COVID-19 Results Briefing

Georgia

February 04, 2021

This document contains summary information on the latest projections from the IHME model on COVID-19 in Georgia. The model was run on February 03, 2021 with data through February 1, 2021.

Current situation

- Daily reported cases in the last week decreased to 700 per day on average compared to 900 the week before (Figure 1).
- Daily deaths in the last week decreased to 20 per day on average compared to 20 the week before (Figure 2). This makes COVID-19 the number 3 cause of death in Georgia this week (Table 1).
- Effective R, computed using cases, hospitalizations, and deaths, is greater than 1 in 7 countries (Figure 3). The Effective R in Georgia on January 21 was 0.77.
- We estimated that 19% of people in Georgia have been infected as of February 1 (Figure 4).
- The daily death rate is greater than 4 per million in 31 countries (Figure 5).

Trends in drivers of transmission

- Mobility last week was 35% lower than the pre-COVID-19 baseline (Figure 6). Mobility was near baseline (within 10%) in Armenia, Estonia, and Uzbekistan. Mobility was lower than 30% of baseline in in 32 countries.
- As of February 1 we estimated that 72% of people always wore a mask when leaving their home compared to 72% last week (Figure 7). Mask use was lower than 50% in in 9 countries.
- There were 50 diagnostic tests per 100,000 people on February 1 (Figure 8).
- In Georgia 58.4% of people say they would accept a vaccine for COVID-19 and 24% say they are unsure if they would accept one. The fraction of the population who are open to receiving a COVID-19 vaccine ranges from 58% in Kazakhstan to 93% in Portugal (Figure 10).
- In our current reference scenario, we expect that 464,200 will be vaccinated by June 1st (Figure 11).

Projections

- In our **reference scenario**, which represents what we think is most likely to happen, our model projects 4,000 cumulative deaths on June 1, 2021. This represents 1,000 additional deaths from February 1 to June 1 (Figure 12). Daily deaths will peak at 20 on January 11, 2021 (Figure 14).
- By June 1, 2021, we project that 20 lives will be saved by the projected vaccine rollout.
- If **universal mask coverage (95%)** were attained in the next week, our model projects 0 fewer cumulative deaths compared to the reference scenario on June 1, 2021 (Figure 12).
- In the **rapid spread of variants scenario** daily deaths would remain above 0 on June 1, 2021. Cumulative deaths on June 1, 2021 would be 4,000 (Figure 13).
- Under our **worst case scenario**, our model projects 4,000 cumulative deaths on June 1, 2021 (Figure 12).
- Figure 16 compares our reference scenario forecasts to other publicly archived models. Forecasts are widely divergent.
- At some point from February through June 1, 17 countries will have high or extreme stress on hospital beds (Figure 17). At some point from February through June 1, 28 countries will have high or extreme stress on ICU capacity (Figure 18).

Model updates

This week we made two important changes to model inputs and assumptions. First, using the GISAID database, we included in the reference scenario the likely scale-up of B.1.1.7 or B.1.351 in any location with community transmission of the variants. We begin the expected scale-up of the new variant based on the first identified isolate in GISAID. The scale-up timing is based on the scale-up observed in London from the time of first isolate. Given very limited sequencing of isolates in many locations, particularly low- and middle-income countries, this is a very imperfect approach to capturing the potential new variant scale-up. Despite these limitations, we have included scale-up in the reference in several new locations, such as Chile and Zambia, which are documented in GISAID.

Second, the release of preliminary Phase III trial results from Novavax and Johnson & Johnson provide some important indications of the potential decline in vaccine efficacy for the B.1.351 variant. In the UK, Novavax saw an efficacy decline of nearly 45%, and in South Africa, Johnson & Johnson saw a smaller efficacy decline. Both estimates of efficacy for B.1.351 had wide uncertainty intervals. We have revised our estimates of all vaccine efficacy for B.1.351 based on the average reduction seen in the two trials. This leads to the following assumptions by vaccine for wild type mild-to-severe disease and efficacy for infection and the same for B.1.351. The only trial to report on infection through tracking weekly nasal swabs is Astra Zeneca, so we used the relative efficacy for infection compared to mild-to-severe disease and applied it to all vaccines. The table below summarizes our current assumptions on vaccine efficacy.

Vaccine	Efficacy at preventing disease - wildtype	Efficacy at preventing infection - wildtype	Efficacy at preventing disease - B.1.351 variant	Efficacy at preventing infection - B.1.351 variant
AstraZeneca	70%	49%	46%	32%
CoronaVac	50%	35%	33%	23%
Janssen	72%	50%	47%	33%
Moderna	95%	67%	62%	44%
Novavax	89%	62%	58%	40%
Pfizer	95%	67%	62%	44%
Sputnik V	92%	64%	60%	42%
All other vaccines	75%	53%	49%	34%

The Novavax placebo arm in South Africa reported that the B.1.351 attack rate was the same in individuals previously infected with COVID-19 as with those who had not been previously infected. This finding suggests that there may be no cross-variant immunity. Similar findings are present in the longer follow-up data reported on the Pfizer placebo arm. This implies that our SEIR model which assumes that once recovered, one is no longerable to be infected may be wrong. We are actively revising our SEIR model to allow for variant-specific immunity. At present, we should assume that our "worst" scenario may underestimate the potential surge in infections and deaths possible with the spread of B.1.351. The absence of cross-variant protection also raises serious doubts about the idea of reaching herd immunity for COVID-19. At the very least, we should only consider variant-specific herd immunity. For this reason, the figure on immunity levels over time is no longer included in this brief.

Current situation

Figure 1. Reported daily COVID-19 cases

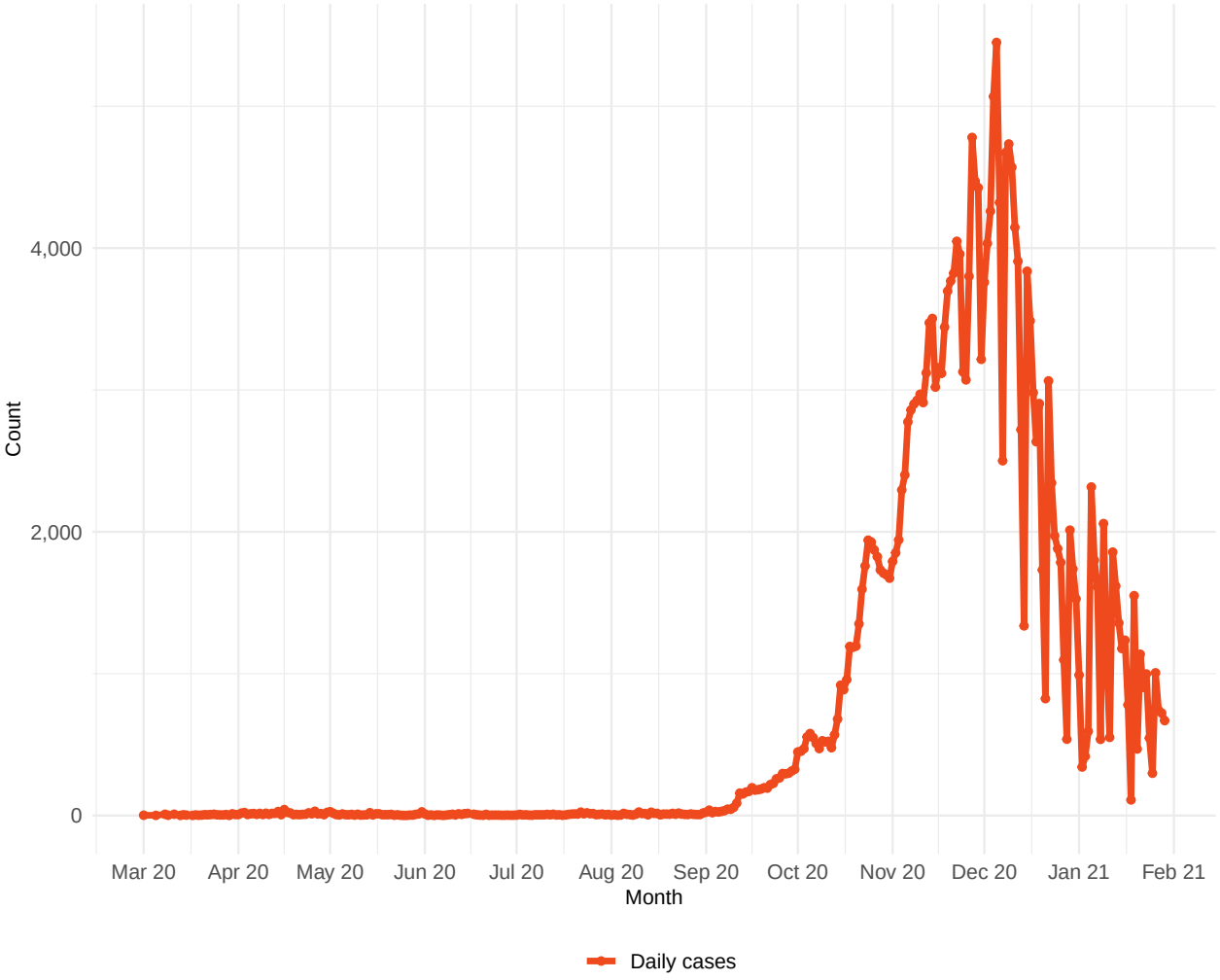


Table 1. Ranking of COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
Ischemic heart disease	268	1
Stroke	198	2
COVID-19	120	3
Hypertensive heart disease	74	4
Tracheal, bronchus, and lung cancer	34	5
Alzheimer's disease and other dementias	33	6
Cirrhosis and other chronic liver diseases	30	7
Diabetes mellitus	26	8
Chronic obstructive pulmonary disease	19	9
Breast cancer	17	10

Figure 2a. Reported daily COVID-19 deaths

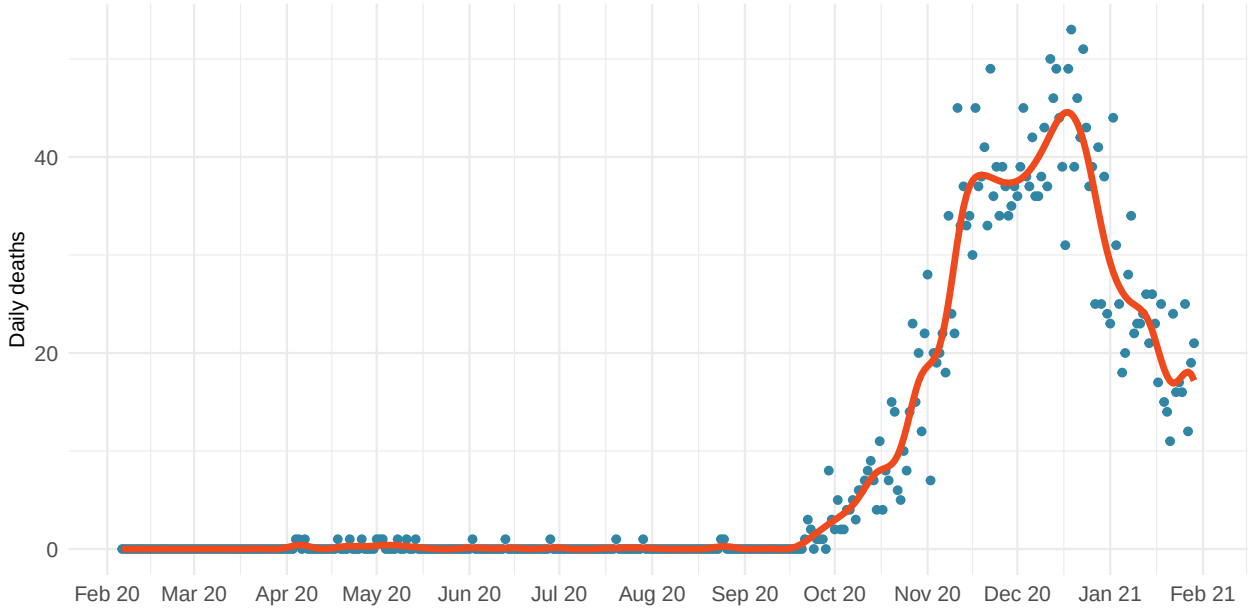


Figure 2b. Estimated cumulative deaths by age group

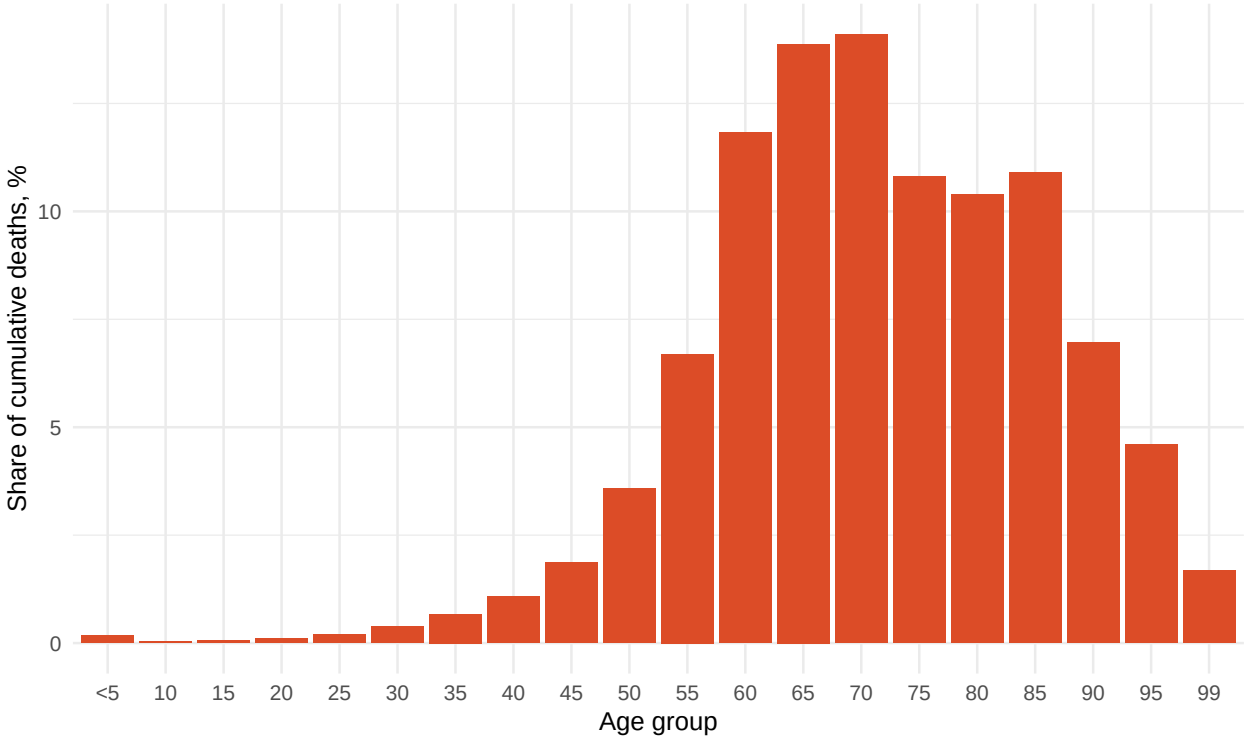


Figure 3. Mean effective R on January 21, 2021. The estimate of effective R is based on the combined analysis of deaths, case reporting, and hospitalizations where available. Current reported cases reflect infections 11-13 days prior, so estimates of effective R can only be made for the recent past. Effective R less than 1 means that transmission should decline, all other things being held the same.

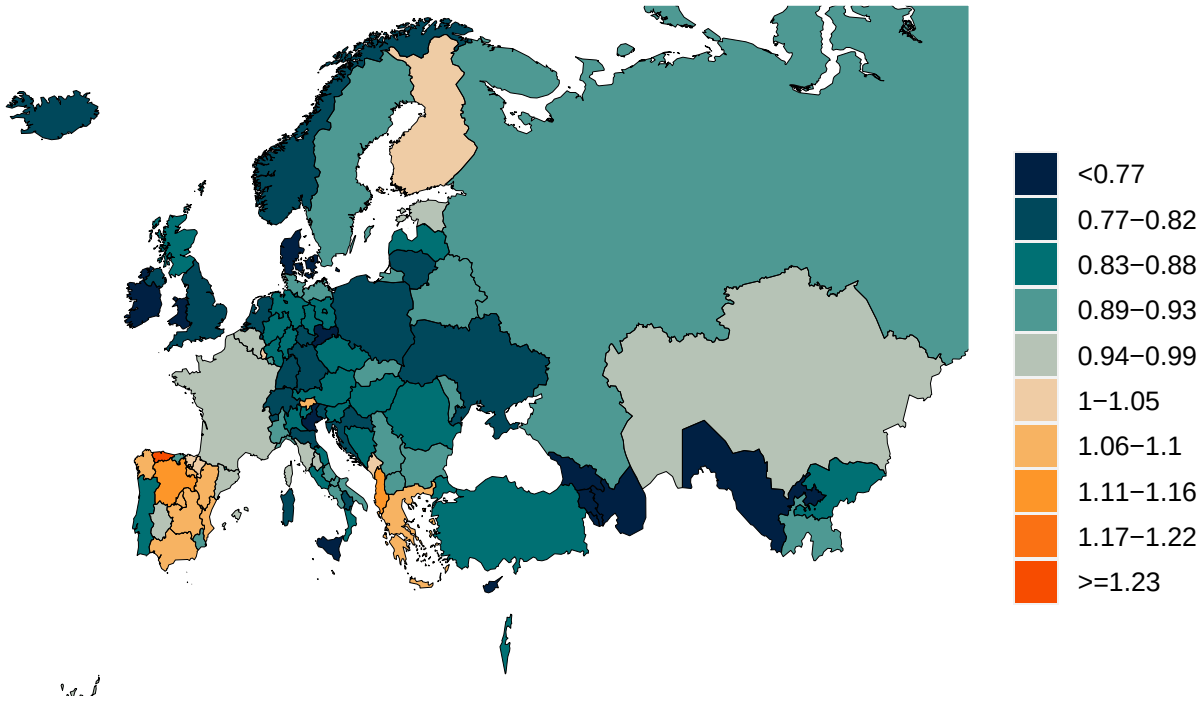


Figure 4. Estimated percent of the population infected with COVID-19 on February 01, 2021

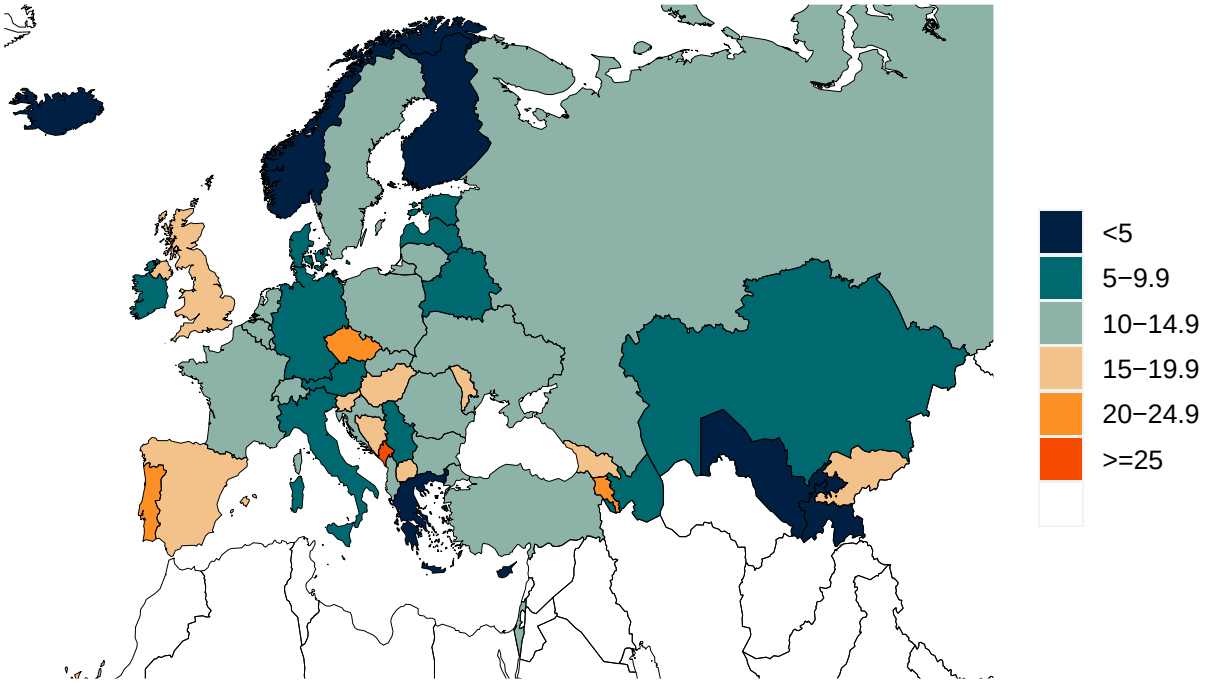
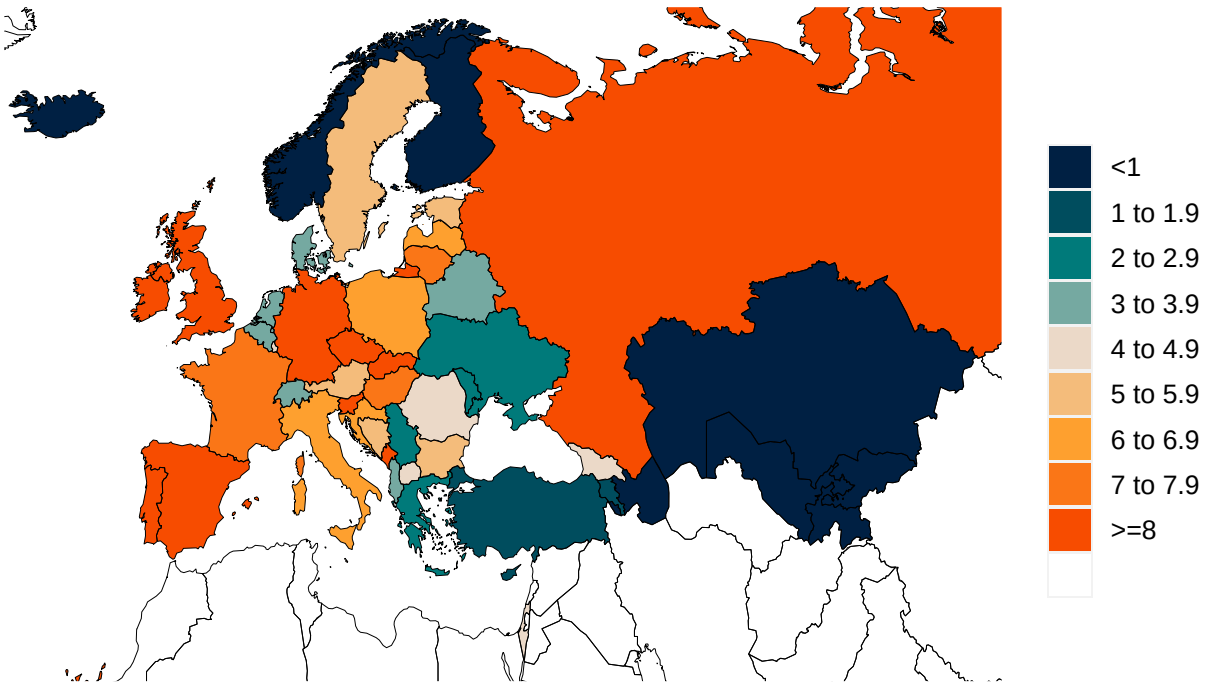
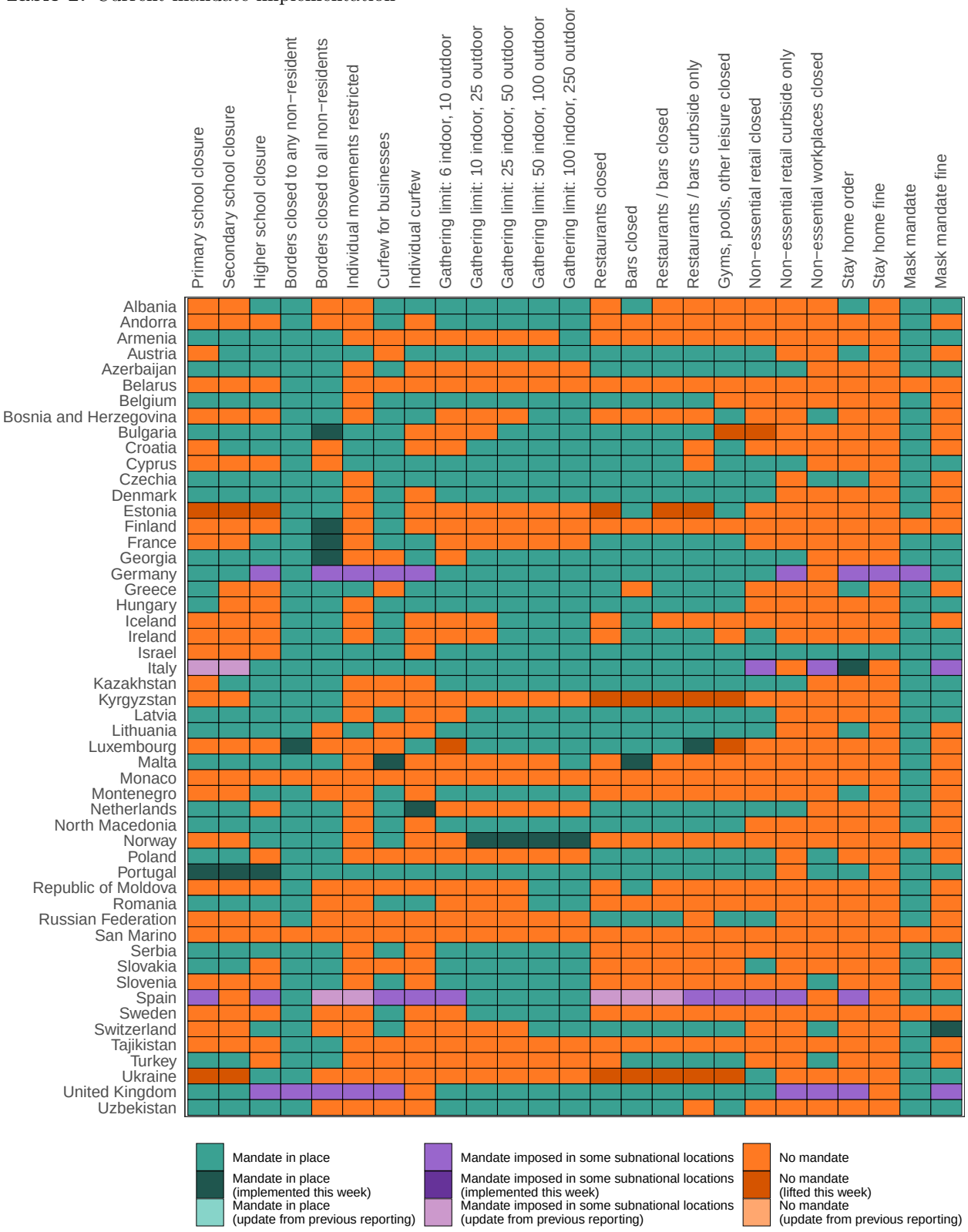


Figure 5. Daily COVID-19 death rate per 1 million on February 01, 2021



Critical drivers

Table 2. Current mandate implementation



*Not all locations are measured at the subnational level.

Figure 6a. Trend in mobility as measured through smartphone app use compared to January 2020 baseline

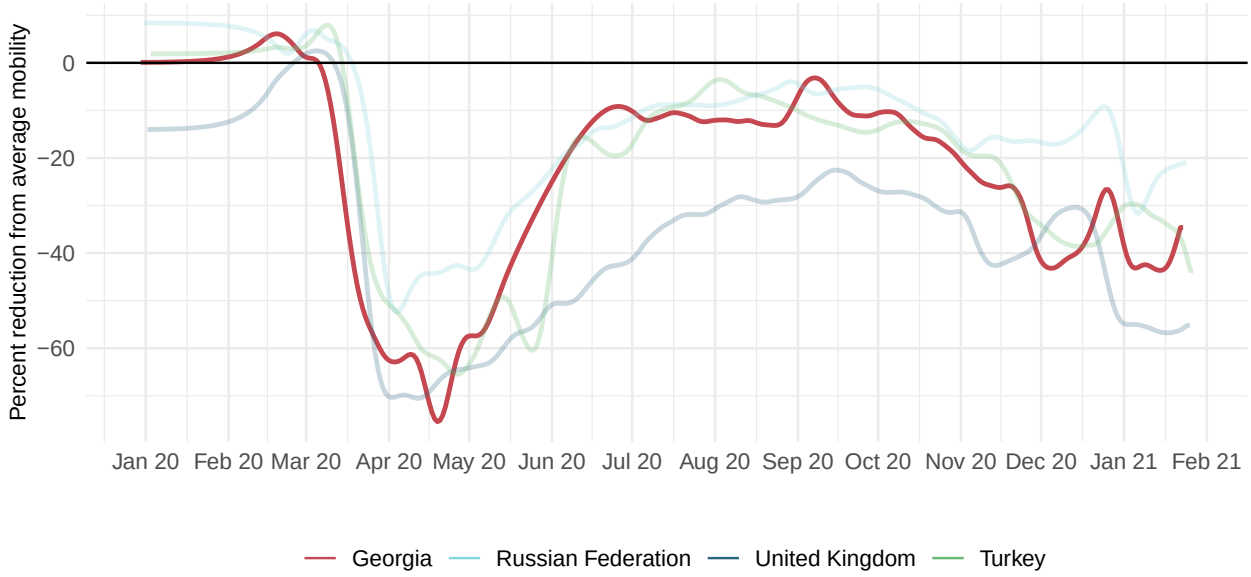


Figure 6b. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent) on February 01, 2021

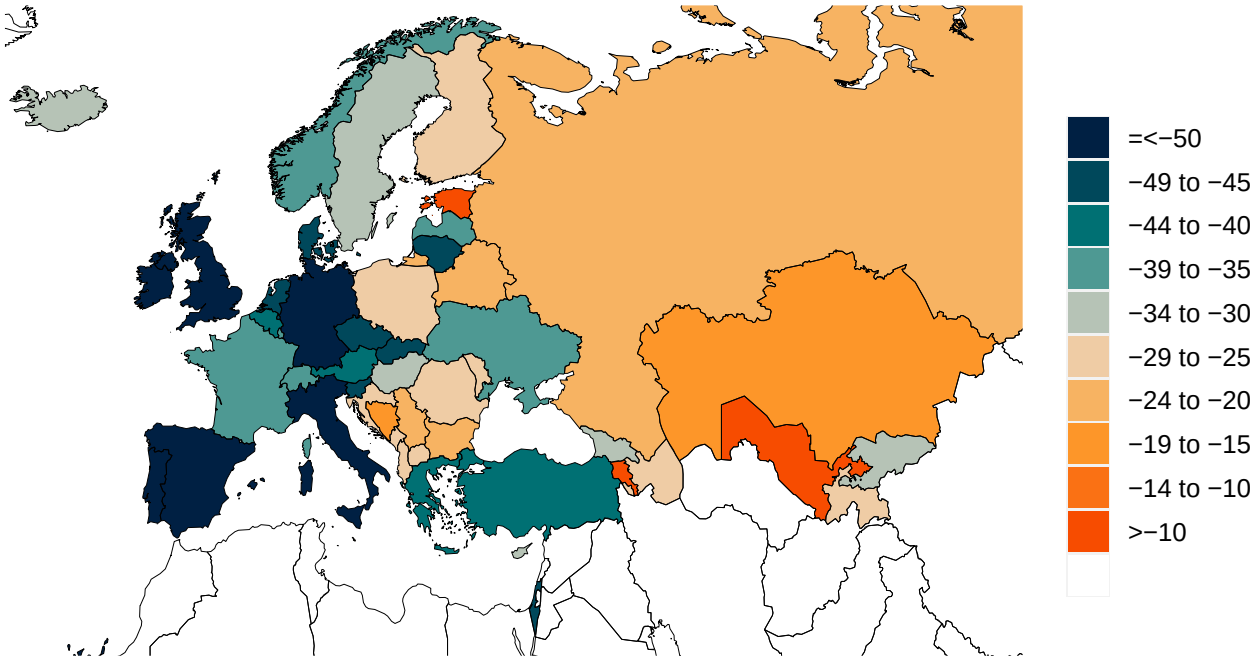


Figure 7a. Trend in the proportion of the population reporting always wearing a mask when leaving home

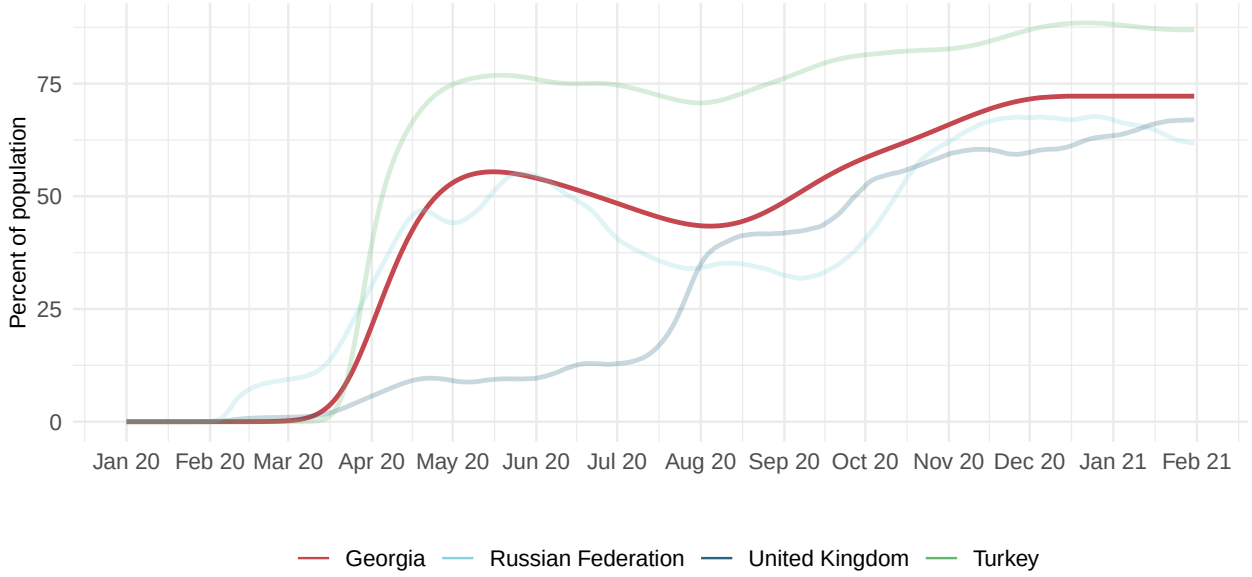


Figure 7b. Proportion of the population reporting always wearing a mask when leaving home on February 01, 2021

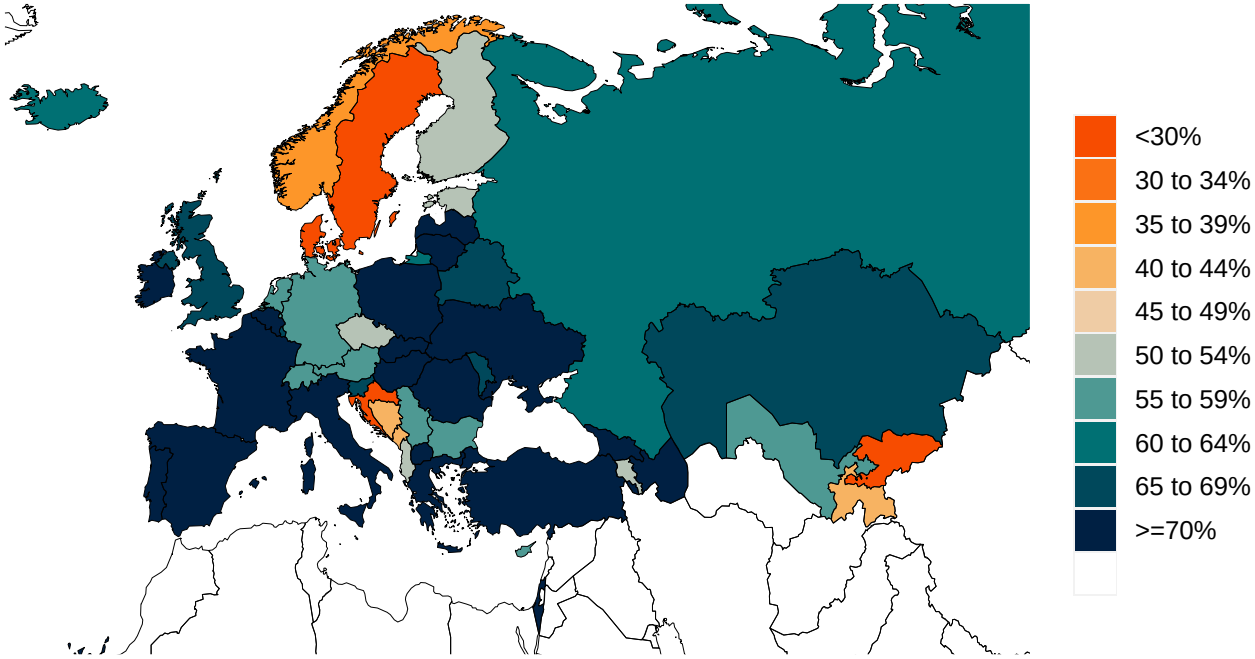


Figure 8a. Trend in COVID-19 diagnostic tests per 100,000 people

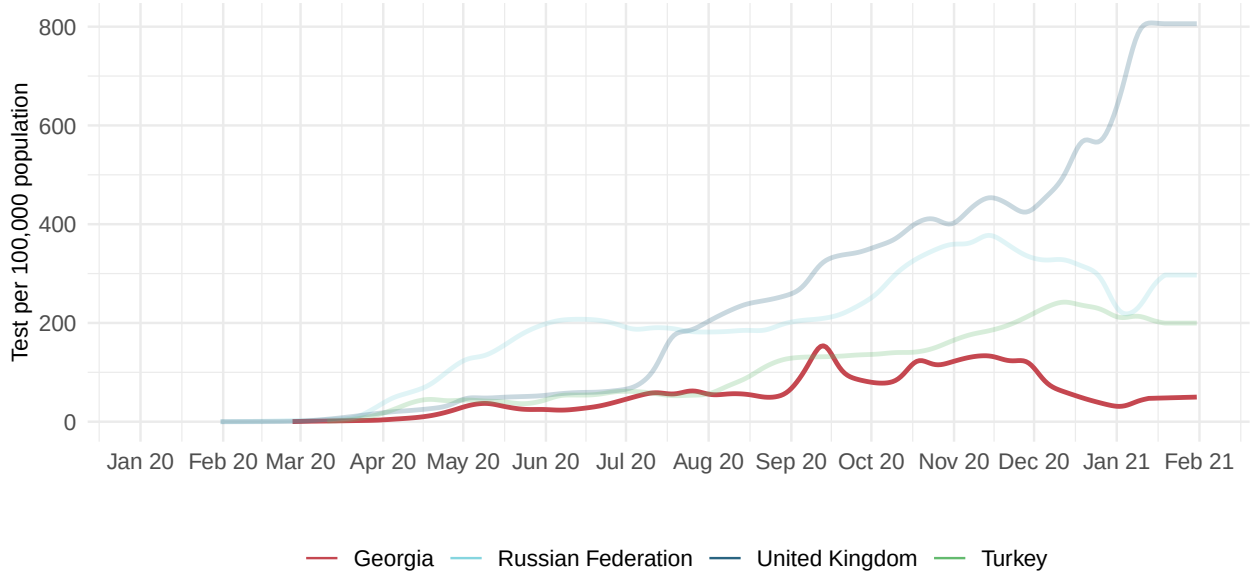


Figure 8b. COVID-19 diagnostic tests per 100,000 people on January 25, 2021

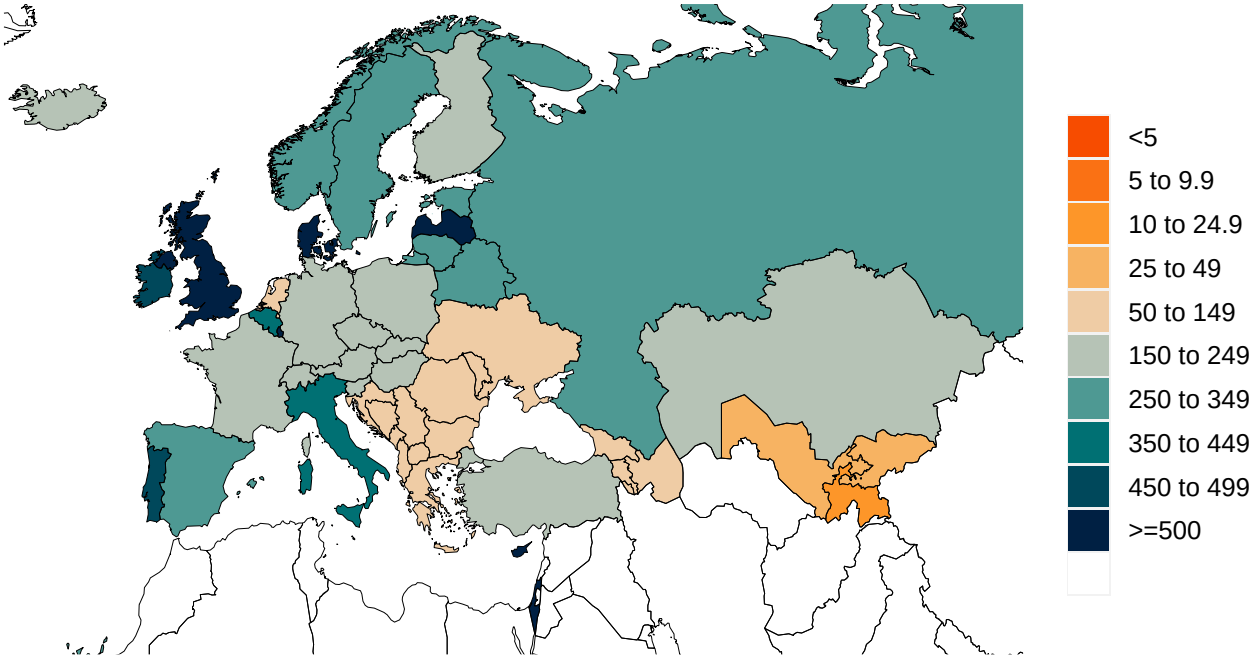


Figure 9. Increase in the risk of death due to pneumonia on February 1 2020 compared to August 1 2020

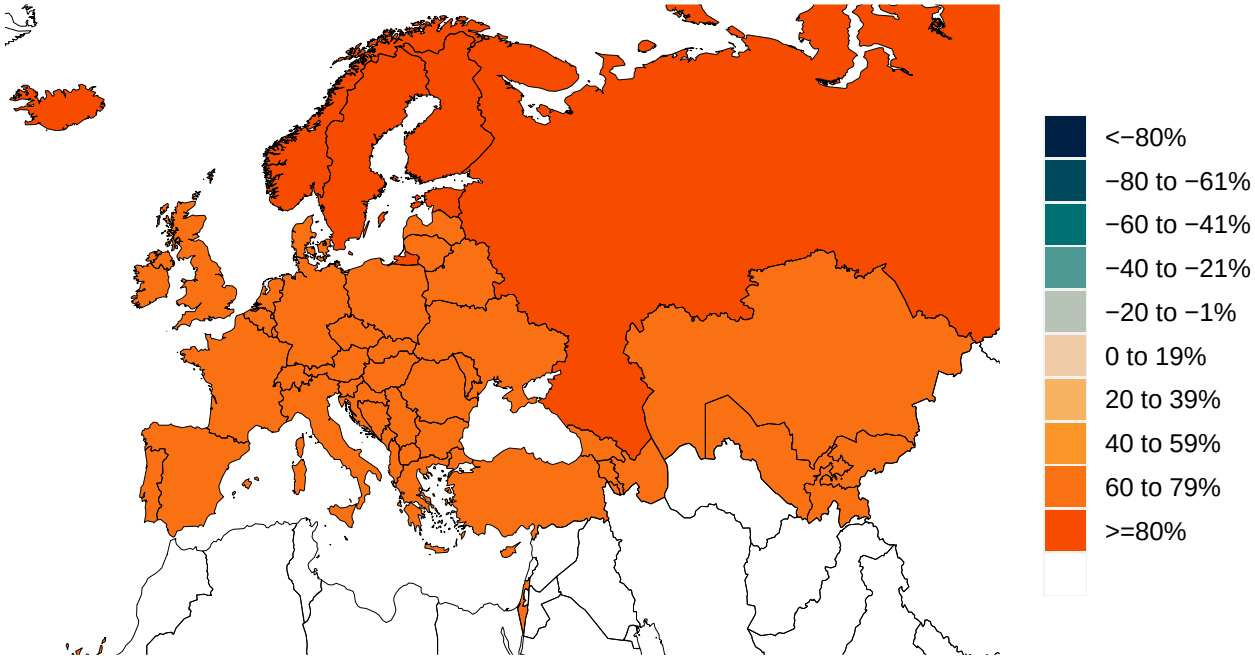


Figure 10. This figure shows the estimated proportion of the adult (18+) population that is open to receiving a COVID-19 vaccine based on Facebook survey responses (yes and unsure).

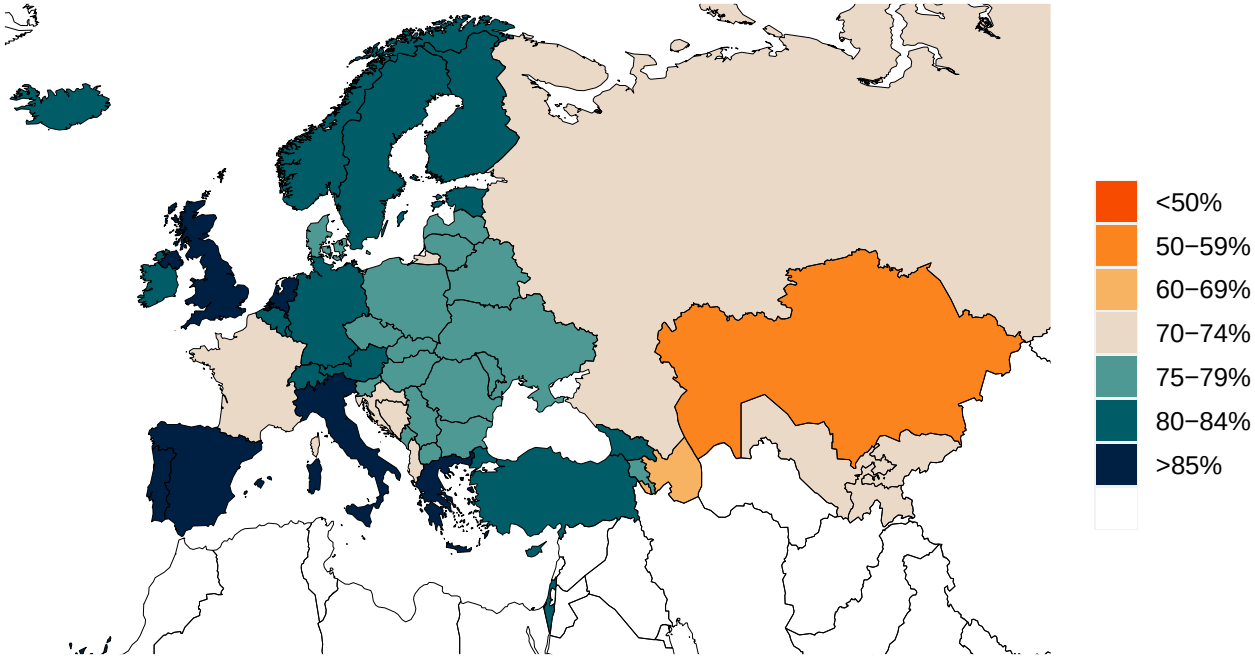
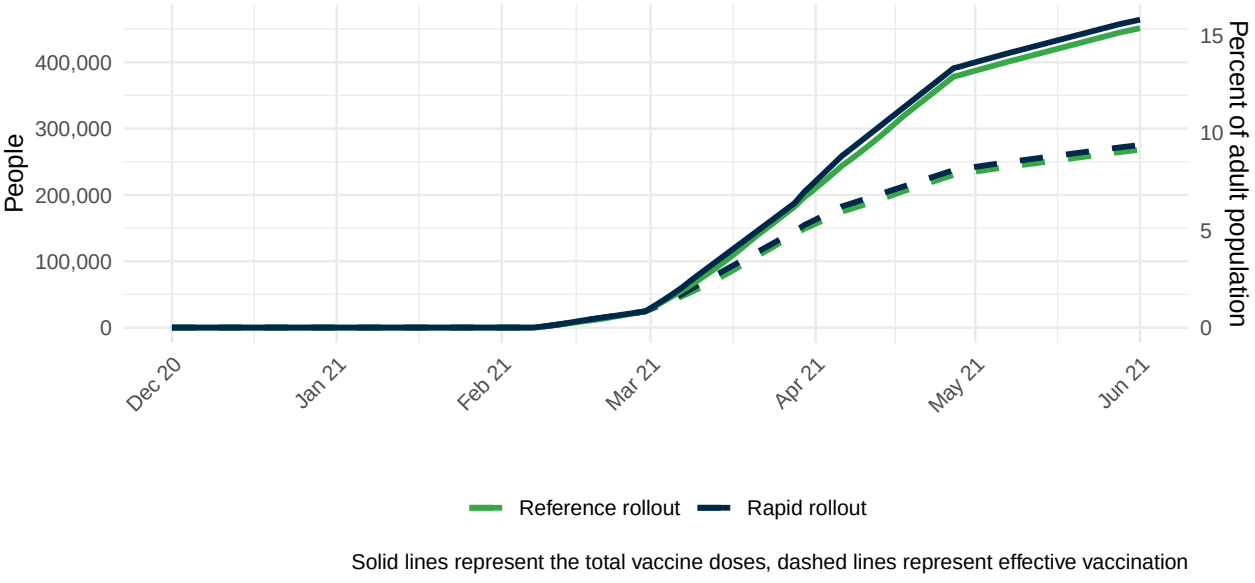


Figure 11. The number of people who receive any vaccine and those who are effectively vaccinated and protected against disease, accounting for efficacy, loss to follow up for two-dose vaccines, partial immunity after one dose, and immunity after two doses.



Projections and scenarios

We produce four 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 which case mandates are re-imposed when daily deaths reach 15 per million. Variant B.1.1.7 (first identified in the UK) continues to spread in locations where 100 or more isolates have been detected to date.

The rapid variant spread scenario shares assumptions with reference but variant B.1.351 (first identified in South Africa) spreads to everywhere in the world, starting Feb. 1, 2021. Variant B.1.351 spreads at the observed rate that B.1.1.7 spread in London. The variant is assumed to increase the infection-fatality rate by 29% and transmissibility by 25%. This scenario also assumes that those vaccinated are less effectively protected against variant B.1.351: Pfizer, Moderna, Janssen, and Novavax clinical effectiveness is reduced by 20%; all other vaccines clinical effectiveness is reduced by 50%. 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 which case mandates are re-imposed when daily deaths reach 15 per million. Variant B.1.1.7 (first identified in the UK) continues to spread in locations where 100 or more isolates have been detected to date.

The worst case scenario makes the same assumptions as the rapid variant spread scenario but also assumed that in those that are vaccinated mobility moves towards pre-COVID-19 levels.

The universal masks scenario makes all the same assumptions as the reference scenario but also assumes 95% mask usage adopted in public in every location.

Figure 12. Cumulative COVID-19 deaths until June 01, 2021 for four scenarios

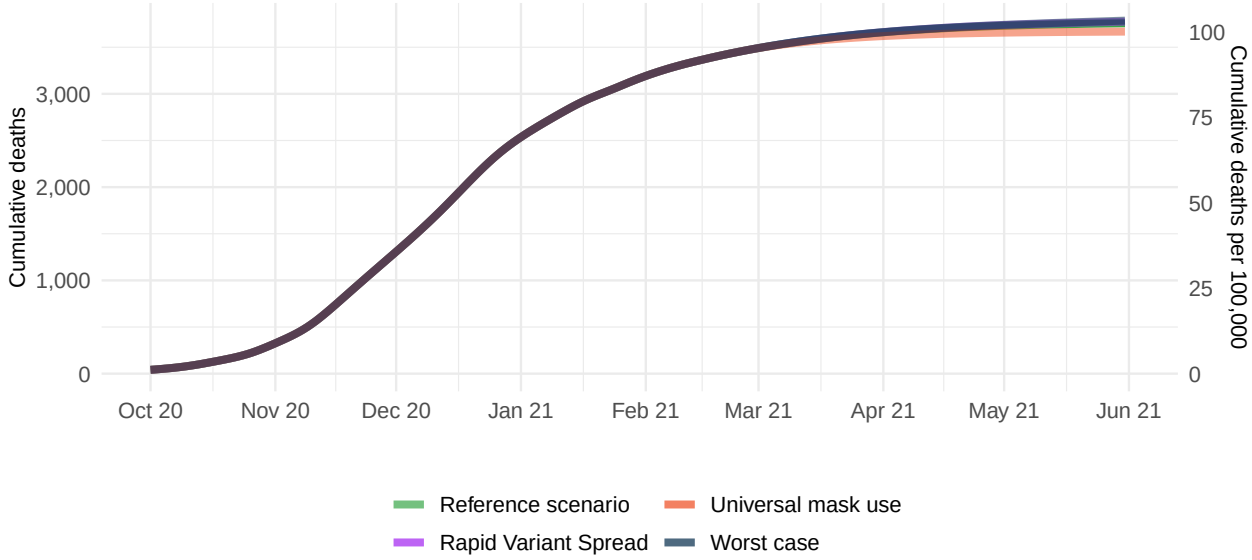


Figure 13. Daily COVID-19 deaths until June 01, 2021 for four scenarios

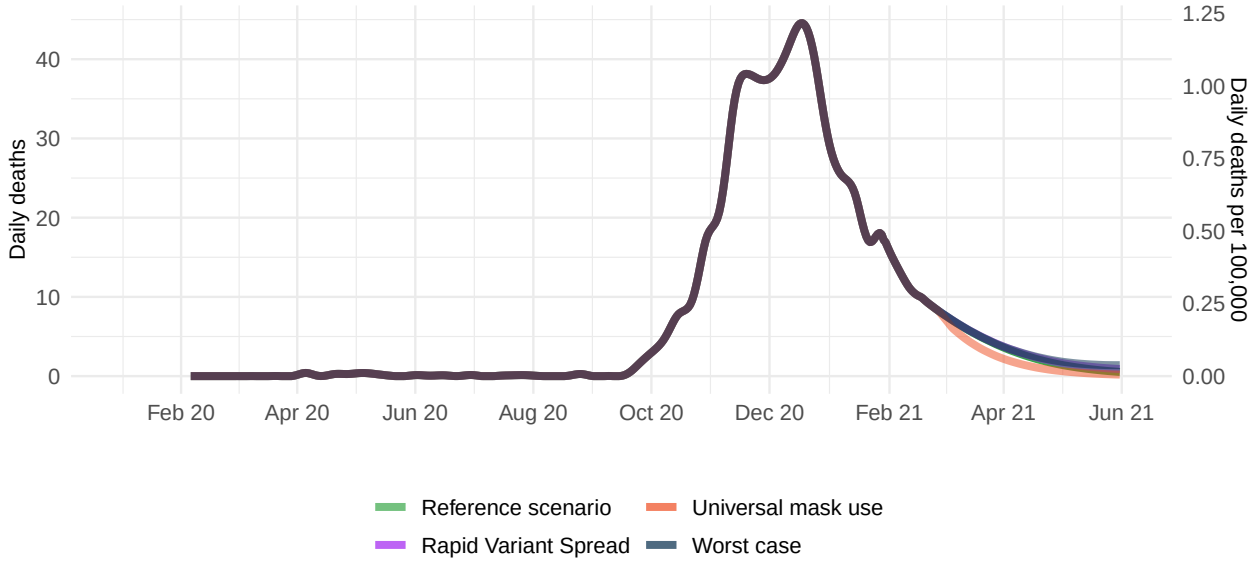


Figure 14. Daily COVID-19 infections until June 01, 2021 for four scenarios

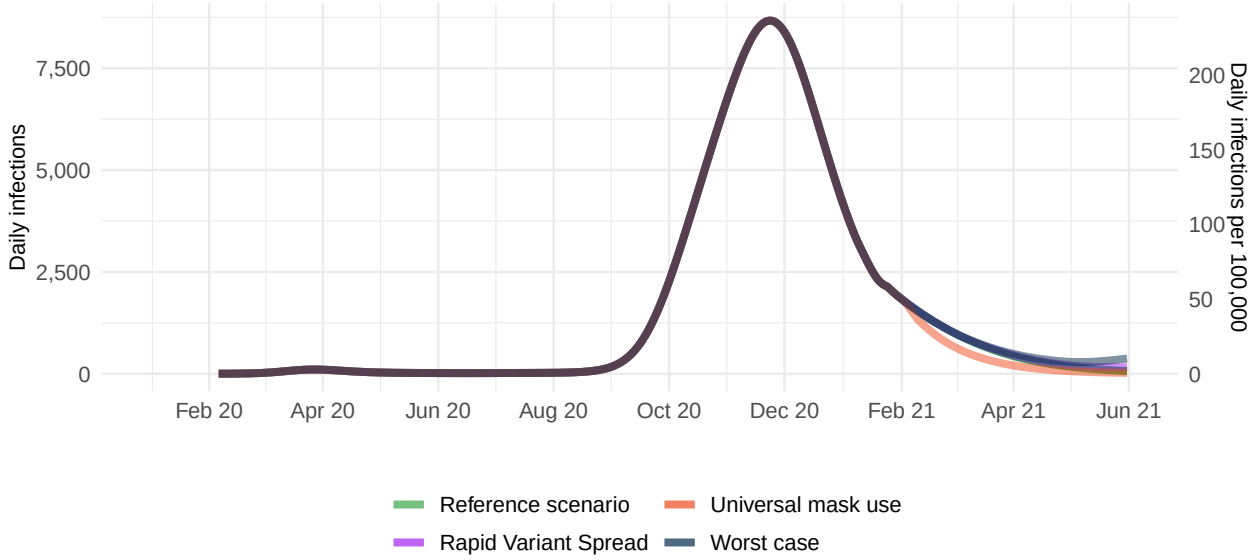


Figure 15. Forecasted percent infected with COVID-19 on June 01, 2021

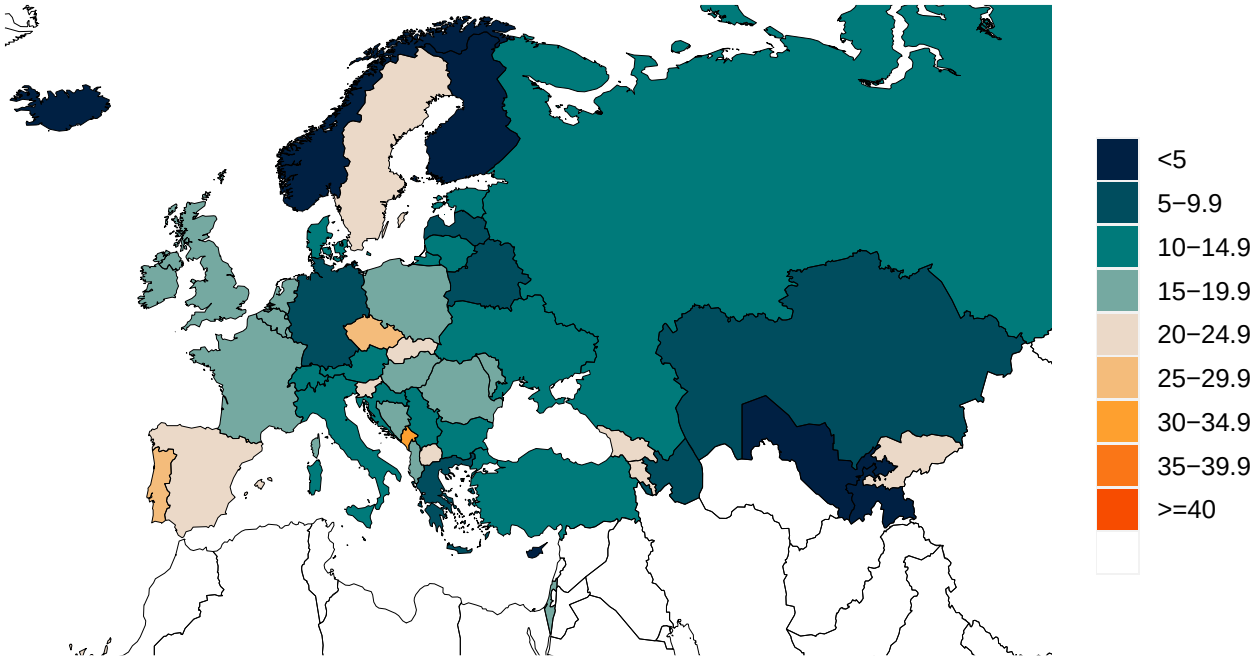


Figure 16. Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available: Delphi from the Massachussets Institute of Technology (Delphi; https://www.covidanalytics.io/home), 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.

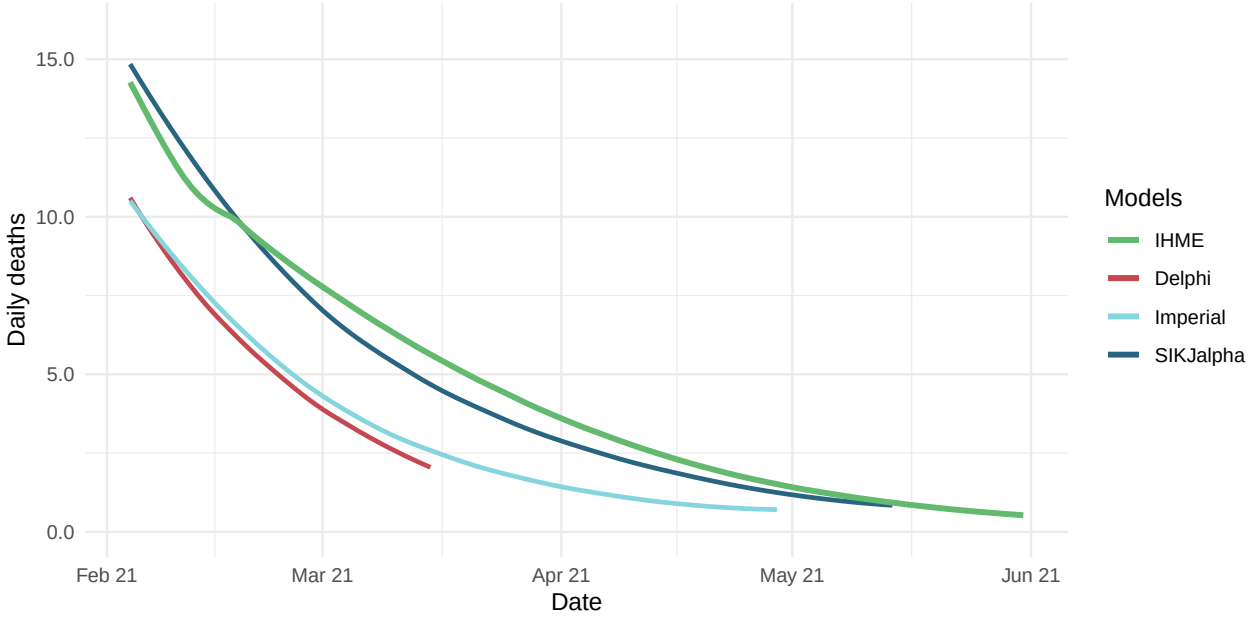


Figure 17. The estimated inpatient hospital usage is shown over time. The percent of hospital beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of beds occupied by COVID-19 patients. Less than 5% is considered *low stress*, 5-9% is considered *moderate stress*, 10-19% is considered *high stress*, and greater than 20% is considered *extreme stress*.

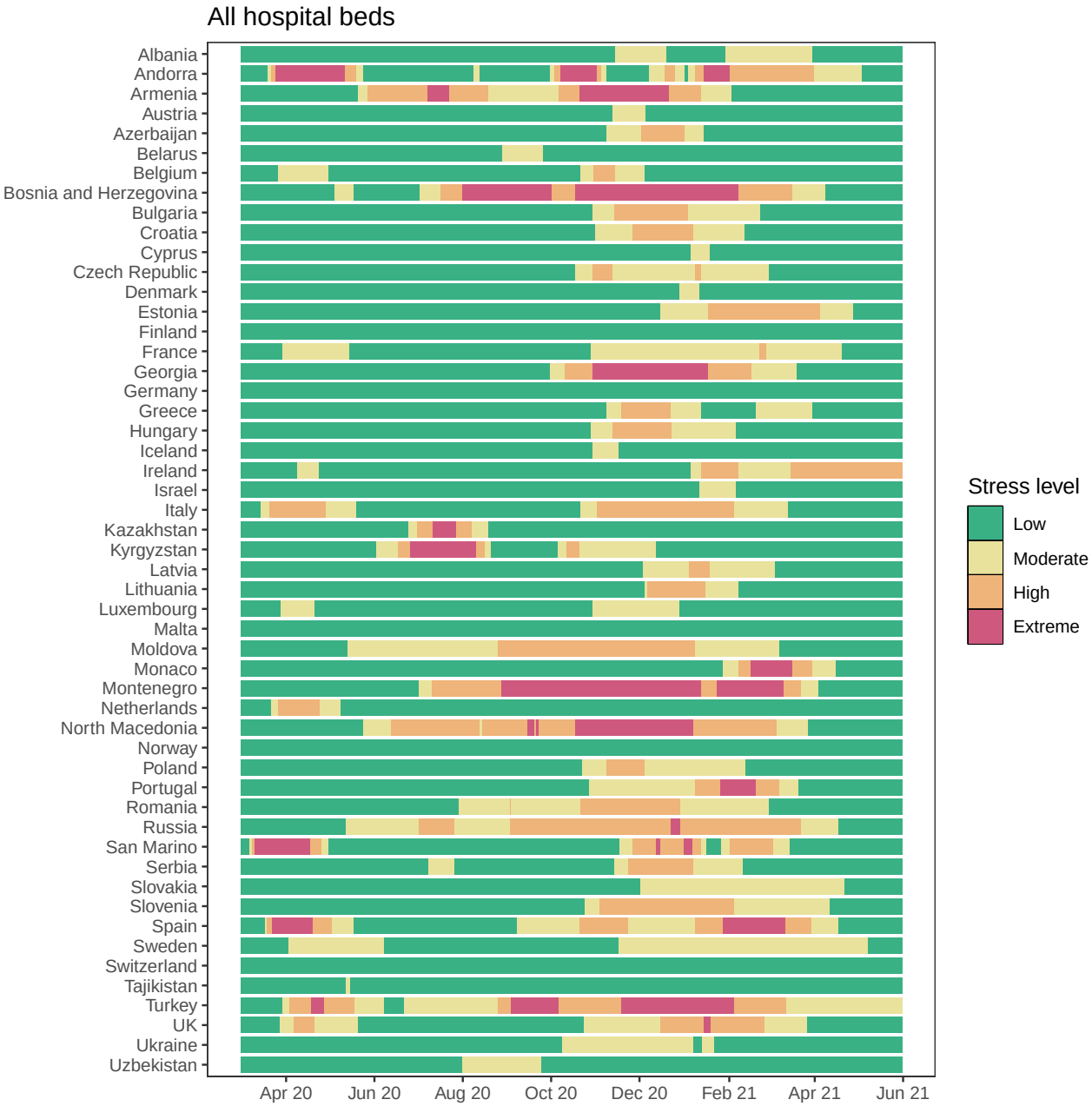


Figure 18. The estimated intensive care unit (ICU) usage is shown over time. The percent of ICU beds occupied by COVID-19 patients is color coded based on observed quantiles of the maximum proportion of ICU beds occupied by COVID-19 patients. Less than 10% is considered *low stress*, 10-29% is considered *moderate stress*, 30-59% is considered *high stress*, and greater than 60% is considered *extreme stress*.

More information

Data sources:

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

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

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

A note of thanks:

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

More information:

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

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