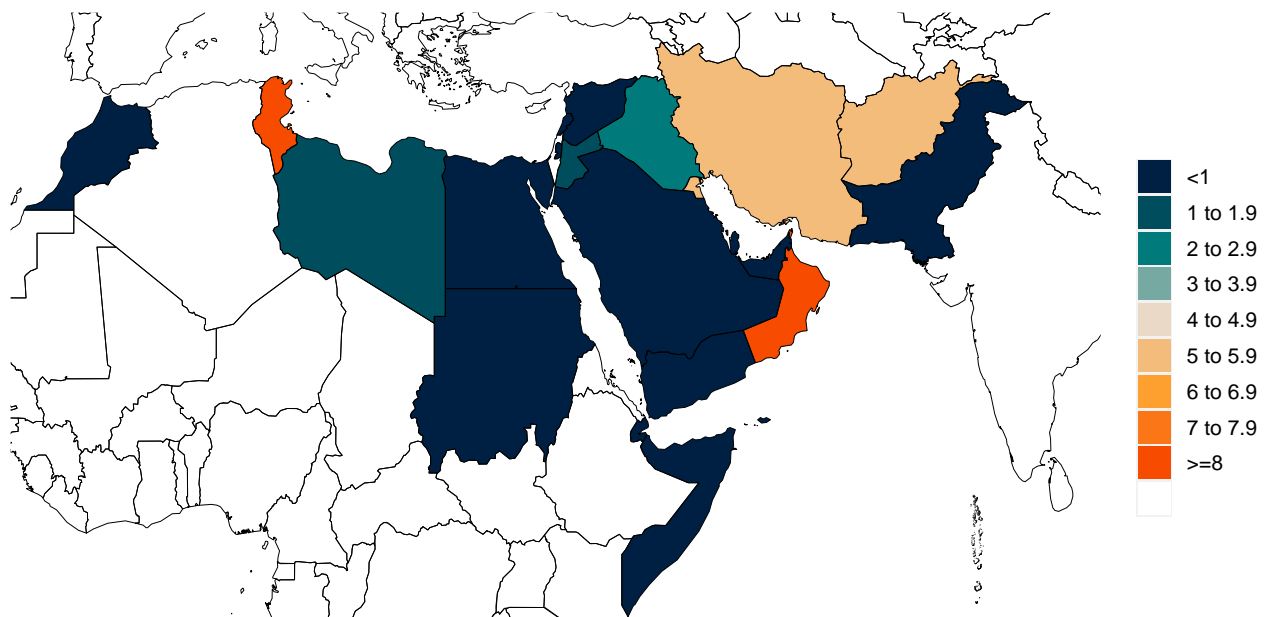


**Figure 3.** Daily COVID-19 death rate per 1 million on July 19, 2021

**A. Daily reported COVID-19 death rate per 1 million**

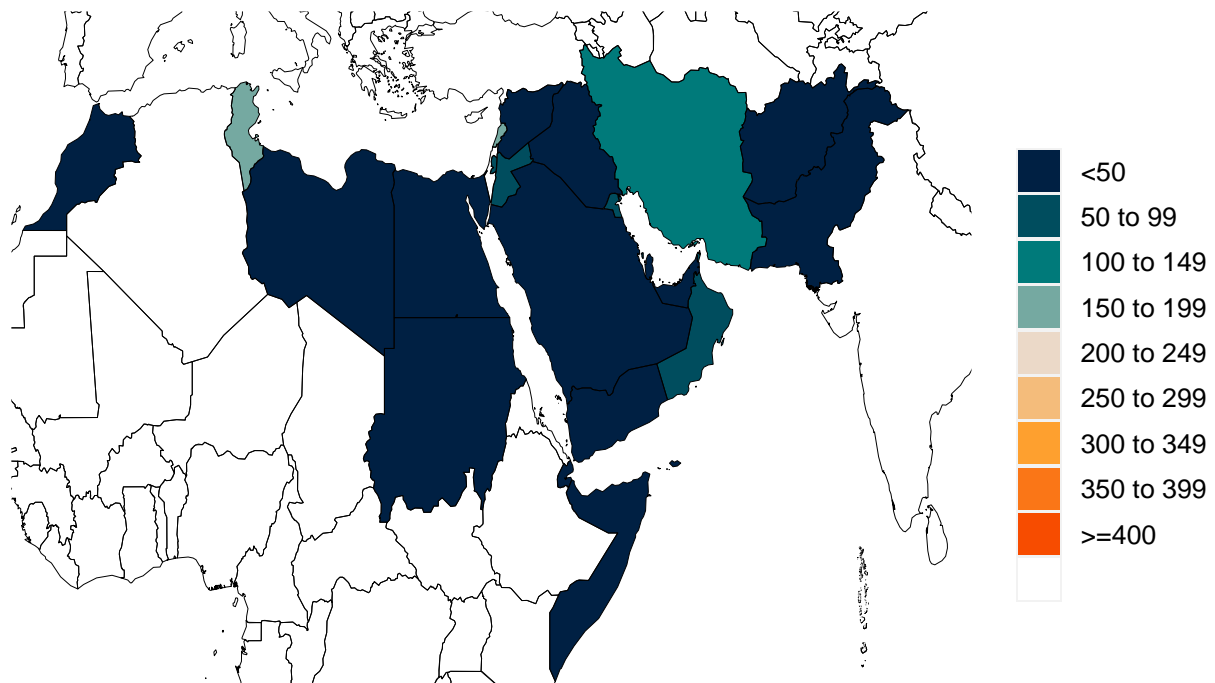


**B. Daily excess COVID-19 death rate per 1 million**

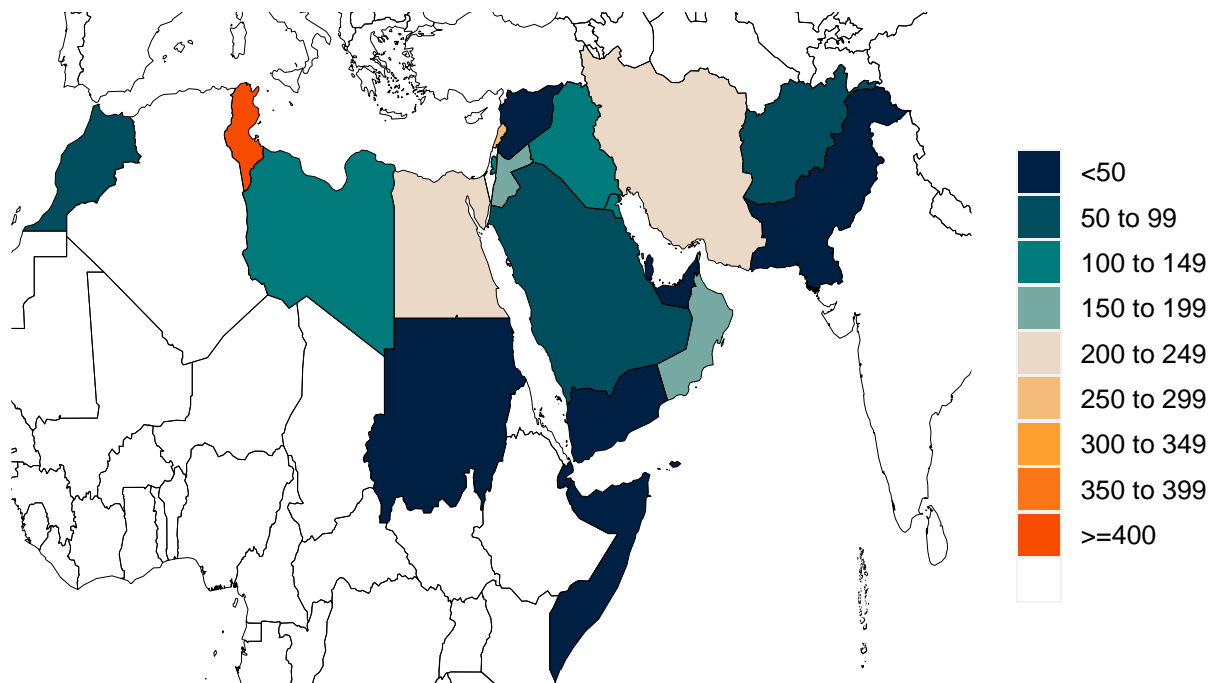


**Figure 4.** Cumulative COVID-19 deaths per 100,000 on July 19, 2021

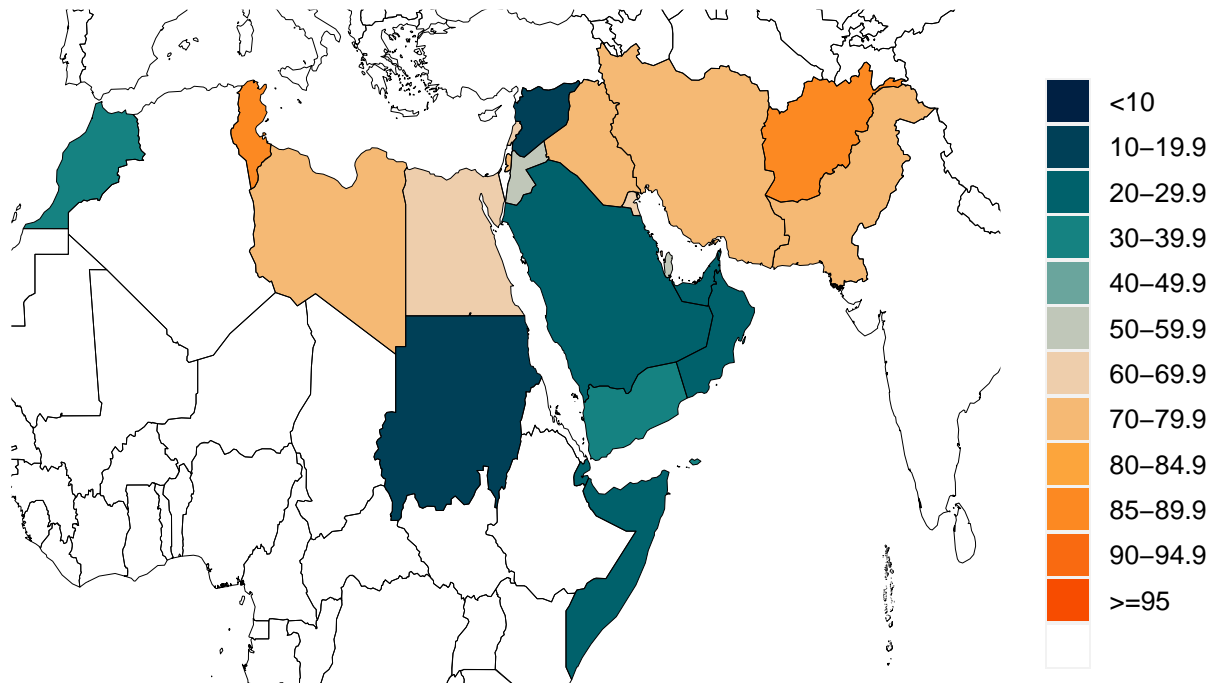
**A. Reported cumulative COVID-19 deaths per 100,000**



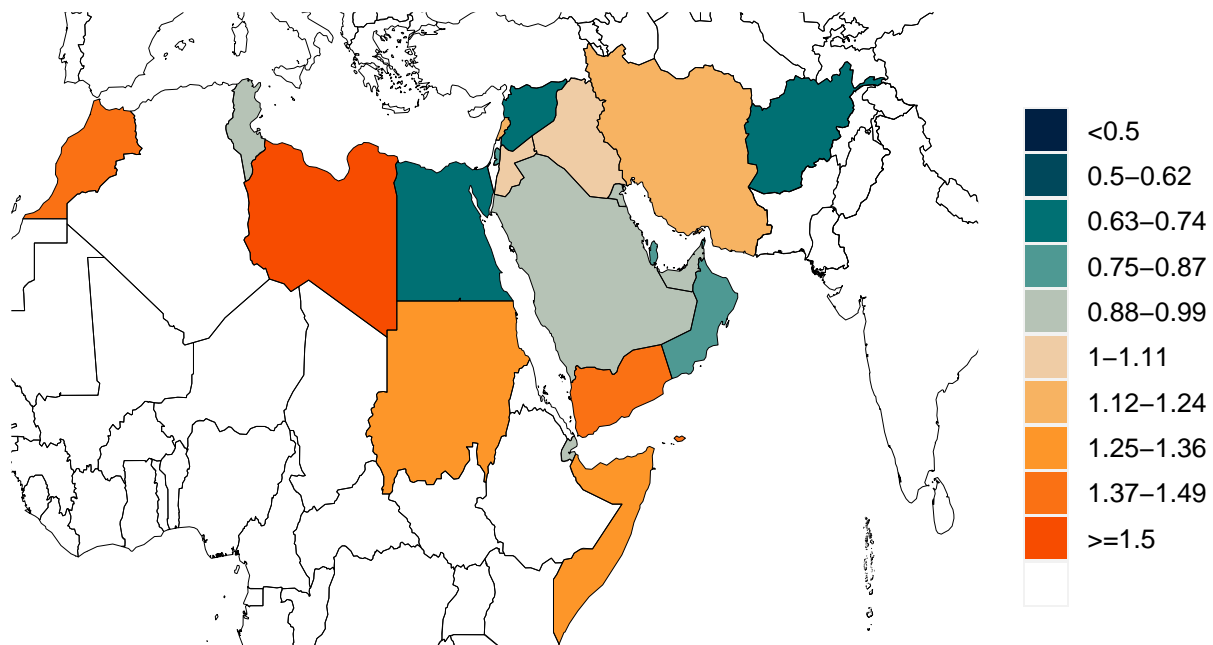
**B. Excess cumulative COVID-19 deaths per 100,000**



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

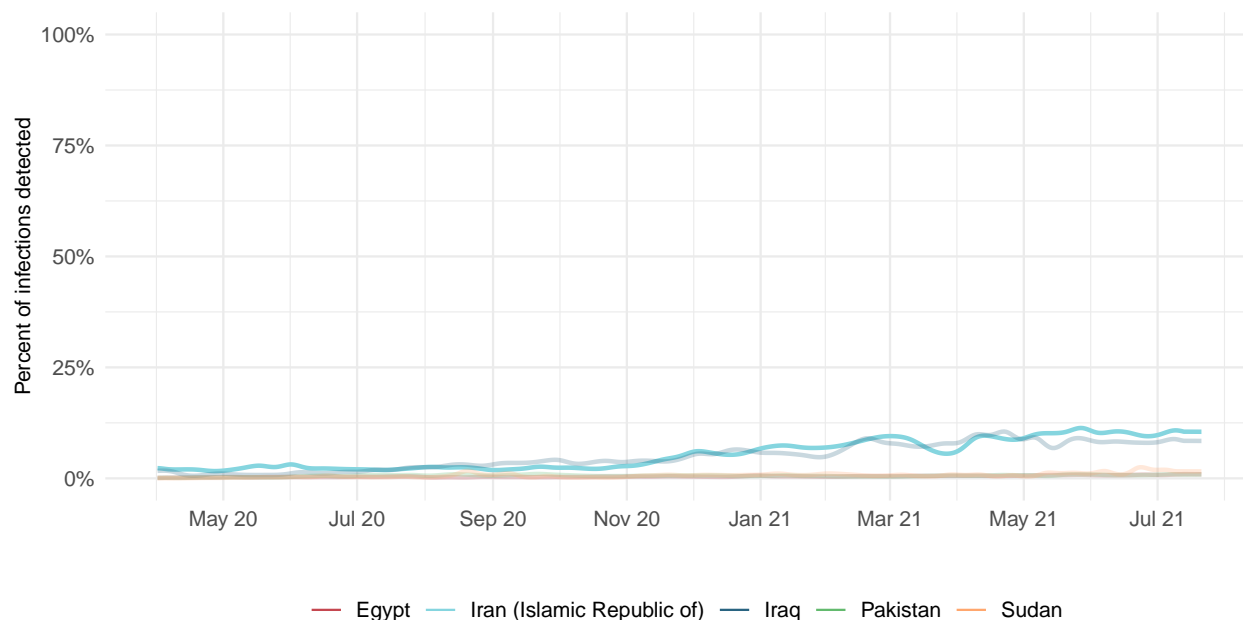


**Figure 6.** Mean effective R on July 8, 2021. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past. Effective R less than 1 means that transmission should decline, all other things being held the same.



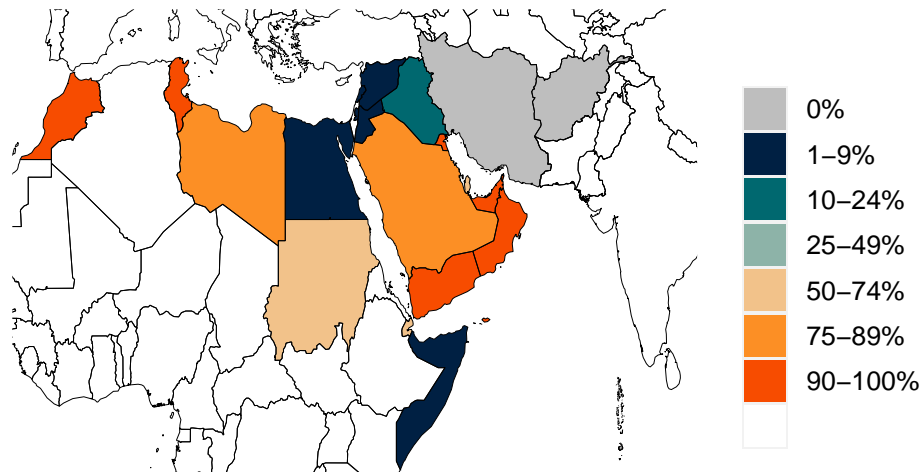


**Figure 7.** Percent of COVID-19 infections detected. This is estimated as the ratio of reported daily COVID-19 cases to estimated daily COVID-19 infections based on the SEIR disease transmission model. Due to measurement errors in cases and testing rates, the infection-detection rate can exceed 100% at particular points in time.



**Figure 8.** Estimated percent of circulating SARS-CoV-2 for primary variant families on July 19, 2021

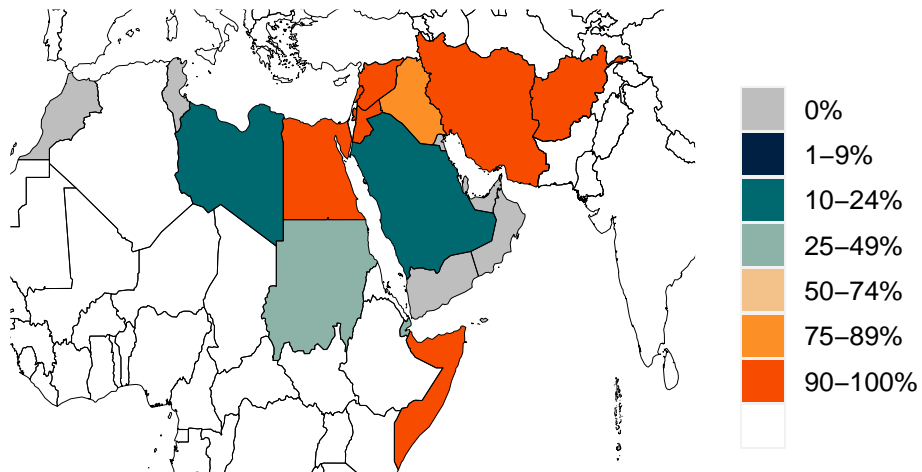
**A. Estimated percent B.1.1.7 variant**



**B. Estimated percent B.1.351 variant**



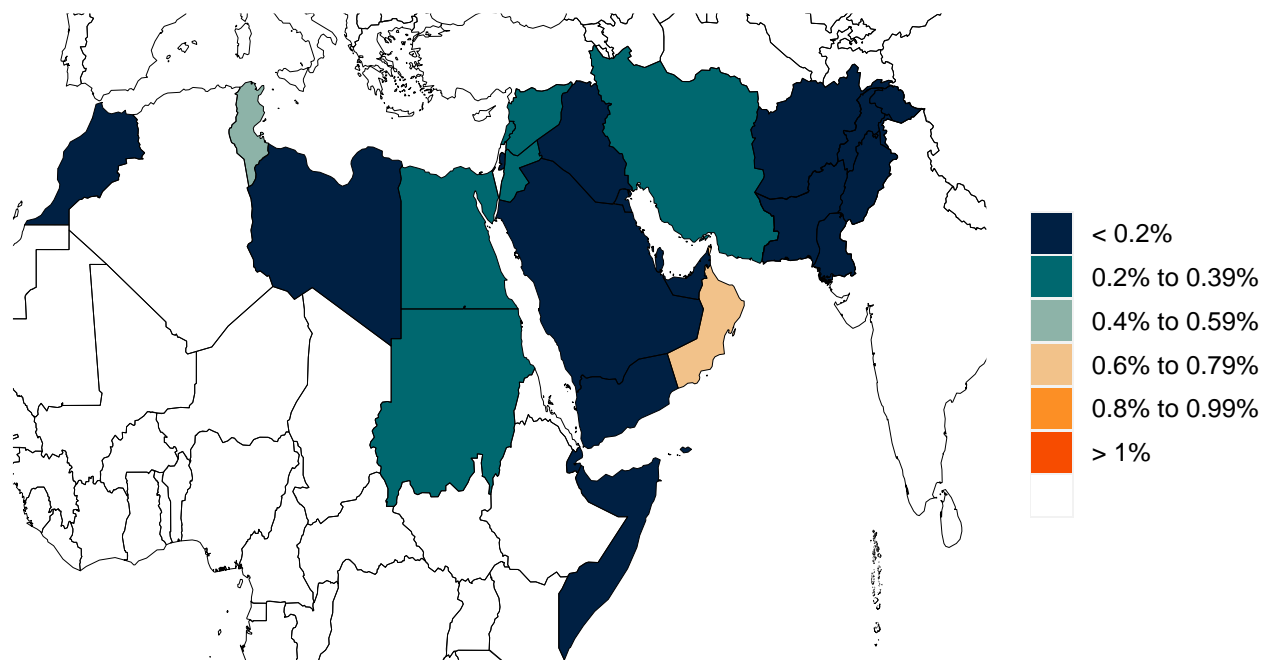
C. Estimated percent B.1.617 variant



D. Estimated percent P.1 variant



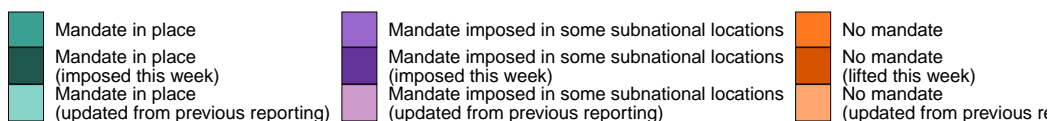
**Figure 9.** Infection-fatality ratio on July 19, 2021



## Critical drivers

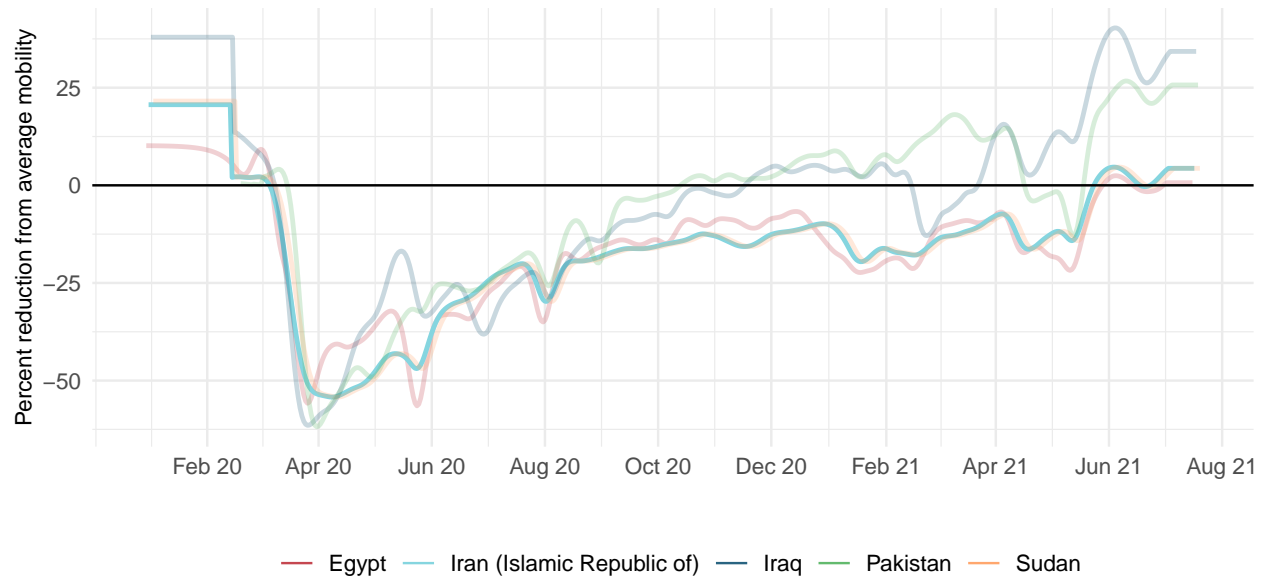
**Table 2.** Current mandate implementation

	Primary school closure	Secondary school closure	Higher school closure	Borders closed to any non-resident	Borders closed to 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
Afghanistan																									
Bahrain																									
Djibouti																									
Egypt																									
Iran (Islamic Republic of)																									
Iraq																									
Jordan																									
Kuwait																									
Lebanon																									
Libya																									
Morocco																									
Oman																									
Pakistan																									
Palestine																									
Qatar																									
Saudi Arabia																									
Somalia																									
Sudan																									
Syrian Arab Republic																									
Tunisia																									
United Arab Emirates																									
Yemen																									

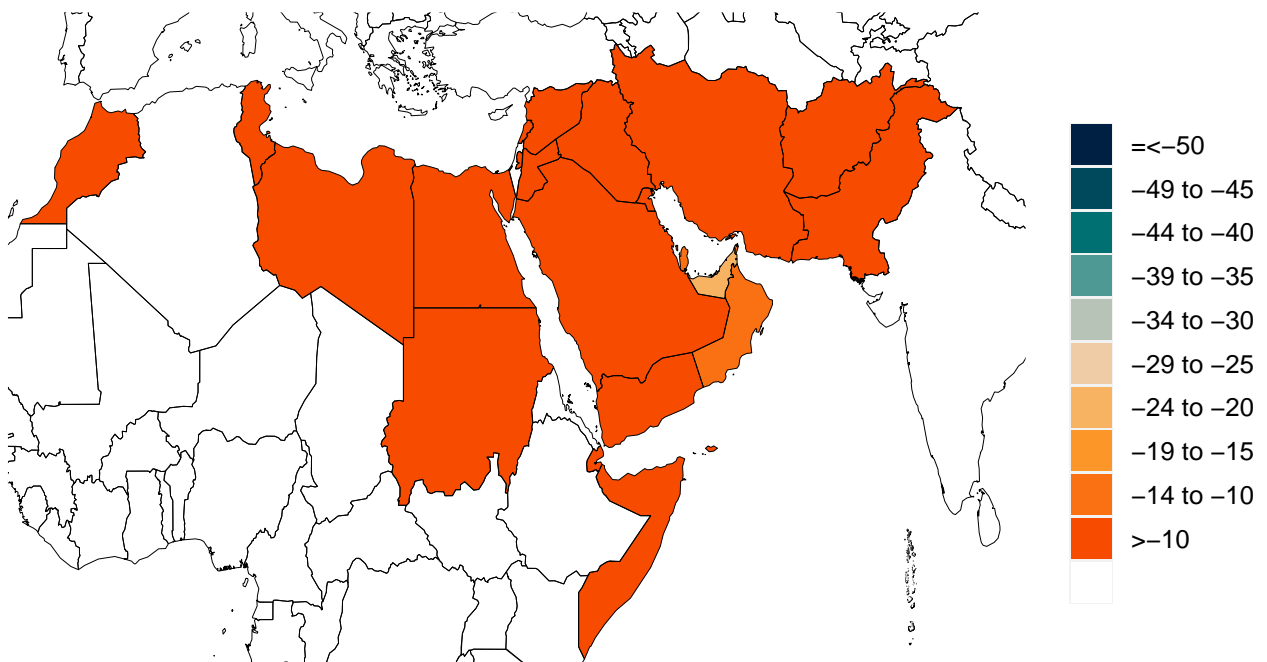


\*Not all locations are measured at the subnational level.

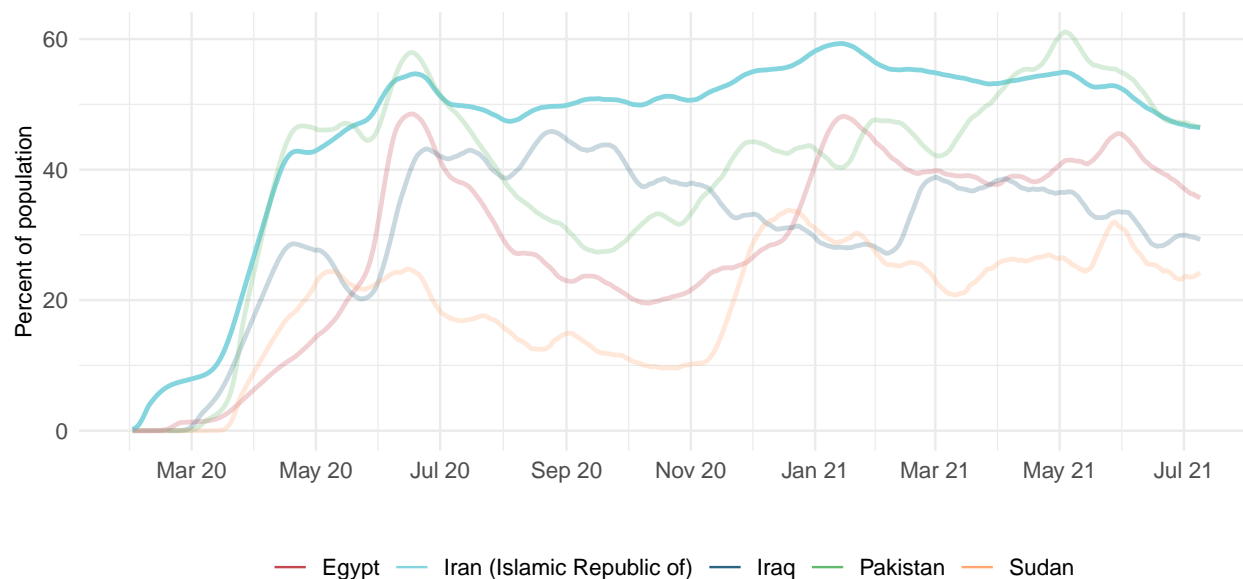
**Figure 10.** Trend in mobility as measured through smartphone app use compared to January 2020 baseline



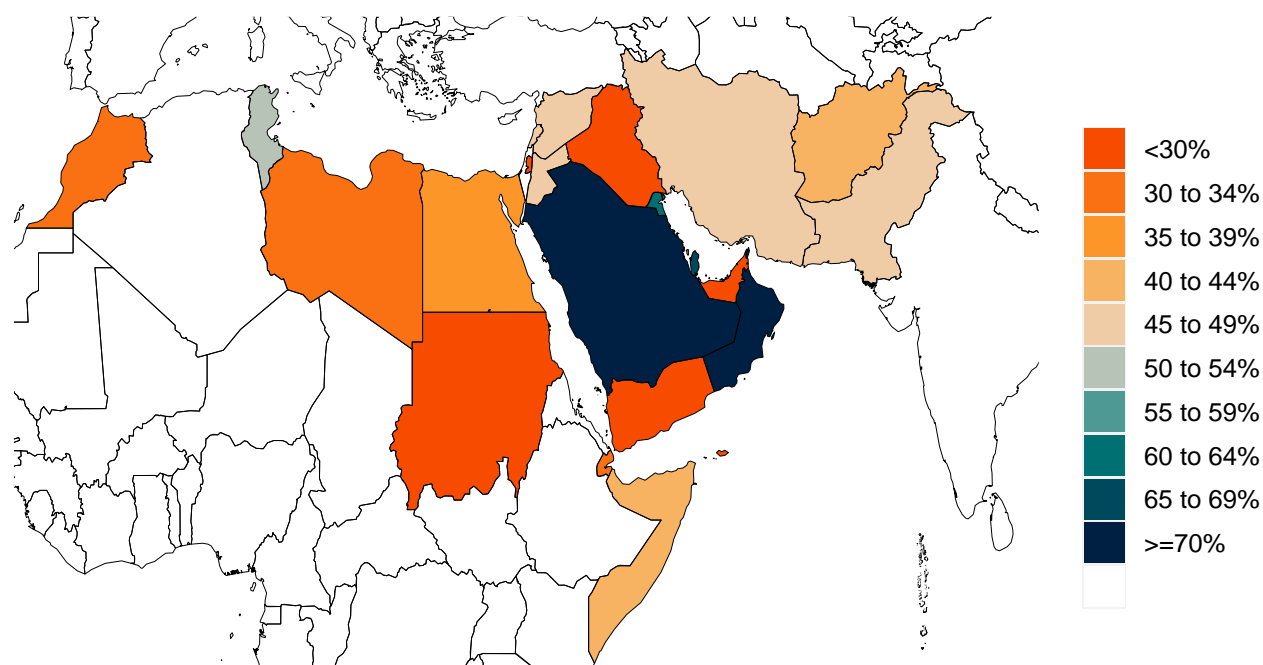
**Figure 11.** Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on July 19, 2021



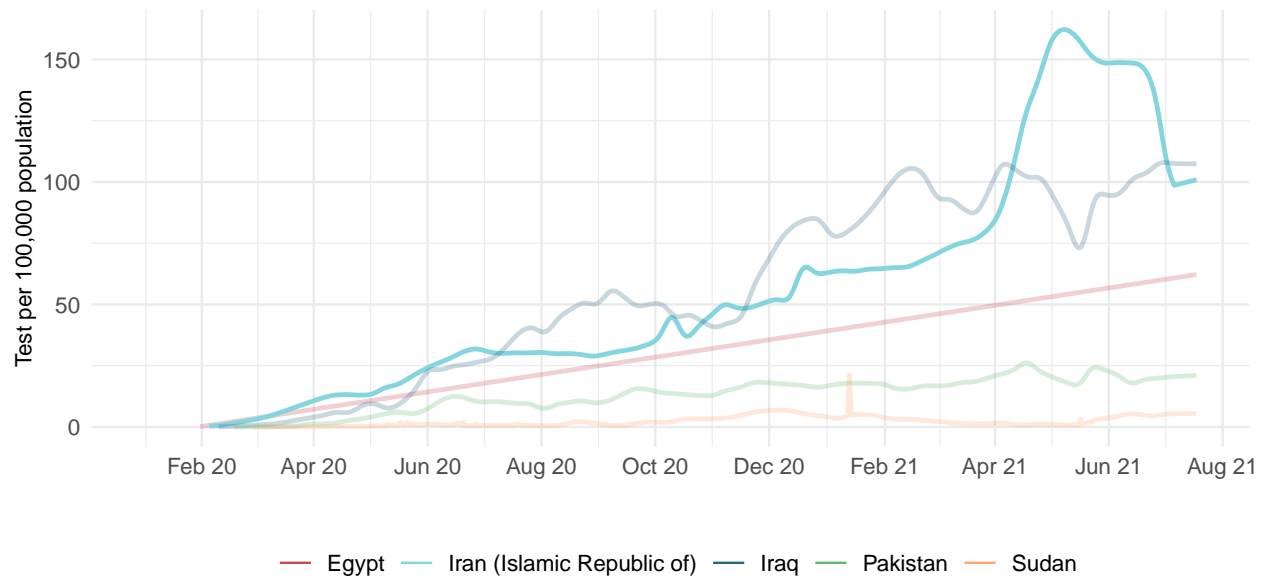
**Figure 12.** Trend in the proportion of the population reporting always wearing a mask when leaving home



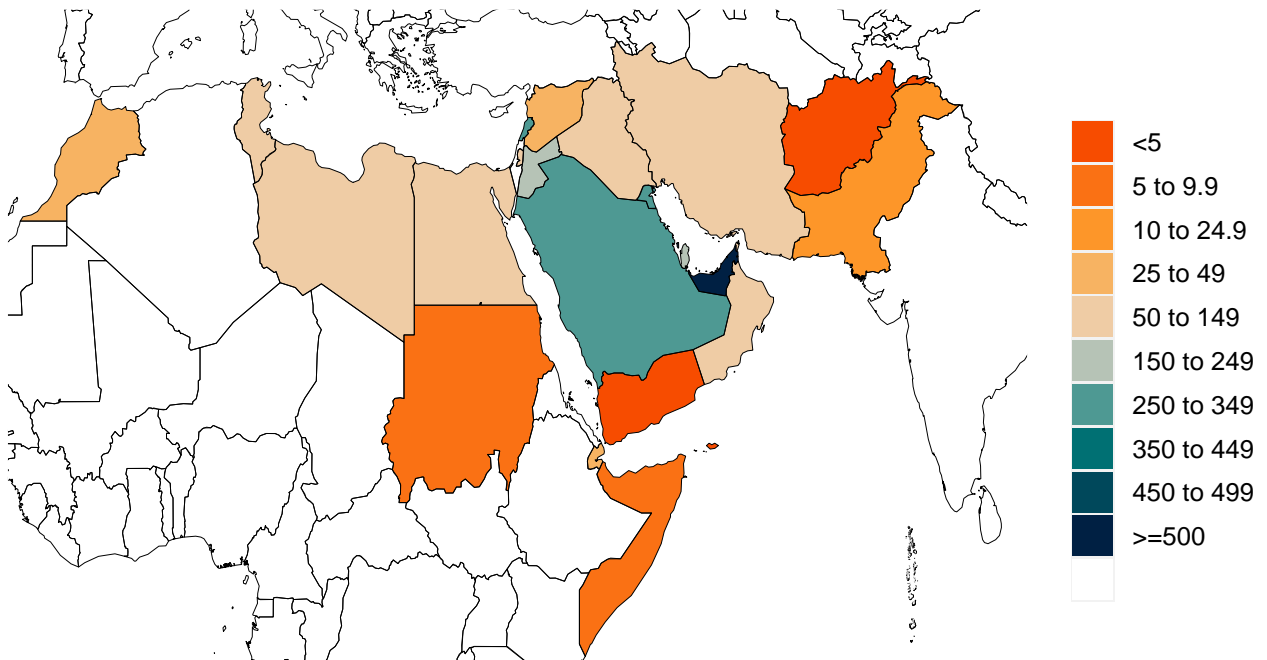
**Figure 13.** Proportion of the population reporting always wearing a mask when leaving home on July 19, 2021



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

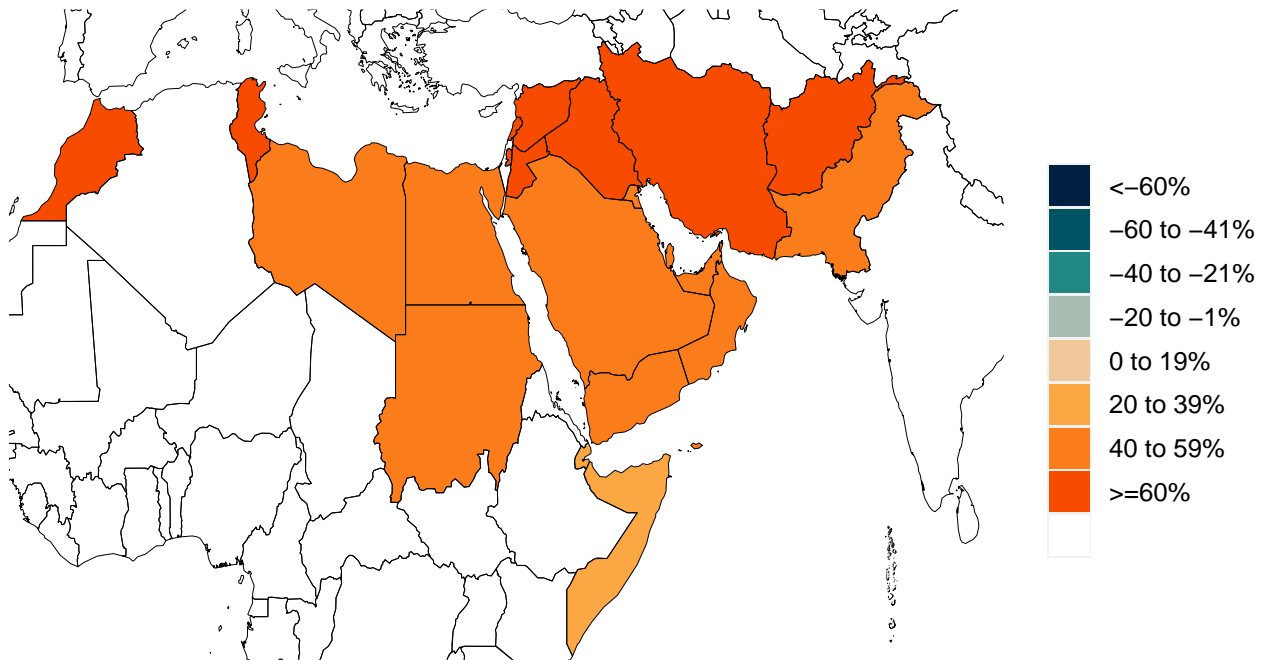


**Figure 15.** COVID-19 diagnostic tests per 100,000 people on July 19, 2021





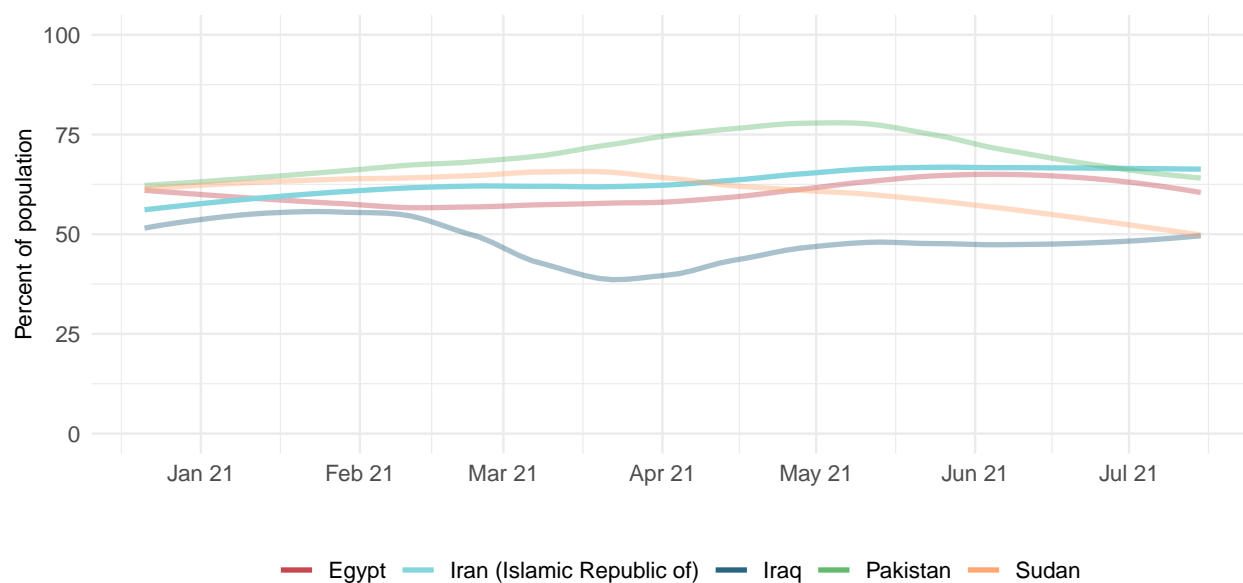
**Figure 16.** Increase in the risk of death due to pneumonia on February 1 compared to August 1



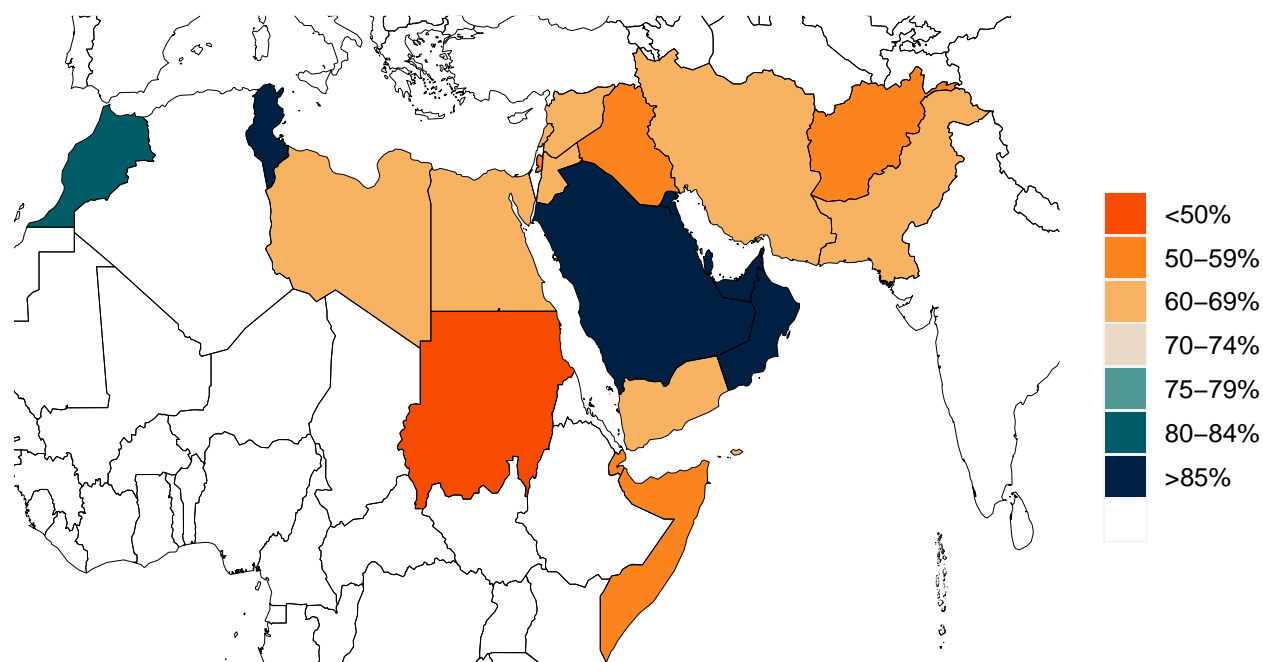
**Table 3.** Estimates of vaccine efficacy for specific vaccines used in the model at preventing disease and infection. The SEIR model uses variant-specific estimates of vaccine efficacy at preventing symptomatic disease and at preventing infection. We use data from clinical trials directly, where available, and make estimates otherwise. More information can be found on our [website](#).

Vaccine	Efficacy at preventing disease: D614G & B.1.1.7	Efficacy at preventing infection: D614G & B.1.1.7	Efficacy at preventing disease: B.1.351, B.1.617, & P.1	Efficacy at preventing infection: B.1.351, B.1.617, & P.1
AstraZeneca	74%	52%	53%	47%
CoronaVac	50%	44%	40%	35%
Covaxin	78%	69%	62%	55%
Janssen	72%	72%	64%	56%
Moderna	94%	89%	83%	79%
Novavax	89%	79%	73%	64%
Pfizer/BioNTech	91%	86%	81%	77%
Sinopharm	73%	65%	47%	41%
Sputnik-V	92%	81%	73%	65%
Tianjin	66%	58%	53%	47%
CanSino				
Other vaccines	75%	66%	60%	53%
Other vaccines (mRNA)	91%	86%	81%	77%

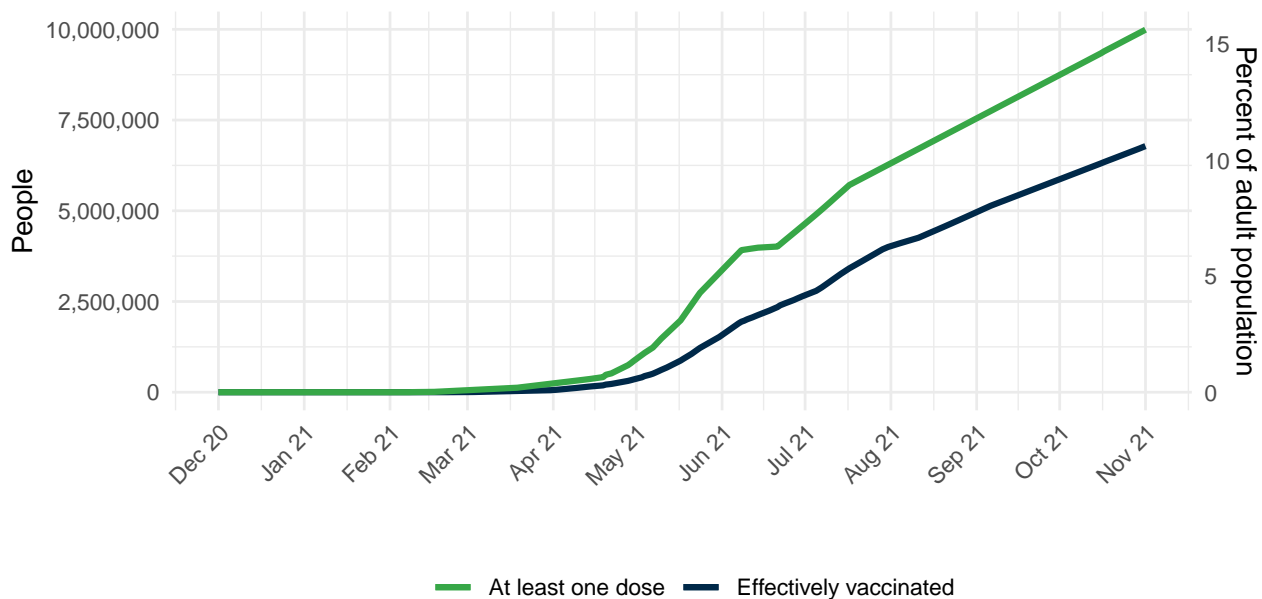
**Figure 17.** Trend in the estimated proportion of the adult (18+) population that have been vaccinated or would probably or definitely receive the COVID-19 vaccine if available



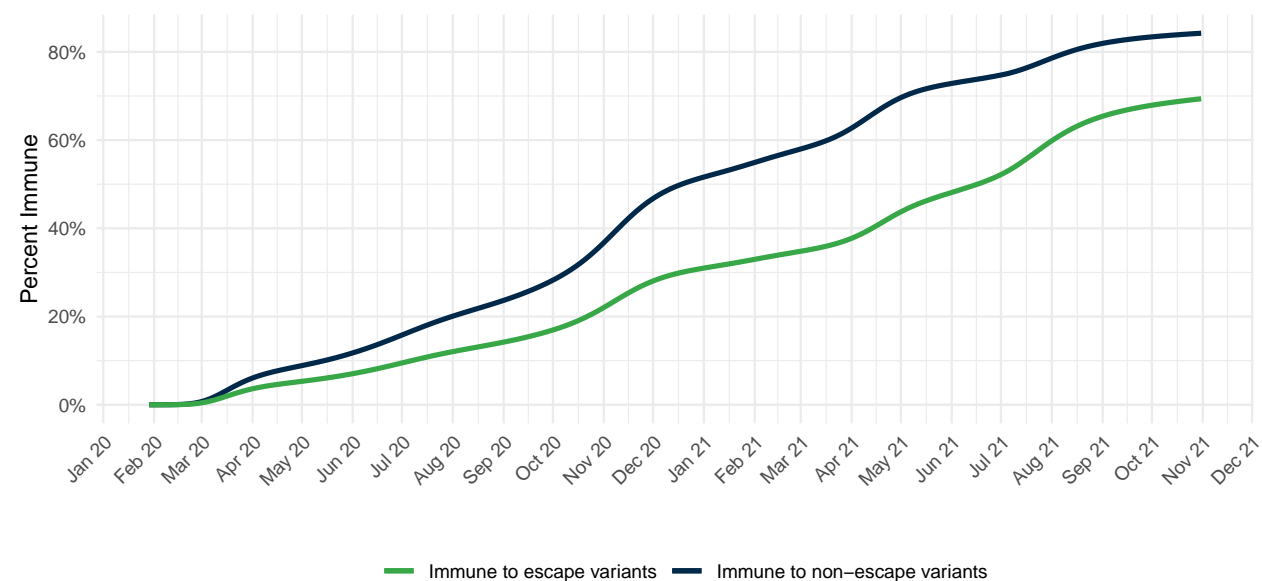
**Figure 18.** This figure shows the estimated proportion of the adult (18+) population that has been vaccinated or would probably or definitely receive the COVID-19 vaccine if available



**Figure 19.** 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



**Figure 20.** Percentage of people who are immune to non-escape variants and the percentage of people who are immune to escape variants



## 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 United Kingdom.
- In one-quarter of those vaccinated, mobility increases toward pre-COVID-19 levels.

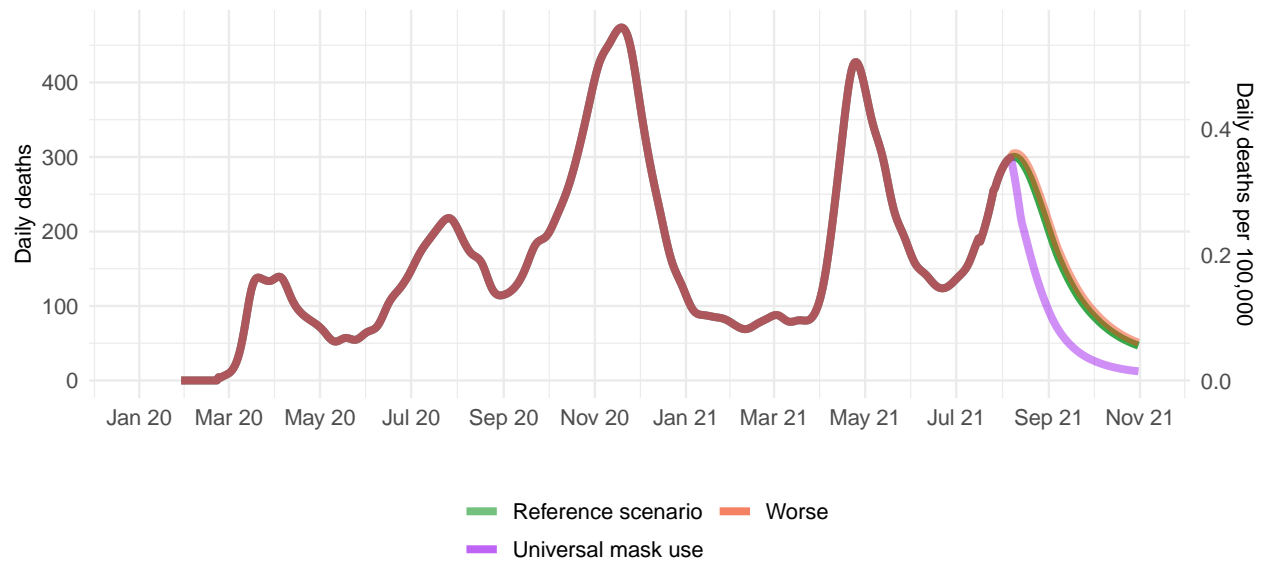
The **worse scenario** modifies the reference scenario assumptions in three ways:

- First, it assumes that variants B.1.351 or P.1 begin to spread within three weeks in adjacent locations that do not already have B.1.351 or P.1 community transmission.
- Second, it assumes that all those vaccinated increase their mobility toward pre-COVID-19 levels.
- Third, it assumes that among those vaccinated, mask use starts to decline exponentially one month after completed vaccination.

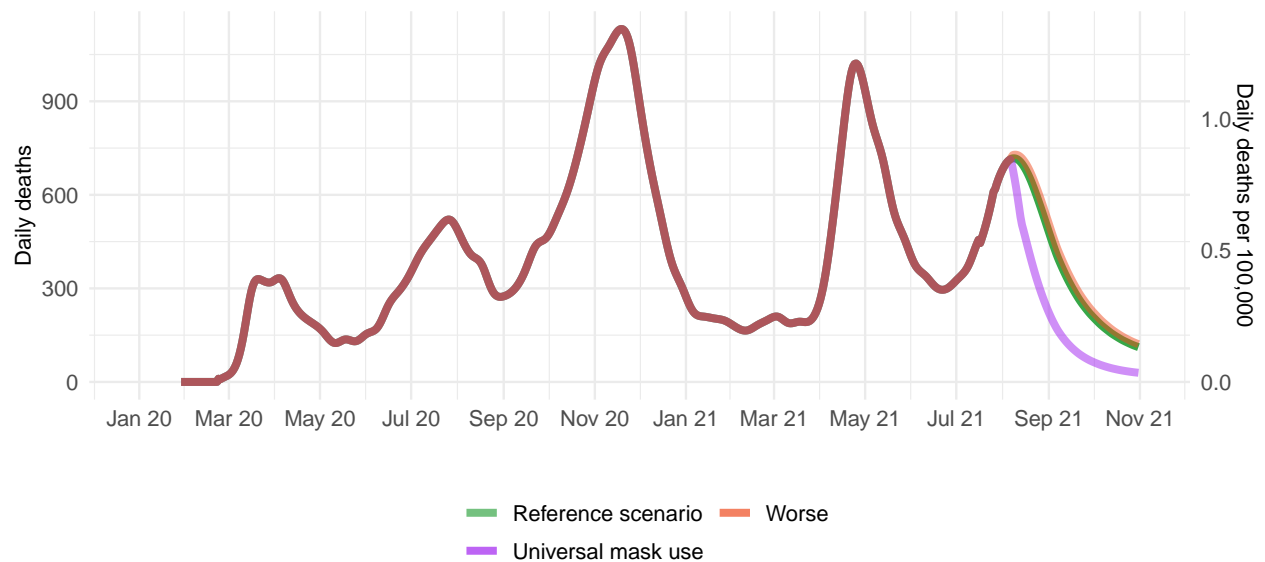
The **universal masks scenario** makes all the same assumptions as the reference scenario but also assumes 95% of the population wear masks in public in every location.

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

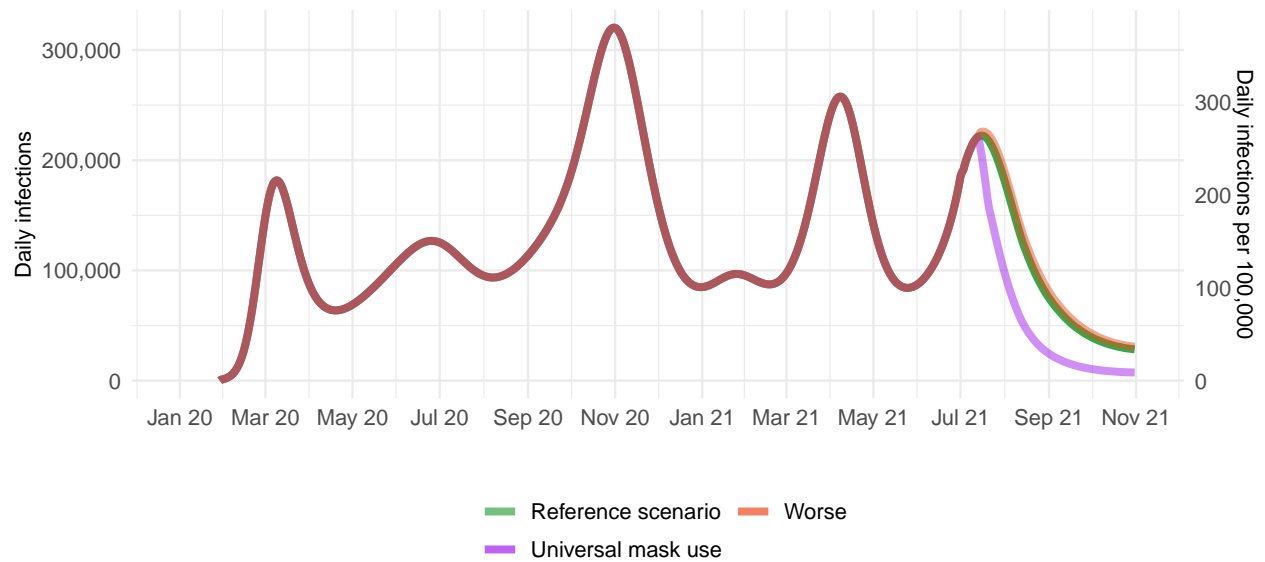
**A. Reported daily COVID-19 death per 100,000**



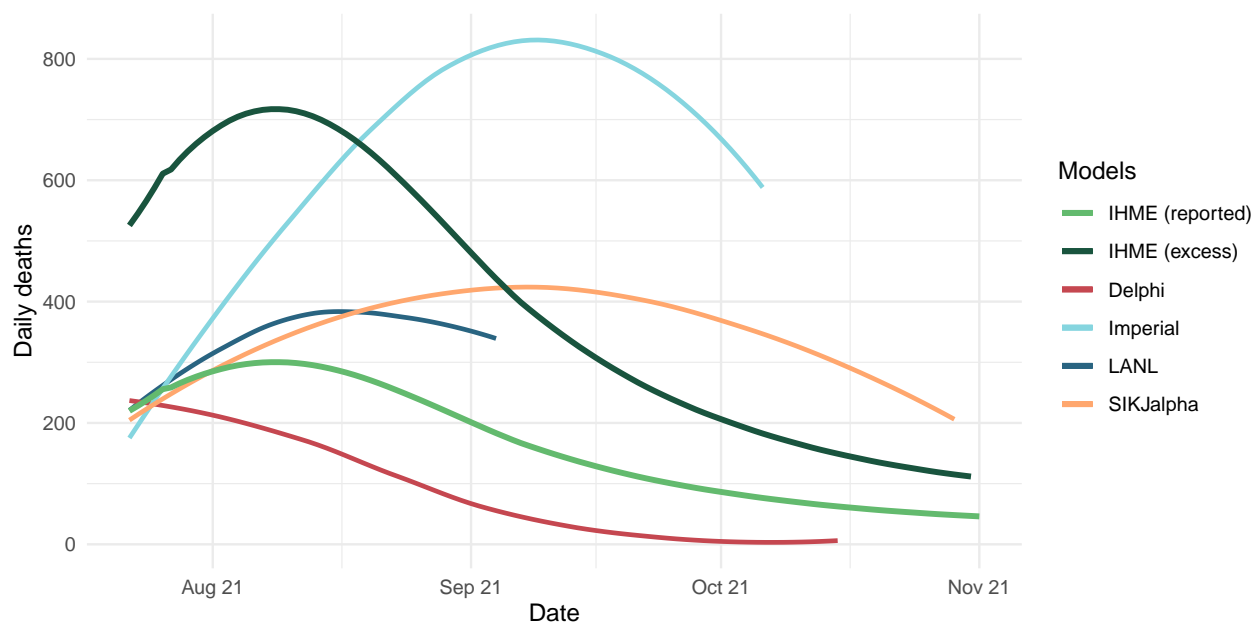
**B. Excess daily COVID-19 deaths per 100,000**



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

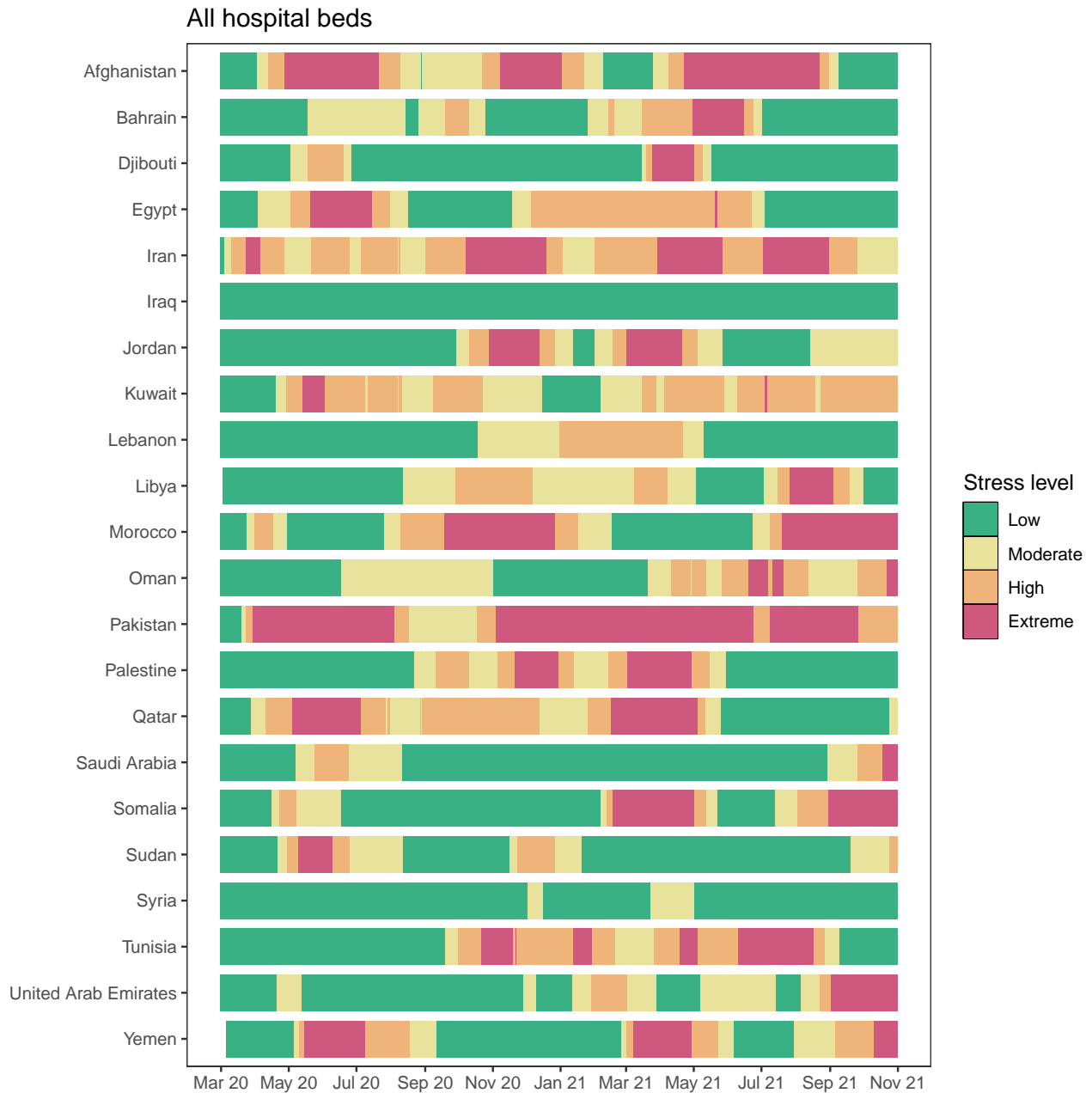


**Figure 23.** Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available: Delphi from the Massachusetts Institute of Technology ([Delphi](#)), Imperial College London ([Imperial](#)), The Los Alamos National Laboratory ([LANL](#)), and the SI-KJalpha model from the University of Southern California ([SIKJalpha](#)). Daily deaths from other modeling groups are smoothed to remove inconsistencies with rounding. Regional values are aggregates from available locations in that region.

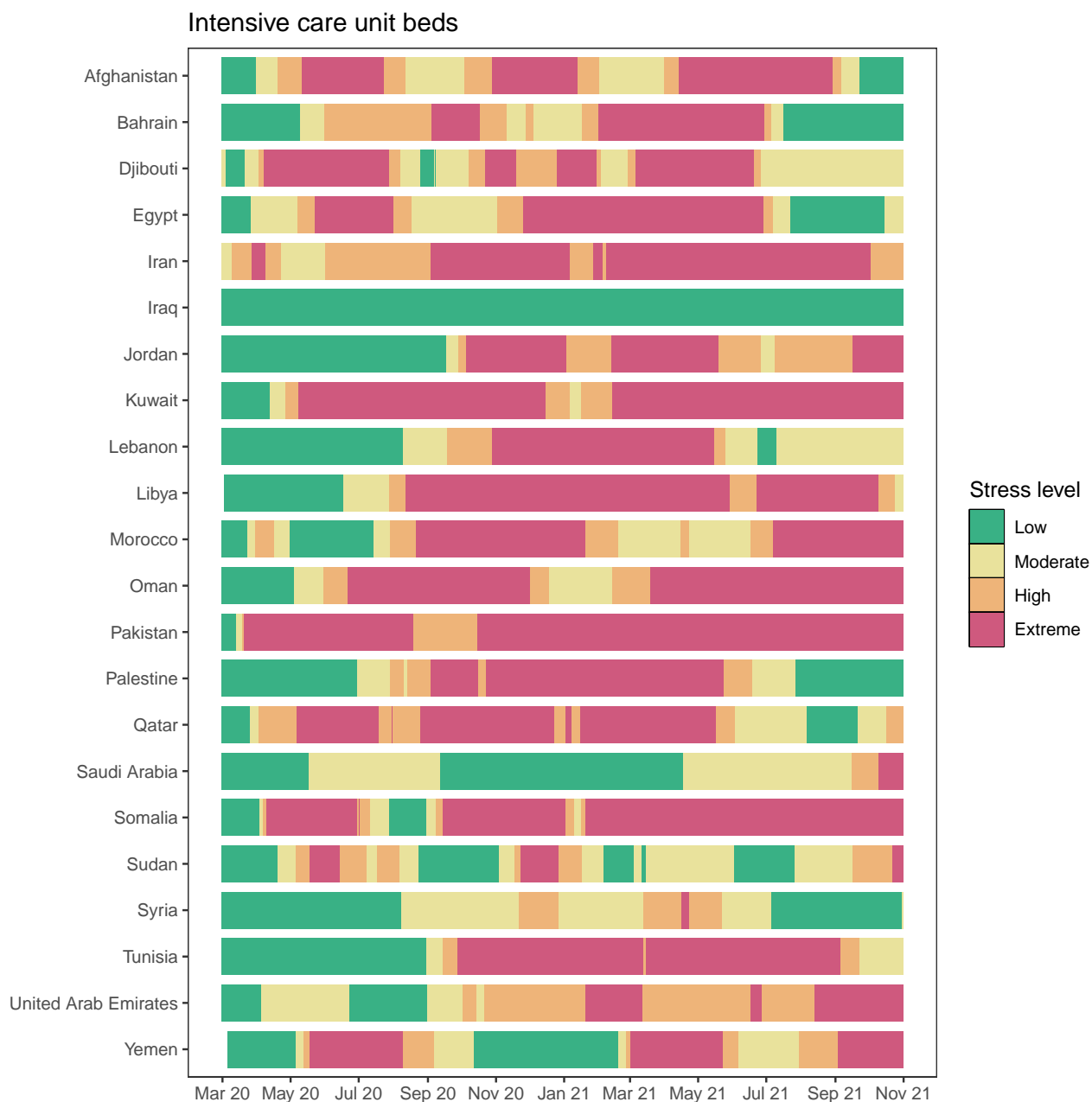




**Figure 24.** The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color-coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered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



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

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