

SCIENTIFIC RESEARCH MONITORING ON COVID-19

1 AUGUST 2020

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SCIENTIFIC RESEARCH MONITORING ON COVID-19

(ISSUE 181)

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

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Transmission

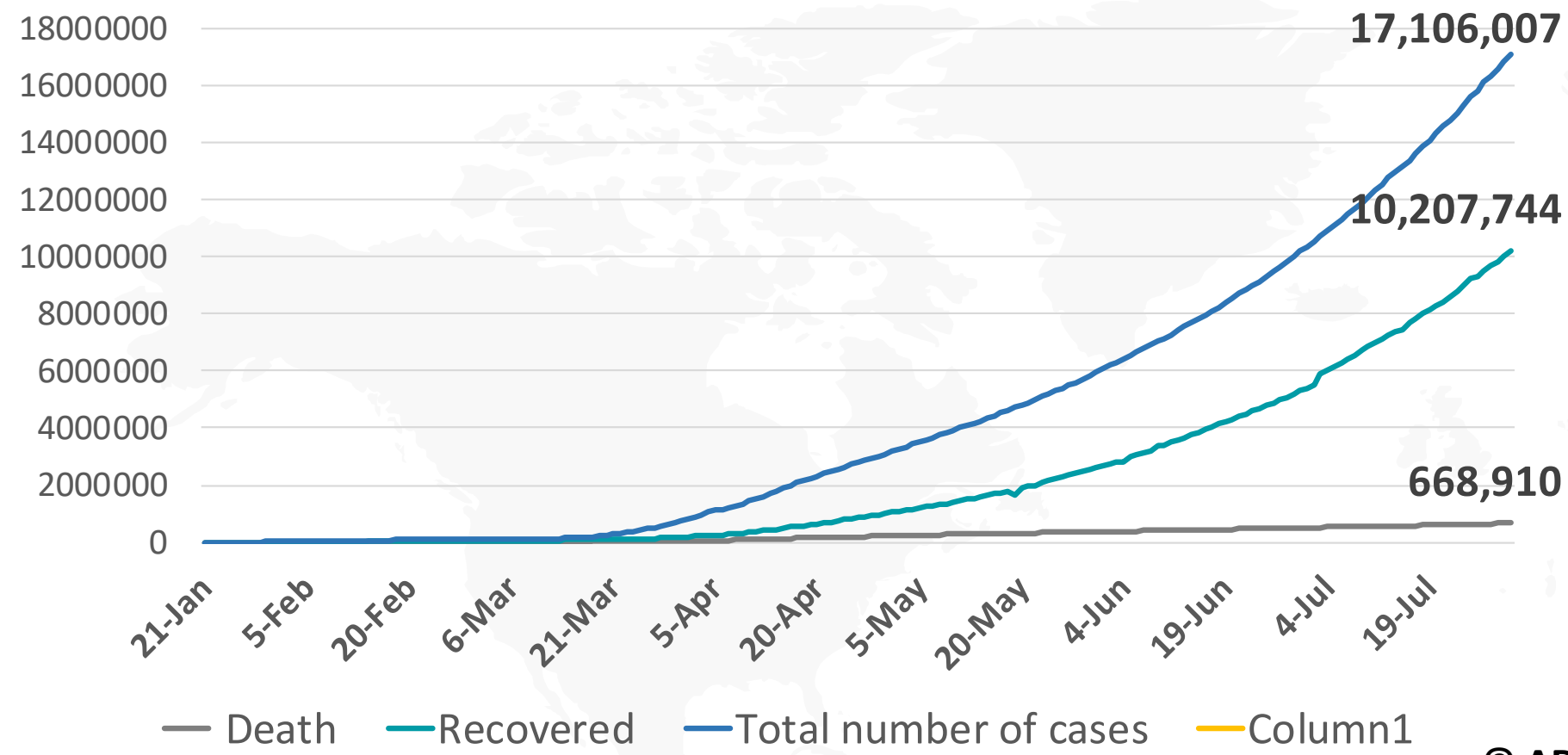
Point-Of-Care Serological Assays for Delayed Sars-Cov-2 Case Identification Among Health-Care Workers in the UK: A Prospective Multicenter Cohort Study

Transmission

The time to do serosurveys for COVID-19 is now



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)

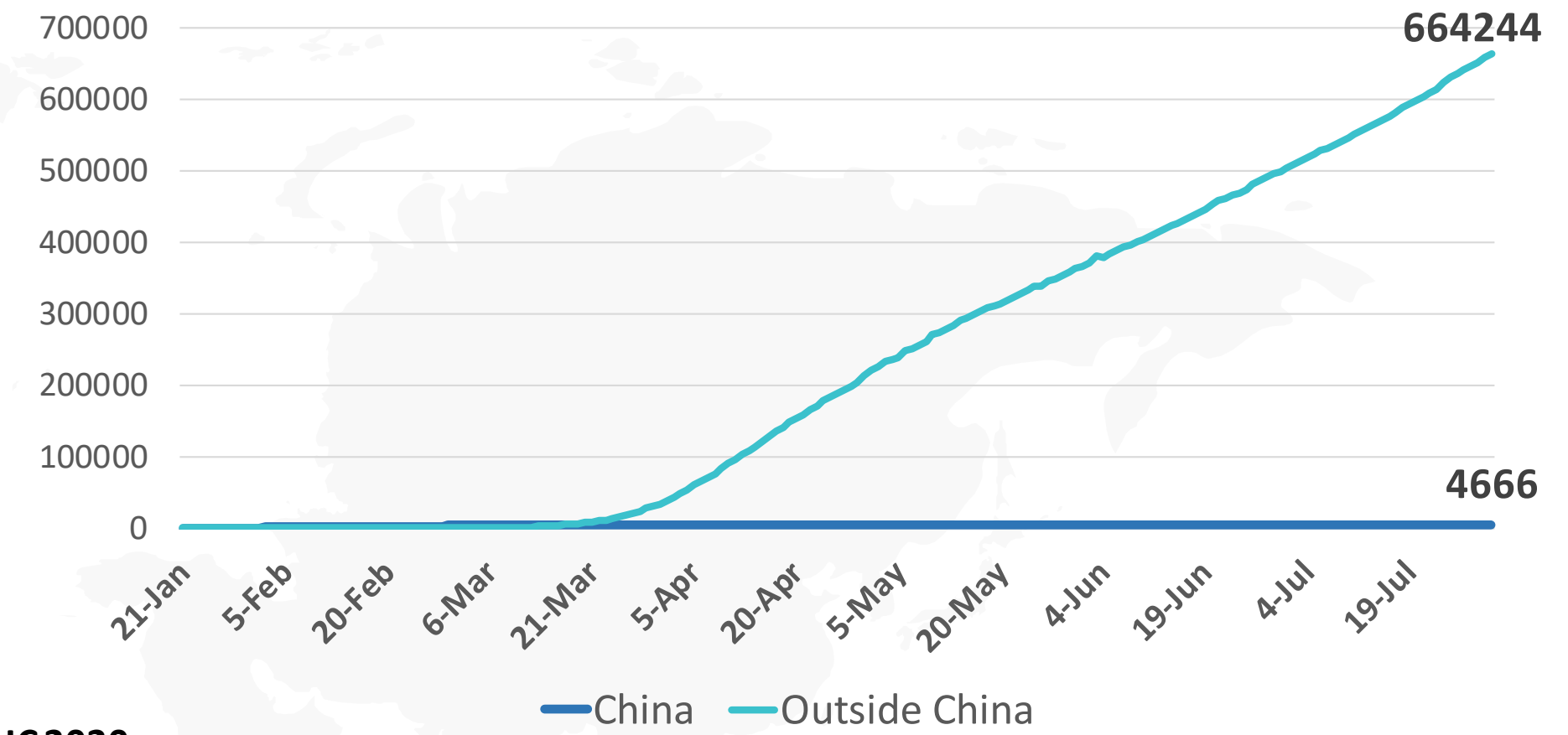


Figure 2: Daily New Infected COVID-19 Cases (China and rest of the world)

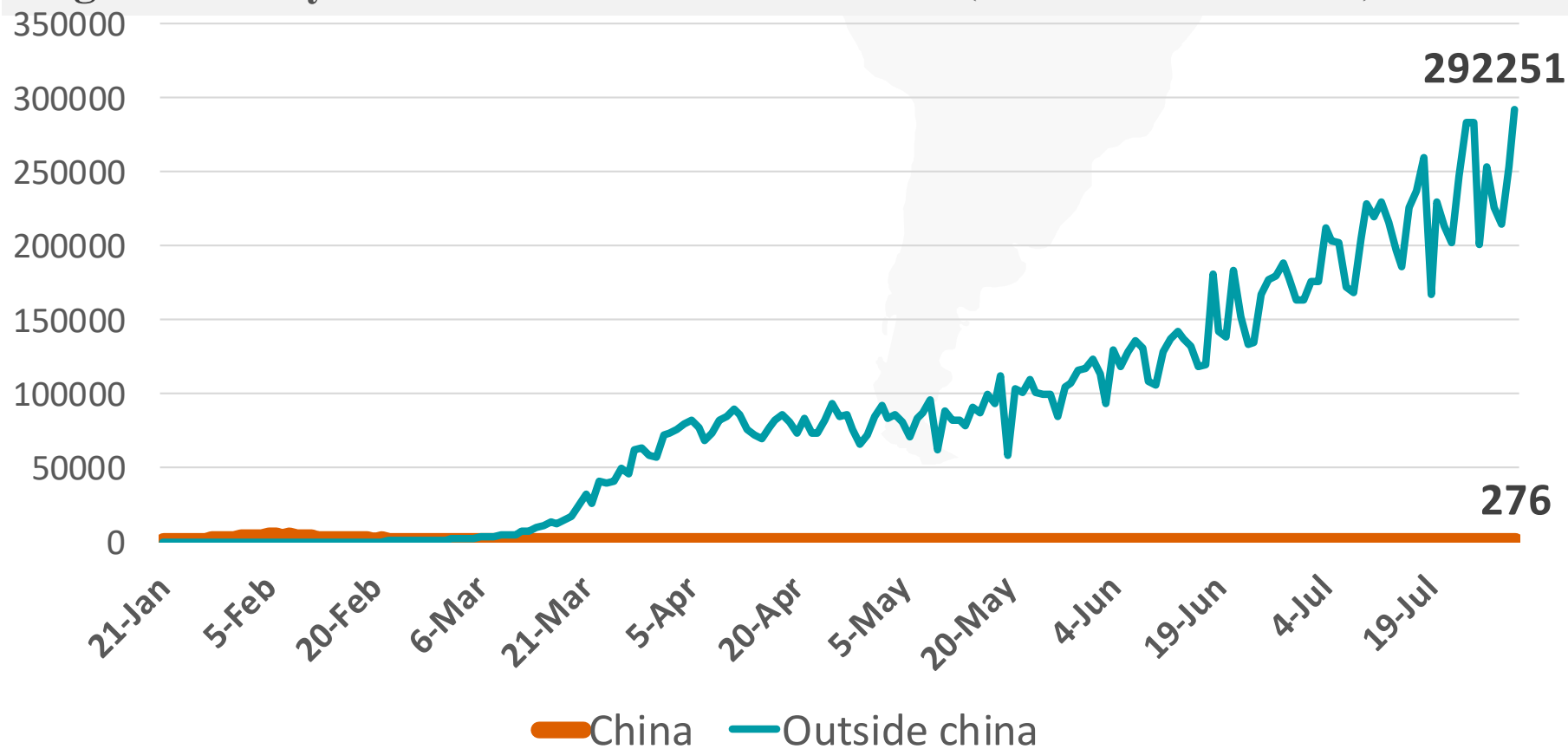


Figure 4: Global Daily New Deaths Due to COVID-19 (China and rest of the world)

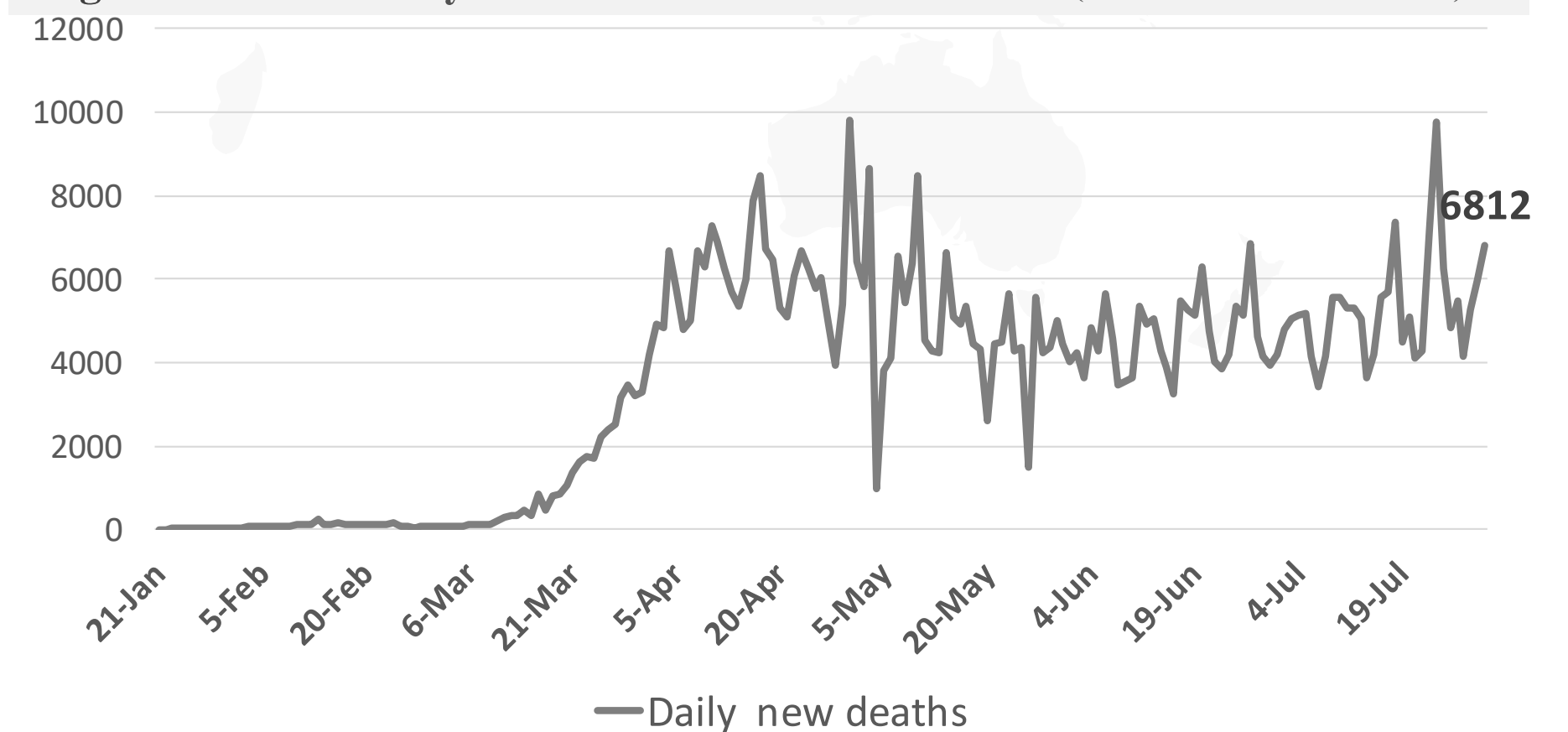
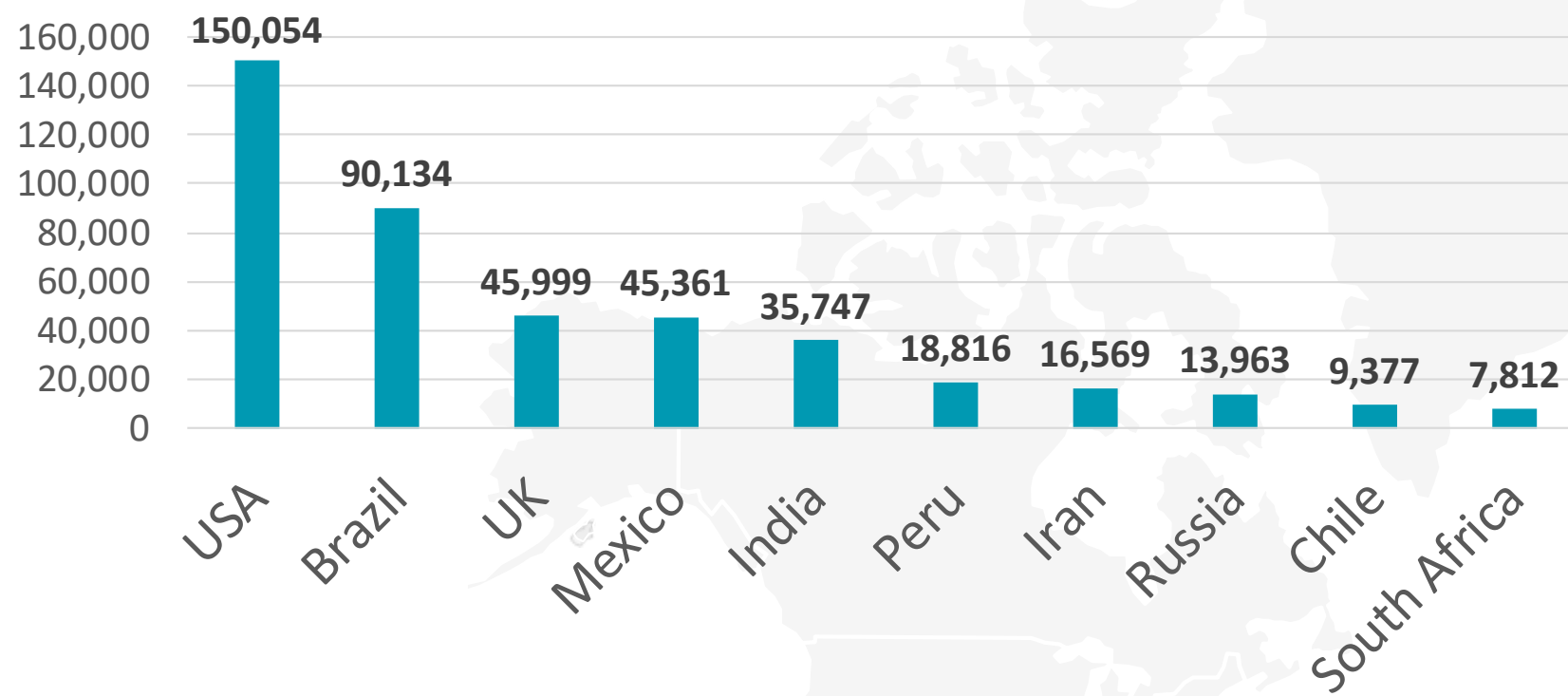
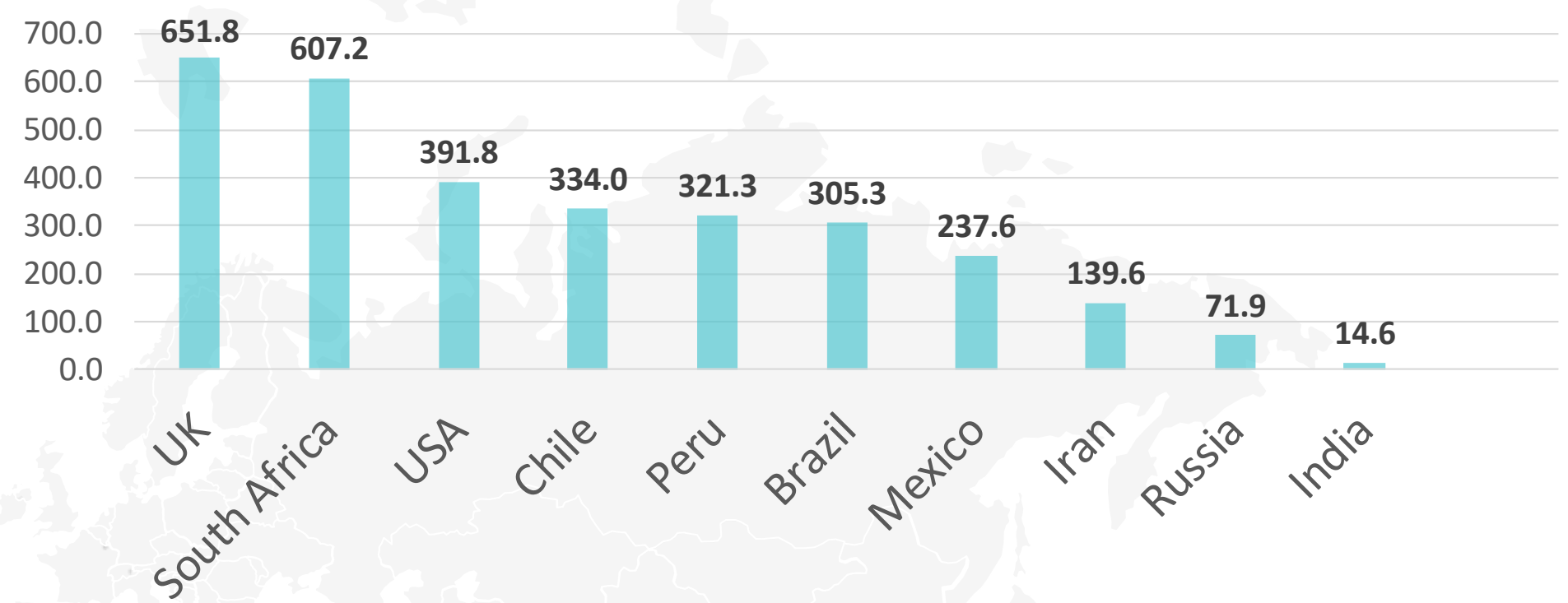


Figure 5: Top 10 Countries in the Total Number of Cases Due to COVID-19

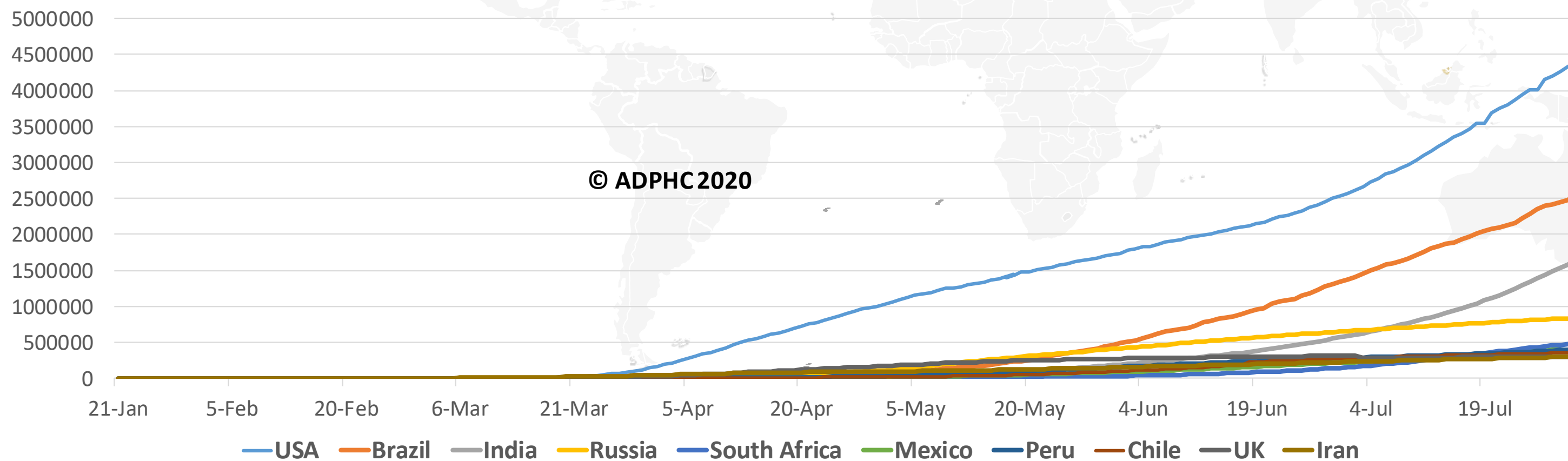
TOTAL DEATHS



DEATHS PER MILLION

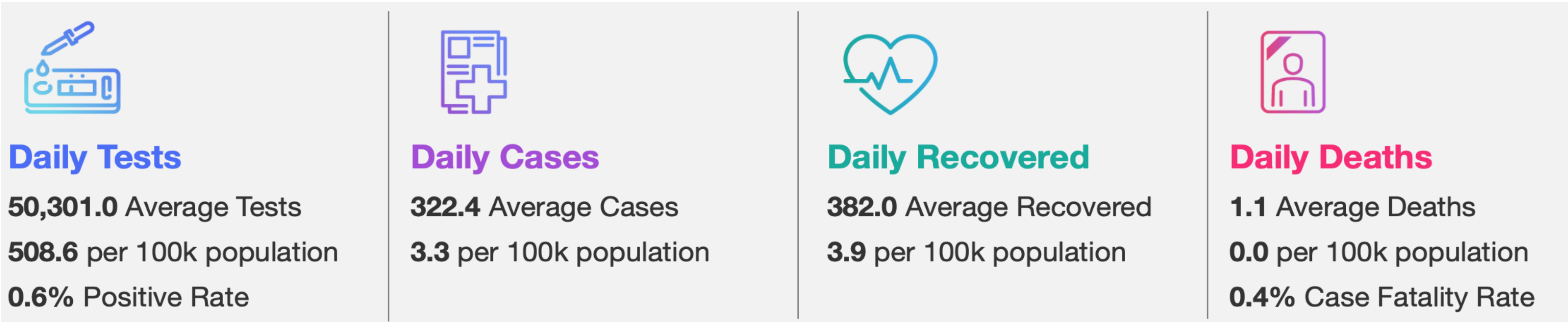


TOTAL INFECTED CASES



| | |
|--------------|-----------|
| USA | 4,388,566 |
| Brazil | 2,552,265 |
| India | 1,638,870 |
| Russi | 839,981 |
| South Africa | 482,169 |
| Peru | 408,449 |
| Mexico | 400,683 |
| Chile | 353,536 |
| UK | 302,305 |
| Iran | 301,530 |

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

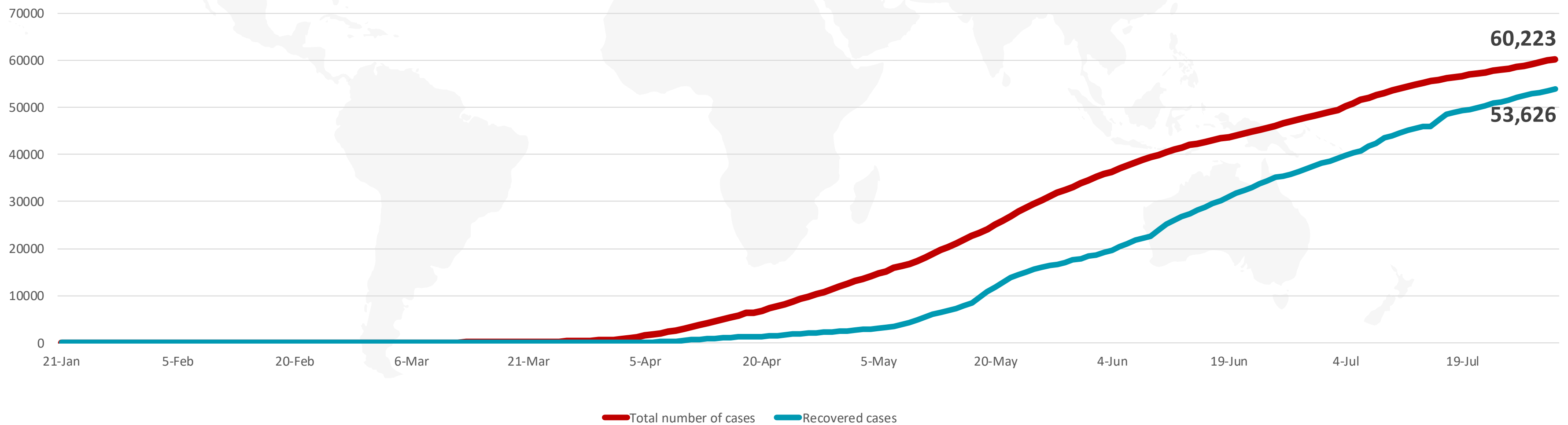
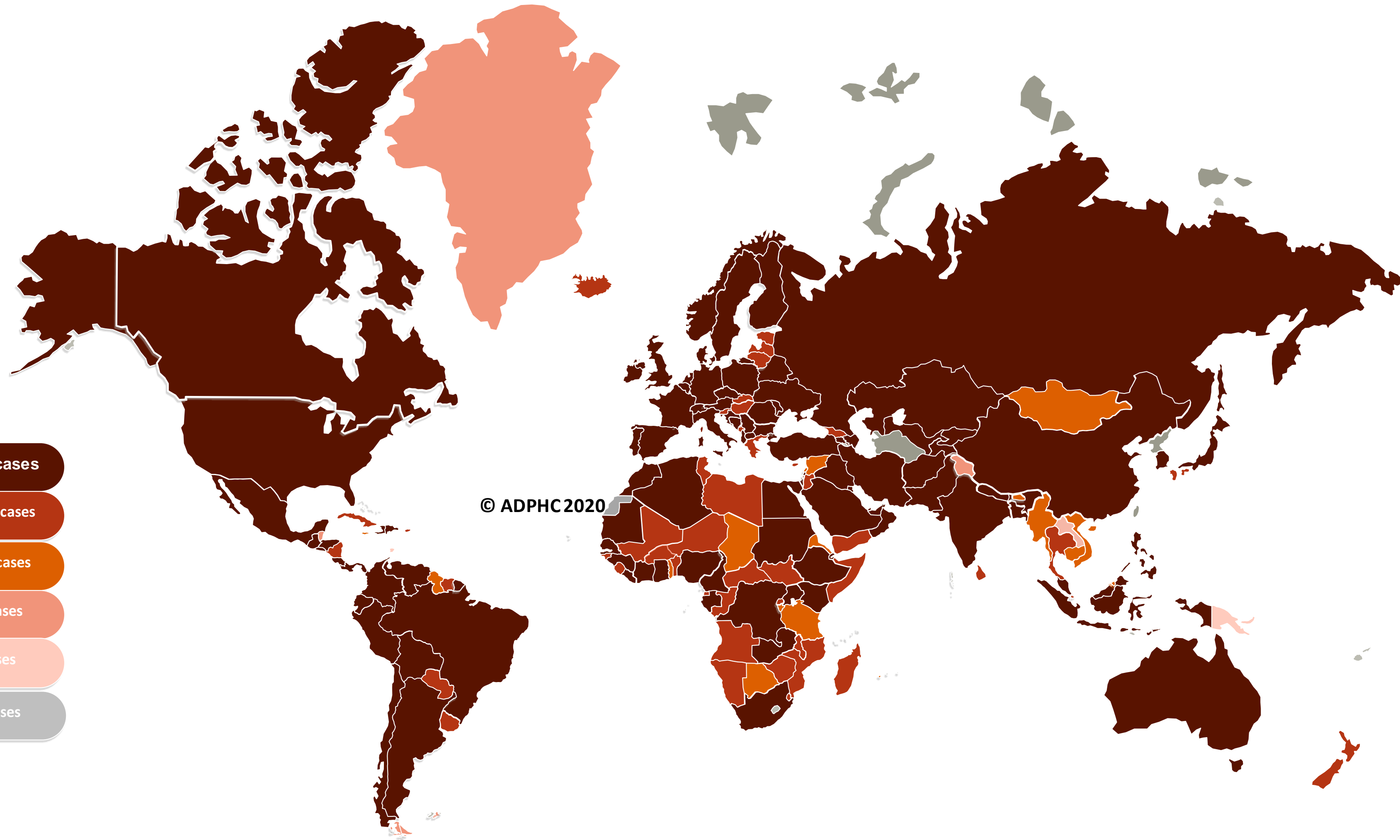


Figure 7A : Global Distribution of COVID-19 Cases



More than 5000 cases

From 1001 to 5000 cases

From 101 to 1000 cases

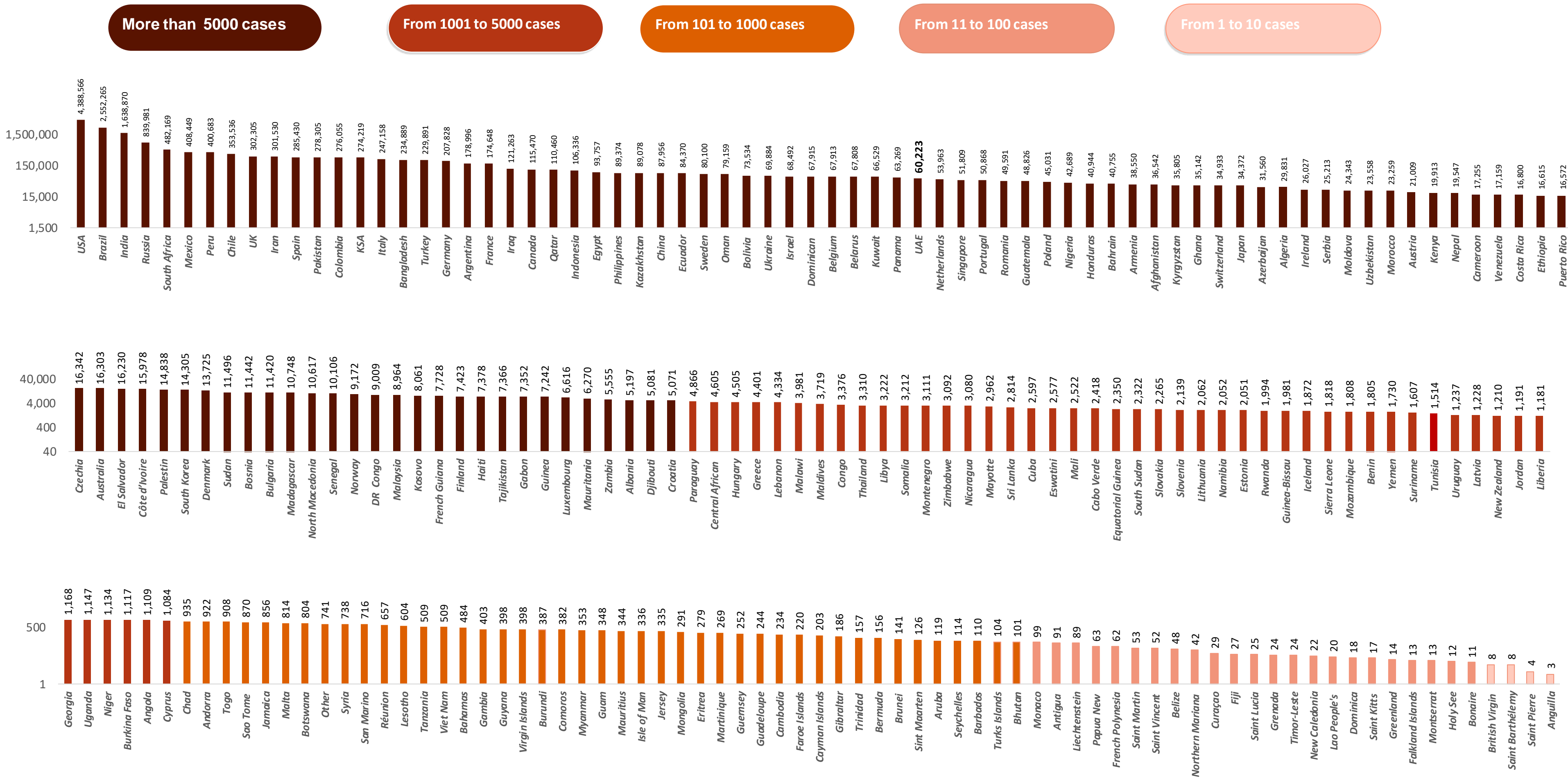
From 11 to 100 cases

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

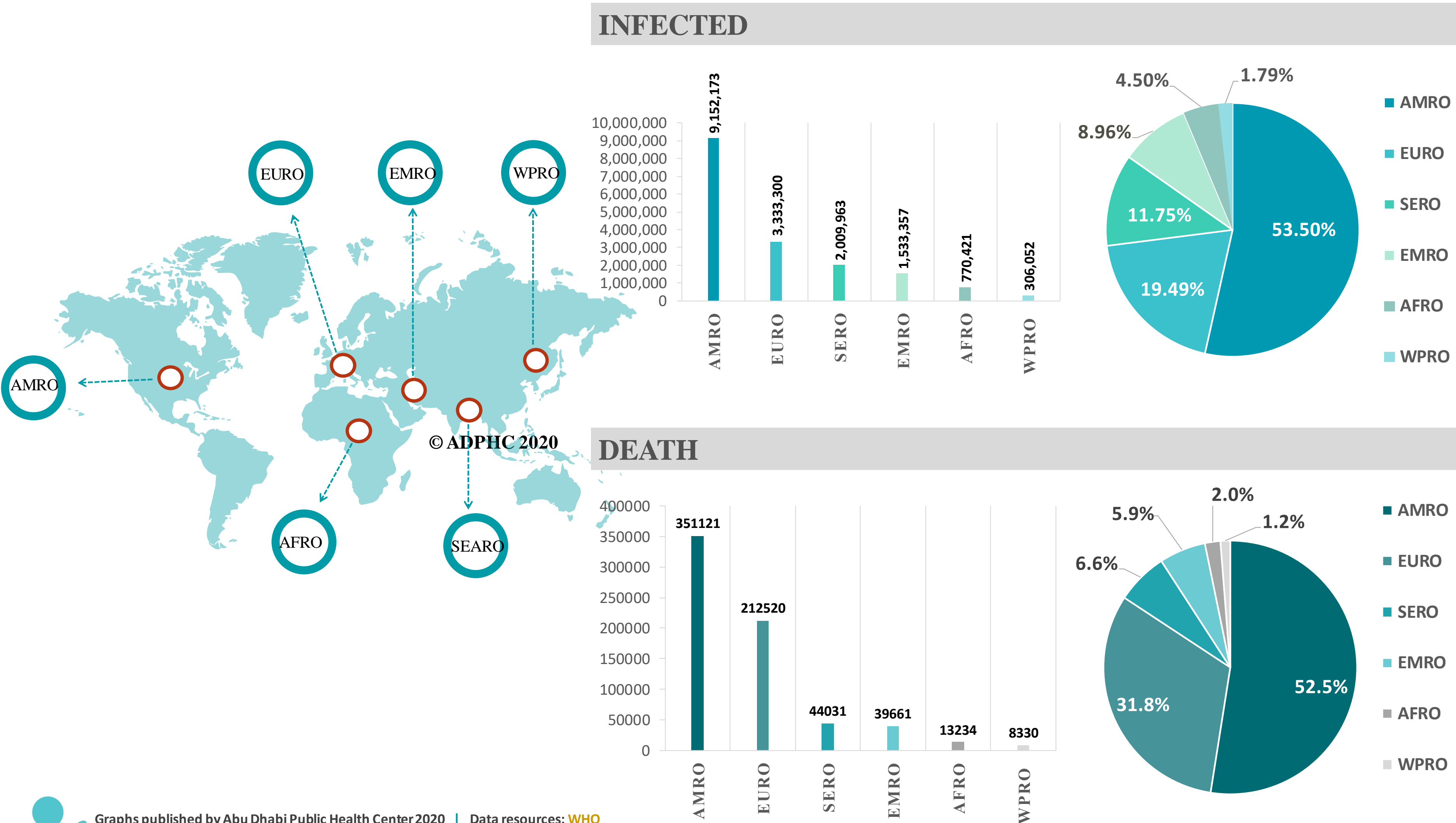
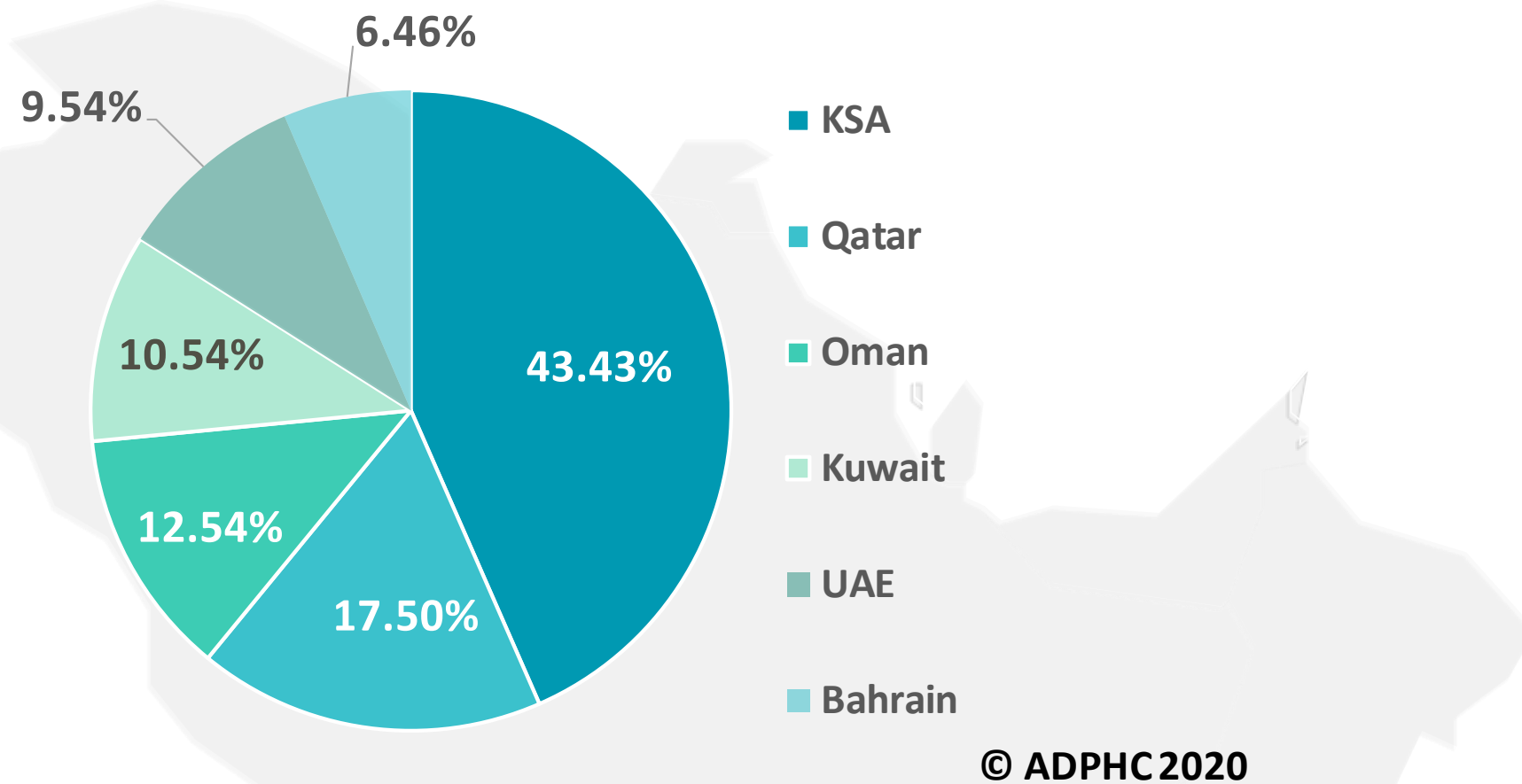
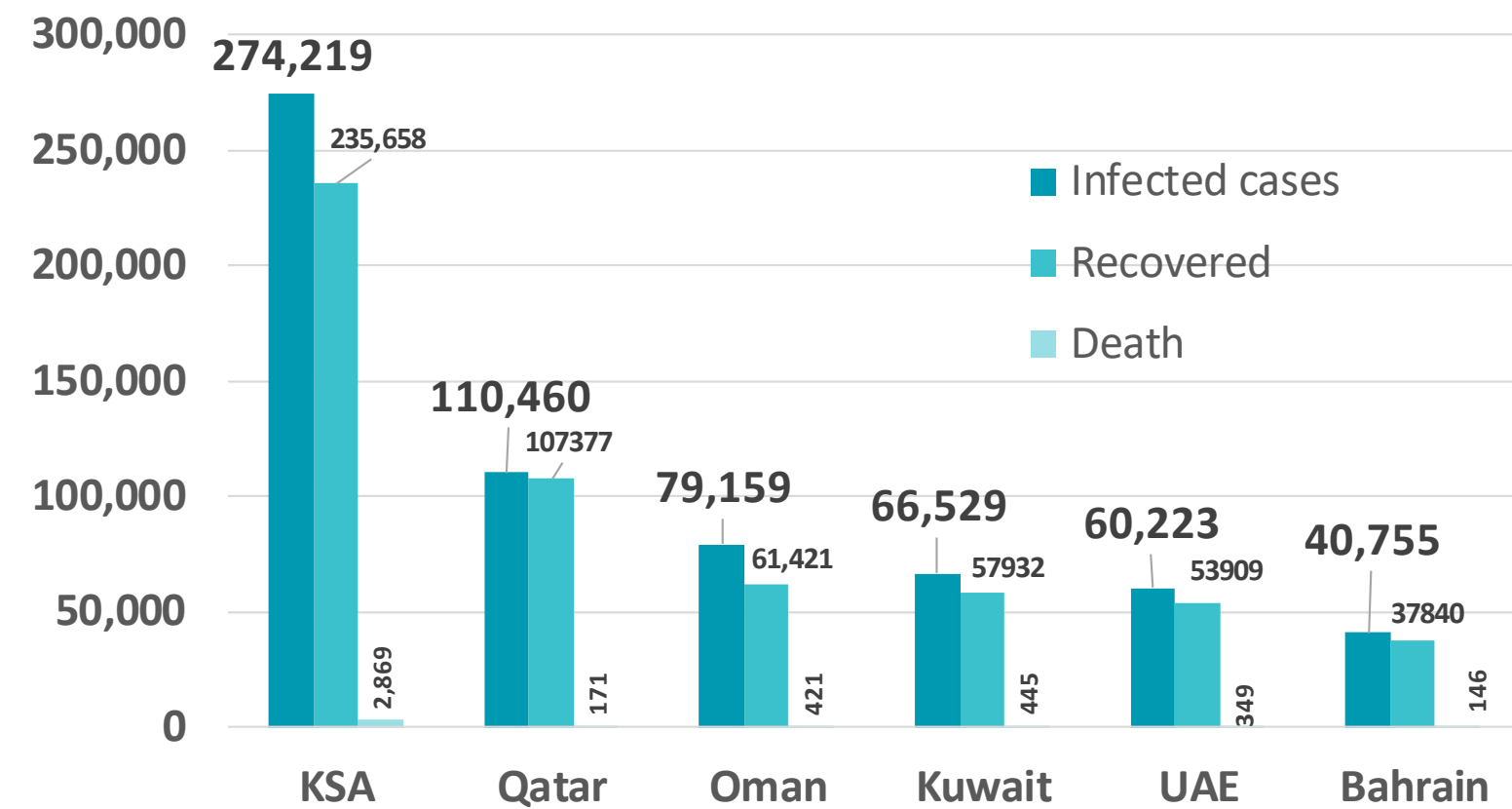


Figure 9: Comparative Analysis of the Distribution of COVID-19 Cases in GCC Countries

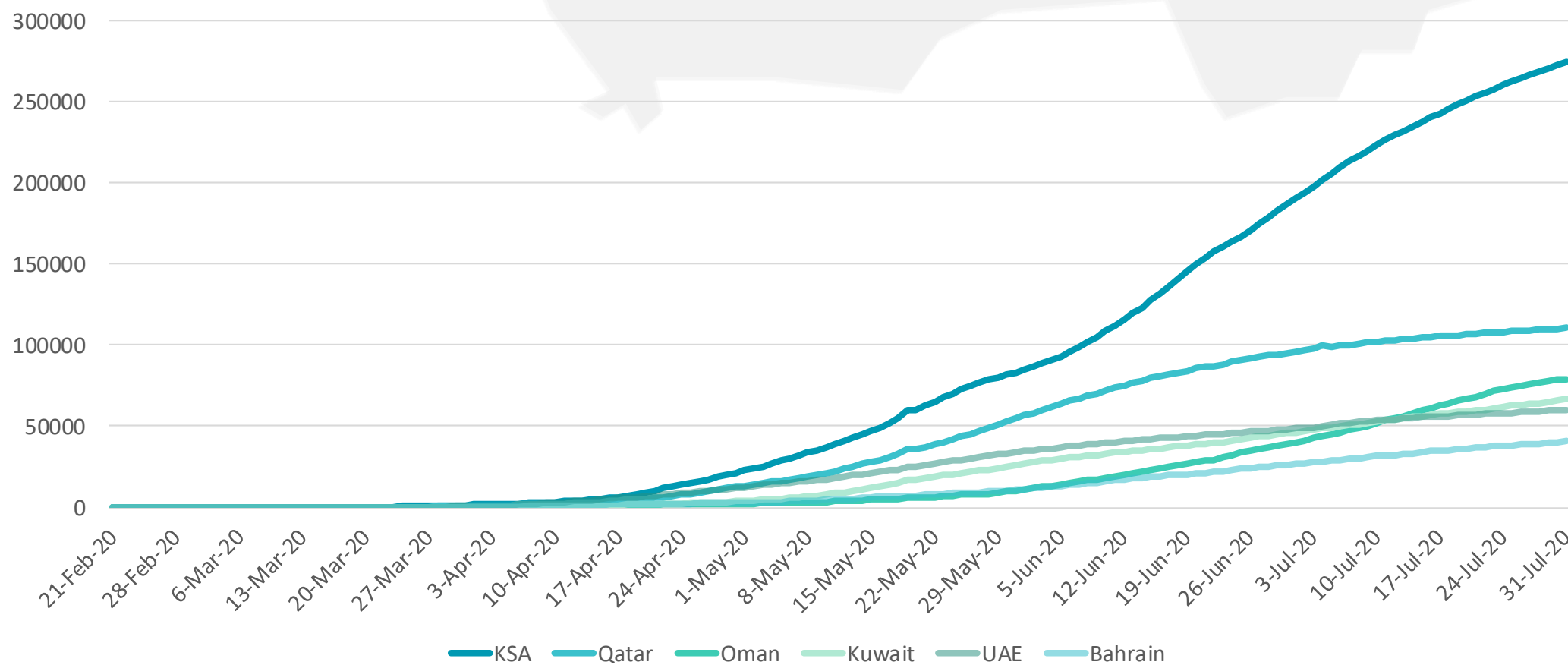
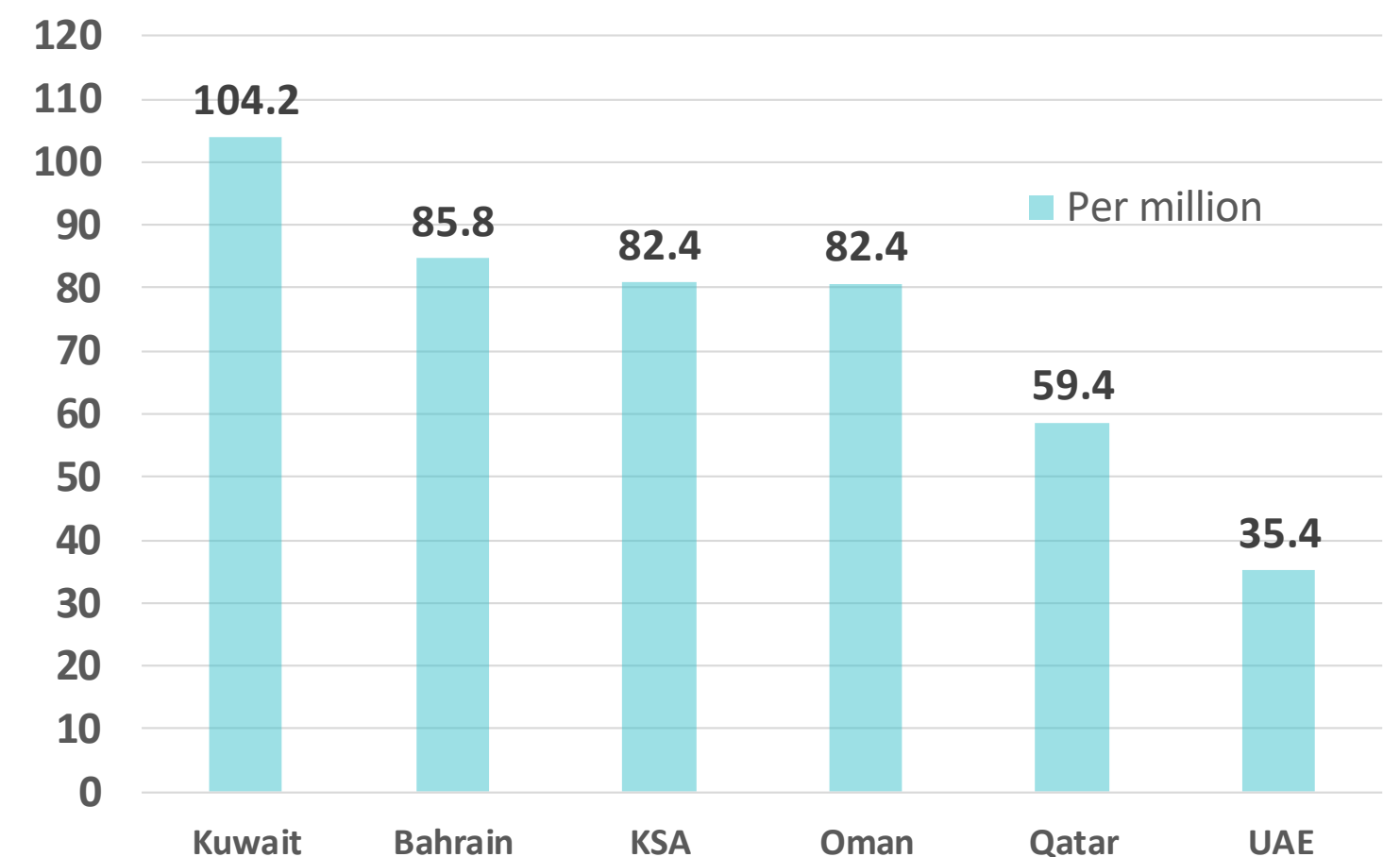
TOTAL NUMBER OF INFECTED CASES



TOTAL NUMBER OF INFECTED, RECOVERED AND DEATHS



DEATH PER MILLION



Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: [WHO](https://www.who.int)

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

UAE



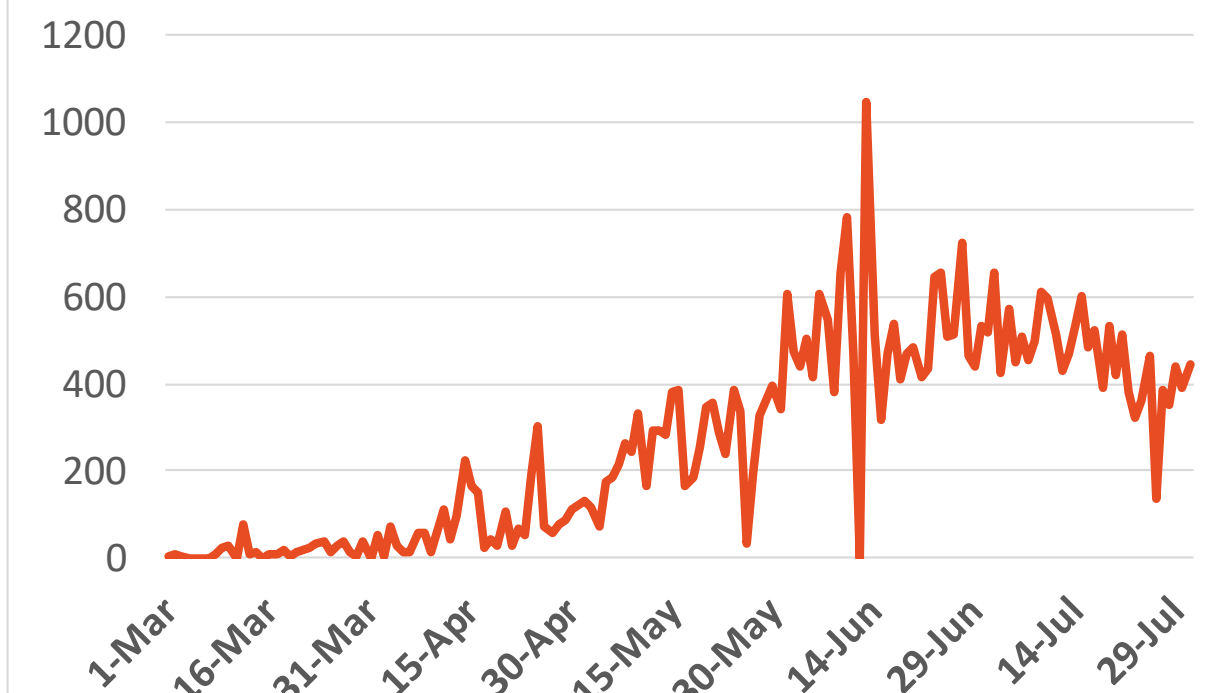
Source : National Emergency Crisis and Disaster Management Authority

KSA



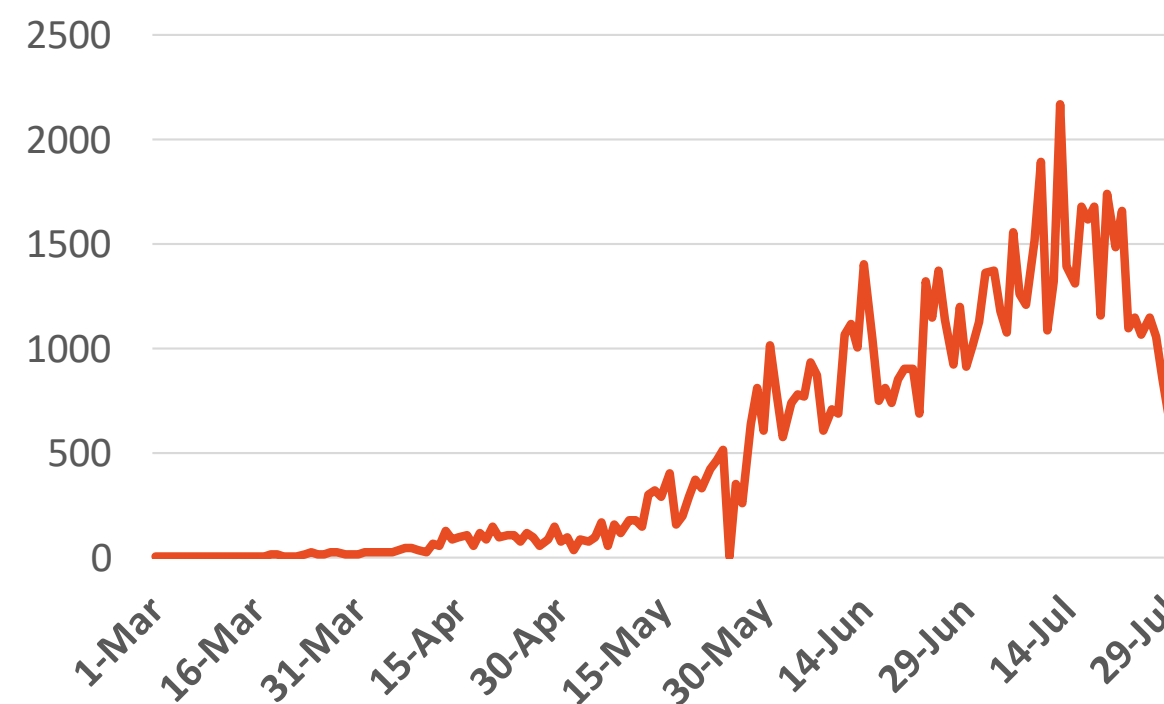
Source : KSA ministry of health

Bahrain



Source :WHO

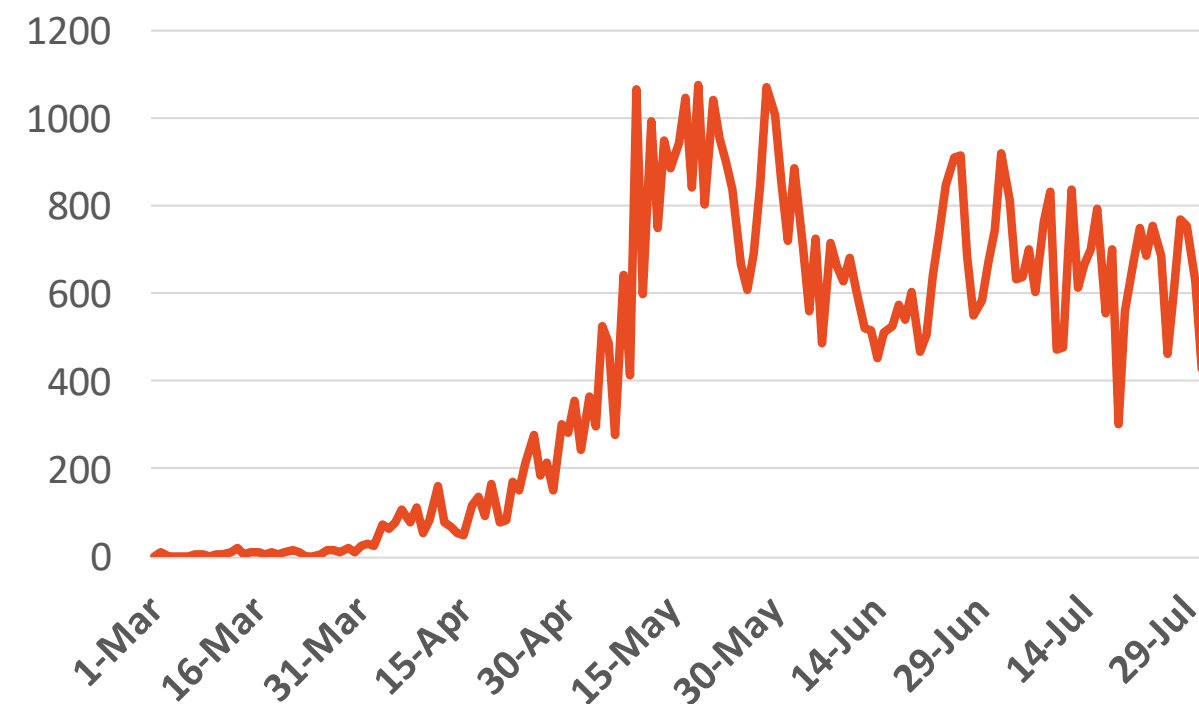
Oman



Source :Oman ministry of health

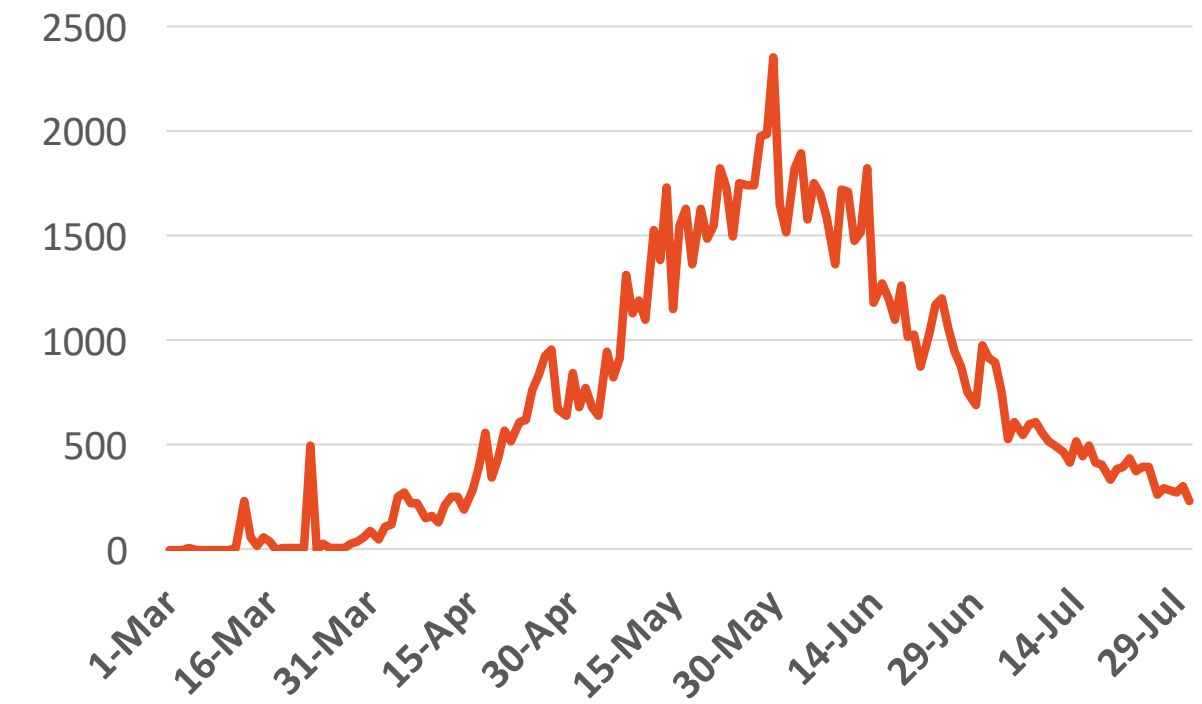
Kuwait

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Source : Kuwait ministry of health

Qatar



Source : Qatar ministry of health

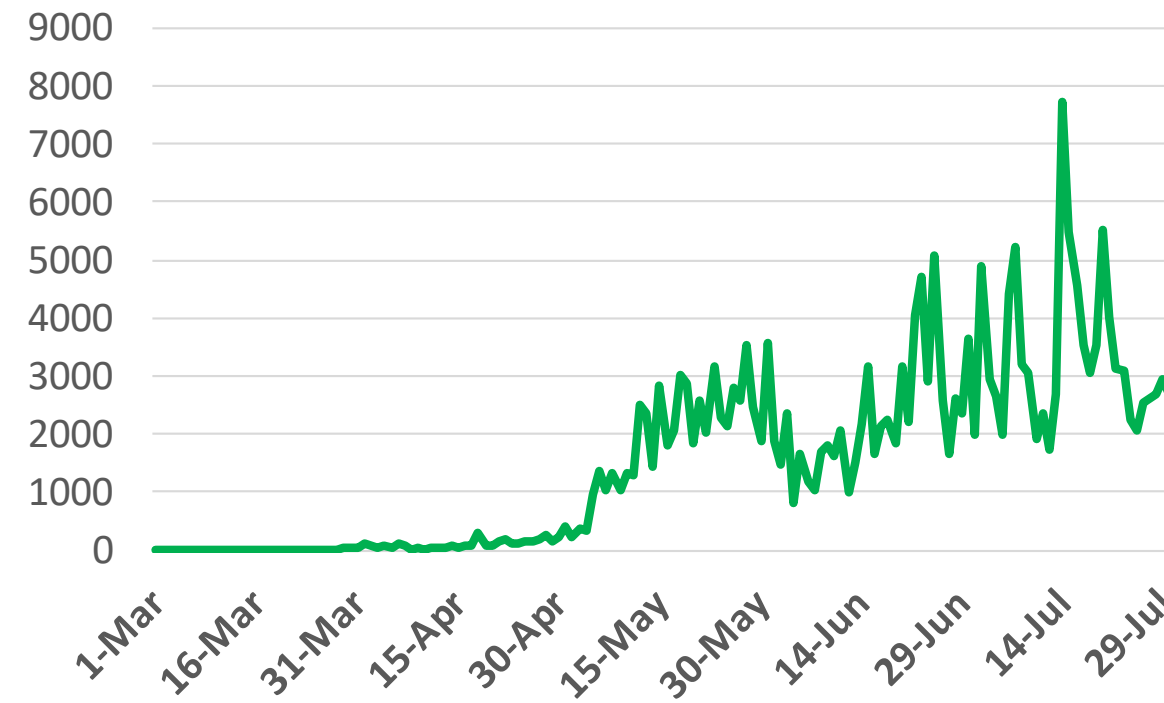
Figure 11: Comparative Analysis of the Distribution of COVID-19 Newly Recovered Cases in GCC Countries

UAE



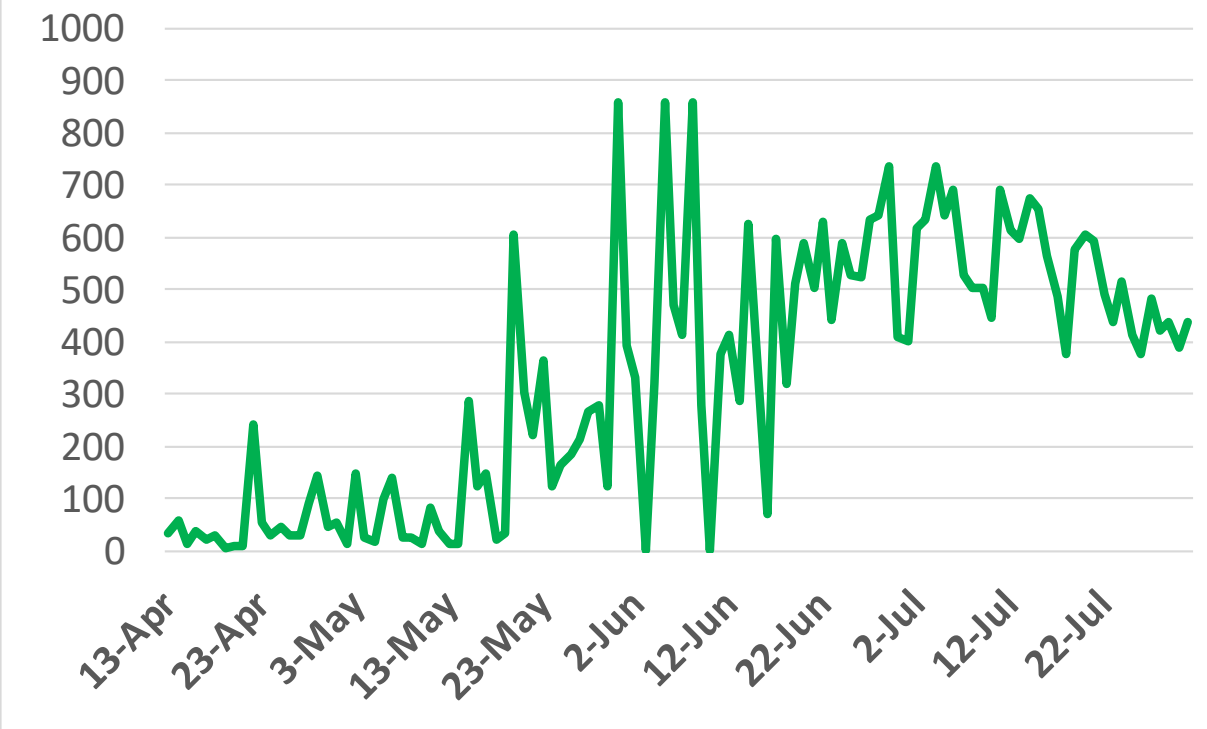
Source : National Emergency Crisis and Disaster Management Authority

KSA



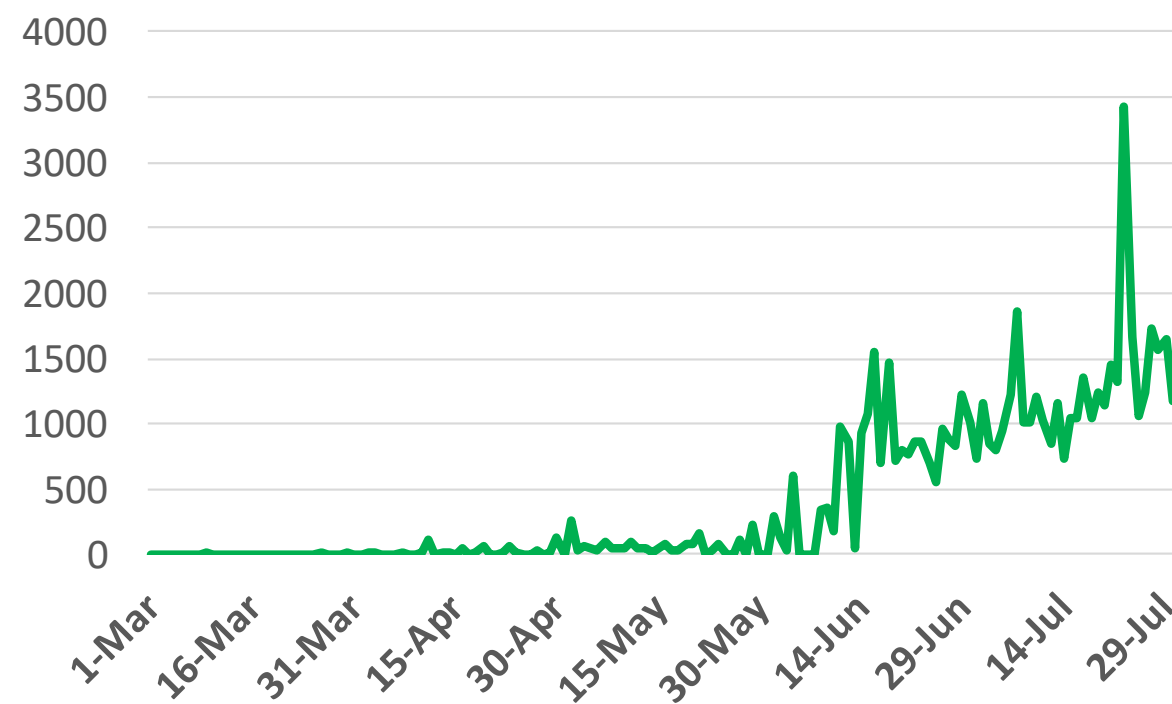
Source : KSA ministry of health

Bahrain



Source : GCCStat

Oman



Source : Oman ministry of health

Kuwait

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Source : Kuwait ministry of health

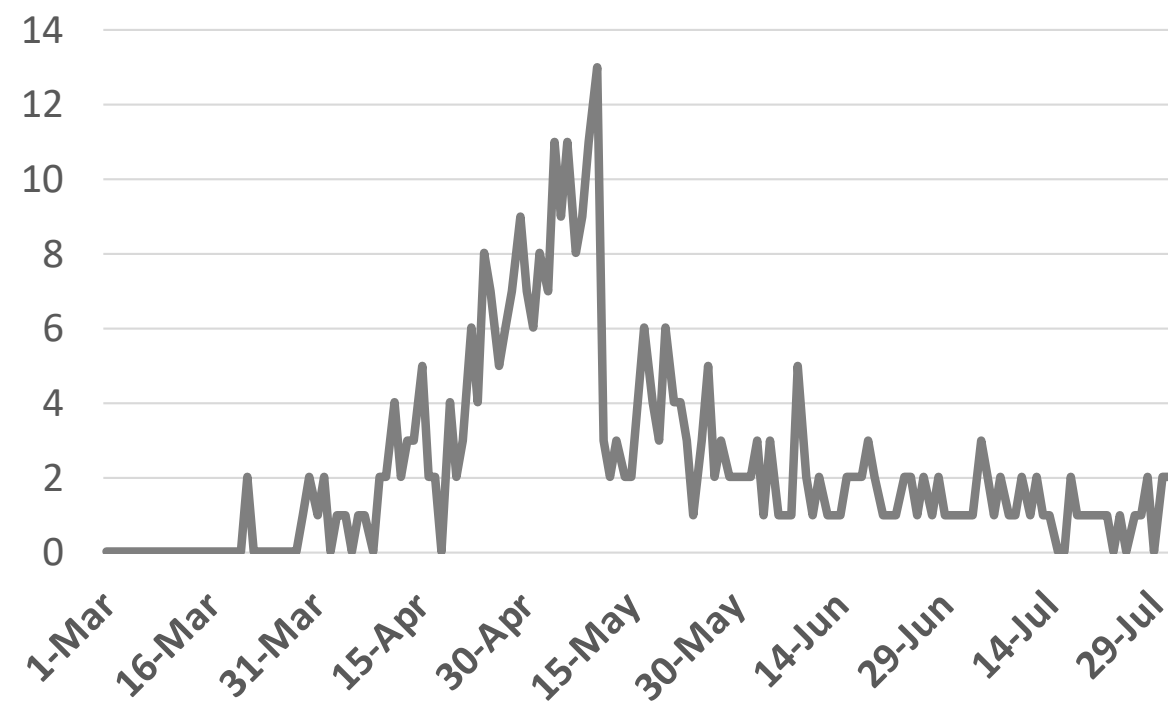
Qatar



Source : Qatar ministry of health

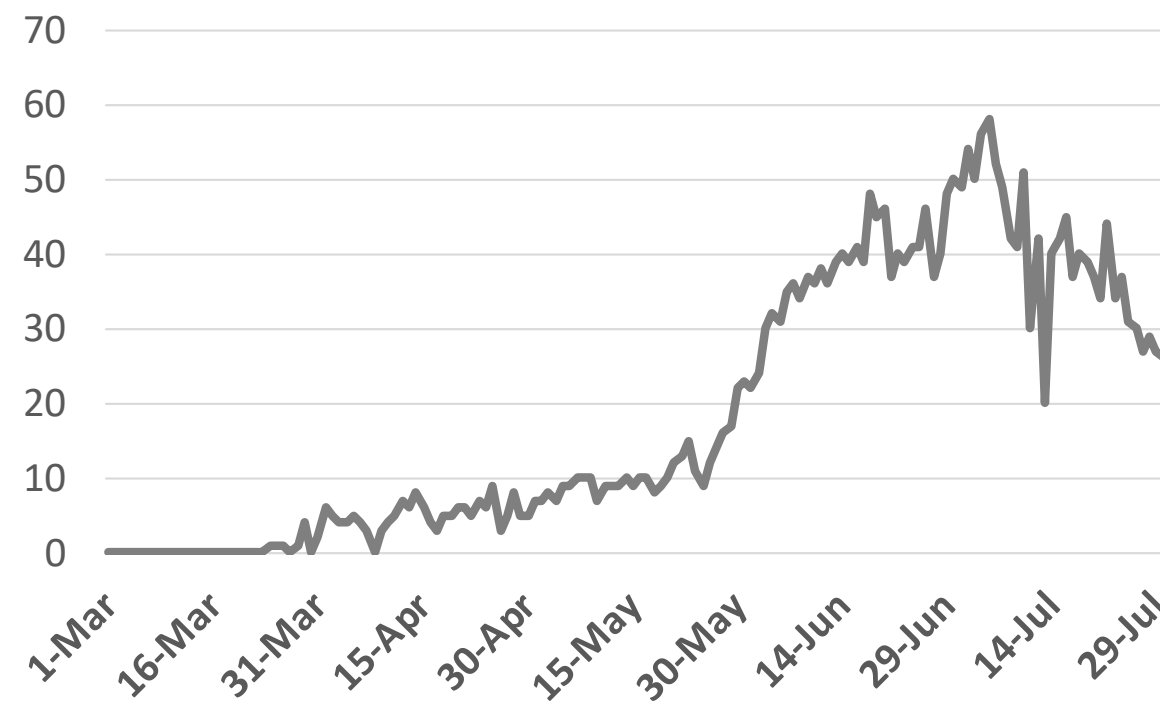
Figure 12: Comparative Analysis of the Distribution of COVID-19 New Death Cases in GCC Countries

UAE



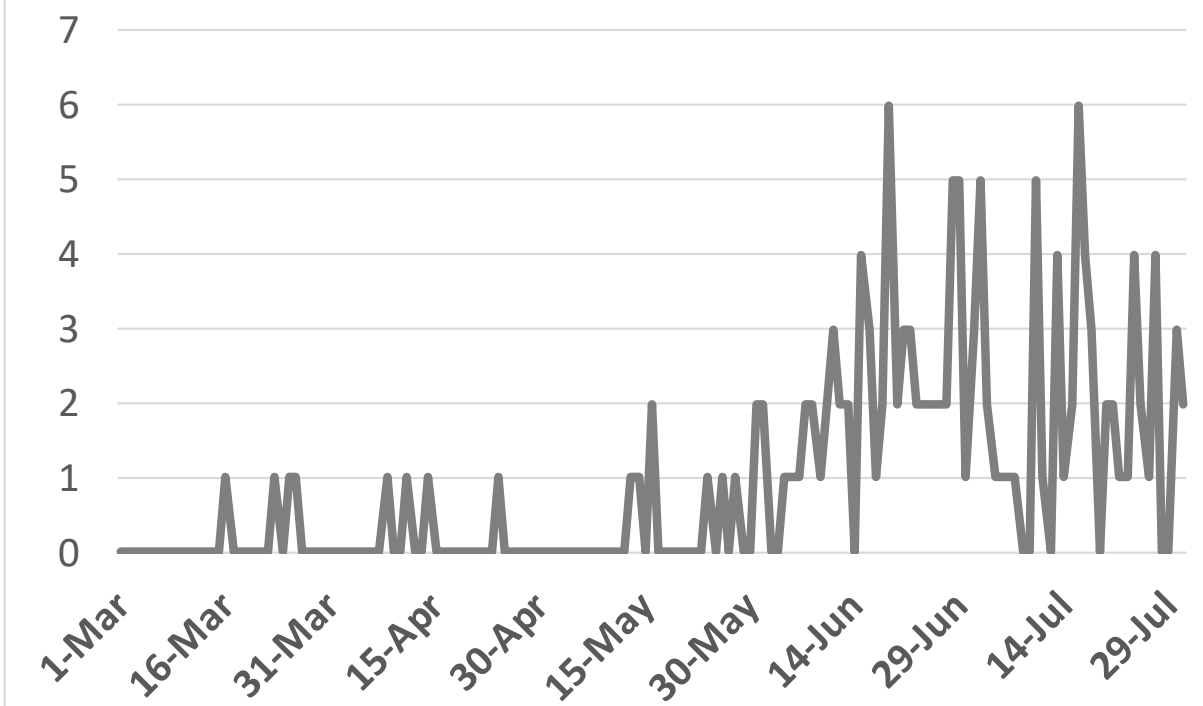
Source : National Emergency Crisis and Disaster Management Authority

KSA



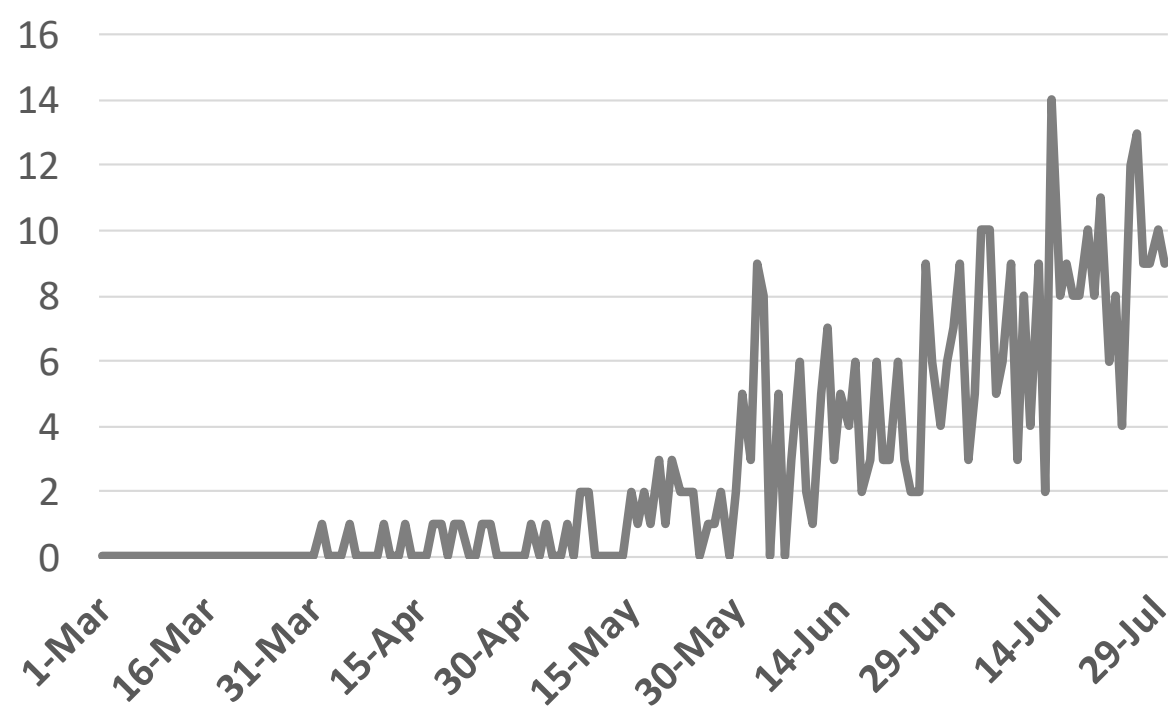
Source : KSA ministry of health

Bahrain



Source :WHO

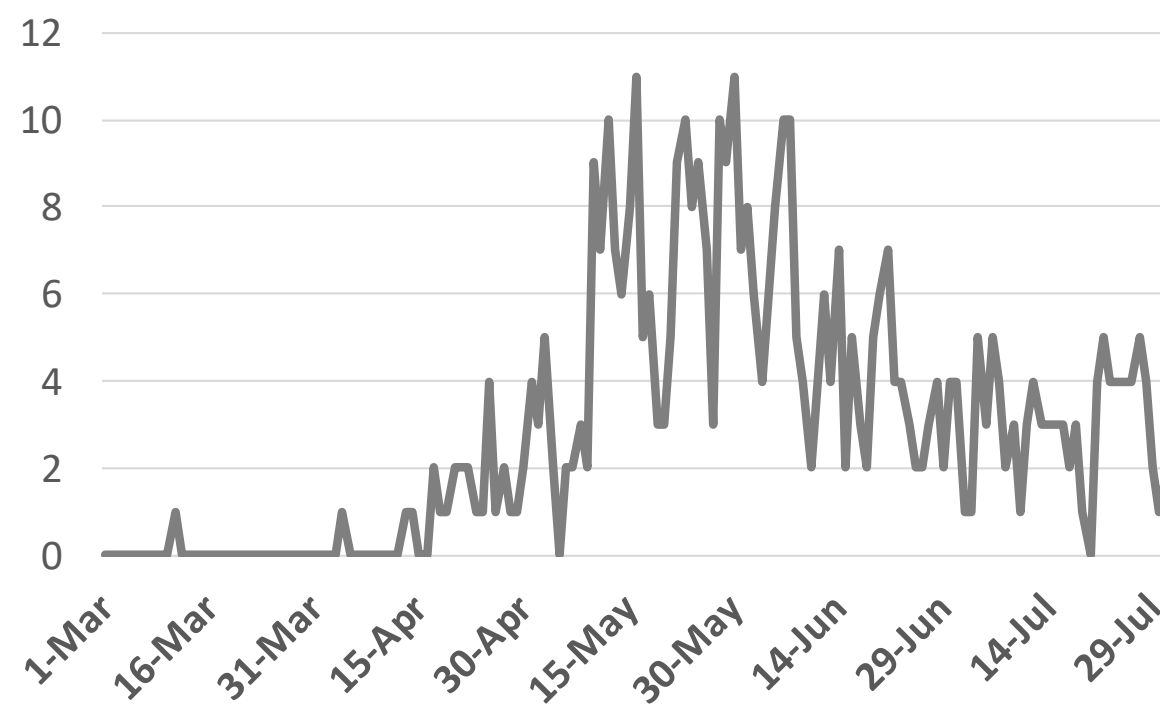
Oman



Source :Oman ministry of health

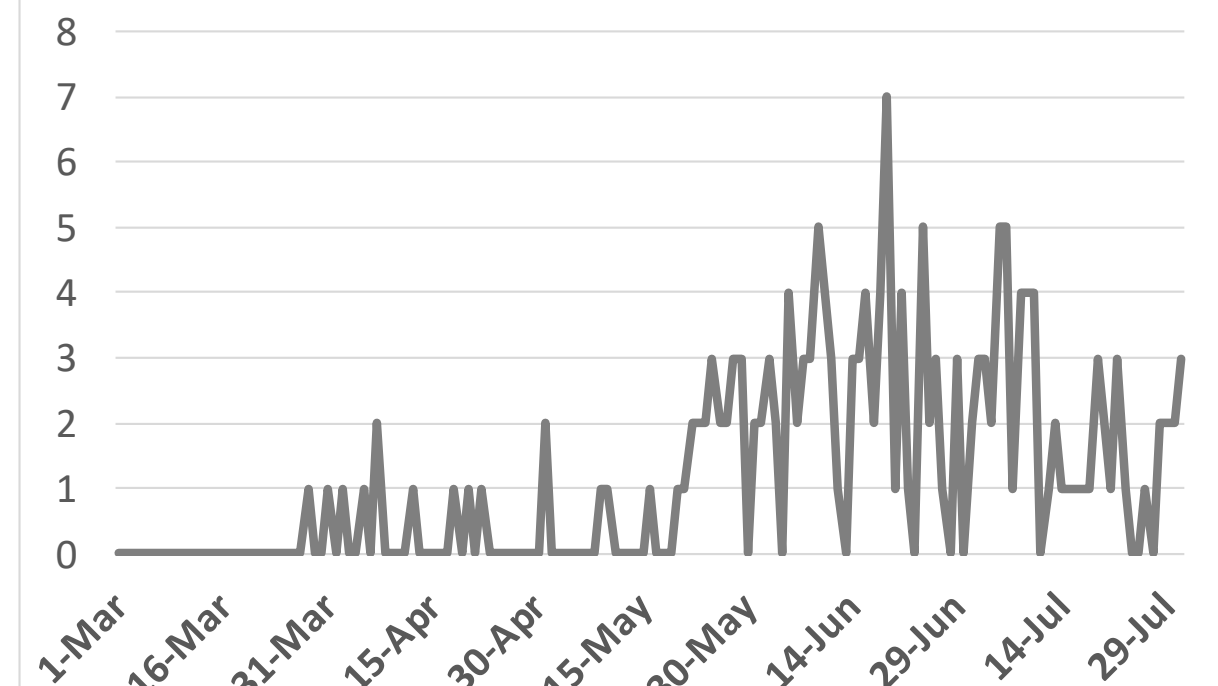
Kuwait

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Source : Kuwait ministry of health

Qatar



Source : Qatar ministry of health

Article 1

Published

Point-Of-Care Serological Assays for Delayed Sars-Cov-2 Case Identification Among Health-Care Workers in the UK: A Prospective Multicenter Cohort Study

24 July 2020 [THE LANCET](#)

This study aimed to investigate the performance of point-of-care alongside laboratory serology assays and their utility in late case identification and to estimate SARS-CoV-2 seroprevalence.

Background

Capacity for acute diagnosis via PCR testing was limited for individuals with mild to moderate SARS-CoV-2 infection in the early phase of the COVID-19 pandemic and, a substantial proportion of health-care workers with suspected infection were not tested.

Methodology

- This is a prospective multicenter cohort study between April 8 and June 12, 2020, conducted in two phases.
- **Phase 1:** Two point-of-care lateral flow serological assays were evaluated for performance against a laboratory immunoassay (ELISA) in 300 samples from health-care workers and 100 pre-COVID-19 negative control samples.
- **Phase 2:** Sero-surveillance was done among 1299 (93.4%) of 1391 health-care workers reporting symptoms and in a subset of asymptomatic health-care workers (405 [8%] of 5049).

Findings

- 141 (47%) of 300 samples had a positive IgG ELISA result.
- Encode Rapid Test assay (China) showed reasonable IgG sensitivity (93.4%) and specificity (99%), and good agreement (94%) with the ELISA.
- Onsite Rapid Test assay (USA) had reduced sensitivity (88.2%) and specificity (94%) and agreement (84.7%).
- Among 70 PCR confirmed cases, 60 were positive on laboratory ELISA, 65 were positive on Encode, and 63 were positive with the Onsite lateral flow serological assays.
- **In phase 2, seroprevalence (presence of antibodies) among the workforce was estimated to be 10.6% in asymptomatic health-care workers and 44.7% in symptomatic health-care workers.**
- **Seroprevalence across the entire workforce was estimated at 18%.**

Continued

Public Health Message

- Variation in performance characteristics between assays highlights the urgent need for individual evaluation of a large number of commercial SARS-CoV-2 serology tests.
- Practically, the observation of false-negative serology results among health-care workers provides valuable information considering their messaging around the interpretation of serology results at this early stage in the scale-up of serological testing.
- False-negative results have a clear impact on the manner in which serological testing might be used to augment and support physical distancing policies, as well as implications for the development of large-scale testing pathways.
- **Further research is required into the full scope of serological testing for SARS-CoV-2 infection and factors associated with failing to mount a detectable immune response to SARS-CoV-2 infection in otherwise healthy individuals.**
- This study also demonstrates the potential limitations of single-target immunoassays for SARS-CoV-2 and should help inform future research studies, where further evaluation is required not just of alternative assays but also through the comparison of the various epitope targets that are currently available.



Article 4

The Time to Do Serosurveys for COVID-19 Is Now

Published

24 July 2020 [THE LANCET](#)

- A study by The Lancet Respiratory Medicine, estimated the prevalence of SARS-CoV-2 infection to be 10.6% in asymptomatic health-care workers and 44.7% in symptomatic health-care workers at two hospitals in London, UK. This work raises important issues in the design of seroprevalence surveys, how they should be done, and, importantly, how to interpret and act on the results.
- Seroprevalence studies (serosurveys) are important for determining the true extent of an outbreak, map its distribution and identify hotspots and, at-risk groups. High specificity is crucial in a serology test so as to avoid misclassifying people as infected (false-positive results) as this would give a false sense of security, misleading public health interventions and prematurely easing restrictions. Therefore, establishing the accuracy of lateral flow serological assays before doing a serosurvey is crucial to generate confidence in the results. Relatively small variations in test specificity and the prevalence of SARS-CoV-2 infection can heavily influence results.
- Two lateral flow serological assays were evaluated:
 - Encode SARS-CoV-2 IgM/IgG: One Step Rapid Test Device
 - Onsite CTK Biotech COVID-19 split IgG/IgM Rapid Test.
- The Encode assay had a sensitivity (compared with PCR-confirmed cases of SARS-CoV-2) of 93.4% and specificity of 99.0%. The Onsite assay had a sensitivity of 88.2% and a specificity of 94.0%. At a seroprevalence of 10.6%, a test with 99.0% specificity would have a positive predictive value (PPV) of 91.7%, meaning around 8% of the results might be false positives.
- Had the study used a test with 94.0% specificity the PPV would be 63.6%, therefore around a third of the results would be false positives, meaning an overestimation of prevalence in health-care workers.
- If these tests were used to do serosurveys on the general population (estimated prevalence 2.7%), then the Encode assay would have a PPV of 72.2% and the Onsite assay 29.0%, unacceptably high rates of false-positive results. So far, 58 serological tests have been approved by the US FDA.