COVID-19 Results Briefing: Algeria

November 12, 2020

This document contains summary information on the latest projections from the IHME model on COVID-19 in Algeria. The model was run on November 11, 2020.

Current situation

- Daily reported cases in the last week increased to 300 per day on average compared to 200 the week before (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, is greater than 1, suggesting that new cases will increase in the next few weeks (Figure 3).
- We estimated that 2% of people in Algeria have been infected as of November 9 (Figure 4).
- Approximately 6% of infections were detected on November 9, 2020 (Figure 5).
- Daily death rate is less than 1 per million (Figure 6).

Trends in drivers of transmission

- Social distancing and mask mandates have not changed in the past week (Table 2).
- Mobility last week was near baseline (within 10%) compared to baseline mobility (average of the period January 1 to March 1, 2020; Figure 8).
- As of November 9, we estimated that 28% of people always wore a mask when leaving their home (Figure 9). This percentage has not changed since the last week.
- There were 39 diagnostic tests per 100,000 people on November 9 (Figure 10).

Projections

- In our reference scenario, which represents what we think is most likely to happen, our model projects about 12,300 deaths by March 1, 2021 (Figure 12).
- Between November 9 and the end of 2020, our model projects 1,600 additional deaths in Algeria.
- We expect there to be about 60 deaths per day on January 1, 2021, and 200 deaths per day on March 1, 2021.
- We expect there to be about 44,000 infections per day on January 1, 2021, and 63,000 infections per day on March 1, 2021.
- We project that Algeria will have extreme stress on its hospital bed and intensive care unit (ICU) beds in January and February based on the percentage of total capacity occupied by COVID-19 patients (Figure 19 and 20).

- In our universal mask scenario, which assumes that mask use reaches 95% in all locations, our model projects 3,400 cumulative deaths on March 1, 2021.

Model updates

We have substantially revised the infection-fatality rate (IFR) used in the model. To date, we had used an IFR that was derived from an analysis of population representative antibody surveys where we disaggregated prevalence by age and matched COVID-19 death rates. The age-specific IFR from this analysis was assumed to be the same across locations and time.

We have now accumulated considerable empirical evidence that suggests that 1) the IFR has been declining since March/April due to improvements in the clinical management of patients, and 2) the IFR varies as a function of the level of obesity in a community. The evidence supporting these observations includes:

- An analysis of detailed clinical records of more than 15,000 individuals from a COVID-19 registry organized by the American Heart Association. This registry covers patients in more than 150 hospitals. Our analysis suggests that after controlling for age, sex, comorbidities, and disease severity at admission, the hospital-fatality rate has declined by about 30% since March/April.

- An analysis of more than 250,000 individuals admitted to hospitals in Brazil with COVID-19 shows that after controlling for age, sex, obesity, and oxygenation at admission, the hospital-fatality rate has declined by about 30% since March/April.

- An analysis of age-standardized IFRs from more than 300 surveys also suggests that the population-level trends in the IFR are consistent with a 30% decline since March/April. These data also suggest that the prevalence of obesity at the population level is associated with a higher IFR and that the magnitude of the effect is similar to that found in the individual-level analysis.

Based on these empirical findings, we have switched to a new estimated IFR. The new IFR varies over time (declining since March/April by approximately 0.19% per day until the beginning of September), varies across locations as a function of obesity prevalence, and varies across locations (as before) as a function of the population distribution by age. The implication of lower IFRs over time is that for a given number of observed deaths there are more cumulative infections.

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

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

<table>
<thead>
<tr>
<th>Cause name</th>
<th>Weekly deaths</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic heart disease</td>
<td>1,129</td>
<td>1</td>
</tr>
<tr>
<td>Stroke</td>
<td>477</td>
<td>2</td>
</tr>
<tr>
<td>Road injuries</td>
<td>213</td>
<td>3</td>
</tr>
<tr>
<td>Hypertensive heart disease</td>
<td>170</td>
<td>4</td>
</tr>
<tr>
<td>Neonatal disorders</td>
<td>168</td>
<td>5</td>
</tr>
<tr>
<td>Chronic kidney disease</td>
<td>158</td>
<td>6</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>111</td>
<td>7</td>
</tr>
<tr>
<td>Congenital birth defects</td>
<td>107</td>
<td>8</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>102</td>
<td>9</td>
</tr>
<tr>
<td>Alzheimer’s disease and other dementias</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>COVID-19</td>
<td>71</td>
<td>13</td>
</tr>
</tbody>
</table>

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

Figure 3. Mean effective R on October 29, 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 November 09, 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 November 09, 2020
Critical drivers

Table 2. Current mandate implementation
Figure 7. Total number of social distancing mandates (including mask use)

Mandate imposition timing

Algeria
Angola
Benin
Botswana
Burkina Faso
Burundi
Cabo Verde
Cameroon
Central African Republic
Chad
Comoros
Congo
Côte d’Ivoire
Democratic Republic of the Congo
Equatorial Guinea
Eritrea
Eswatini
Ethopia
Gabon
Gambia
Ghana
Guinea
Guinea-Bissau
Kenya
Lesoto
Liberia
Madagascar
Malawi
Mali
Mauritania
Mauritius
Mozambique
Namibia
Niger
Nigeria
Rwanda
Sao Tome and Principe
Senegal
Seychelles
Sierra Leone
South Africa
South Sudan
Togo
Uganda
United Republic of Tanzania
Zambia
Zimbabwe

Feb Mar Apr May Jun Jul Aug Sep Oct Nov

# of mandates
0
1
2
3
4
5
6
7

covid19.healthdata.org
Institute for Health Metrics and Evaluation
**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 November 09, 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 November 09, 2020.
Figure 10a. Trend in COVID-19 diagnostic tests per 100,000 people

Figure 10b. COVID-19 diagnostic tests per 100,000 people on November 09, 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 March 01, 2021 for three scenarios.

![Cumulative COVID-19 deaths graph](https://covid19.healthdata.org/image1.png)

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

![Daily COVID-19 deaths graph](https://covid19.healthdata.org/image2.png)
Fig 14. Daily COVID-19 infections until March 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 March 01, 2021

Figure 17. Daily COVID-19 deaths per million forecasted on March 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 Massachusetts 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 available locations in that region.
Figure 19. 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 20. 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).

<table>
<thead>
<tr>
<th>Cause name</th>
<th>Annual deaths</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic heart disease</td>
<td>58,700</td>
<td>1</td>
</tr>
<tr>
<td>Stroke</td>
<td>24,800</td>
<td>2</td>
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<tr>
<td>Road injuries</td>
<td>11,100</td>
<td>3</td>
</tr>
<tr>
<td>Hypertensive heart disease</td>
<td>8,800</td>
<td>4</td>
</tr>
<tr>
<td>Neonatal disorders</td>
<td>8,800</td>
<td>5</td>
</tr>
<tr>
<td>Chronic kidney disease</td>
<td>8,200</td>
<td>6</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>5,800</td>
<td>7</td>
</tr>
<tr>
<td>Congenital birth defects</td>
<td>5,600</td>
<td>8</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>5,300</td>
<td>9</td>
</tr>
<tr>
<td>Alzheimer’s disease and other dementias</td>
<td>5,200</td>
<td>10</td>
</tr>
<tr>
<td>COVID-19</td>
<td>3,612</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 4. Table of the number of deaths at varying levels of the cumulative percent of the population that is infected with COVID-19. The infection fatality rate can be used to figure out how many people may eventually die from COVID-19 before a community arrives at herd immunity. Since we do not know the level at which herd immunity may be reached for COVID-19, the table below shows the total number of deaths that would be expected in Algeria for various levels of herd immunity. These estimates assume that there does not exist an effective vaccine and that no significant improvements in treatment will be made. We estimated that the all age infection fatality ratio of of November 11, 2020 in Algeria was 0.2%.

<table>
<thead>
<tr>
<th>Cumulative incidence</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>30%</td>
<td>28,000</td>
</tr>
<tr>
<td>35%</td>
<td>32,000</td>
</tr>
<tr>
<td>40%</td>
<td>37,000</td>
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<tr>
<td>45%</td>
<td>42,000</td>
</tr>
<tr>
<td>50%</td>
<td>46,000</td>
</tr>
<tr>
<td>55%</td>
<td>51,000</td>
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<tr>
<td>60%</td>
<td>55,000</td>
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<td>65%</td>
<td>60,000</td>
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<tr>
<td>70%</td>
<td>65,000</td>
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<tr>
<td>75%</td>
<td>69,000</td>
</tr>
<tr>
<td>80%</td>
<td>74,000</td>
</tr>
<tr>
<td>85%</td>
<td>78,000</td>
</tr>
<tr>
<td>90%</td>
<td>83,000</td>
</tr>
<tr>
<td>95%</td>
<td>88,000</td>
</tr>
</tbody>
</table>
Recognition and thanks

Mask data sources:

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.

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: Tómatelos 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.