COVID-19 Results Briefing: Libya

December 17, 2020

This document contains summary information on the latest projections from the IHME model on COVID-19 in Libya. The model was run on December 16, 2020.

Current situation

- Daily reported cases in the last week were about 600 per day on average (Figure 1).

- Daily deaths in the last week were about 10 per day on average (Figure 2).

- Effective R, computed using cases, hospitalizations, and deaths, on December 3 was 0.87 (Figure 3).

- We estimated that 10% of people in Libya have been infected as of December 14 (Figure 4).

- Daily death rates were less than 2 per million (Figure 6).

Trends in drivers of transmission

- In the last week, no new mandates have been imposed and no mandates have been lifted (Table 2).

- Mobility last week was similar to that of the pre-COVID-19 baseline (Figure 8).

- As of December 14, we estimated that 33% of people always wore a mask when leaving their home (Figure 9).

- There were 72 diagnostic tests per 100,000 people on December 14 (Figure 10).

- The fraction of the population who are open to receiving a COVID-19 vaccine is about 77% (Figure 12).

Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects about 2,000 cumulative deaths on April 1, 2021. This represents about 1,000 additional deaths from December 14 to April 1 (Figure 14).

- We project that the country will have high or extreme stress on ICU capacity in December through April (Figure 23).

Model updates

See the briefs for December 4 (https://www.healthdata.org/covid/updates/archive) for details on how vaccination has been incorporated into our reference and alternative scenarios. In this week's release, we have reflected the survey evidence that 25% of those surveyed indicated that they intend to stop wearing a mask after receiving the second dose of their vaccination.

Current situation

Figure 1. Reported daily COVID-19 cases

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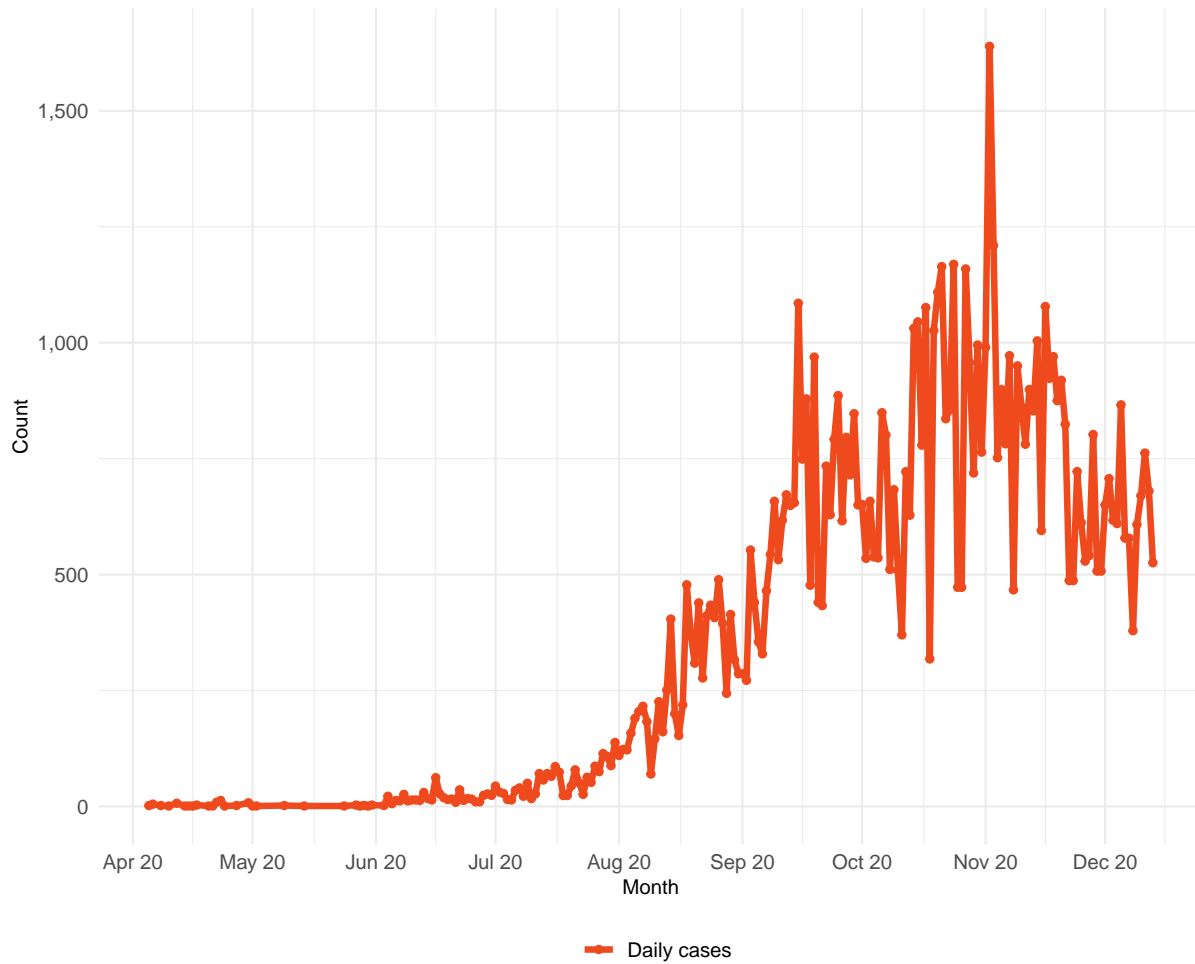
Table 1. Ranking of COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
Ischemic heart disease	151	1
COVID-19	60	2
Stroke	59	3
Road injuries	41	4
Chronic kidney disease	26	5
Hypertensive heart disease	21	6
Alzheimer's disease and other dementias	21	7
Conflict and terrorism	20	8
Tracheal, bronchus, and lung cancer	18	9
Diabetes mellitus	17	10

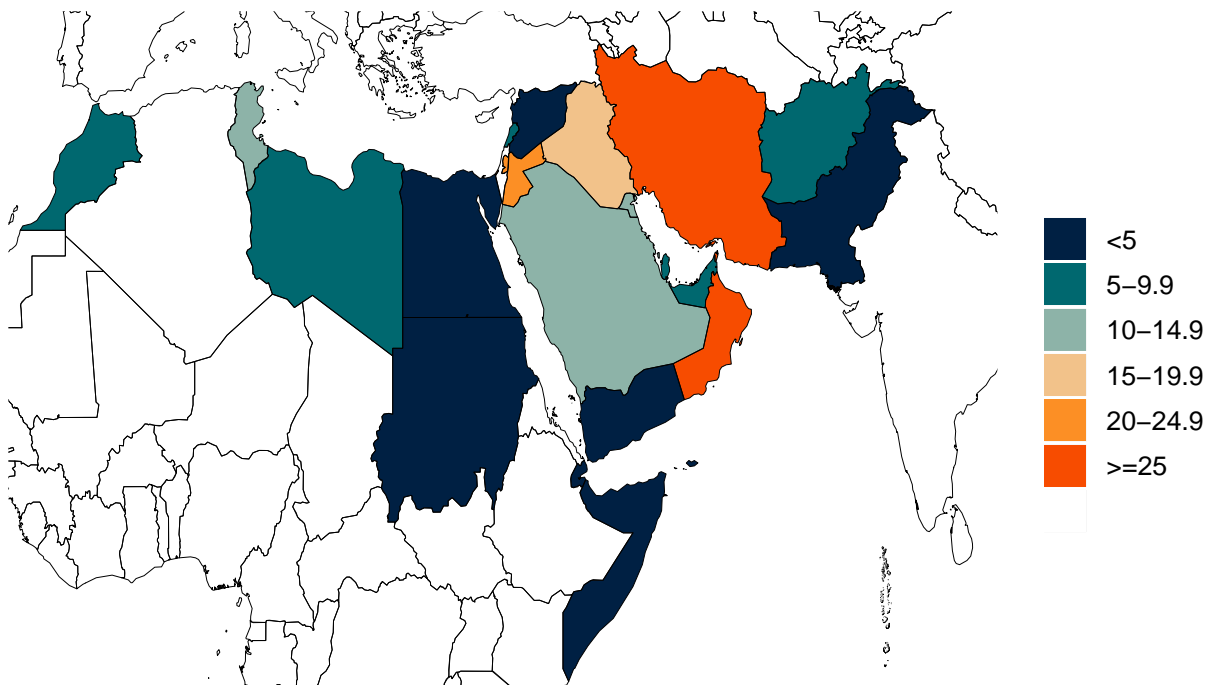**Figure 2a.** Reported daily COVID-19 deaths
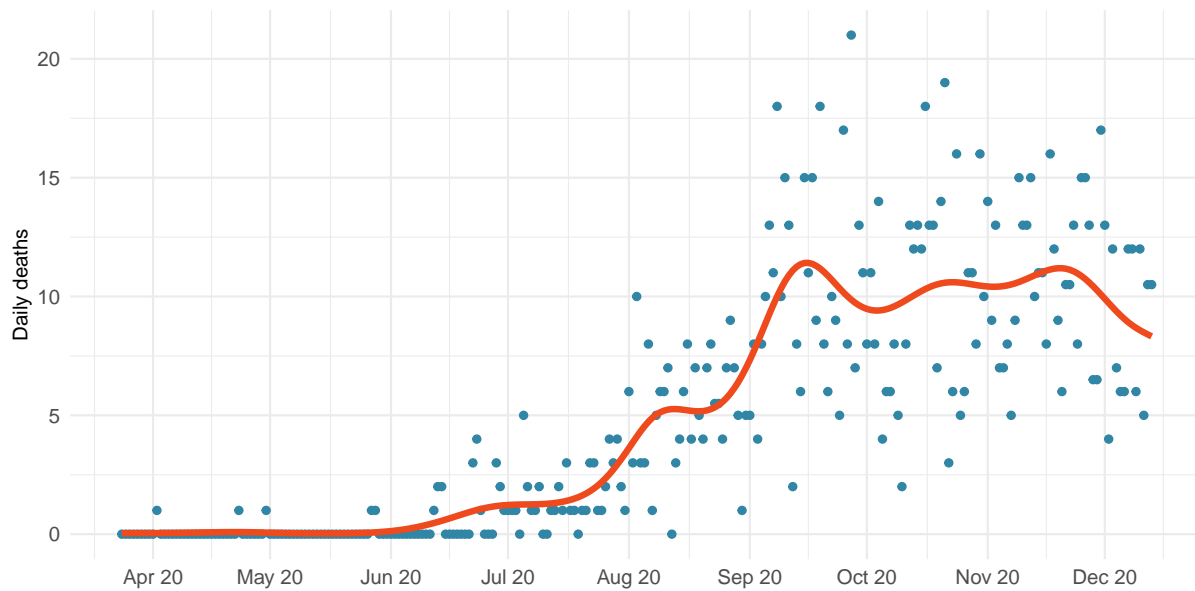
Figure 2b. Estimated cumulative deaths by age group

Figure 3. Mean effective R on December 03, 2020. 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.
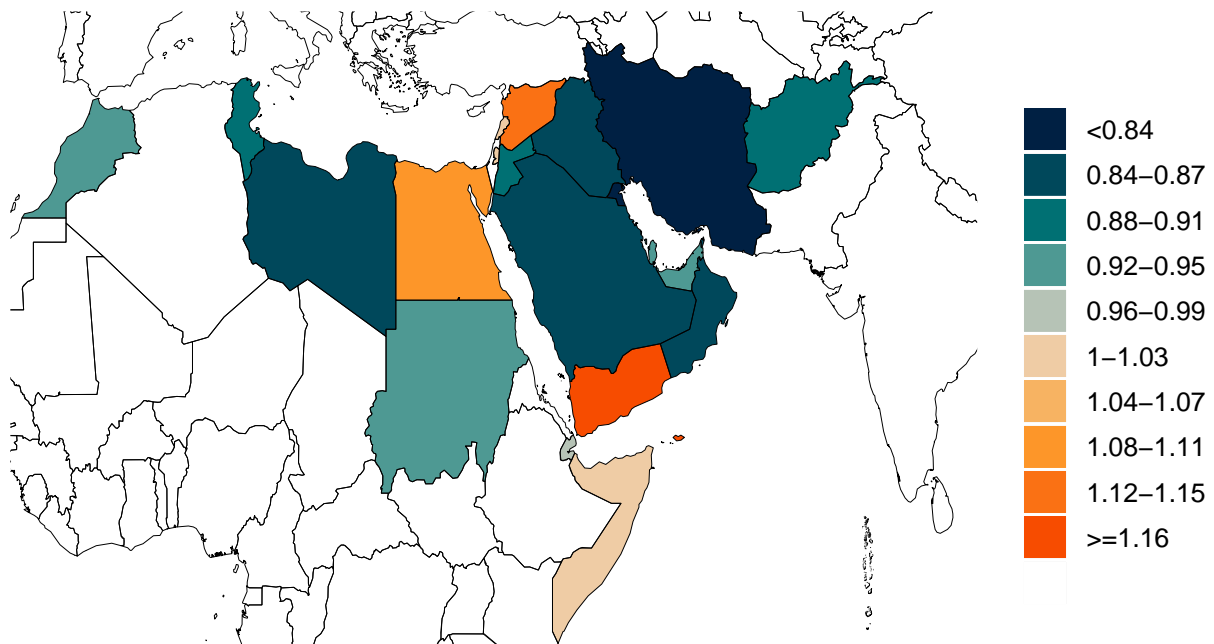
Figure 4. Estimated percent of the population infected with COVID-19 on December 14, 2020

Figure 5. 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.
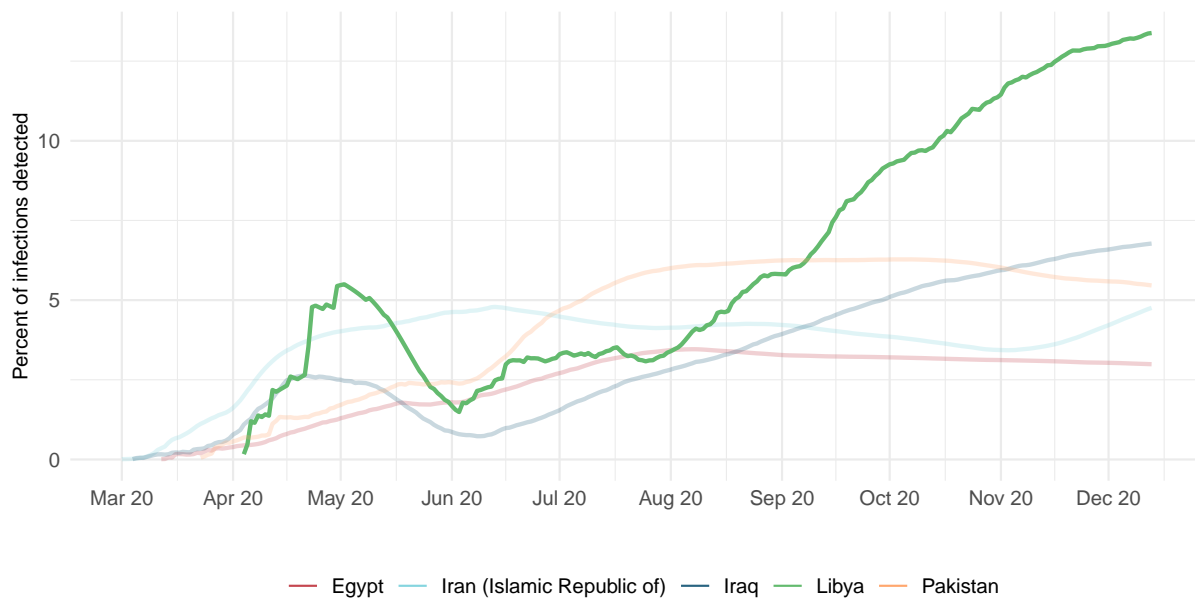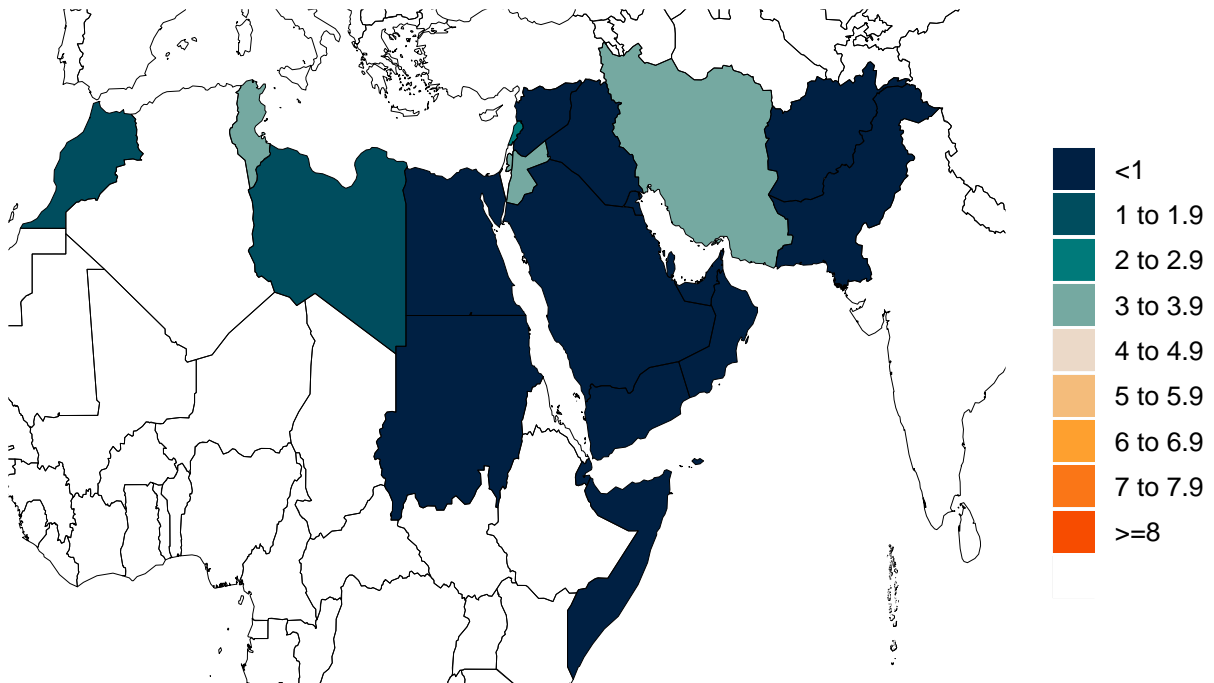
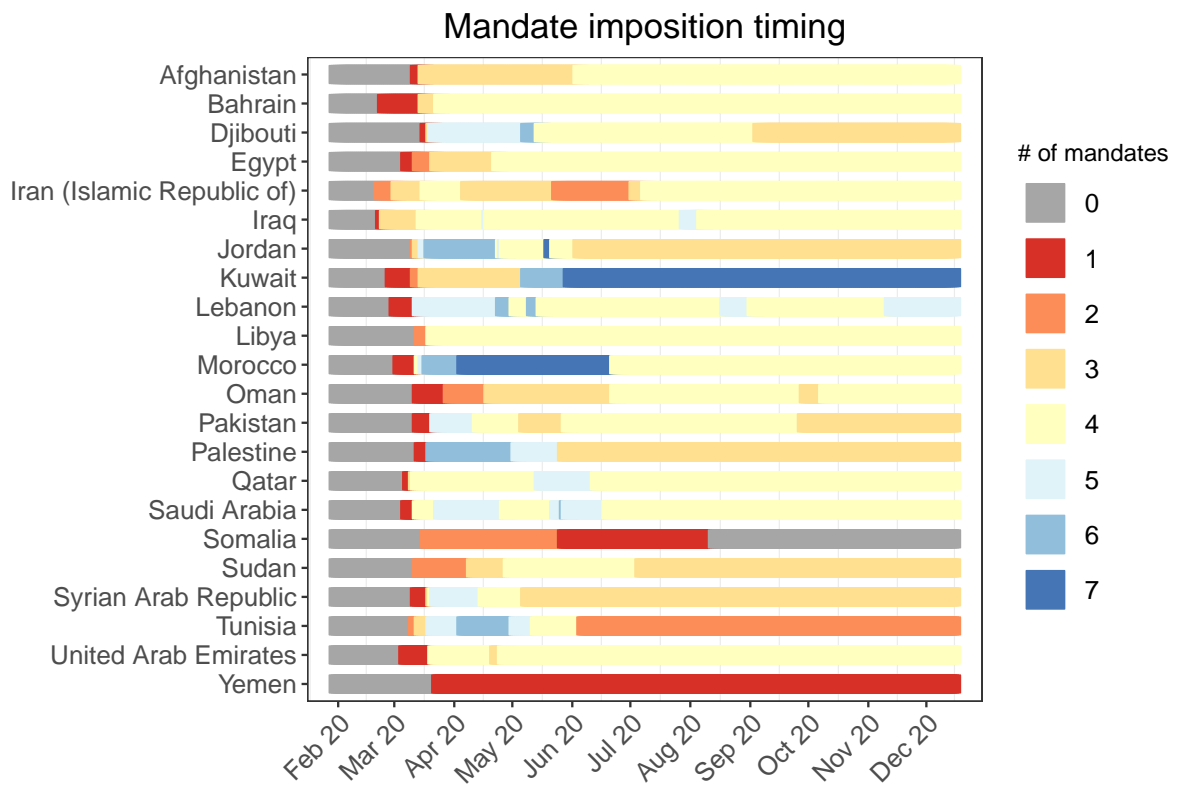**Figure 6.** Daily COVID-19 death rate per 1 million on December 14, 2020

Critical drivers

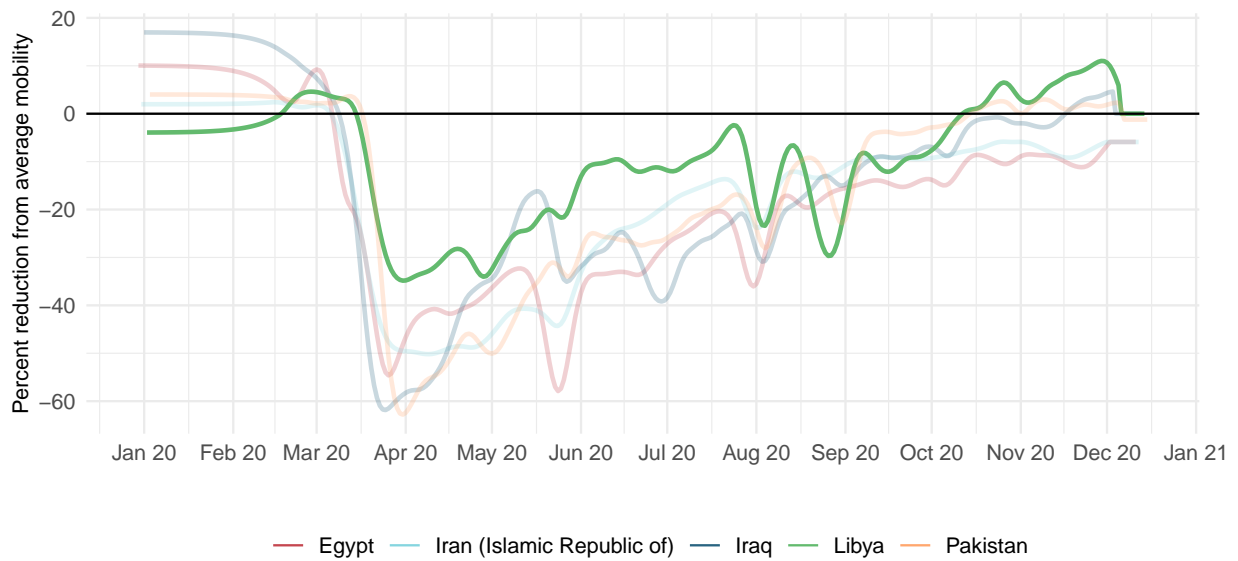**Table 2.** Current mandate implementation

Figure 7. Total number of social distancing mandates (including mask use)
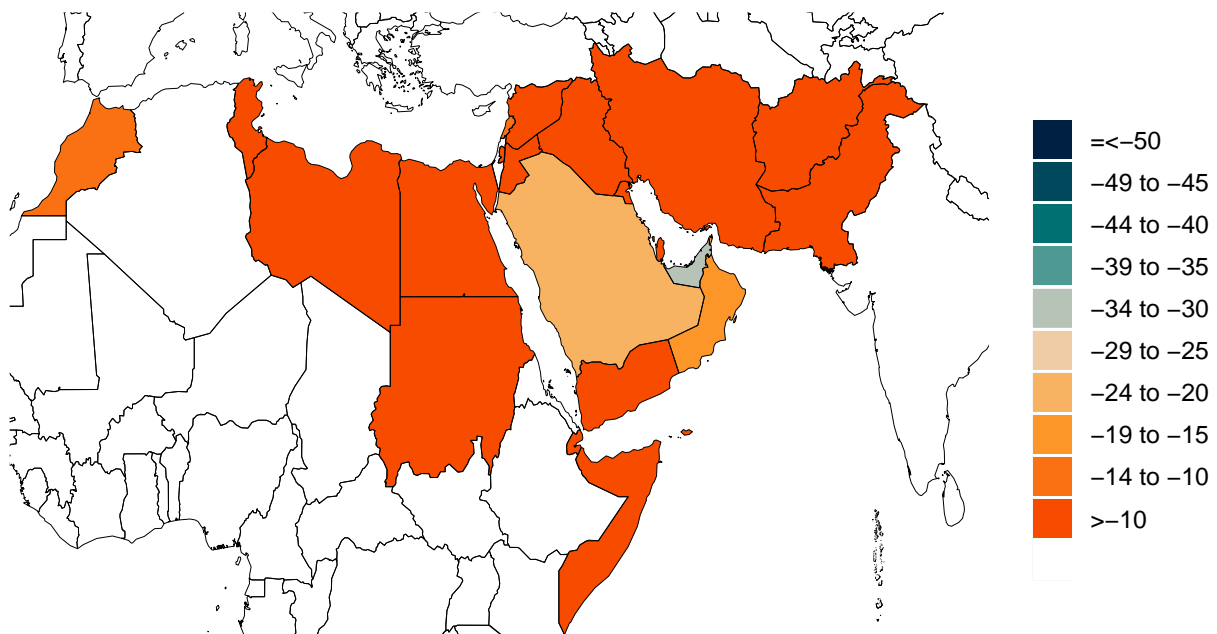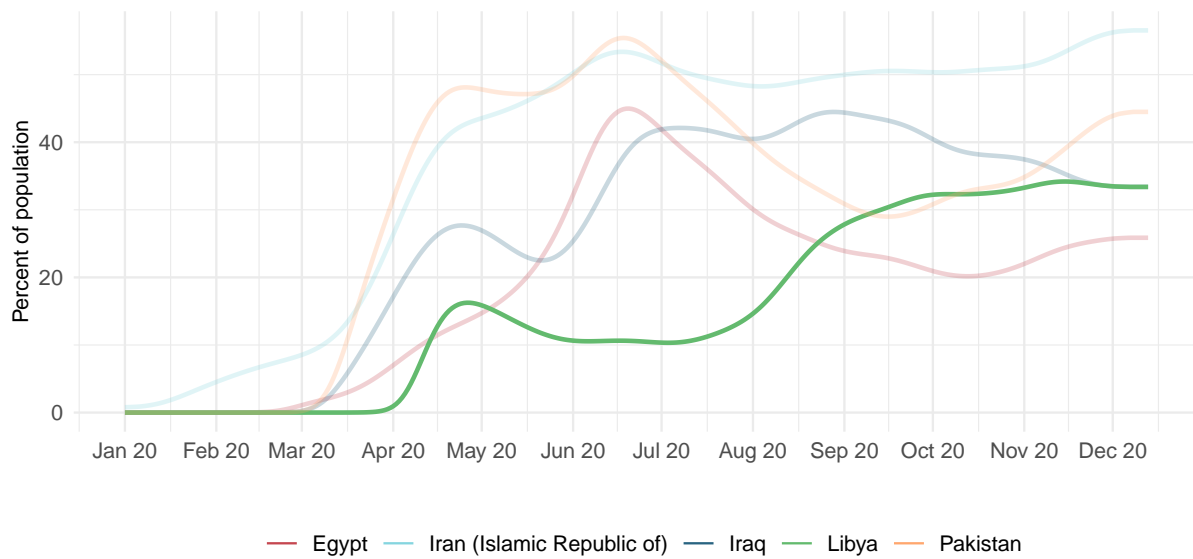
**Figure 8a.** Trend in mobility as measured through smartphone app use compared to January 2020 baseline

Figure 8b. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on December 14, 2020
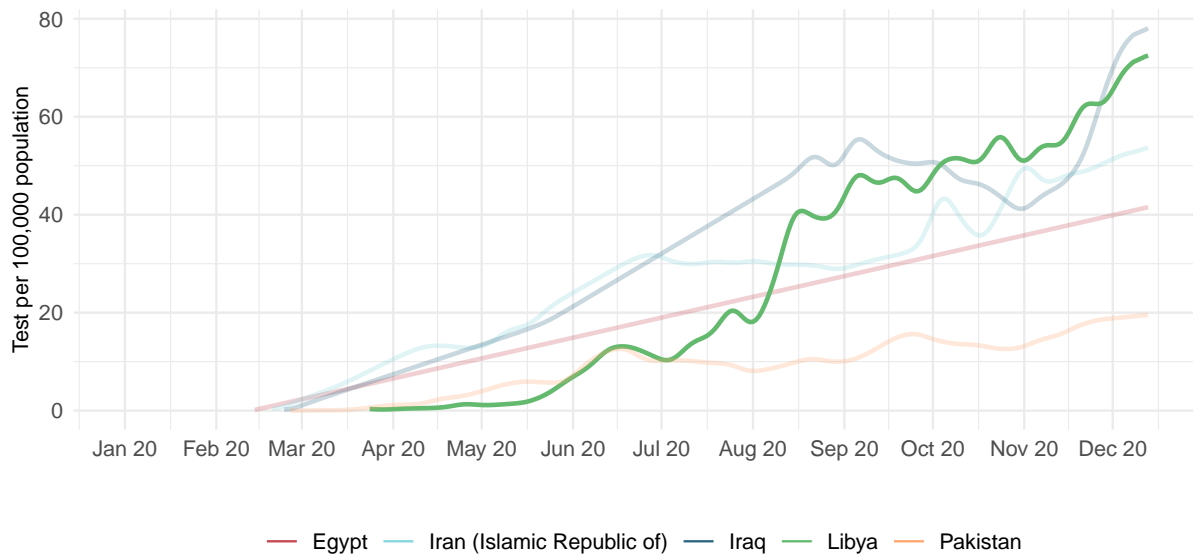
Figure 9a. Trend in the proportion of the population reporting always wearing a mask when leaving home

Figure 9b. Proportion of the population reporting always wearing a mask when leaving home on December 14, 2020
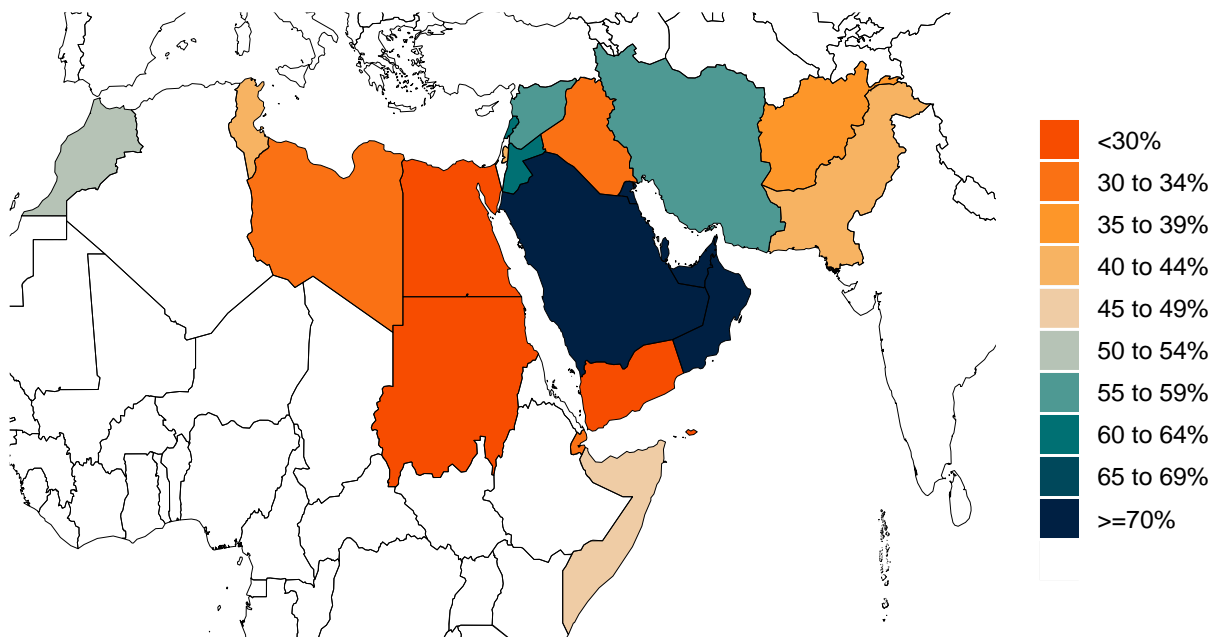
Figure 10a. Trend in COVID-19 diagnostic tests per 100,000 people

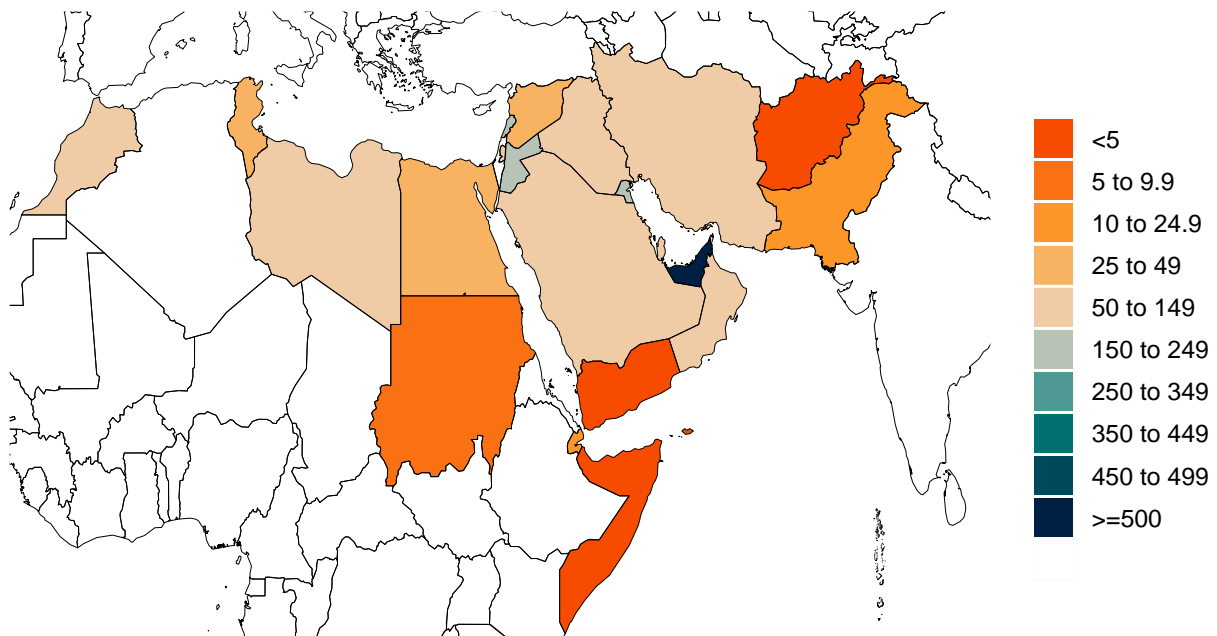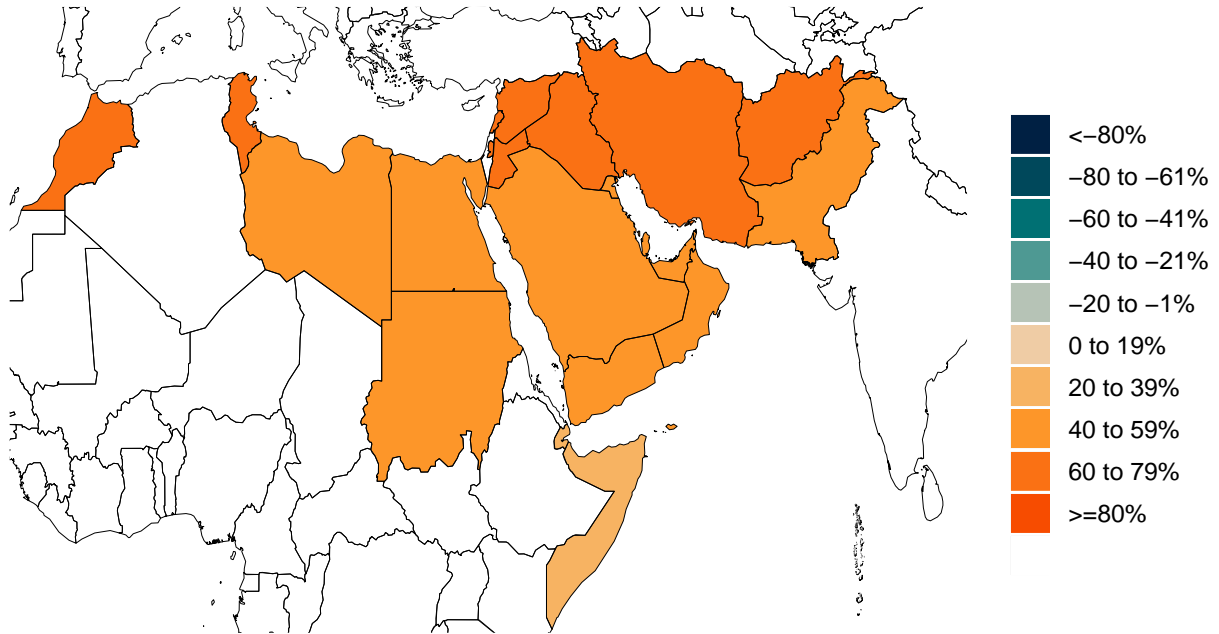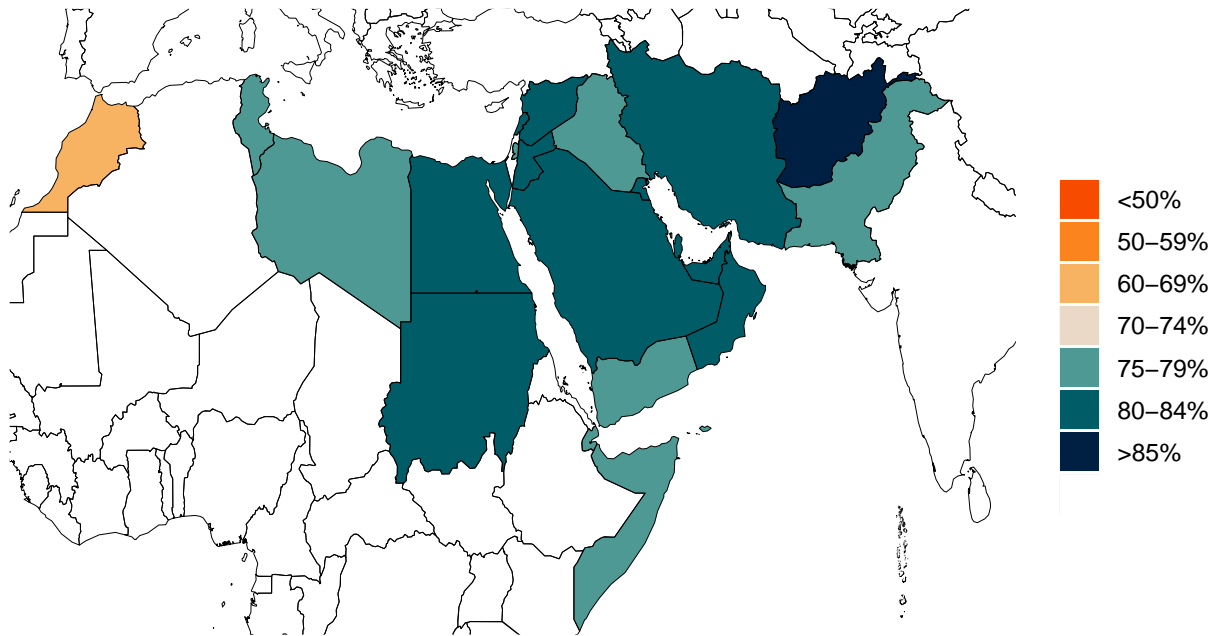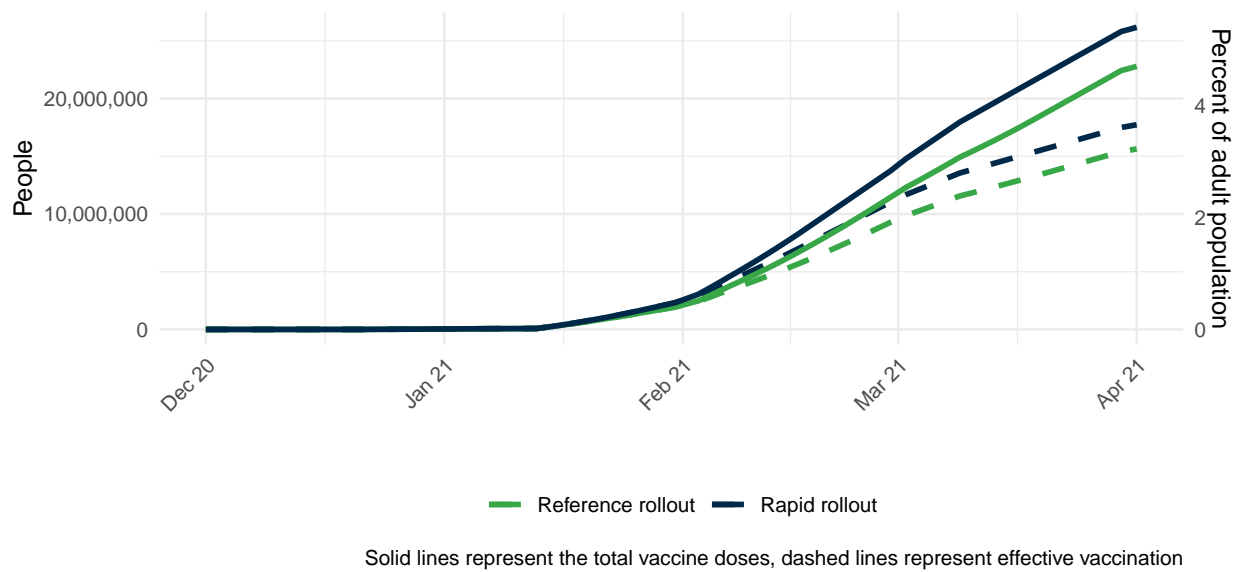**Figure 10b.** COVID-19 diagnostic tests per 100,000 people on December 10, 2020

Figure 11. Increase in the risk of death due to pneumonia on February 1 2020 compared to August 1 2020

Figure 12. This figure shows the estimated proportion of the adult (18+) population that is open to receiving a COVID-19 vaccine based on Facebook survey responses

Figure 13. The number of people who receive any vaccine and those that are immune accounting for efficacy, loss to follow up for 2 dose vaccines, and a 28 day delay between first dose and immunity for 2 dose vaccines.


Solid lines represent the total vaccine doses, dashed lines represent effective vaccination
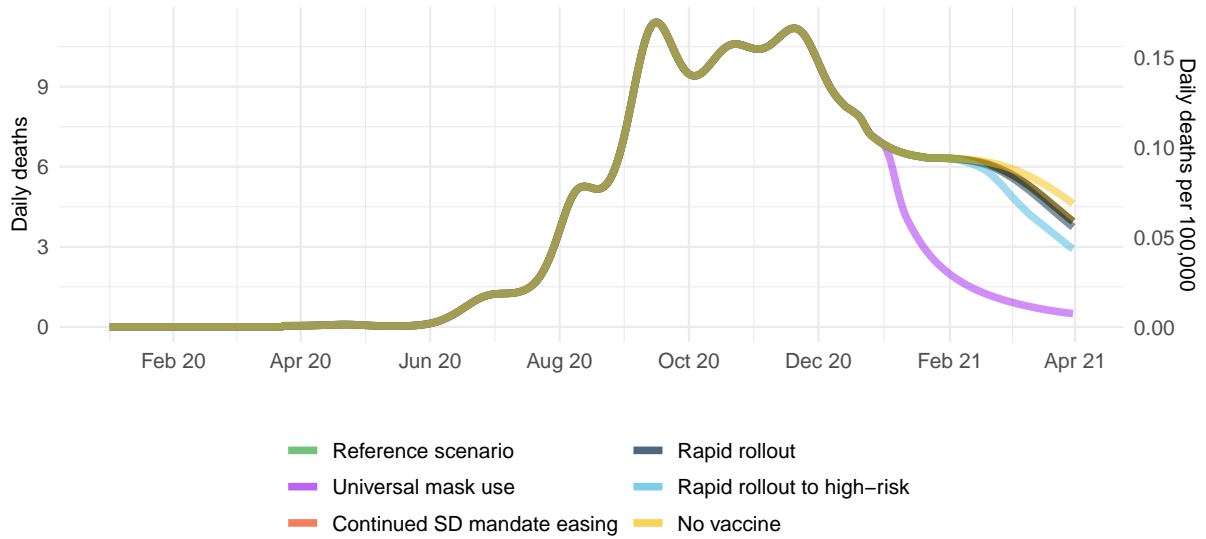
Projections and scenarios

We produce six scenarios when projecting COVID-19. The reference scenario is our forecast of what we think is most likely to happen. We assume that if the daily mortality rate from COVID-19 reaches 8 per million, social distancing (SD) mandates will be re-imposed. The mandate easing scenario is what would happen if governments continue to ease social distancing mandates with no re-imposition. The universal mask mandate scenario is what would happen if mask use increased immediately to 95% and social distancing mandates were re-imposed at 8 deaths per million. These three scenarios assume our reference vaccine delivery scale up where vaccine delivery will scale to full capacity over 90 days.

The rapid vaccine rollout scenario assumes that vaccine distribution will scale up to full delivery capacity in half the time as the reference delivery scenario and that the maximum doses that can be delivered per day is twice as much as the reference delivery scenario. The rapid vaccine rollout to high-risk populations scenario is the same but high-risk populations are vaccinated before essential workers or other adults. The no vaccine scenario is the same as our reference scenario but with no vaccine use.

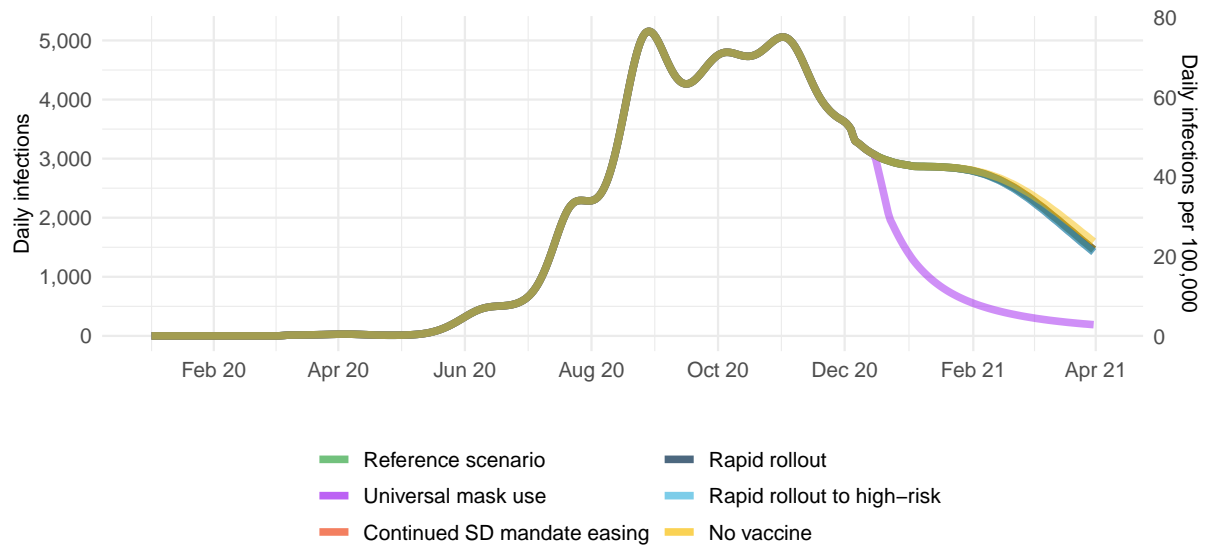**Figure 14.** Cumulative COVID-19 deaths until April 01, 2021 for six scenarios
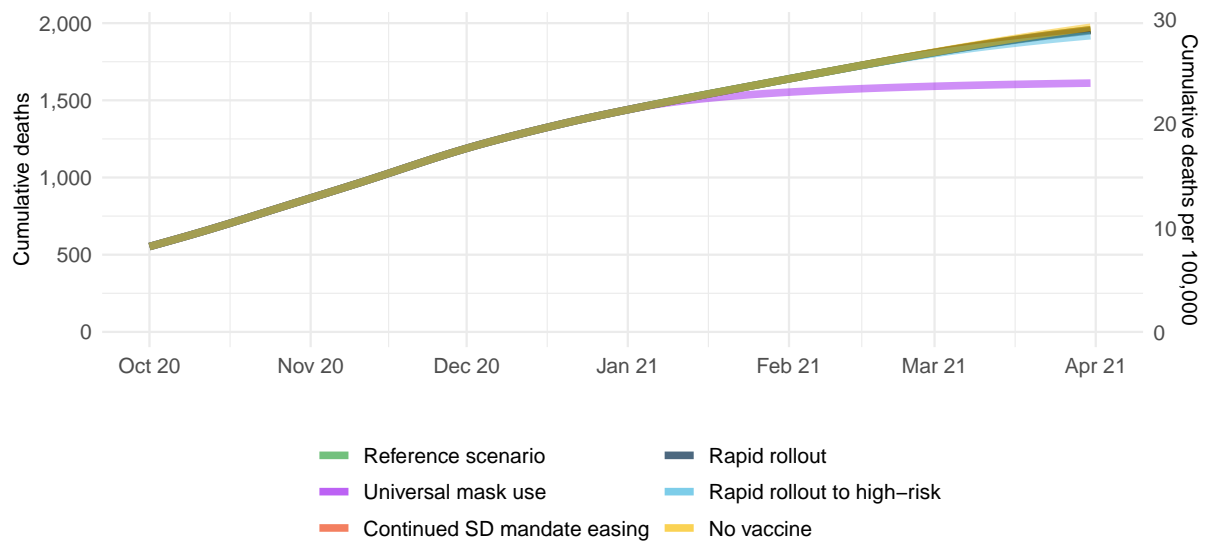
Figure 15. Daily COVID-19 deaths until April 01, 2021 for six scenarios
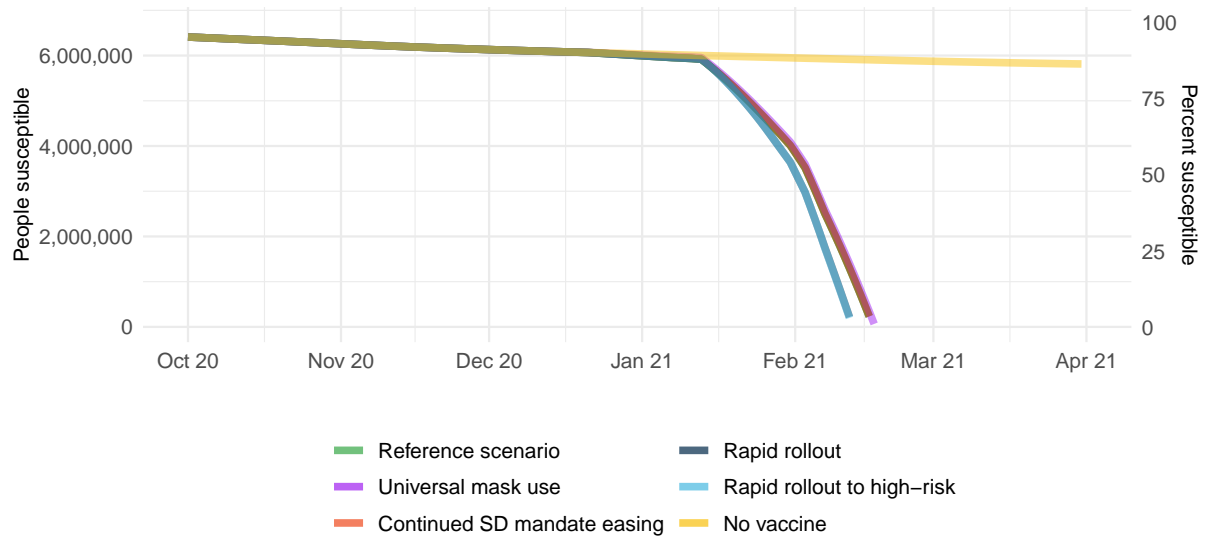
Figure 16. Daily COVID-19 infections until April 01, 2021 for six scenarios

Figure 17. Susceptible population, accounting for infections and people immune through vaccination

Figure 18. Month of assumed mandate re-implementation. (Month when daily death rate passes 8 per million, when reference scenario model assumes mandates will be re-imposed.)

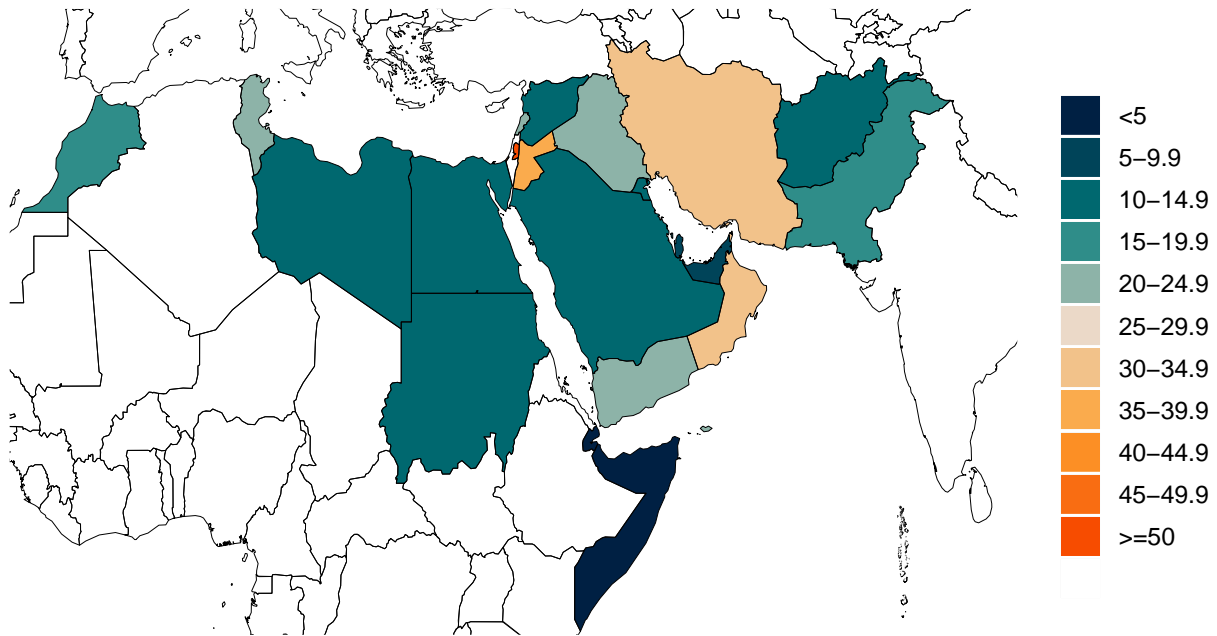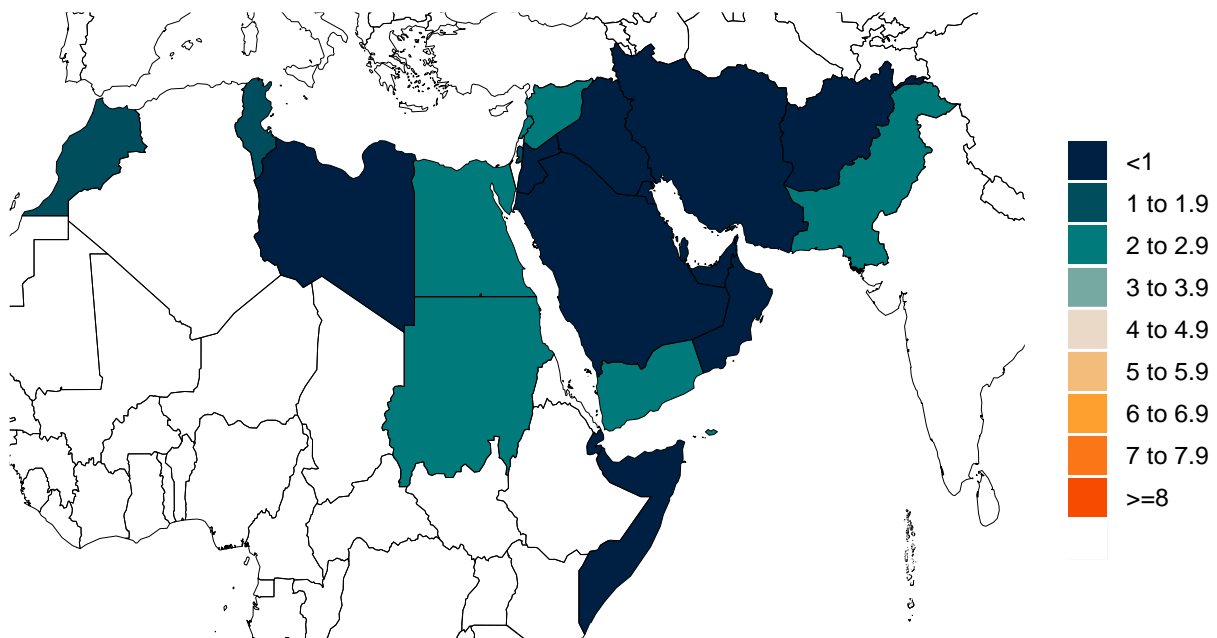**Figure 19.** Forecasted percent infected with COVID-19 on April 01, 2021

Figure 20. Daily COVID-19 deaths per million forecasted on April 01, 2021 in the reference scenario

Figure 21. Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available: Delphi from the Massachussets Institute of Technology (Delphi; https://www.covidanalytics.io/home), Imperial College London (Imperial; https://www.covidsim.org), The Los Alamos National Laboratory (LANL; https://covid-19.bsvgateway.org/), and the SI-KJalpha model from the University of Southern California (SIKJalpha; https://github.com/scc-usc/ReCOVER-COVID-19). Daily deaths from other modeling groups are smoothed to remove inconsistencies with rounding. Regional values are aggregates from availble locations in that region.
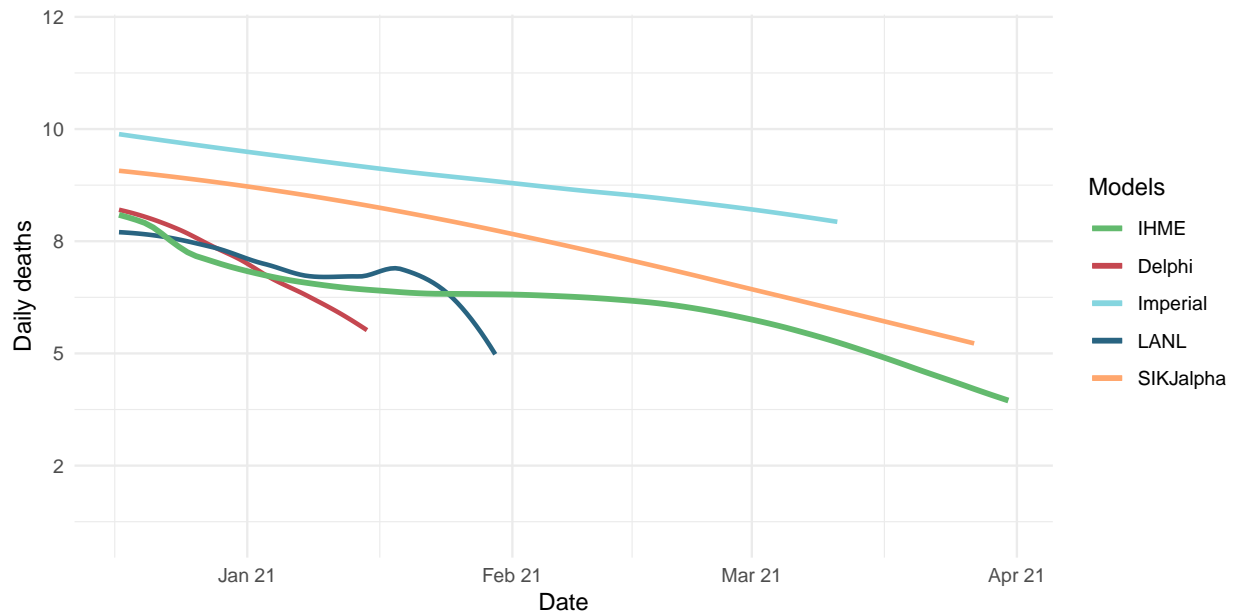
Figure 22. The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate stress*, 10-19% is considered *high stress*, and greater than 20% is considered *extreme stress*.

All hospital beds
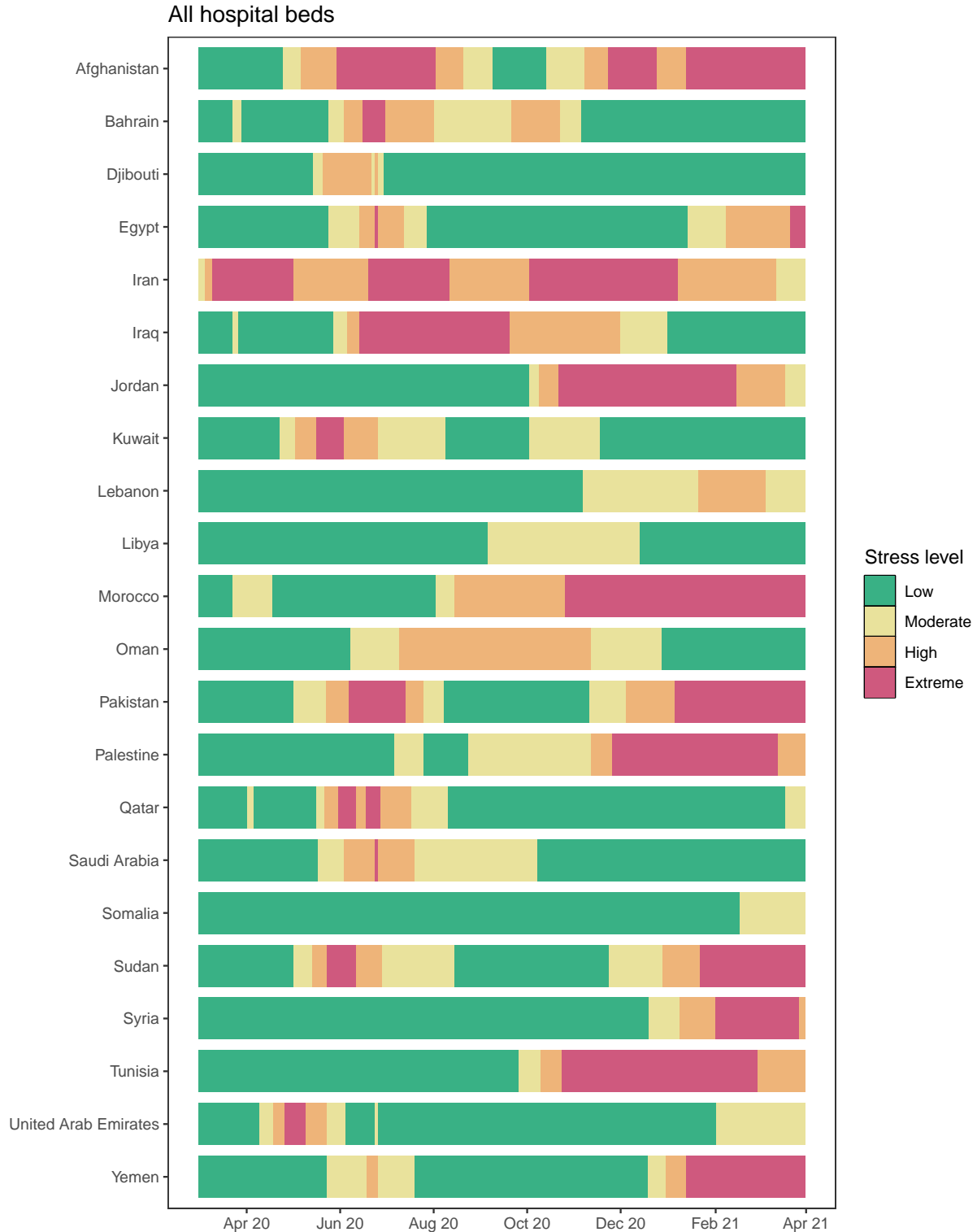
Figure 23. The estimated intensive care unit (ICU) usage is shown over time. The percent of ICU beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of ICU beds occupied by COVID-19 patients. Less than 10% is considered *low stress*, 10-29% is considered *moderate stress*, 30-59% is considered *high stress*, and greater than 60% is considered *extreme stress*.
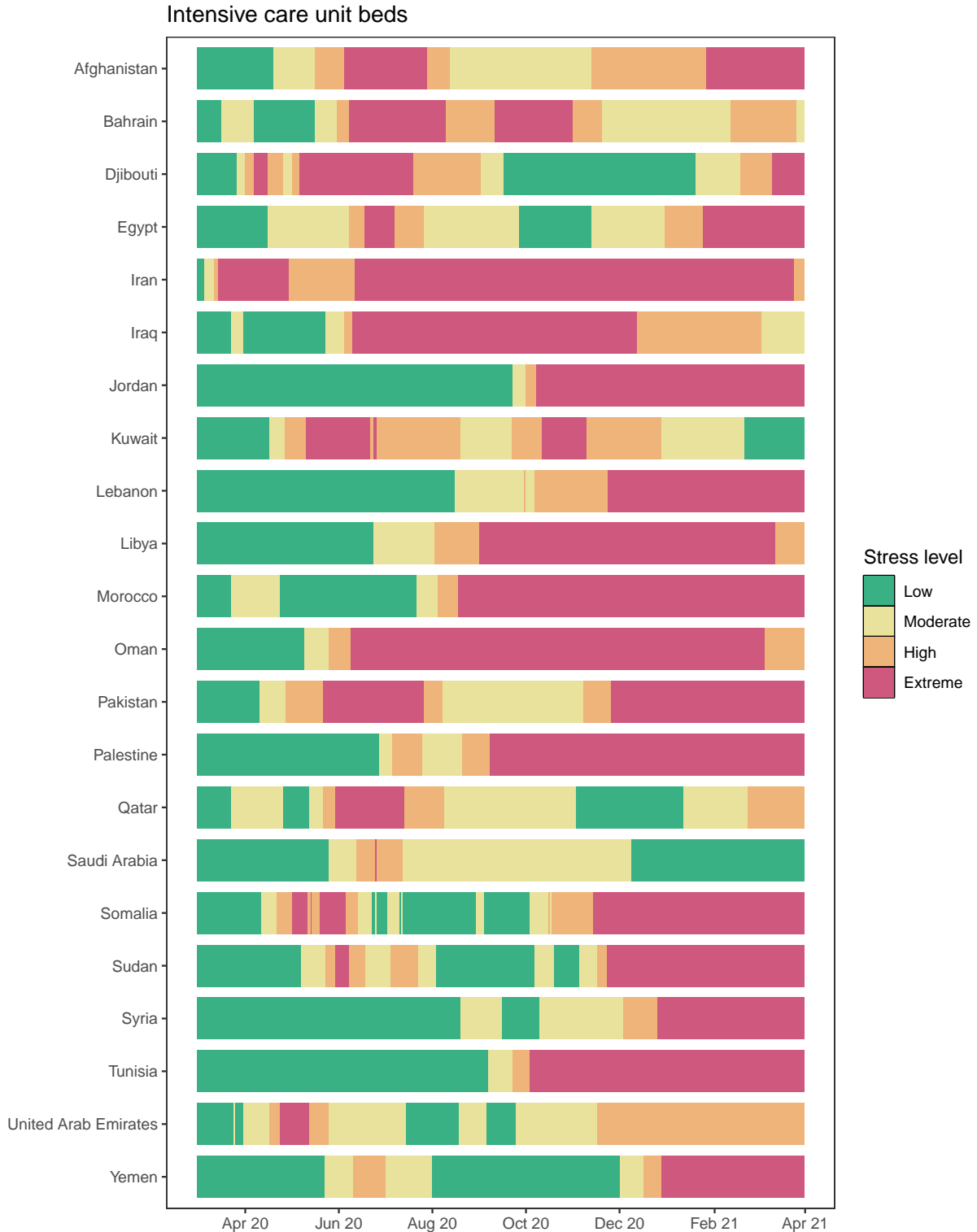
Table 3. Ranking of COVID-19 among the leading causes of mortality in the full year 2020. Deaths from COVID-19 are projections of cumulative deaths on Jan 1, 2021 from the reference scenario. Deaths from other causes are from the Global Burden of Disease study 2019 (rounded to the nearest 100).

Cause name	Annual deaths	Ranking
Ischemic heart disease	7,800	1
Stroke	3,100	2
Road injuries	2,200	3
COVID-19	1,439	4
Chronic kidney disease	1,400	5
Hypertensive heart disease	1,100	6
Alzheimer's disease and other dementias	1,100	7
Conflict and terrorism	1,000	8
Tracheal, bronchus, and lung cancer	900	9
Diabetes mellitus	900	10

More information

Data sources:

Mask use data sources include PREMISE; Facebook Global symptom survey (This research is based on survey results from University of Maryland Social Data Science Center) and the Facebook United States symptom survey (in collaboration with Carnegie Mellon University); Kaiser Family Foundation; YouGov COVID-19 Behaviour Tracker survey.

Vaccine hesitancy data are from the COVID-19 Beliefs, Behaviors, and Norms Study, a survey conducted on Facebook by the Massachusetts Institute of Technology (https://covidsurvey.mit.edu/).

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

A note of thanks:

We wish to warmly acknowledge the support of these and others who have made our covid-19 estimation efforts possible.

More information:

For all COVID-19 resources at IHME, visit http://www.healthdata.org/covid.

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