SCIENTIFIC RESEARCH MONITORING ON COVID-19

18 SEPTEMBER 2020

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SCIENTIFIC RESEARCH MONITORING ON COVID-19 (ISSUE 229)

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.
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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).

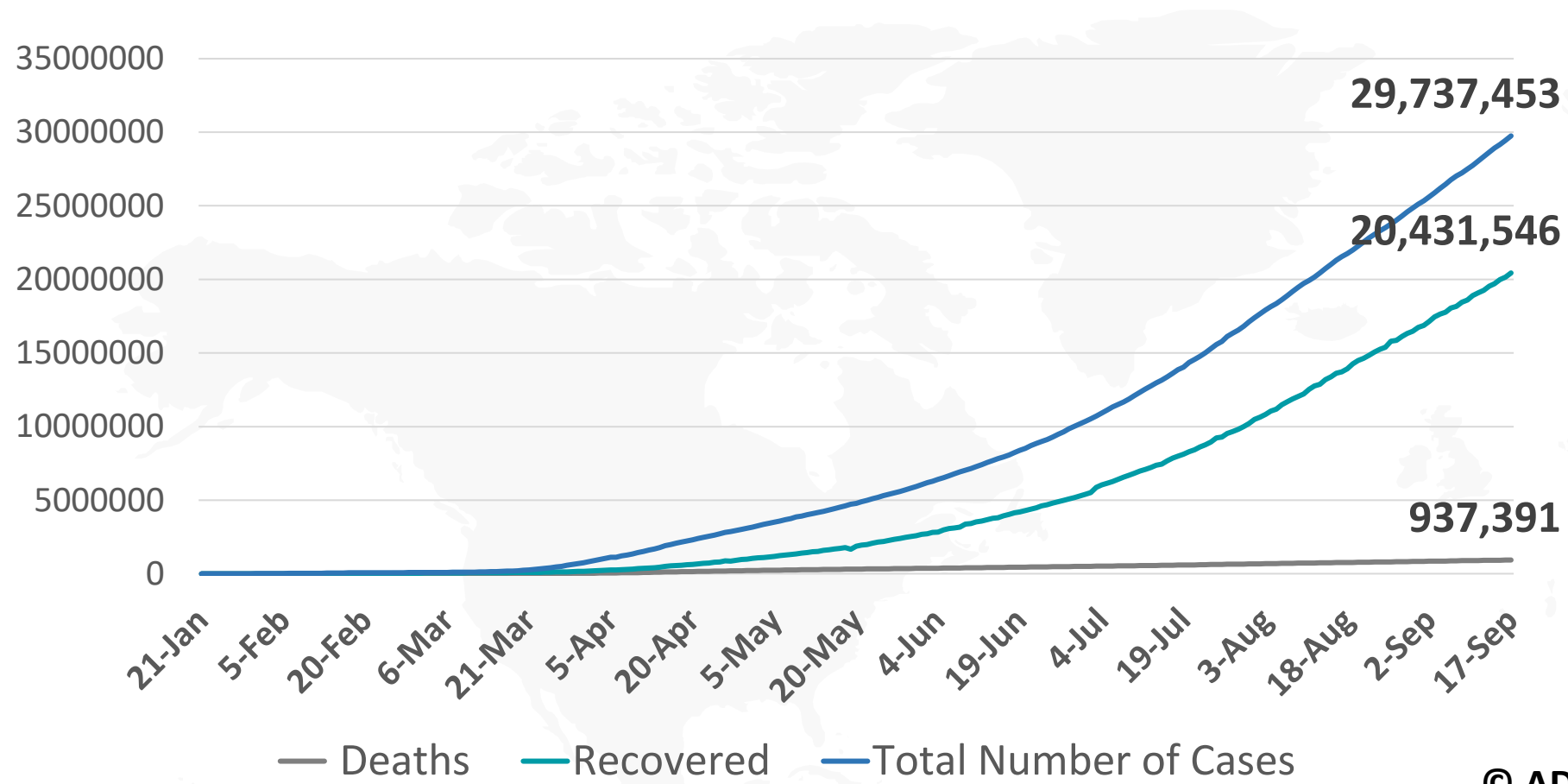**Click on icon to view content**

UAE Research

Thrombotic Events Following Tocilizumab Therapy in Critically Ill COVID-19 Patients: A Façade for Prognostic Markers

Public Health

Projected Health-Care Resource Needs for an Effective Response to COVID-19 in 73 Low-Income and Middle-Income Countries: A Modelling Study
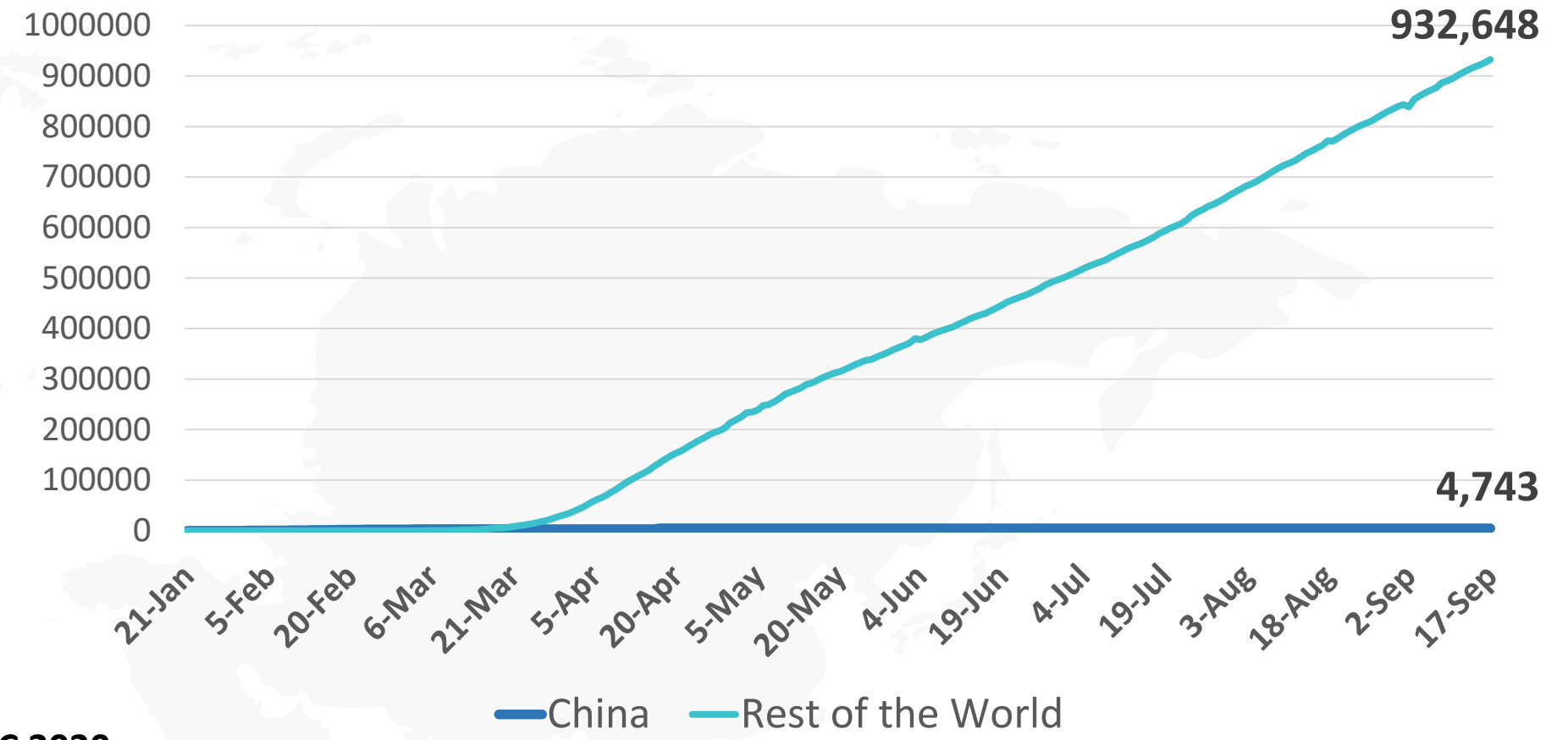
EPIDEMIOLOGY
FROM 21 JAN TO 17 SEPT 2020

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

29,737,453
20,431,546
937,391

— Deaths — 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)

932,648
4,743

— China — Rest of the World

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

292,288
19

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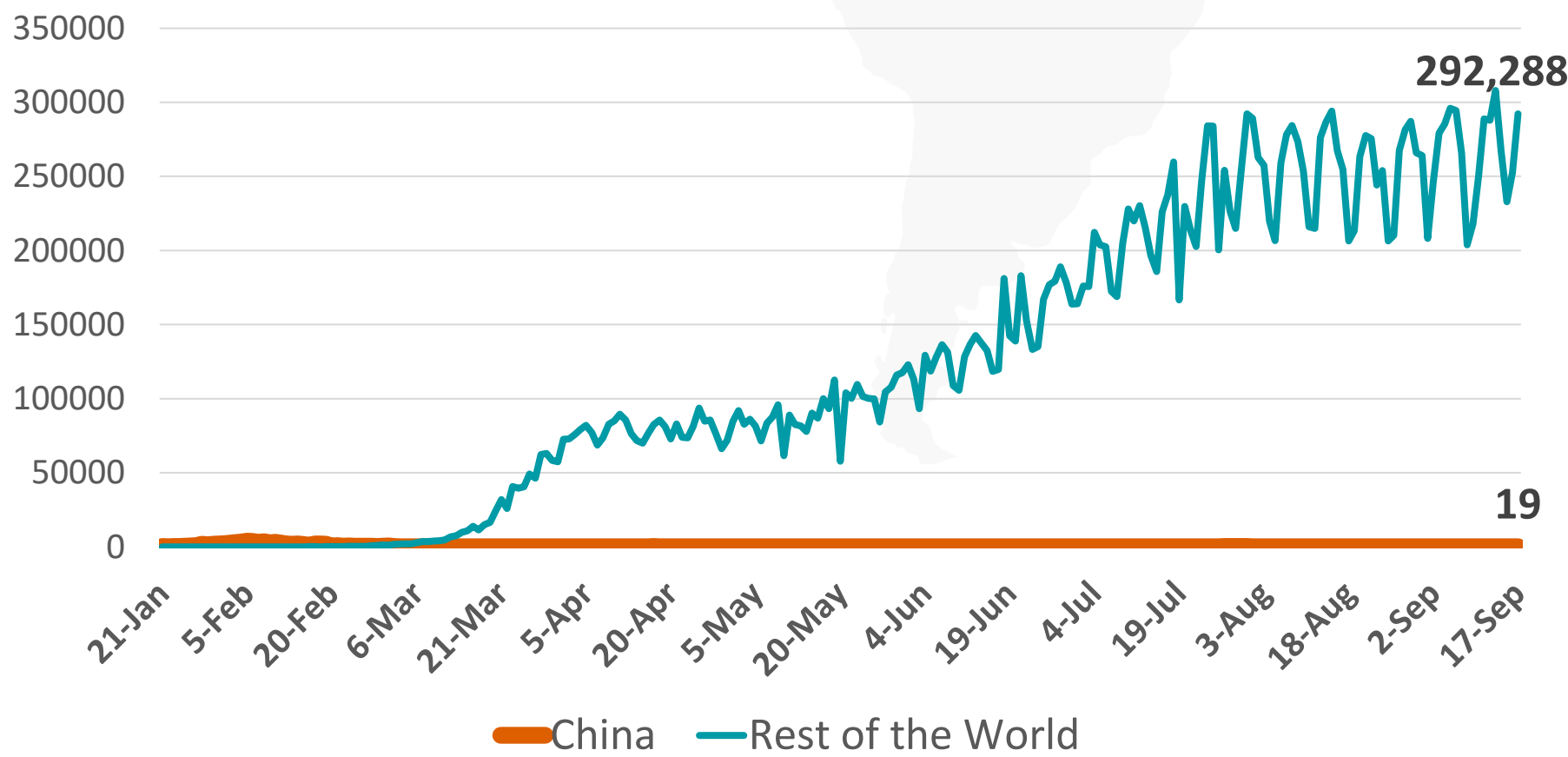
Figure 4: Global Daily New Deaths Due to COVID-19 (china and rest of the world)

6,057

— Daily New Deaths

Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: John Hopkins, WHO

EPIDEMIOLOGY
FROM 21 JAN TO 17 SEPT 2020

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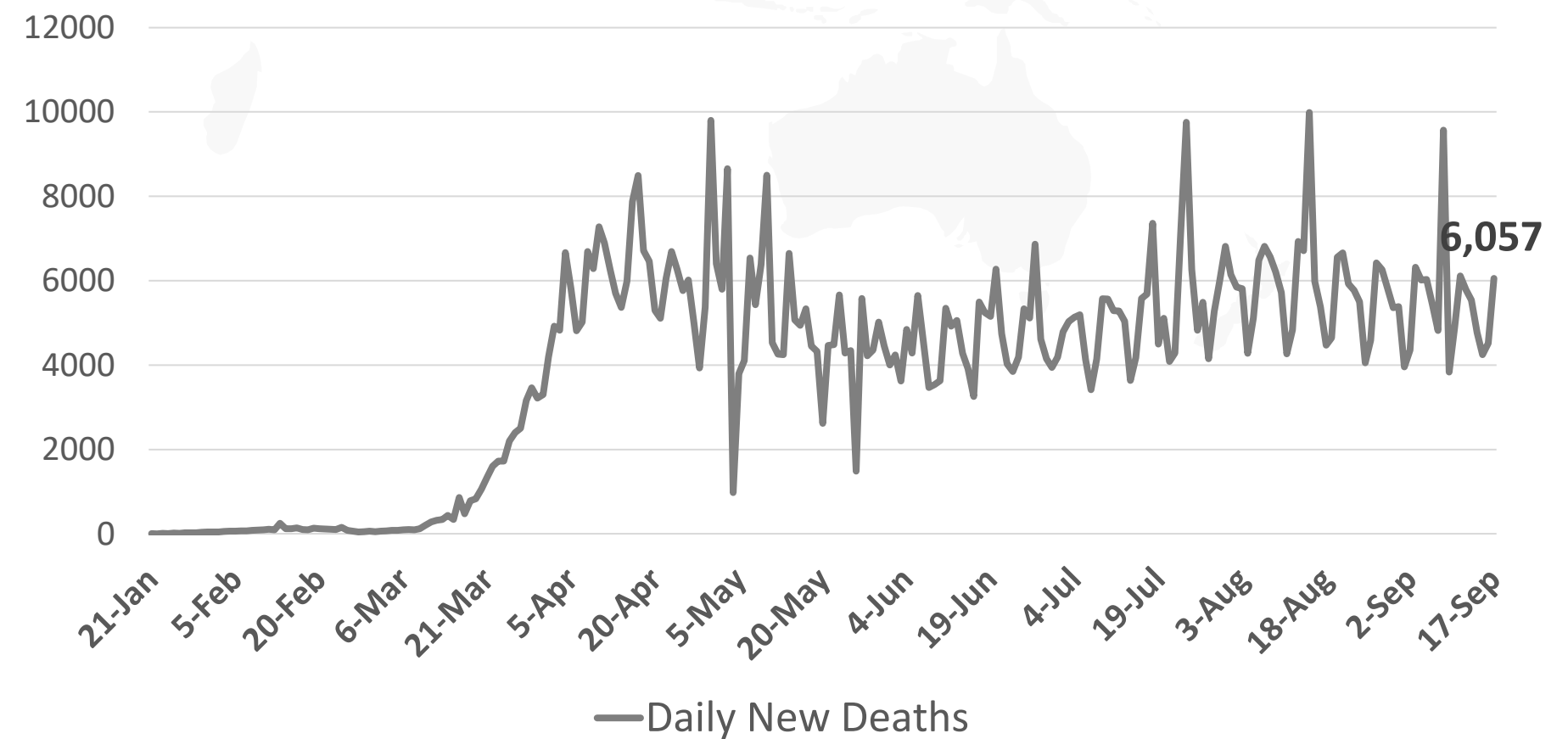
Figure 5: Top 10 Countries in the Total Number of Cases Due to COVID-19

TOTAL DEATHS

USA: 194,434
Brazil: 133,119
India: 83,198
Mexico: 71,678
Peru: 30,927
Spain: 30,243
Colombia: 23,288
Russia: 19,061
South Africa: 15,705
Argentina: 11,910

DEATHS PER MILLION

Colombia: 651.8
South...: 607.2
USA: 391.8
Argentina: 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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USA — India — Brazil — Russia — Peru — Colombia — Mexico — South Africa — Spain — Argentina
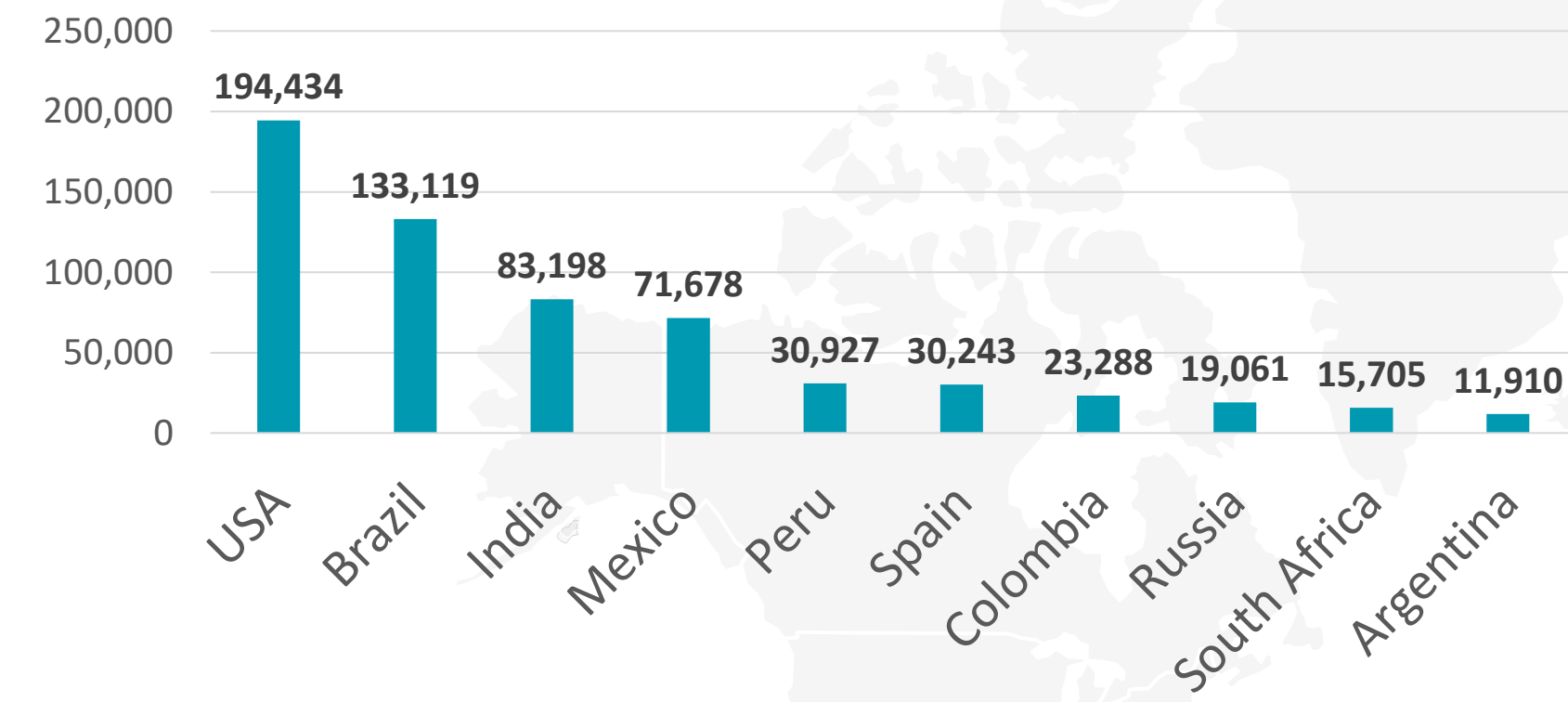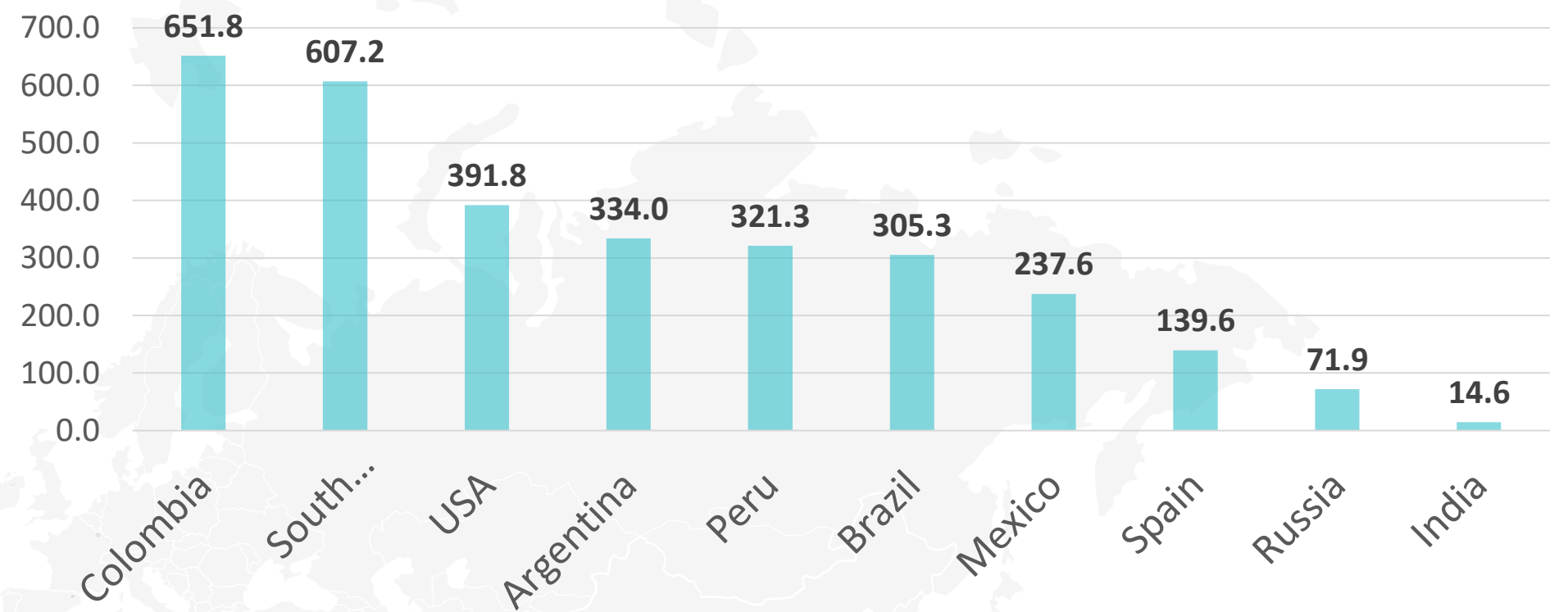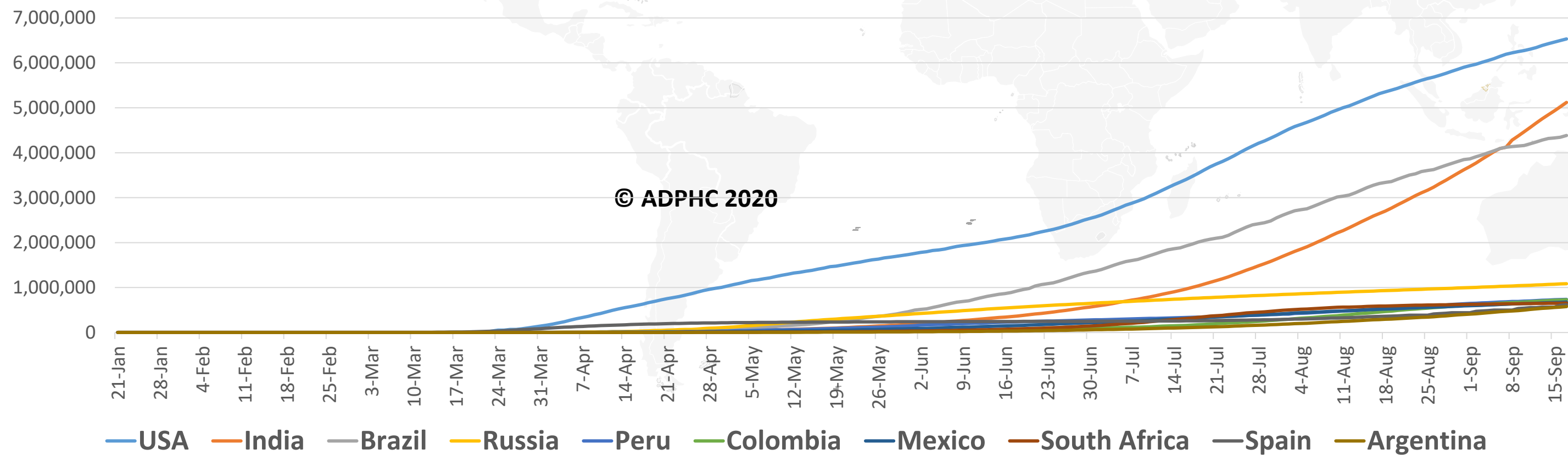
Country	Cases
USA	6,530,324
Brazil	5,118,253
India	4,382,263
Russia	1,085,281
Peru	738,020
Colombia	728,590
Mexico	676,487
South Africa	653,444
Spain	614,360
Argentina	577,338

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

Daily Tests
84,666.1 Average Tests
856.0 per 100k population
1.0% Positive Rate

Daily Cases
808.1 Average Cases
8.2 per 100k population

Daily Recovered
596.0 Average Recovered
6.0 per 100k population

Daily Deaths
0.6 Average Deaths
0.0 per 100k population
0.1% Case Fatality Rate
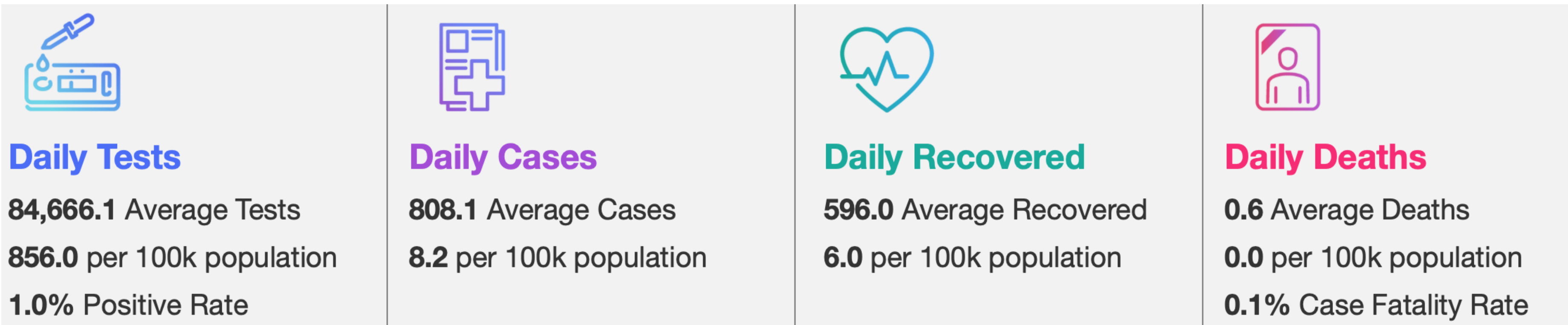
TOTAL NUMBER OF INFECTED AND RECOVERED CASES DUE TO COVID-19 REPORTED BY THE UAE

81,782

72,117

Total number of cases   Recovered cases

EPIDEMIOLOGY
Date: 17 SEPT 2020

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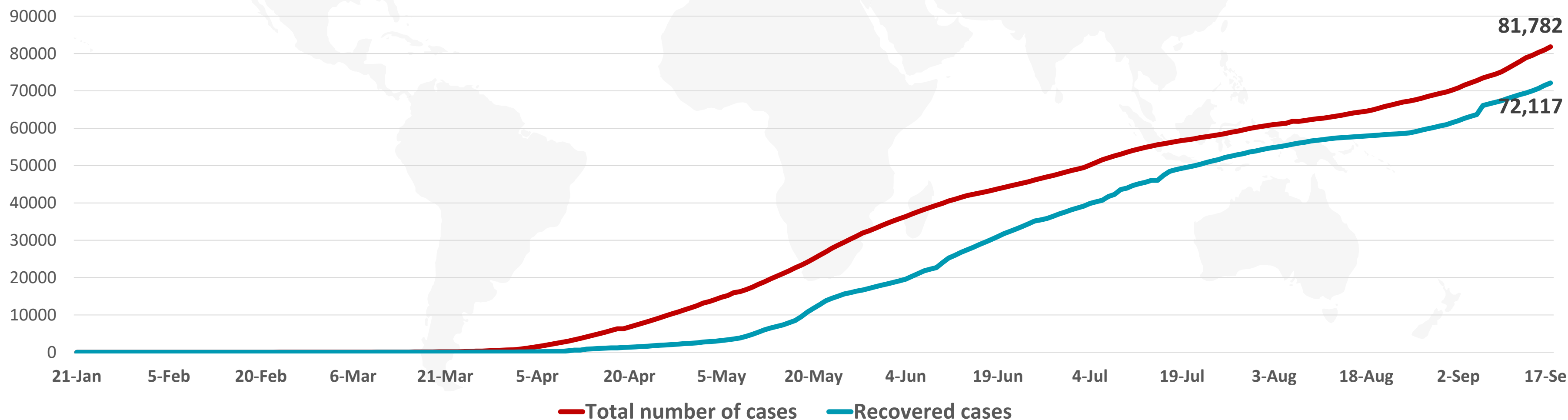
Figure 7A : Global Distribution of COVID-19 Cases
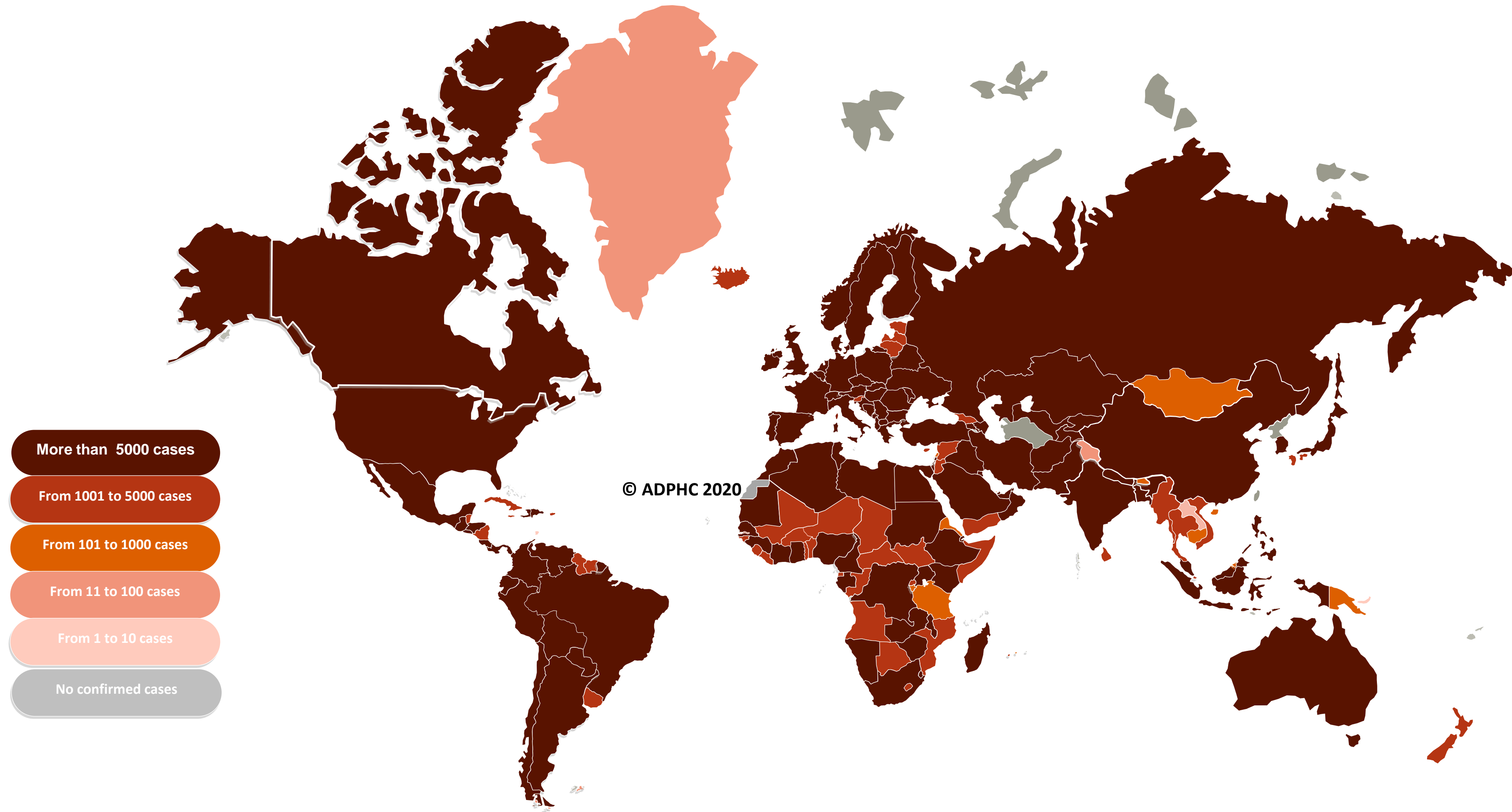
Legend:
- More than 5000 cases
- From 1001 to 5000 cases
- From 101 to 1000 cases
- From 11 to 100 cases
- From 1 to 10 cases
- No confirmed cases

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EPIDEMIOLOGY

Date: 17 SEPT 2020

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

Legend:
- More than 5000 cases
- From 1001 to 5000 cases
- From 101 to 1000 cases
- From 11 to 100 cases
- From 1 to 10 cases
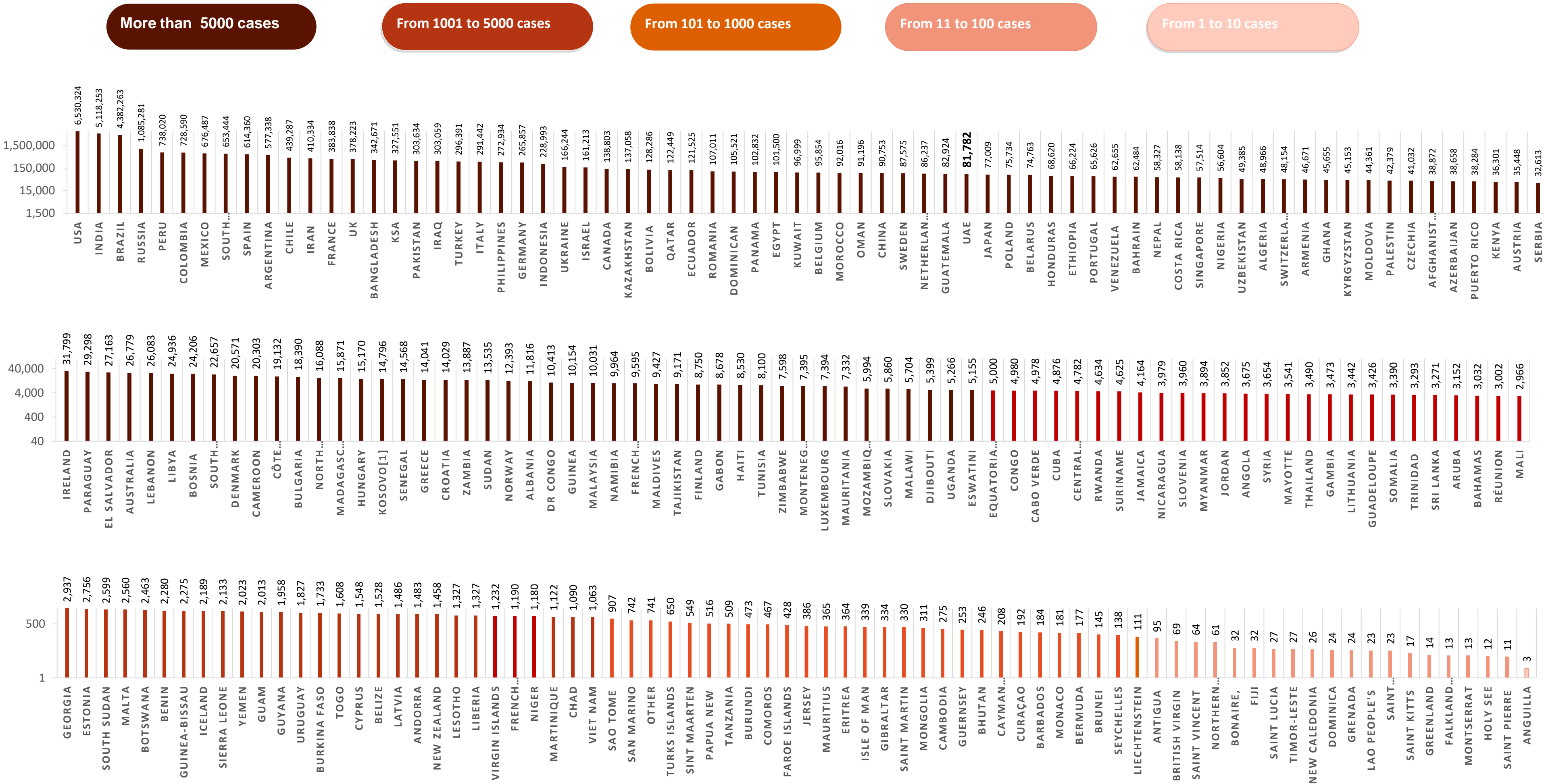
Other*:includes cases and deaths reported under the international conveyance(Diamond Princess)

EPIDEMIOLOGY

Date: 17 SEPT 2020

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

INFECTED

Region	Cases
AMRO	15,095,402
SERO	5,768,599
EURO	5,011,212
EMRO	2,165,227
AFRO	1,131,482
WPRO	564,790

Pie chart (INFECTED):
- AMRO 50.8%
- SERO 19.4%
- EURO 16.9%
- EMRO 7.3%
- AFRO 3.8%
- WPRO 1.9%

DEATHS

Region	Deaths
AMRO	518,459
EURO	227,971
SERO	97,650
EMRO	56,494
AFRO	24,400
WPRO	12,404

Pie chart (DEATHS):
- AMRO 55.3%
- EURO 24.3%
- SERO 10.4%
- EMRO 6.0%
- AFRO 2.6%
- WPRO 1.3%

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EPIDEMIOLOGY
Date: 17 SEPT 2020

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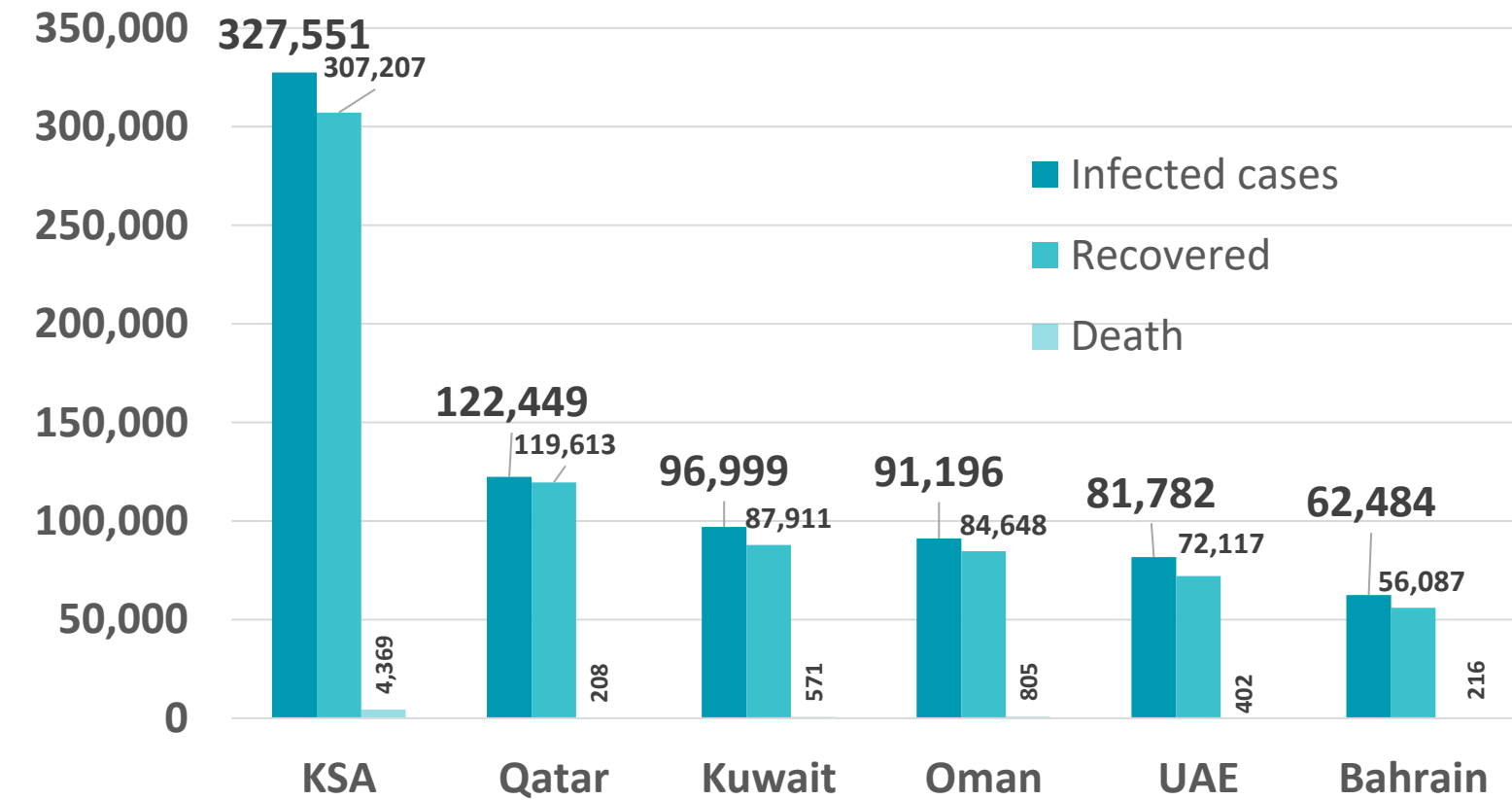
Figure 9: Comparative Analysis of the Distribution of COVID-19 Cases in GCC Countries

TOTAL NUMBER OF INFECTED CASES

KSA 41.86%
Qatar 15.65%
Kuwait 12.40%
Oman 11.66%
UAE 10.45%
Bahrain 7.99%

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TOTAL NUMBER OF INFECTED, RECOVERED AND DEATHS

Infected cases / Recovered / Death

KSA: 327,551 / 307,207 / 4,369
Qatar: 122,449 / 119,613 / 208
Kuwait: 96,999 / 87,911 / 571
Oman: 91,196 / 84,648 / 805
UAE: 81,782 / 72,117 / 402
Bahrain: 62,484 / 56,087 / 216

DEATHS PER MILLION

Per million

Oman 157.6
Kuwait 133.7
Bahrain 126.9
KSA 125.5
Qatar 72.2
UAE 40.7

EPIDEMIOLOGY

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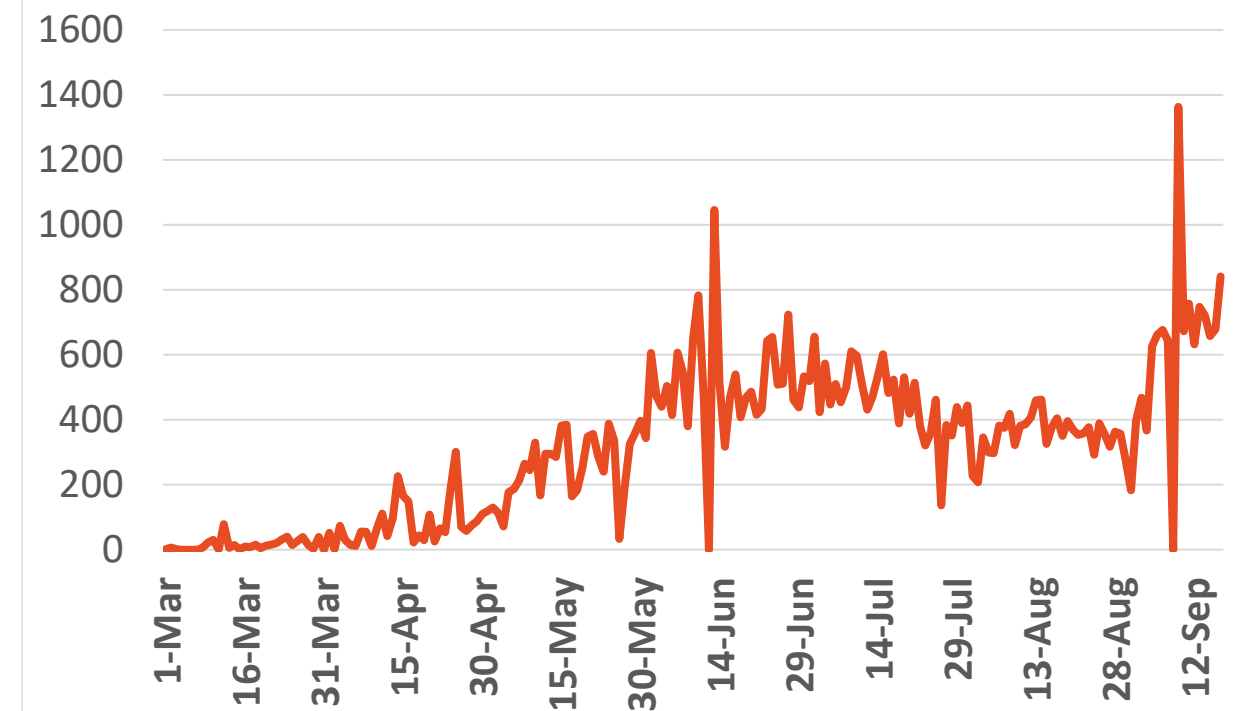

UAE
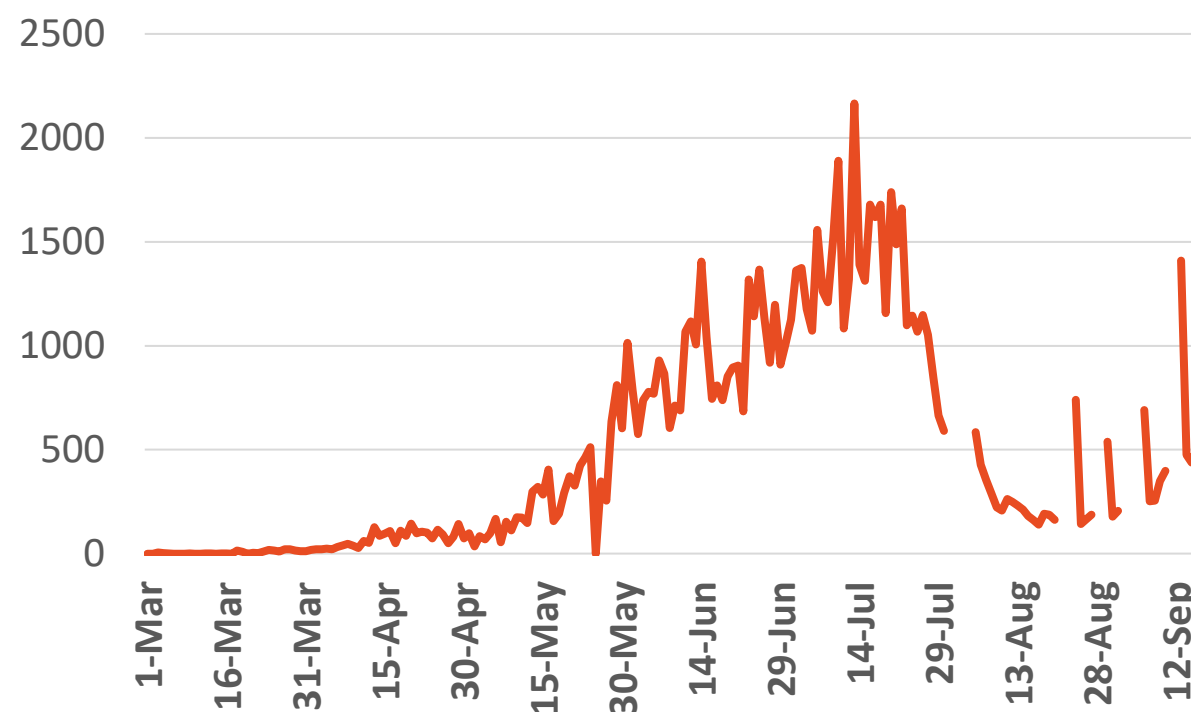Source : National Emergency Crisis and Disaster Management Authority

KSA
Source : KSA ministry of health
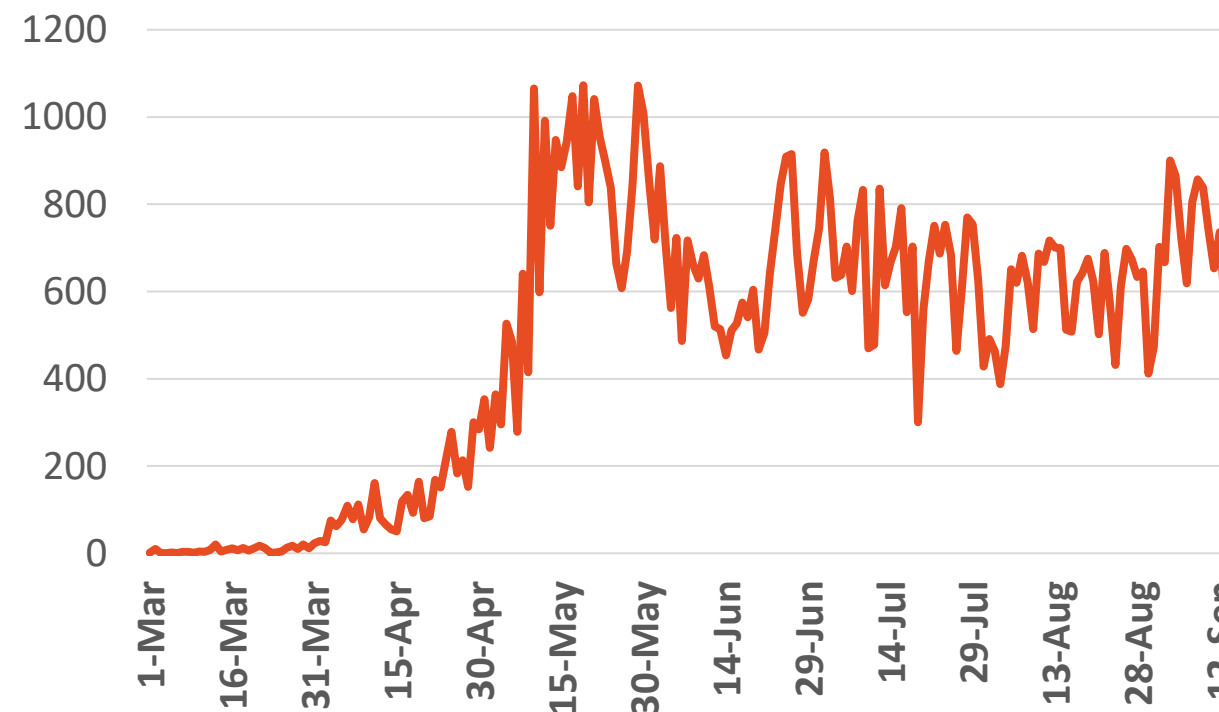
Bahrain
Source :WHO

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, 2, 4٫ 5,11 & 12 September
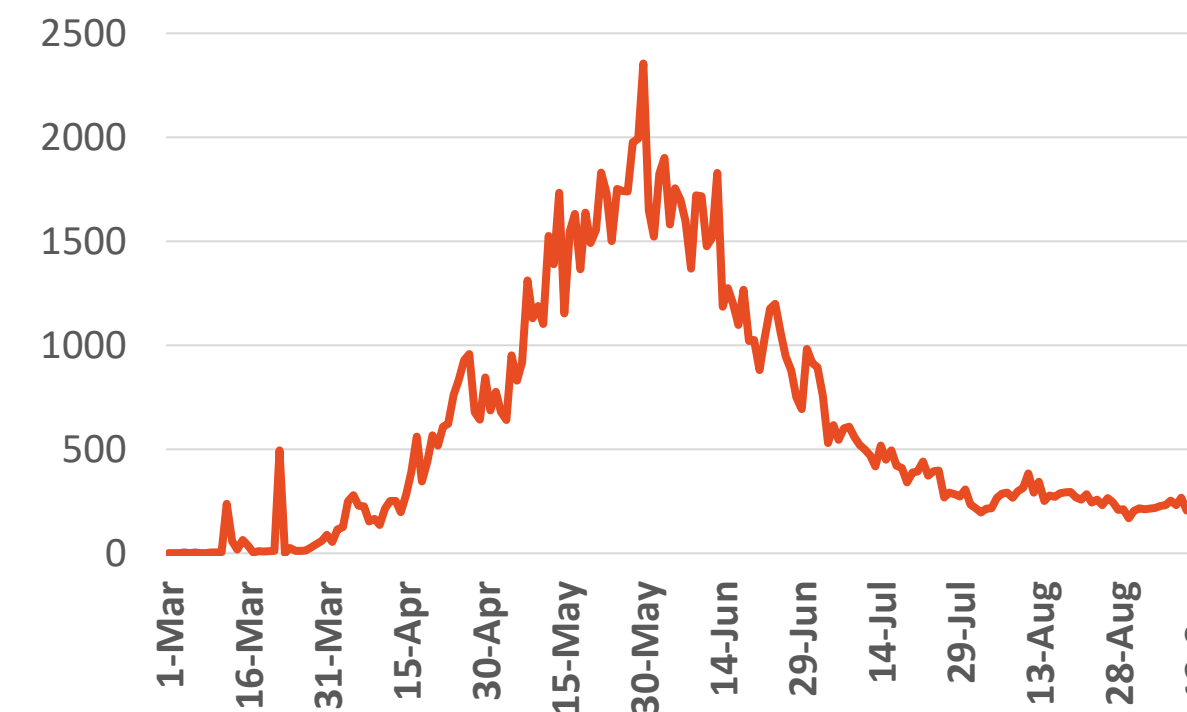*No announced statistic data on weekends and official holidays.
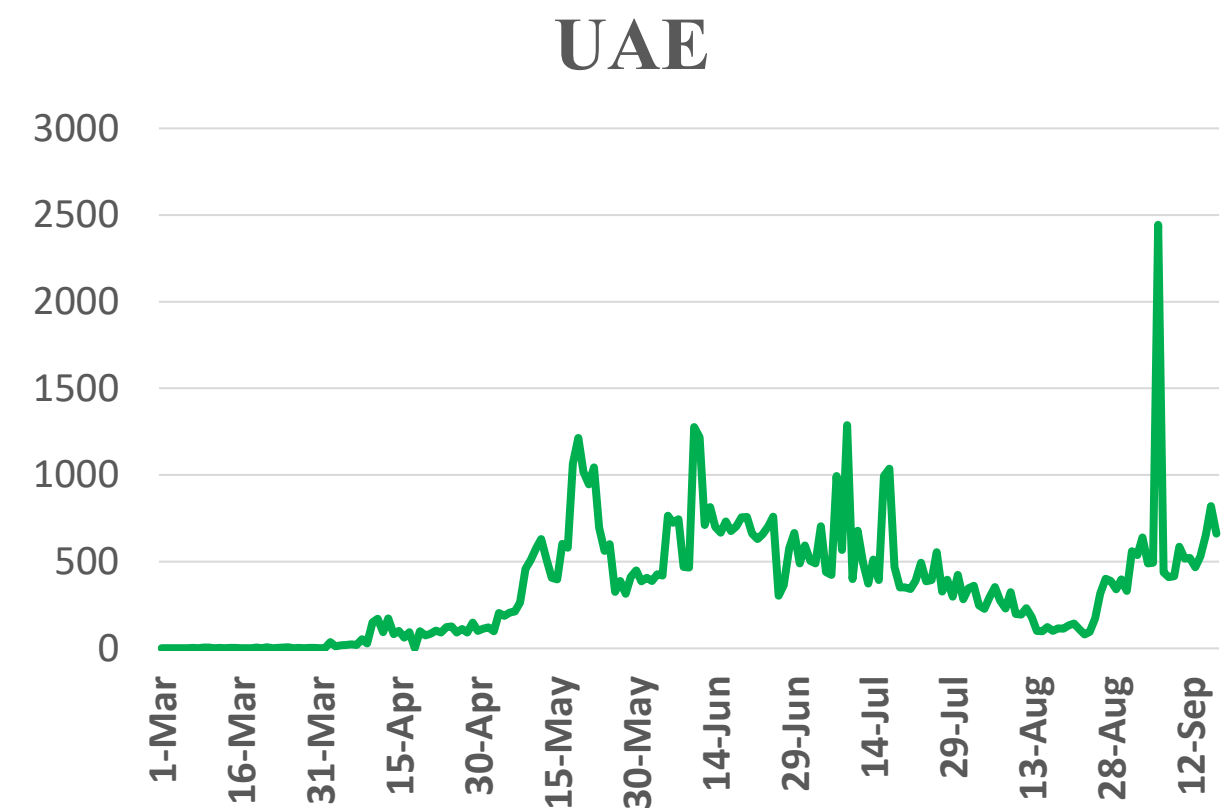
Kuwait
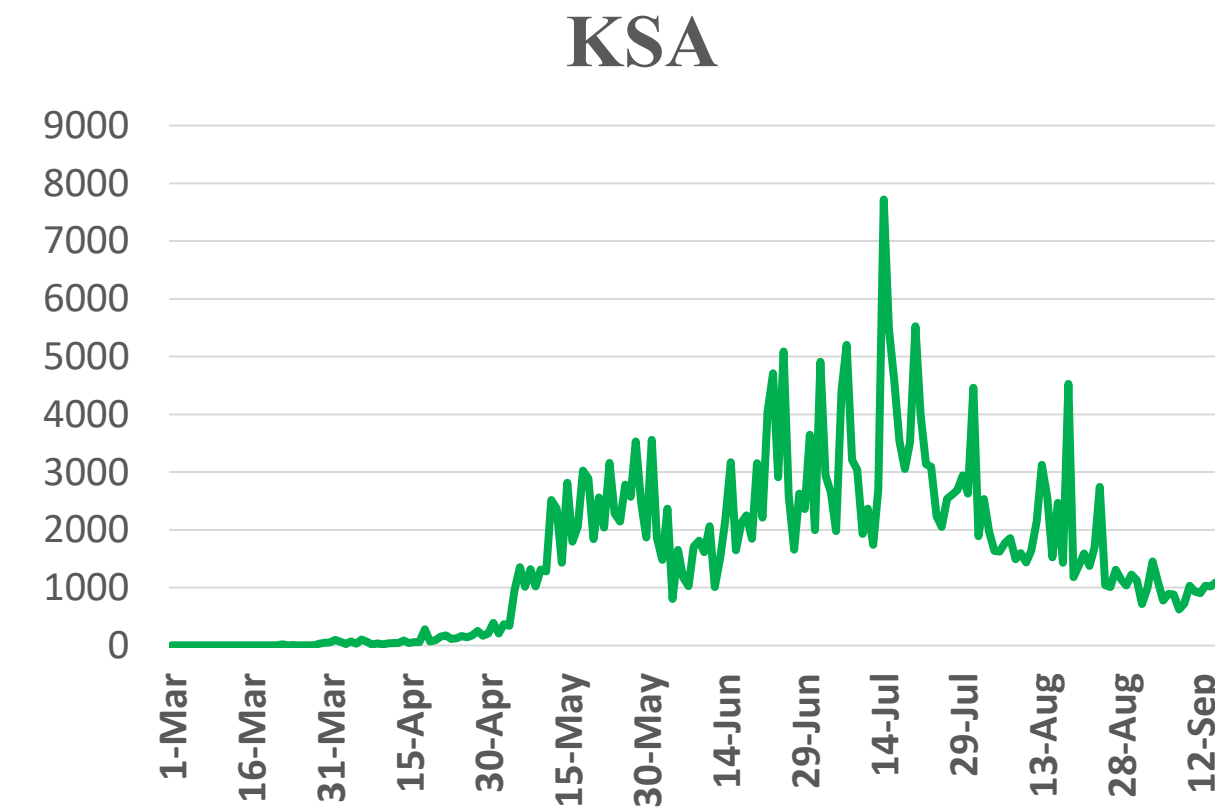© ADPHC 2020
Source : Kuwait ministry of health

Qatar
Source : Qatar ministry of health

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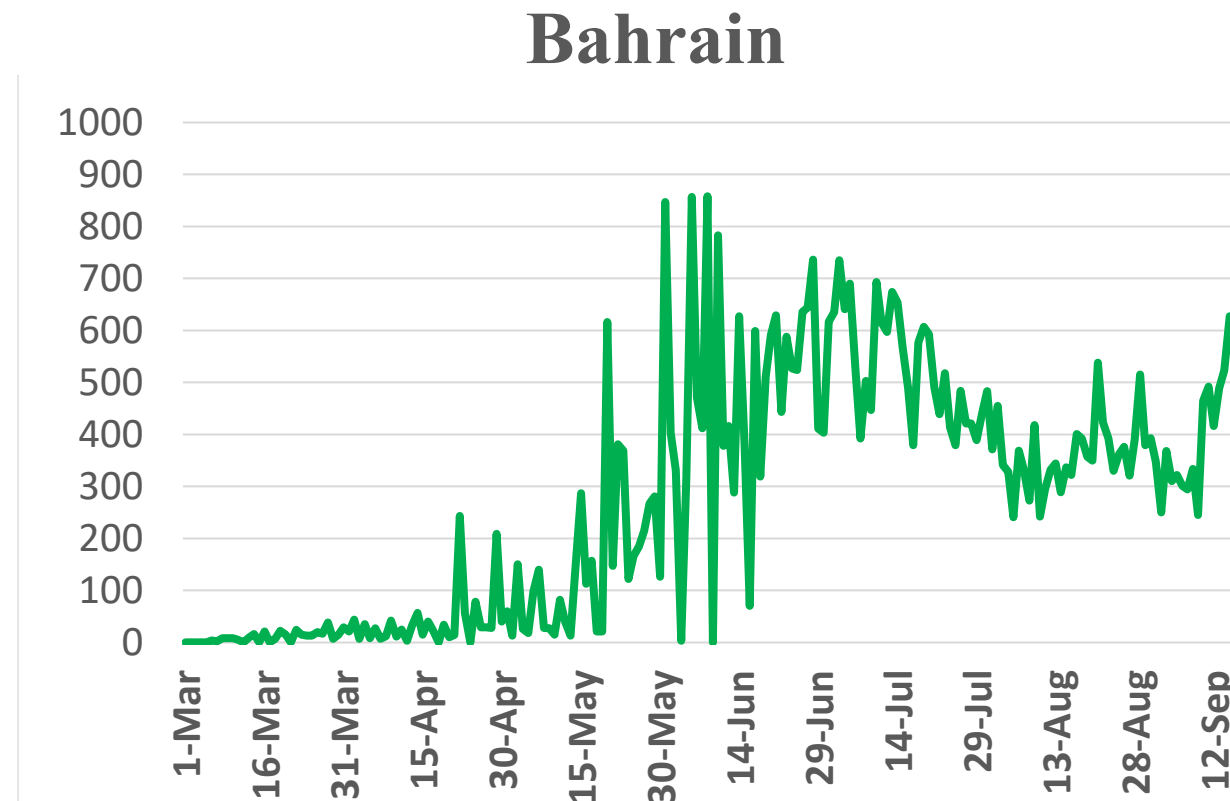ABU DHABI PUBLIC
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Figure 11: Comparative Analysis of the Distribution of COVID-19 Newly Recovered Cases in GCC Countries
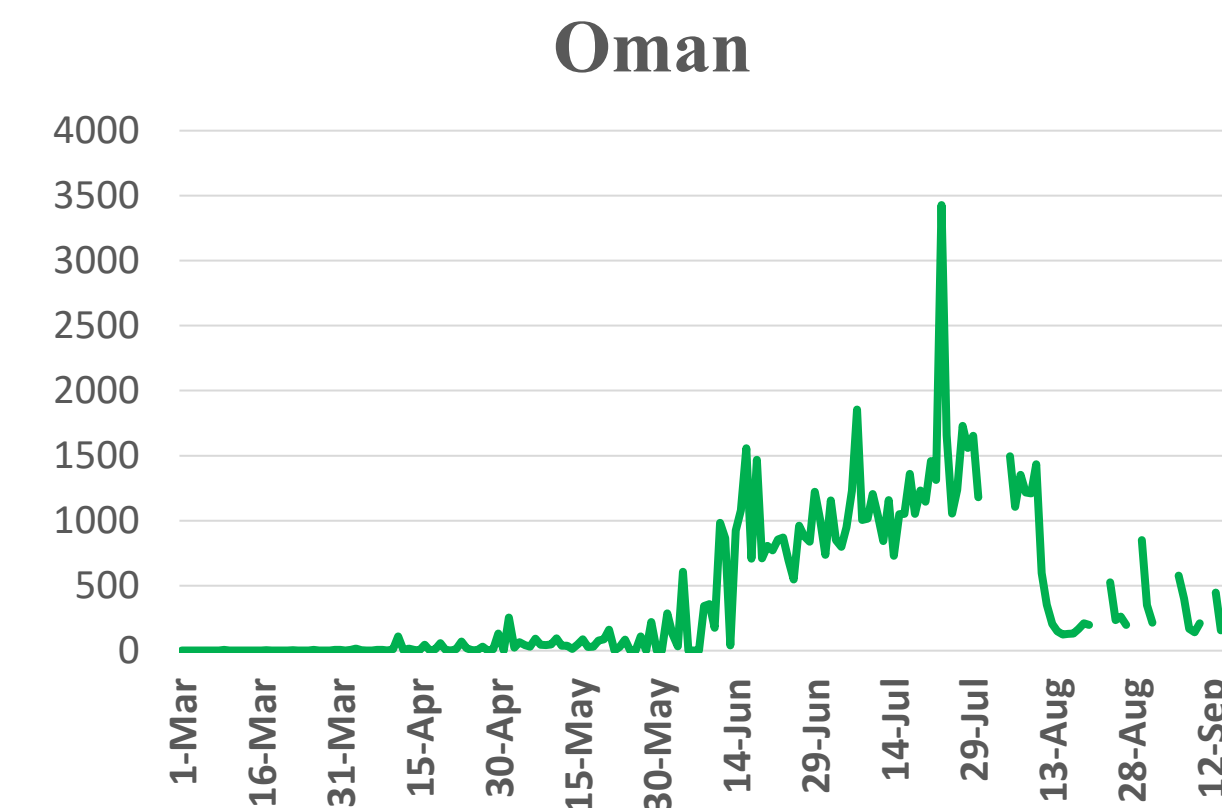
UAE

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

*No announced statistic data from 31 July to 4 August, 21 to 23 August & from 28 to 30 August, 2, 4، 5,11 & 12 September

*No announced statistic data on weekends and official holidays.

Kuwait

© ADPHC 2020

Source : Kuwait ministry of health

Qatar

Source : Qatar ministry of health

EPIDEMIOLOGY
FROM 1 MAR TO 17 SEPT 2020

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

UAE

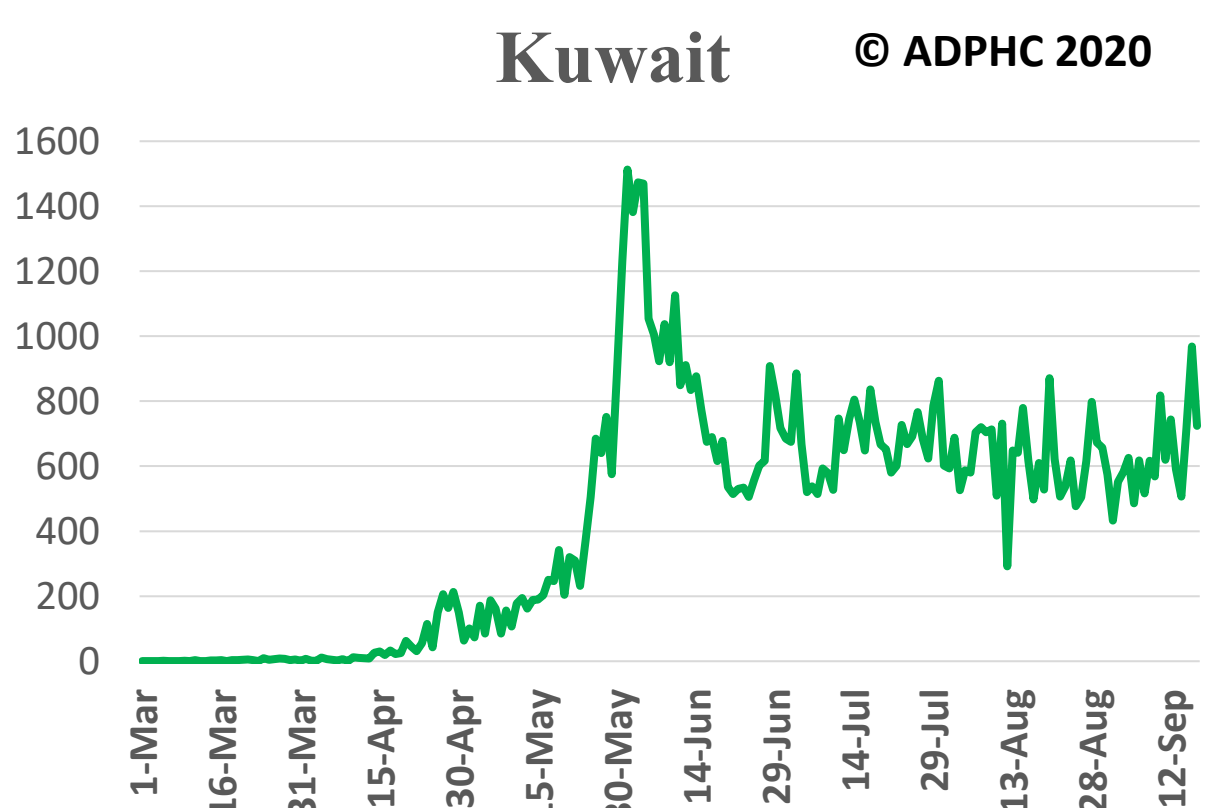Source : National Emergency Crisis and Disaster Management Authority

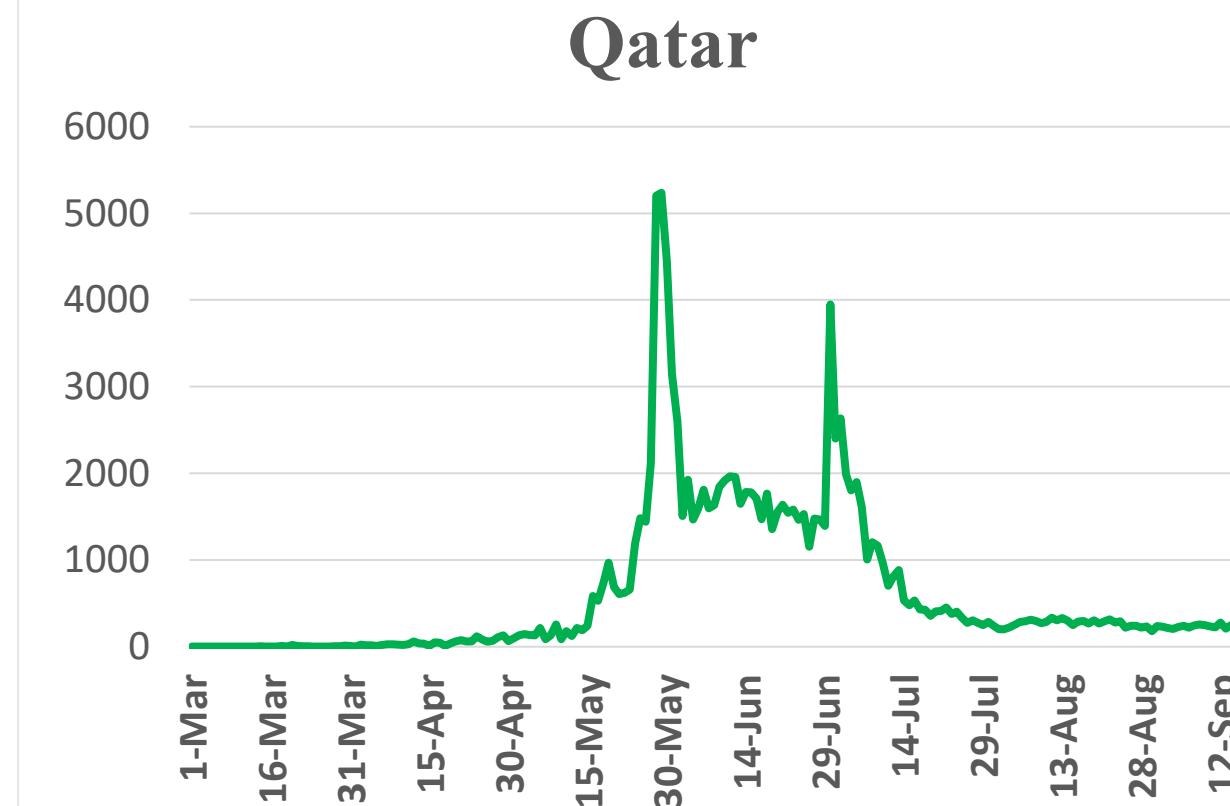## KSA

Source : KSA ministry of health

Bahrain
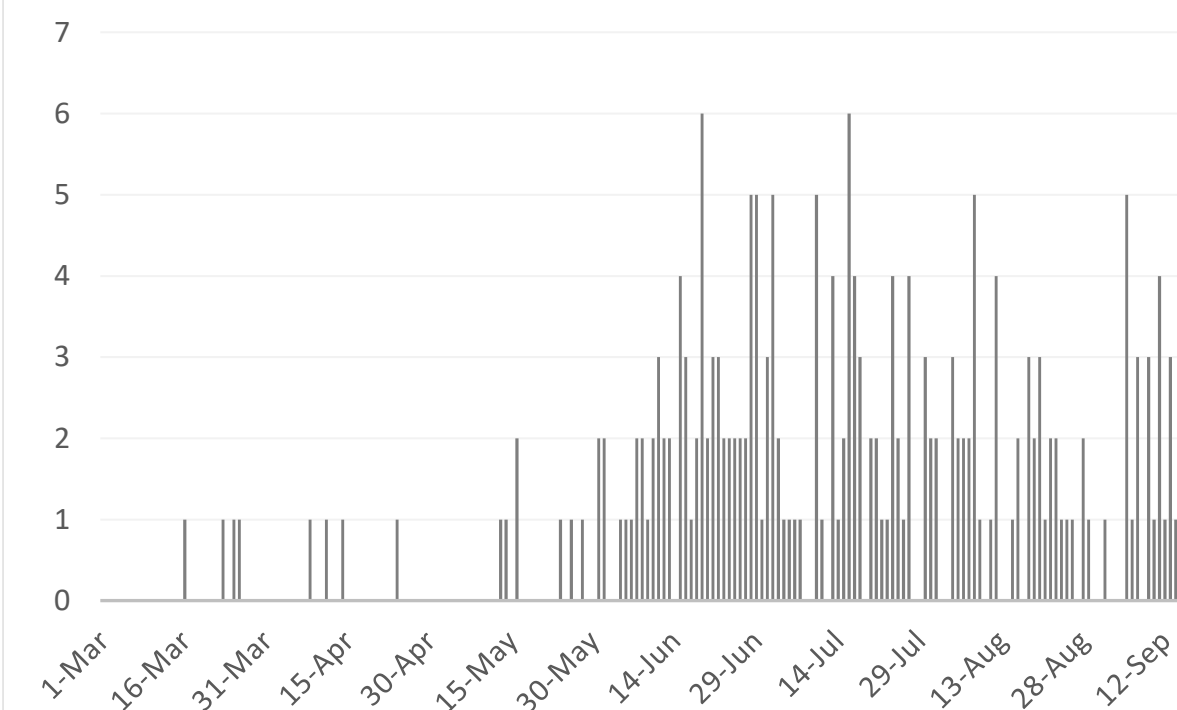
Source :WHO

Oman

Source :Oman ministry of health

Kuwait
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Source : Kuwait ministry of health
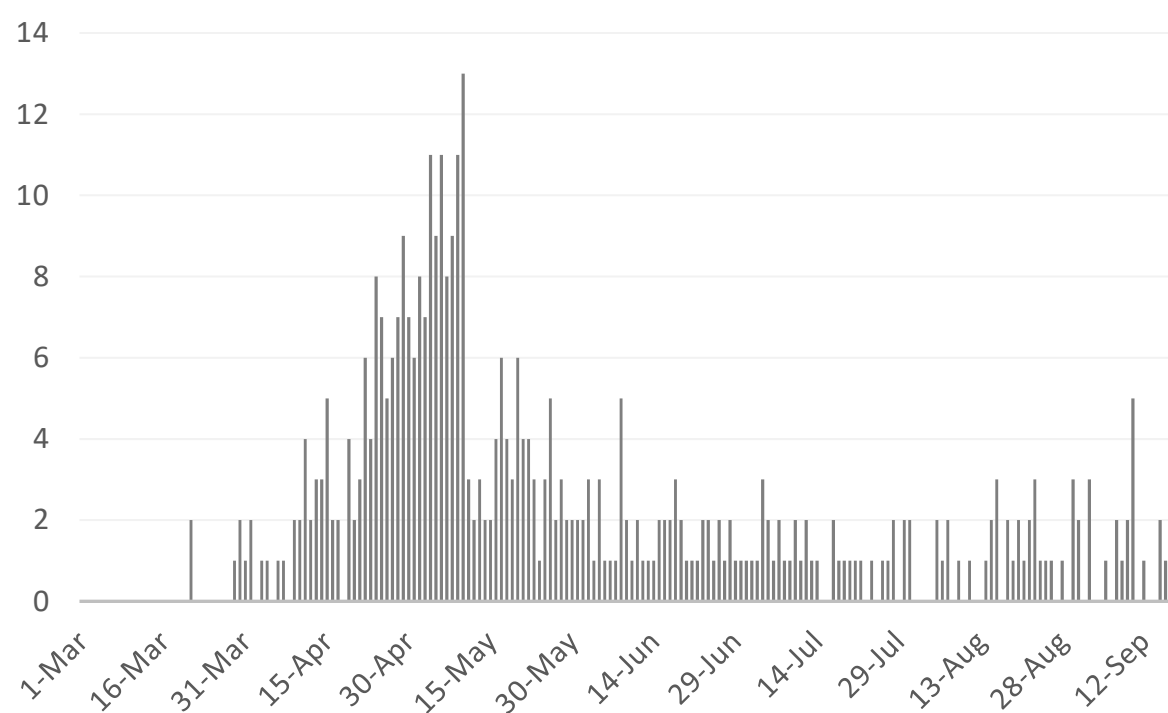
Qatar

Source : Qatar ministry of health

*No announced statistic data from 31 July to 4 August, 21 to 23 August & from 28 to 30 August, 2, 4، 5,11 & 12 September

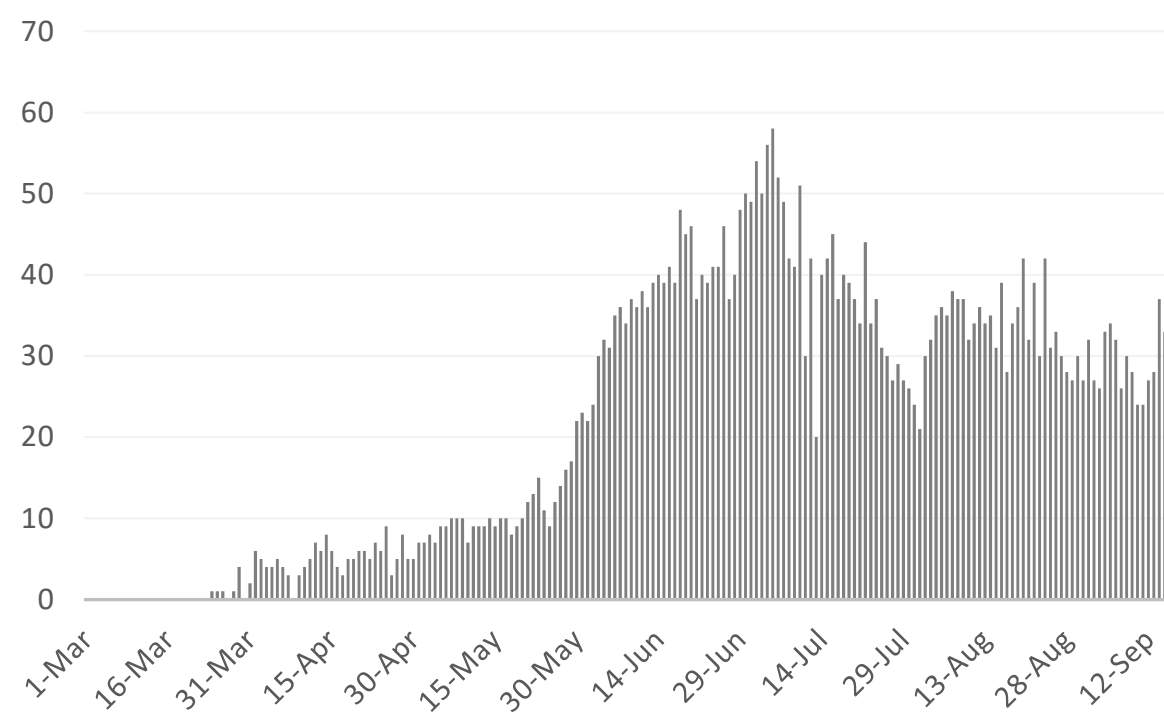*No announced statistic data on weekends and official holidays.

Article 1

Published

Thrombotic Events Following Tocilizumab Therapy in Critically Ill COVID-19 Patients: A Façade for Prognostic Markers

August 26, 2020 in **Thrombosis Journal**

Authors

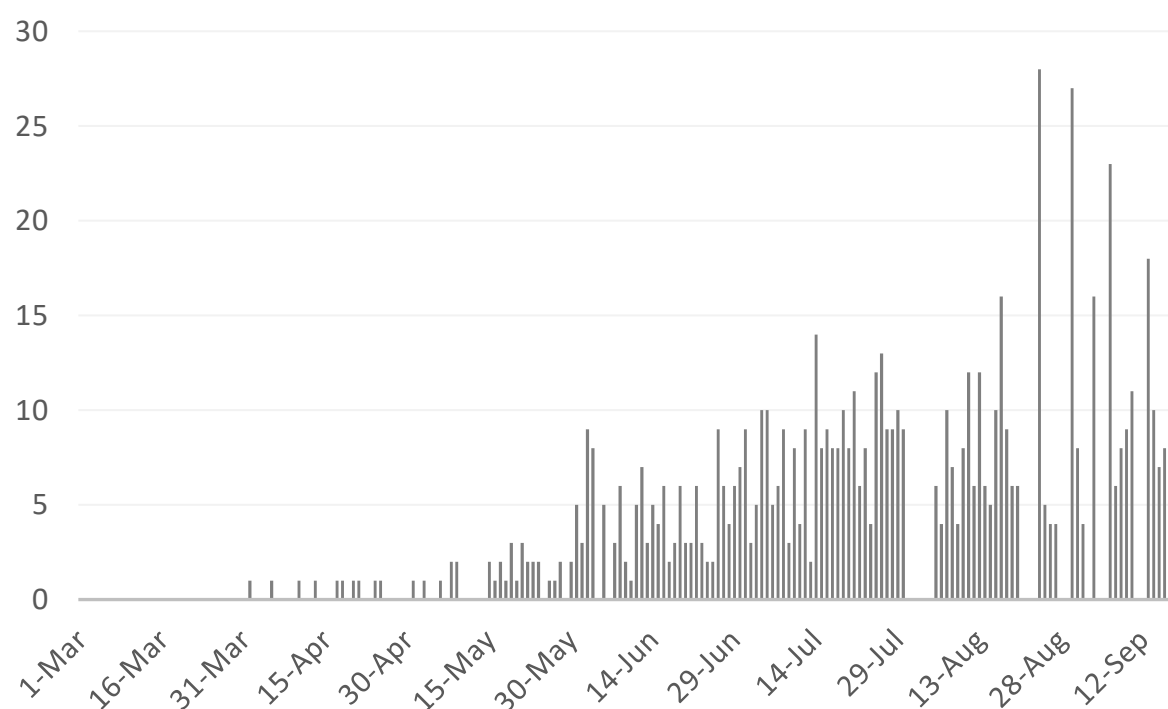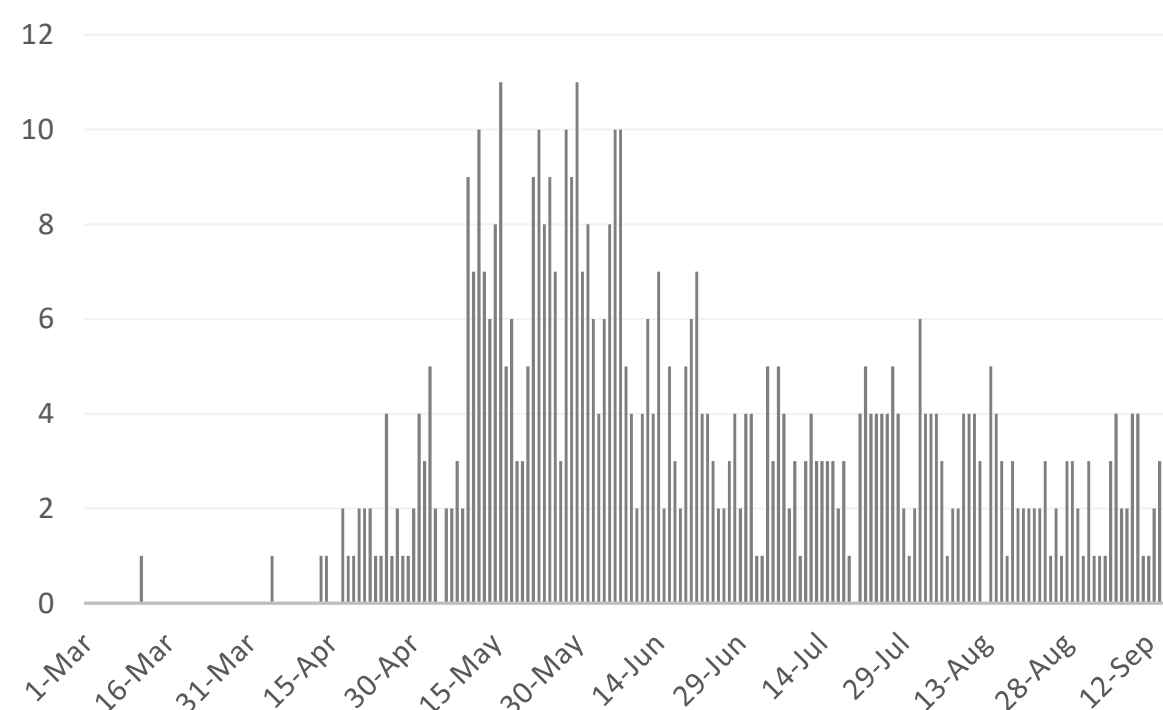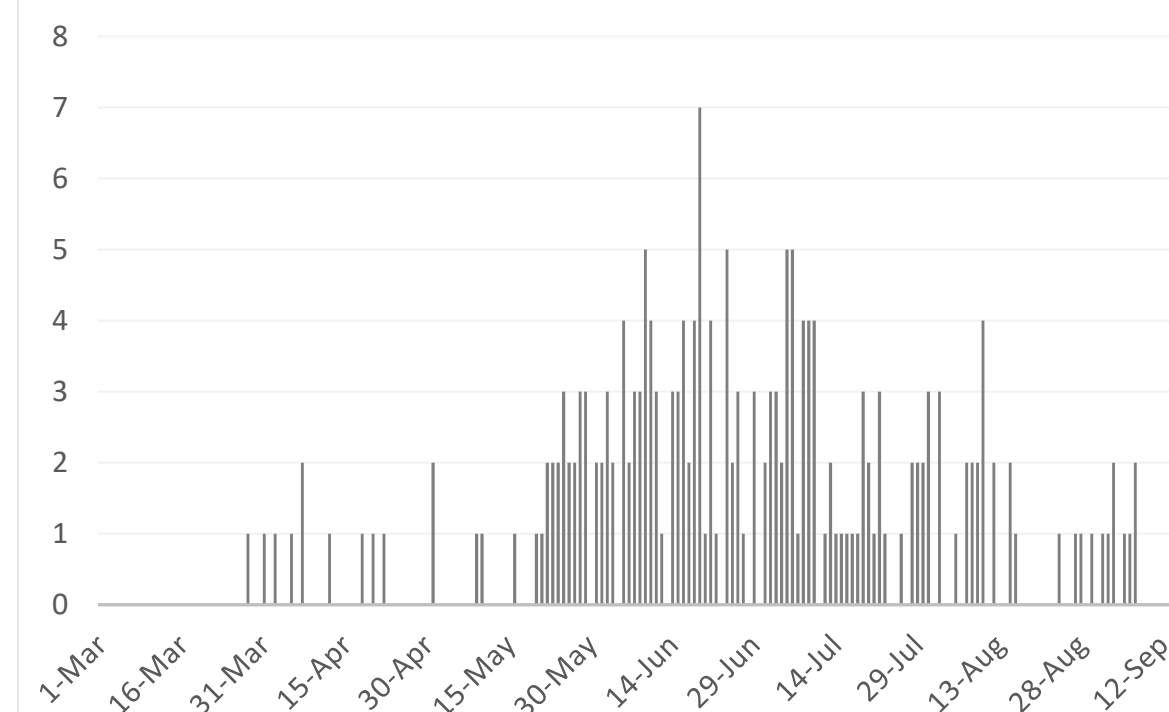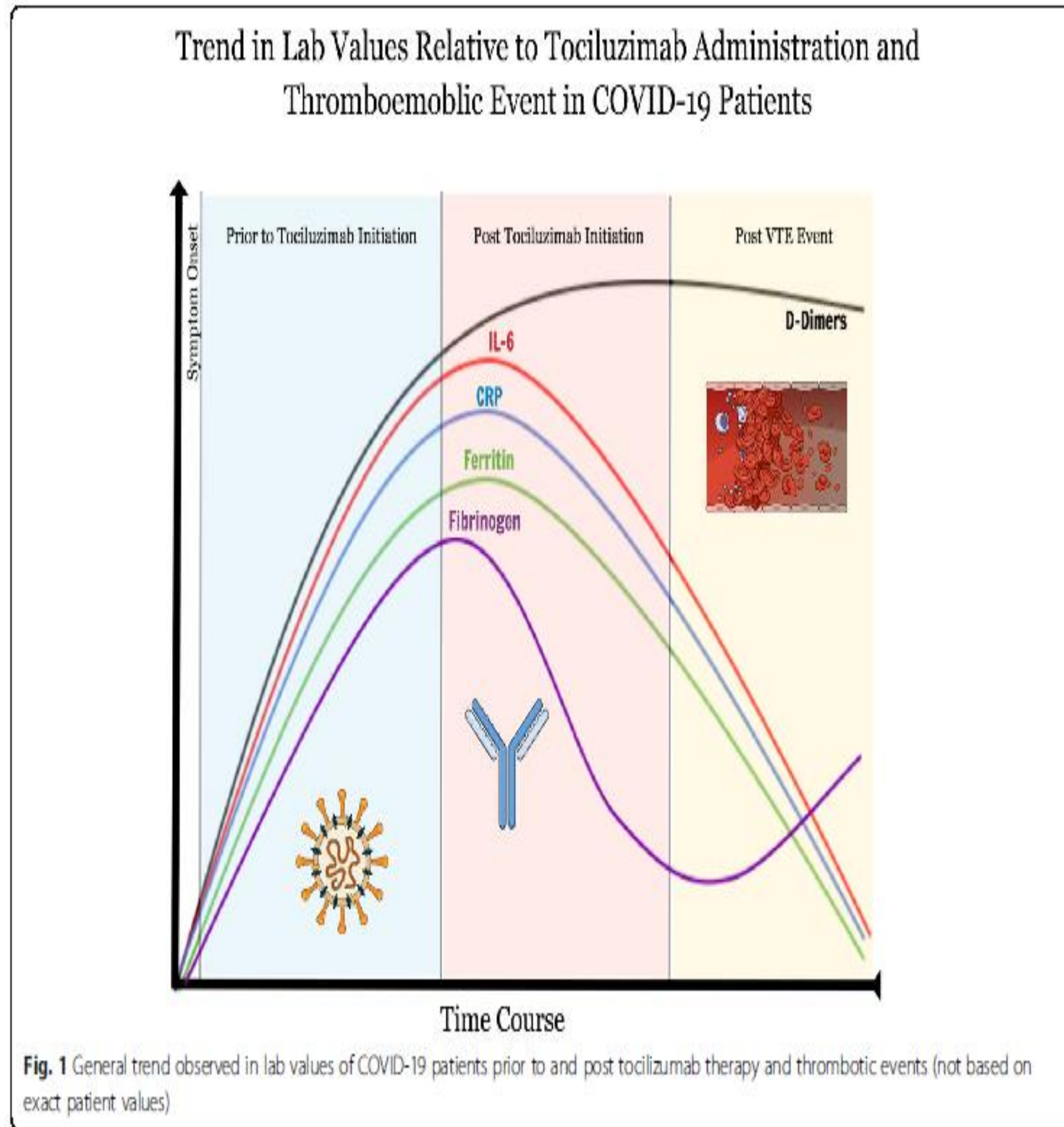Bassam Atallah , Wasim El Nekidy, Saad I. Mallah, Antoine Cherfan, Laila AbdelWareth, Jihad Mallat and Fadi Hamed , CCAD

- The COVID-19 (SARS CoV-2) pandemic has stricken all corners of the globe. The hypercoagulability of these patients has been widely reported on a global scale. Pooled results from a meta-analysis of nine studies describing COVID-19 patient characteristics revealed that prothrombin time (PT) and D-dimer levels were significantly higher in patients with severe COVID-19

- In a case series from Cleveland Clinic Abu Dhabi, the authors reported four cases of venous thromboembolism and one case of arterial thrombotic event. All patients were treated with standard or intensified prophylactic doses of unfractionated heparin or low molecular weight heparin.

- Tocilizumab has been utilized as an add-on therapy to the standard of care to treat patients with SARS-CoV-2 associated acute respiratory distress syndrome, to dampen the hyperinflammatory response. this drug is likely to be masking the inflammatory markers (e.g. IL6, CRP, fibrinogen, and ferritin), without reducing the risk of thrombotic events in this population, creating instead a façade of an improved prognostic outcome.

- The authors concluded that in the setting of tocilizumab therapy, there is a potential risk of acute thrombosis. Hence, the benefits of using this drug should be weighed carefully. The fact that thrombotic events continued to be observed despite decrease in inflammatory markers and the proactive anticoagulative approach adopted, raises more questions about the coagulative mechanisms at play in COVID-19, and the appropriate management strategy.

Continued

Fig. 1 General trend observed in lab values of COVID-19 patients prior to and post tocilizumab therapy and thrombotic events (not based on exact patient values)

Article 2

Published

Projected Health-Care Resource Needs for an Effective Response to COVID-19 in 73 Low-Income and Middle-Income Countries: A Modelling Study

September 09, 2020 **THE LANCET**

In this modelling study, authors predicted the health care cost of Covid-19 in low- and middle-income countries.

Purpose

- This study aimed to identify what the additional health-care costs of a strategic preparedness and response plan (SPRP) would be if current transmission levels of Covid-19 are maintained in a status quo scenario, or under scenarios where transmission is increased or decreased by 50%.

Methodology

- The study includes low-income countries, and the most populous lower-middle-income and upper-middle-income countries, and it excludes countries for which no GDP or epidemiological data were available.

- **Capital Costs:** included upgrading laboratories for diagnostic testing, buying field hospitals, and repurposing health facilities to enable them to cope with non-COVID-19 patients to lift the supply side constraint of hospital and intensive care unit beds, procuring communications equipment, providing motorcycles for contact-tracing teams, and provision of handwashing stations for hygiene.

- In addition to capital costs, a series of one-time costs are included, such as the hiring of consultants to develop or adapt guidance documents, prepare online training courses, document plans, design communications materials, and other related duties.

- **Cost of Commodities**: The essential supplies forecasting tool version 2 (ESFT2) was used. It included cost of personal protective equipment, single-use masks, diagnostic tests, supportive drugs (including dexamethasone), disposable supplies, and oxygen for hospitalised patients.

- **Human Resource Cost:** To calculate health worker costs, the Health Workforce Estimator tool (HWE) was used. The costing included cadres ranging from doctors to cleaners and other patient support personnel.

- After the start date of June 26, 2020, the costs were estimated in the 4-week and 12-week periods (July 24 and Sept 18, 2020).

Continued

Conclusion

- If status quo is maintained over 4 weeks, the total cost at this stage of the epidemic is $52.45 billion ($8.60 per-capita).

- If more measures to facilitate physical and social distancing, and to restrict movement were applied, and country transmission was reduced by 50%, the 4-week resource requirements would be reduced, to $33.08 billion ($5.42 per-capita), with 50% increased transmission, under a scenario of relaxed restrictions, costs of $61.92 billion ($10.15 per-capita) over the same 4-week period would be generated.

- In the 12-week projection, costs would more than triple under the status quo, and 50% increased transmission scenarios. The costs of the 50% decreased transmission scenario over 12 weeks is equivalent to the cost of the status quo scenario at 4 weeks.

- At 4 weeks, capital costs are nearly equivalent to human resources costs; however, at 12 weeks, the costs of human resources becomes higher than all other categories, at 63% of the total cost.

- Recurrent costs are primarily for human resources, and secondarily for commodities.

- Costs for human resources are high, at $21.83 billion at 4 weeks, and they are driven by salaries for newly hired staff and incentives.

- The cost of the status quo scenario would decrease to $45 billion and $132 billion at 4 weeks and 12 weeks, respectively, if incentives are excluded.

Table. 4-week and 12-week (after June 26, 2020) cost of COVID-19 response by country income group
Costs are in 2020 US$.

	Low income (population 685 066 000)		Lower-middle income (population 2 920 000 000)		Upper-middle income (population 2 493 375 000)		Total (population 6 098 441 000)	
	Total cost (billions)	Cost per capita	Total cost (billions)	Cost per capita	Total cost (billions)	Cost per capita	Total cost (billions)	Cost per capita
Total cost (4 weeks)								
Status quo	2·25	3·28	24·74	8·48	25·46	10·21	52·45	8·60
Decrease transmission 50%	1·65	2·41	14·18	4·86	17·24	6·92	33·08	5·42
Increase transmission 50%	3·30	4·82	30·08	10·30	28·54	11·45	61·92	10·15
Total cost (12 weeks)								
Status quo	6·20	9·06	80·97	27·73	66·69	26·75	153·86	25·23
Decrease transmission 50%	2·30	3·36	23·28	7·97	26·53	10·64	52·11	8·54
Increase transmission 50%	10·99	16·04	104·88	35·92	80·98	32·48	196·85	32·28

Continued

Table. Composition of costs for the COVID-19 response for 4 weeks and 12 weeks (after June 26, 2020)

	4-week status quo	12-week status quo
Cost category		
HR	42%	63%
Commodities	13%	17%
Capital	41%	16%
Other	4%	4%
HR costs (billions 2020 US$)		
Low income	0·27	2·02
Lower-middle income	10·29	51·58
Upper-middle income	11·27	43·23
Total	21·83	96·84
HR cost components		
Salaries	51%	68%
Hazard pay	15%	9%
Incentives	34%	23%

Public Health Message

- Major investment will be needed in low and middle-income countries to counter the virus, because of baseline preparedness these countries, and the limited resilience of their health systems.
- The result of the status quo scenario, a health-care cost total of US$52.45 billion or $8.60 per-capita after 4 weeks for 73 low-income and middle-income countries, is not an insignificant cost but reflects the constrained capacity in the countries facing a virus that has spread and established itself.
- Some hope is offered by the scenario in which the public health and social measures are intensified, resulting in a decrease in transmission by 50%.
- However, the costs, when the restrictions are relaxed and transmission increases by 50%, escalated at 4 weeks and further escalated at 12 weeks.
- Instituting early and comprehensive measures to limit the further spread of the virus will conserve resources and sustain the response.
- This study should inform governments, as they consider relaxing restrictions to jumpstart their economies.

THANK YOU