

SCIENTIFIC RESEARCH MONITORING ON COVID-19

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SCIENTIFIC RESEARCH MONITORING ON COVID-19

(ISSUE 535)

Abu Dhabi Public Health Center (ADPHC) is gathering the latest scientific research updates and trends on coronavirus disease (COVID-19) in a daily report. The report provides summaries on breakthrough or updated research on COVID-19 to allow health care professionals and public health professionals get easy and fast access to information.

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Research
Update



Statistics



Articles
Summary

Note : All articles presented in this report represent the authors' views and not necessarily represents Abu Dhabi Public Health Center views or directions. Due the nature of daily posting , some minor language errors are expected.

For further inquiries you may communicate with us as PHP@adphc.gov.ae

RESEARCH UPDATES

The views and opinions expressed in this report are those of the authors and do not reflect the official policy or position of the Abu Dhabi Public Health Center (ADPHC).

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Clinical Feature

Cytokine Elevation in Severe and Critical COVID-19: A Rapid Systematic Review, Meta-Analysis, and Comparison with Other Inflammatory Syndromes

Public Health Response

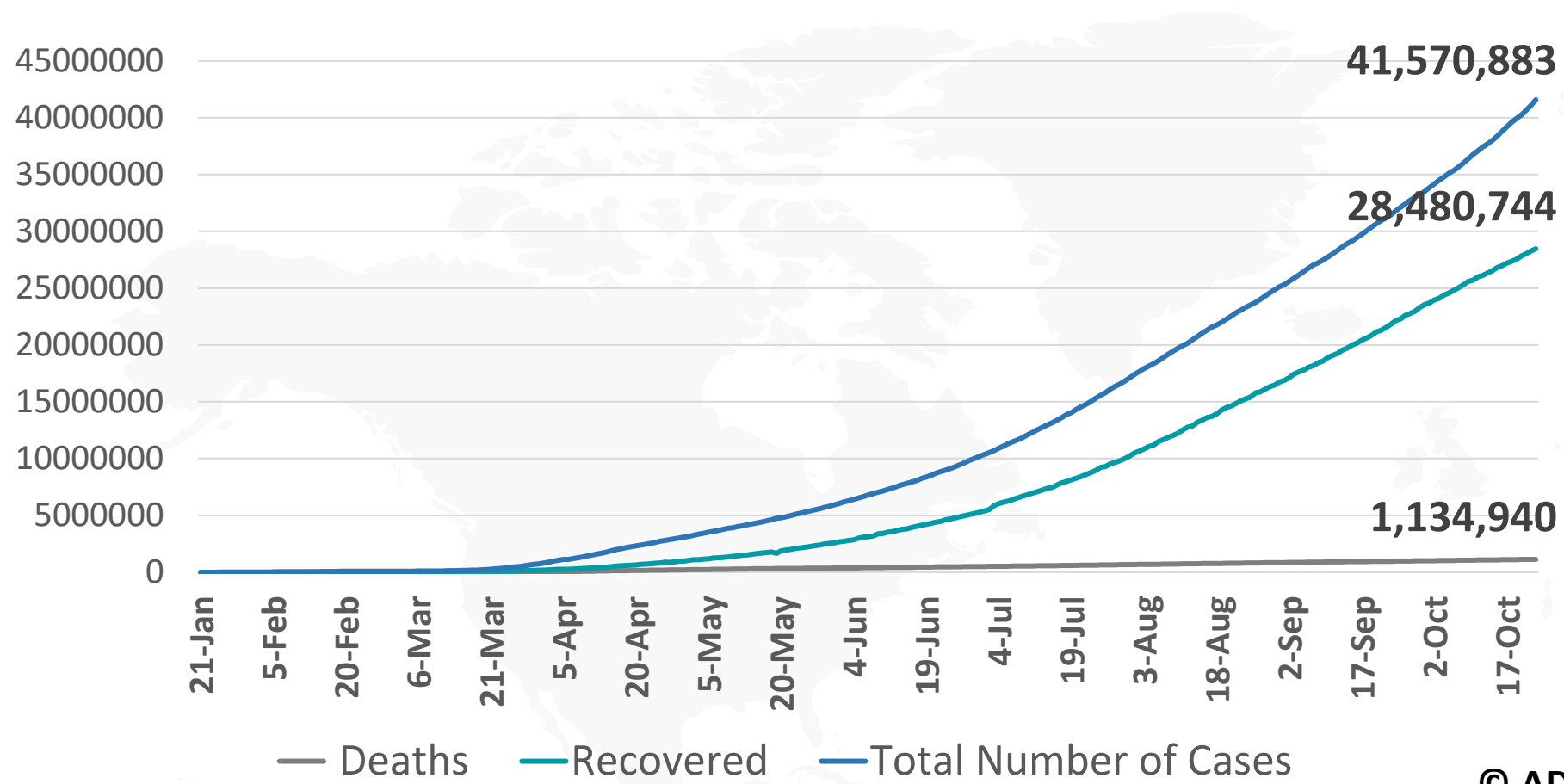
The Scientific and Ethical Feasibility of Immunity Passports

Diagnosis

Combining Rapid PCR and Antibody Tests Improved COVID-19 Diagnosis



Figure 1: Total Number of Infected, Recovered, and Death Cases



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Figure 3: Total Number of Death Due to COVID-19 (china and result of the world)

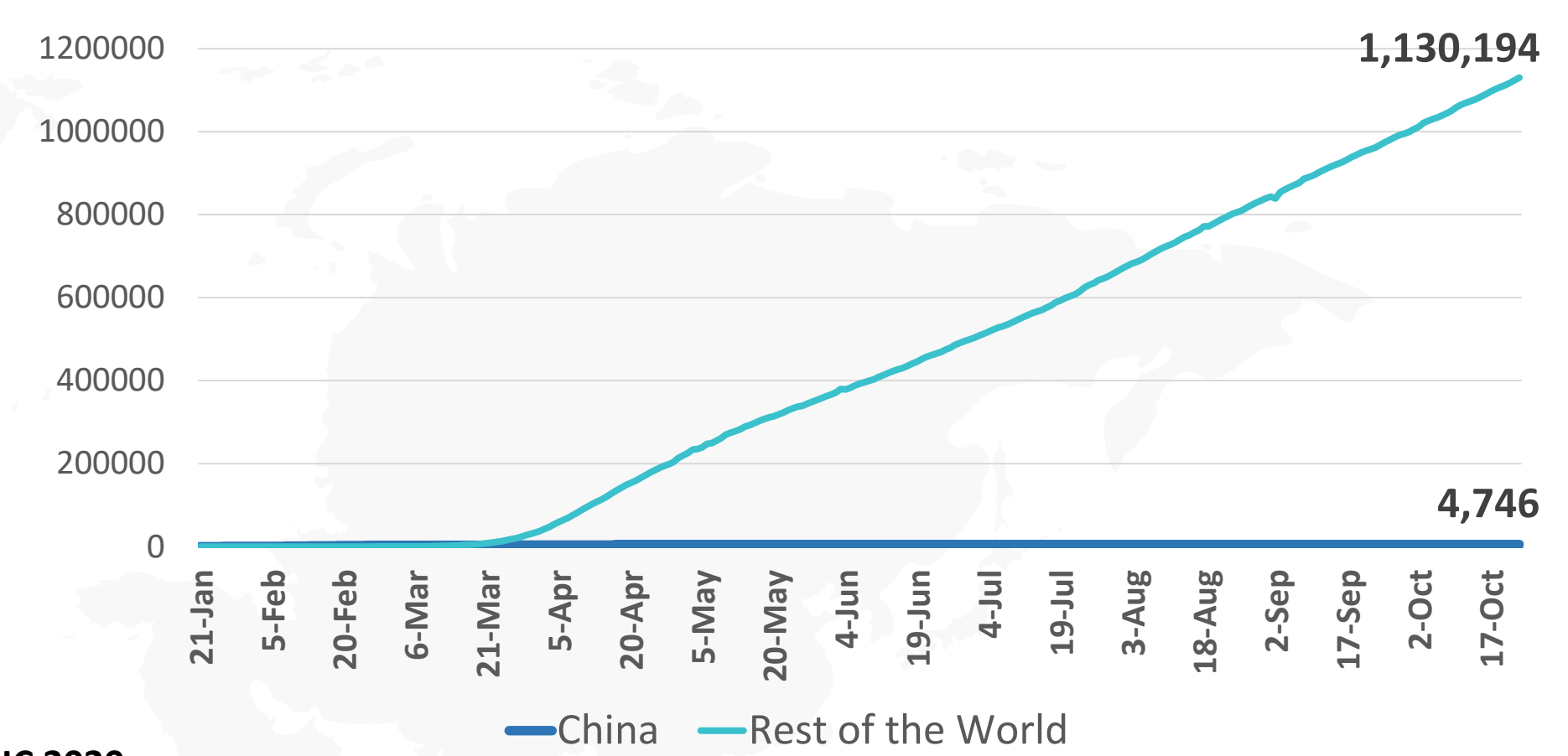


Figure 2: Daily New Infected COVID-19 Cases (China and rest of the world)

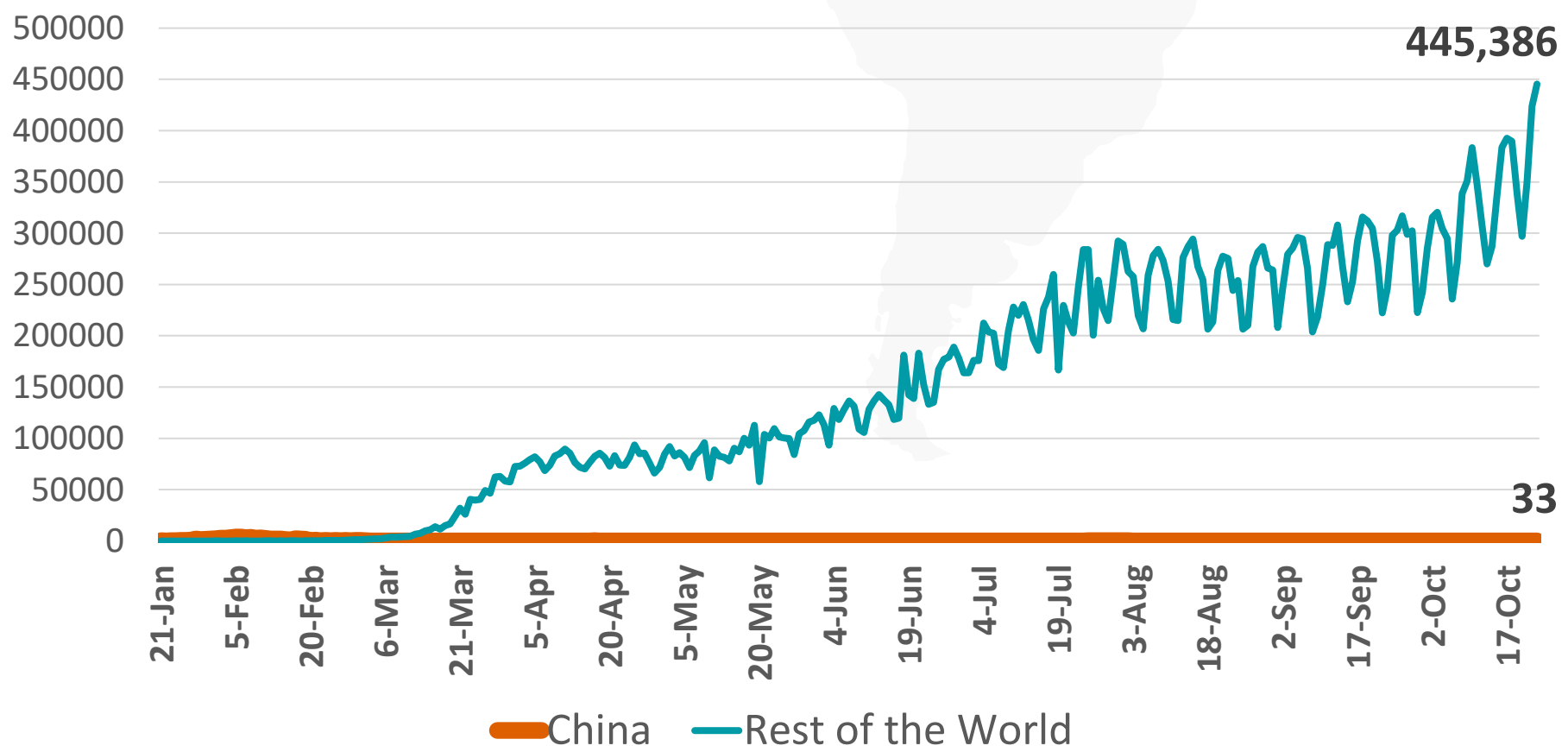


Figure 4: Global Daily New Deaths Due to COVID-19 (china and rest of the world)

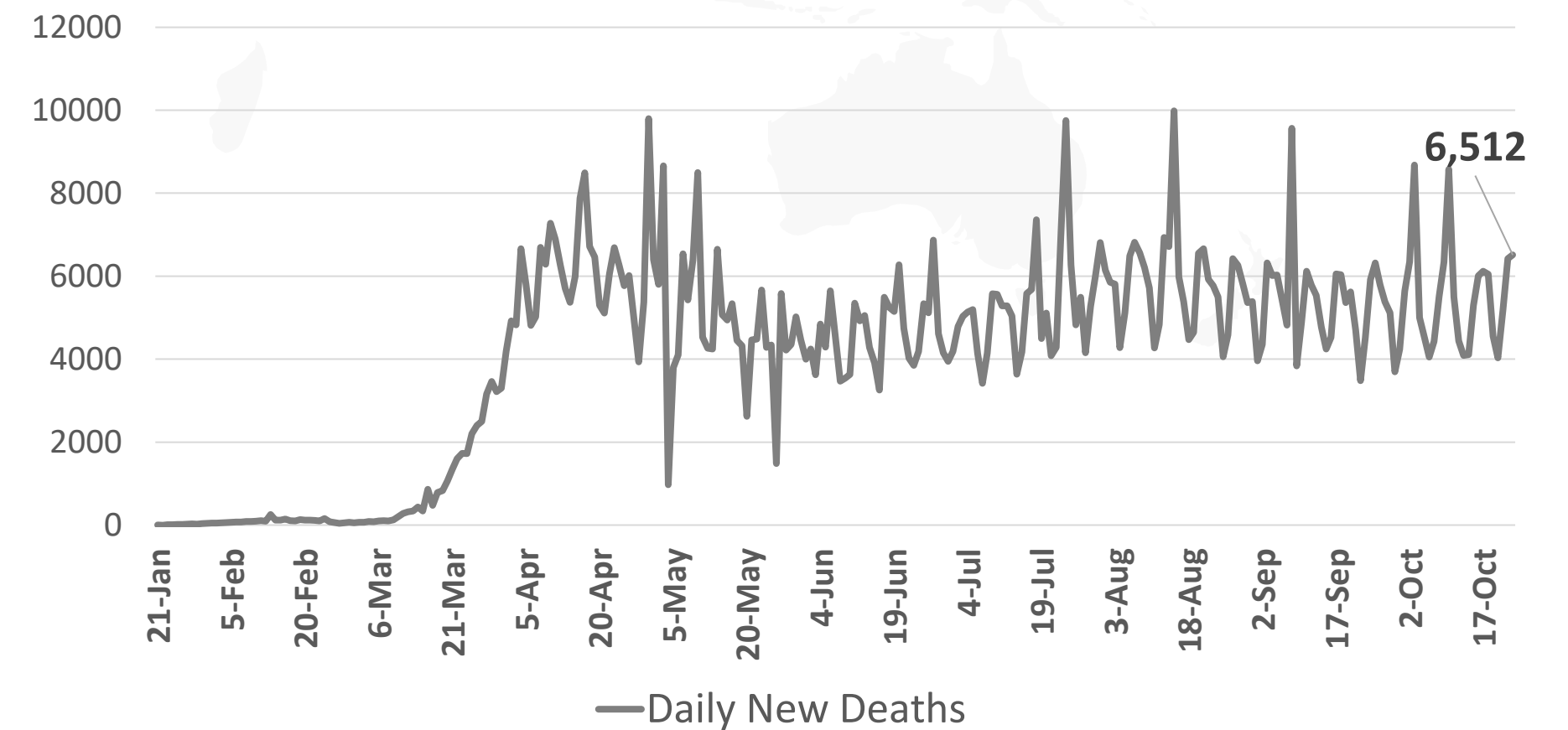


Figure 5: Top 10 Countries in the Total Number of Cases Due to COVID-19

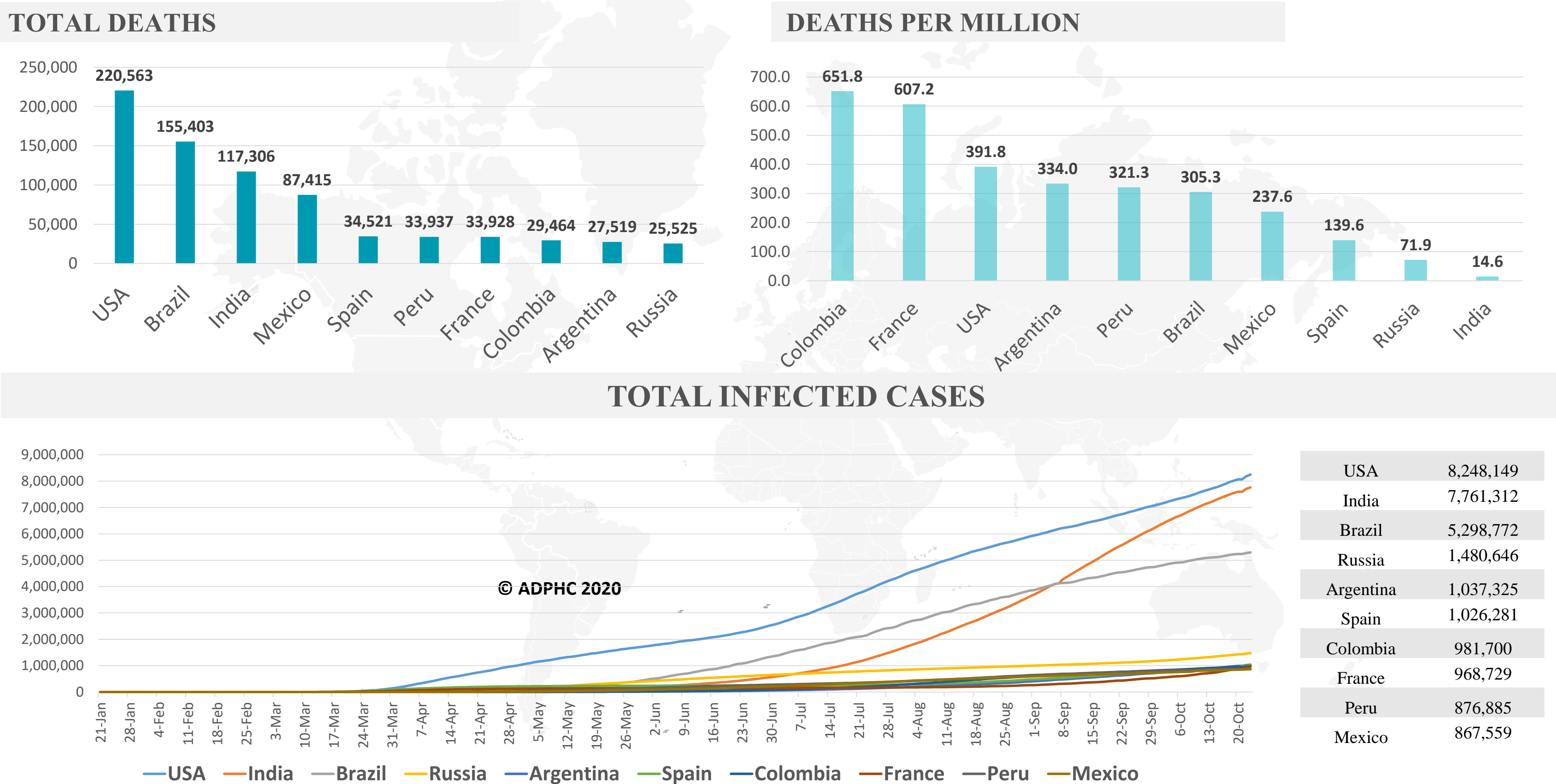
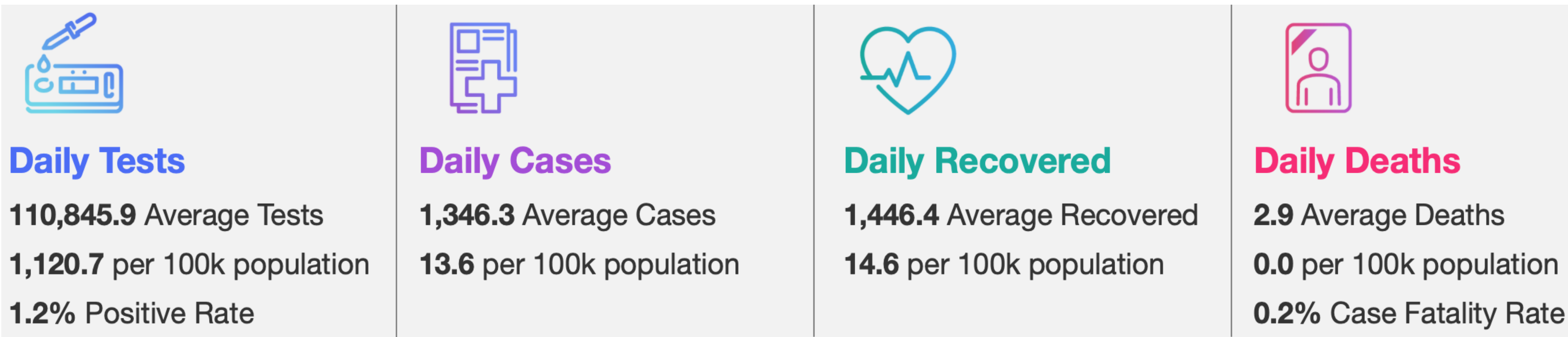


Figure 6: COVID-19 Status in the UAE (Federal Competitiveness and Statistics Authority Dashboard)



TOTAL NUMBER OF INFECTED AND RECOVERED CASES DUE TO COVID-19 REPORTED BY THE UAE

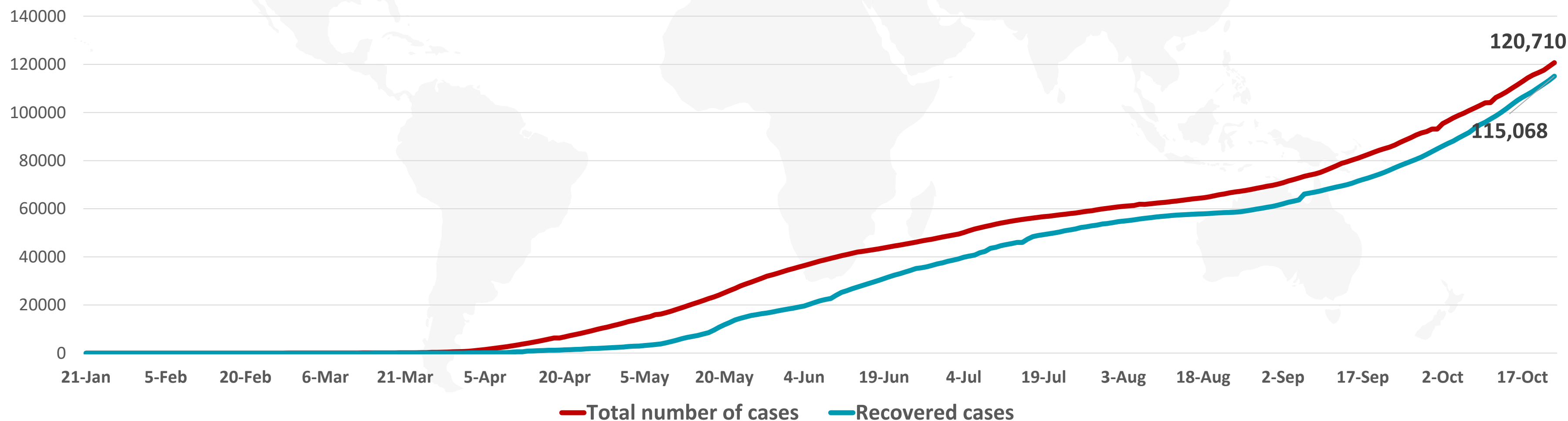
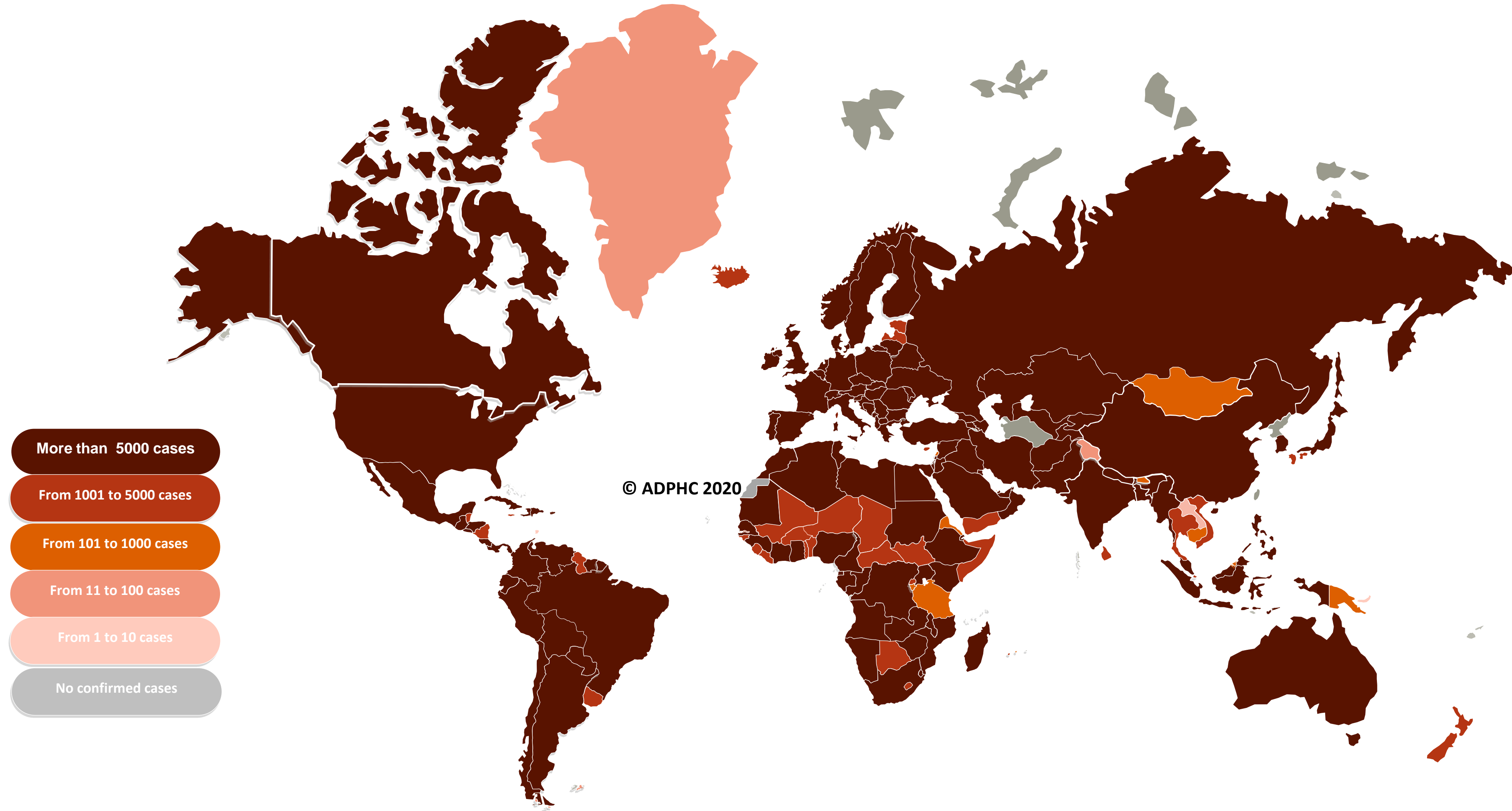


Figure 7A : Global Distribution of COVID-19 Cases



More than 5000 cases

From 1001 to 5000 cases

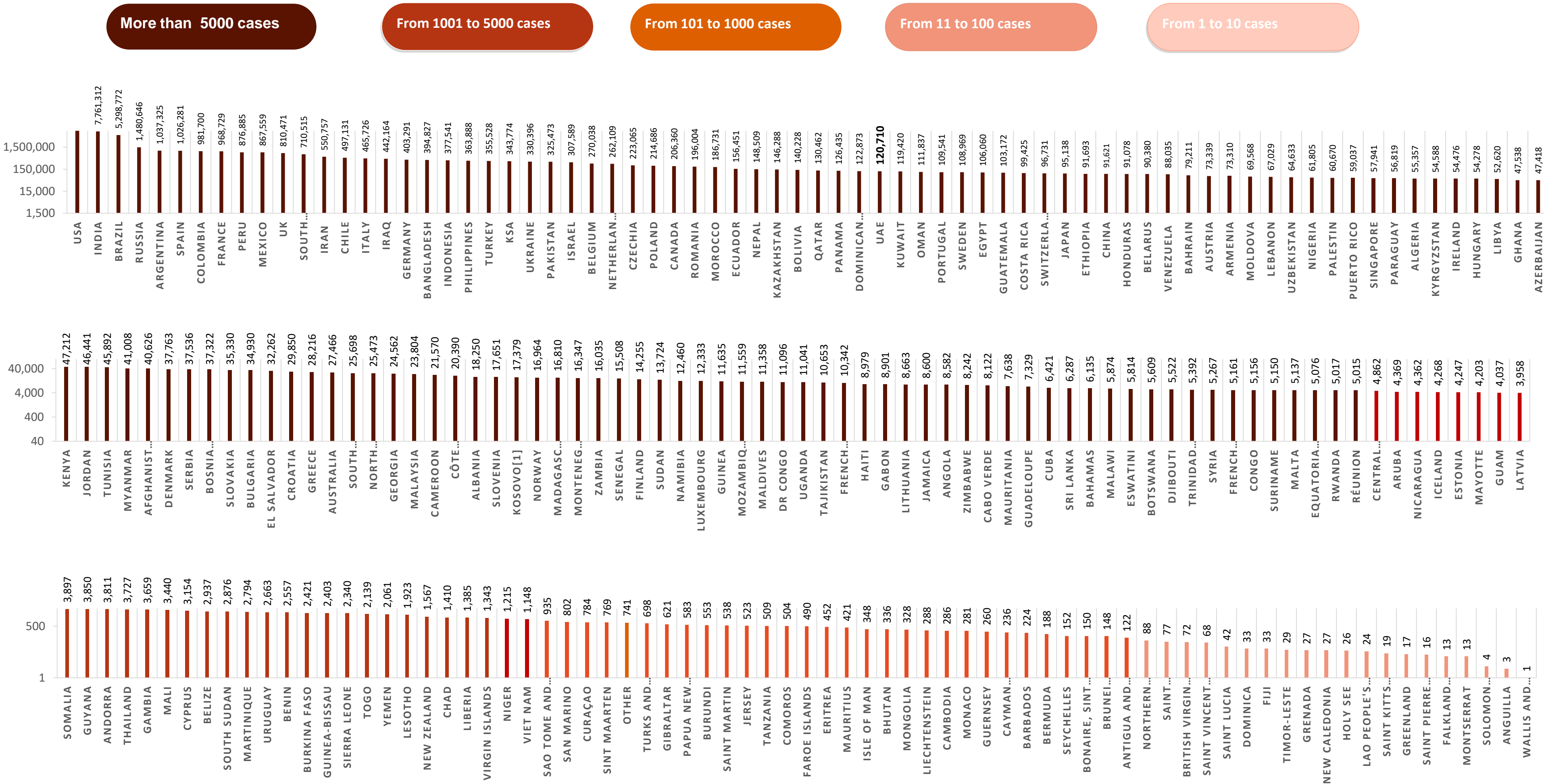
From 101 to 1000 cases

From 11 to 100 cases

From 1 to 10 cases

No confirmed cases

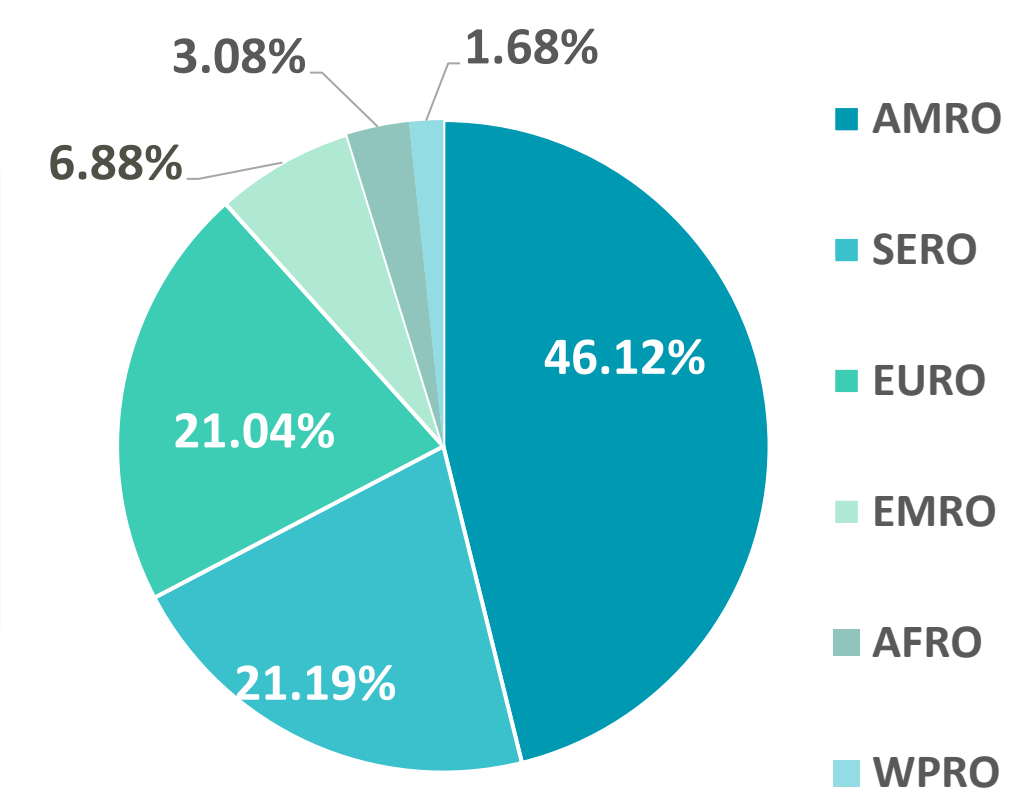
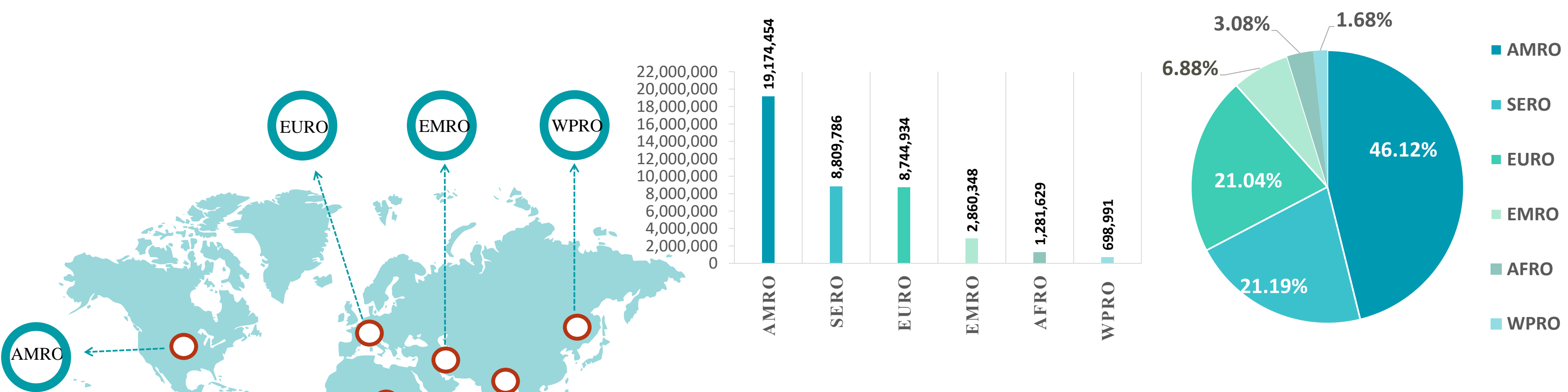
Figure 7B: Bar Chart Illustrates the Global Distribution of COVID19 Cases



Other*: includes cases and deaths reported under the international conveyance (Diamond Princess)

Figure 8: Global Distribution of COVID-19 Cases per Region

INFECTED



DEATHS

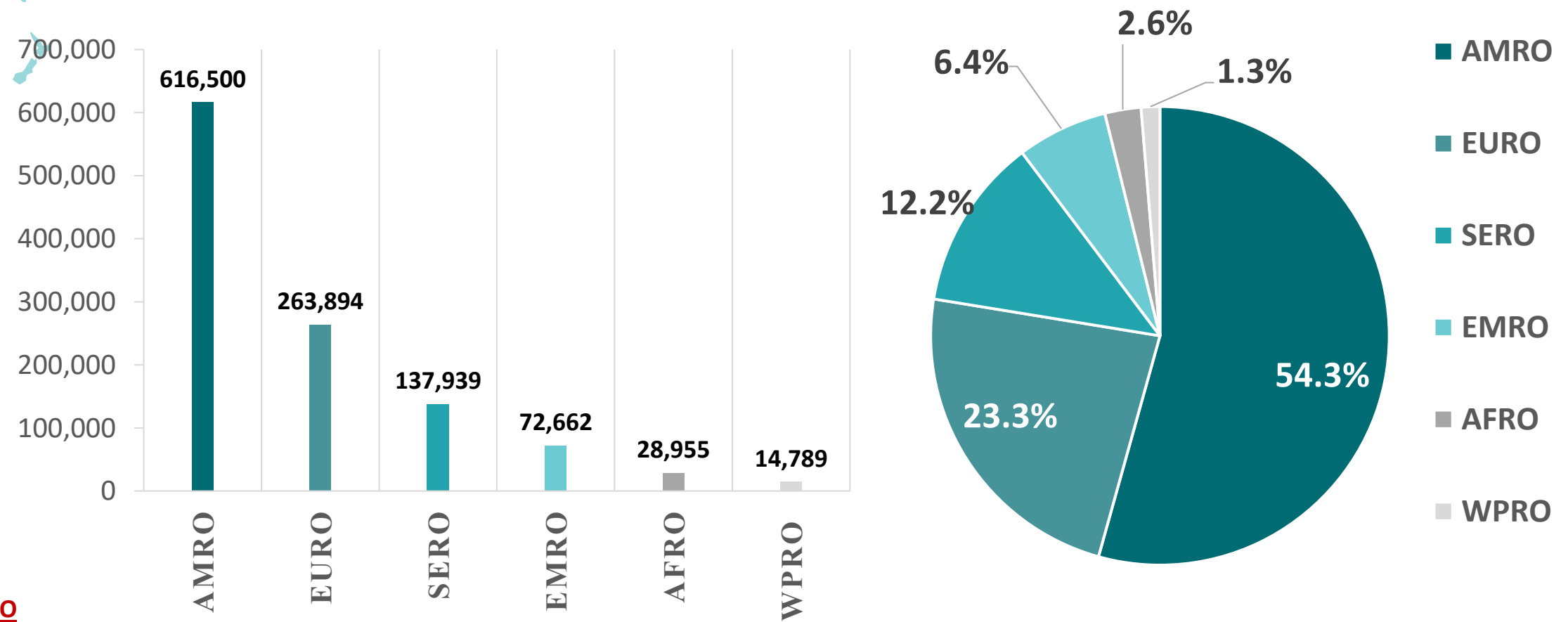
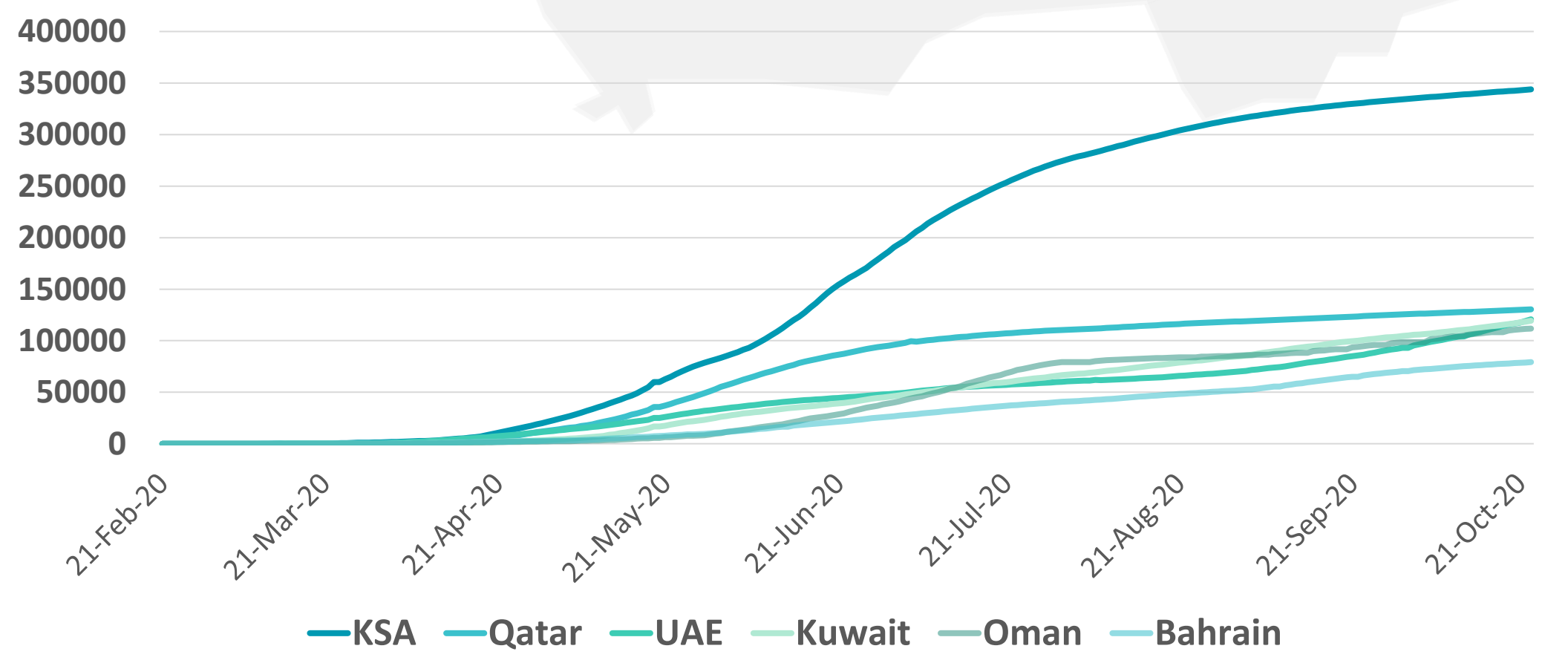
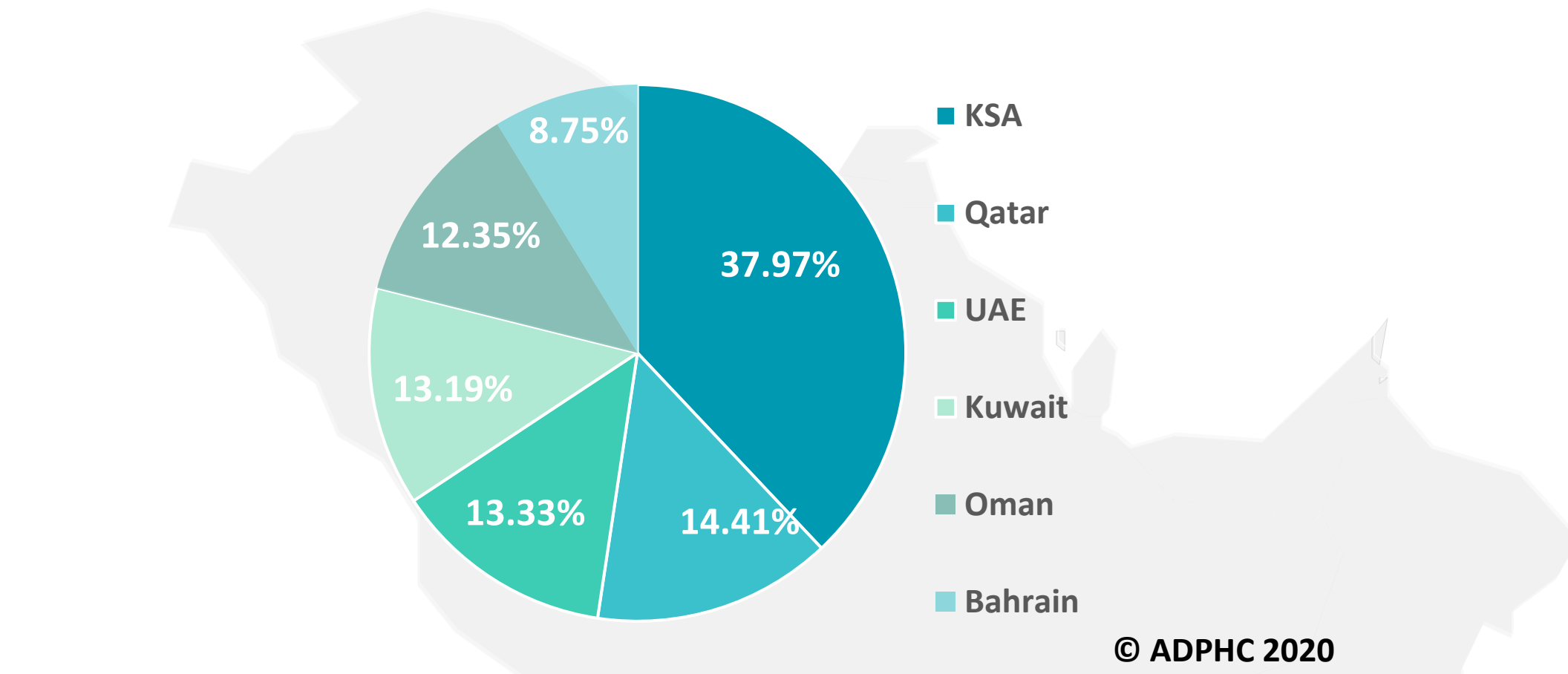
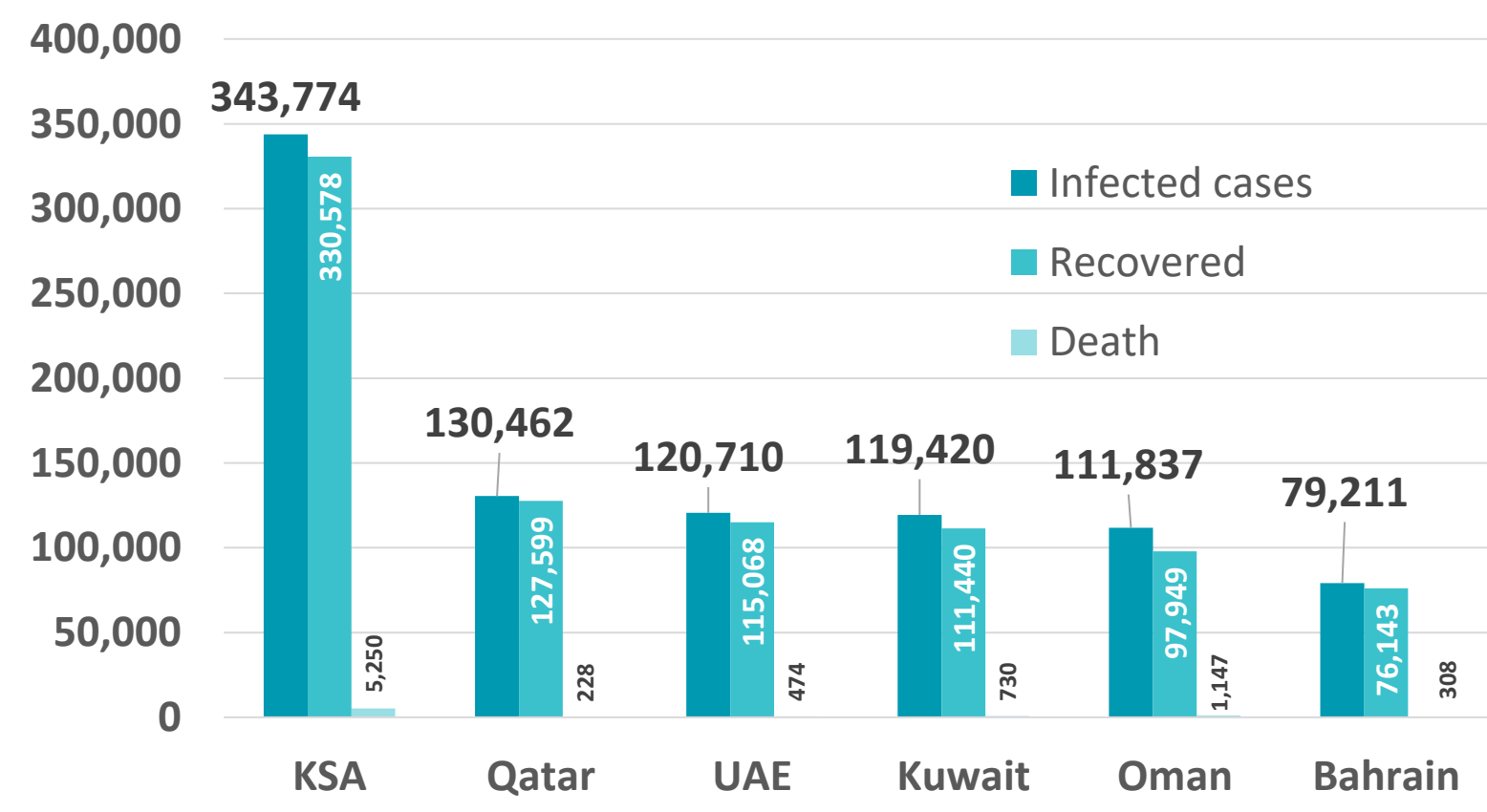


Figure 9: Comparative Analysis of the Distribution of COVID-19 Cases in GCC Countries

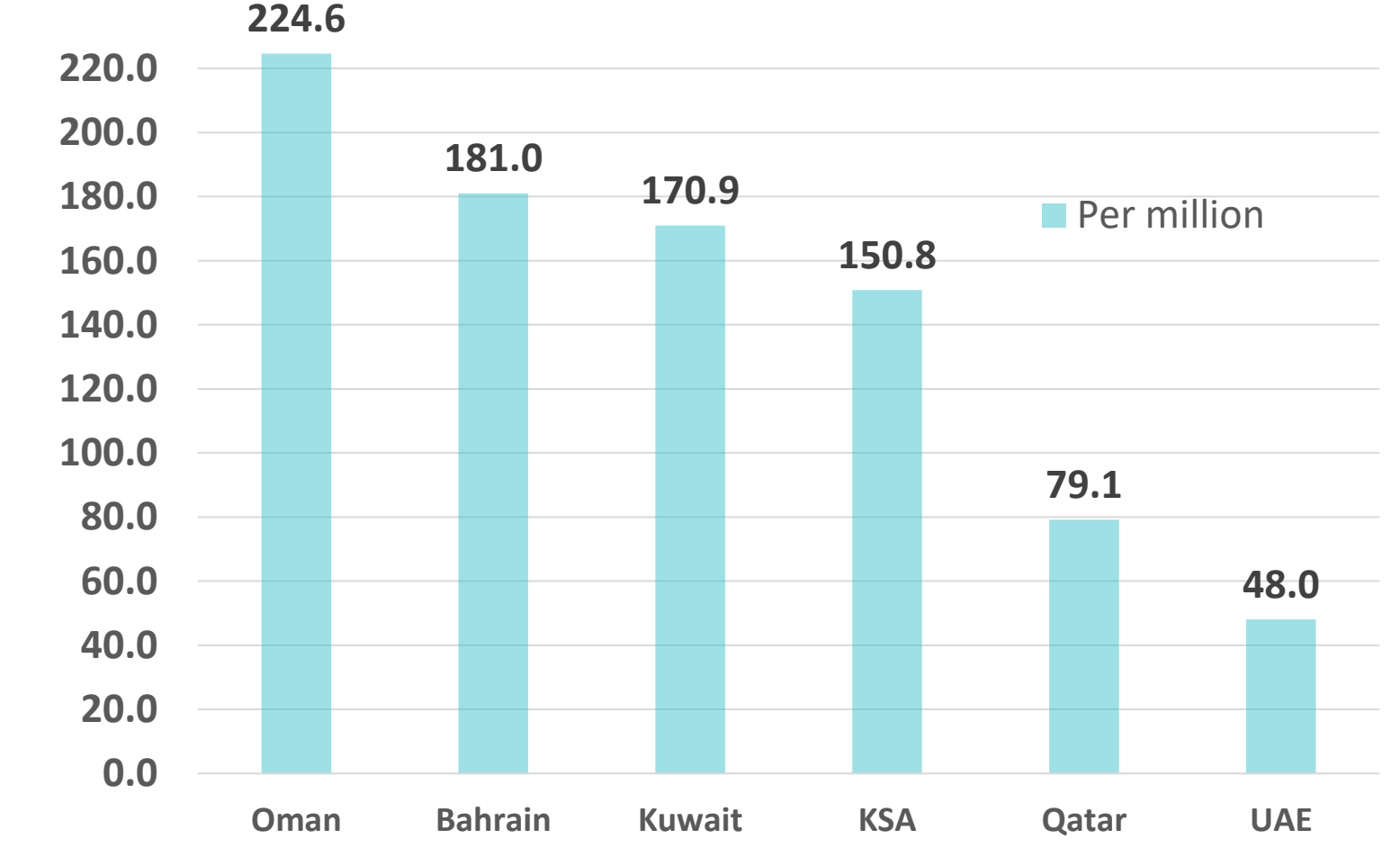
TOTAL NUMBER OF INFECTED CASES



TOTAL NUMBER OF INFECTED, RECOVERED AND DEATHS



DEATHS PER MILLION



Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: [John Hopkins](#), [WHO](#)

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Figure 10: Comparative Analysis of the Distribution of COVID-19 New Cases in GCC Countries

UAE



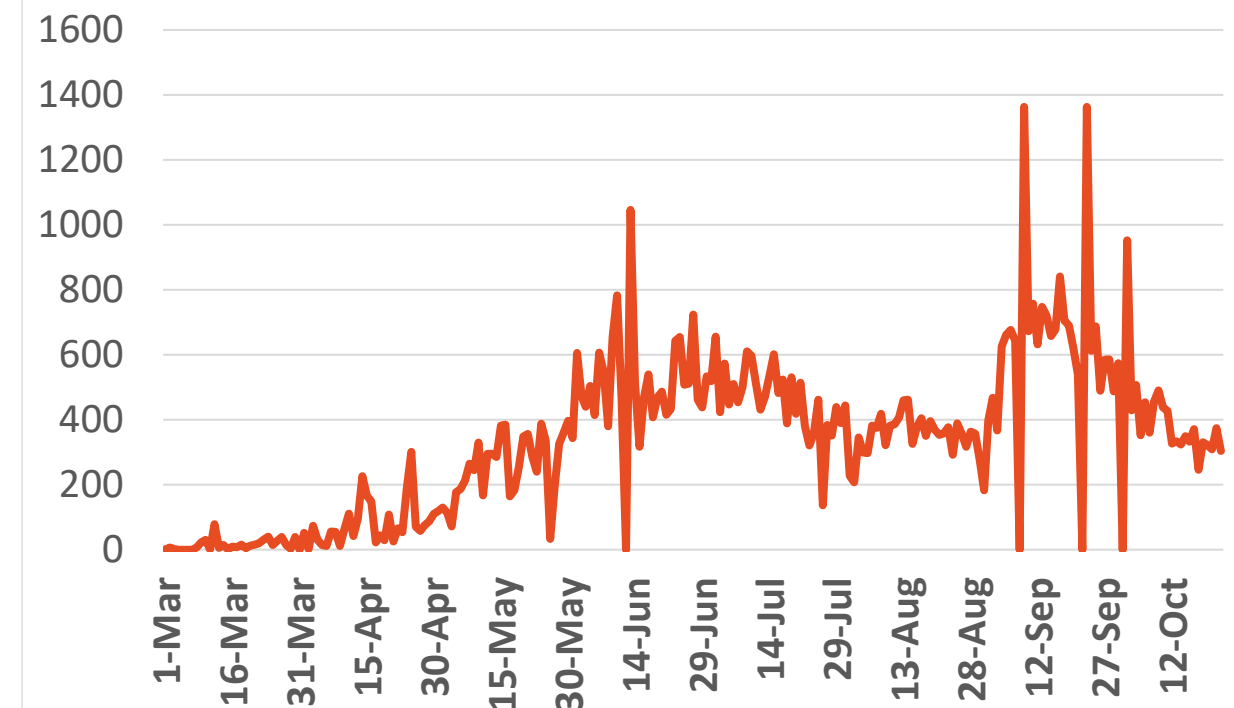
Source : National Emergency Crisis and Disaster Management Authority

KSA



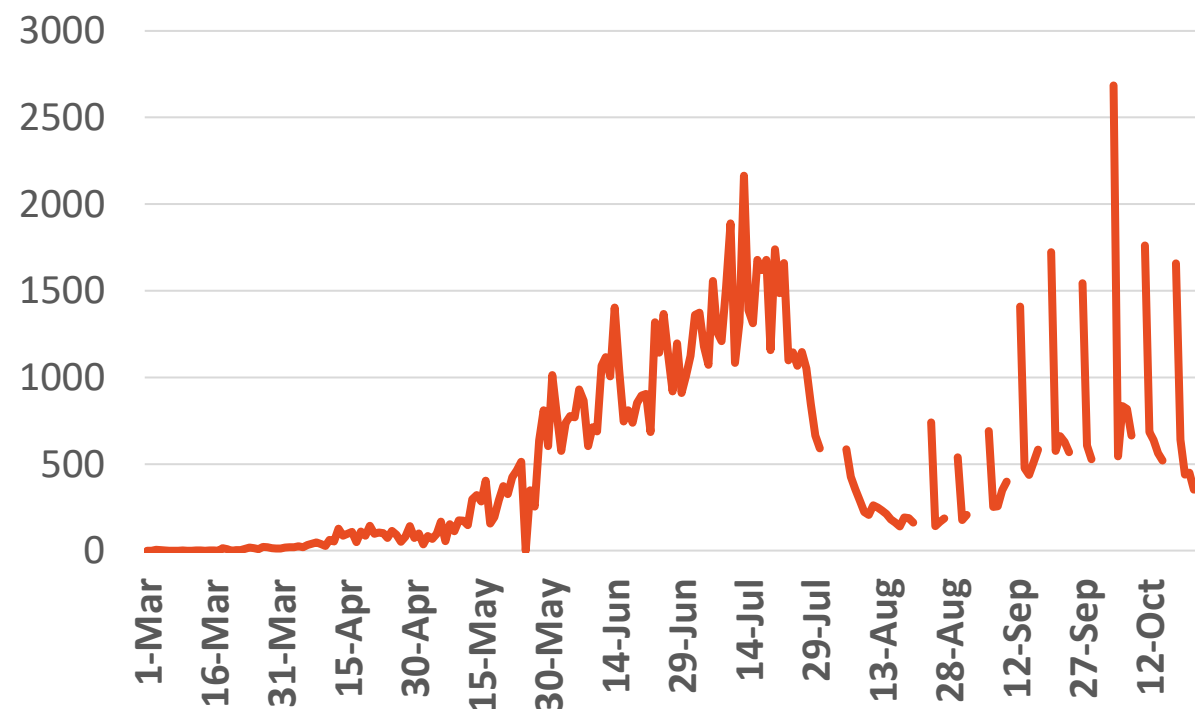
Source : KSA ministry of health

Bahrain



Source :WHO

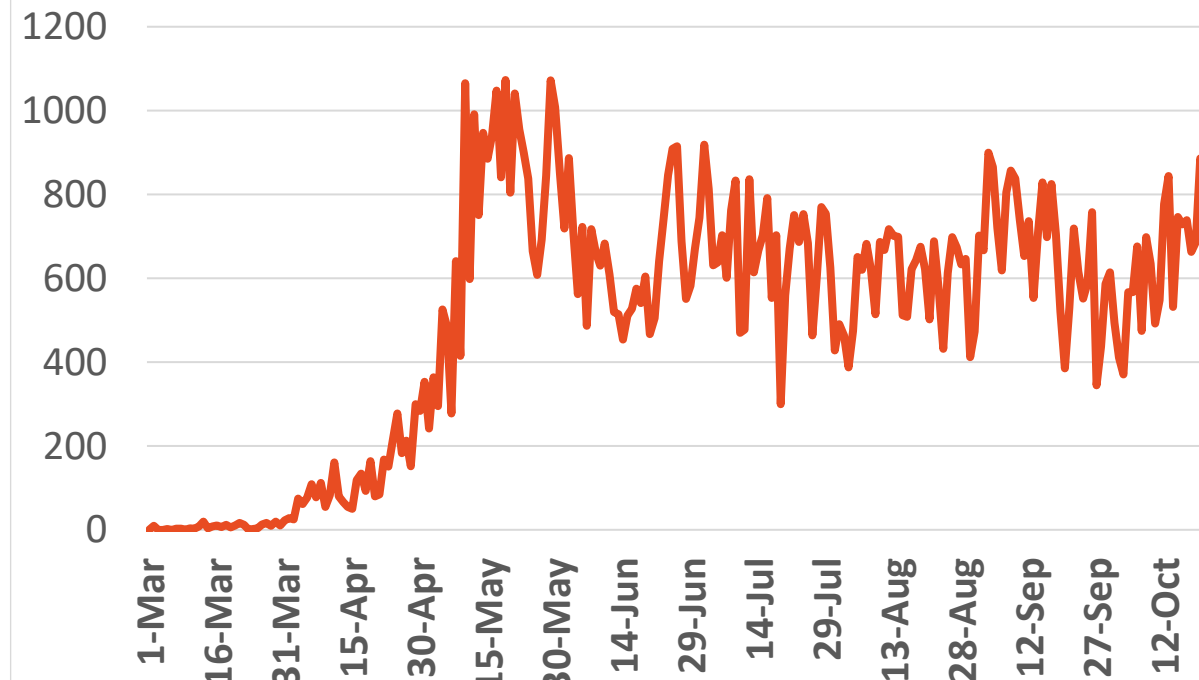
Oman



Source :Oman ministry of health

Kuwait

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Source : Kuwait ministry of health

Qatar



Source : Qatar ministry of health

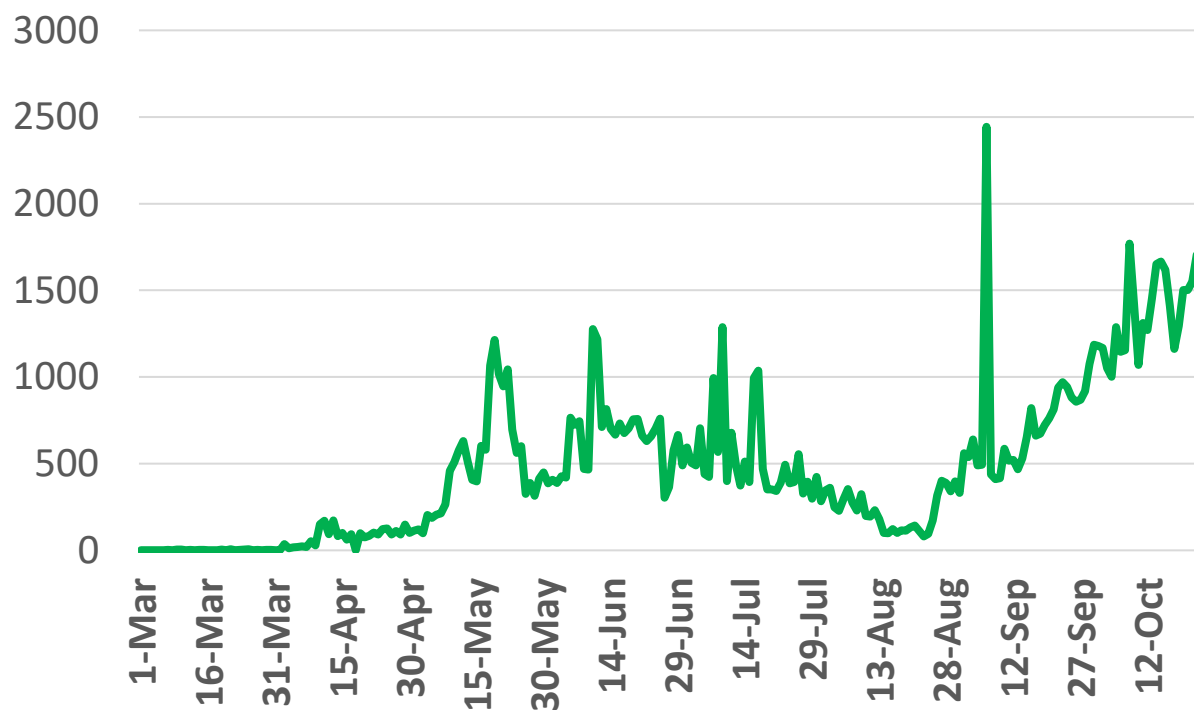
*No announced statistic data from 31 July to 4 August, 21,23,28,30 August 2, 4, 5,11,12,18,19,25, 26,30 September,1,2,9,10,16,17,23 & 24 October

*No announced statistic data on weekends and official holidays.



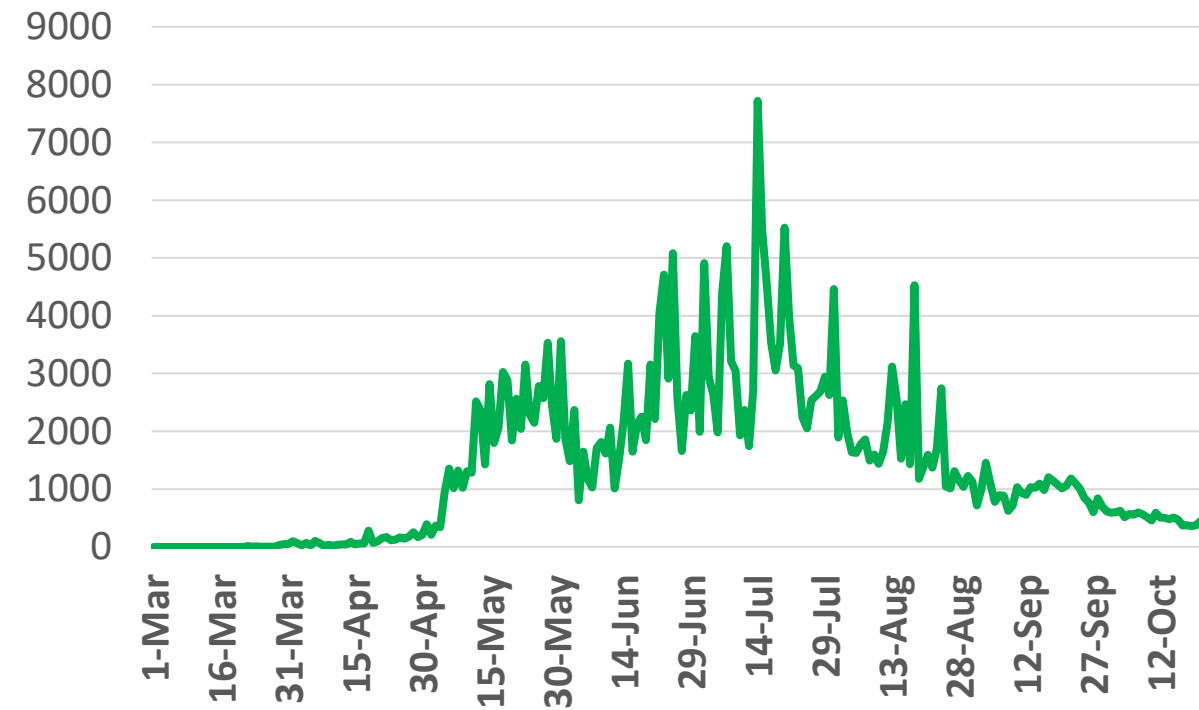
Figure 11: Comparative Analysis of the Distribution of COVID-19 Newly Recovered Cases in GCC Countries

UAE



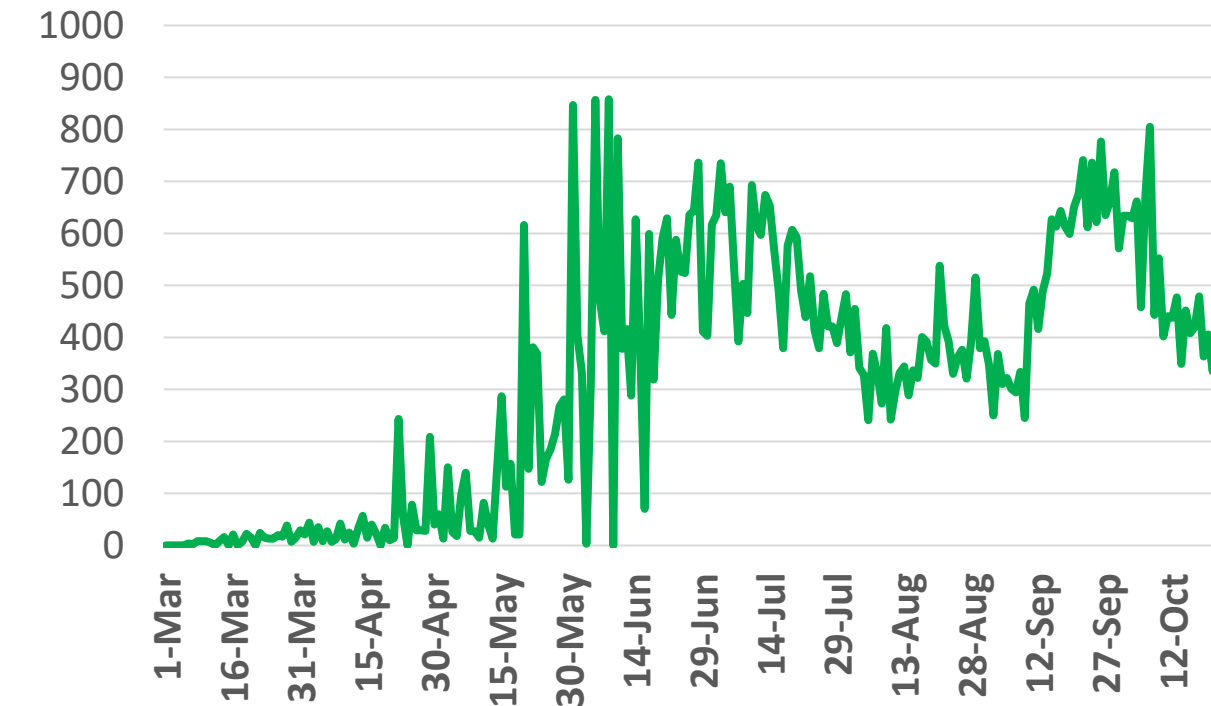
Source : National Emergency Crisis and Disaster Management Authority

KSA



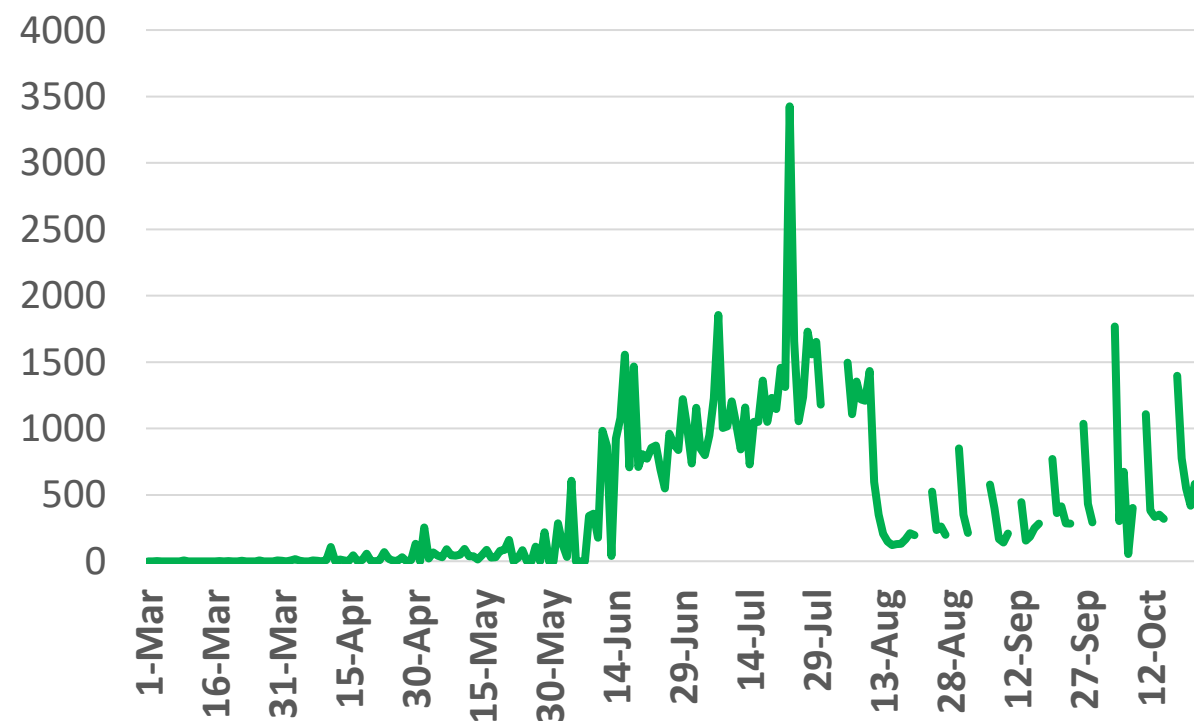
Source : KSA ministry of health

Bahrain



Source : Bahrain ministry of health

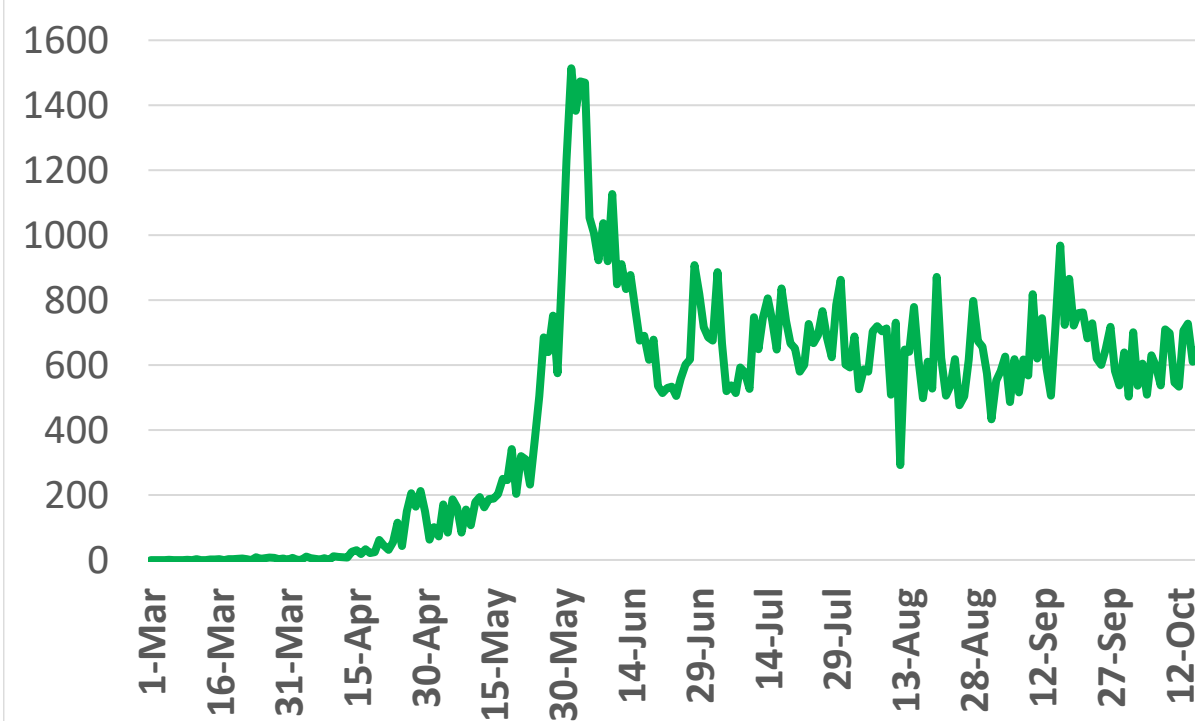
Oman



Source : Oman ministry of health

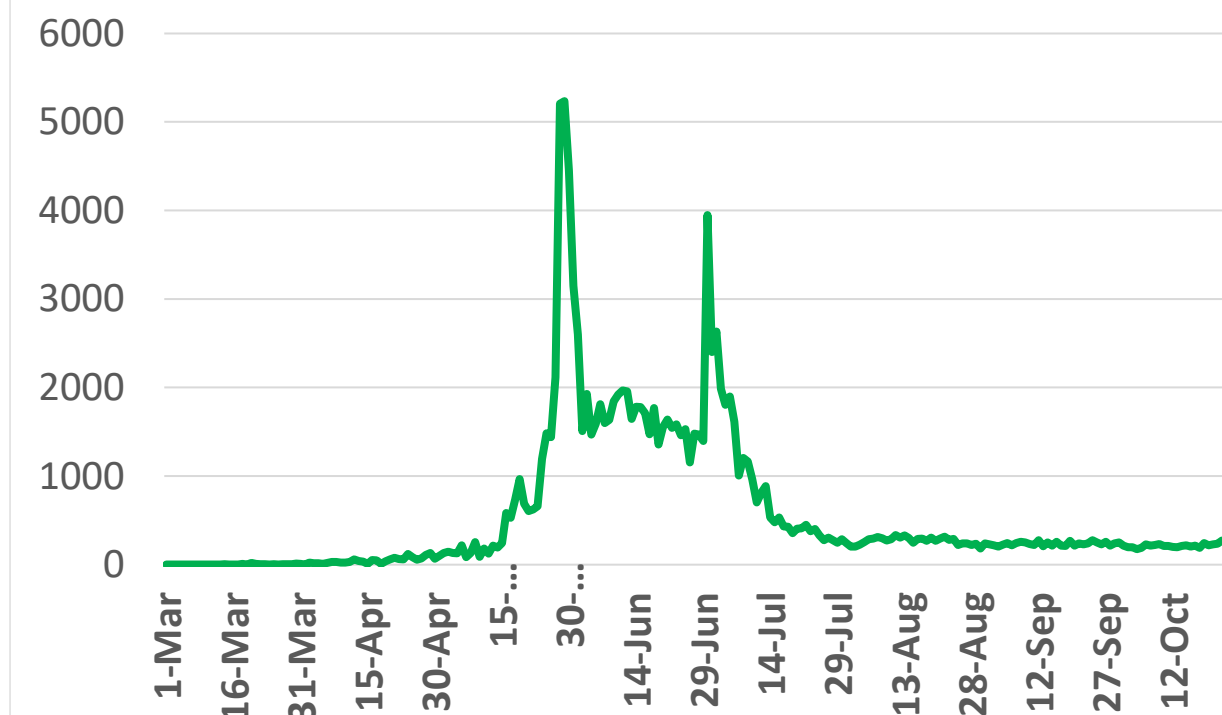
Kuwait

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Source : Kuwait ministry of health

Qatar



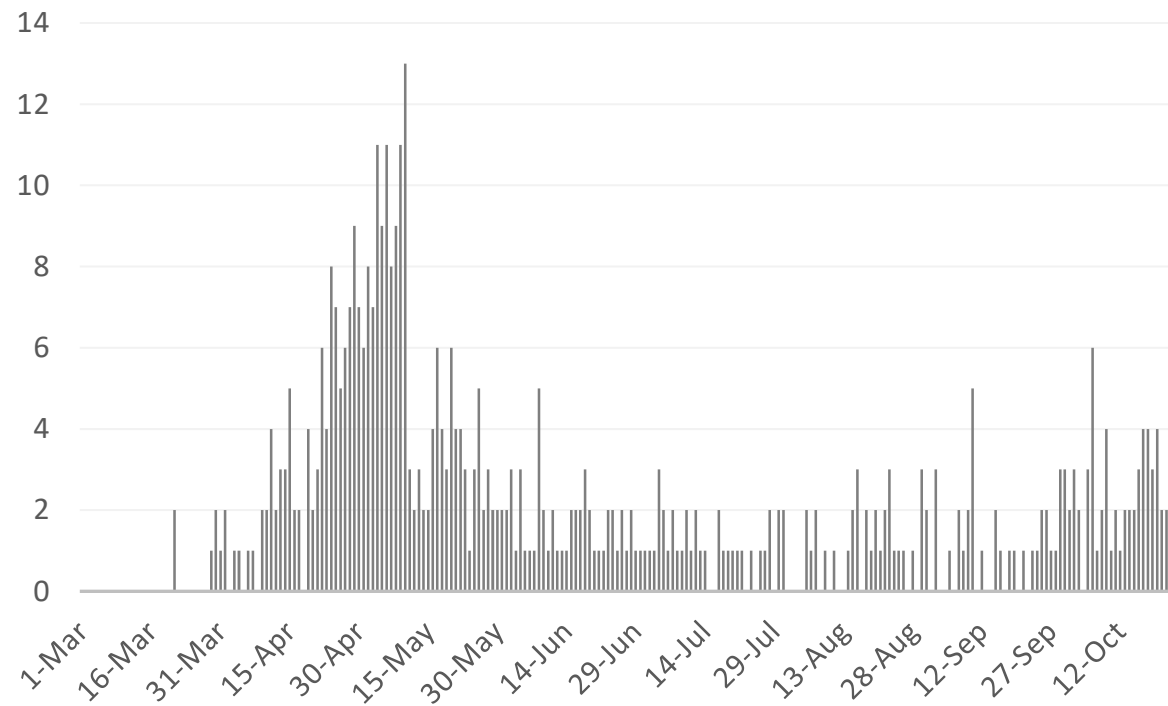
Source : Qatar ministry of health

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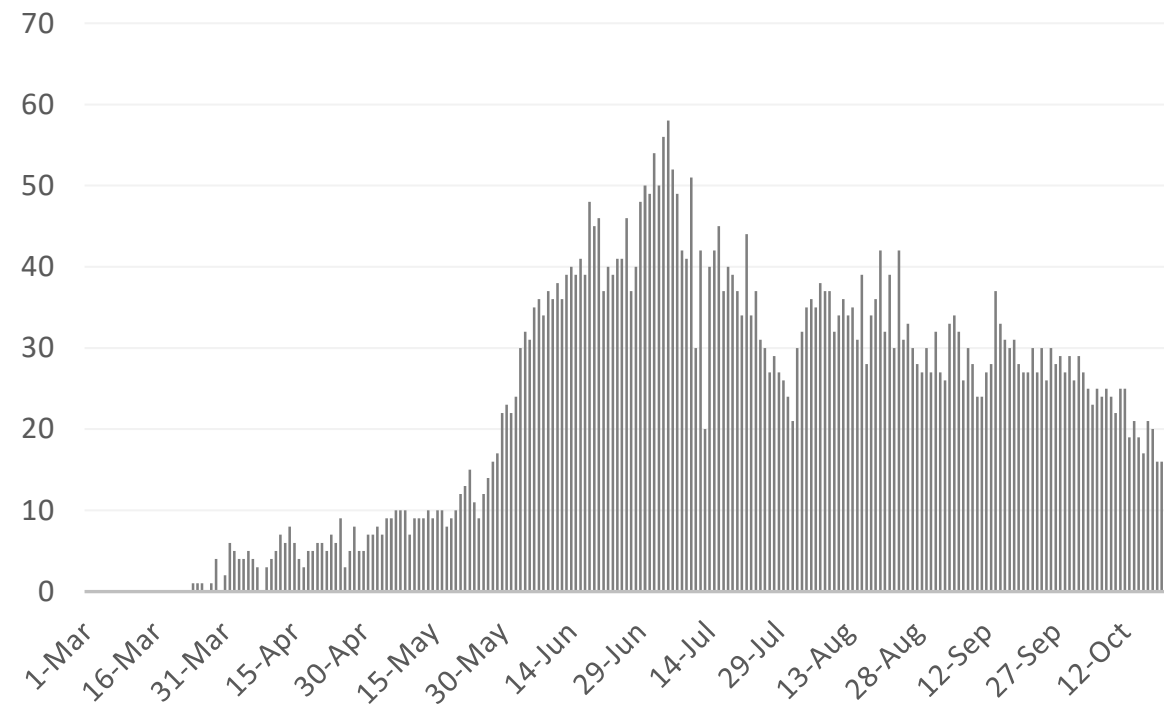
Figure 12: Comparative Analysis of the Distribution of COVID-19 New Death Cases in GCC Countries

UAE



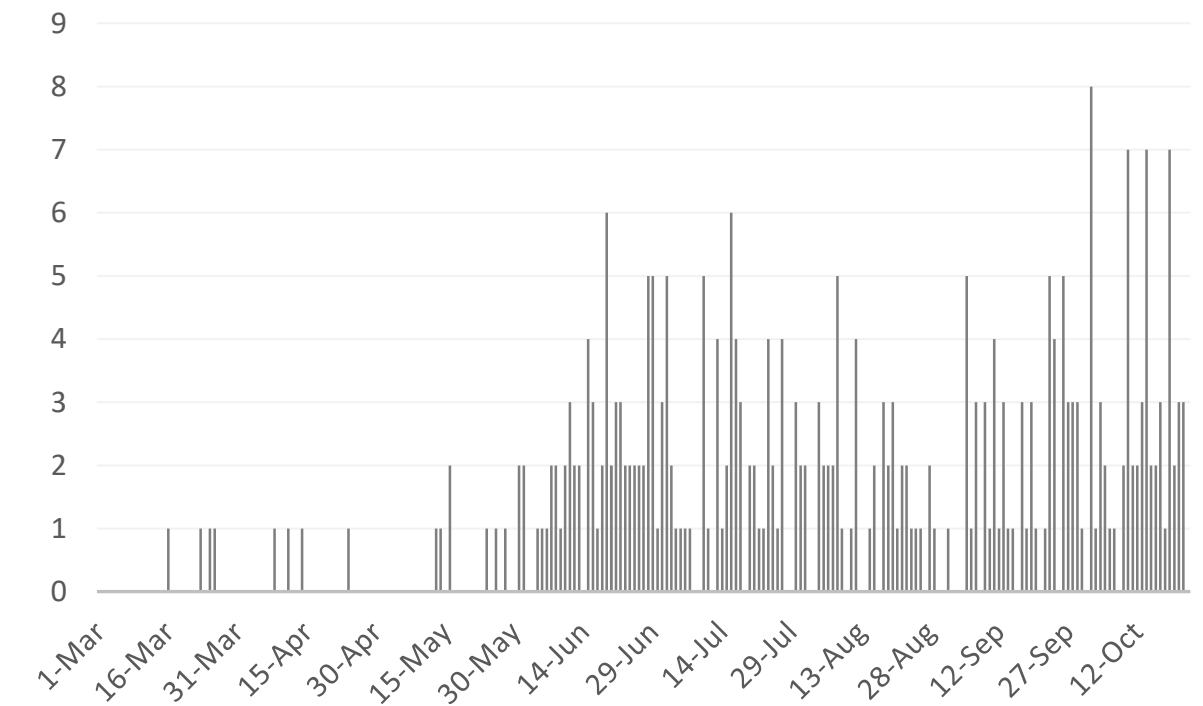
Source : National Emergency Crisis and Disaster Management Authority

KSA



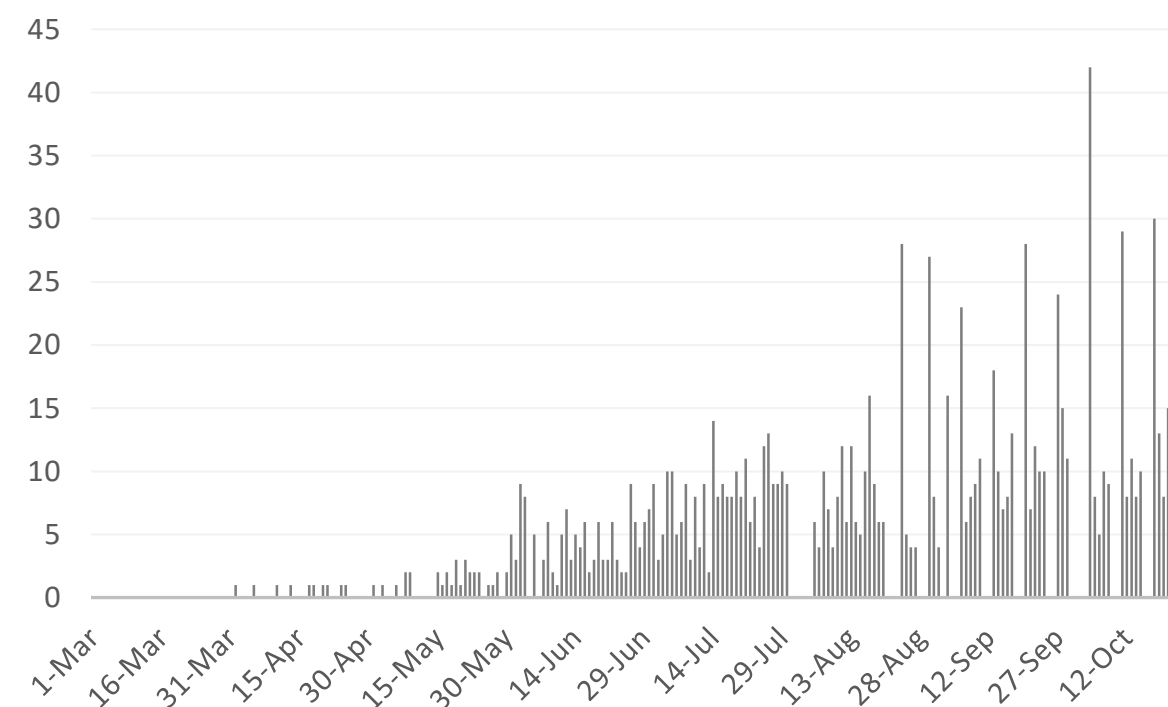
Source : KSA ministry of health

Bahrain



Source :WHO

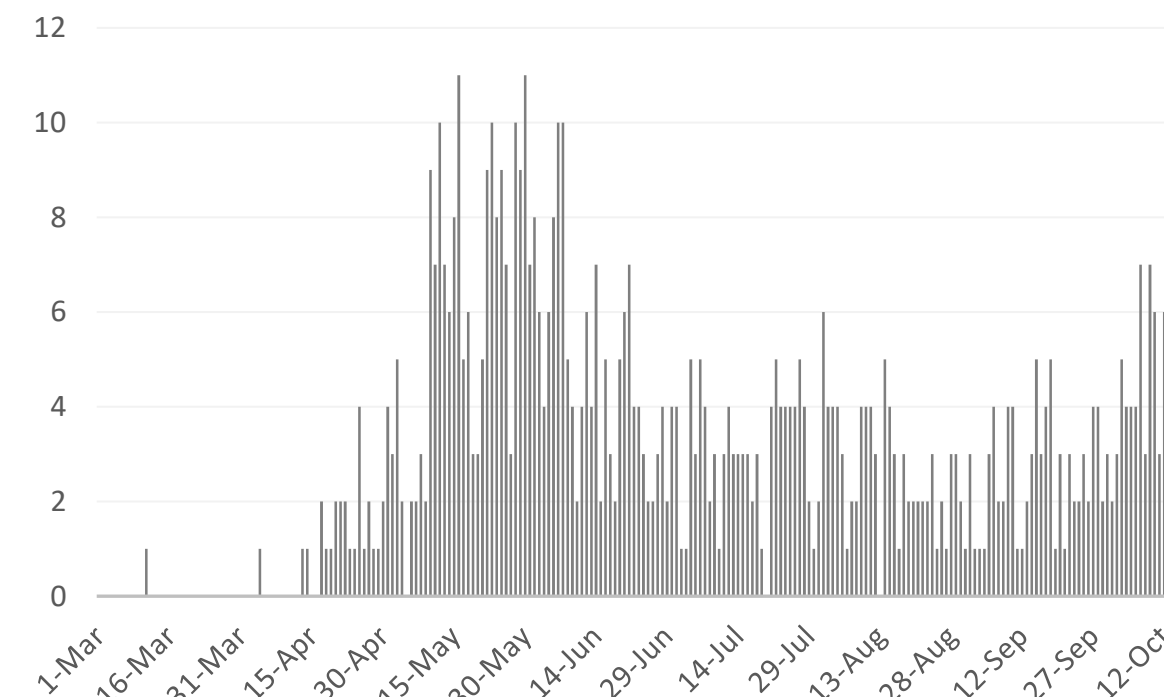
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Source :Oman ministry of health

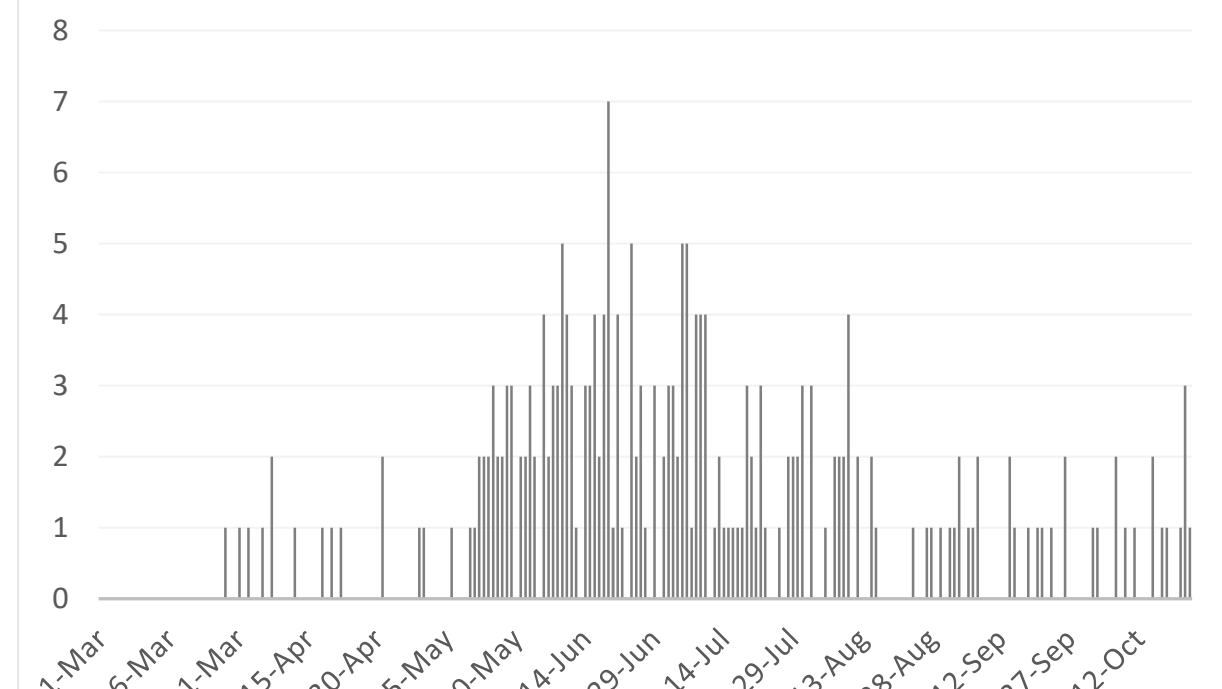
Kuwait

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Source : Kuwait ministry of health

Qatar



Source : Qatar ministry of health

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Article 1

Published

Cytokine Elevation in Severe and Critical COVID-19: A Rapid Systematic Review, Meta-Analysis, and Comparison with Other Inflammatory Syndromes

October 16, 2020 [The Lancet](#)

Background

- Several studies have reported elevated serum concentrations of inflammatory cytokines, including interleukin (IL)-6, in severe COVID-19.
- Administration of anti-cytokine medications, including IL-6 antagonists, has become widespread while awaiting trial results.

Methodology

- This is a rapid systematic review and meta-analysis of inflammatory cytokine and related biomarker concentrations in the COVID-19 literature.
- The authors compared the findings in patients with COVID-19 with those reported in landmark studies of patients with acute respiratory distress syndrome (ARDS) unrelated to COVID-19, sepsis, and chimeric antigen receptor (CAR) T cell-induced cytokine release syndrome.
- Out of 335 studies, 37 studies were included in the meta-analysis.

Results

- The estimated mean for IL-6 concentrations in patients with COVID-19 was 36.7 pg/mL.
- In contrast, the mean IL-6 serum concentration was 3110.5 pg/mL in patients with non-covid19, nearly 100 times higher than in patients with COVID-19 (difference 3074 pg/mL, $p < 0.0001$).
- Similarly, the mean IL-6 concentration was 1558.2 pg/mL in patients with hyper-inflammatory ARDS (difference 1521.5 pg/mL, $p < 0.0001$) and 983.6 pg/mL in patients with sepsis (difference 947 pg/mL, $p < 0.0001$).
- Even in patients with hypo-inflammatory ARDS, the mean IL-6 concentration was 198.6 pg/mL, 5 times higher than the concentration in patients with COVID-19 (difference 162 pg/mL, $p = 0.0085$).
- **Patients with ARDS unrelated to COVID-19 had significantly higher IL-6 concentrations than did patients with COVID-19 when analysed as a single disorder (mean 460.1 pg/mL, difference 4234 pg/mL, $p < 0.0001$)**



Continued

Public Health Message

- Inflammatory cytokine elevations in patients with severe and critical COVID-19, including elevations of interleukin-6, are **profoundly lower** than those reported in patients with acute ARDS unrelated to COVID-19, sepsis, and CAR T cell-induced cytokine release syndrome.
- In contrast, several non-cytokine biomarkers, including D-dimer, C-reactive protein, and ferritin, are elevated to a similar or greater extent in patients with COVID-19 than in patients with these comparison disorders.
- As in other syndromes of critical illness, the role of inflammatory cytokine elevations in the pathobiology of COVID-19 **remains unclear**.
- The systemic inflammatory profile of COVID-19 is distinct from that of non-COVID-19 ARDS, sepsis, and CAR T cell-induced cytokine release syndrome; applying the descriptor cytokine storm to COVID-19 might be particularly problematic.
- Alternative models of organ dysfunction in COVID-19, such as endovasculitis, direct viral injury and lymphodepletion, or viral-induced immunosuppression, might be worth considering.





PUBLIC HEALTH RESPONSE

Article 2

The Scientific and Ethical Feasibility of Immunity Passports

Published

October 16, 2020 [The Lancet](#)

- During COVID-19 pandemic, one proposed strategy to help individuals lives return to normality is the identification and documentation of immunity (i.e. immunity passports). These passports can be implemented based on either a laboratory test of an immune response or an immunizing event such as infection or vaccination that will identify individuals less likely to get the disease or transmit the virus when exposed to SARS-CoV-2.
- There are important issues for such passports – a) degree of immunity induced, and b) duration of immunity. Critics of immunity passports point to persisting uncertainties about the immune response to COVID-19 makes these passports unfeasible. There are also concerns regarding sensitivity and specificity of the tests used to define immunity particularly in populations with a low incidence of the previous infection and need for unrealistic numbers of tests to be done to ensure the population remains immune.
- There is suspicion that these passports could provide a way to monitor an individual’s movement and health status. However, the point of these passports is to facilitate movement when it is safe to do so. These passports have been frequently objected to on the basis that their introduction would aggravate existing inequalities. If these passports were introduced, marginalized groups would be subject to more scrutiny because of existing inequities and racism and would be less likely to access testing as compared to non-marginalized groups.
- As further evidence relating to the immune response to COVID-19 accumulates, and the capacity to identify immune individuals develops, these passports could be accurately adopted. In such an event, the freedoms these passports confer must be subject to amendments and cancellations, and integrated with other measures including contact tracing and physical distancing to keep people safe.



Article 3

Combining Rapid PCR and Antibody Tests Improved COVID-19 Diagnosis

Published

October 13, 2020 [The Lancet](#)

- Polymerase chain reaction (PCR) test that includes nose and throat swab can miss up to 50% of COVID-19 cases as the virus may have already cleared the upper respiratory tract. Patients may have developed antibodies by that time. An approach that combines PCR and antibody testing could help physicians to diagnose more cases.
- In the United Kingdom, the University of Cambridge researchers analyzed previously collected data from a study (COVIDx), in which they clinically validated a simple amplification-based assay (SAMBA II); a rapid PCR test to detect severe SARS-CoV-2. Stored sera from a subsample of 45 patients were included in the new analysis that allowed for antibody testing. Patients' swabs and sera samples were collected a median of 7 days after the symptoms emerged. Approximately half of this group had COVID-19.
- About 1 in 5 positive cases were missed in SAMBA II based on a reference standard that combined laboratory-based PCR and neutralizing antibody test. However, when SAMBA II results were combined with those from either of two rapid lateral flow antibody assays, the positive predictive value increased to 100%.
- The point of care (POC) antibody tests had 100% negative predictive agreement with the laboratory-based neutralizing antibody test in a separate analysis of fresh finger prick blood from patients with suspected COVID-19 (n=128) who were not part of the COVIDx study. Antibodies were detected in the assays induced by a now dominant SARS-CoV-2 variant that wasn't widespread when the tests were developed.



THANK YOU

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