Cases continue to surge in the WHO European Region and daily deaths have increased by 12% in the last week. Increases in transmission are occurring particularly in Portugal, Spain, France, the United Kingdom, Czechia, Ukraine, and Turkey. Given the surge in cases and an expected trend toward less vigilance and the effect of seasonality, we expect the epidemic to increase to more than 8,000 deaths per day by late December.

Current situation

- Cases continue to increase rapidly, reaching over 40,000 a day. The speed of the increase, while high, is nowhere near the speed of increase seen in late March (Figure 1).
- Daily deaths have increased to approximately 675 a day, up from 600 a day a week ago. COVID-19 was the eighth leading cause of death in the region during the second week of September (Figure 2 and Table 1).
- Effective R is greater than 1 in Portugal, the United Kingdom, France, Czechia, Croatia, Ukraine, Turkey, Israel, Uzbekistan, and Malta (Figure 3).
- The vast majority (over 90%) of the region remains susceptible; the only exceptions are Kazakhstan and San Marino (Figure 4).
- The highest daily death rates are in Spain, the western Balkans, Romania, Moldova, Ukraine, Israel, and Kazakhstan.

Trends in key drivers of transmission (mobility, mask use, testing, and seasonality)

- Mobility is increasing slowly despite the surge in cases, with a tendency toward higher mobility in the eastern part of the region (Figure 8).
- Mask use is increasing slightly, with a strong gradient to lower mask use moving from the South to the North (Figure 9).
- Many countries in the region have reopened schools, with a combined approach of online and in-person instructions, as well as strict social distancing regulations.
- Diagnostic testing rates in the region remain high, second highest in the world (after the WPR region). The highest testing rates are in Denmark, with over 500 tests per 100,000 inhabitants. Israel and Luxembourg have the second highest testing rate in the region, followed by the UK, Spain, Portugal, Italy, Belgium, Germany, the Nordic region, Latvia and the Russian Federation as the third highest. (Figures 10a and 10b)
- Kyrgyzstan, Tajikistan, Uzbekistan, and Albania have the lowest rates of diagnostic testing, with less than 49 tests per 100,000 inhabitants (Figure 10b).

Projections

- In our reference scenario, we expect daily deaths to begin increasing substantially in early November, reaching over 8,000 deaths per day in December. Cumulative deaths will reach nearly 700,000 by January 1 (Figure 13).
- Pursuing a herd immunity strategy, namely no further government intervention through the imposition of mandates, could lead to dramatically higher daily deaths in December, reaching above 30,000 a day.
- Increasing mask use to 95% throughout the region could save nearly 240,000 lives between now and January 1 (Figure 12).
- Comparing our forecasts to other forecasts for the region, our estimates are in line with those produced by Imperial College London. Other regularly updated and publicly archived forecasts do not show any winter surge. The difference in the forecasts is dramatic by mid-November. Our higher forecasts in this period are driven both by further expected increases in mobility as mandates may ease, and by seasonality (Figure 18).
- The current projections assume that before January 1, most countries in the region will re-impose a package of mandates when the daily death rate exceeds 8 per million (Figure 15).

- By January 1, COVID-19 is expected to be the third leading cause of death in the region (Table 3).

Model updates

- With each re-estimation of the regression coefficients over the last three months for predicting b(t), the transmission parameter, the coefficient on testing per capita has tended to get closer to 0. In many of the 1,000 models, the coefficient is now 0. This declining role of testing in reducing transmission seen empirically may have several explanations. First, many tests are being conducted but results are not being returned fast enough to impact transmission. Second, since most testing is still in symptomatic individuals, testing per capita may be poorly correlated with actual testing of contacts that may have a larger impact on reducing transmission. Third, when the epidemic starts to increase, testing of symptomatic individuals increases and vice versa.

IHME wishes to warmly acknowledge the support of these and others who have made our COVID-19 estimation efforts possible. Thank you.

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.

COVID-19 Results Briefing: the European Region

Institute for Health Metrics and Evaluation (IHME)

September 17, 2020

This briefing contains summary information on the latest projections from the IHME model on COVID-19 in the European Region. The model was run on September 16, 2020.

Model updates

Updates to the model this week include additional data on deaths, cases, and updates on covariates.

Current situation

Figure 1. Reported daily COVID-19 cases

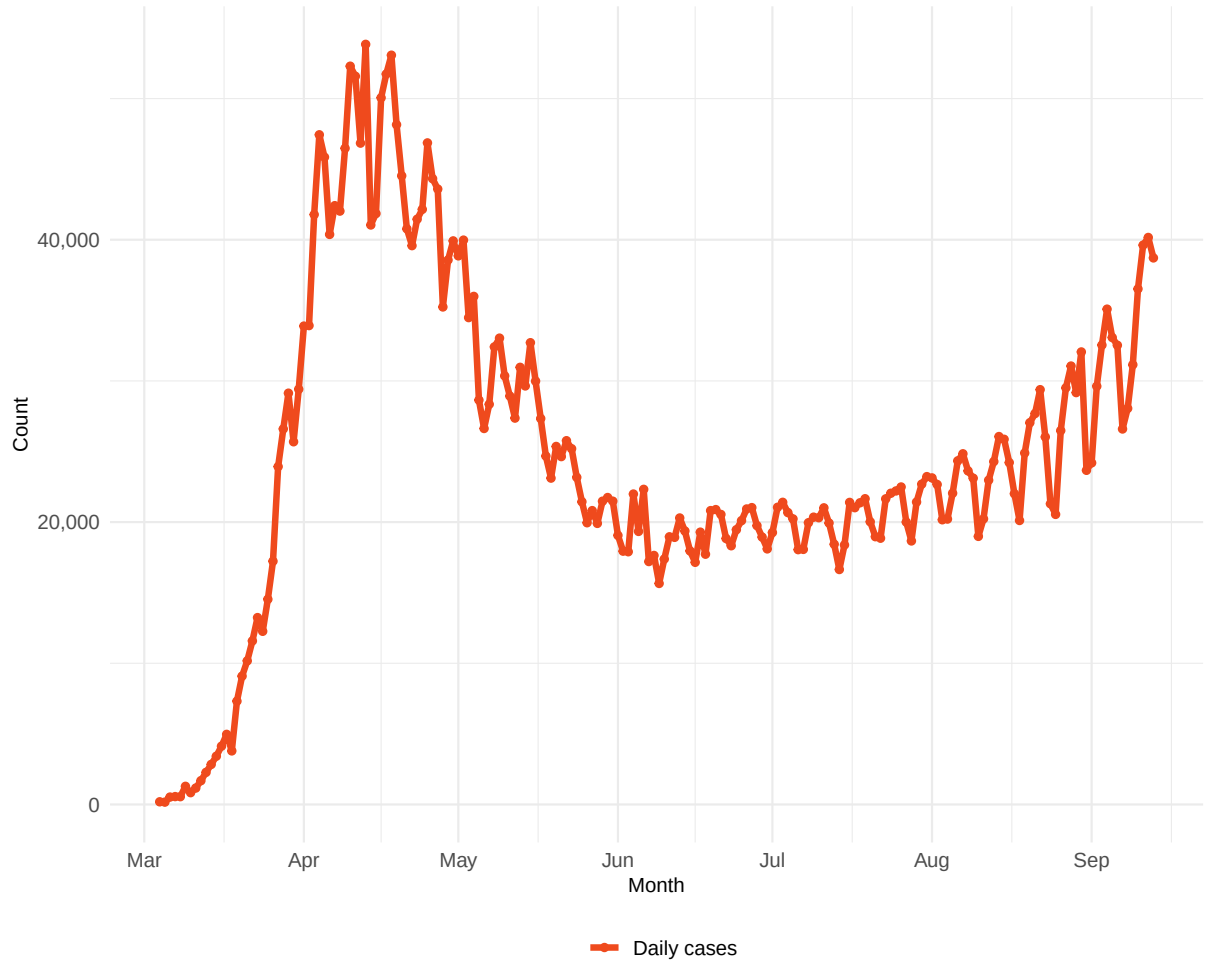


Table 1. Ranking of COVID-19 among the leading causes of mortality this week, assuming uniform deaths of non-COVID causes throughout the year

Cause name	Weekly deaths	Ranking
Ischemic heart disease	44,253	1
Stroke	22,622	2
Tracheal, bronchus, and lung cancer	8,918	3
Alzheimer's disease and other dementias	8,022	4
Chronic obstructive pulmonary disease	6,719	5
Colon and rectum cancer	5,881	6
Lower respiratory infections	5,254	7
COVID-19	4,738	8
Cirrhosis and other chronic liver diseases	4,290	9
Hypertensive heart disease	3,949	10

Figure 2a. Reported daily COVID-19 deaths and smoothed trend estimate

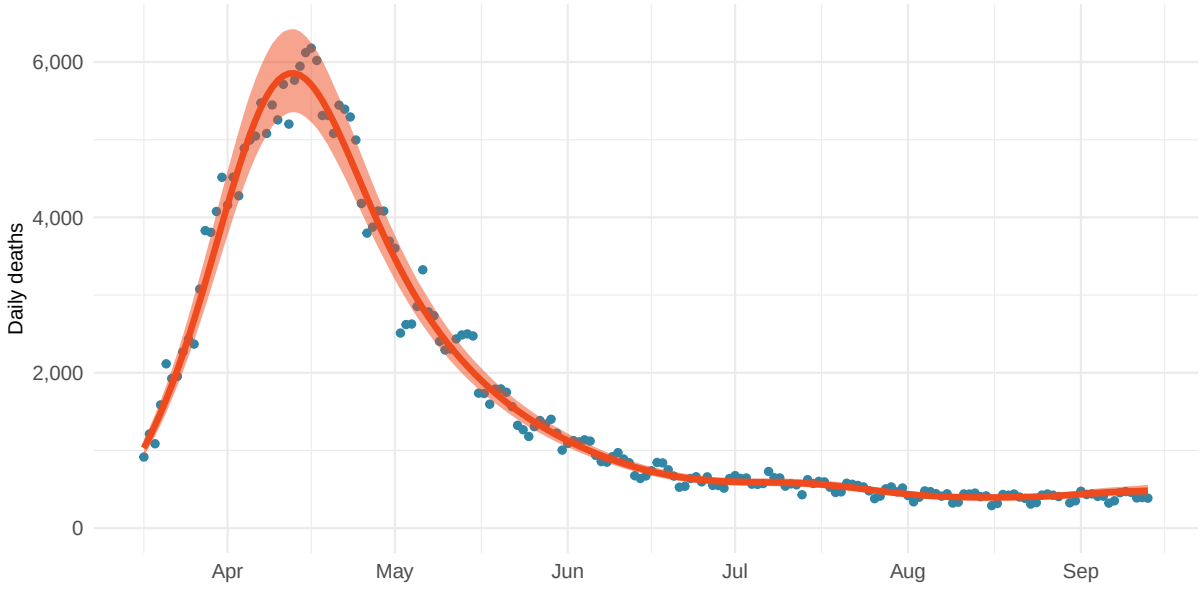


Figure 2b. Estimated cumulative deaths by age group

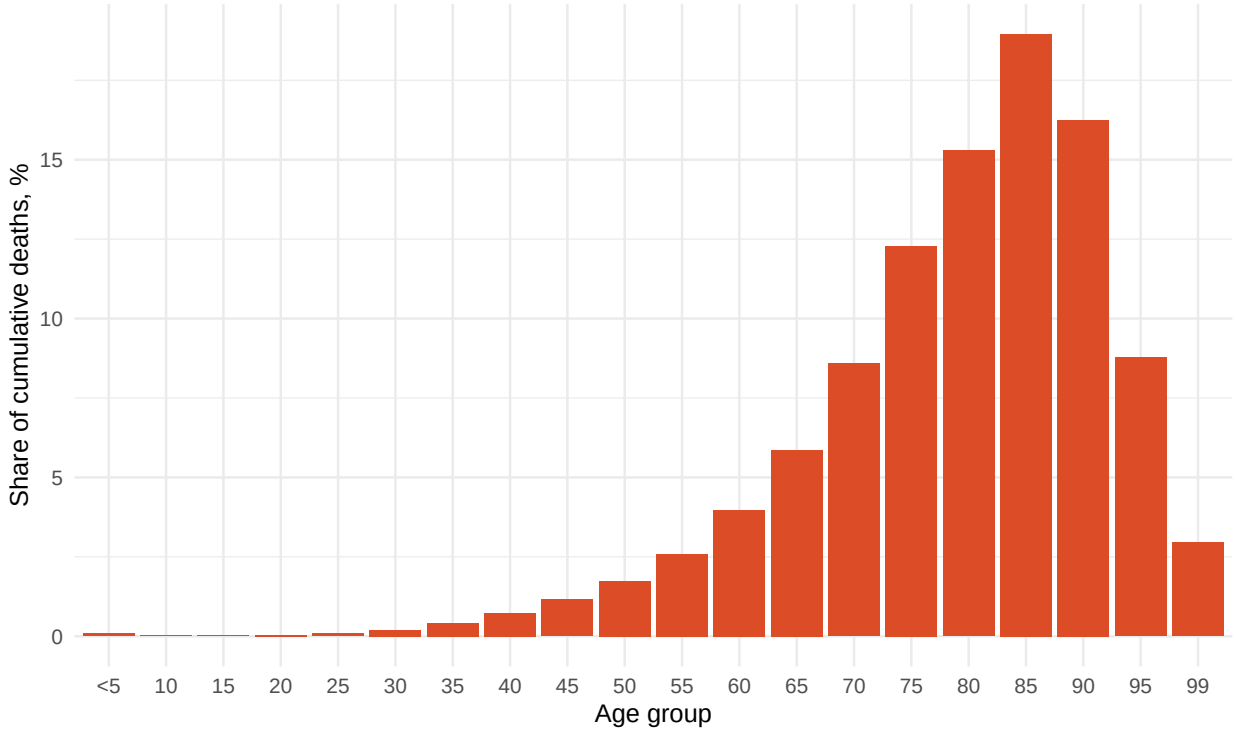


Figure 3. Mean effective R on September 03, 2020. The estimate of effective R is based on the combined analysis of deaths, case reporting and hospitalizations where available. Current reported cases reflect infections 11-13 days prior so estimates of effective R can only be made for the recent past. Effective R less than 1 means that transmission should decline all other things being held the same.

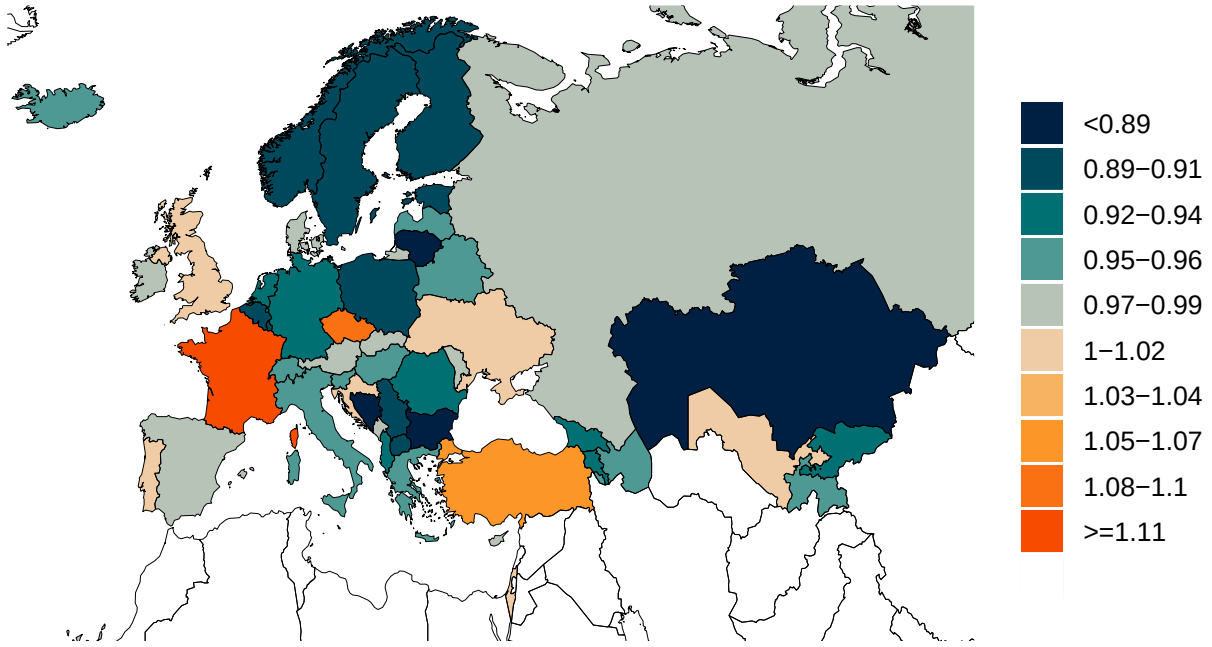


Figure 4. Estimated percent infected with COVID-19 on September 14, 2020

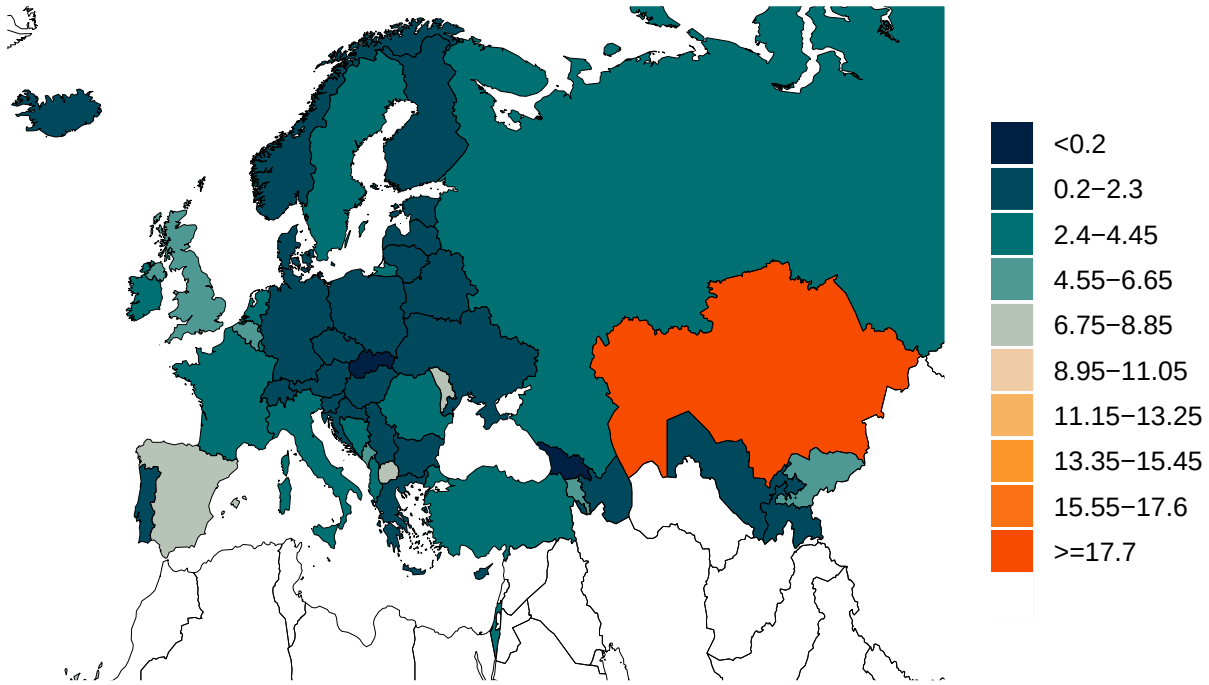


Figure 5. Percent of COVID-19 infections detected. This is estimated as the ratio of reported COVID-19 cases to estimated COVID-19 infections based on the SEIR model.

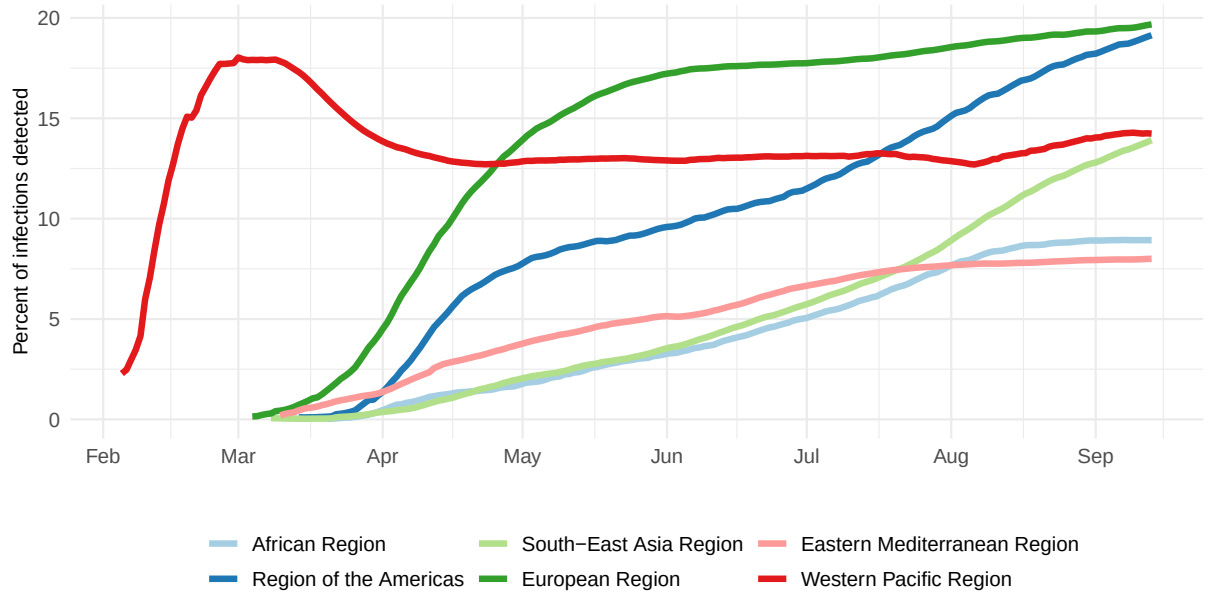
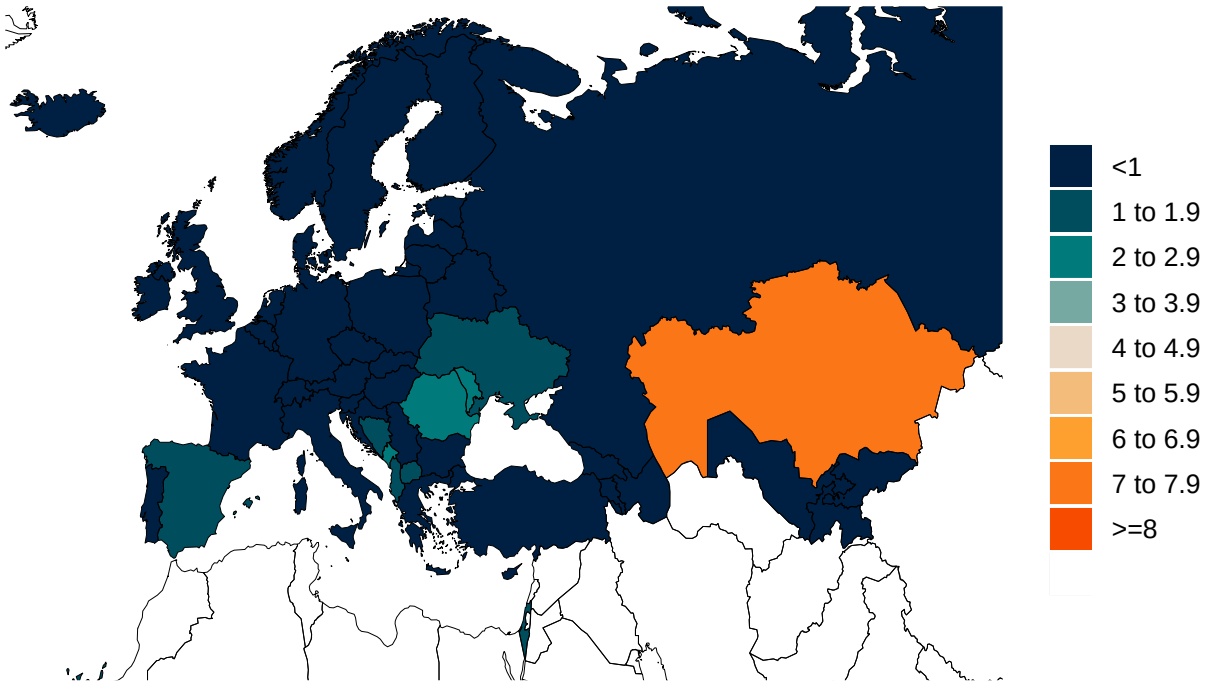


Figure 6. Daily COVID-19 death rate per 1 million on September 14, 2020



Critical drivers

Table 2. Current mandate implementation

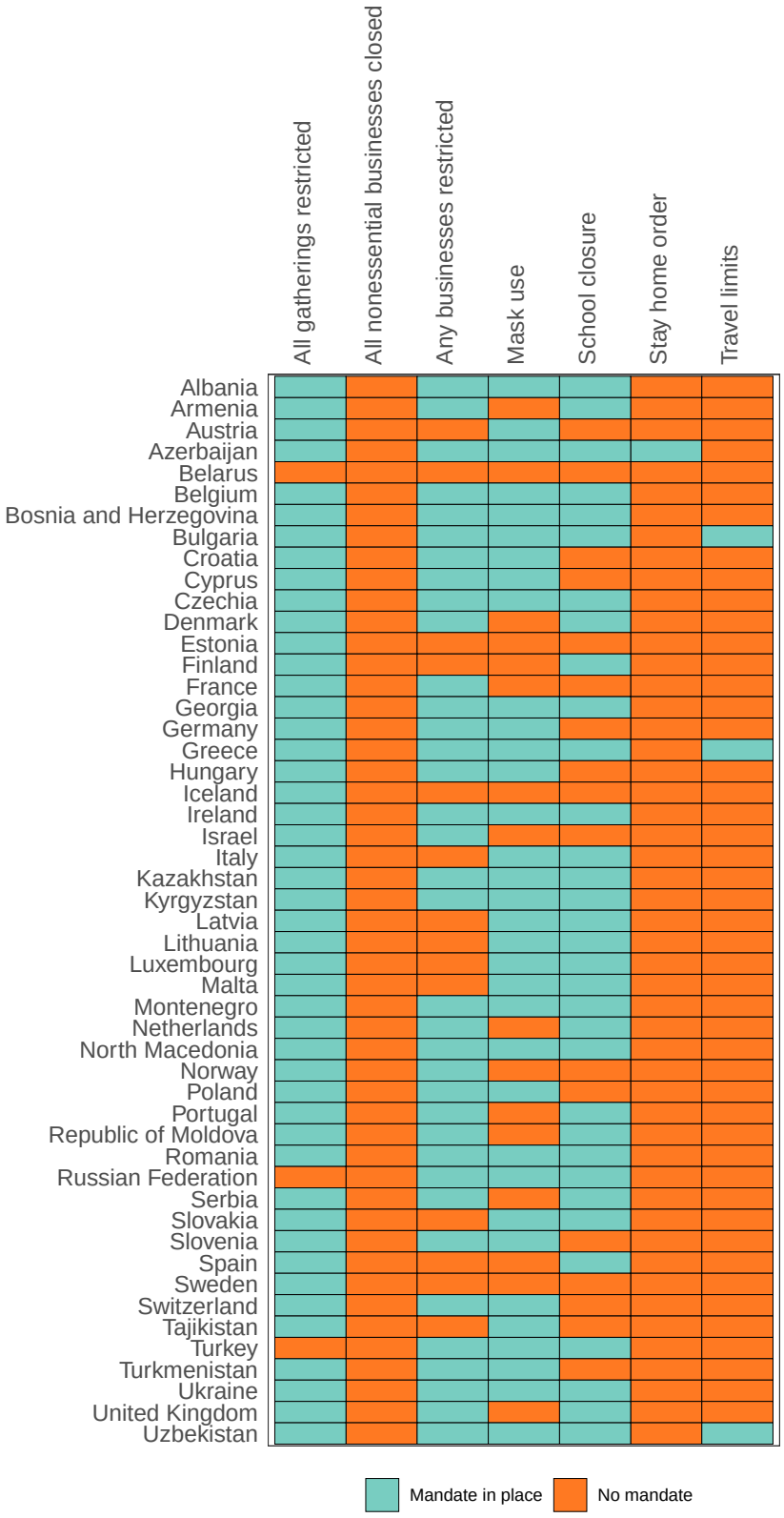


Figure 7. Total number of social distancing mandates (not including mask use)

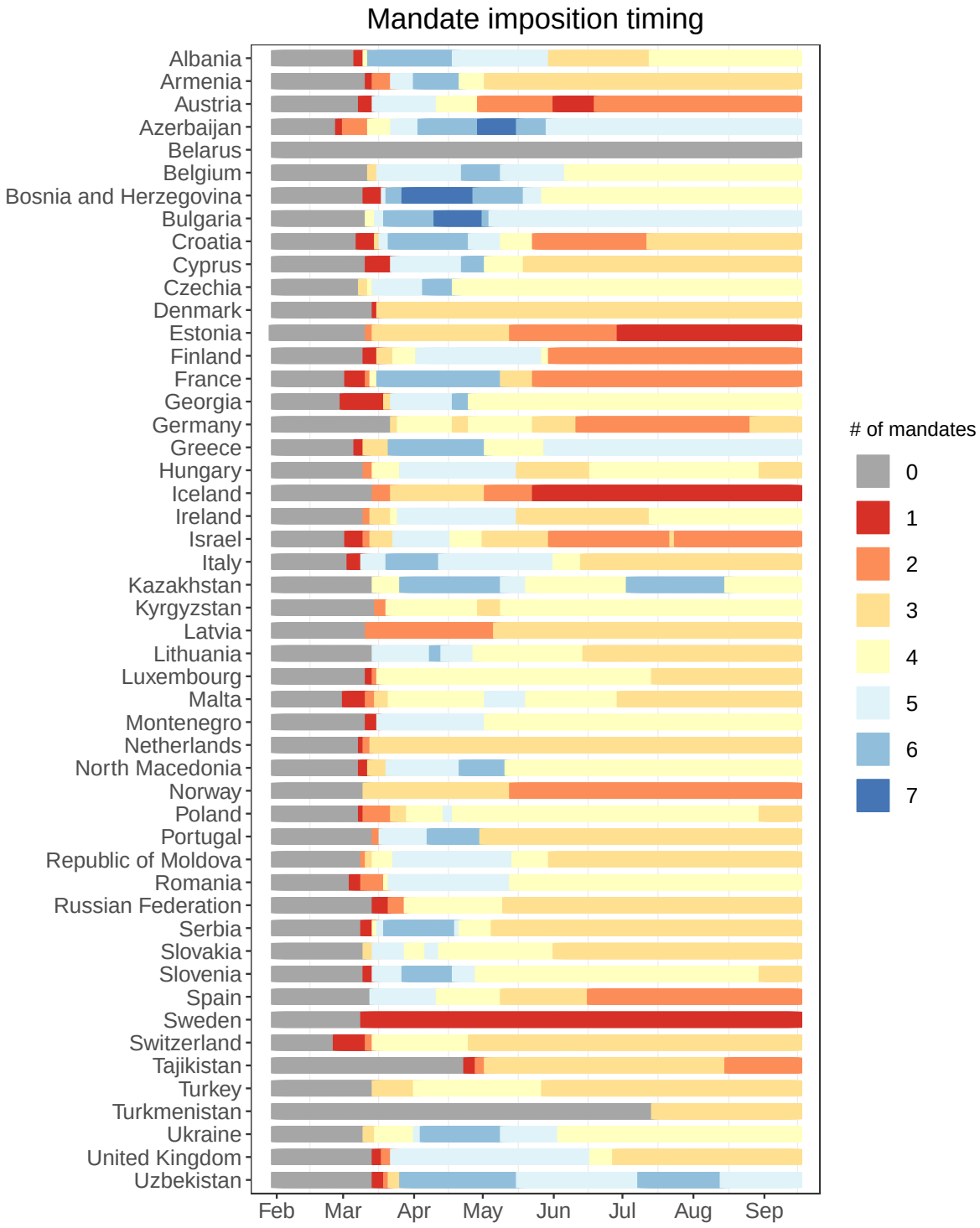


Figure 8a. Trend in mobility as measured through smartphone app use compared to January 2020 baseline

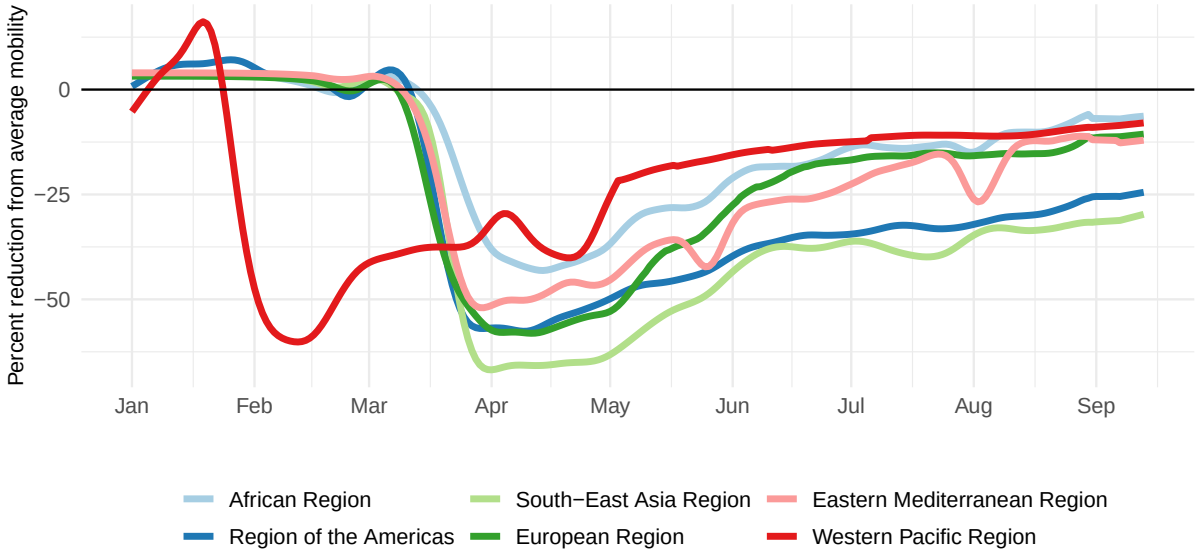


Figure 8b. Mobility level as measured through smartphone app use compared to January 2020 baseline (percent)

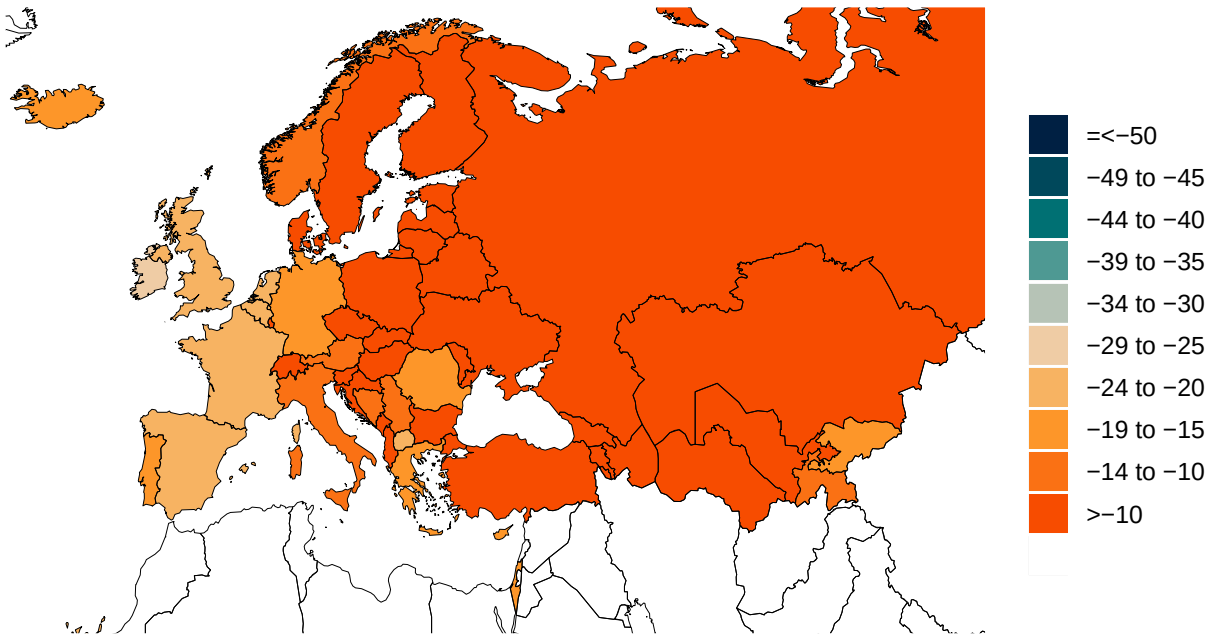


Figure 9a. Trend in the proportion of the population reporting always wearing a mask when leaving home

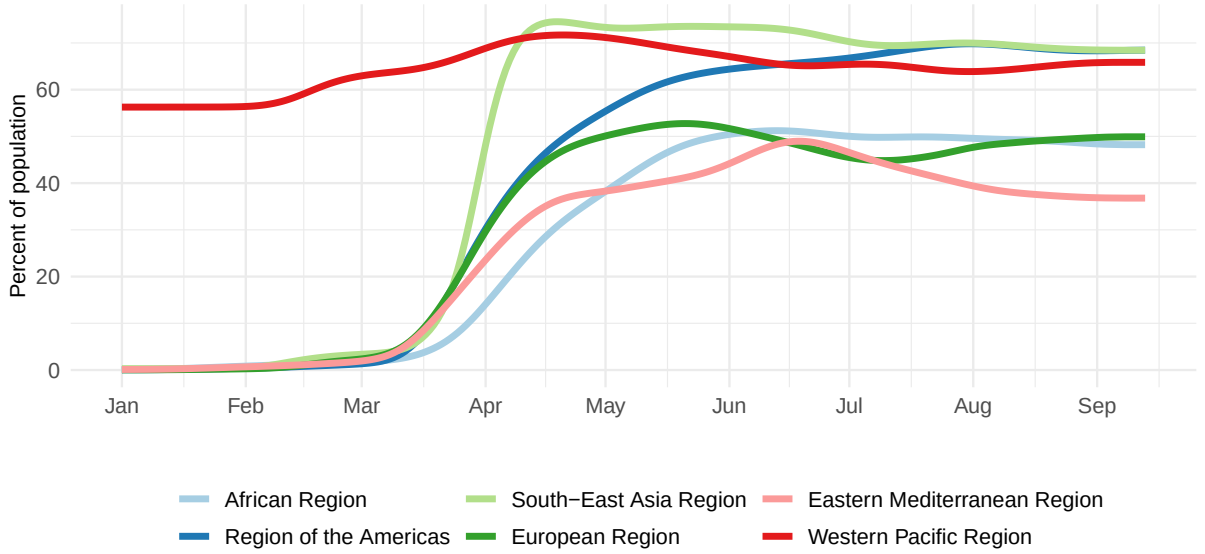


Figure 9b. Proportion of the population reporting always wearing a mask when leaving home on September 14, 2020

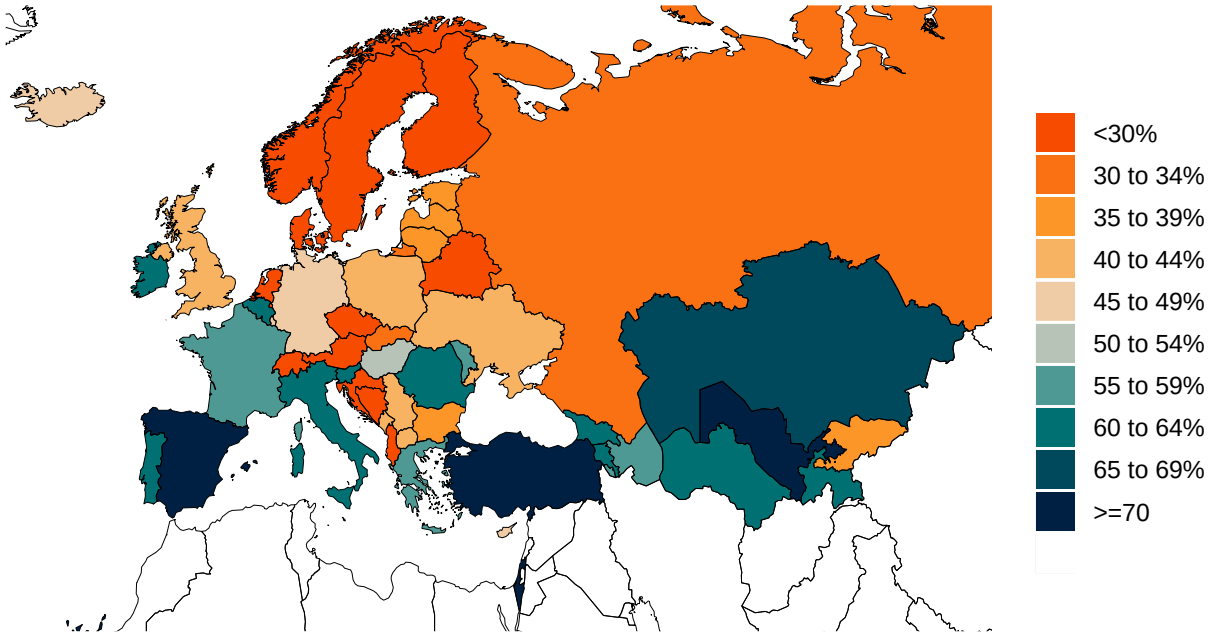


Figure 10a. Trend in COVID-19 diagnostic tests per 100,000 people

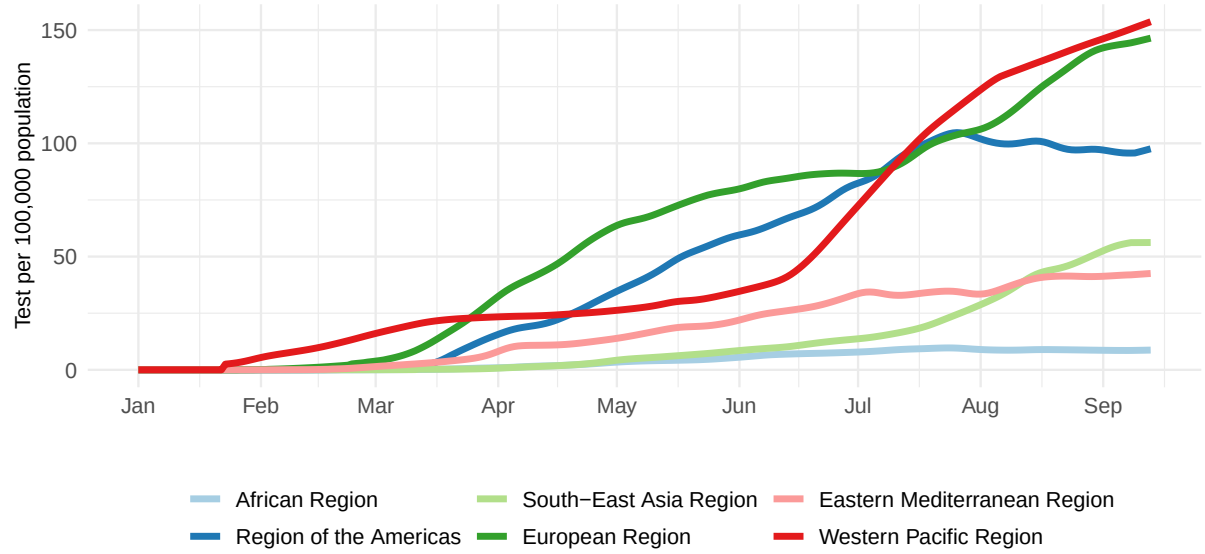


Figure 10b. COVID-19 diagnostic tests per 100,000 people on September 10, 2020

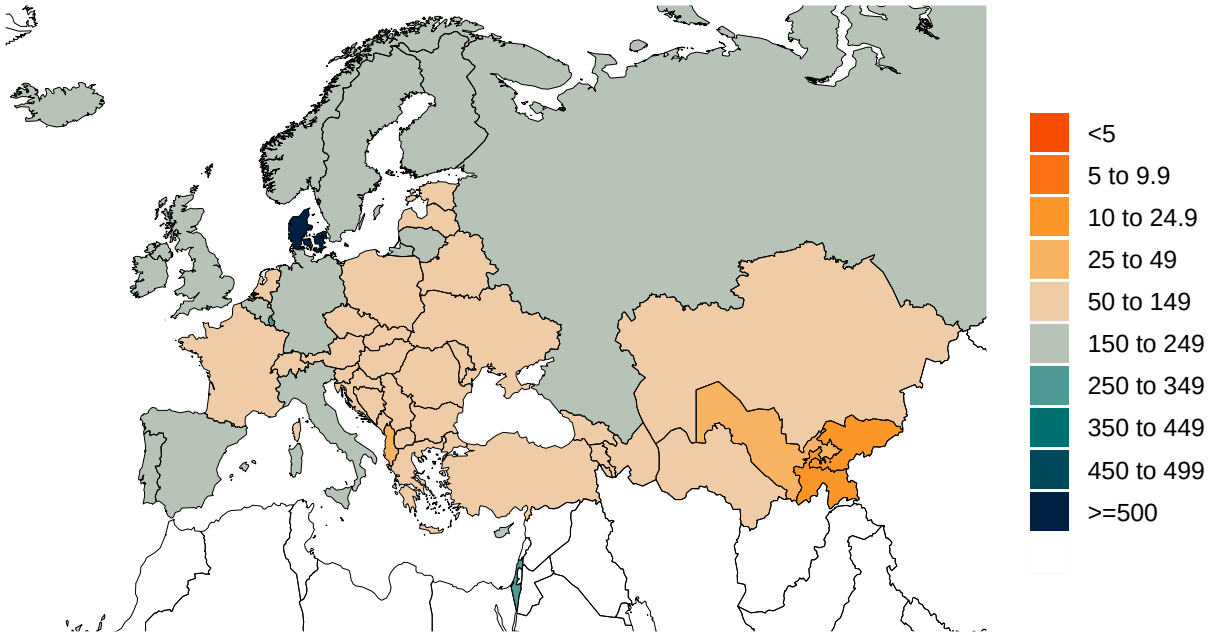
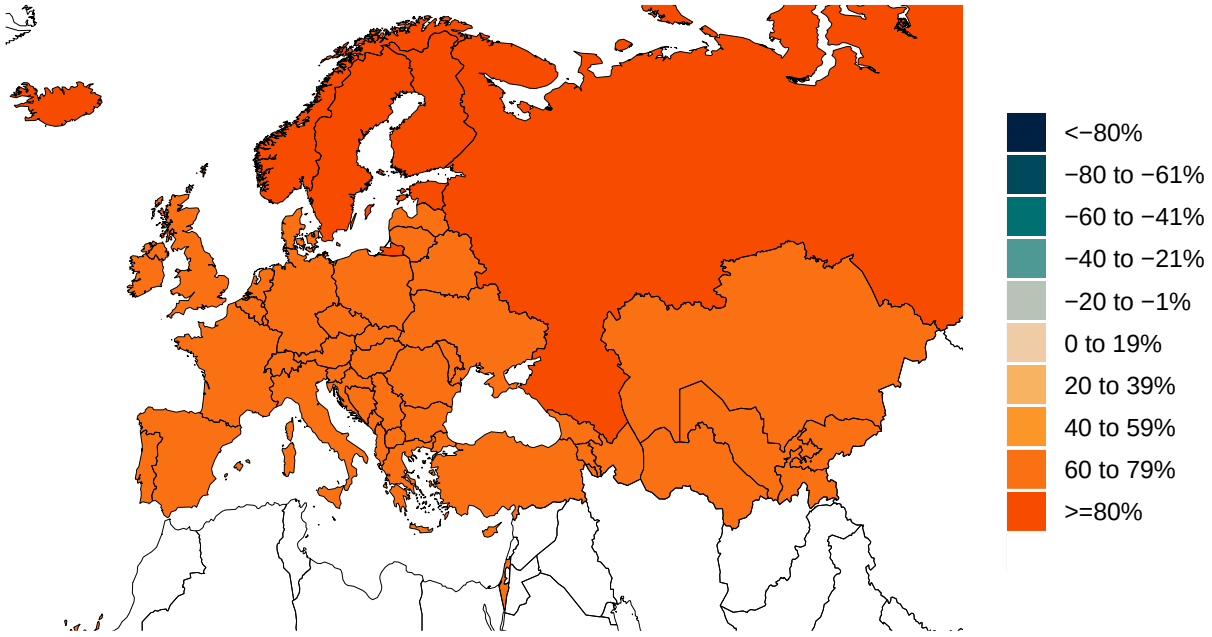


Figure 11. Increase in the risk of death due to pneumonia on February 1 compared to August 1



Projections and scenarios

We produce three scenarios when projecting COVID-19. The reference scenario is our forecast of what we think is most likely to happen. 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.

Figure 12. Cumulative COVID-19 deaths until January 01, 2021 for three scenarios.

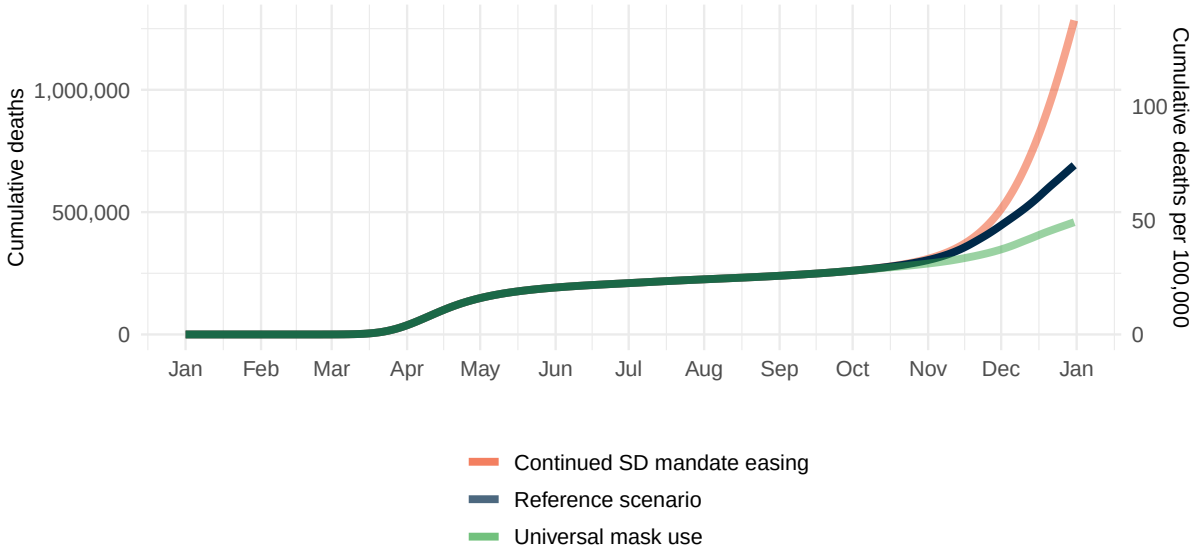


Fig 13. Daily COVID-19 deaths until January 01, 2021 for three scenarios.

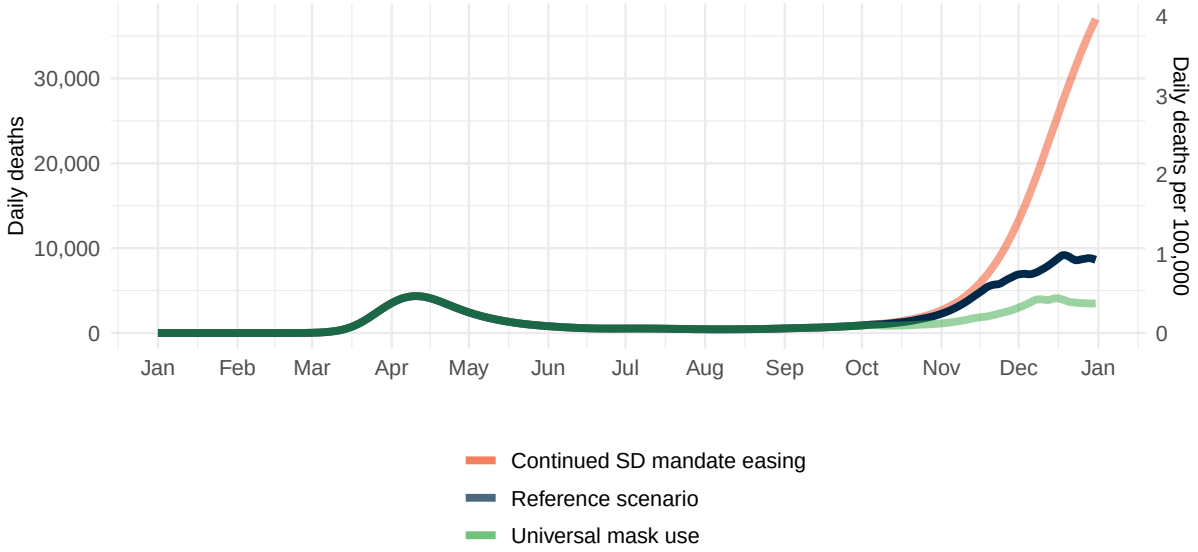


Fig 14. Daily COVID-19 infections until January 01, 2021 for three scenarios.

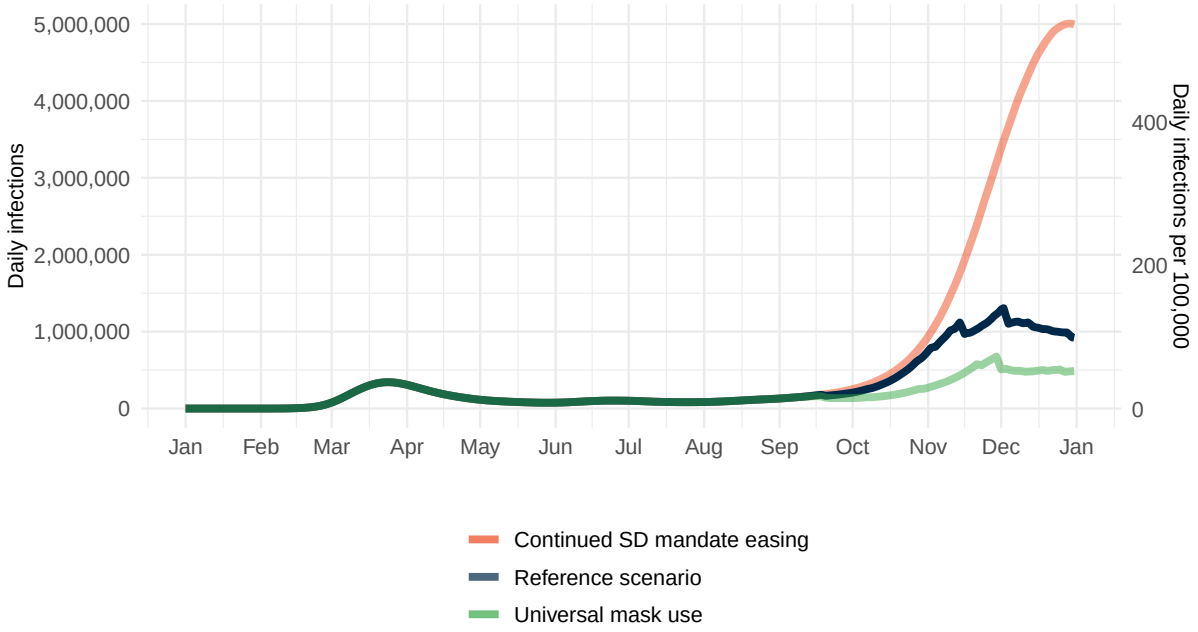


Fig 15. Month of assumed mandate re-implementation. (Month when daily death rate passes 8 per million, when reference scenario model assumes mandates will be re-imposed.)

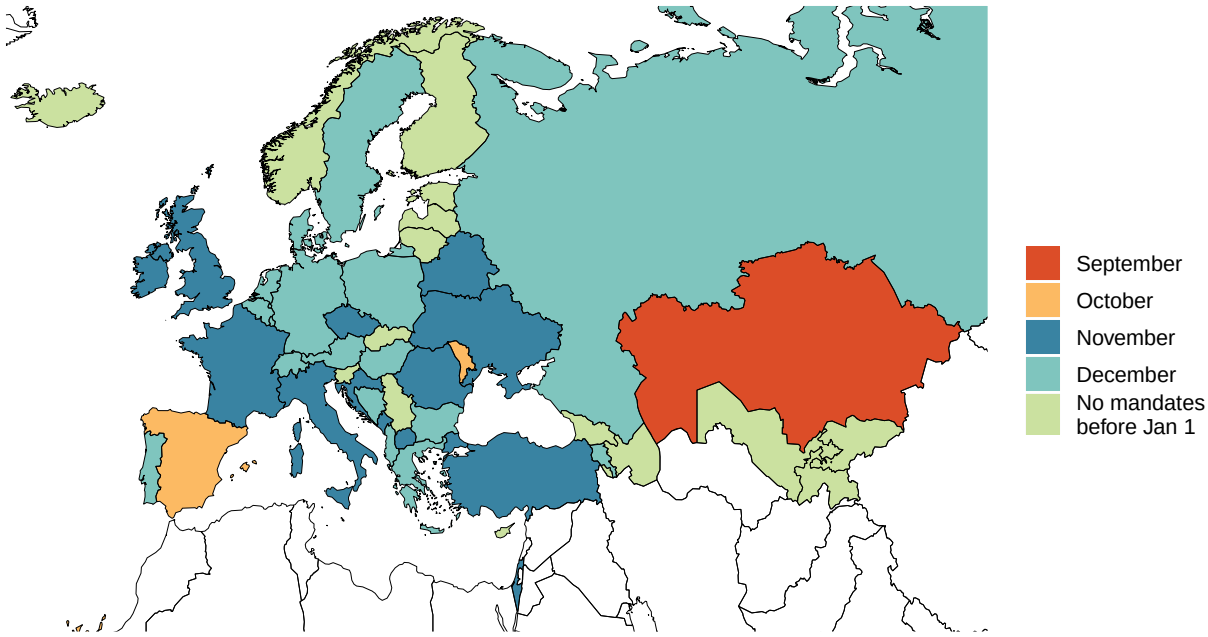


Figure 16. Forecasted percent infected with COVID-19 on January 01, 2021

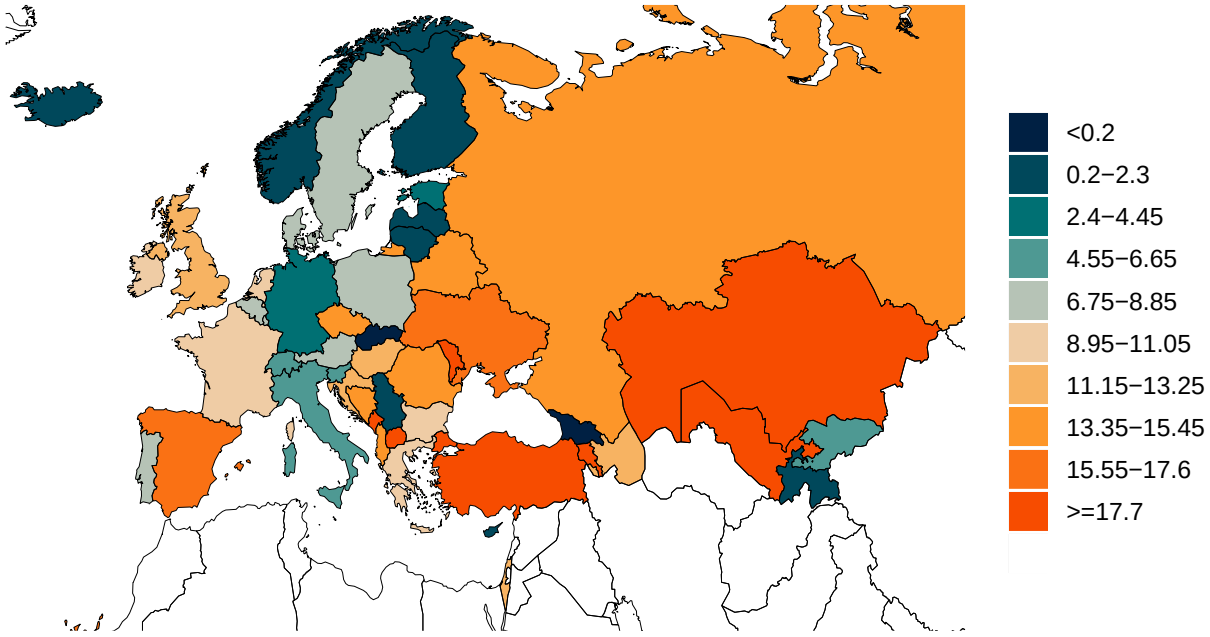


Figure 17. Daily COVID-19 deaths per million forecasted on January 01, 2021 in the reference scenario

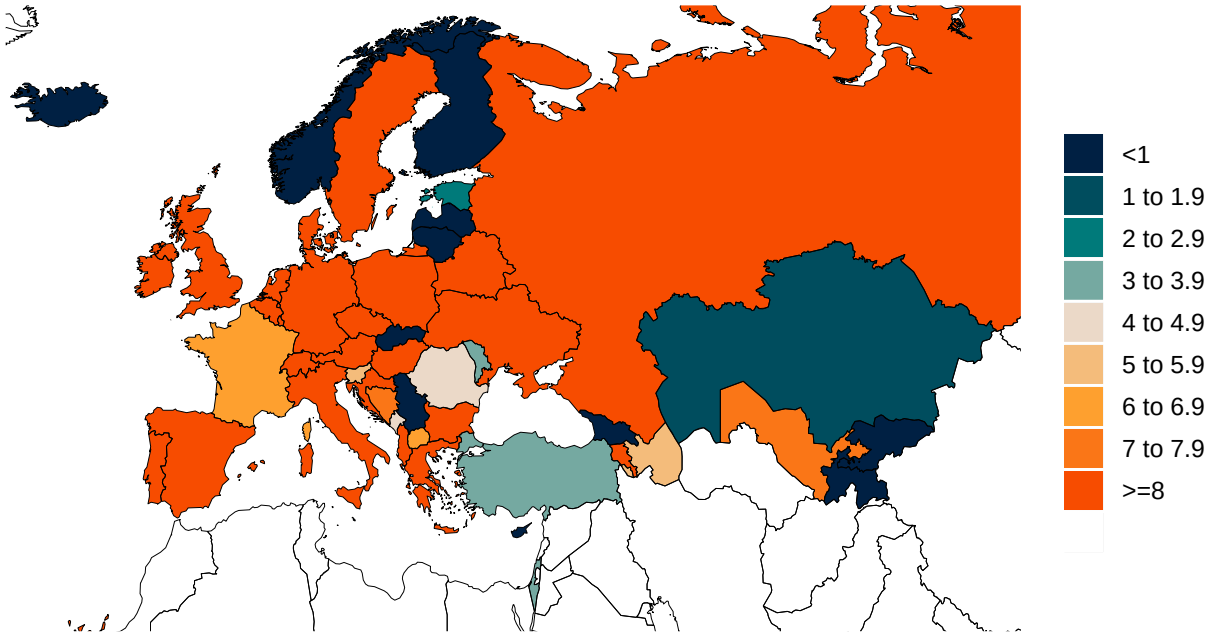


Figure 18. Comparison of reference model projections with other COVID modeling groups. For this comparison, we are including projections of daily COVID-19 deaths from other modeling groups when available: Delphi from the Massachussets Institute of Technology (Delphi; https://www.covidanalytics.io/home), Imperial College London (Imperial; https://www.covidsim.org), The Los Alamos National Laboratory (LANL; https://covid-19.bsvgateway.org/), the SI-KJalpha model from the University of Southern California (SIKJalpha; https://github.com/scc-usc/ReCOVER-COVID-19), and Youyang Gu (YYG; https://covid19-projections.com/). Daily deaths from other modeling groups are smoothed to remove inconsistencies with rounding. Regional values are aggregates from availble locations in that region.

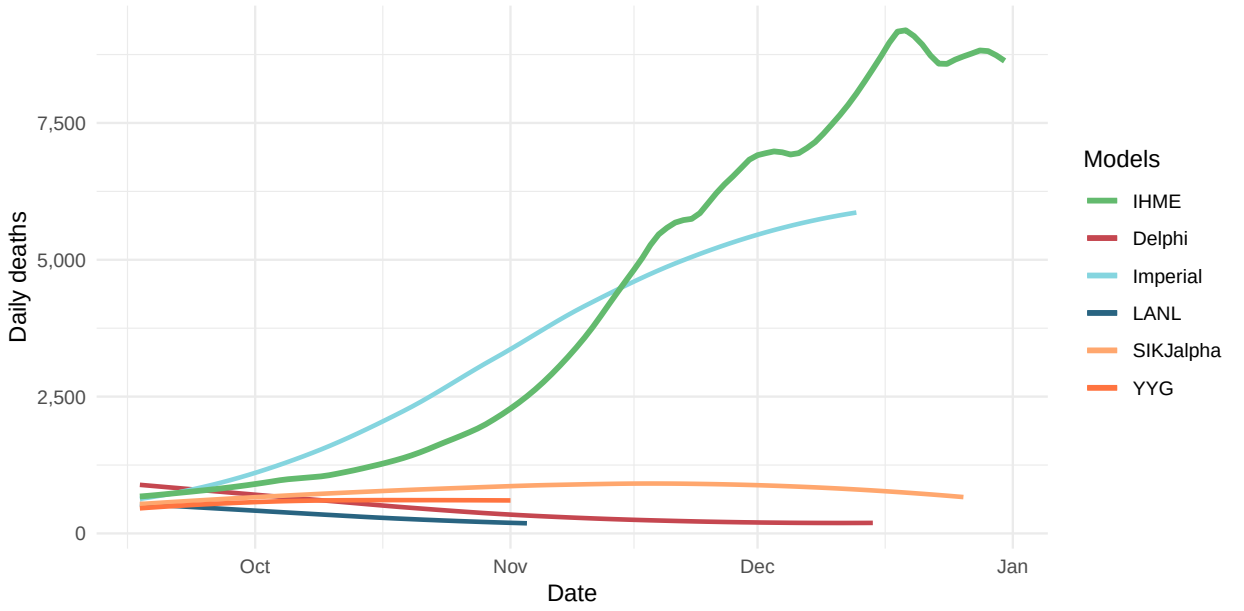


Table 3. Ranking of COVID-19 among the leading causes of mortality in the full year 2020. Deaths from COVID-19 are projections of cumulative deaths on Jan 1, 2021 from the reference scenario. Deaths from other causes are from the Global Burden of Disease study 2019 (rounded to the nearest 100).

Cause name	Annual deaths	Ranking
Ischemic heart disease	2,301,100	1
Stroke	1,176,300	2
COVID-19	699,945	3
Tracheal, bronchus, and lung cancer	463,800	4
Alzheimer's disease and other dementias	417,200	5
Chronic obstructive pulmonary disease	349,400	6
Colon and rectum cancer	305,800	7
Lower respiratory infections	273,200	8
Cirrhosis and other chronic liver diseases	223,100	9
Hypertensive heart disease	205,400	10

Mask data source: Premise; Facebook Global symptom survey (This research is based on survey results from University of Maryland Social Data Science Center); Kaiser Family Foundation; YouGov COVID-19 Behaviour Tracker survey

A note of thanks:

We would like to extend a special thanks to the Pan American Health Organization (PAHO) for key data sources; our partners and collaborators in Argentina, Brazil, Bolivia, Chile, Colombia, Cuba, the Dominican Republic, Ecuador, Egypt, Honduras, Israel, Japan, Malaysia, Mexico, Moldova, Panama, Peru, the Philippines, Russia, Serbia, South Korea, Turkey, and Ukraine for their support and expert advice; and to the tireless data collection and collation efforts of individuals and institutions throughout the world.

In addition, we wish to express our gratitude for efforts to collect social distancing policy information in Latin America to University of Miami Institute for Advanced Study of the Americas (Felicia Knaul, Michael Touchton), with data published here: http://observcovid.miami.edu/; Fundación Mexicana para la Salud (Héctor Arreola-Ornelas) with support from the GDS Services International: Tómatelo a Pecho A.C.; and Centro de Investigaciones en Ciencias de la Salud, Universidad Anáhuac (Héctor Arreola-Ornelas); Lab on Research, Ethics, Aging and Community-Health at Tufts University (REACH Lab) and the University of Miami Institute for Advanced Study of the Americas (Thalia Porteny).

Further, IHME is grateful to the Microsoft AI for Health program for their support in hosting our COVID-19 data visualizations on the Azure Cloud. We would like to also extend a warm thank you to the many others who have made our COVID-19 estimation efforts possible.