

SCIENTIFIC RESEARCH MONITORING ON COVID-19

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SCIENTIFIC RESEARCH MONITORING ON COVID-19

(ISSUE 157)

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



WHO
Report



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).

Ministry of Health and Prevention Contribution:

Diagnosis

Laboratory Diagnosis of Coronavirus Disease-2019 (COVID-19)

Pathogenesis

Neurobiology of Coronaviruses: Potential Relevance for COVID-19

Transmission

COVID-19 in Health-Care Workers in Three Hospitals in the South of the Netherlands: A Cross-Sectional Study

Clinical Features

Characteristics, Risk Factors and Outcomes Among the First Consecutive 1096 Patients Diagnosed with COVID-19 in Kuwait

Epidemiology

Association Between Mobility Patterns and COVID-19 Transmission in the USA: A Mathematical Modelling Study

Clinical Features

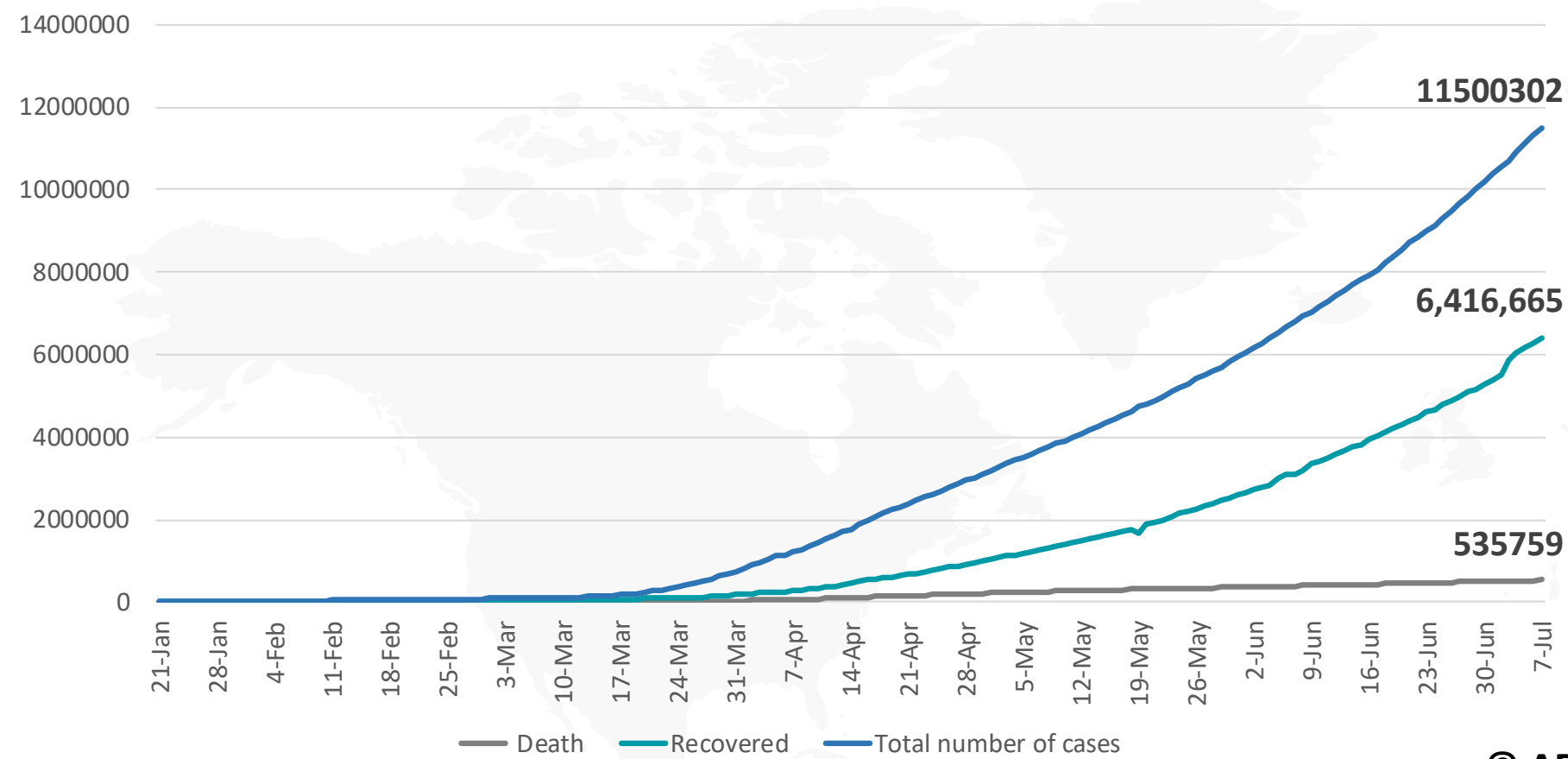
Neurological Associations of COVID-19



- WHO encourages Member States to invest in and build longer-term health emergency preparedness during the COVID-19 pandemic. To support this goal, WHO has published guidance that maps COVID-19 preparedness and response actions; locates relevant supporting WHO resources; and advocates for conscious and effective allocation of COVID-19 funds to meet countries' longer-term needs.
- WHO survey has found that access to HIV medicines has been severely impacted by COVID-19. **Seventy-three countries have warned that they are at risk of stock-outs of antiretroviral (ARV) medicines as a result of the COVID-19 pandemic, according to the survey conducted ahead of the International AIDS Society's biannual conference.**
- WHO Regional Office for America urges countries to continue the fight against malaria during the COVID-19 pandemic, especially among vulnerable communities. In the Americas, 138 million people live in areas at risk of malaria, and some 765 000 cases and around 340 deaths were reported in 2018.



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 the result of the world)

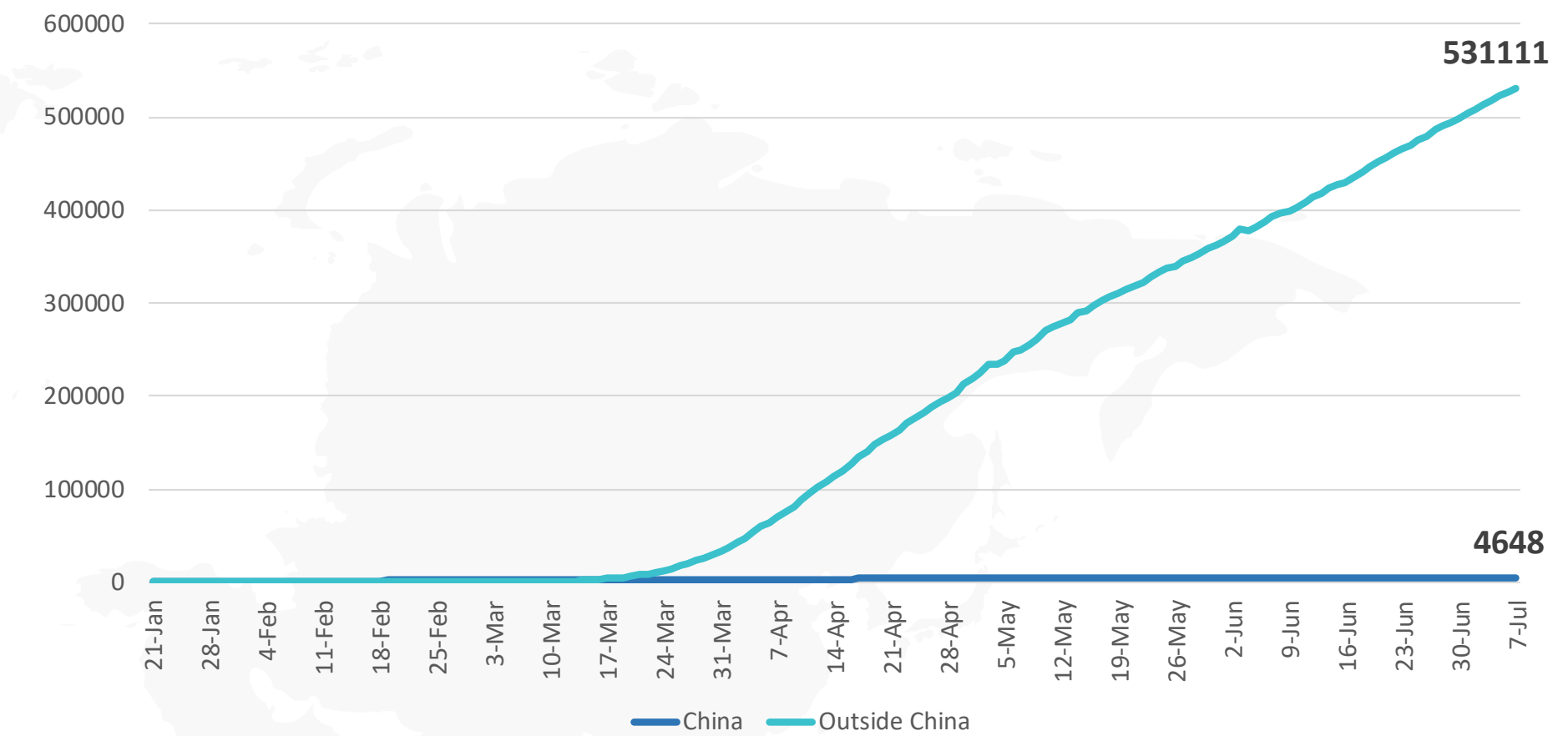


Figure 2: Daily new infected COVID-19 cases (china and the rest of the world)

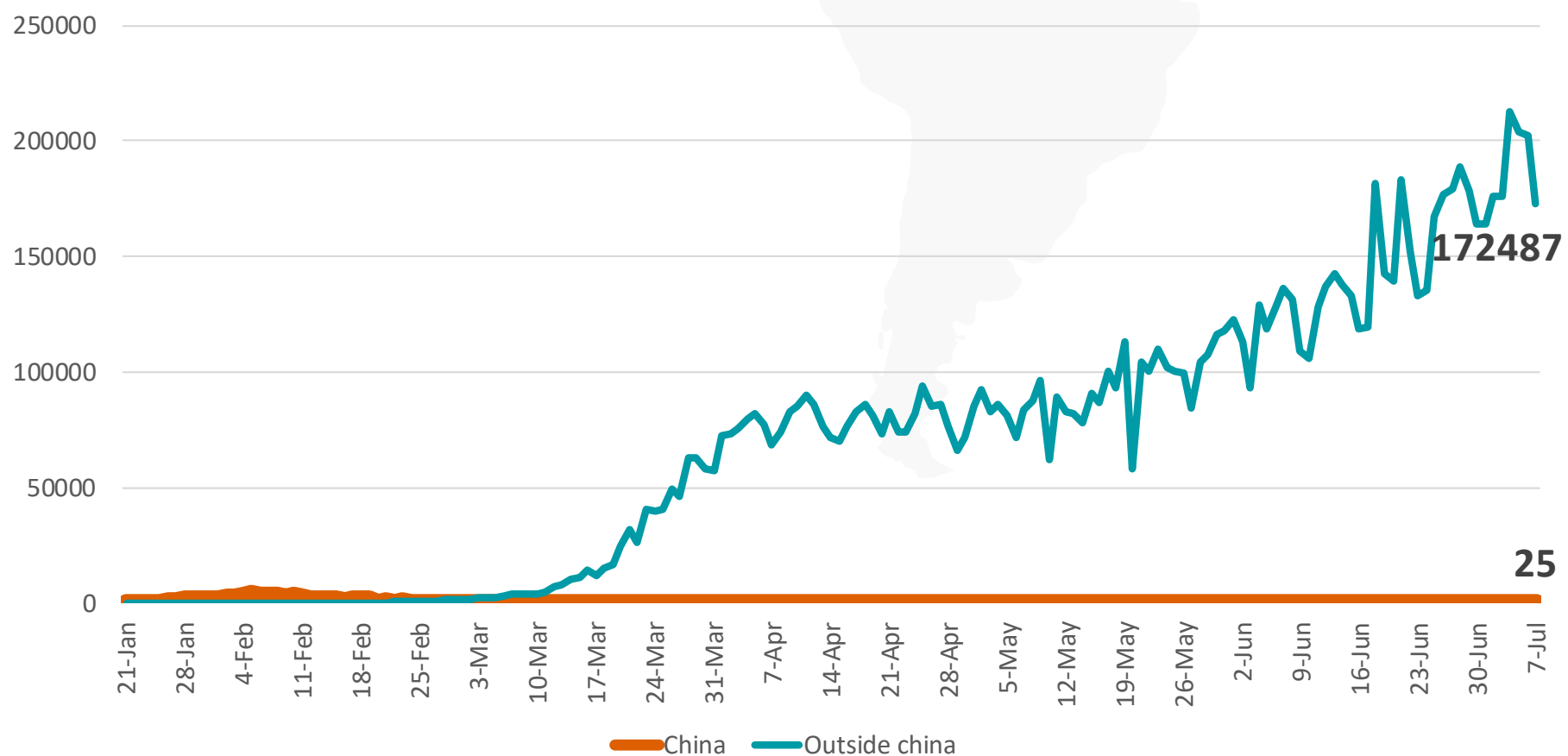


Figure 4: Global daily new deaths due to COVID-19 (china and rest world)

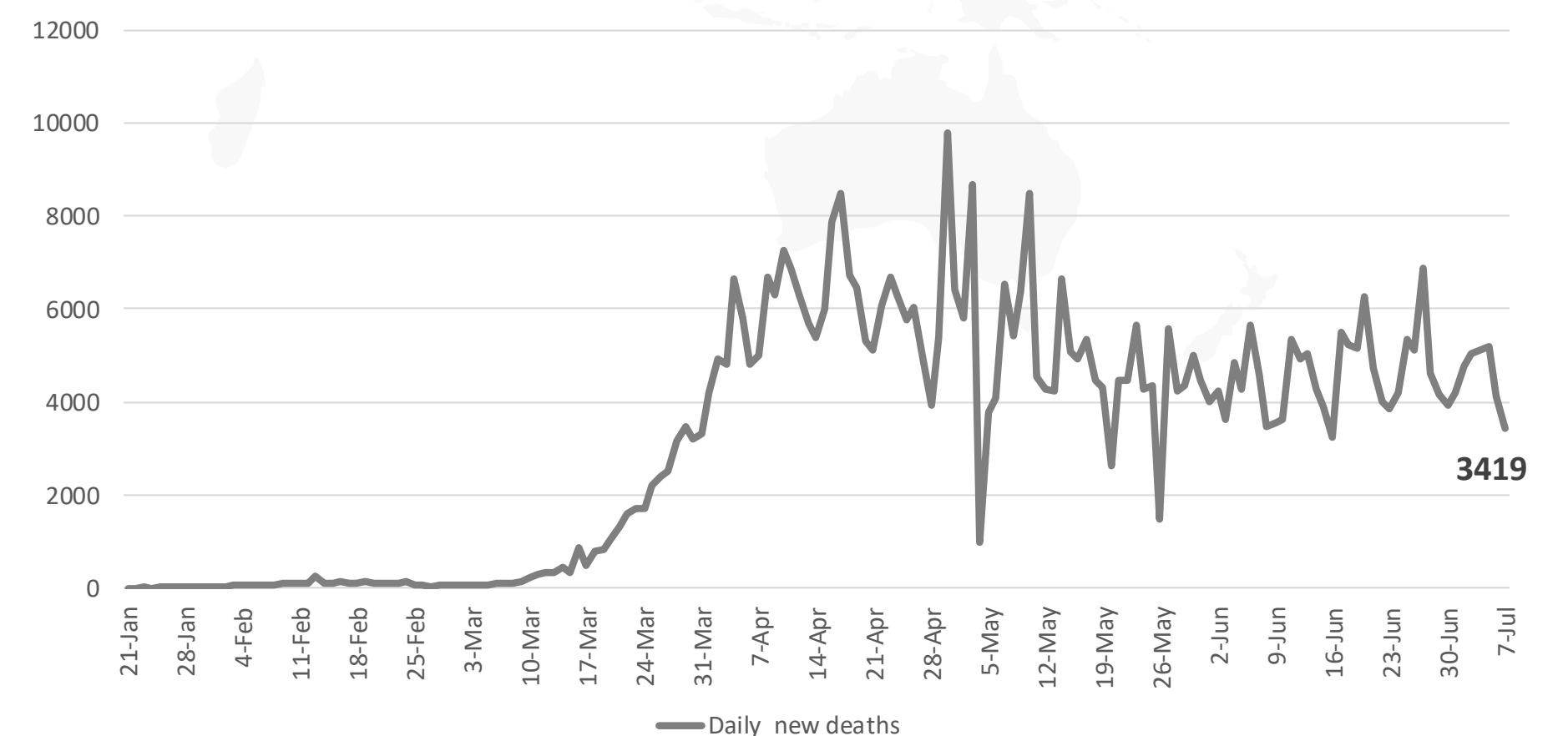
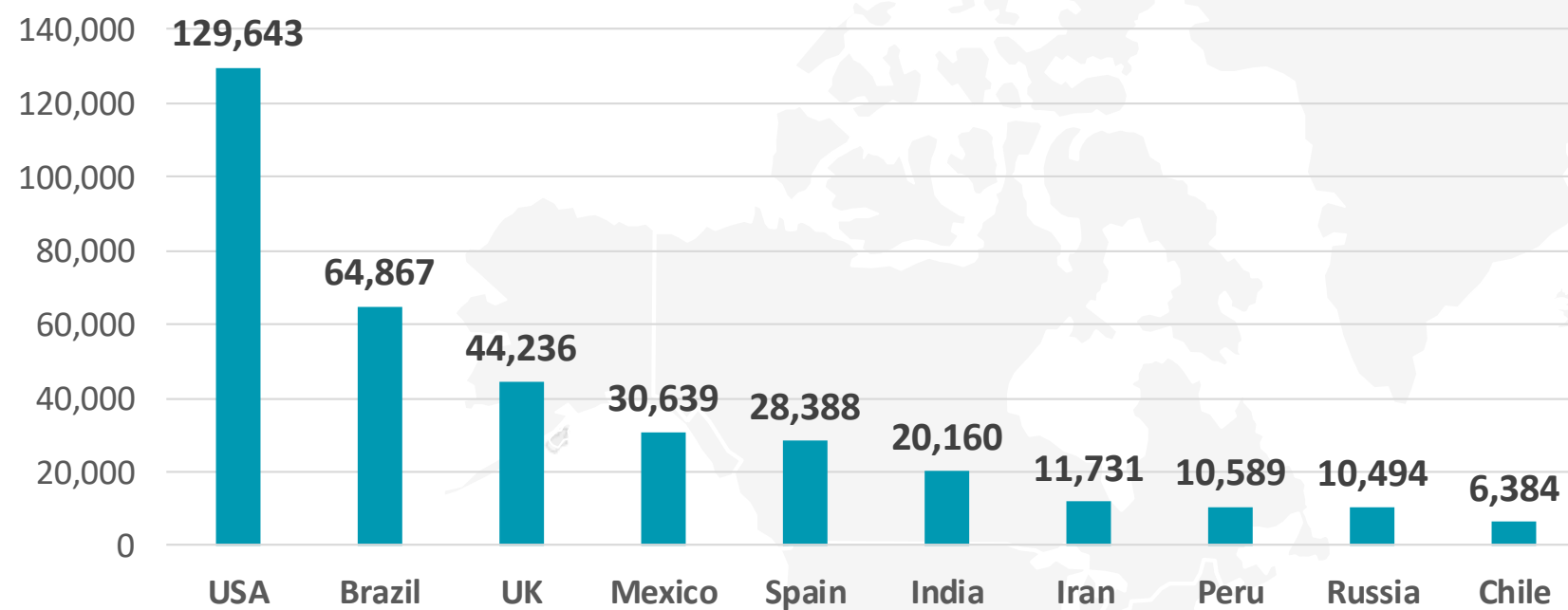
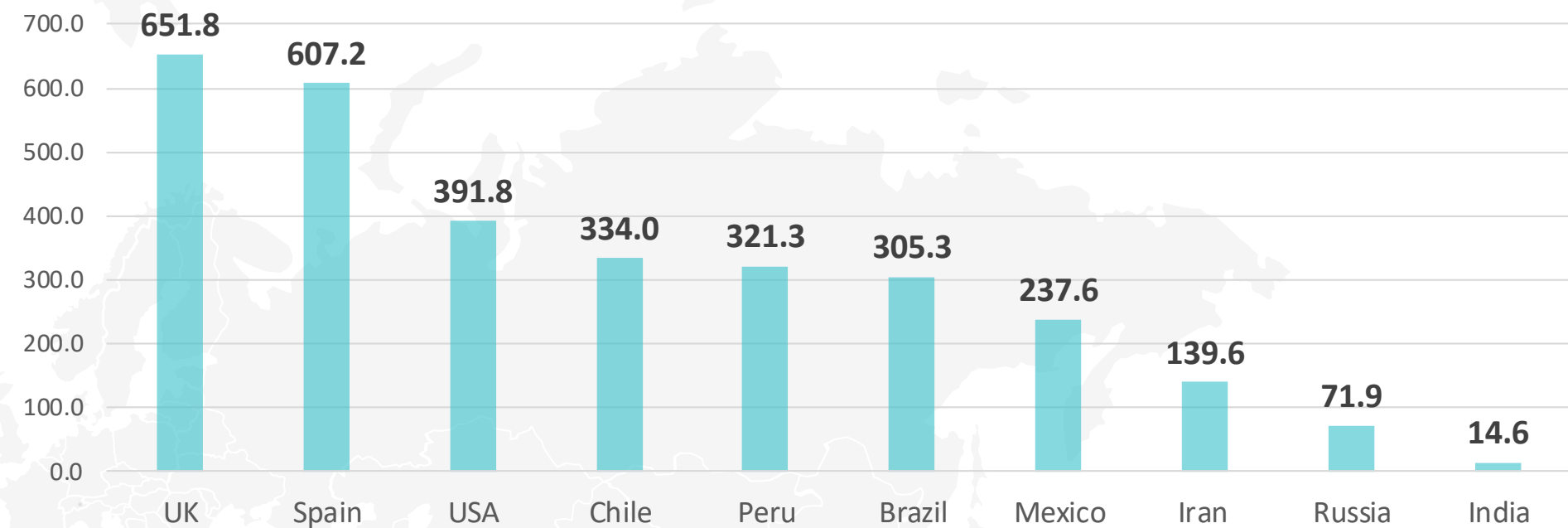


Figure 3: Top 10 countries in the total number of cases due to COVID-19

TOTAL DEATHS



DEATHS PER MILLION



TOTAL INFECTED CASES

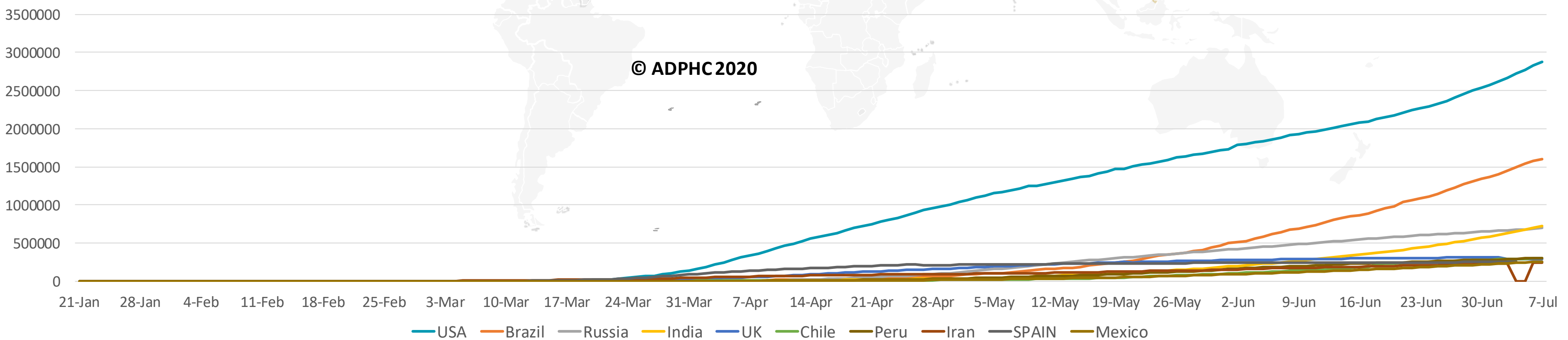


Figure 5: Total number of infected and recovered due to COVID-19 reported by the UAE

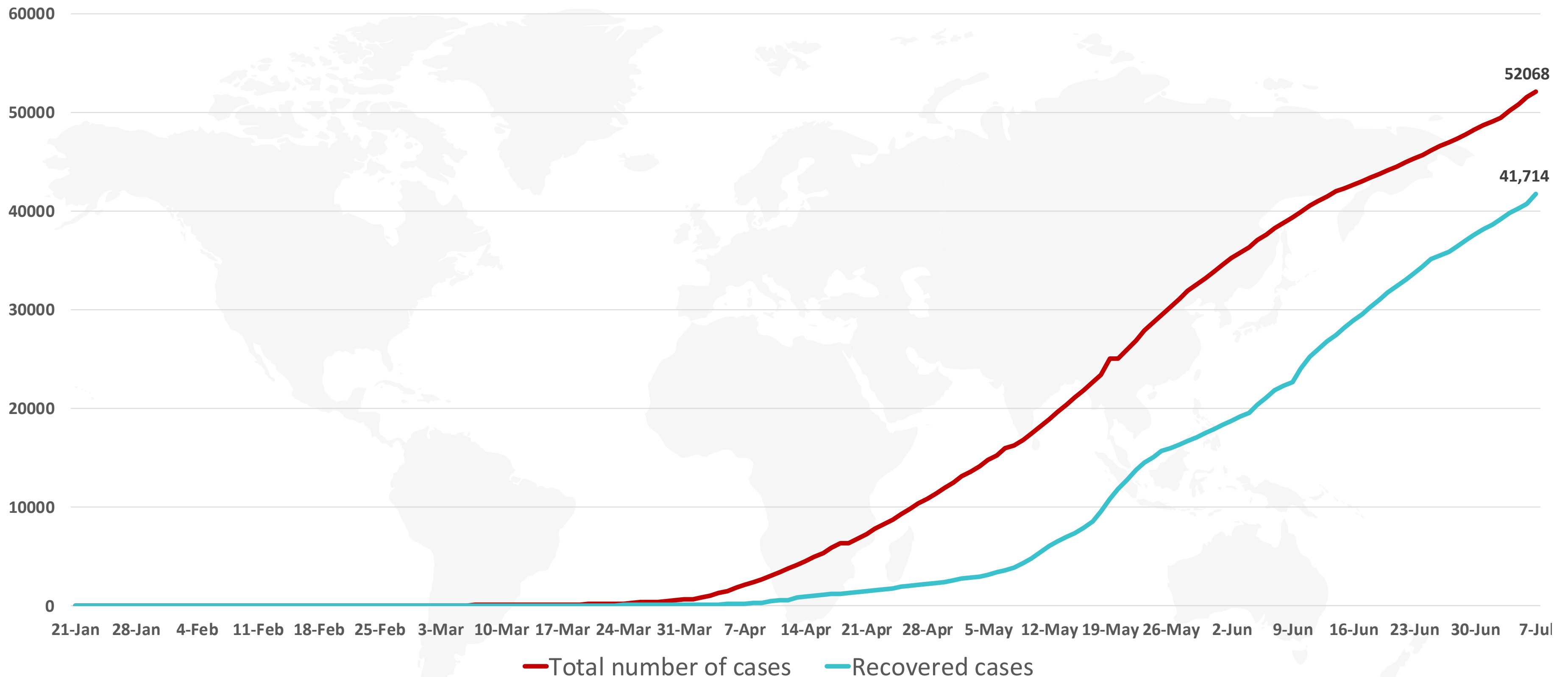
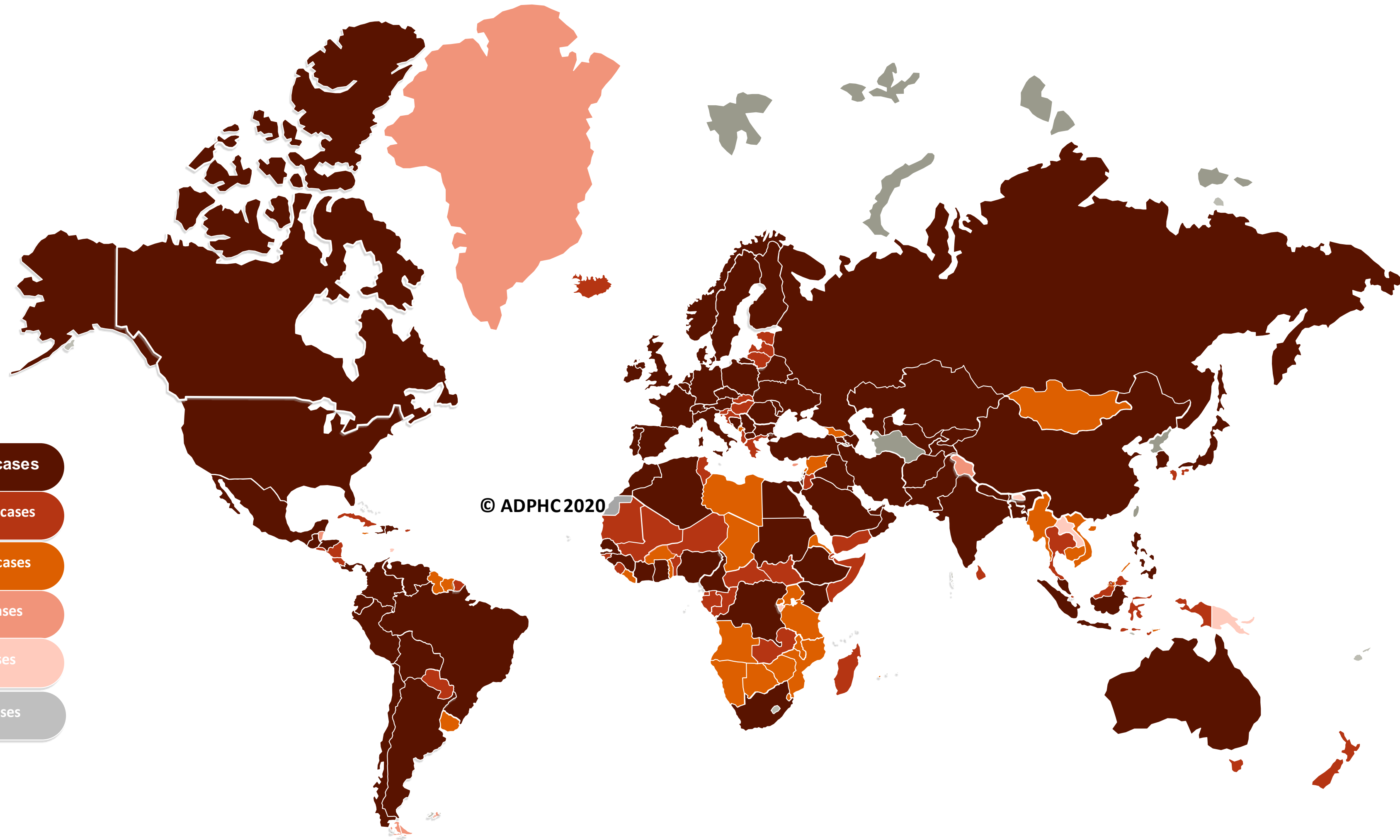


Figure 7A : Global distribution of COVID-19 cases



More than 5000 cases

From 1001 to 5000 cases

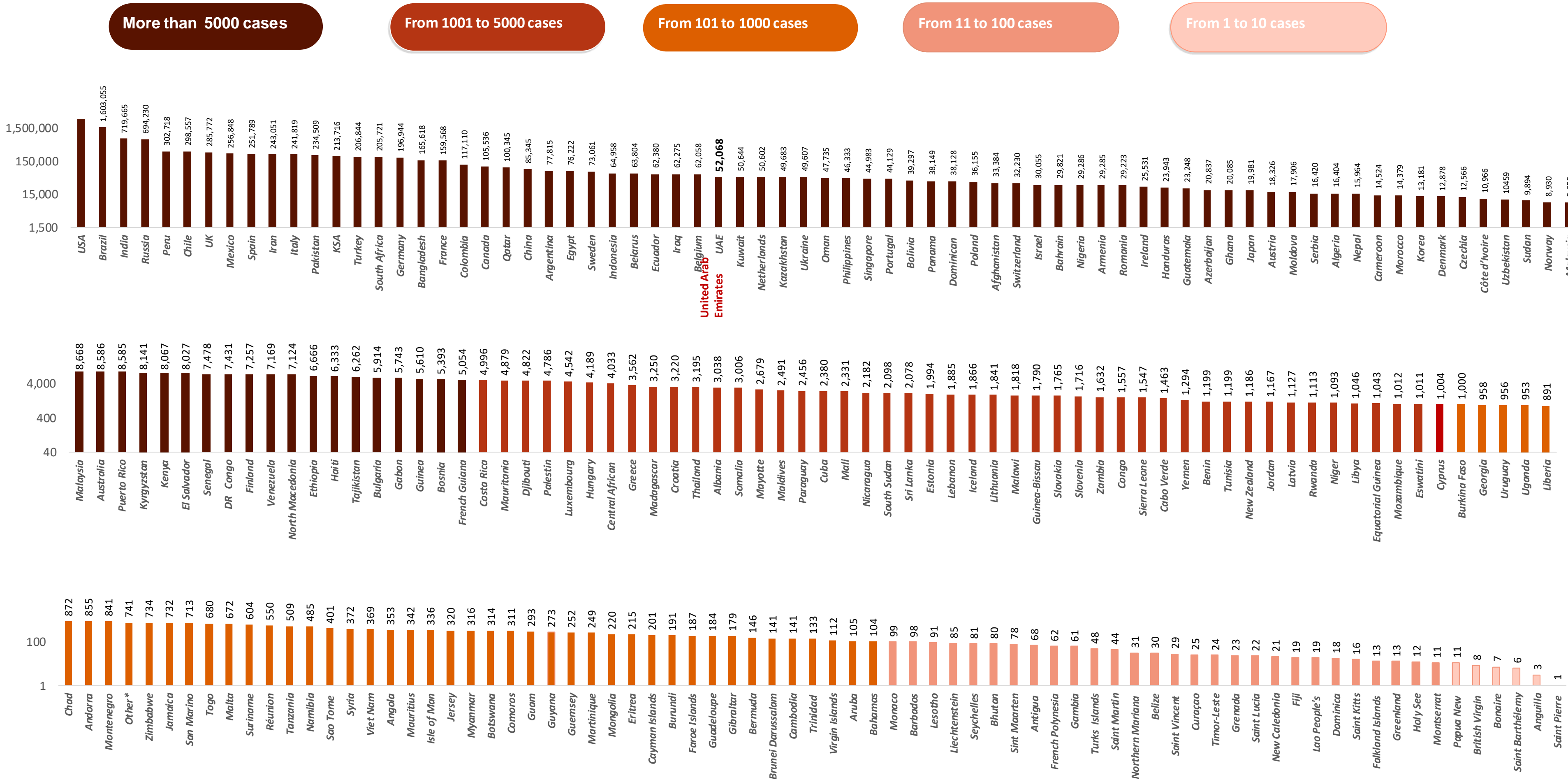
From 101 to 1000 cases

From 11 to 100 cases

From 1 to 10 cases

No confirmed cases

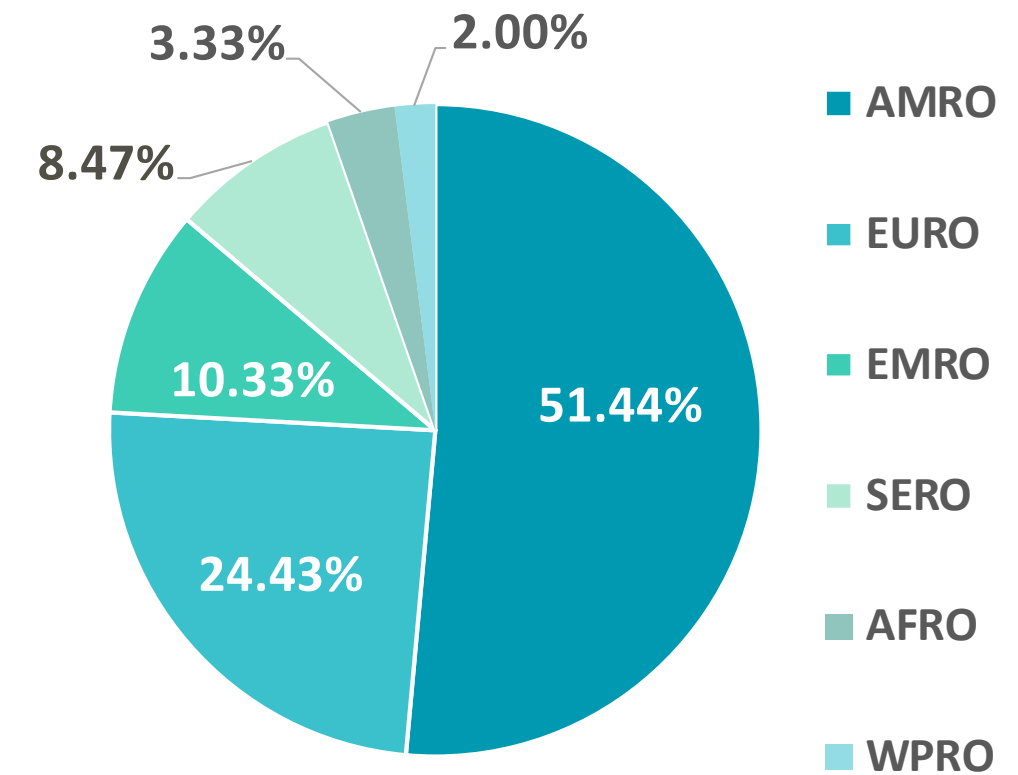
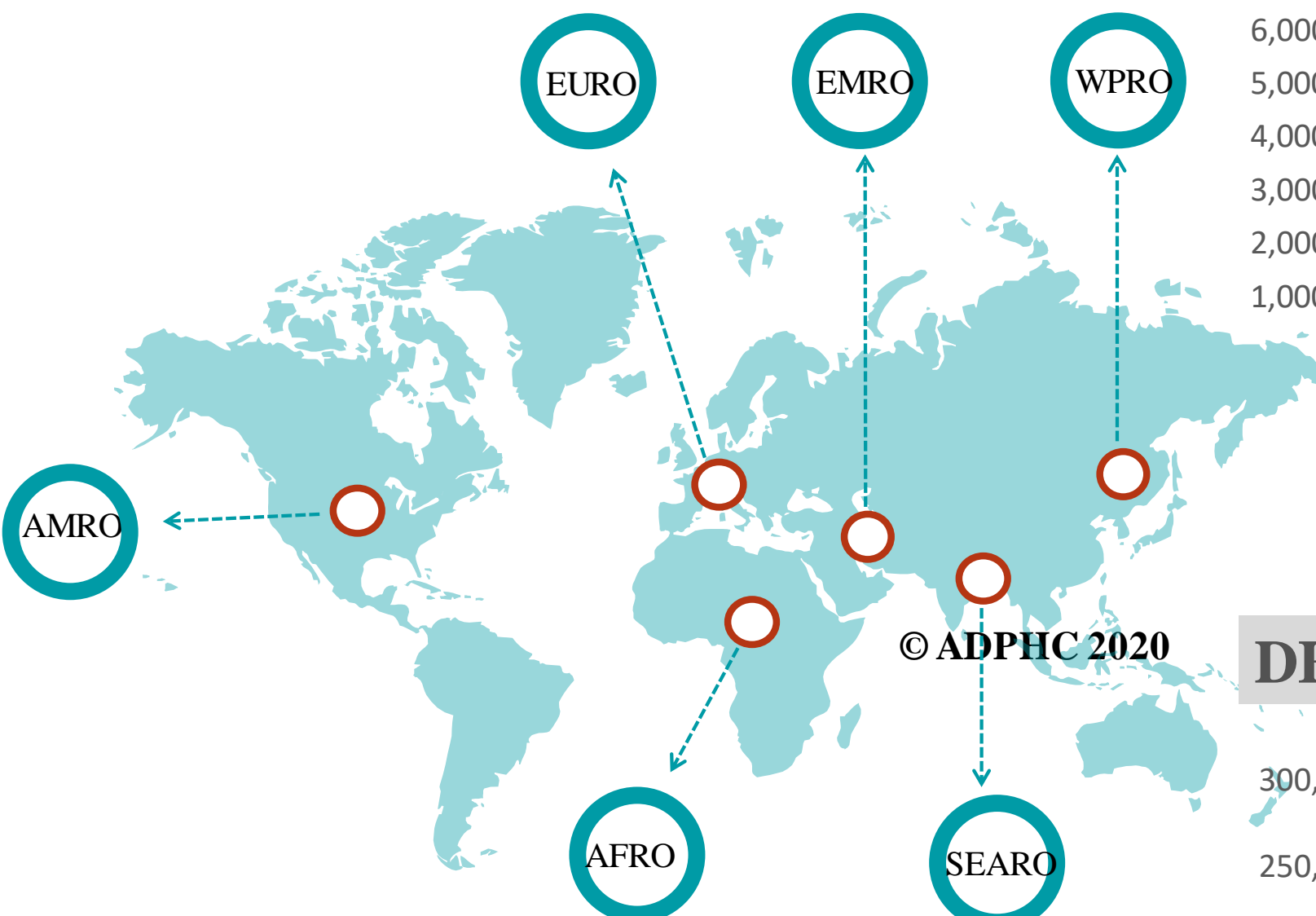
Figure 7B: Bar chart illustrate the global distribution of COVID19 cases



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

Figure 8: illustrate the Global distribution of COVID19 cases per region

INFECTED



DEATH

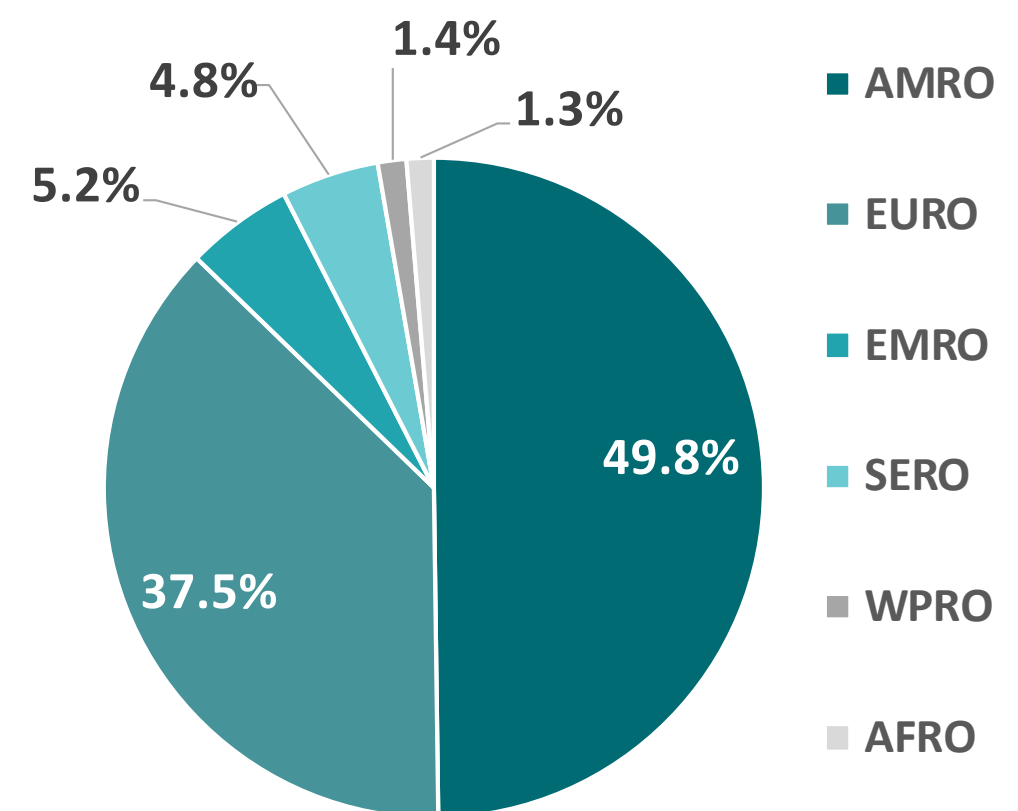
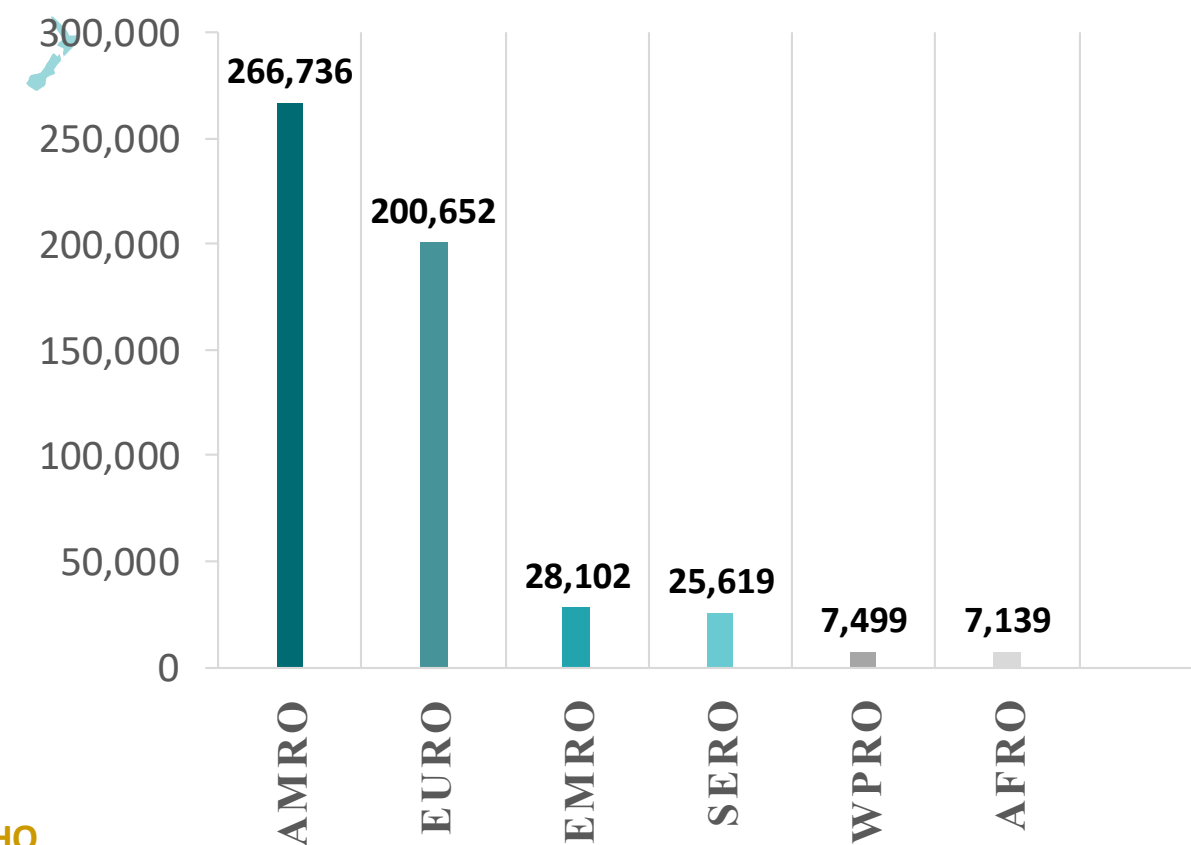
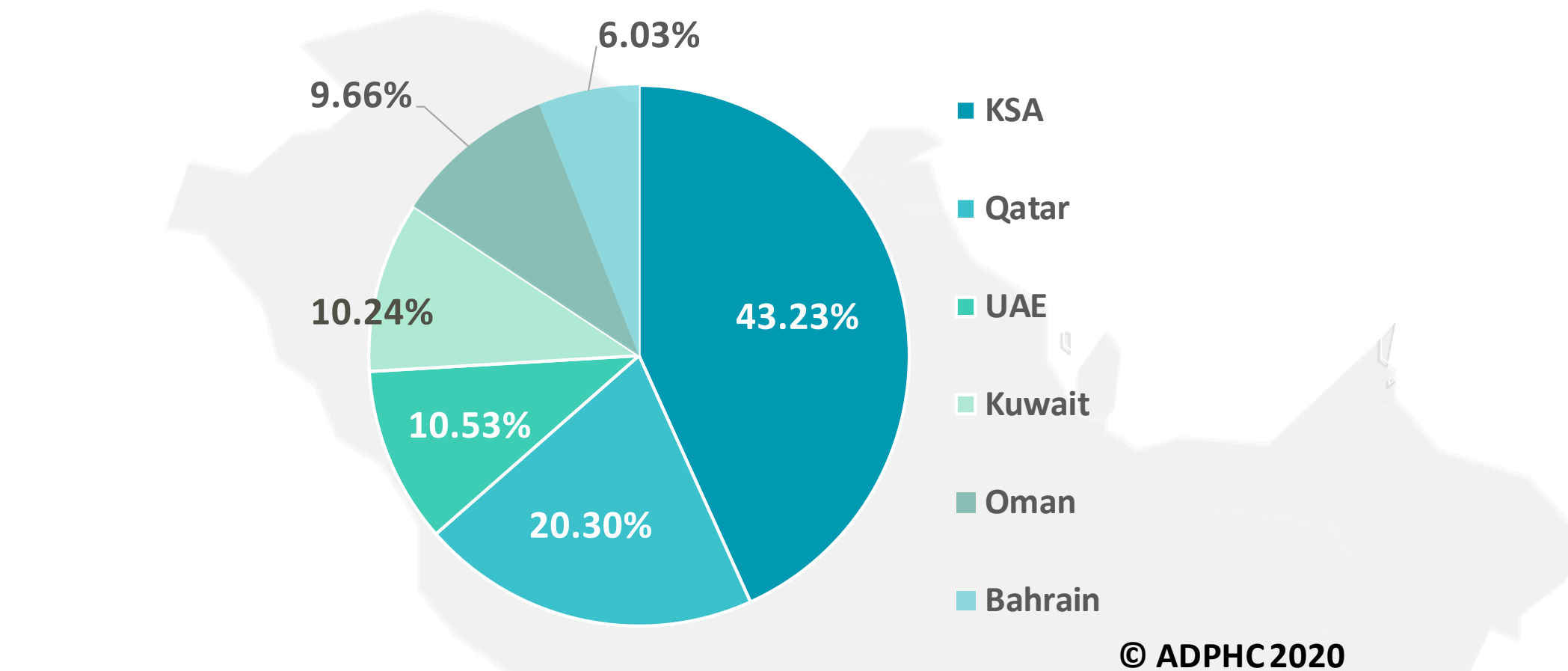
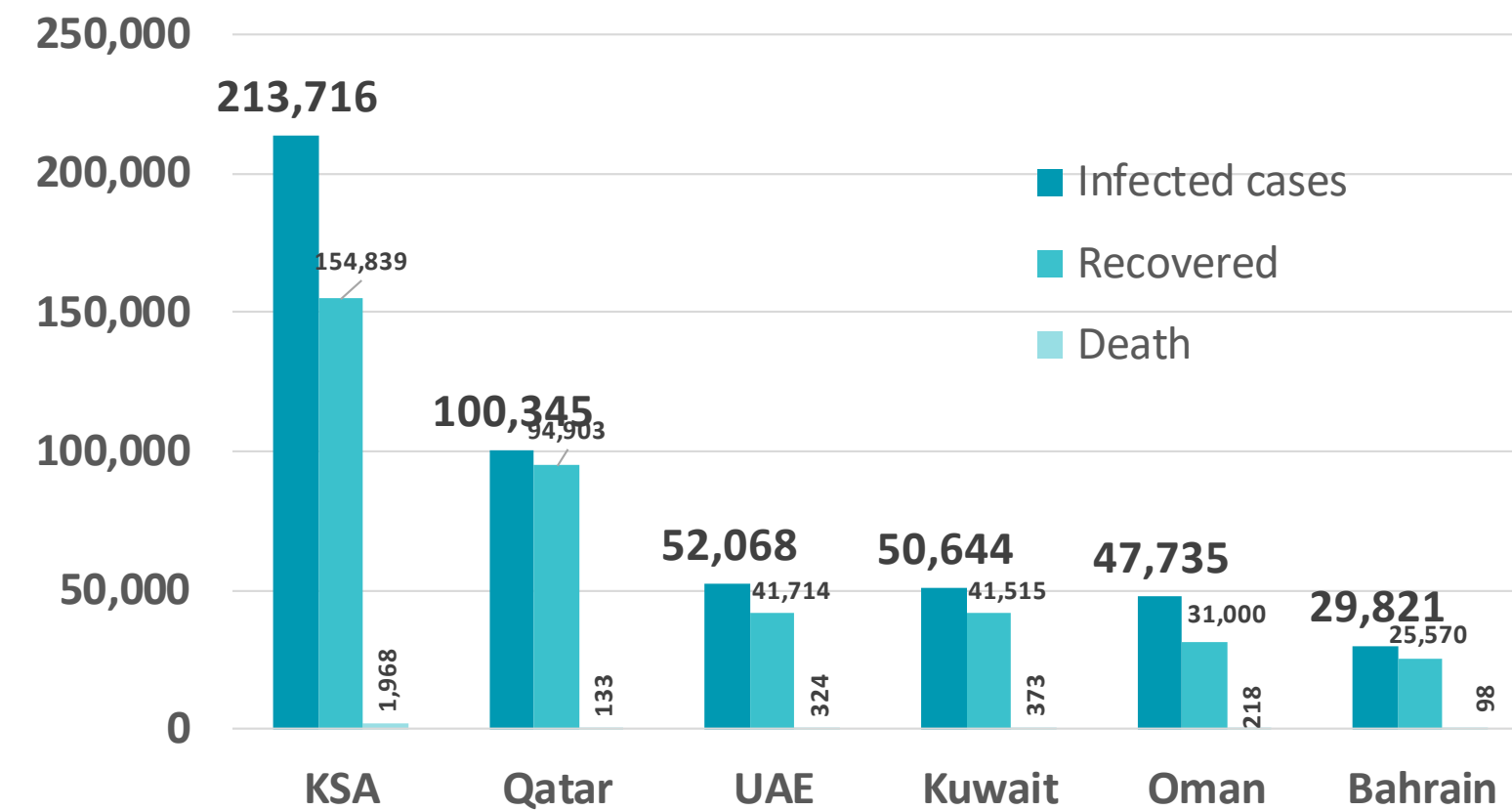


Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries

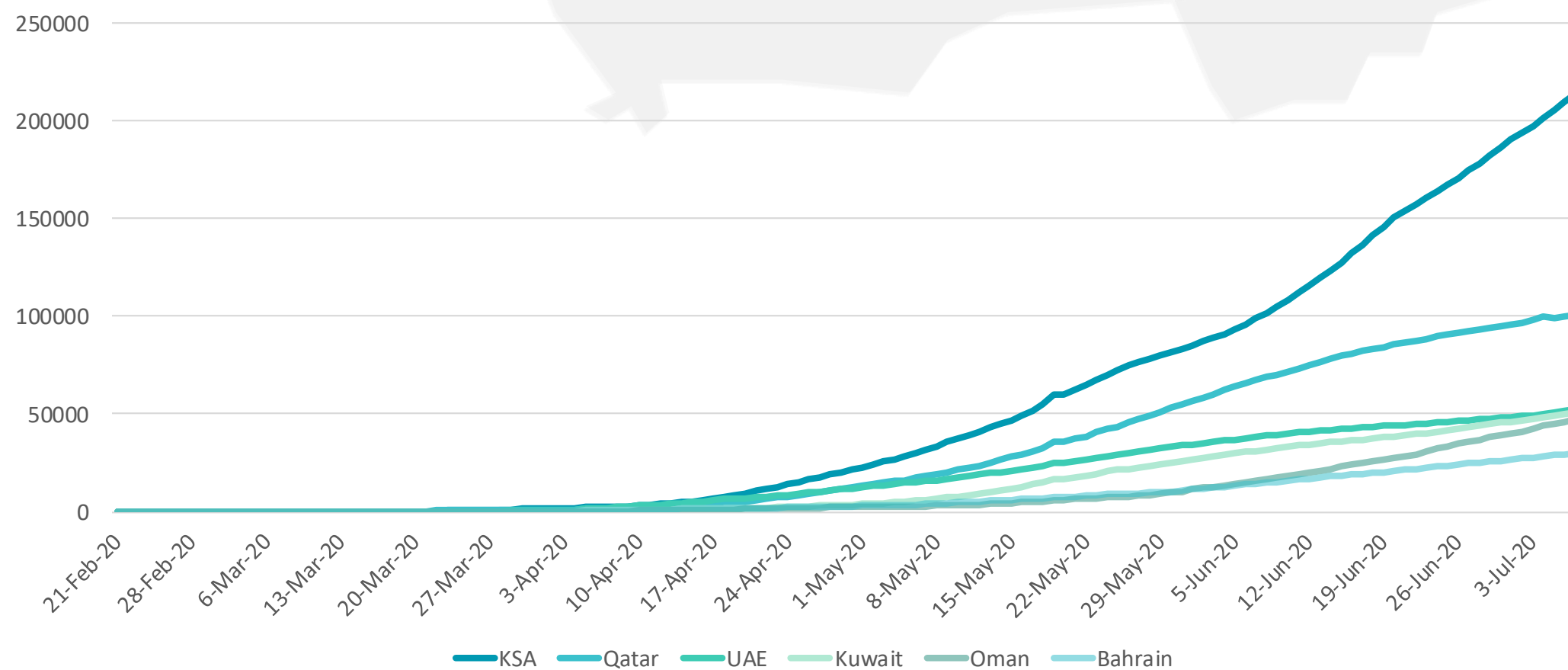
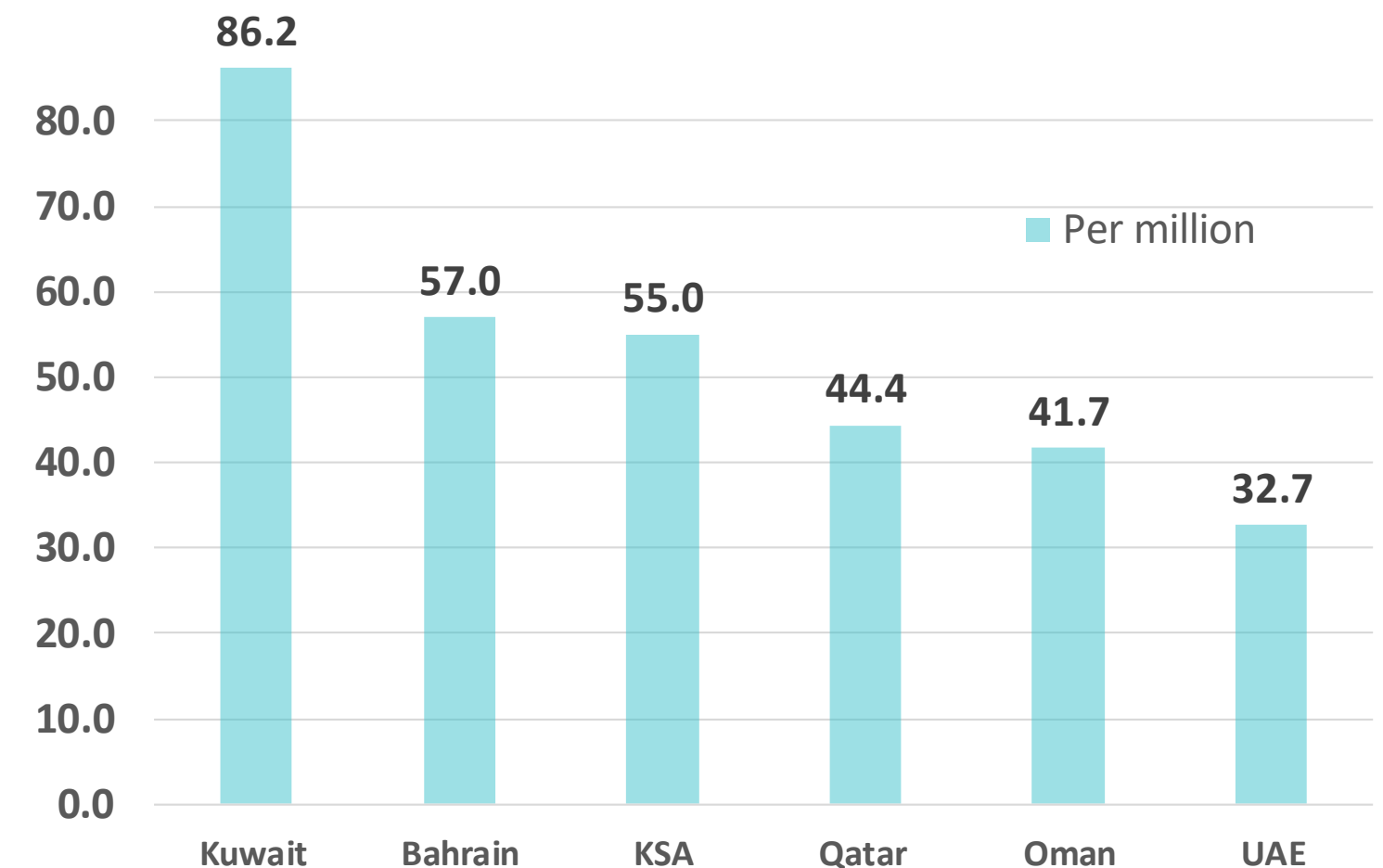
TOTAL NUMBER OF INFECTED CASES



TOTAL NUMBER OF INFECTED, RECOVERED AND DEATHS



DEATH PER MILLION



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

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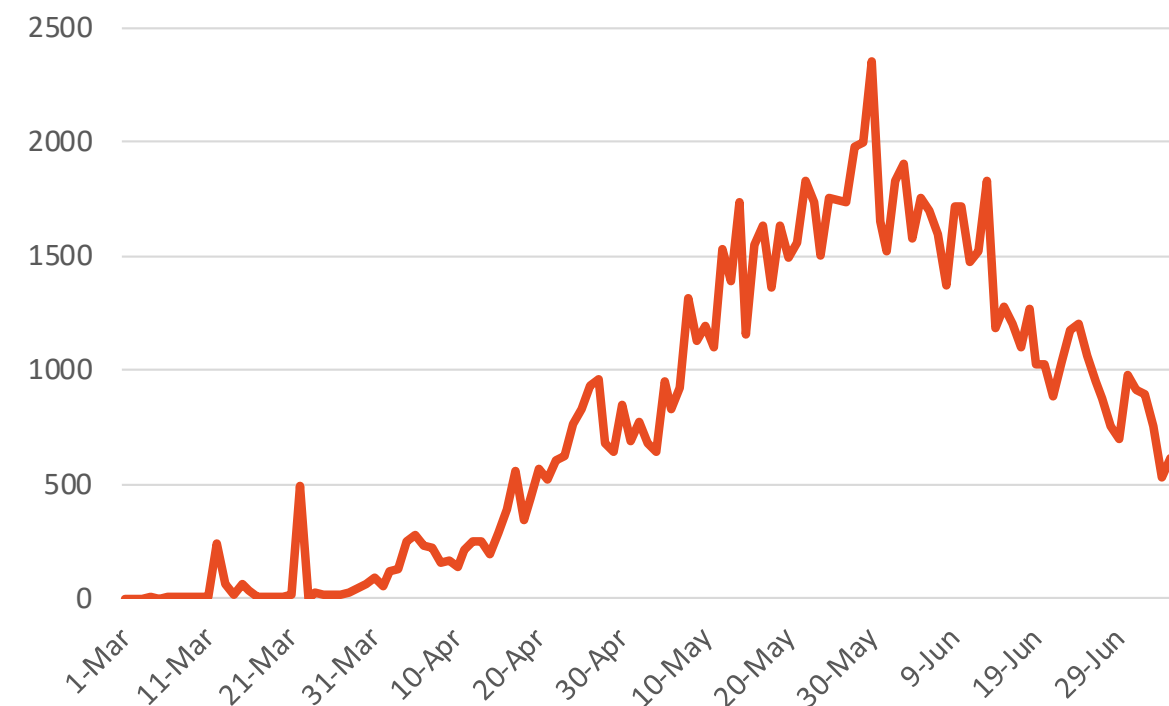
Figure 10: Comparative analysis of the distribution of COVID19 new cases in GCC countries

KSA



Source : KSA ministry of health

Qatar



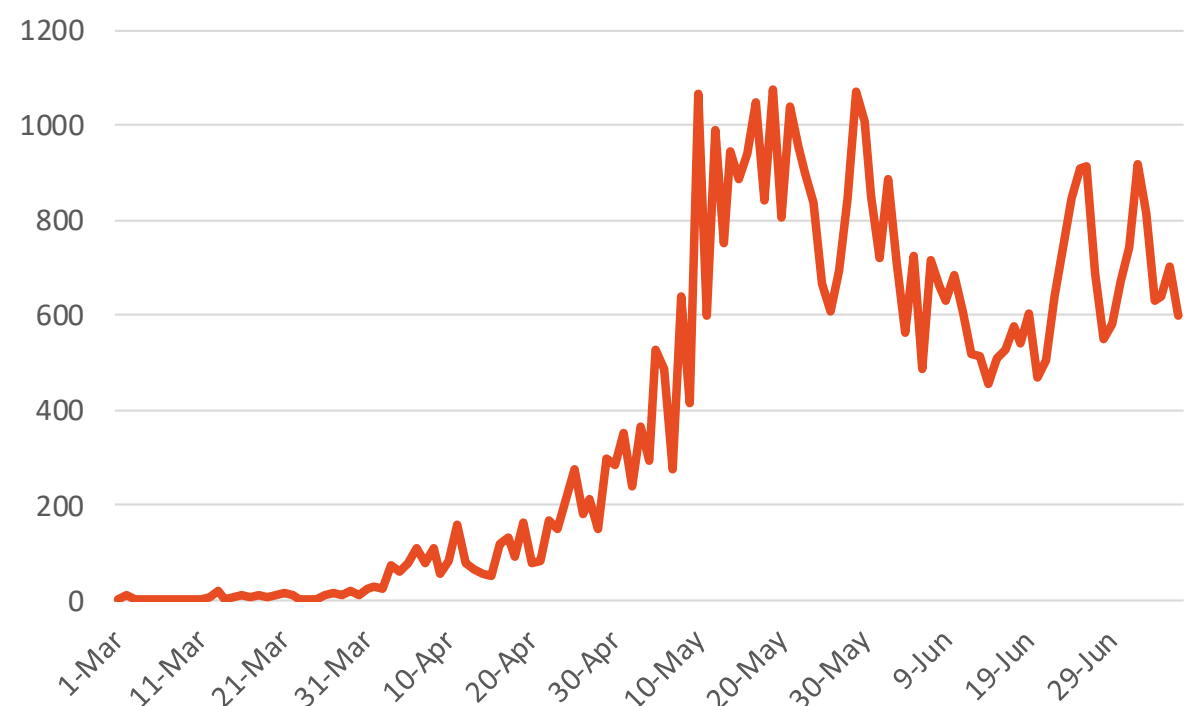
Source : Qatar ministry of health

UAE



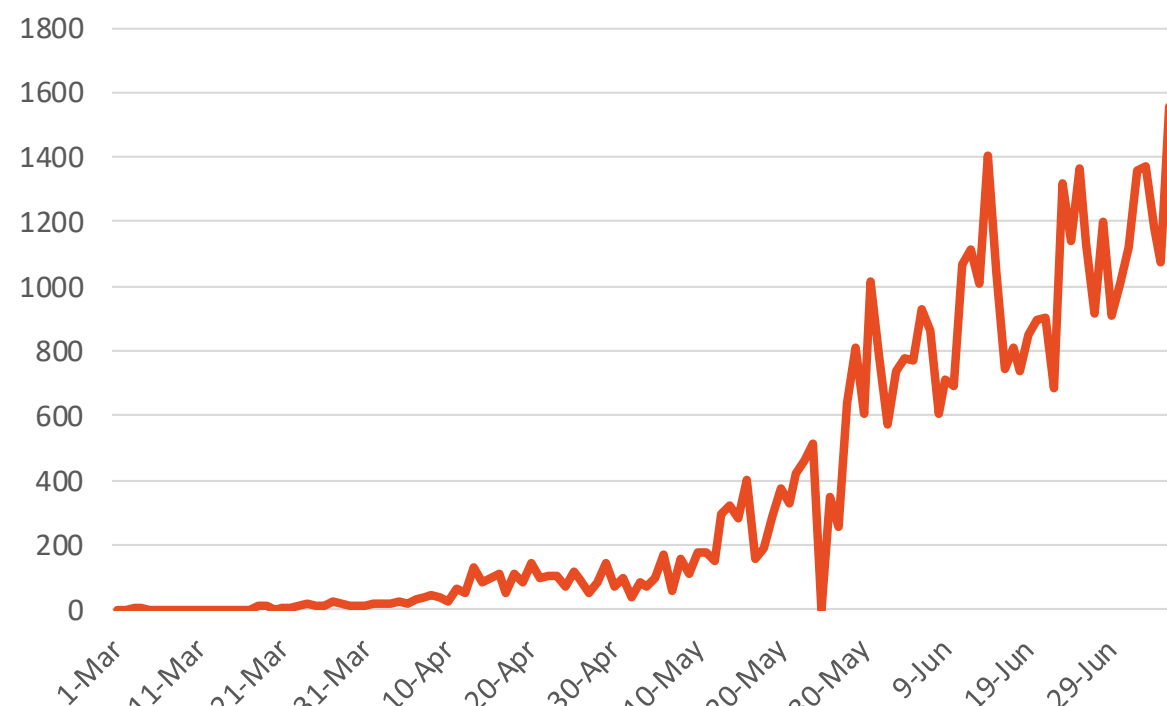
Source : National Emergency Crisis and Disaster Management Authority

Kuwait



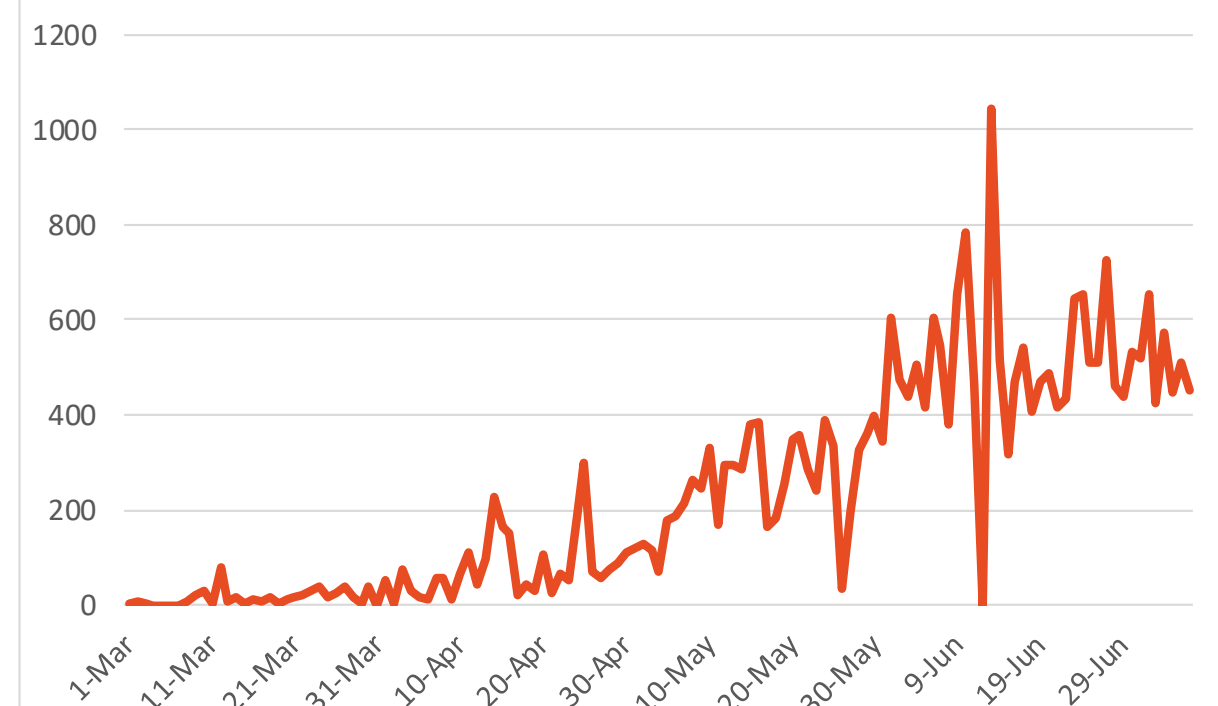
Source : Kuwait ministry of health

Oman © ADPHC 2020



Source : Oman ministry of health

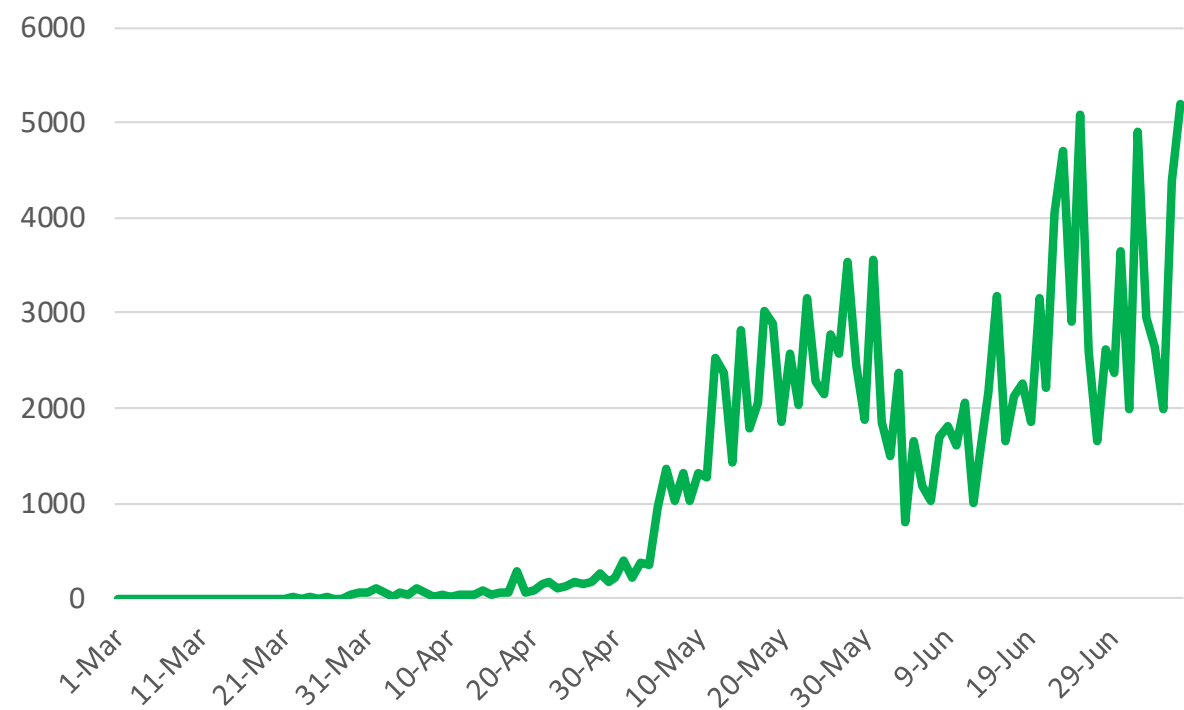
Bahrain



Source : WHO

Figure 11: Comparative analysis of the distribution of COVID19 newly recovered cases in GCC Countries

KSA



Source : [KSA ministry of health](#)

Qatar



Source : [Qatar ministry of health](#)

UAE



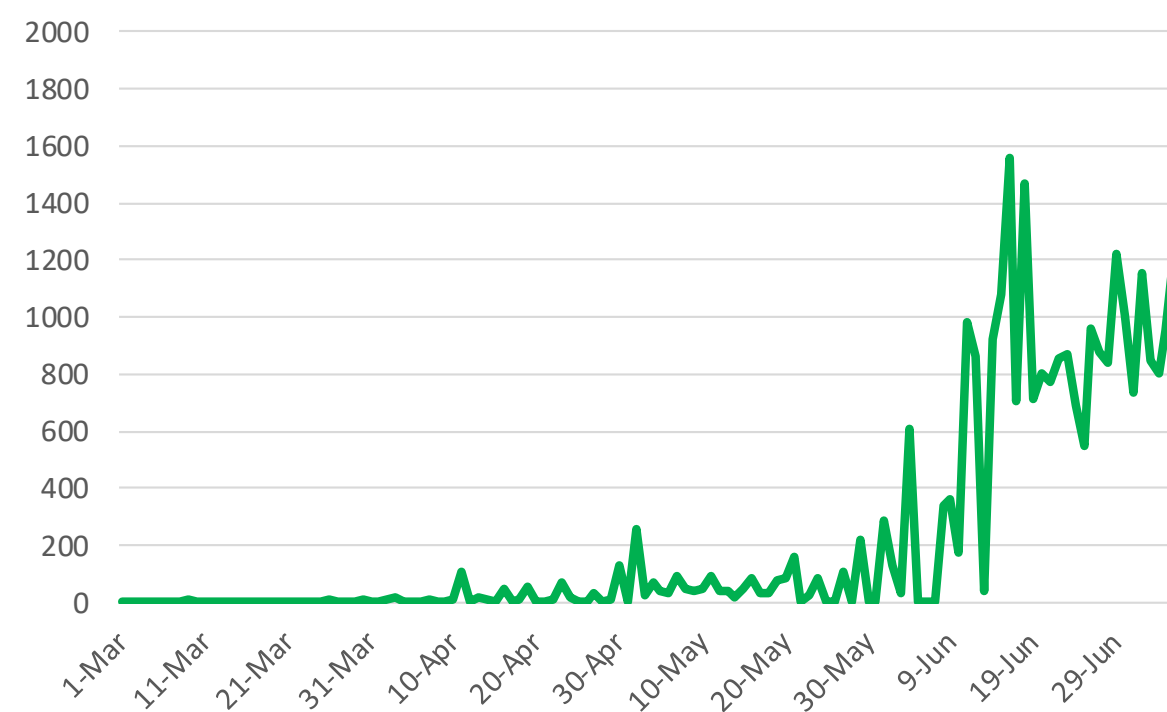
Source : [National Emergency Crisis and Disaster Management Authority](#)

Kuwait



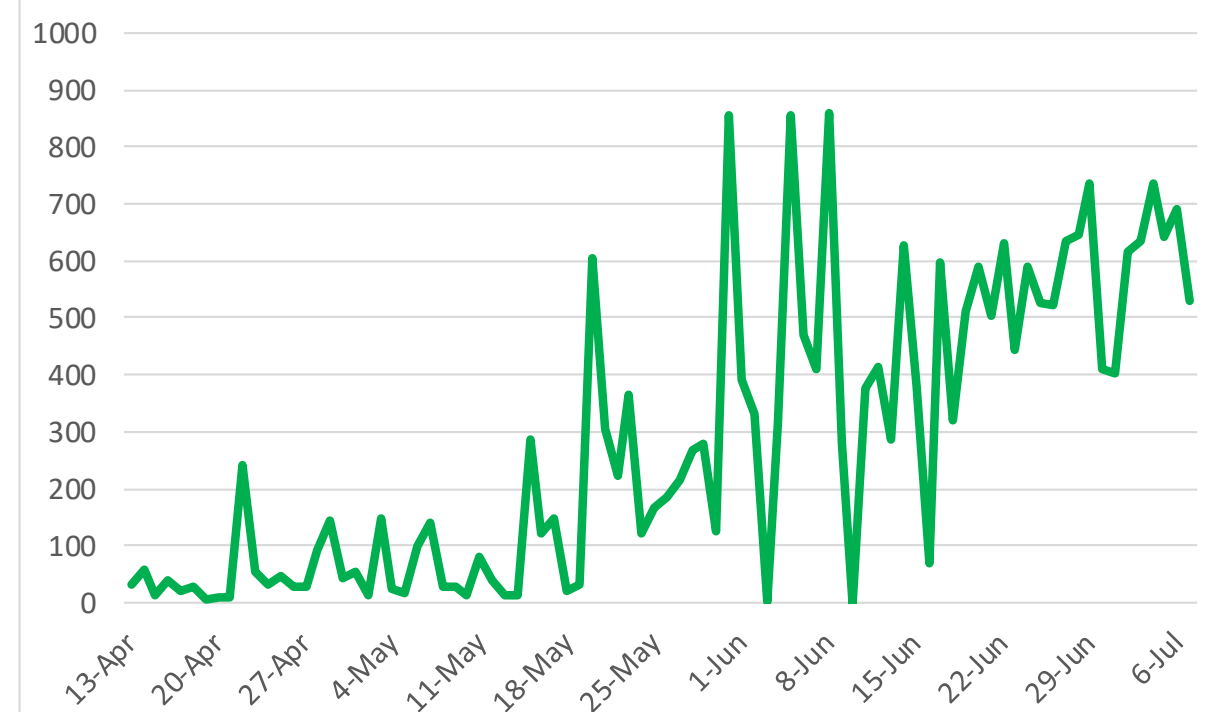
Source : [Kuwait ministry of health](#)

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Source : [Oman ministry of health](#)

Bahrain



Source : [GCCStat](#)

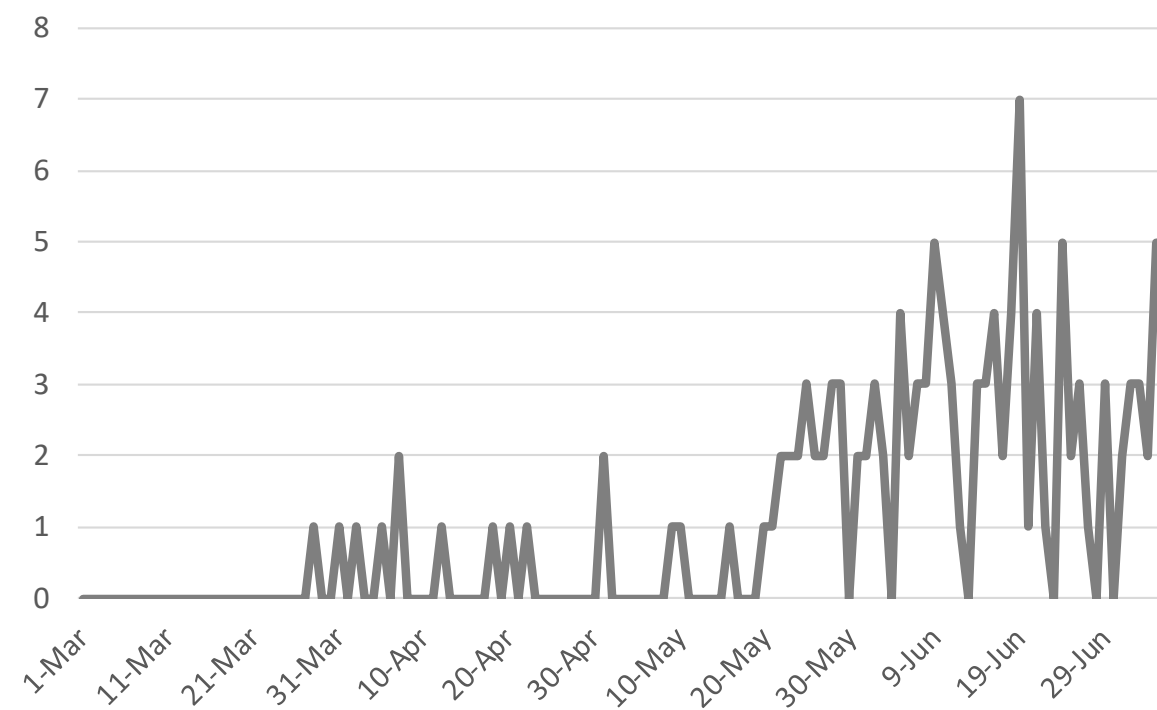
Figure 12: Comparative analysis of the distribution of COVID19 newly death cases in GCC countries

KSA



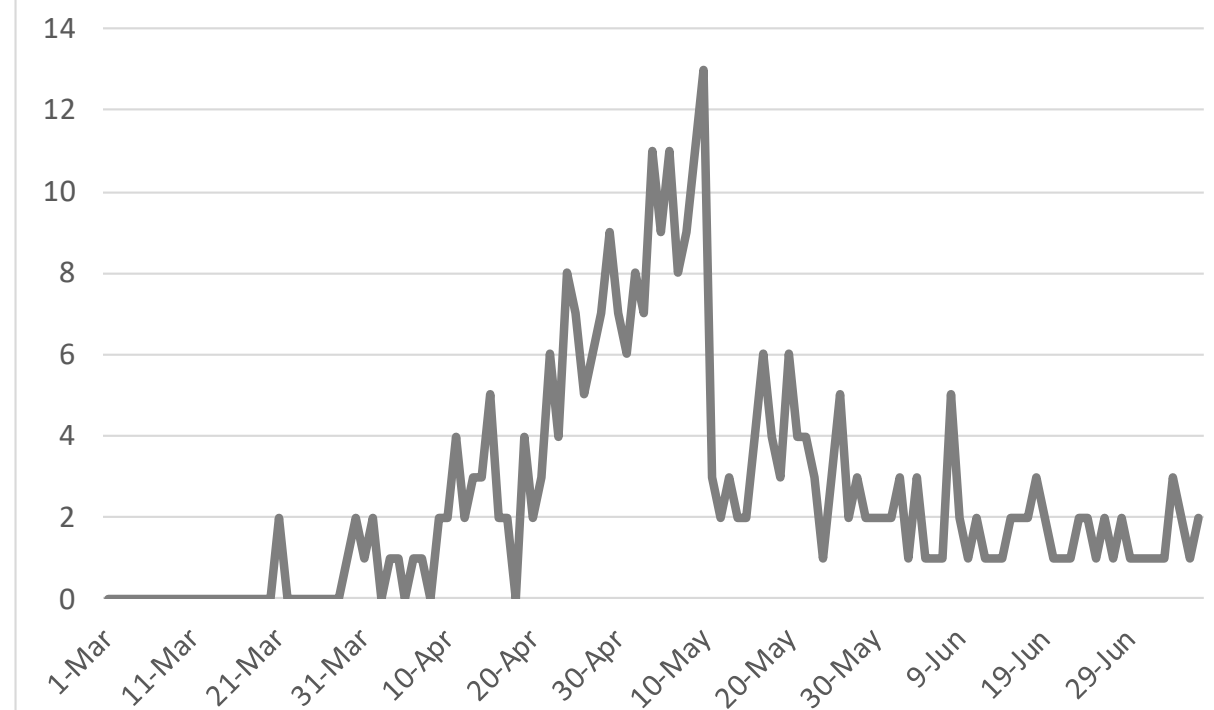
Source : KSA ministry of health

Qatar



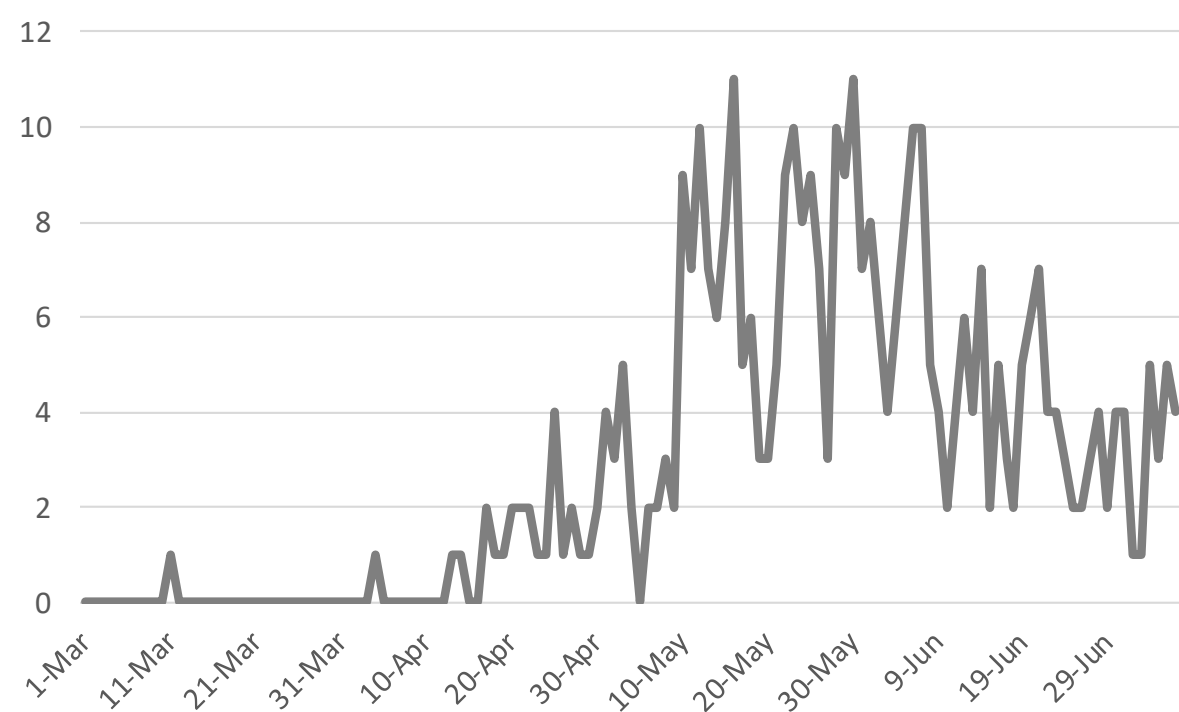
Source : Qatar ministry of health

UAE



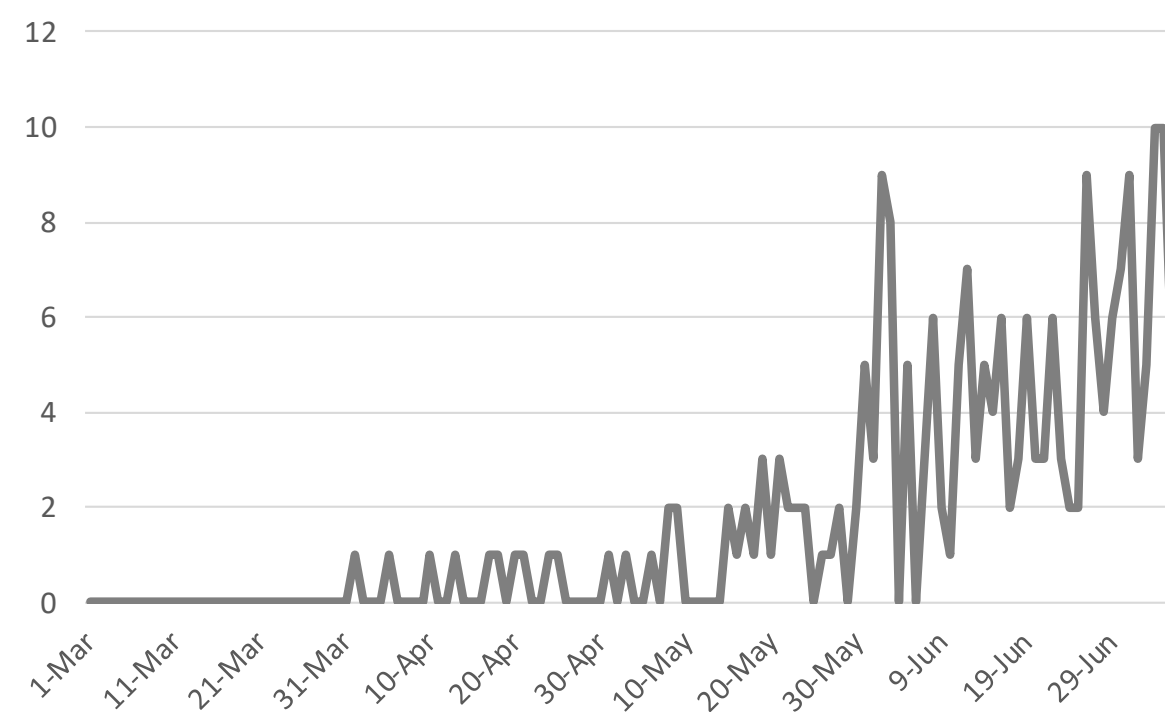
Source : National Emergency Crisis and Disaster Management Authority

Kuwait



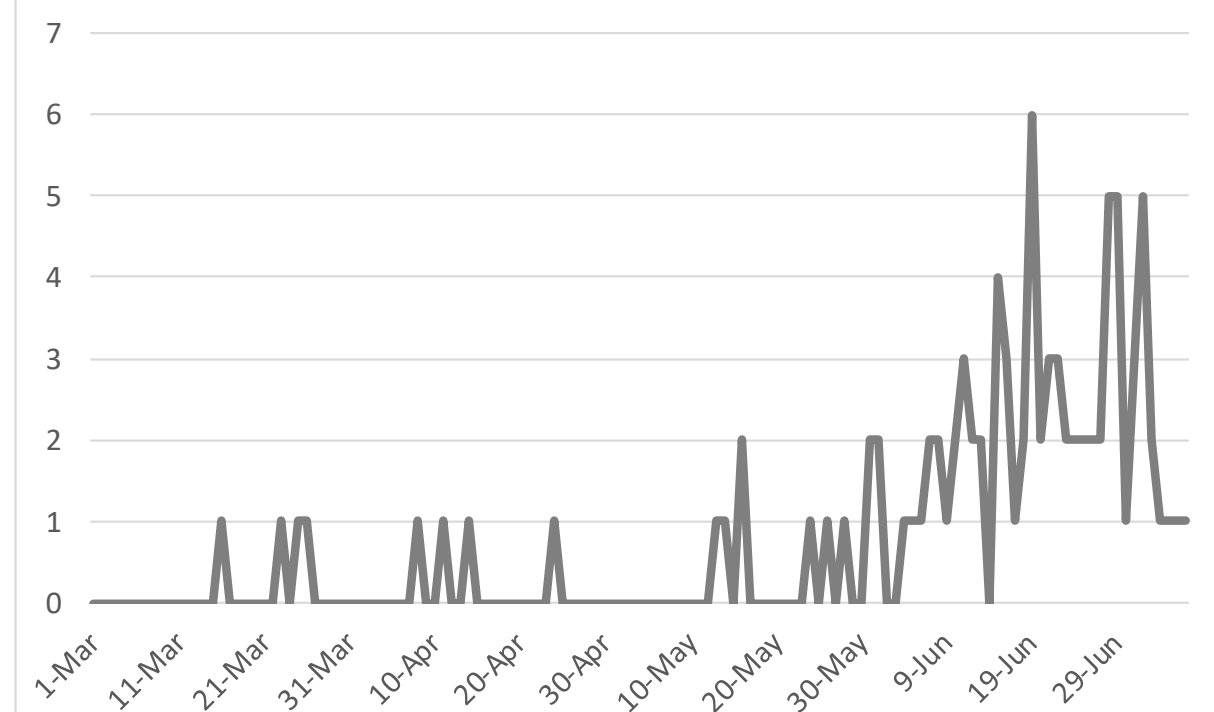
Source : Kuwait ministry of health

Oman © ADPHC 2020



Source :Oman ministry of health

Bahrain



Source :WHO



Article 1: Laboratory Diagnosis of Coronavirus Disease-2019 (COVID-19)

Published

2 July 2020 [ELSIVIER](#)

- This review described the current laboratory diagnosis of SARS-CoV-2 infection. This information aimed at contributing to accurate and rapid laboratory diagnosis and treatment of COVID-19 in clinical laboratory.
- The review of previous studies revealed that molecular tests are the basis for confirmation of COVID-19, but serological tests for SARS-CoV-2 are widely available and play a significant role in understanding the virus epidemiology as well as identifies at risk population for infection.
- Point-of-care tests have the benefit of rapid, portable, accurate, low cost and non-specific device requirements, which provide great support for disease detection and diagnosis.





Article 2: Neurobiology of Coronaviruses: Potential Relevance for COVID-19

Published

2 July 2020 [ELSEVIER](#)

- This study reviewed existing preclinical evidence on the consequences and mechanisms of CoVs-induced CNS damage, as well as addressed the potential role of CoVs in aggravating or determining acute and long-term neurological diseases in infected individuals.
- COVID patients may display significant neurological signs and symptoms for example, nausea, headache, vomiting, and sensory disturbances, the most prominent being ageusia or anosmia. The neuro-invasive potential of CoVs may be responsible for at least part of these symptoms and may contribute to the respiratory failure found in affected patients.
- The study further highlighted that a widespread awareness of the significant neurotropism of CoVs may contribute to an earlier recognition of the signs and symptoms of viral-induced CNS damage. Moreover, a better understanding of the molecular and cellular mechanisms by which CoVs impacts the function CNS and cause CNS damage may help in planning novel strategies for prognostic assessment and targeted therapeutic intervention.





Article 3:

COVID-19 in Health-Care Workers in Three Hospitals in the South of the Netherlands: A Cross-Sectional Study

Published

2 July 2020 [The LANCET](#)

- This cross-sectional study aimed at gaining insight on possible sources of infection of health-care professionals at three hospitals in the Netherlands.
- Healthcare workers in hospitals having SARS-CoV-2 infection patients were screened 10 days before on clinical symptoms (such as fever or mild respiratory symptoms).
- Epidemiological data through structured interviews were acquired with health-care workers, this information was combined with data from whole-genome sequencing of SARS-CoV-2 in clinical samples taken from health-care workers and patients.
- An in-depth analysis of modes of transmission and sources of SARS-CoV-2 in health-care workers and patients was undertaken. Around 1796 healthcare workers were screened, between March 2 and March 12, 2020, of these, 96 (5%) individuals were tested positive for SARS-CoV-2.
- Genome sequences from 50 health-care workers and 10 patients were also completed. Most sequences were grouped in three clusters, with two clusters showing local circulation within the region. The noted patterns were consistent with multiple introductions into the hospitals through community-acquired infections and local amplification in the community.

	Health-care workers (n=96)
Northern Italy	3 (3%)
Austria	3 (3%)
UK	1 (1%)
Spain	1 (1%)
Portugal	1 (1%)
Switzerland	1 (1%)
Attendance at carnival with 50 people or more, 14 days before onset of symptoms	60 (63%)
Breda	7 (7%)
Prinsenbeek	11 (11%)
Tilburg	20 (21%)
Other city	22 (23%)
Attendance at other event with 50 people or more, 14 days before onset of symptoms	31 (32%)
Close contact with individual with confirmed COVID-19, 14 days before onset of symptoms	31 (32%)
Patient	3 (3%)
Colleague	18 (19%)
Household member	1 (1%)
Other, outside hospital	9 (9%)

Data are n (%) or median (range).

Table: Descriptive characteristics of 96 health-care workers testing positive for severe acute respiratory syndrome coronavirus 2 RNA at three hospitals in the south of the Netherlands in March, 2020



Article 4 : Neurological Associations of COVID-19

Published

2 July 2020 [The LANCET](#)

- This study aimed at summarizing the evidence to date for COVID-19, observation of putative disease mechanisms, and finally suggest a framework for investigating patients with suspected COVID-19-associated neurological disease to support clinical-epidemiological disease mechanism, and treatment studies.
- A wide array of neurological manifestations in 901 patients have been described in several case reports and series. Majority of these studies had inadequate details that reflected the challenges of studying such patients. In total, 93 patients reported Encephalopathy including 16 (7%) of 214 hospitalized patients with COVID-19 in Wuhan, China, and 40 (69%) of 58 patients in intensive care with COVID-19 in France.
- To date, Encephalitis has been addressed in 8 patients and Guillain-Barré syndrome in 19 patients. SARS-CoV-2 has been detected in the CSF of some patients. Ageusia and Anosmia are common and can occur in the absence of other clinical features. Unexpectedly, acute cerebrovascular disease is also emerging as an essential complication, with cohort studies reporting stroke in 2–6% of patients hospitalized with COVID-19. Thus far, 96 patients with stroke have been described, who commonly had vascular events in the context of a pro-inflammatory hypercoagulable state with elevated C-reactive protein, ferritin and D-dimer.
- Careful clinical, diagnostic, and epidemiological studies are required to support in defining the manifestations and neurological disease burden caused by SARS-CoV-2.
- **It is important that a precise case definition may be applied to differentiate non-specific complications of severe disease (e.g., hypoxic encephalopathy and critical care neuropathy) from those caused directly or indirectly by the virus, such as post-infectious, para-infectious, and infectious Encephalitis, hypercoagulable states leading to stroke, and acute neuropathies for e.g. Guillain-Barré syndrome.**

Article 5 : Association Between Mobility Patterns and COVID-19 Transmission in the USA: A Mathematical Modelling Study

Published

1 July 2020 [The LANCET](#)

- Social distancing will remain one of the primary measures to combat the spread of disease. The study evaluated the effects of social distancing on the spread of COVID-19 in the USA.
- Daily mobility data extracted from aggregated and anonymized cell (mobile) phone data from Jan 1 to April 20, 2020, was used to capture real-time trends in movement patterns, and to generate a social distancing metric.
- Epidemiological data was used to compute the COVID-19 growth rate ratio for a given county on a given day. The mobility patterns were correlated strongly with decreased COVID-19 case growth rates for the most affected counties in USA, with Pearson correlation coefficients above 0.7 for 20 of the 25 counties assessed.
- In many US counties, behavioral changes were already underway days to weeks before state-level or local-level stay-at-home policies were implemented, implying that individuals anticipated public health directives where social distancing was adopted, in spite of mixed political message.



Article 6 :

Published

Characteristics, Risk Factors and Outcomes Among the First Consecutive 1096 Patients Diagnosed with COVID-19 in Kuwait

4 July 2020 [The LANCET](#)

- This retrospective cohort study aimed to summarize clinical characteristics, laboratory and radiologic findings and outcomes of the first consecutive 1096 patients who tested positive for SARS-COV-2 according to WHO guidelines and were hospitalized at Jaber Al-Ahmad Al-Sabah in Kuwait and received standardized investigations and treatments from 24th February to 20th April 2020.
- Multivariable analysis was applied to examine associations between risk factors and outcomes (admission to intensive care and/or mortality).
- Median age of the individuals was 41 year, 81% were male. Majority were asymptomatic on admission (46.3%), of whom 35 later developed symptoms, and 59.7% had no signs of infection. 3.6% of patients required an ICU admission and 1.7% died before the end of the study. Asthma, smoking and elevated procalcitonin levels correlated significantly with mortality in the cohort.
- Further studies are needed to characterize risk factors for disease severity and outcomes, principally predictive scoring systems.

Table 7

Multivariable analysis of factors associated with mortality or admission to intensive care.

	Multivariable odds ratio			
	(95% CI)	Lower CI	Upper CI	p-value
Mortality				
Age >50 years old	3.034	0.582	15.811	0.188
Obesity	0.223	0.033	1.513	0.223
Diabetes Mellitus	0.831	0.166	4.164	0.822
Hypertension	0.837	0.462	4.812	0.841
Asthma	4.92	1.03	23.44	0.046
Chronic Renal Disease	2.085	0.270	16.076	0.481
Smoker	10.09	1.22	83.40	0.032
qSOFA score > 0	2.968	0.831	10.605	0.094
Elevated procalcitonin	8.24	1.95	34.74	0.004
Elevated CRP	6.880	0.615	76.911	0.117
Admission to Intensive Care				
Age >50 years old	2.88	1.05	7.95	0.041
Obesity	2.883	0.938	5.954	0.068
Diabetes Mellitus	2.287	0.799	6.550	0.123
Hypertension	0.592	0.198	1.767	0.347
Asthma	1.446	0.383	5.455	0.586
Chronic Renal Disease	0.494	0.062	3.945	0.494
Smoker	5.86	1.40	24.47	0.015
qSOFA score > 0	2.798	1.25	6.26	0.012
Elevated CRP	9.08	1.97	41.95	0.005
Elevated procalcitonin	7.00	2.79	17.59	0.000

THANK YOU

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