SCIENTIFIC RESEARCH MONITORING ON COVID-19

2 SEPTEMBER 2020

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SCIENTIFIC RESEARCH MONITORING ON COVID-19 (ISSUE 213)

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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Public Health Response

Immediate Impact of Stay-at-Home Orders to Control COVID-19 Transmission on Socioeconomic Conditions, Food Insecurity, Mental Health, and Intimate Partner Violence in Bangladeshi Women and Their Families: An Interrupted Time Series

Epidemiology

Prognostic Modelling of COVID-19 Using Artificial Intelligence in the United Kingdom: Model Development and Validation

Treatment

Beneficial non-anticoagulant mechanisms underlying heparin treatment of COVID-19 patients

Clinical Features

Ocular Manifestations and Clinical Characteristics of Children with Laboratory-Confirmed COVID-19 in Wuhan, China
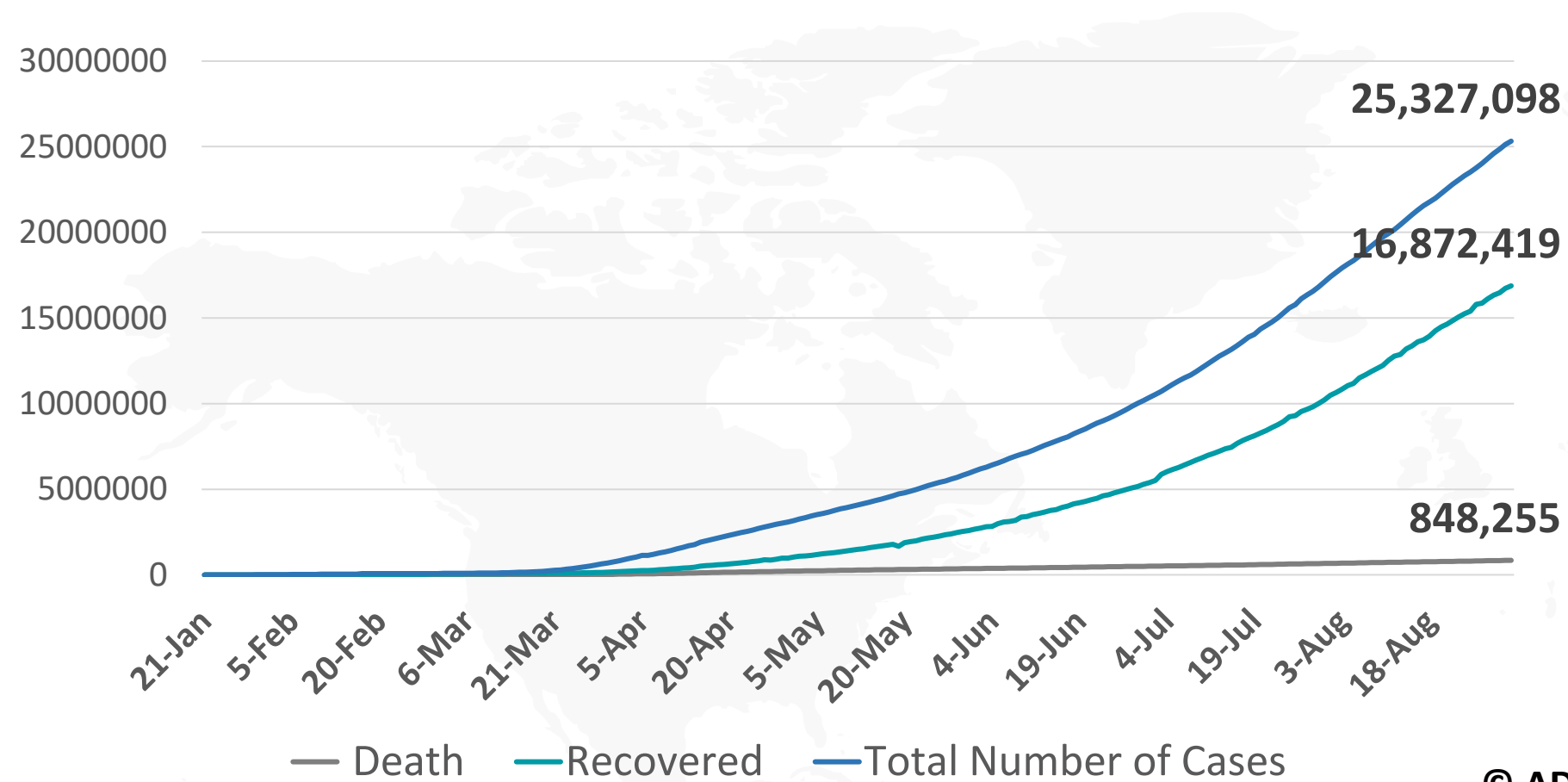
Diagnosis

Overview of Testing for SARS-CoV-2 (COVID-19)

Public Health Response

Duration of Isolation and Precautions for Adults with COVID-19

EPIDEMIOLOGY

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مركز أبوظبي للصحة العامة

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

25,327,098
16,872,419
848,255

Legend: — Death — Recovered — Total Number of Cases

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

843,525
4,730

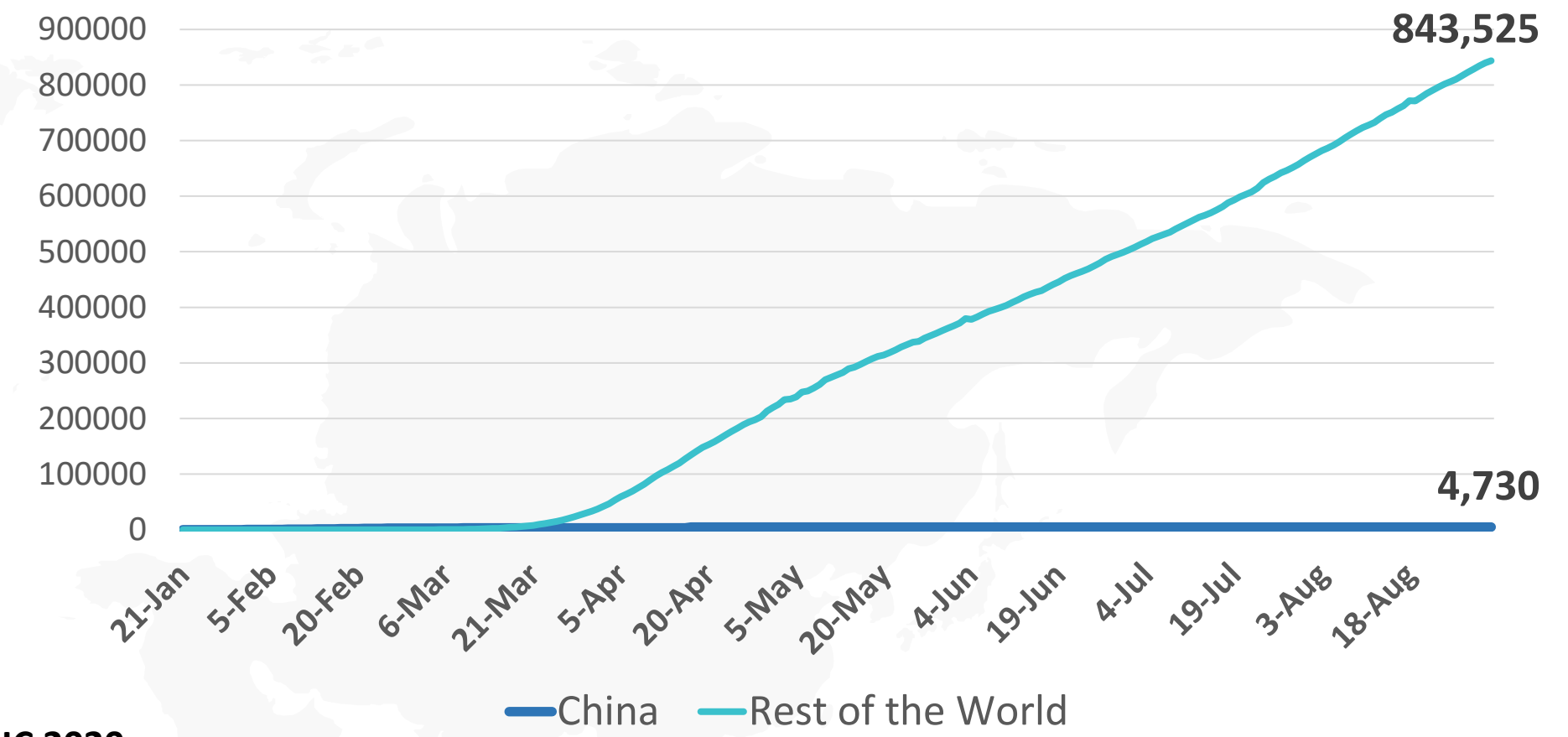Legend: — China — Rest of the World

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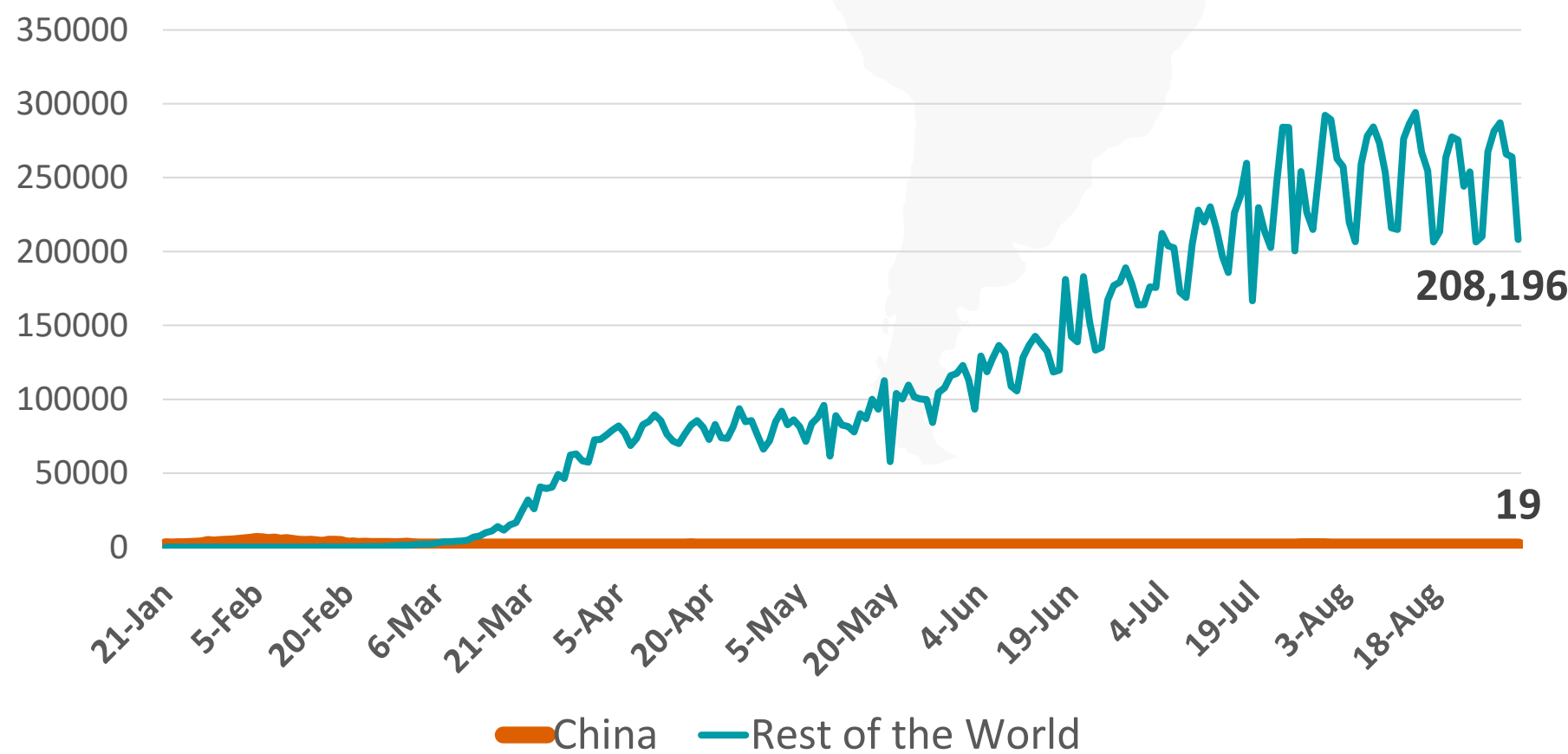

208,196
19

Legend: — China — Rest of the World

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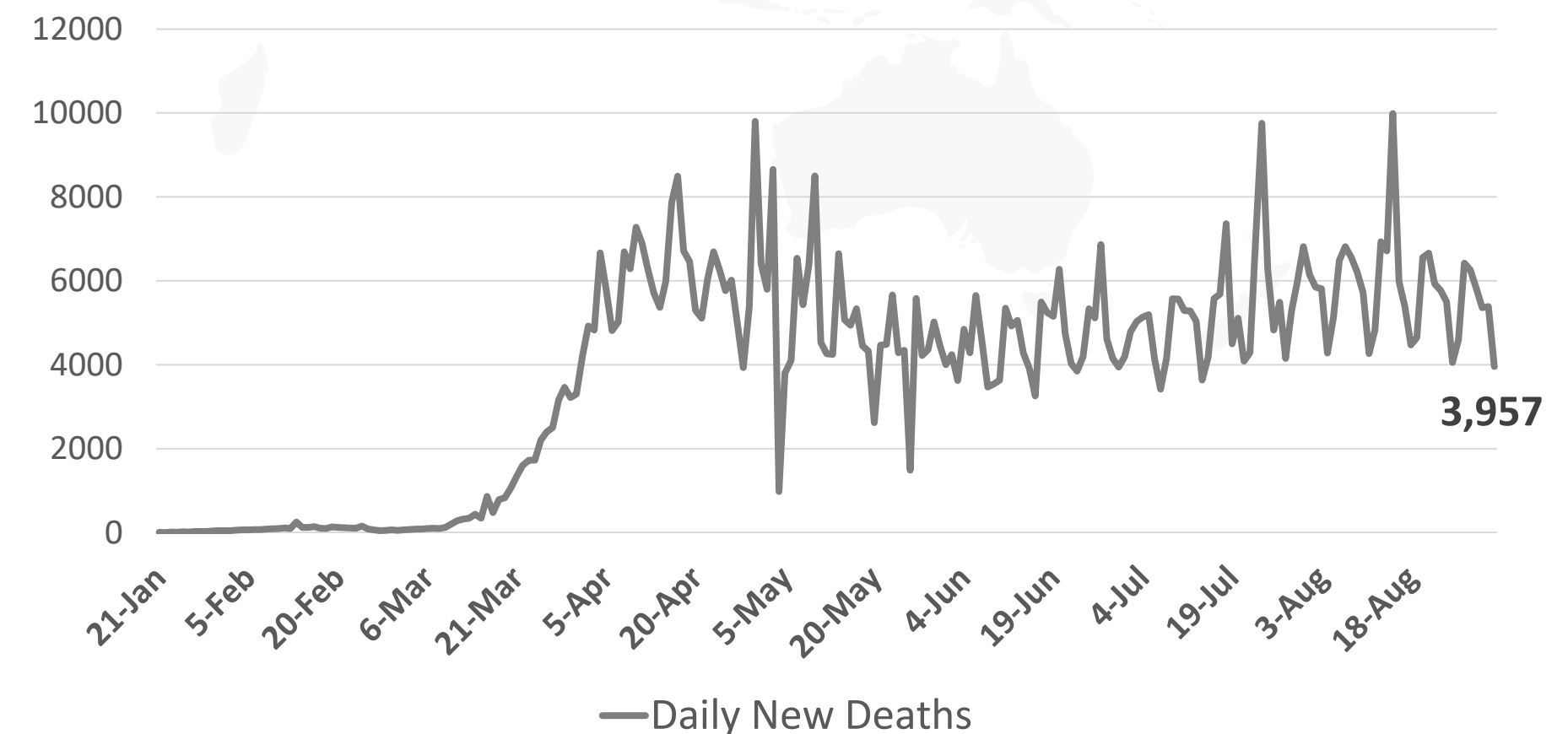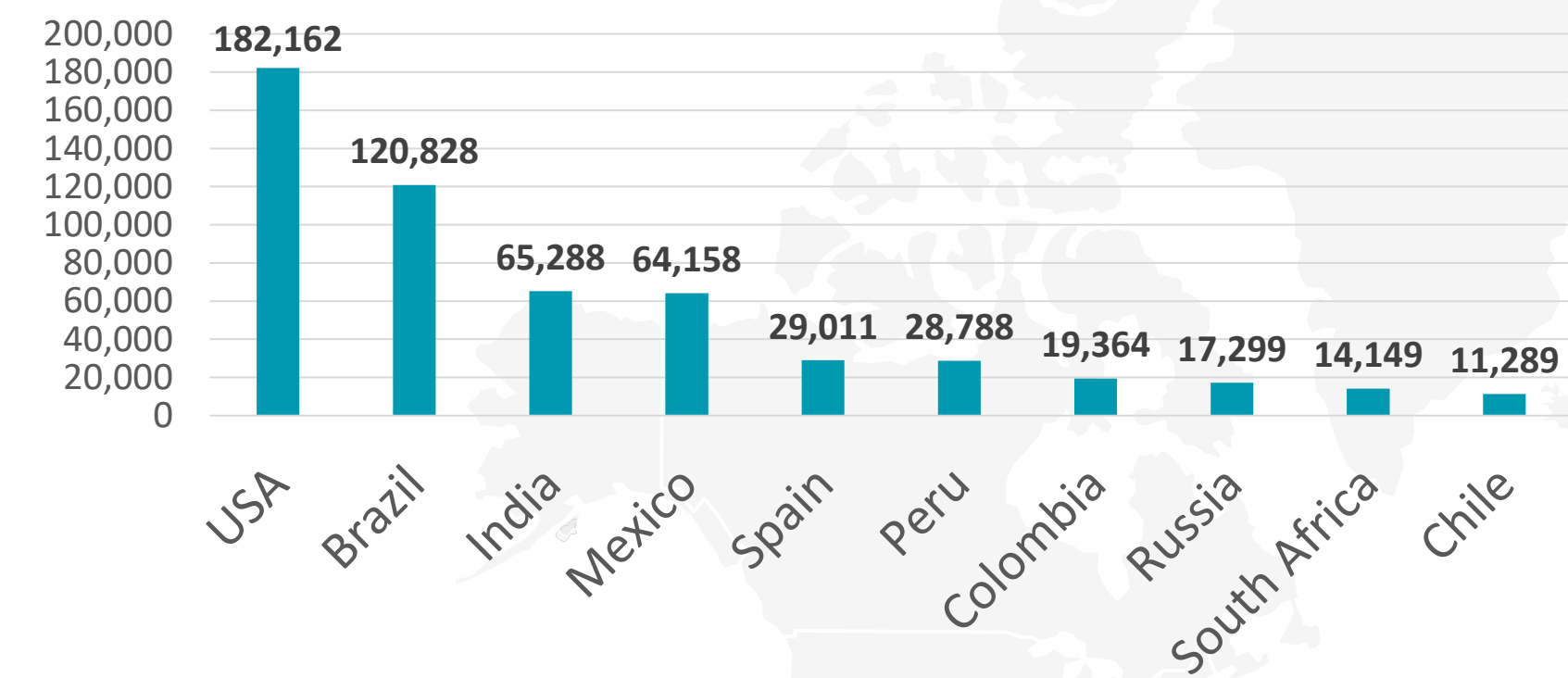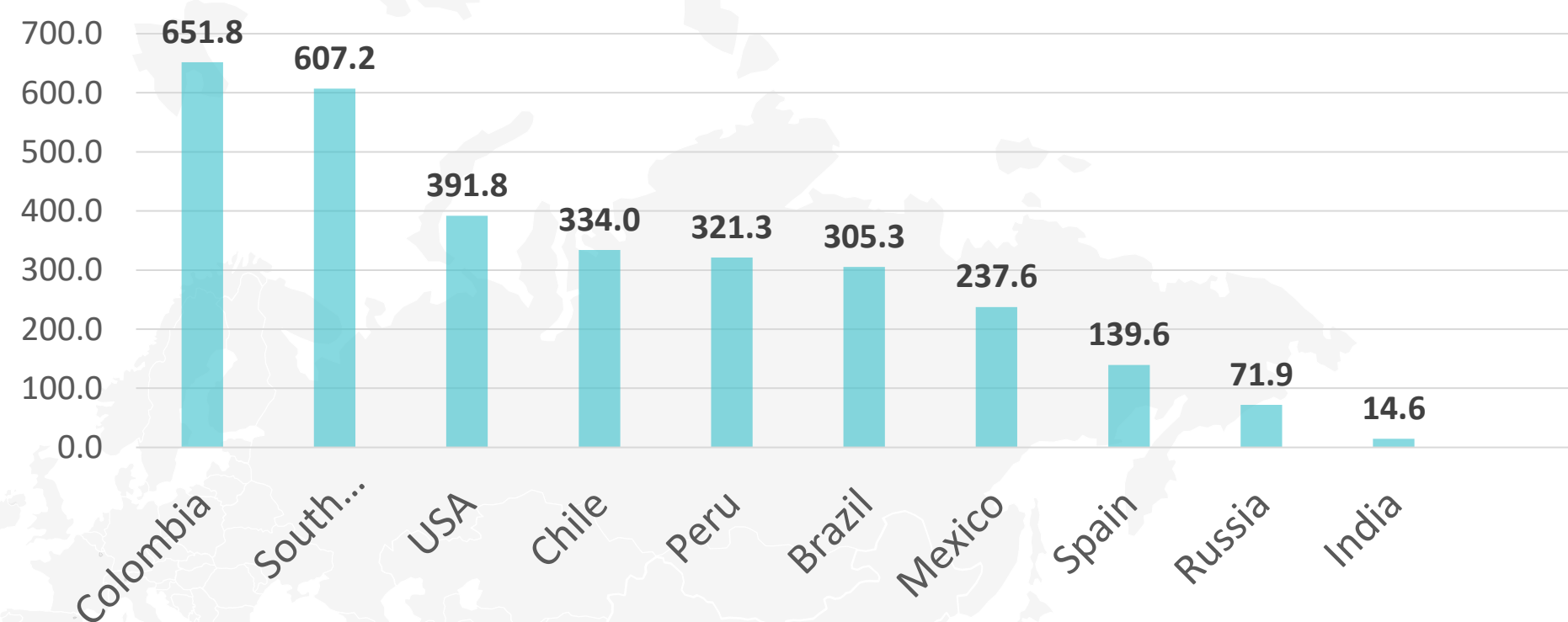

3,957

Legend: — Daily New Deaths

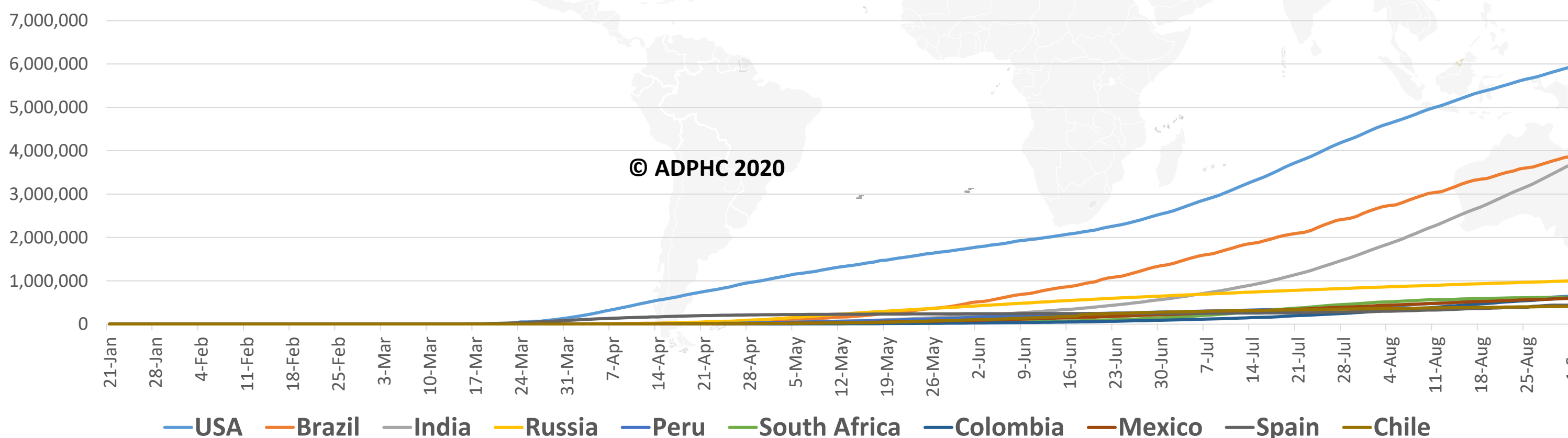**Figure 5:** Top 10 Countries in the Total Number of Cases Due to COVID-19

TOTAL DEATHS

Country	Total Deaths
USA	182,162
Brazil	120,828
India	65,288
Mexico	64,158
Spain	29,011
Peru	28,788
Colombia	19,364
Russia	17,299
South Africa	14,149
Chile	11,289

DEATHS PER MILLION

Country	Deaths Per Million
Colombia	651.8
South...	607.2
USA	391.8
Chile	334.0
Peru	321.3
Brazil	305.3
Mexico	237.6
Spain	139.6
Russia	71.9
India	14.6

TOTAL INFECTED CASES

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Legend: USA — Brazil — India — Russia — Peru — South Africa — Colombia — Mexico — Spain — Chile

Country	Total Infected Cases
USA	5,936,572
Brazil	3,862,311
India	3,691,166
Russia	1,000,048
Peru	647,166
South Africa	627,041
Colombia	607,938
Mexico	595,841
Spain	439,286
Chile	411,726

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

Daily Tests

78,205.0 Average Tests

790.7 per 100k population

0.6% Positive Rate

Daily Cases

454.9 Average Cases

4.6 per 100k population

Daily Recovered

391.0 Average Recovered

4.0 per 100k population

Daily Deaths

1.0 Average Deaths

0.0 per 100k population

0.2% Case Fatality Rate
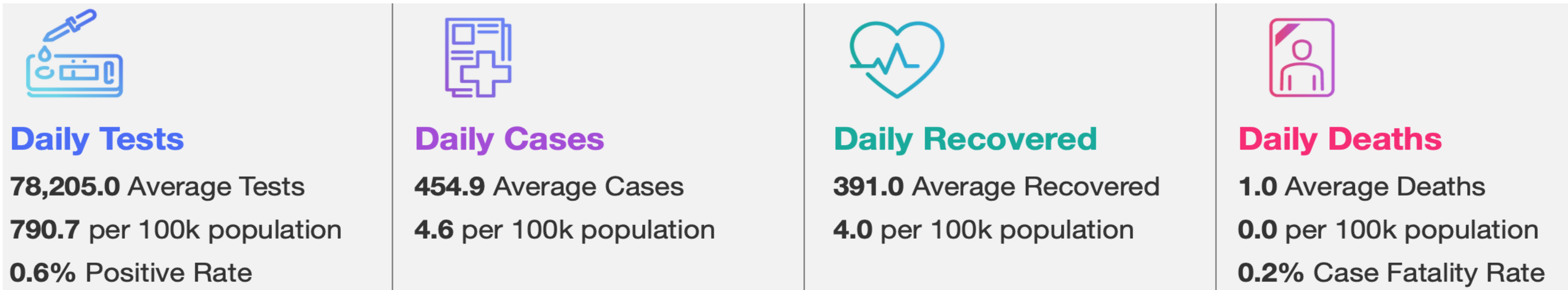
TOTAL NUMBER OF INFECTED AND RECOVERED CASES DUE TO COVID-19 REPORTED BY THE UAE

70,231

61,491

—— Total number of cases —— Recovered cases

EPIDEMIOLOGY
Date: 1 SEP 2020

مركز أبوظبي
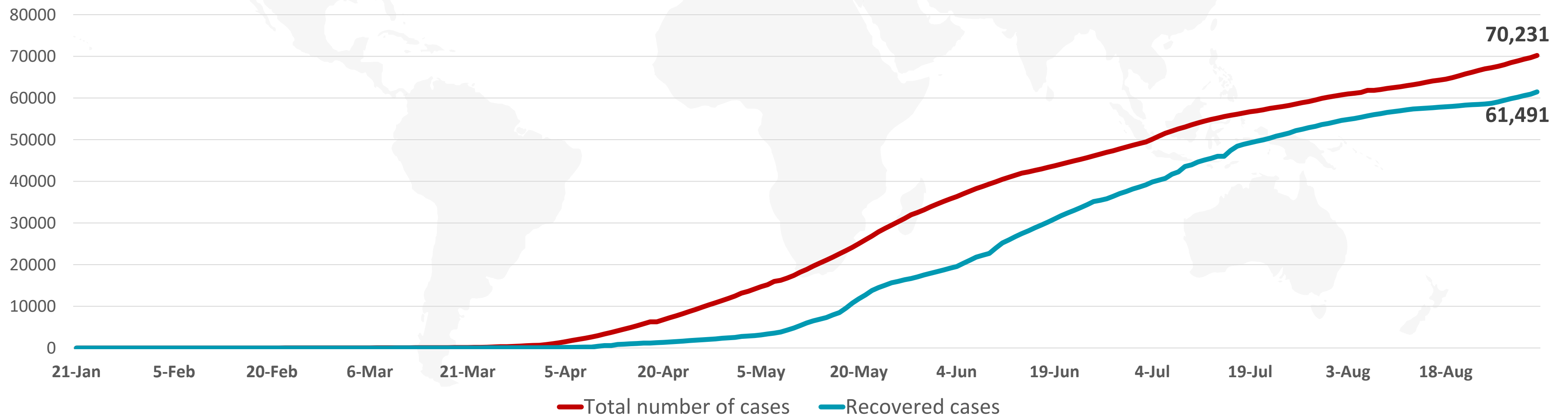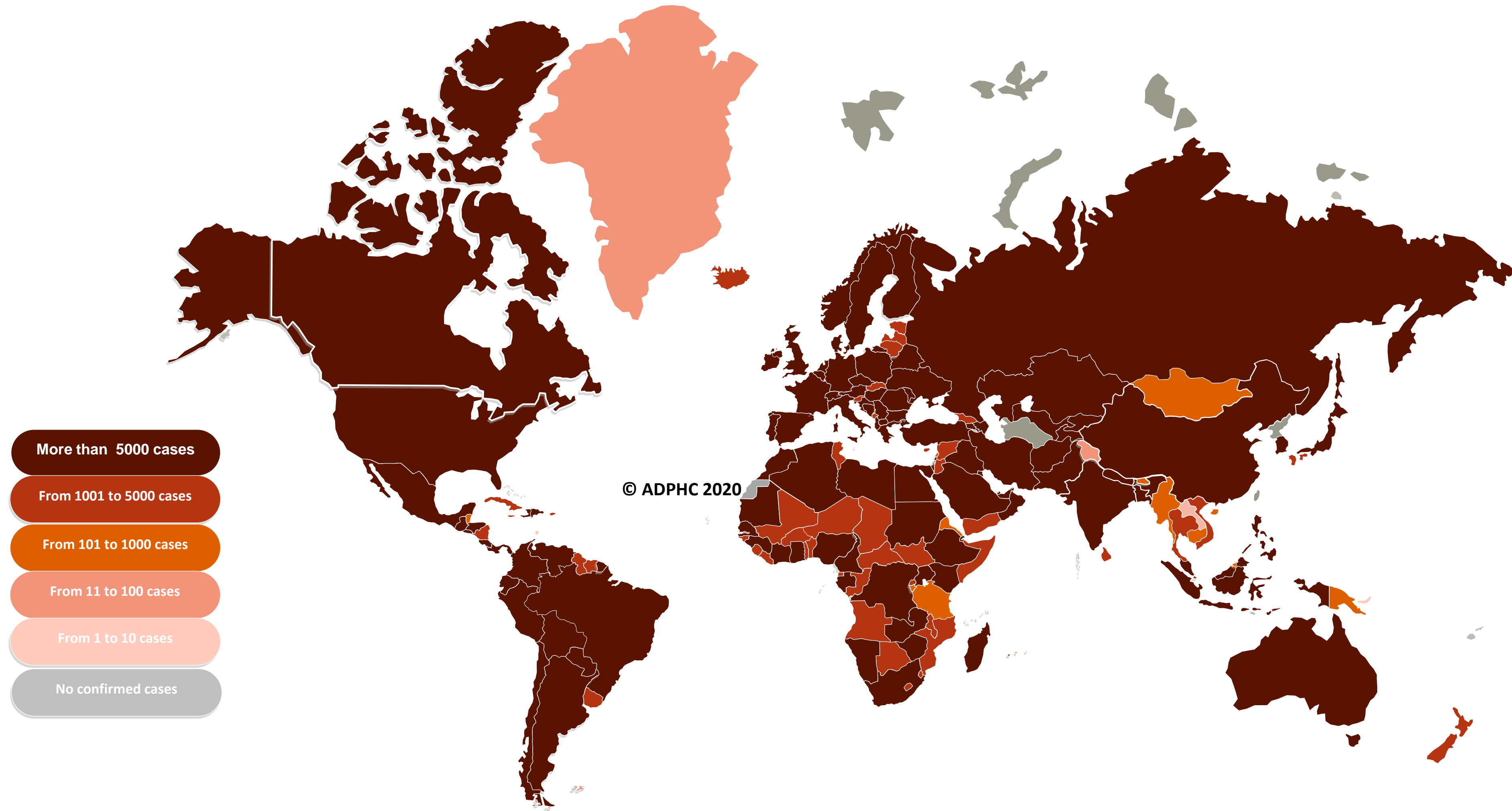للصحة العامة
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Figure 7A : Global Distribution of COVID-19 Cases

More than 5000 cases

From 1001 to 5000 cases

From 101 to 1000 cases

From 11 to 100 cases
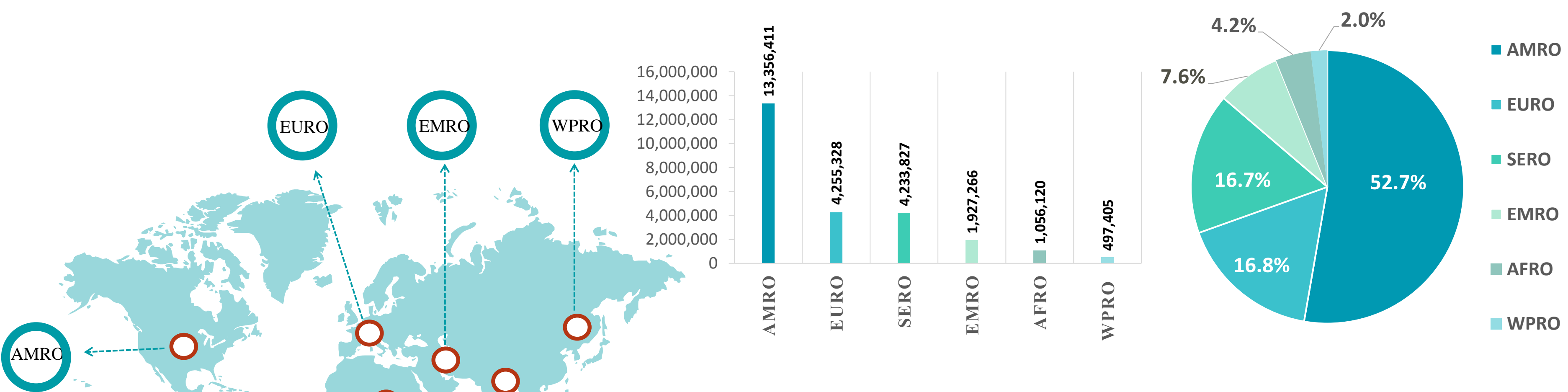
From 1 to 10 cases

No confirmed cases

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EPIDEMIOLOGY

Date: 1 SEP 2020

Figure 7B: Bar Chart Illustrates the Global Distribution of COVID19 Cases
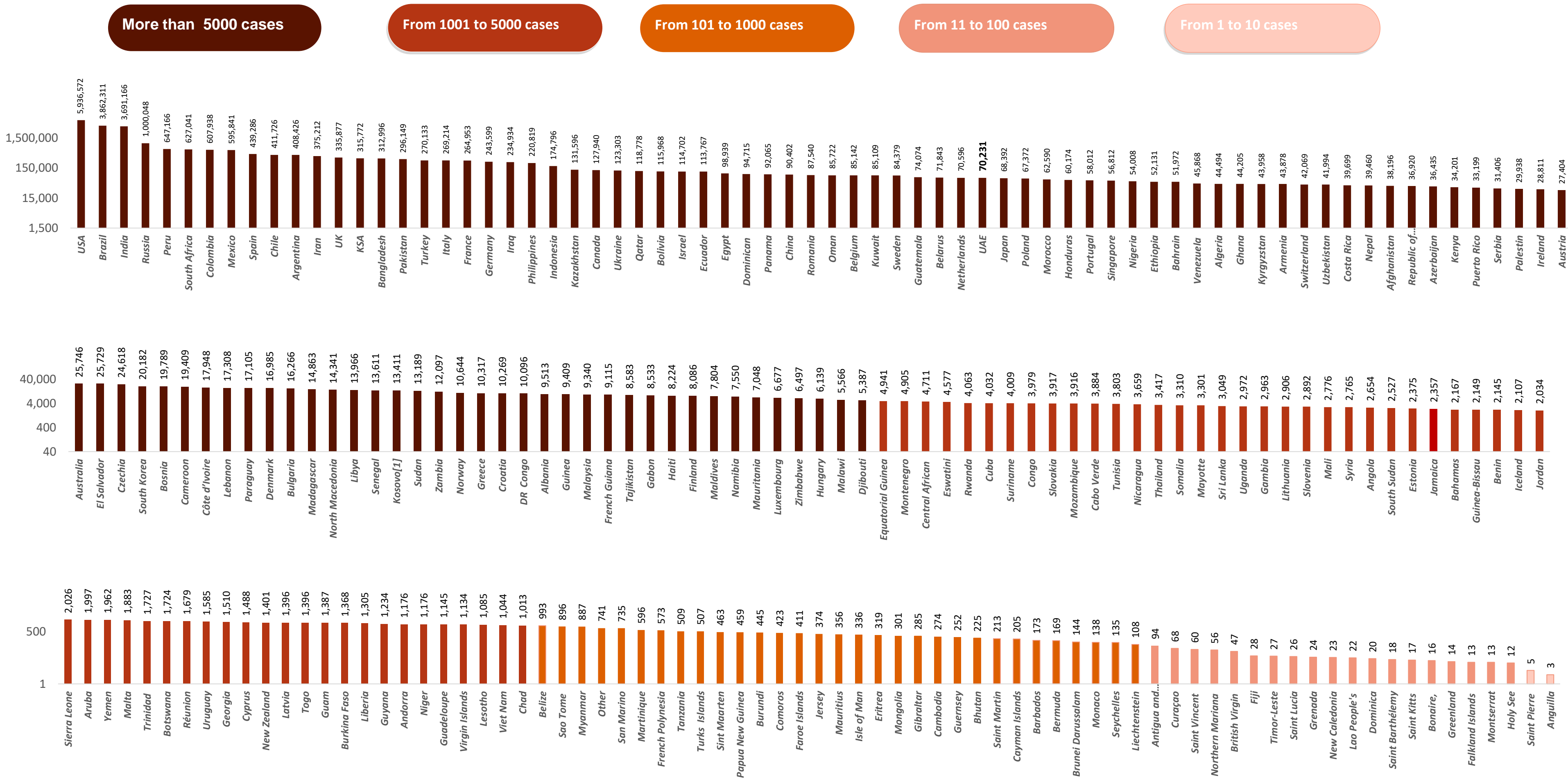
Other*:includes cases and deaths reported under the international conveyance(Diamond Princess)

EPIDEMIOLOGY
Date: 1 SEP 2020

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

INFECTED

Bar chart (Infected):
- AMRO: 13,356,411
- EURO: 4,255,328
- SERO: 4,233,827
- EMRO: 1,927,266
- AFRO: 1,056,120
- WPRO: 497,405

Pie chart (Infected):
- AMRO: 52.7%
- EURO: 16.8%
- SERO: 16.7%
- EMRO: 7.6%
- AFRO: 4.2%
- WPRO: 2.0%

Map labels: EURO, EMRO, WPRO, AMRO, AFRO, SEARO

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DEATHS

Bar chart (Deaths):
- AMRO: 467,149
- EURO: 219,892
- SERO: 77,318
- EMRO: 51,092
- AFRO: 21,999
- WPRO: 10,792

Pie chart (Deaths):
- AMRO: 55.1%
- EURO: 25.9%
- SERO: 9.1%
- EMRO: 6.0%
- AFRO: 2.6%
- WPRO: 1.3%

Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO
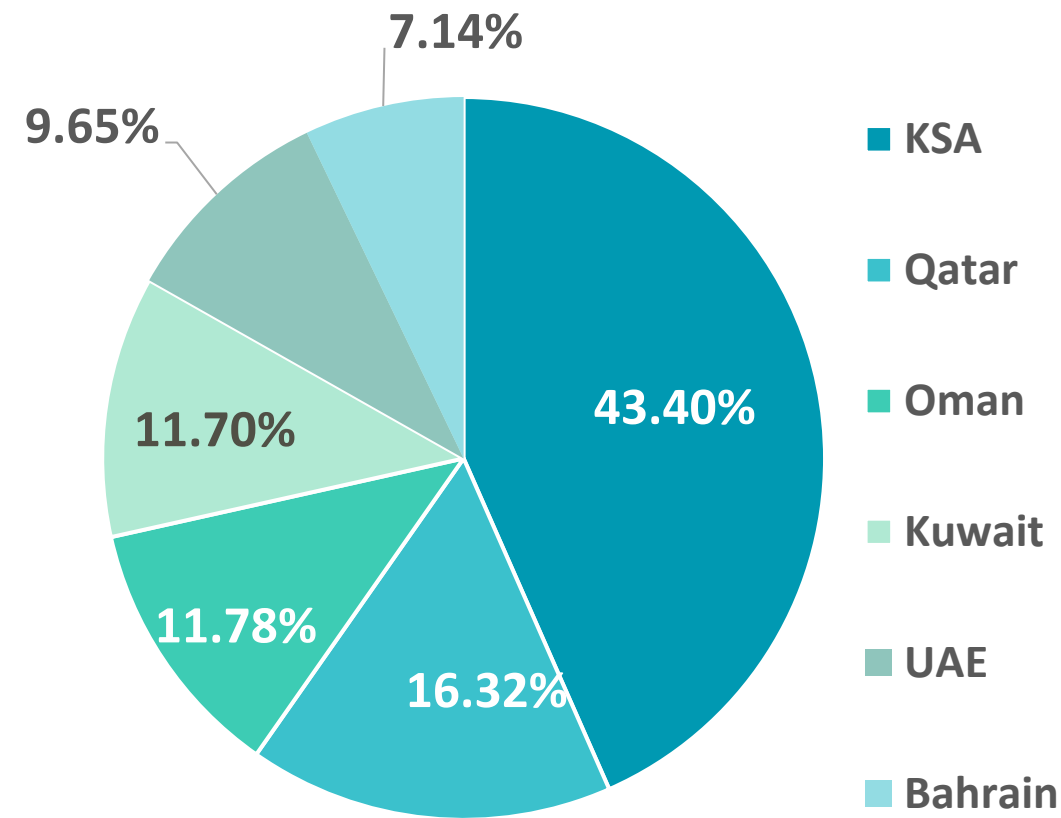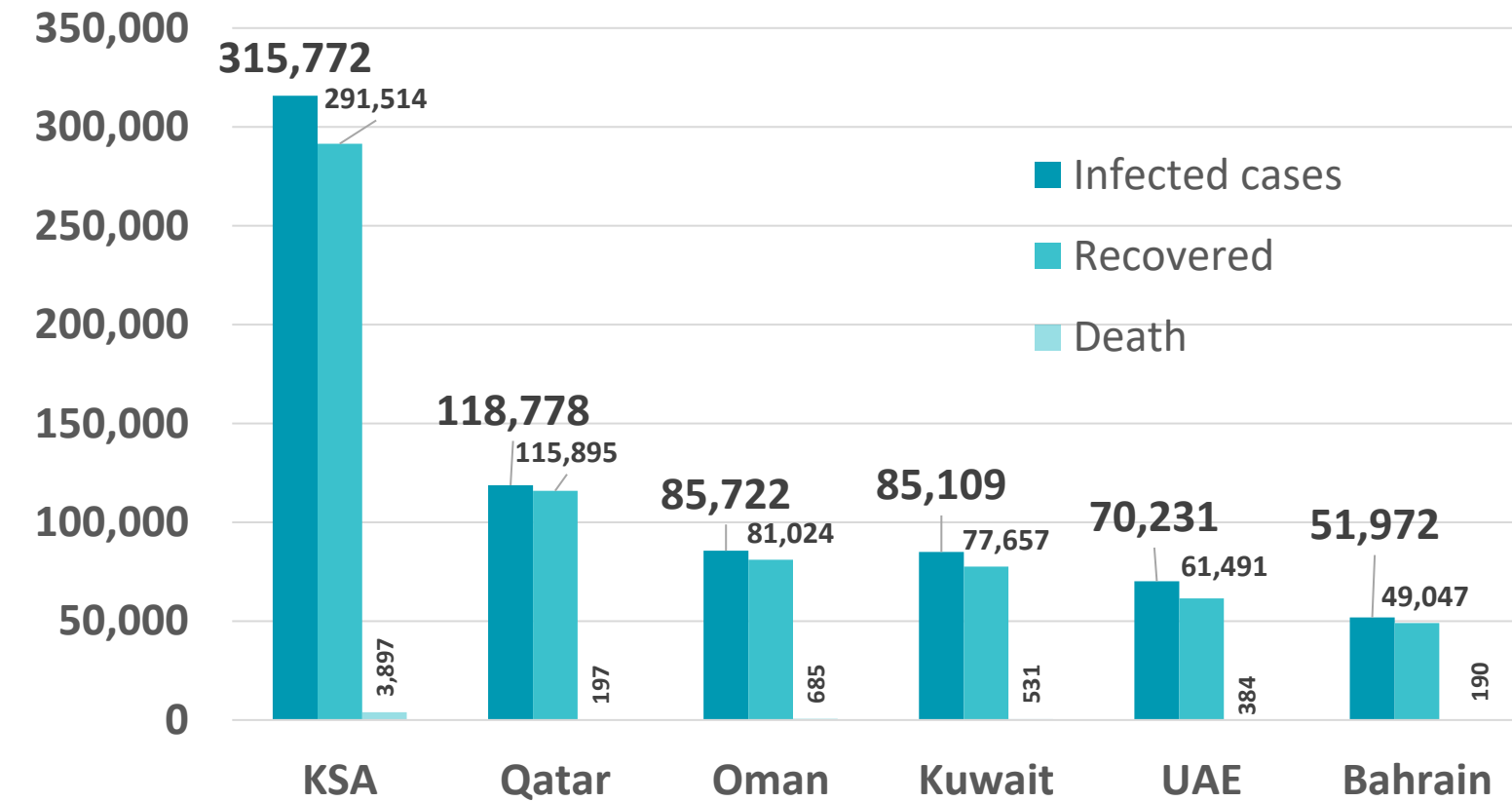
Figure 9: Comparative Analysis of the Distribution of COVID-19 Cases in GCC Countries
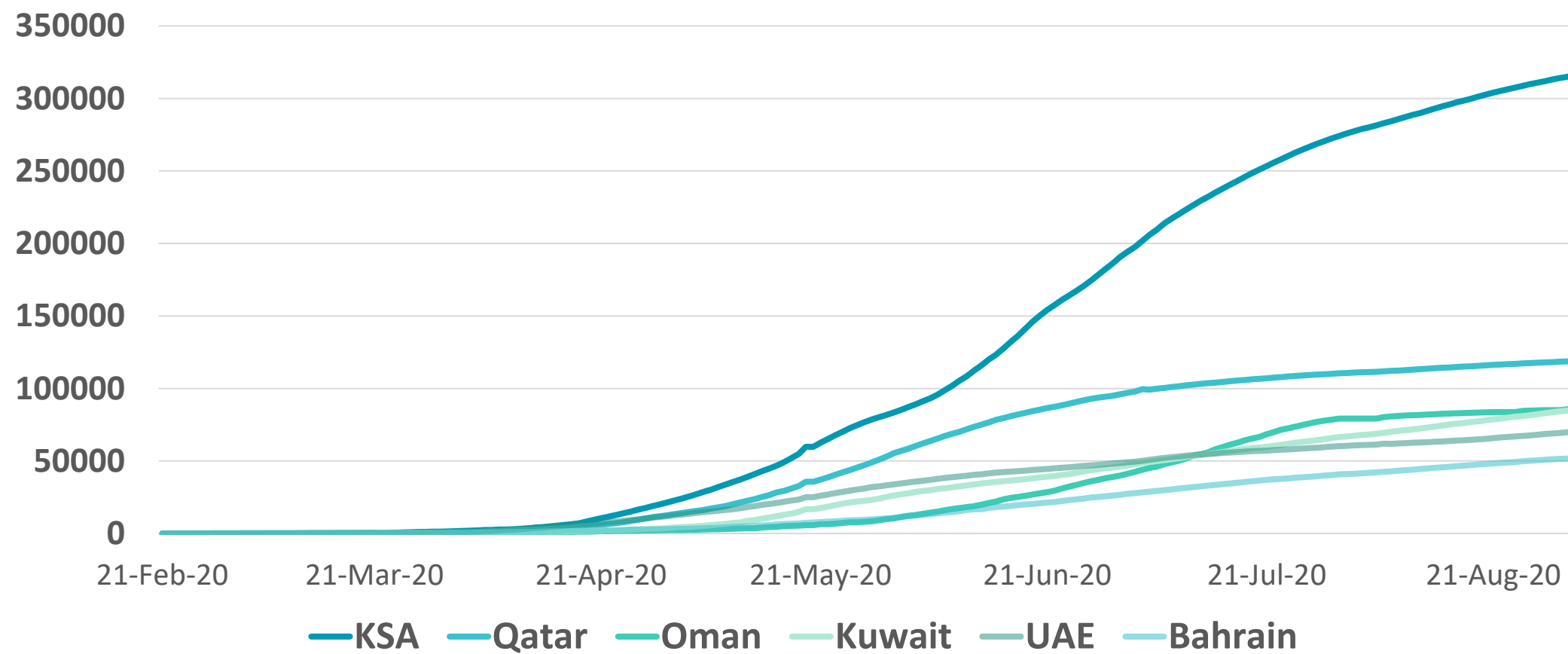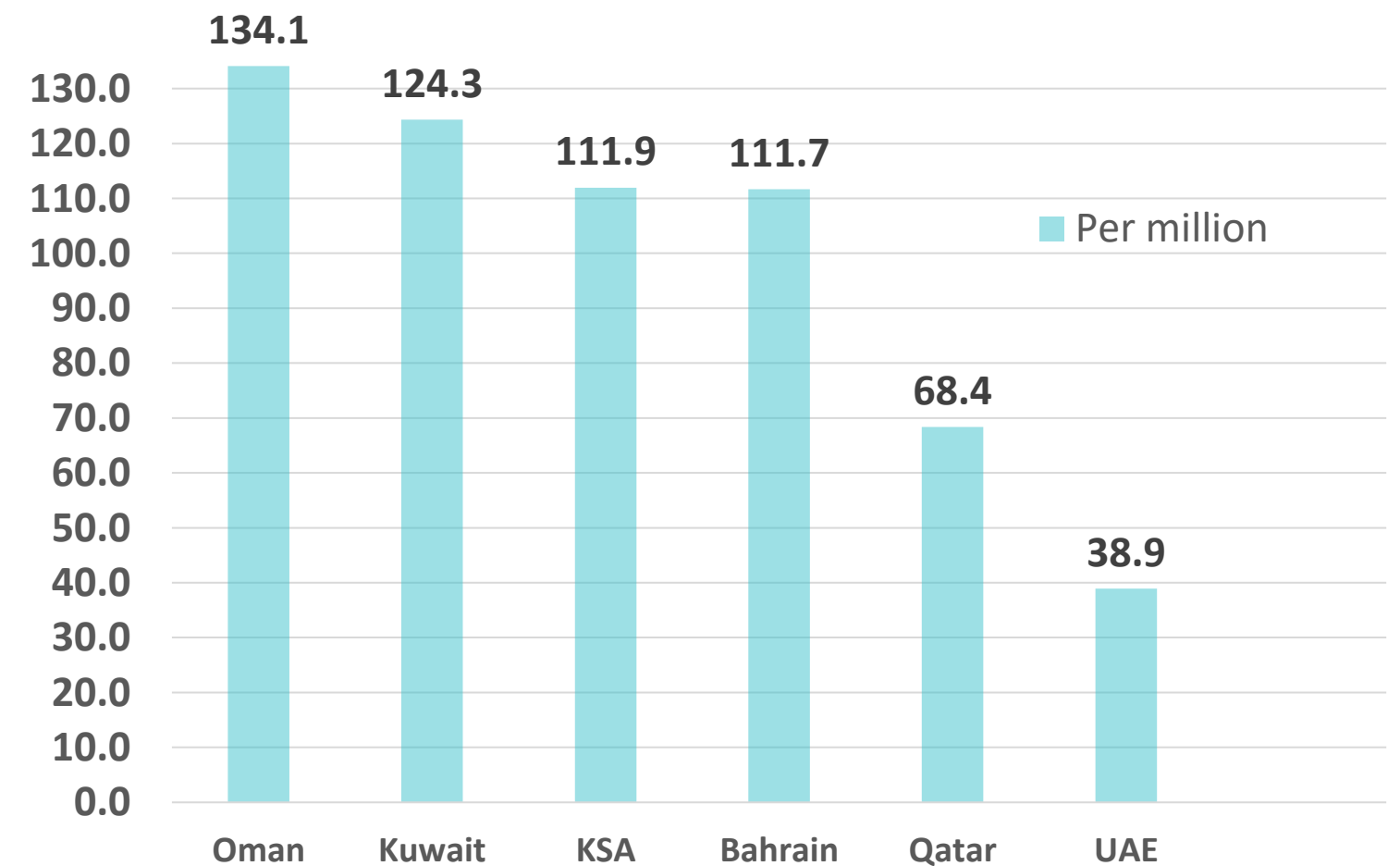
TOTAL NUMBER OF INFECTED CASES

Pie chart:
- KSA: 43.40%
- Qatar: 16.32%
- Oman: 11.78%
- Kuwait: 11.70%
- UAE: 9.65%
- Bahrain: 7.14%

© ADPHC 2020

TOTAL NUMBER OF INFECTED, RECOVERED AND DEATHS

	Infected cases	Recovered	Death
KSA	315,772	291,514	3,897
Qatar	118,778	115,895	197
Oman	85,722	81,024	685
Kuwait	85,109	77,657	531
UAE	70,231	61,491	384
Bahrain	51,972	49,047	190

DEATHS PER MILLION

Per million:
- Oman: 134.1
- Kuwait: 124.3
- KSA: 111.9
- Bahrain: 111.7
- Qatar: 68.4
- UAE: 38.9

Line chart (21-Feb-20 to 21-Aug-20): KSA, Qatar, Oman, Kuwait, UAE, Bahrain

EPIDEMIOLOGY

FROM 21 JAN TO 1 SEP 2020

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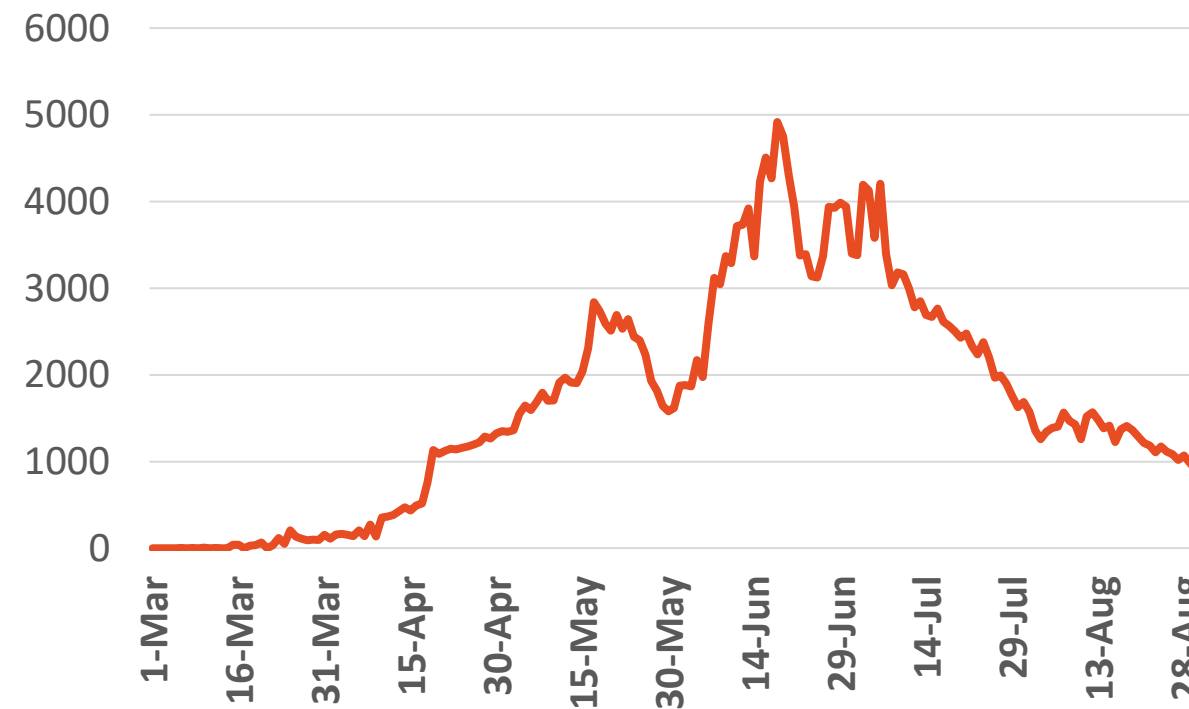للصحة العامة
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Figure 10: Comparative Analysis of the Distribution of COVID-19 New Cases in GCC Countries
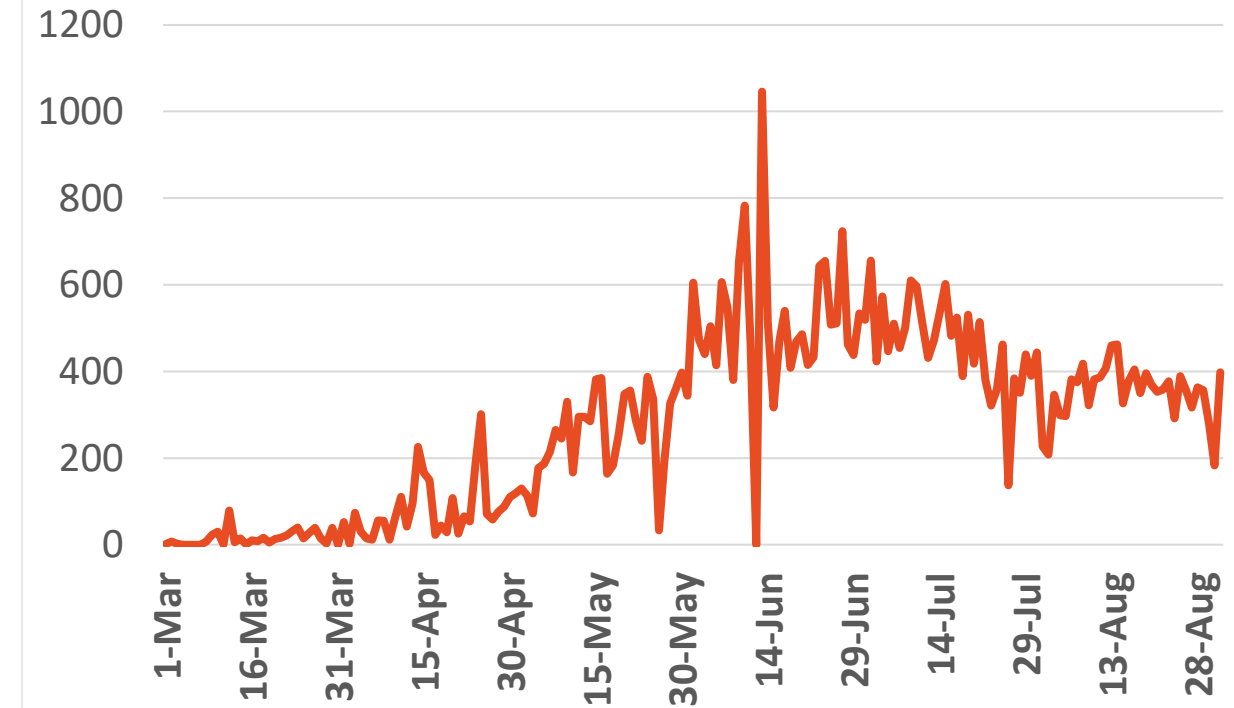

UAE

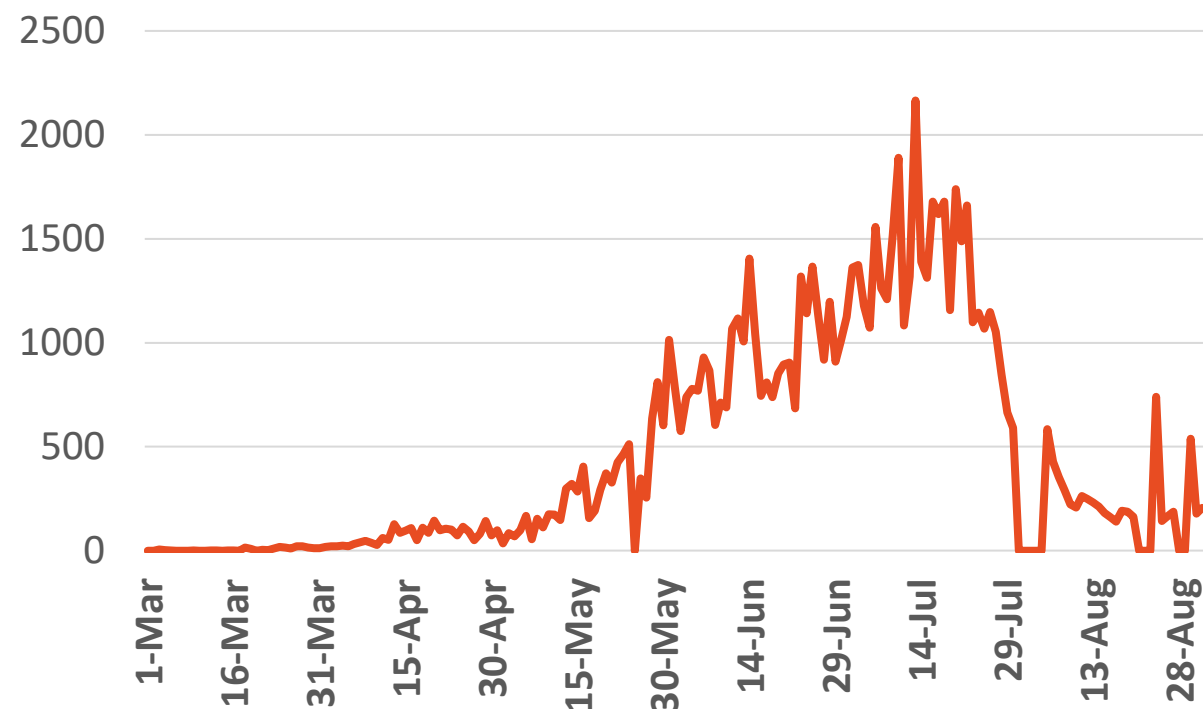Source : National Emergency Crisis and Disaster Management Authority

KSA

Source : KSA ministry of health
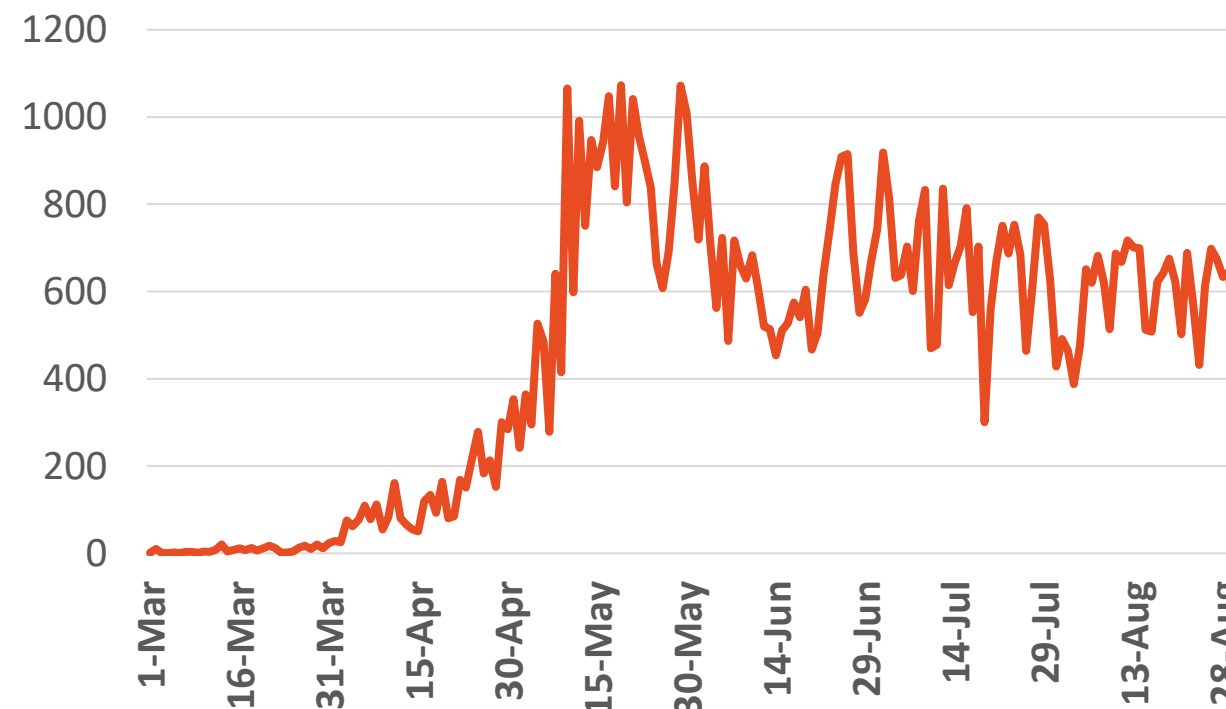
Bahrain

Source :WHO

Oman

Source :Oman ministry of health
*No announced statistic data from 31 July to 4 August, 21 to 23 August & from 28 to 30 August
*No announced statistic data on weekends and official holidays.

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

Source : National Emergency Crisis and Disaster Management Authority

Source : KSA ministry of health

Source : GCCStat

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Source :Oman ministry of health
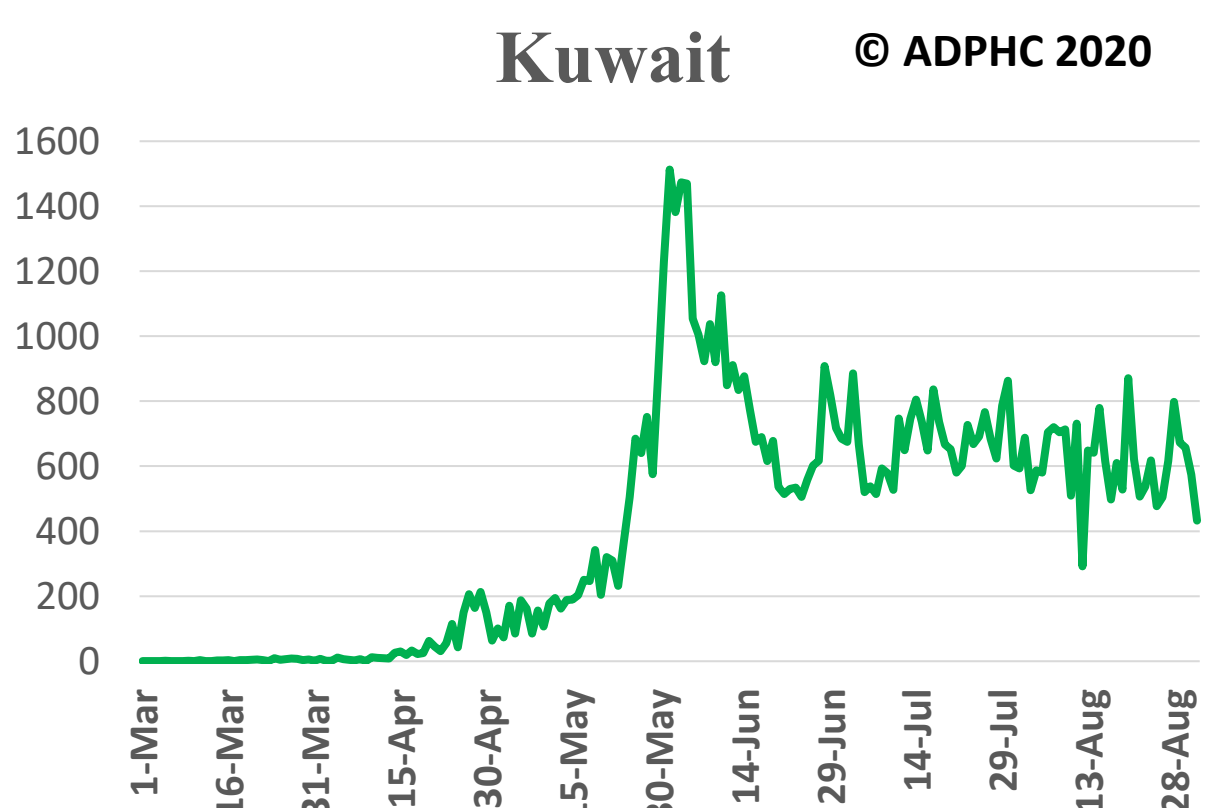
Source : Kuwait ministry of health
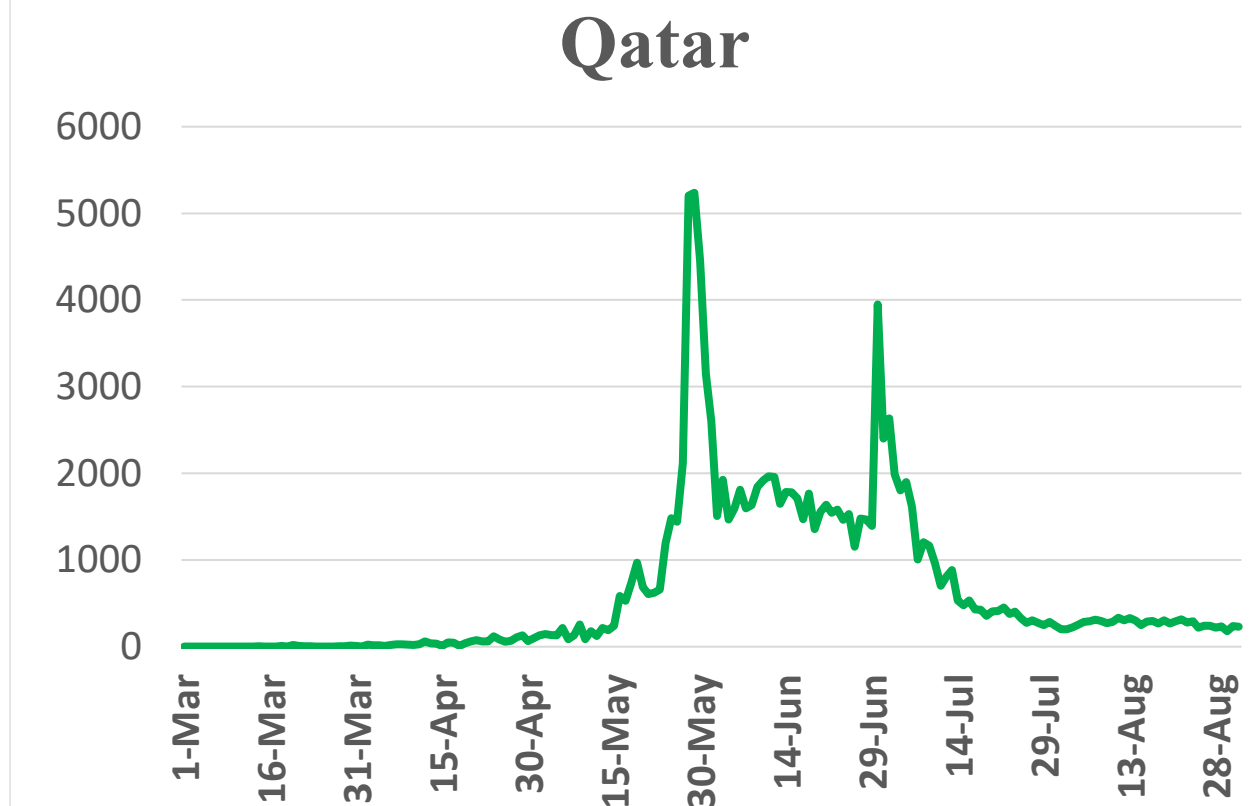
Source : Qatar ministry of health

*No announced statistic data from 31 July to 4 August, 21 to 23 August & from 28 to 30 August

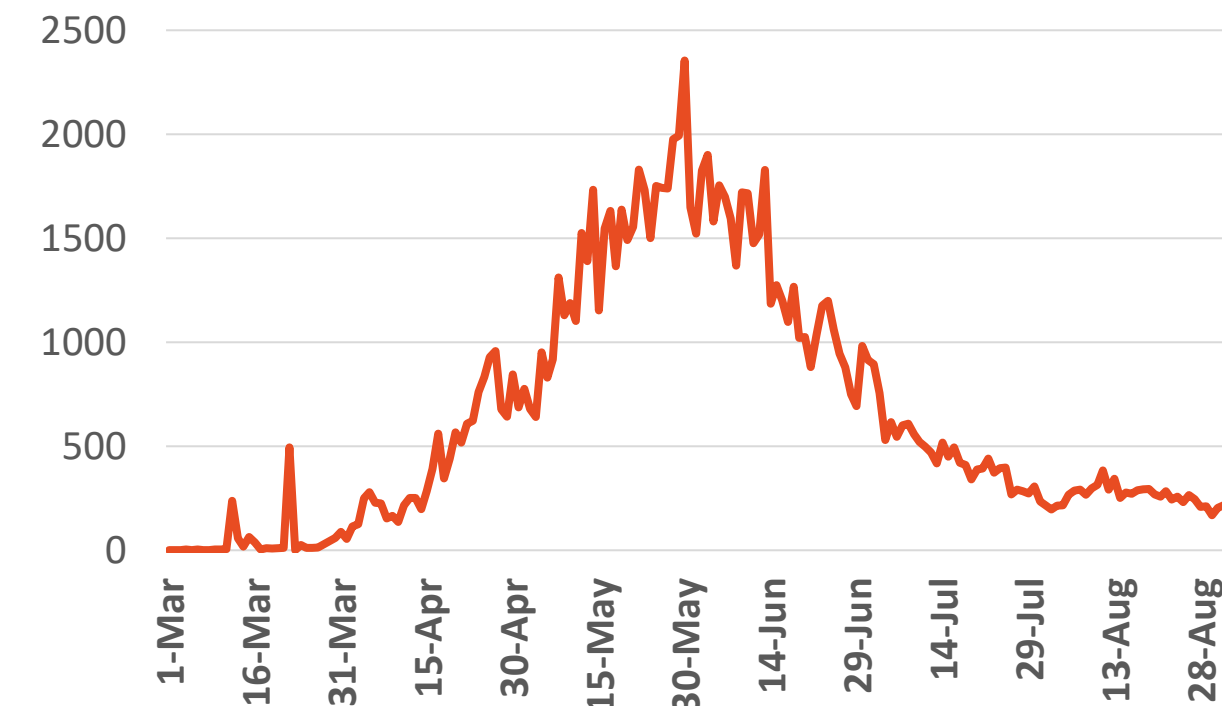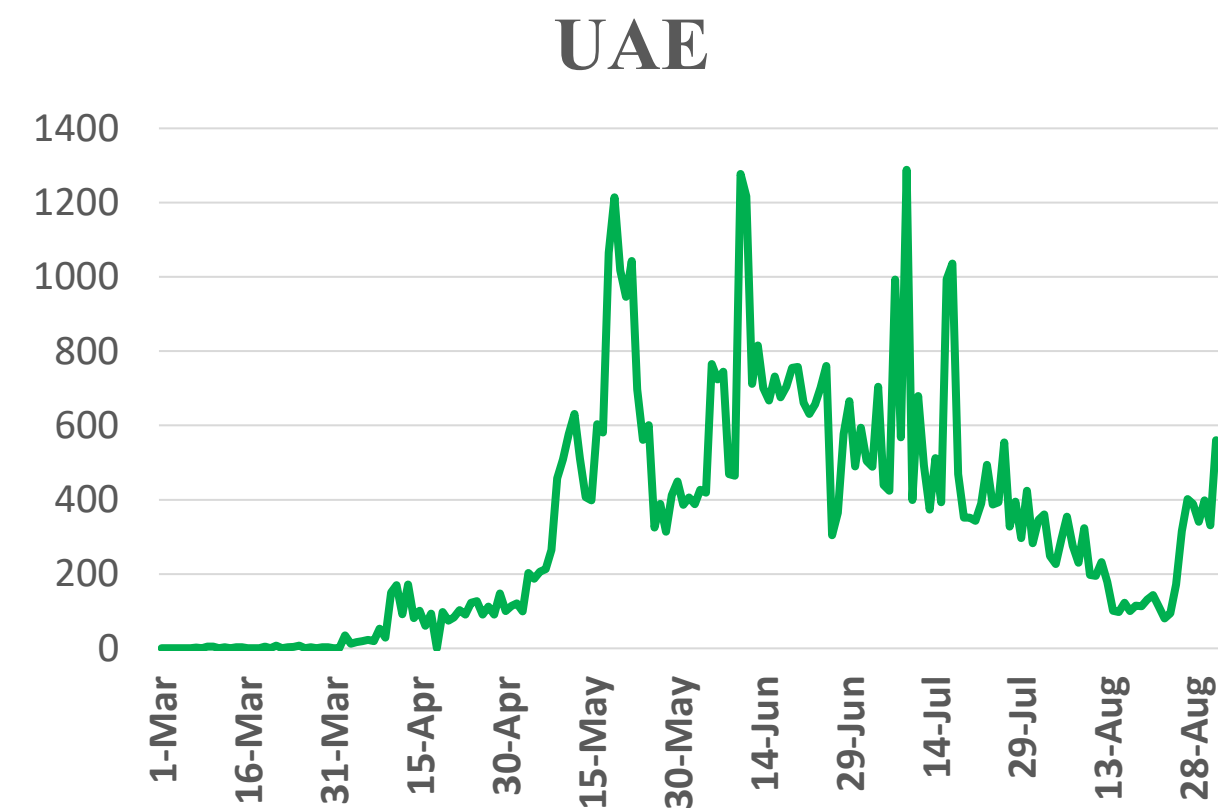*No announced statistic data on weekends and official holidays.

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

*No announced statistic data from 31 July to 4 August, 21 to 23 August & from 28 to 30 August

*No announced statistic data on weekends and official holidays.

Kuwait

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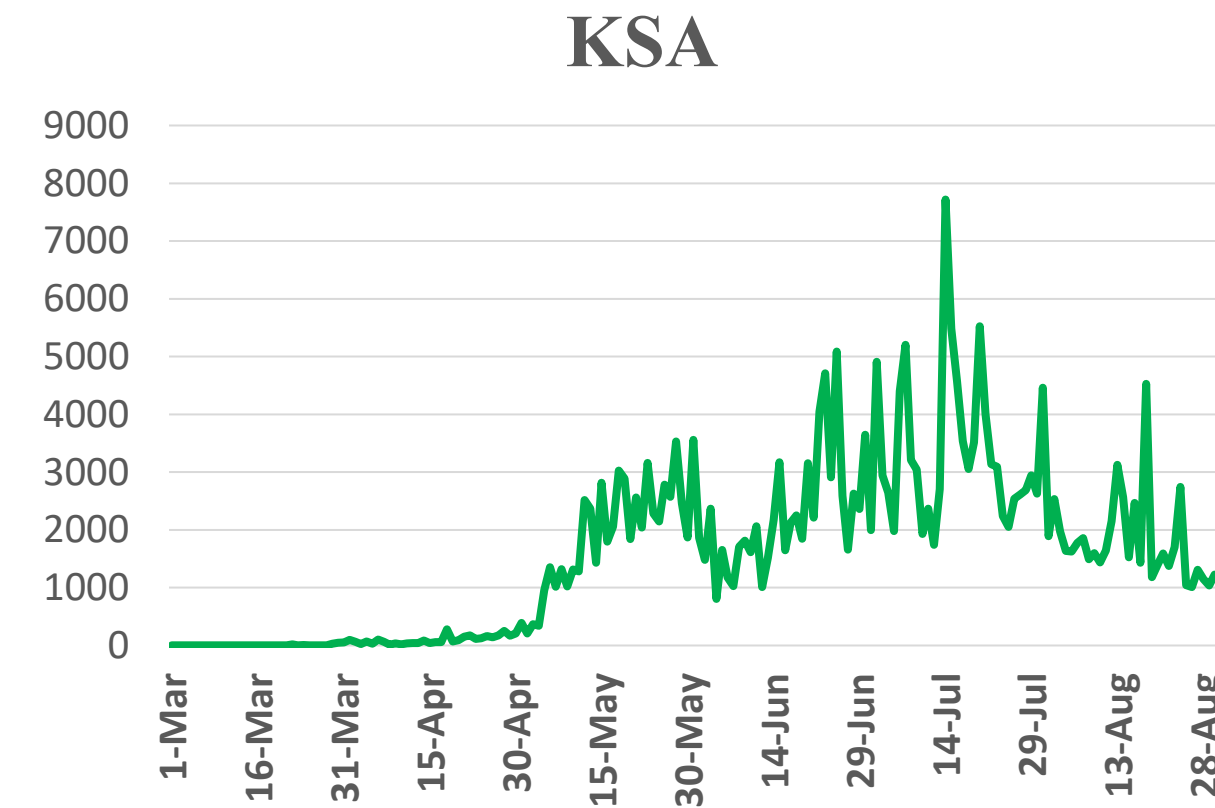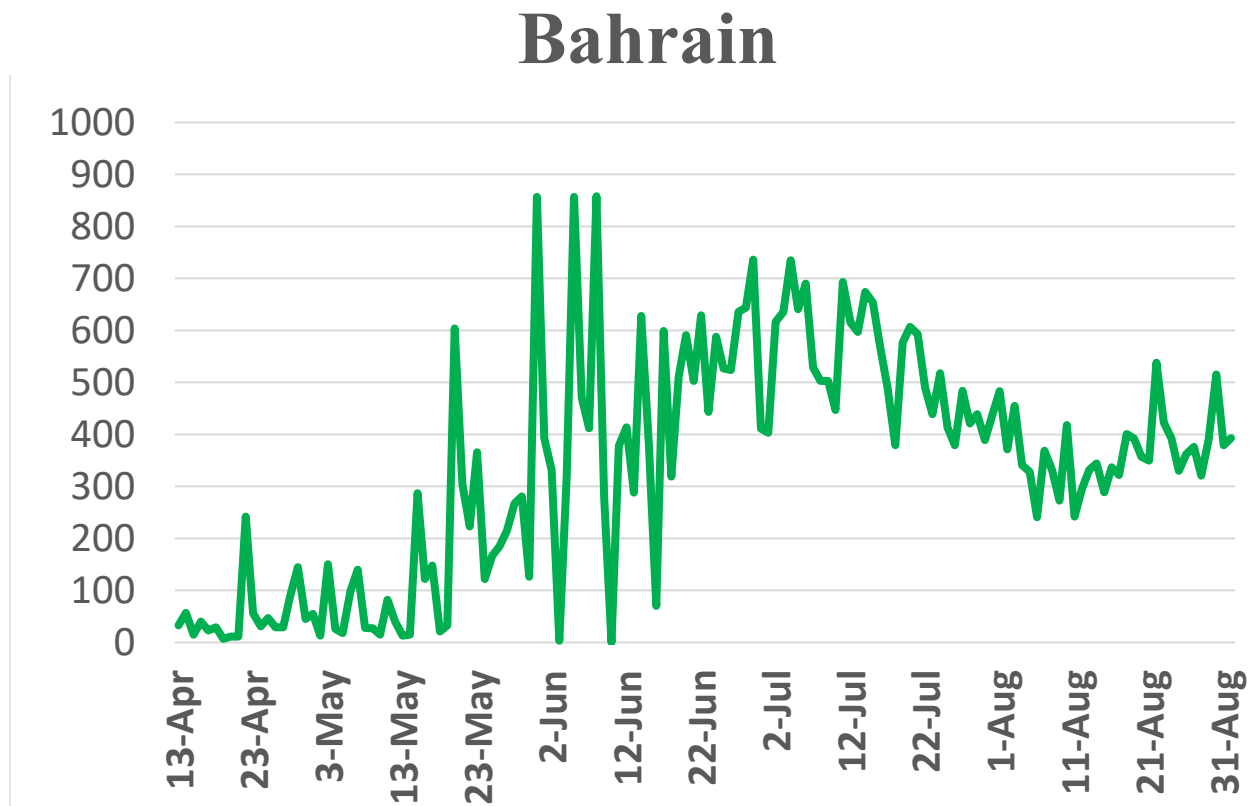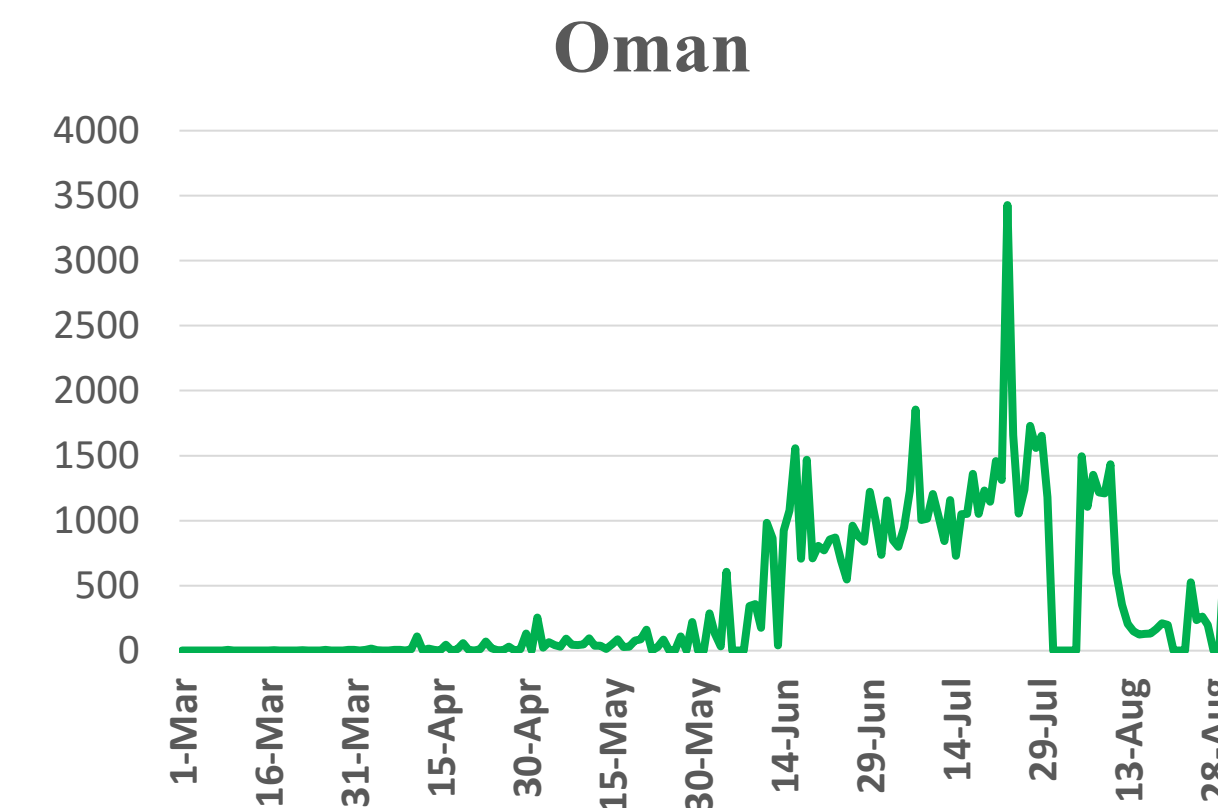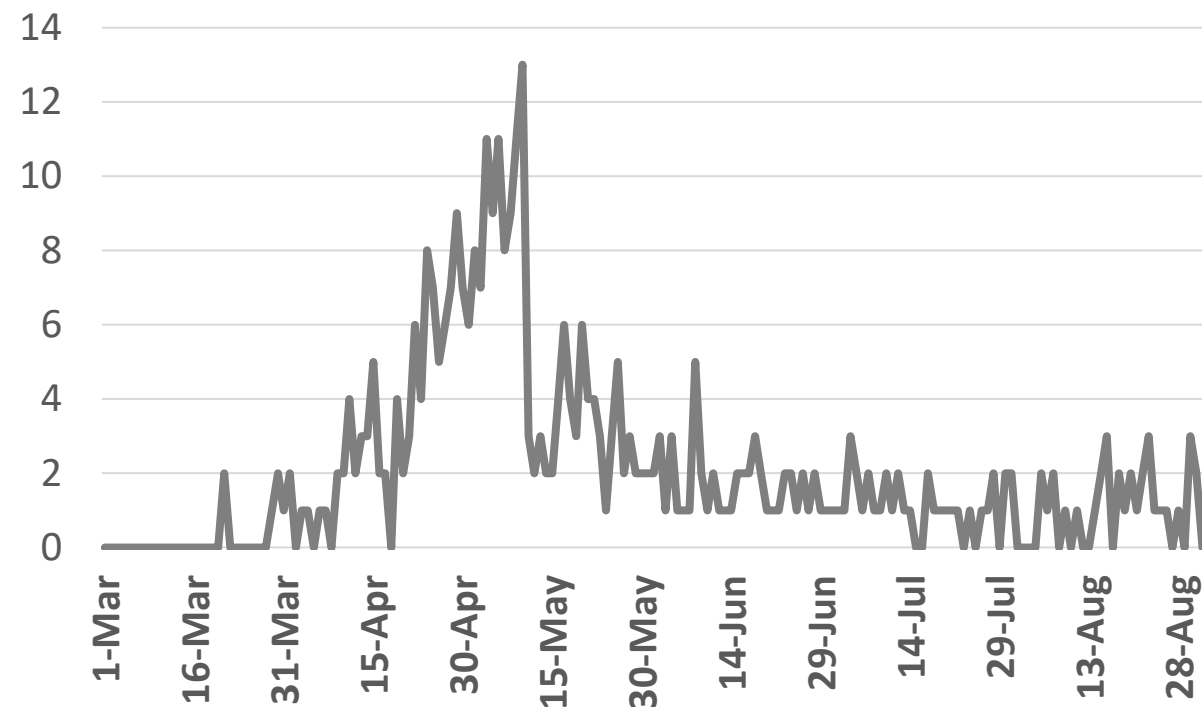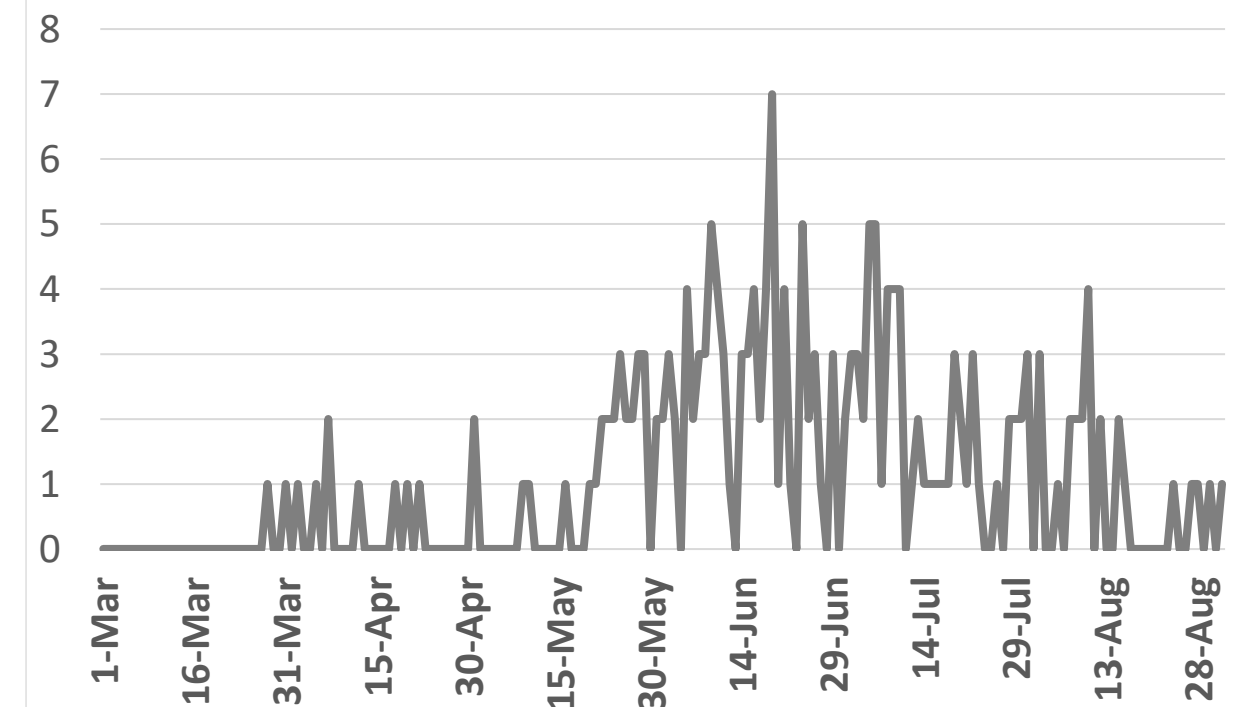
Source : Kuwait ministry of health

Qatar

Source : Qatar ministry of health

PUBLIC HEALTH

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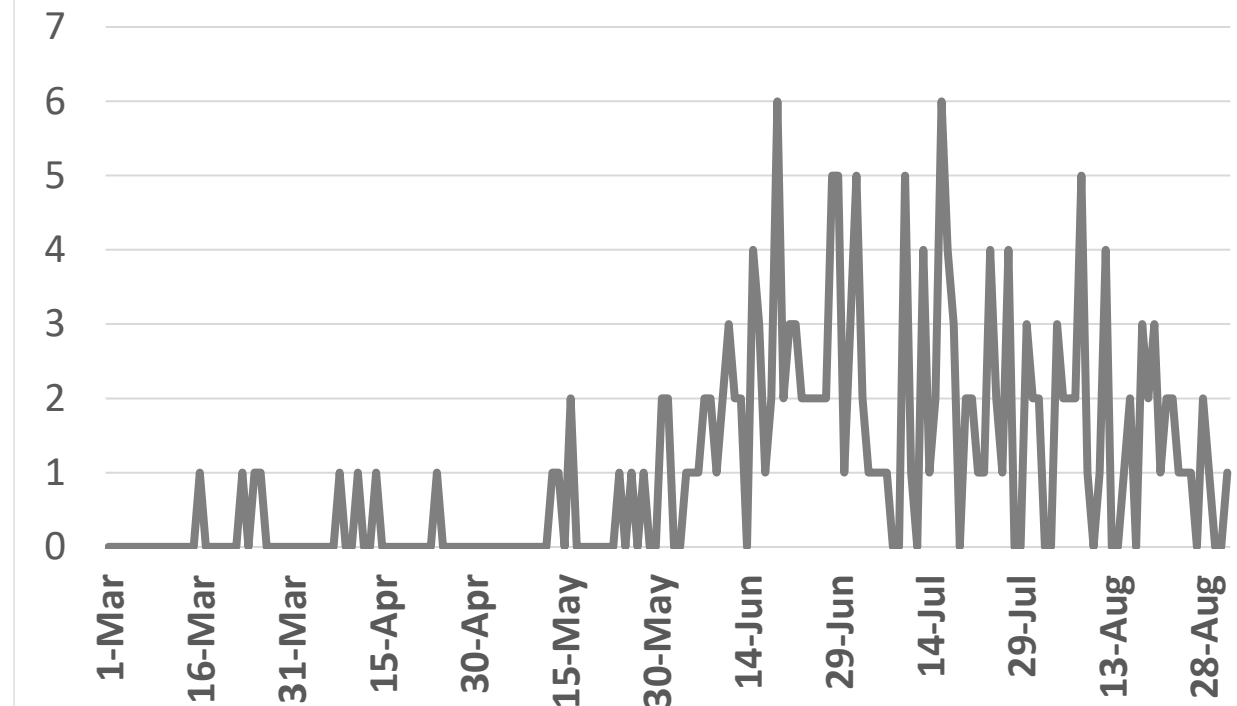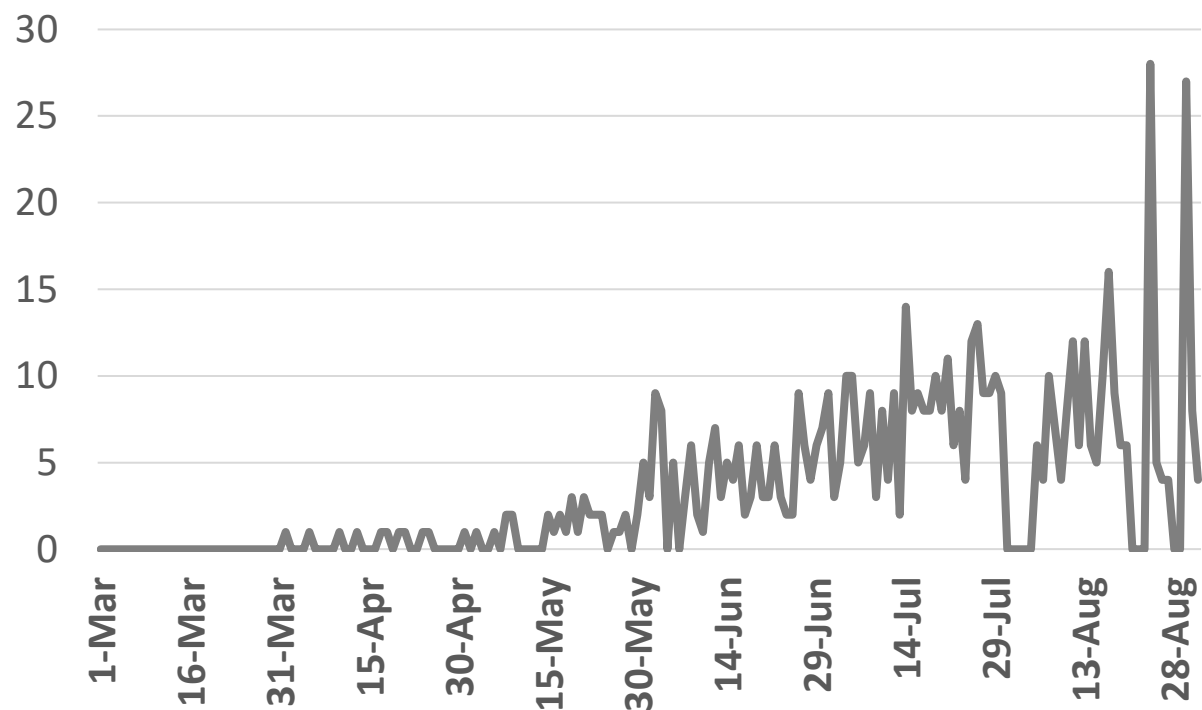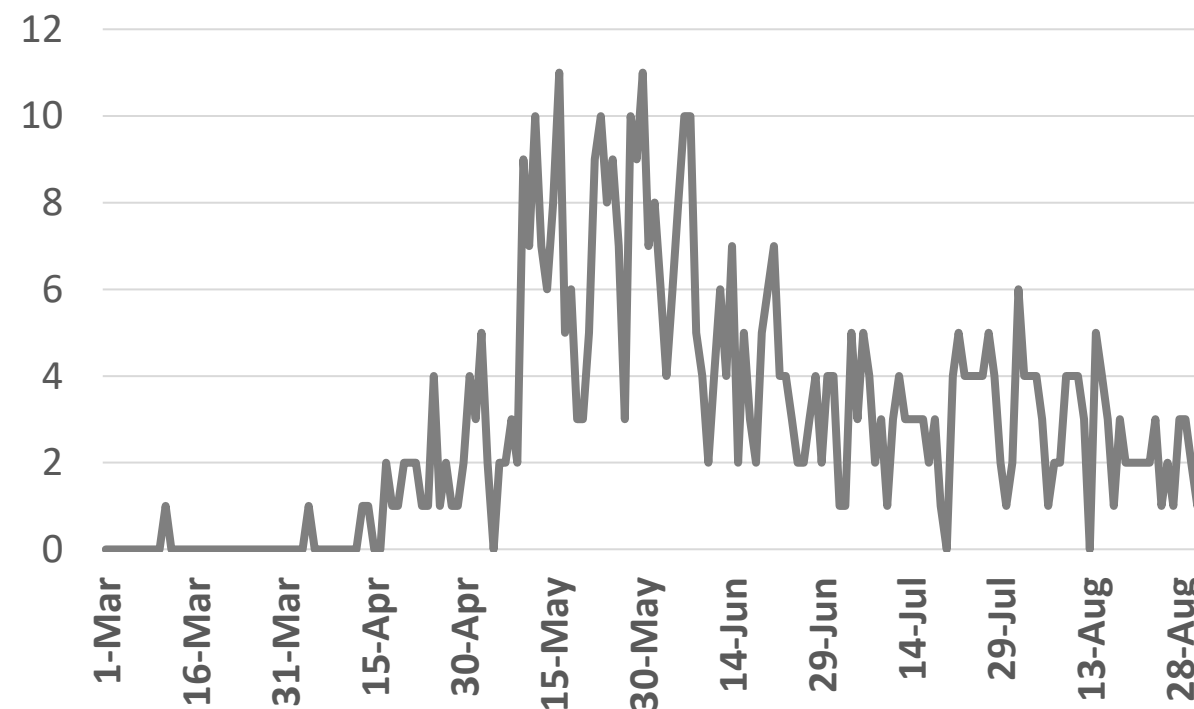
Article 1

Published

Immediate Impact of Stay-at-Home Orders to Control COVID-19 Transmission on Socioeconomic Conditions, Food Insecurity, Mental Health, and Intimate Partner Violence in Bangladeshi Women and Their Families: An Interrupted Time Series

This interrupted time-series analysis examined the immediate effects of at least 8 weeks of stay-at-home orders on family economic outcomes and food security, on women's mental health and experiences of intimate partner violence.

Methodology

- The studied variables were then compared with the situation before the pandemic. The mothers of 3016 children were randomly invited and selected to take part in the study. The consent was provided by 2424 of females.

Results & Conclusion

- Around 2414 (99·9%, 95% CI 99·6–99·9) of 2417 mothers were aware of, and adhering to, the stay-at-home advice.
- 2321 (96·0%, 95·2–96·7) of 2417 mothers reported a reduction in paid work for the family. Median monthly family income fell from US$212 at baseline to $59 during the lockdown and, the proportion of families earning less than $1·90 per day rose from five (0·2%, 0·0–0·5) of 2422 to 992 (47·3%, 45·2–49·5) of 2096 (p<0·0001 comparing baseline with lockdown period).
- Around 136 (5·6%, 4·7–6·6) of 2420 and 65 (2·7%, 2·1–3·4) of 2420 families experienced moderate and severe food insecurity before the pandemic respectively.
- The anxiety and depression of the mothers increased during the lockdown and emotional or moderate physical violence; was found to be increased.
- If future lockdowns are needed to control COVID-19 transmission, a comprehensive public health response must underwrite economic circumstances and integrate solutions that ensure the wellbeing of families, specifically in women.

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Article 2
Published

Prognostic Modelling of COVID-19 Using Artificial Intelligence in the United Kingdom: Model Development and Validation

This study aims to use an algorithm capable of revealing which features were important for making predictions while maintaining consistency and accuracy.

Methodology

- This study aimed at creating a point-of-admission mortality risk scoring system using an artificial neural network (ANN).

- The ANN analyzes a set of patient features such as comorbidities, demographics, smoking history, and presenting symptoms as well as predicts patient-specific mortality risk during the current hospital admission.

- The model was validated and trained on data extracted from 398 patients admitted to hospital with a positive real-time reverse transcription-polymerase chain reaction (RT-PCR) test for SARS-CoV-2.

Results & Conclusion

- The findings of the study suggest that patient-specific mortality was predicted with 86.25% accuracy, with a sensitivity of 87.50% and specificity of 85.94%. The area under the receiver operating characteristic curve was 90.12%. Furthermore, the positive predictive value was 60.87%, and the negative predictive value was 96.49%.

- These findings suggest an adaptive ANN trained on data at a single site, that shows the early utility of deep learning strategies in a swiftly evolving pandemic with no validated or established prognostic scoring systems.

CLINICAL FEATURES

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Article 3

Published

Beneficial Non-Anticoagulant Mechanisms Underlying Heparin Treatment of COVID-19 Patients

25 AUGUST 2020 THE LANCET

This study proposes that therapeutic treatment with heparin/LMWH will interfere with several pathological processes in COVID-19 patients, thereby increasing its rate of survival.

- The study, therefore, summarized the potentially beneficial, non-anticoagulant mechanisms underlying COVID-19 patients' treatment with heparin/LMWH, including
  - Inhibition of heparanase activity, responsible for endothelial leakage.
  - Neutralization of chemokines, and cytokines.
  - Interference with leukocyte trafficking;
  - Reducing viral cellular entry.
  - Neutralization of extracellular cytotoxic histones.

- Keeping in mind, several different pathogenic and inflammatory mechanisms targeted by heparin/LMWH, it is warranted that clinical studies shall be conducted that scrutinizes therapeutic doses of heparin/LMWH in COVID-19 patients. Moreover, the examination of certain heparin-derived sequences that are beneficial in targeting non-anticoagulant mechanisms may have even higher therapeutic potential for COVID-19 patients.

CLINICAL FEATURES

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Article 4
Published

Ocular Manifestations and Clinical Characteristics of Children with Laboratory-Confirmed COVID-19 in Wuhan, China

26 AUGUST 2020 JAMA Network

This cross-sectional study scrutinizes clinical characteristics and ocular manifestations of children with laboratory-confirmed COVID-19.

Methodology

- Around 216 pediatric patients were included; of these around 134 (62%) were boys, with a median (interquartile range) age of 7.25 (2.6-11.6) years.

- Based on the history of exposure, 193 children (89.4%) had a confirmed (173 [80.1%]) or suspected (20 [9.3%]) family member with COVID-19 infections.

- Some of the common symptoms among symptomatic children comprised are cough and fever. From the 216 children, 93 (43.1%) had no respiratory or systemic symptoms. Children with moderate or mild symptoms recovered without reported death.

Results

- Around 49 children demonstrated different ocular manifestations, from these nine of them had ocular complaints being the initial COVID-19 manifestation.

- Some of the most common ocular manifestation were conjunctival congestion, eye rubbing, and conjunctival discharge. Children with cough or systemic symptoms were more likely to develop ocular symptoms.

- Ocular symptoms were typically mild, and children improved or recovered. In this study, children hospitalized with COVID-19 presented with a diversity of onset symptoms including cough, fever, and ocular manifestations, such as eye rubbing, conjunctival discharge, and conjunctival congestion. Patients' systemic clinical symptoms or cough were related to ocular symptoms. Thus, the Ocular symptoms improved or recovered eventually.

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Article 5

Overview of Testing for SARS-CoV-2 (COVID-19)

Published   **24 AUGUST 2020** CDC

This document is intended to provide guidance on the appropriate use of testing for SARS-CoV-2 (COVID-19).

This document was updated on 24th of August:

- The document states that if a person has been in close contact (within 6 feet) of a person with a COVID-19 infection for at least 15 minutes but do not have symptoms:
  - They may not necessarily need a test unless they are a vulnerable individual
  - Or their health care provider or state or local public health officials recommend them to take one.

- If a person does not have COVID-19 symptoms and has not been in close contact with someone known to have a COVID-19 infection: that individual does not need a test. A negative test does not mean they will not contract an infection at a later time.

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Article 6 — Duration of Isolation and Precautions for Adults with COVID-19

Published **16 AUGUST 2020** CDC

This update includes current evidence to inform the duration of isolation and precautions recommended to prevent transmission of SARS-CoV-2 to others while limiting unnecessarily prolonged isolation and unnecessary use of laboratory testing resources.

Duration of isolation and precautions:

- For most persons with COVID-19 illness, isolation and precautions can generally be discontinued 10 days after symptom onset and resolution of fever for at least 24 hours, without the use of fever-reducing medications, and with an improvement of other symptoms.

- A limited number of persons with severe illness may produce replication-competent virus beyond 10 days that may warrant extending duration of isolation and precautions for up to 20 days after symptom onset; consider a consultation with infection control experts.

- For persons who never develop symptoms, isolation and other precautions can be discontinued 10 days after the date of their first positive RT-PCR test for SARS-CoV-2 RNA.

- **Serologic testing** should <u>not be used</u> to establish the presence or absence of SARS-CoV-2 infection or reinfection.

THANK YOU

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