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للصحة العامة
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HEALTH CENTRE

SCIENTIFIC RESEARCH MONITORING ON COVID-19

9 SEPTEMBER 2020

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SCIENTIFIC RESEARCH MONITORING ON COVID-19 (ISSUE 220)

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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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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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Treatment

- Association of Vitamin D Status and Other Clinical Characteristics with COVID-19 Test Results

Diagnosis

- Humoral Immune Response to SARS-CoV-2 in Iceland

Epidemiology

- Cell Phone Activity in Categories of Places and Associations with Growth in Cases of COVID-19 in the US

EPIDEMIOLOGY

FROM 21 JAN TO 8 SEPT 2020

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

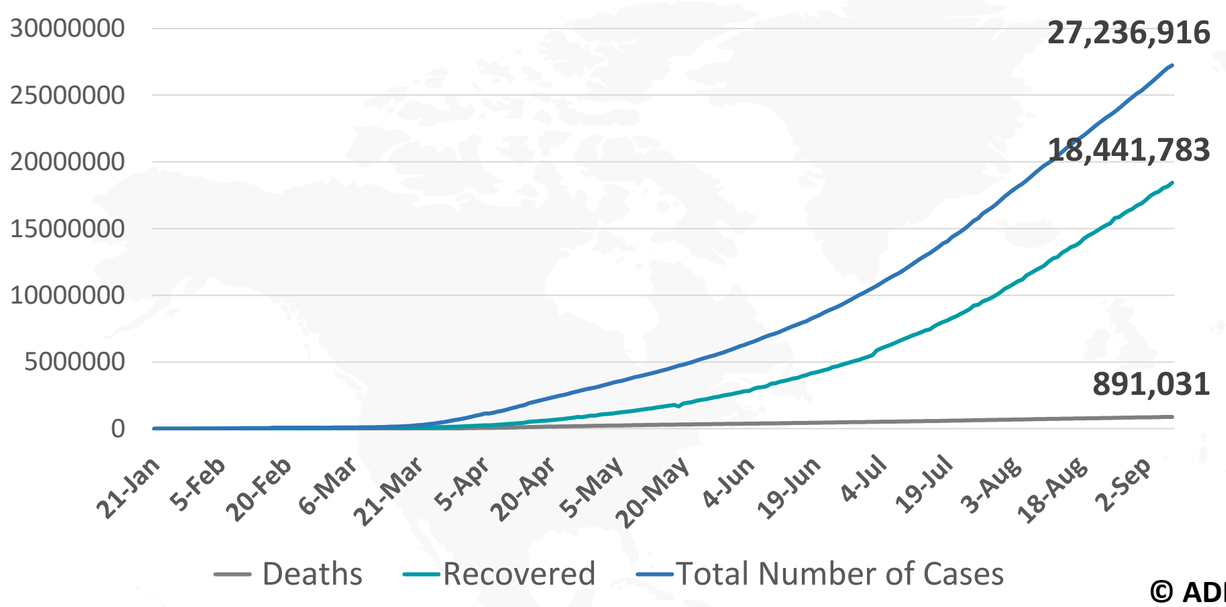


Figure 3: Total Number of Death Due to COVID-19 (china and result of the world)

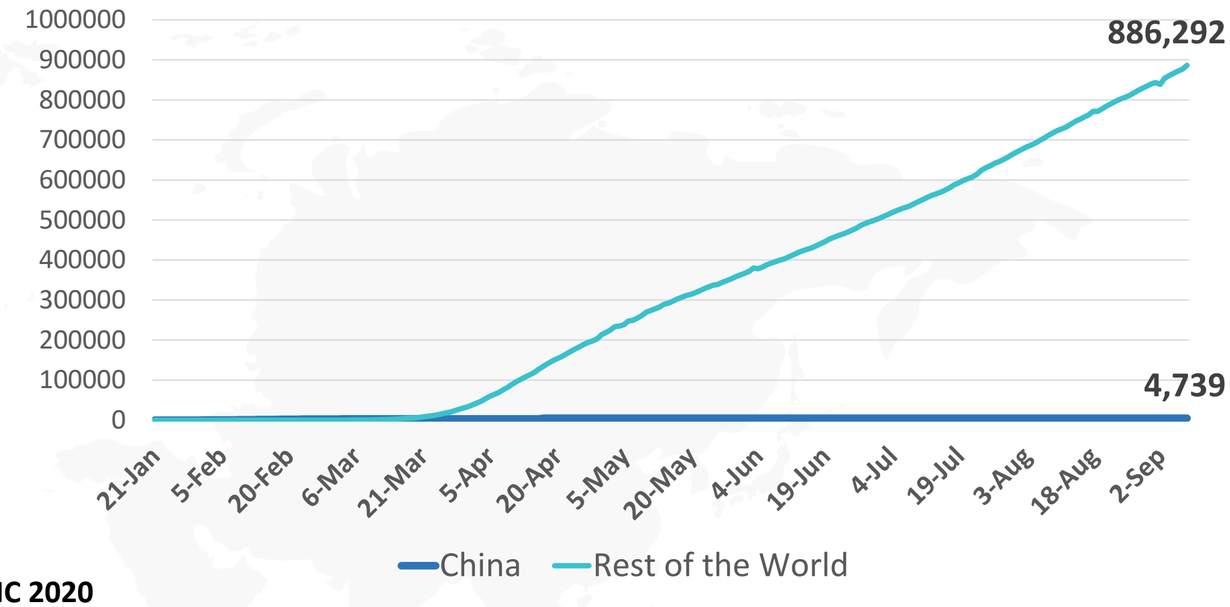


Figure 2: Daily New Infected COVID-19 Cases (China and rest of the world)

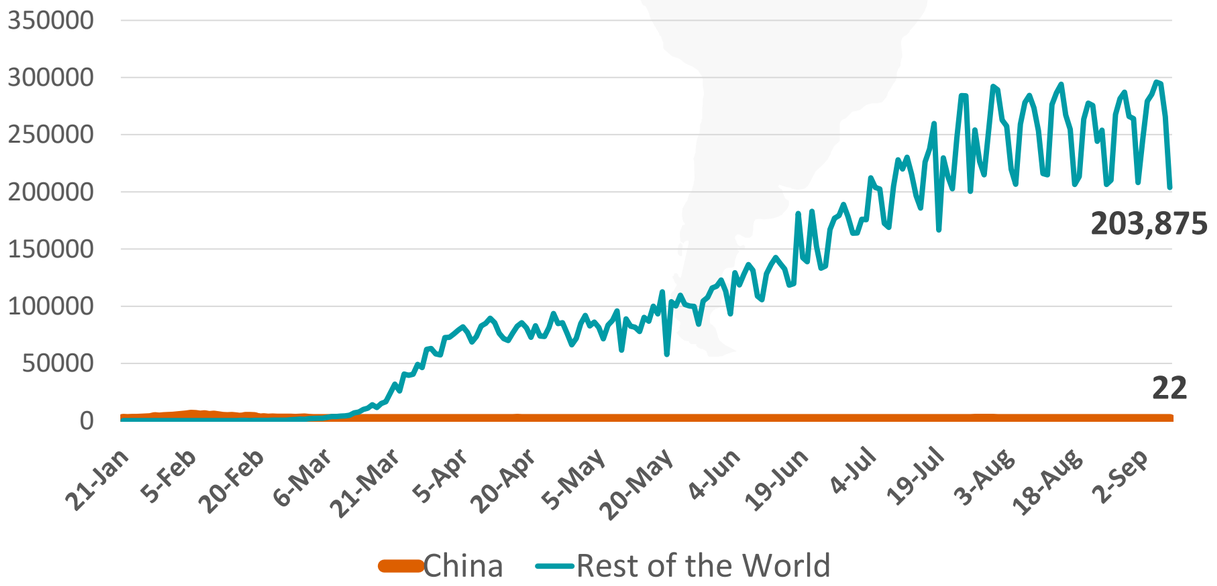
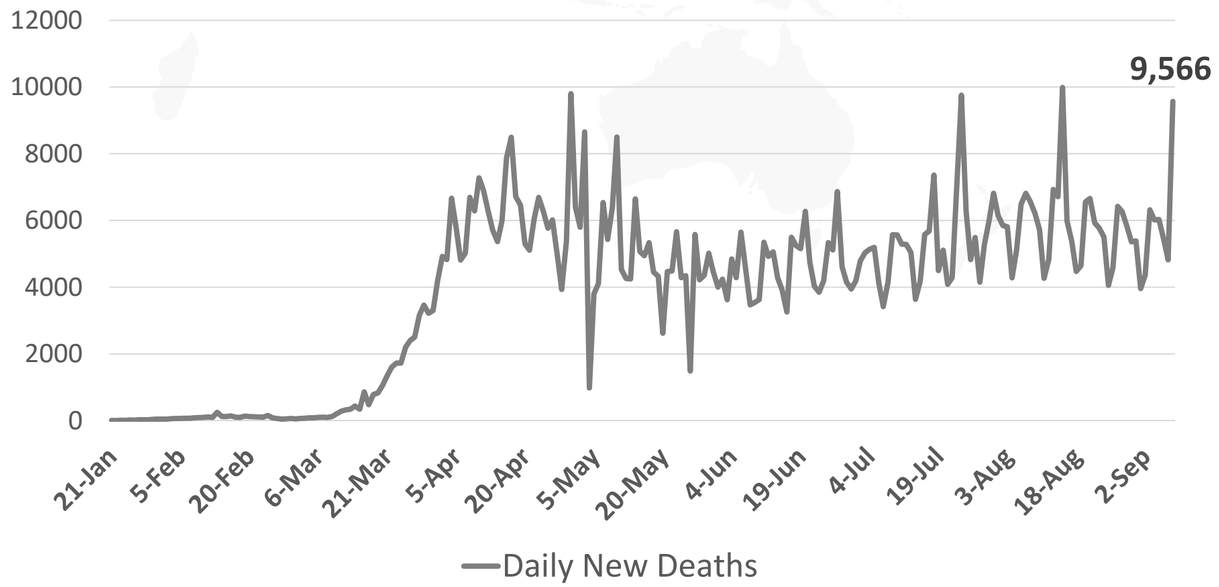


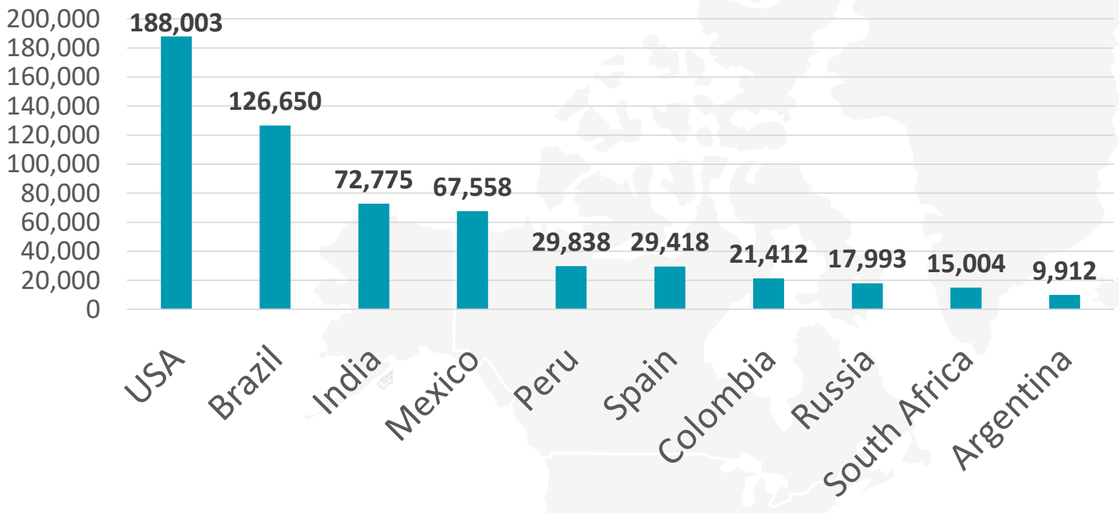
Figure 4: Global Daily New Deaths Due to COVID-19 (china and rest of the world)



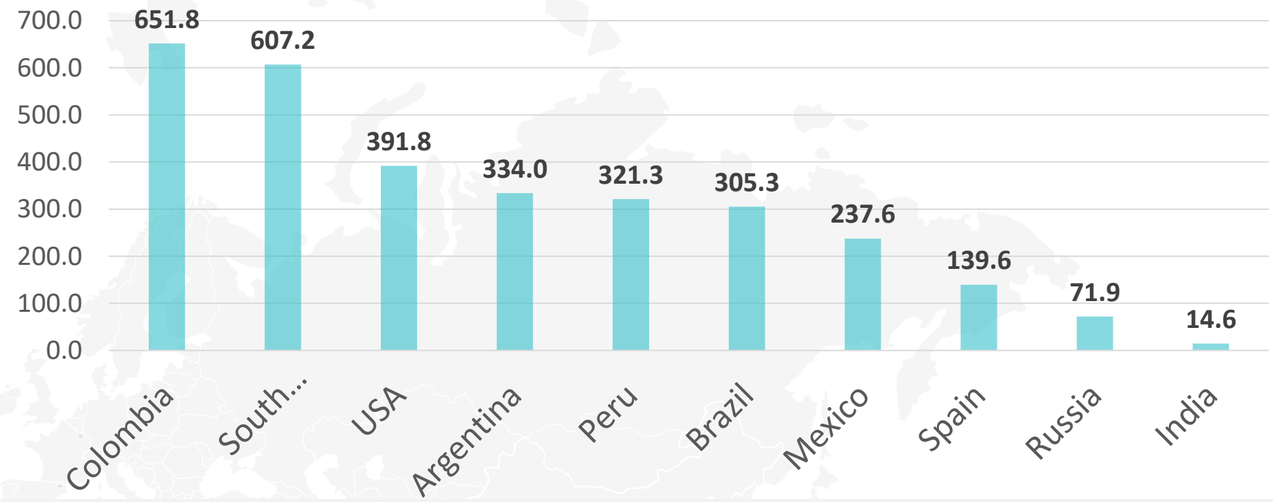
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: John Hopkins, WHO

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

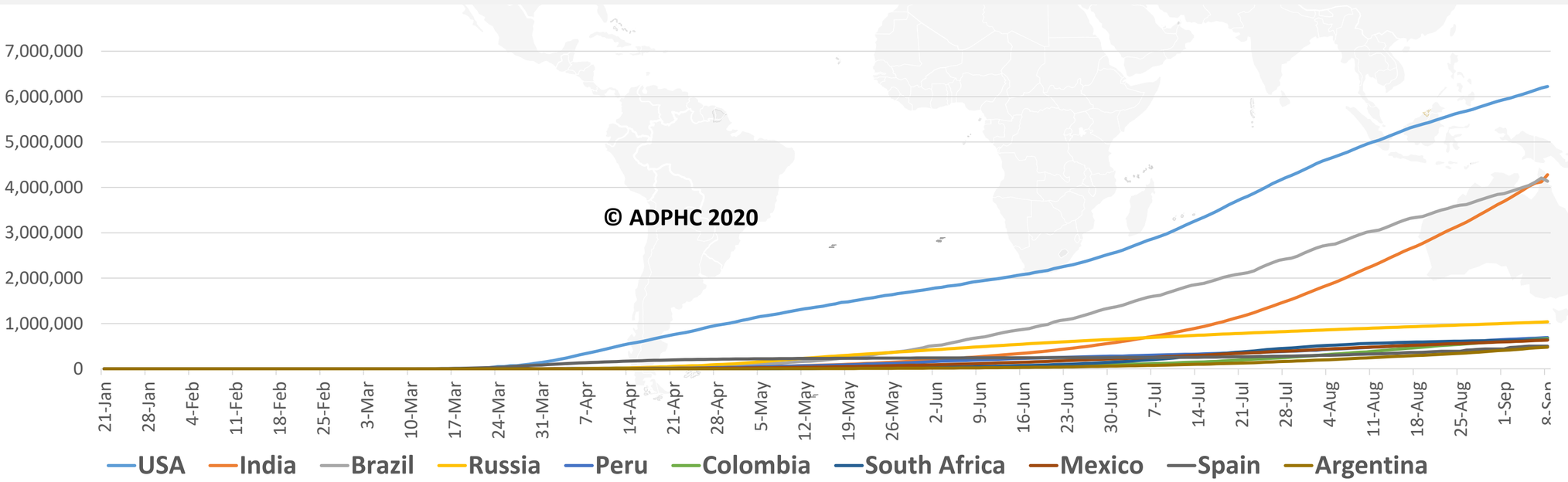
TOTAL DEATHS



DEATHS PER MILLION



TOTAL INFECTED CASES



USA	6,222,974
Brazil	4,280,422
India	4,137,521
Russia	1,035,789
Peru	689,977
Colombia	666,521
South Africa	639,362
Mexico	634,023
Spain	498,989
Argentina	478,792

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

EPIDEMIOLOGY

FROM 21 JAN TO 8 SEPT 2020

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ABU DHABI PUBLIC HEALTH CENTRE

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

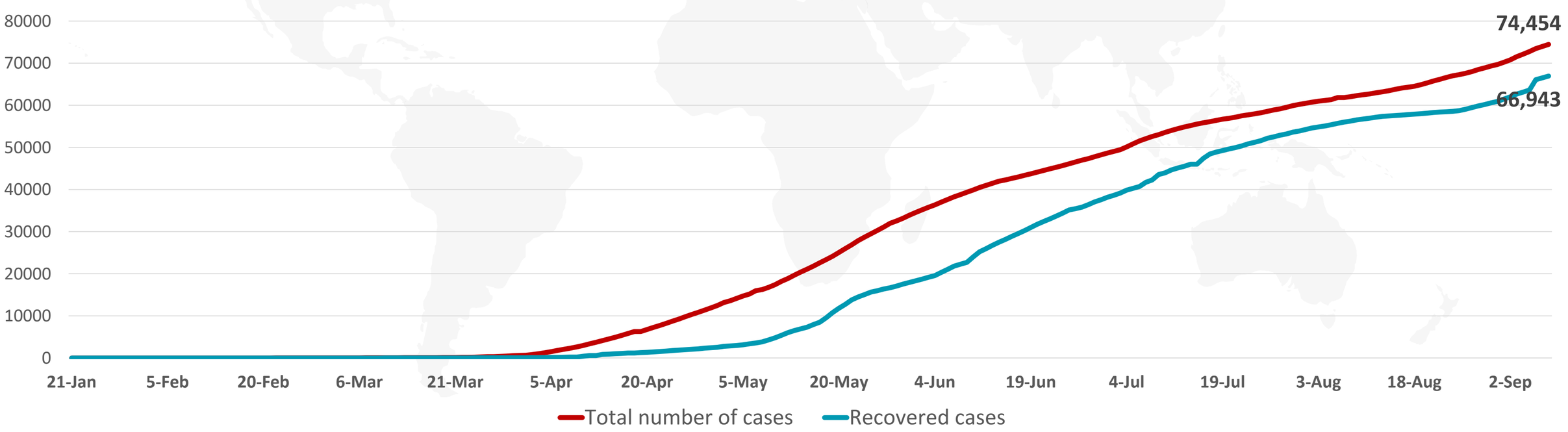
Daily Tests
75,269.7 Average Tests
761.0 per 100k population
0.8% Positive Rate

Daily Cases
613.3 Average Cases
6.2 per 100k population

Daily Recovered
778.9 Average Recovered
7.9 per 100k population

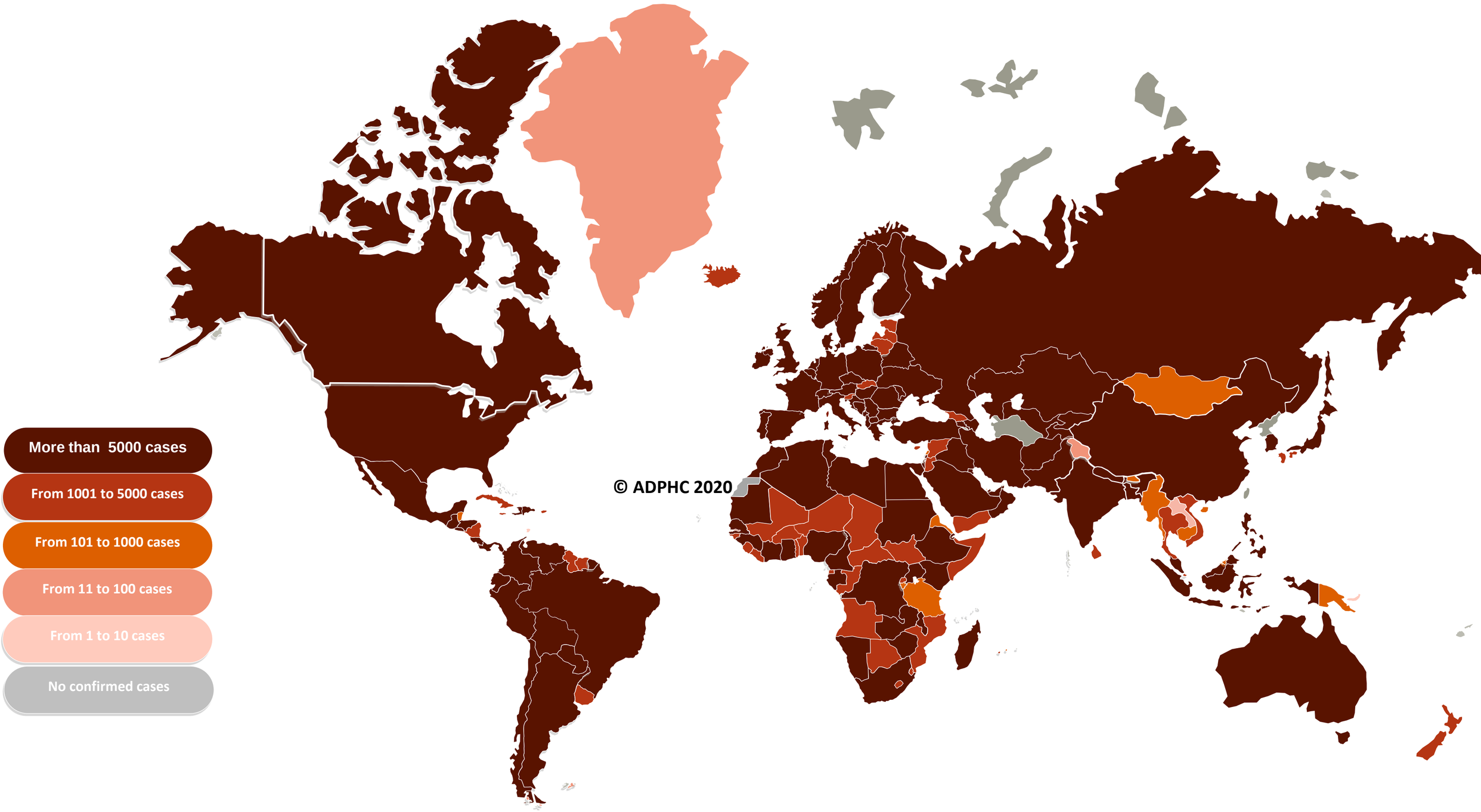
Daily Deaths
1.0 Average Deaths
0.0 per 100k population
0.2% Case Fatality Rate

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



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

Figure 7A : Global Distribution of COVID-19 Cases



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

EPIDEMIOLOGY

Date: 8 SEPT 2020

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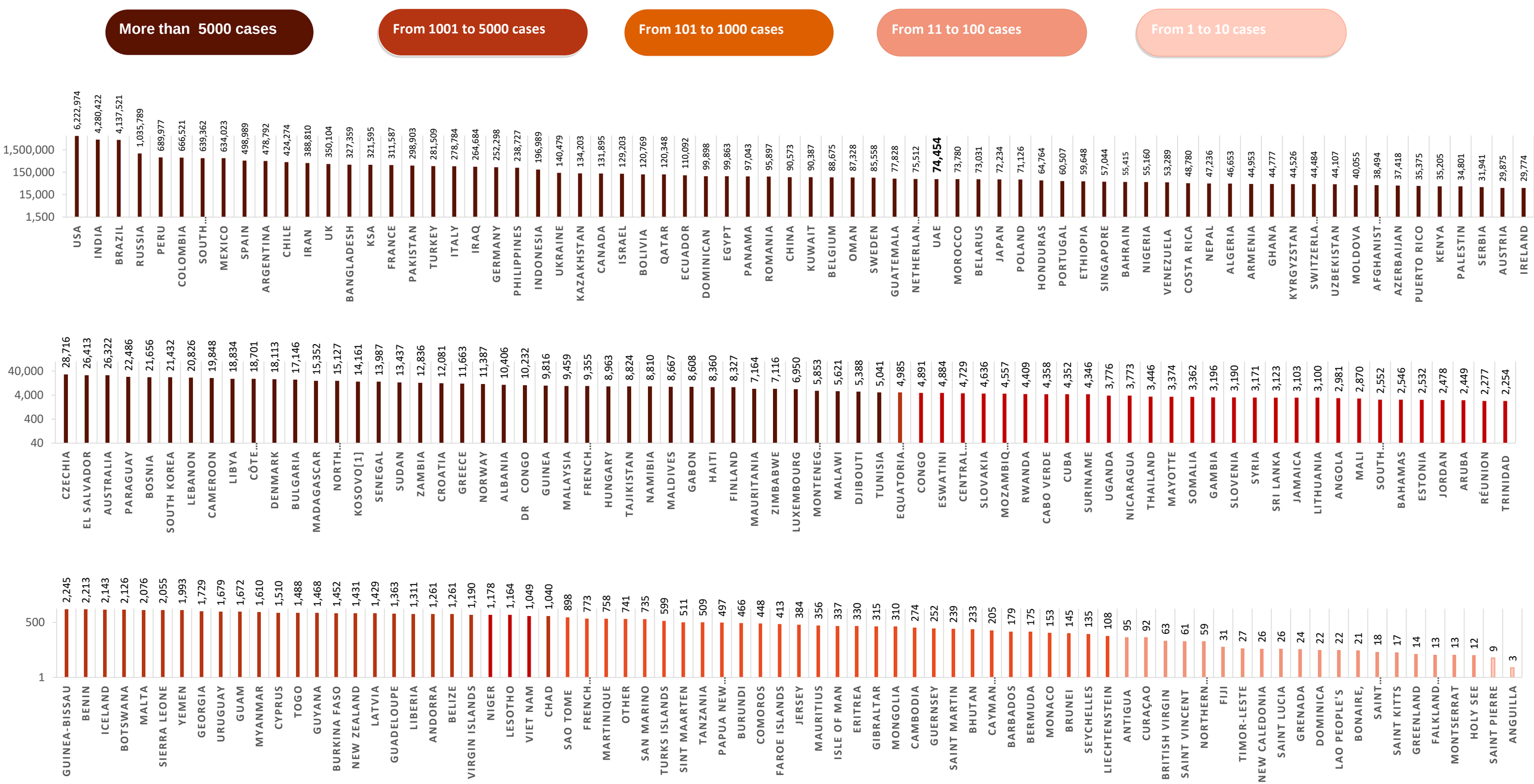
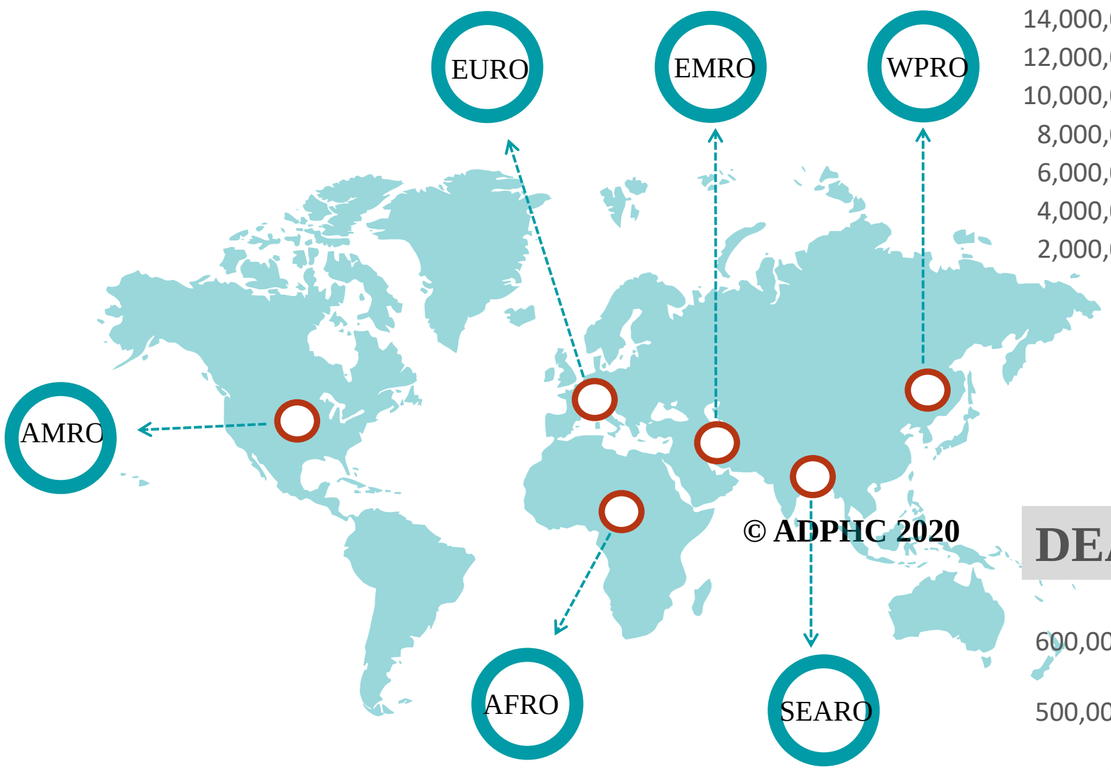
Figure 7B: Bar Chart Illustrates the Global Distribution of COVID19 Cases



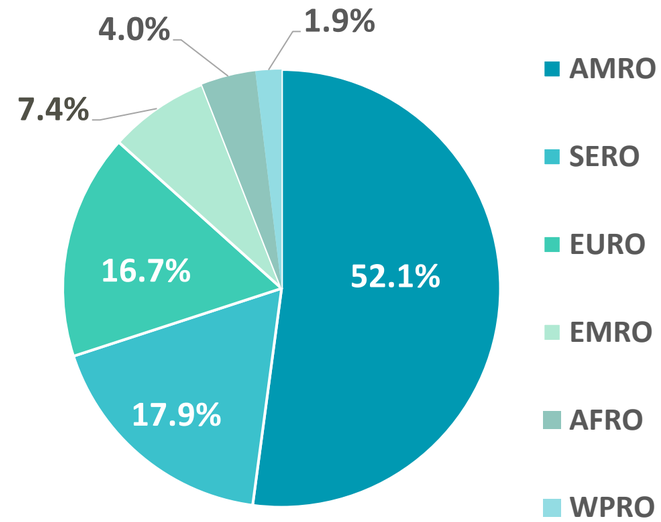
Other*:includes cases and deaths reported under the international conveyance(Diamond Princess)

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

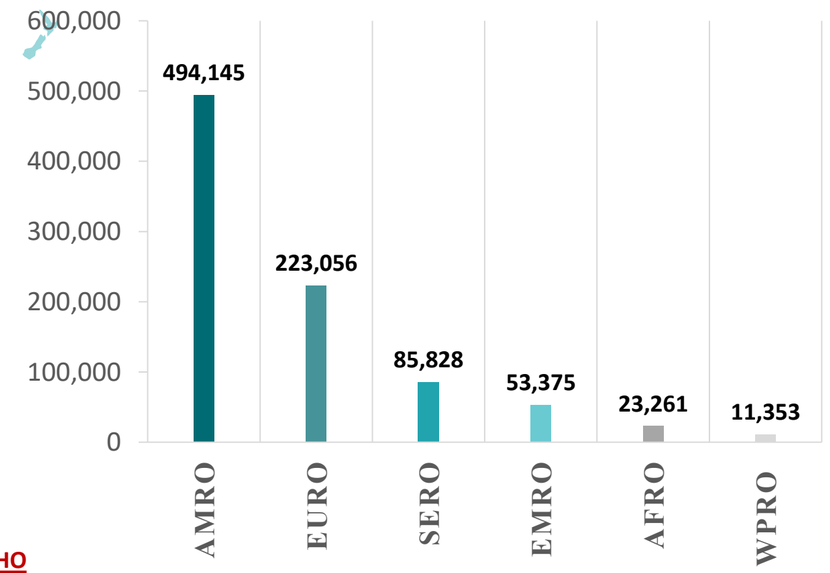
Figure 8: Global Distribution of COVID-19 Cases per Region

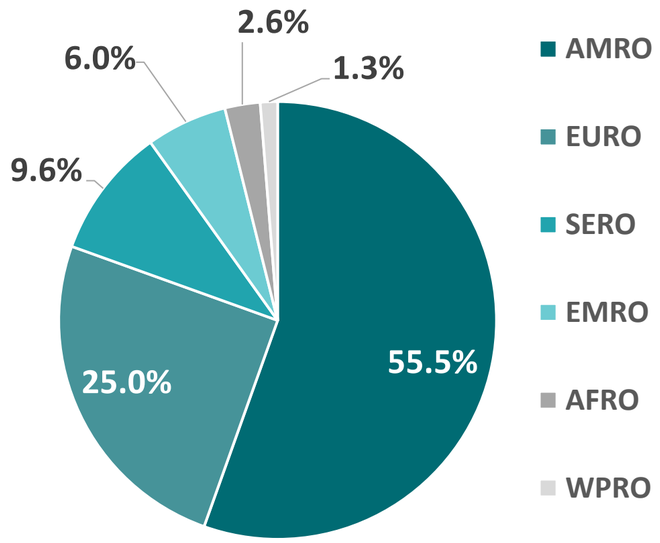


INFECTED



DEATHS

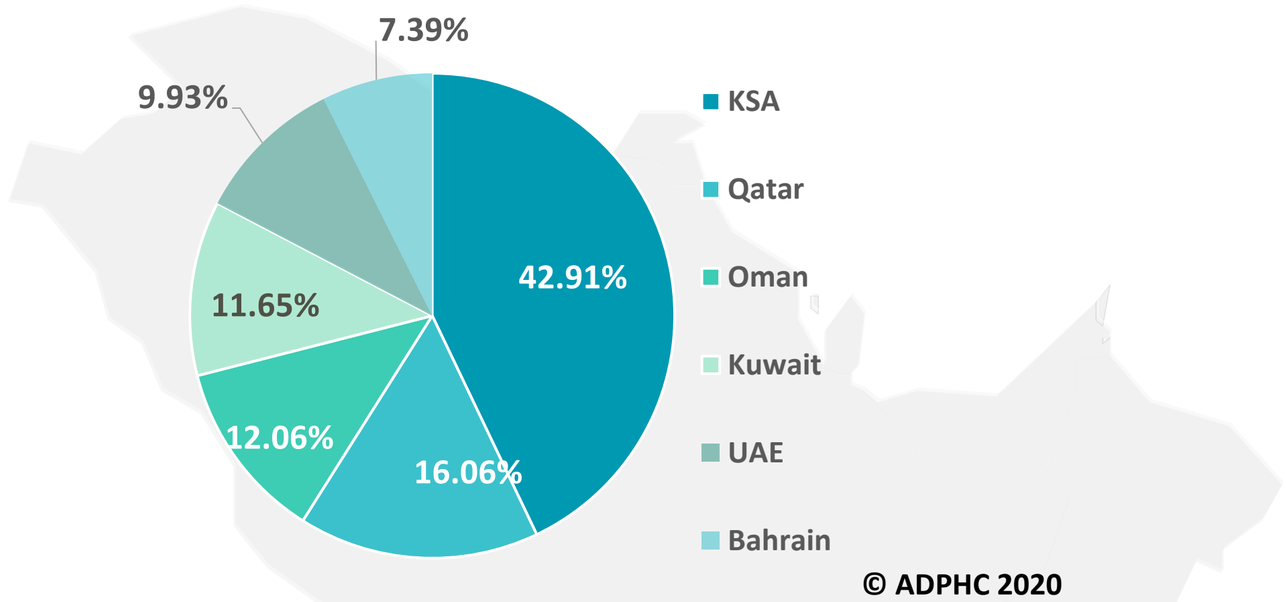


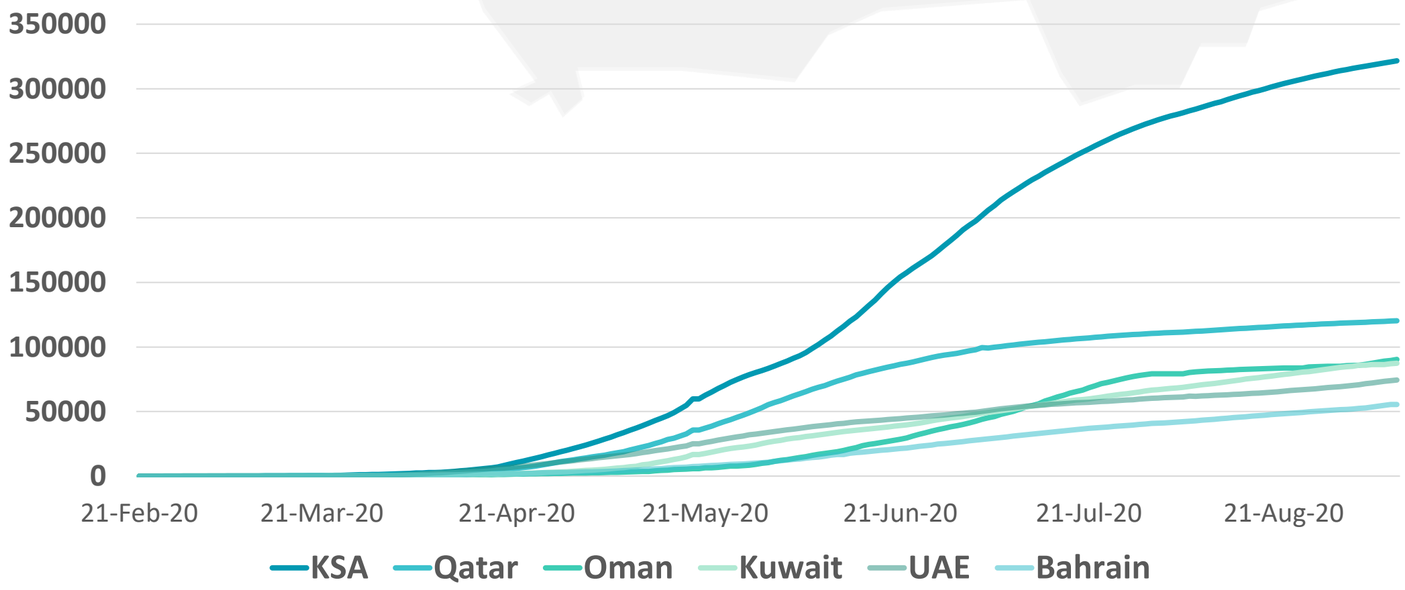


Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

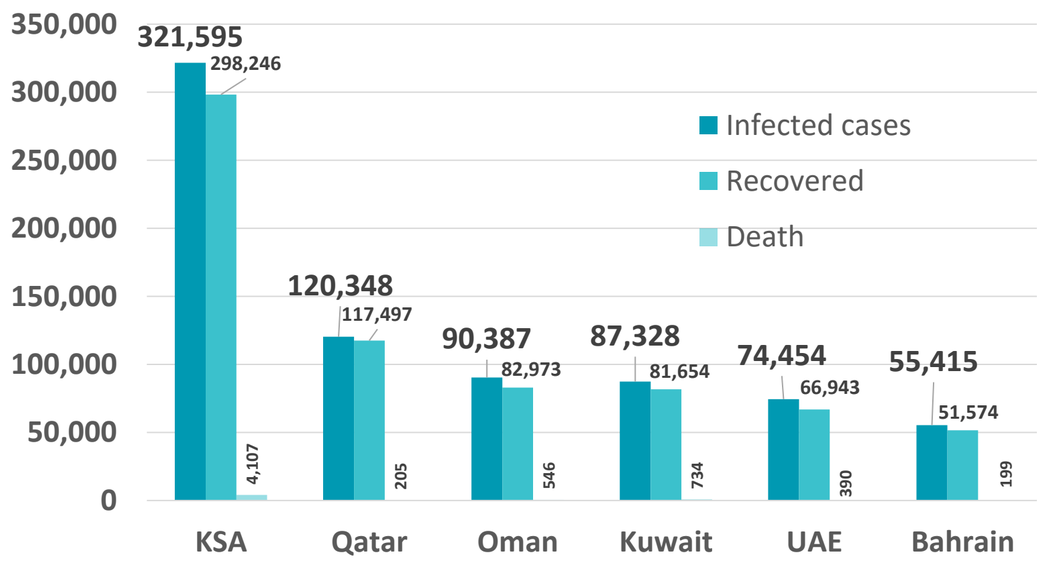
Figure 9: Comparative Analysis of the Distribution of COVID-19 Cases in GCC Countries

TOTAL NUMBER OF INFECTED CASES

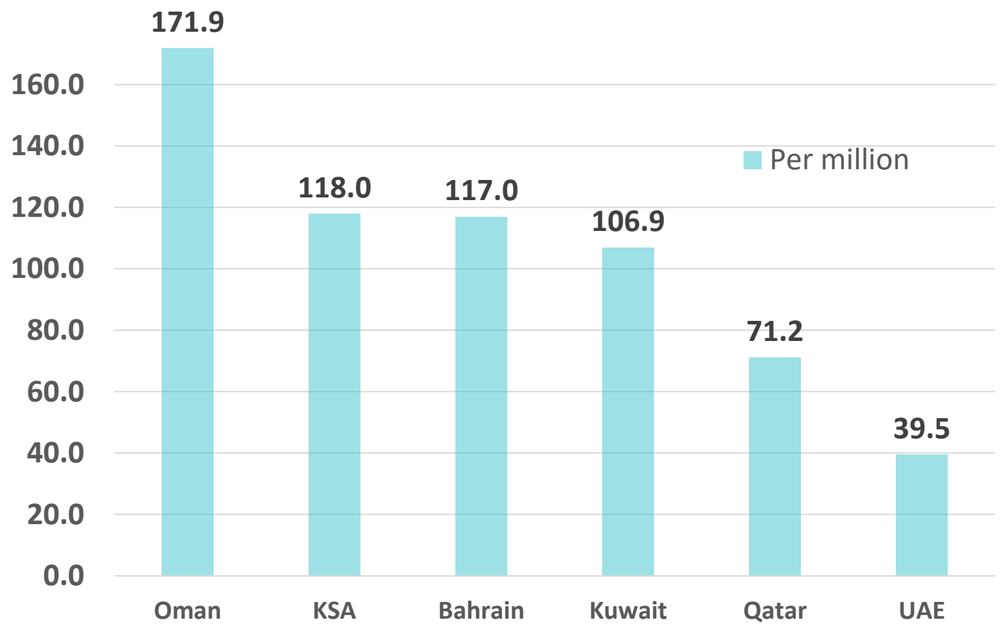




TOTAL NUMBER OF INFECTED, RECOVERED AND DEATHS



DEATHS PER MILLION



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

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

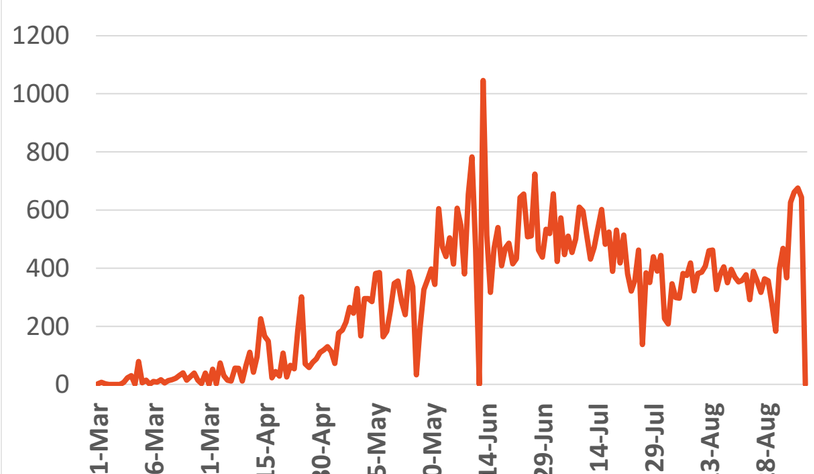
UAE

Source : National Emergency Crisis and Disaster Management Authority

KSA

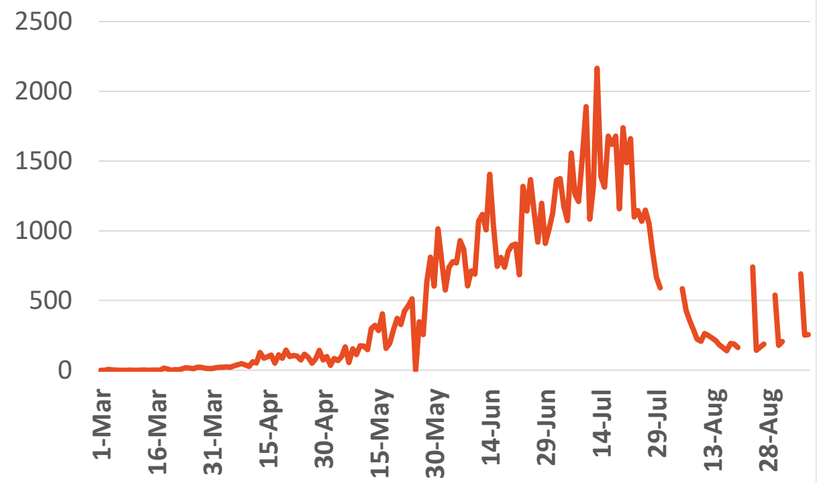
Source : KSA ministry of health

Bahrain



Source :WHO

Oman

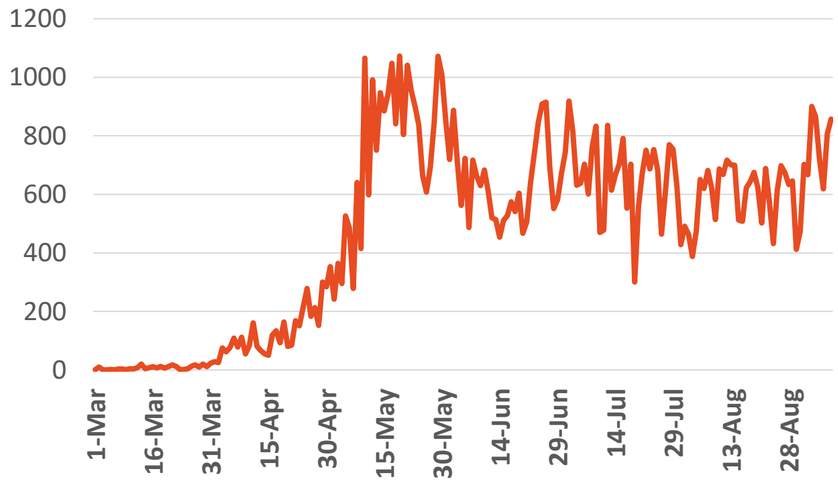


Source :Oman ministry of health

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

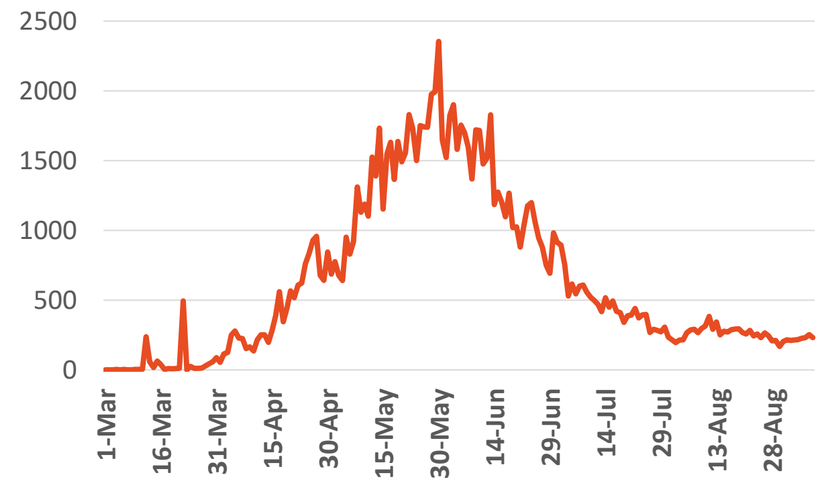
*No announced statistic data on weekends and official holidays.

Kuwait



Source : Kuwait ministry of health

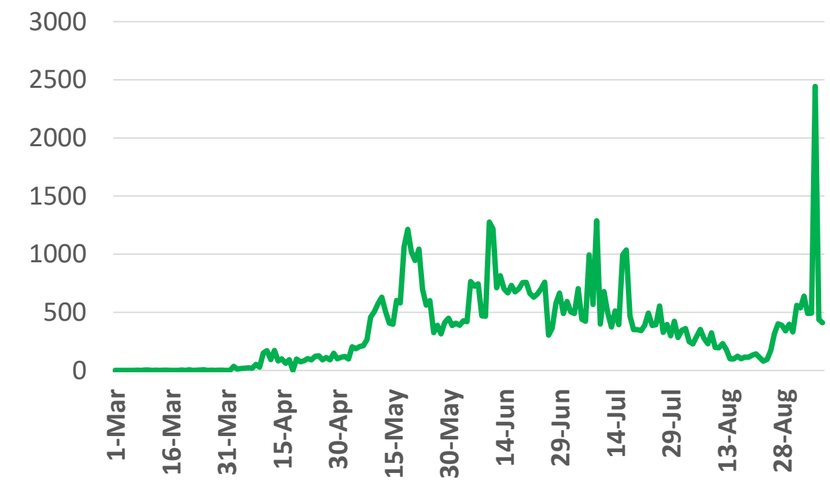
Qatar



Source : Qatar ministry of health

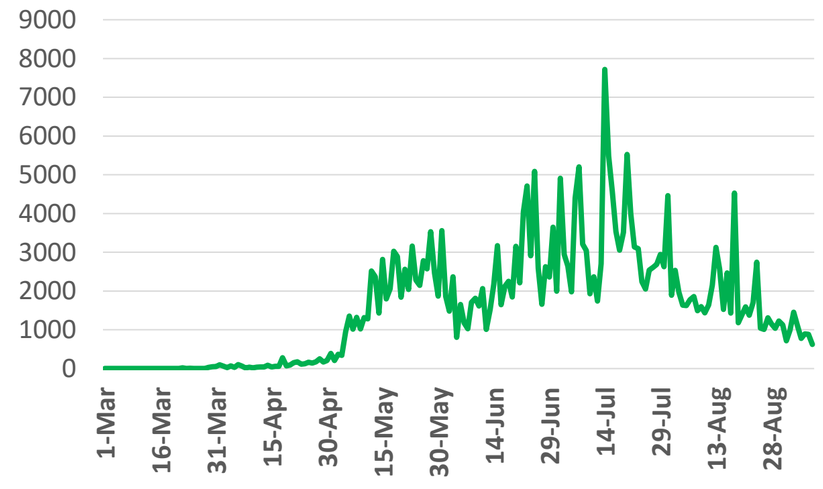
Figure 11: Comparative Analysis of the Distribution of COVID-19 Newly Recovered Cases in GCC Countries

UAE



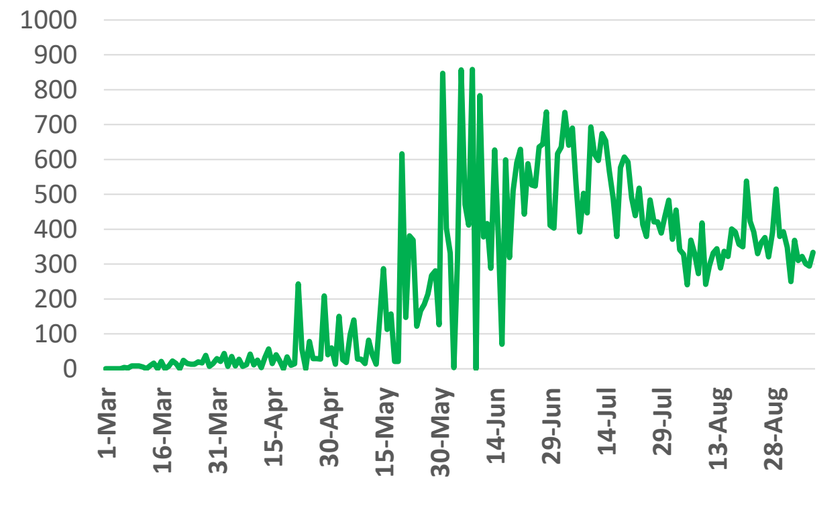
Source : National Emergency Crisis and Disaster Management Authority

KSA



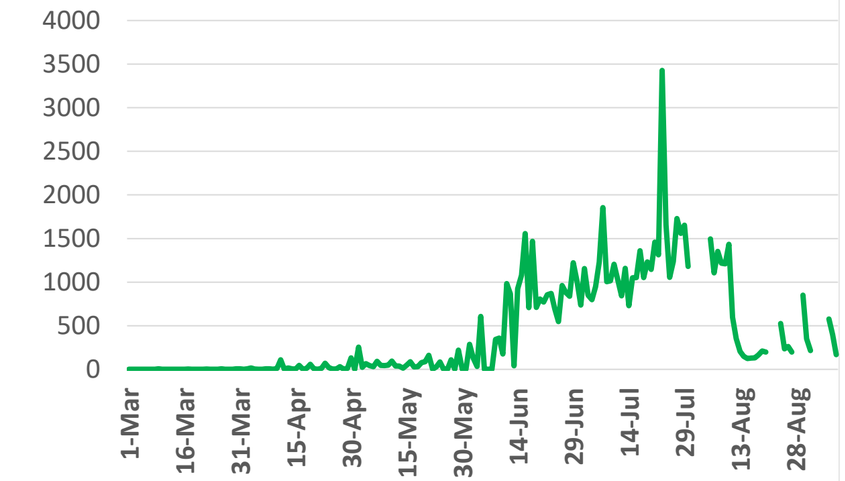
Source : KSA ministry of health

Bahrain



Source : Bahrain ministry of health

Oman



Source :Oman ministry of health

Kuwait

Source : Kuwait ministry of health

Qatar

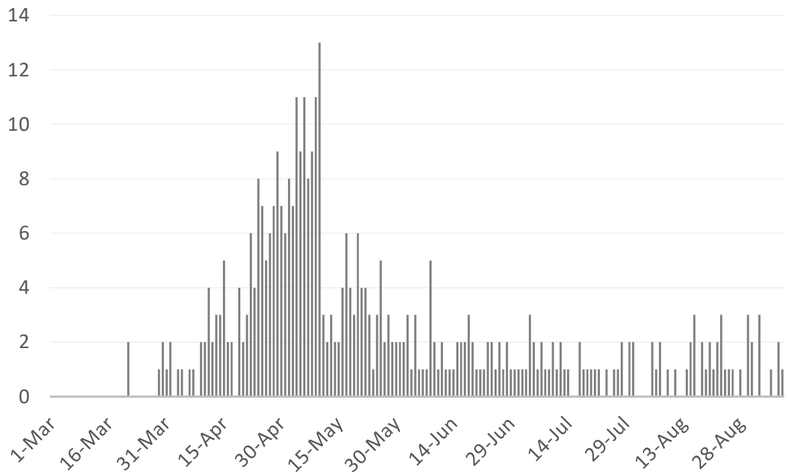
Source : Qatar ministry of health

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

*No announced statistic data on weekends and official holidays.

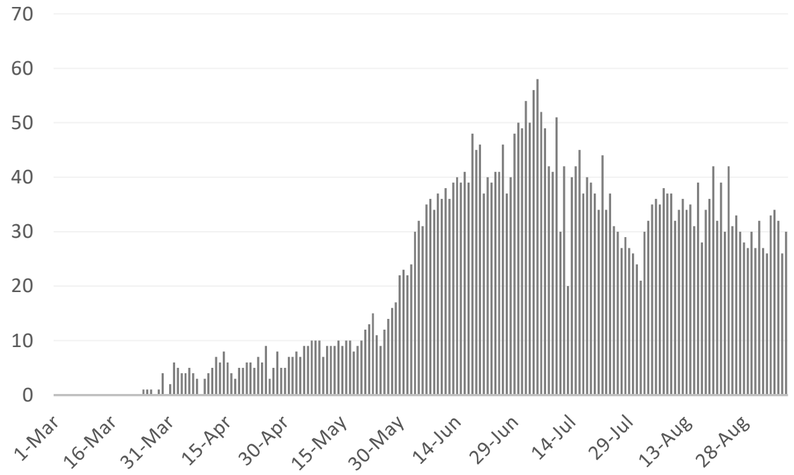
Figure 12: Comparative Analysis of the Distribution of COVID-19 New Death Cases in GCC Countries

UAE



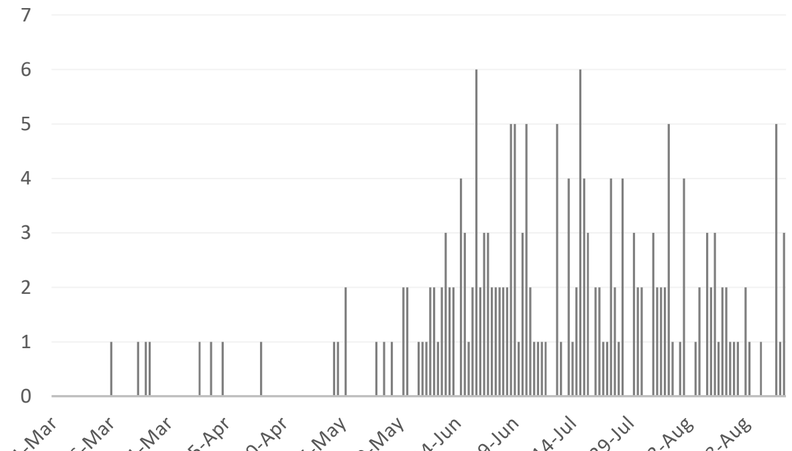
Source : National Emergency Crisis and Disaster Management Authority

KSA



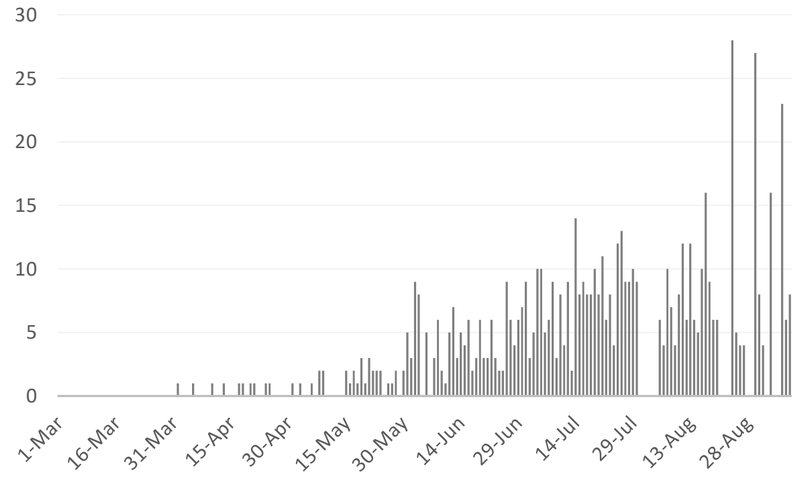
Source : KSA ministry of health

Bahrain



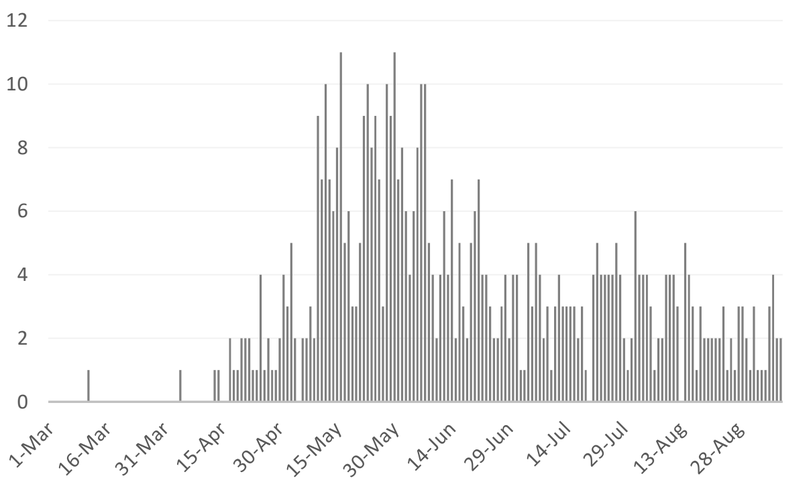
Source :WHO

Oman



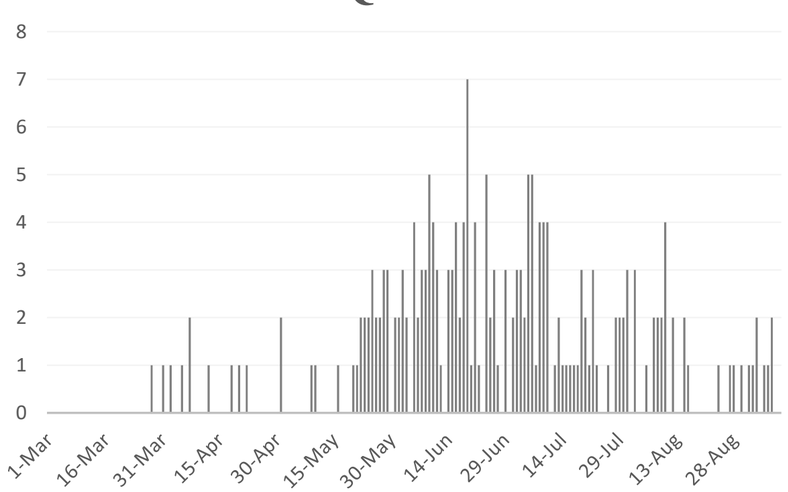
Source :Oman ministry of health

Kuwait



Source : Kuwait ministry of health

Qatar



Source : Qatar ministry of health

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*No announced statistic data on weekends and official holidays.

TREATMENT

Article 1

Published 03 September 2020 JAMA

Association of Vitamin D Status and Other Clinical Characteristics with COVID-19 Test Results

This single-center, retrospective cohort study examining whether the last vitamin D status before COVID-19 testing is associated with COVID-19 test results.

Methodology

- Electronic health record data were obtained from March 3 to April 10, 2020, on 489 patients who had a vitamin D level tested within one year before the date of their first COVID-19 test.
- Vitamin D levels and treatments within 14 days of COVID-19 testing were excluded from analyses.
- Patients who deemed to be vitamin D deficient were less than 20 ng/mL (50 nmol/l) for 25-hydroxycholecalciferol or less than 18 pg/mL for 1,25 dihydroxycholecalciferol.
  - Researchers categorised patient vitamin status into four categories:
  - Likely deficient (last level deficient, and treatment not increased (c)).
  - likely sufficient (the last level not deficient; treatment not decreased (d)).
  - Two groups with an uncertain deficiency (last level deficient; treatment increased (e)).
  - Last level not deficient; treatment decreased (f)).

Table 1. Characteristics of Patient Population

Characteristic	No. (%)			
	Full sample	Vitamin D deficient		*P* value[a]
		Yes (<20 ng/mL)	No (≥20 ng/mL)	
No. of patients	489	172	317	
Age, y				
Mean (SD)	49.2 (18.4)	45.9 (17.6)	51.0 (18.6)	.004[b]
<50	260 (53)	109 (63)	151 (48)	.004
50-64	122 (25)	33 (19)	89 (28)	
≥65	107 (22)	30 (17)	77 (24)	
Sex				
Female	366 (75)	133 (77)	233 (74)	.38
Male	123 (25)	39 (23)	84 (27)	
Race				
White	158 (32)	30 (17)	128 (40)	<.001
Other than White	331 (68)	142 (83)	189 (60)	
Ethnicity				
Hispanic	41 (8)	14 (8)	27 (9)	>.99
Non-Hispanic	448 (92)	158 (92)	290 (91)	
Most recent vitamin D <20 ng/mL	172 (35)	172 (100)	0	
Interpretation				
Likely deficient[c]	124 (25)	124 (72)		
Uncertain deficiency[d]	48 (10)	48 (28)		
Uncertain deficiency[e]	30 (5)		30 (9)	
Likely sufficient[f]	287 (59)		287 (91)	
Most recent active vitamin D treatment before COVID-19 test				<.001
None	212 (43)	80 (47)	132 (42)	.34
1-1000 IU D3/multivitamin	113 (23)	28 (16)	85 (27)	.01
2000 IU D3	60 (12)	7 (4)	53 (17)	<.001
≥3000 IU D3	20 (4)	10 (6)	10 (3)	.16
D2	76 (16)	44 (26)	32 (10)	<.001
Calcitriol	8 (2)	<5[g]	5 (2)	>.99
Test positive for COVID-19	71 (15)	32 (19)	39 (12)	.06

TREATMENT

Continued

Results

- Overall, 71 (15%) participants tested positive for COVID-19. Among the 172 (35%) participants whose most recent vitamin D level was deficient, 32 (19%) tested positive for COVID-19 compared with 39 (12%) for participants whose last vitamin D level was not deficient (**P = .06).**
- Patients with likely deficient vitamin D status at the time of COVID-19 testing had an increased relative risk of testing positive for COVID-19 (relative risk, 1.77; 95%CI, 1.12-2.81; **P = .02)** compared with patients with likely sufficient status at the time of COVID-19 testing.
- Testing positive for COVID-19 was also associated with increasing age up to age 50 years (relative risk, 1.06; 95%CI, 1.01-1.09**; P = .02**), and with race other than White (relative risk, 2.54; 95%CI, 1.26-5.12; **P = .009).**

Conclusion

- To our knowledge, this study provides the first assessment of the association of vitamin D deficiency
- and potentially insufficient treatment with testing positive for COVID-19.
- Randomized clinical trials of interventions to reduce vitamin D deficiency are needed to determine if those interventions could reduce COVID-19 incidence, including both broad population interventions and interventions among groups at increased risk of vitamin D deficiency and/or COVID-19.

Table 4. Multivariable Association of Vitamin D Deficiency and Treatment With Testing Positive for COVID-19 in 489 Patients

Characteristic	No. (%)	Relative risk (95% CI)	*P* value
Age (linear spline)[a]			
<50	260 (53)	1.05 (1.01-1.09)	.02
≥50	229 (47)	1.02 (1.00-1.05)	.06
Sex			
Male	123 (25)	1 [Reference]	
Female	366 (75)	0.87 (0.52-1.44)	.58
Race			
White	158 (32)	1 [Reference]	
Other than White	331 (68)	2.54 (1.26-5.12)	.009
Ethnicity			
Non-Hispanic	448 (92)	1 [Reference]	
Hispanic	41 (8)	0.29 (0.04-2.01)	.21
Employee status, UCM employee			
No	328 (67)	1 [Reference]	
Yes	161 (33)	0.93 (0.52-1.64)	.79
Most recent vitamin D <20 ng/mL			
Likely deficient[b]	124 (25)	1.77 (1.12-2.81)	.02
Uncertain deficiency[c]	48 (10)	1.10 (0.49-2.43)	.82
Uncertain deficiency[d]	30 (5)	1.09 (0.43-2.82)	.85
Likely sufficient[e]	287 (59)	1 [Reference]	

Study limitation

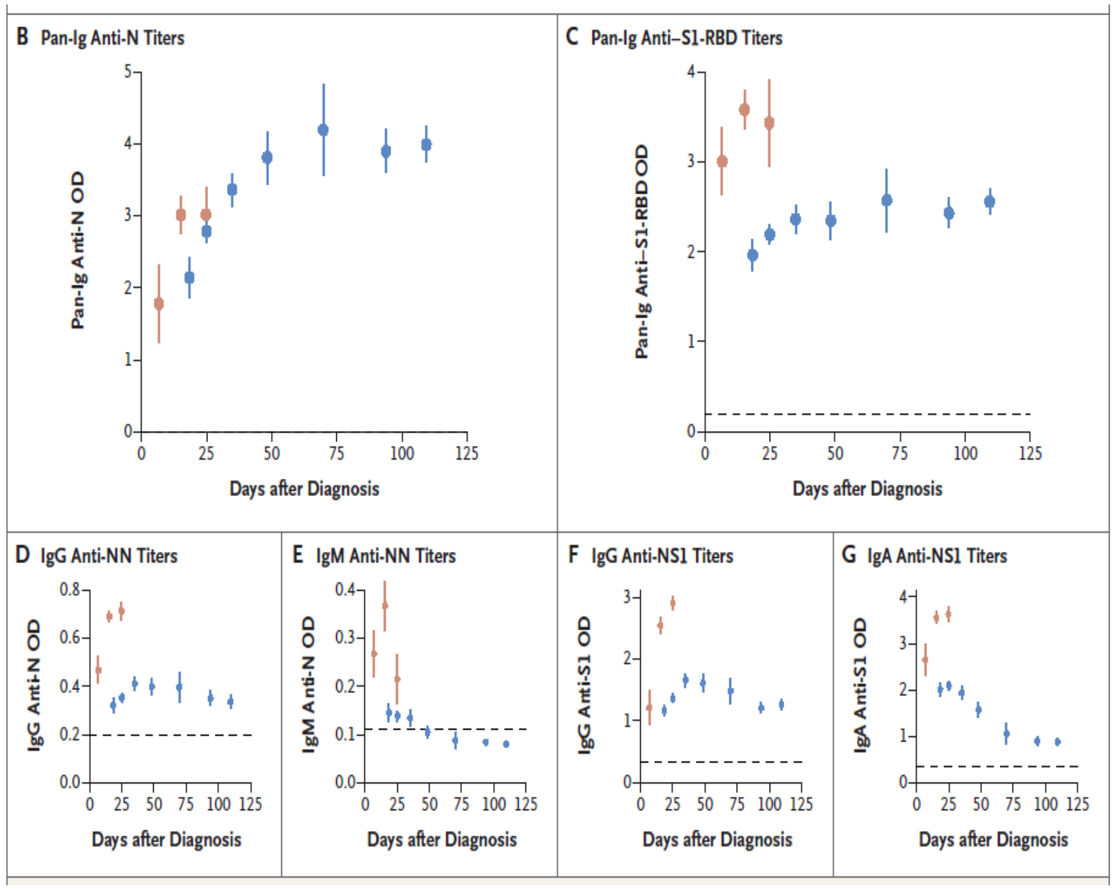
- Small sample size.
- Non white population such as African American are at high risk for vitamin D deficiency compared to white and they were representing the majority of the studied population.

DIAGNOSIS

Article 2 Humoral Immune Response to SARS-CoV-2 in Iceland

Published 01 September 2020 NEJM

- A study of 61,000 persons in Spain showed that 5% of the population had formed antibodies against the spike and nucleoproteins; and that approximately one-third of those infected were asymptomatic. This study aimed to assess SARS CoV- 2 seroprevalence in the population of Iceland and to assess longitudinal changes in antibody levels within the first 4 months after SARS-CoV-2 infection.
- The investigators measured antibodies in serum samples from 30,576 persons in Iceland. The authors used six different assays. They determined that the appropriate measure of seropositivity was a positive result with two pan-Ig assays. Samples were collected from 1237 persons up to 4 months after diagnosis by PCR. Additionally, they measured antibodies in 4222 quarantined persons and a control sample of 23,452 persons.
- Of the 1797 who had recovered from SARS-CoV-2 infection, 1107 of 1215 who were tested (91.1%) were seropositive; antiviral antibody titers assayed by two pan-Ig assays increased during 2 months after diagnosis by PCR and remained on a plateau for the remainder of the study. Of quarantined persons, 2.3% were seropositive; of those with unknown exposure, 0.3% were positive.



- The investigators estimated that 0.9% of Icelanders were infected with SARS-CoV-2 and that the infection was fatal in 0.3%.
- The investigators concluded that antiviral antibodies against SARS-CoV-2 did not decline within 4 months after diagnosis and the fatality risk from infection was 0.3% and that 44

EPIDEMIOLOGY

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Article 3

Cell Phone Activity in Categories of Places and Associations with Growth in Cases of COVID-19 in the US

Published 30 August 2020 JAMA

This cohort study aimed to evaluate associations between county-specific and state-specific characteristics in the US and percentage change in each county in cell phone activity in multiple categories of place (i.e. workplace, residence) during the period after stay-at-home measures were advised.

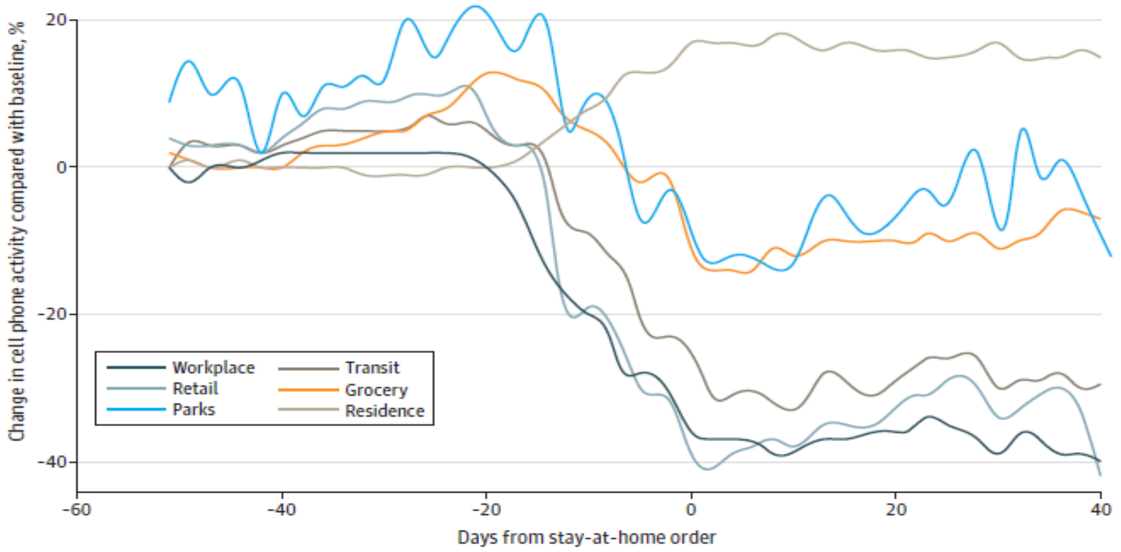
Introduction

- The US federal government declared COVID-19 a state of emergency in early 2020.
- As of May 25, 2020, the US had the highest number of reported COVID-19 cases and deaths worldwide.
- US prediction models are using smartphones as a tool to help summarize human behavior as a means to understand disease spread and inform policy.
- There is an unknown association between cell phone location data and social distancing, or if location data are associated with the incidence of COVID-19 cases in a particular geographical area.

Methods

- This cohort incorporated publicly available county-level daily COVID-19 case data from January 22, 2020, to May 11, 2020, and county-level daily cell phone location data made publicly available by Google, after the initiation of stay-at-home orders for each state.
- The primary outcome was the percentage change in COVID-19 cases 5 days from the exposure date..

Figure 1. Cell Phone Activity Compared With Baseline Over Time by Category of Place



Findings

- Changes in cell phone use compared with baseline in different categories of place are shown before and after issuance of stay-at-home orders in each state. Each category of place was studied separately in its regression model. (See Figure 1)
- Greater reductions in cell phone activity in the workplace, transit stations, and retail locations and greater increases in activity at the residence were associated with a lower incidence of COVID-19 cases 5, 10, and 15 days later.

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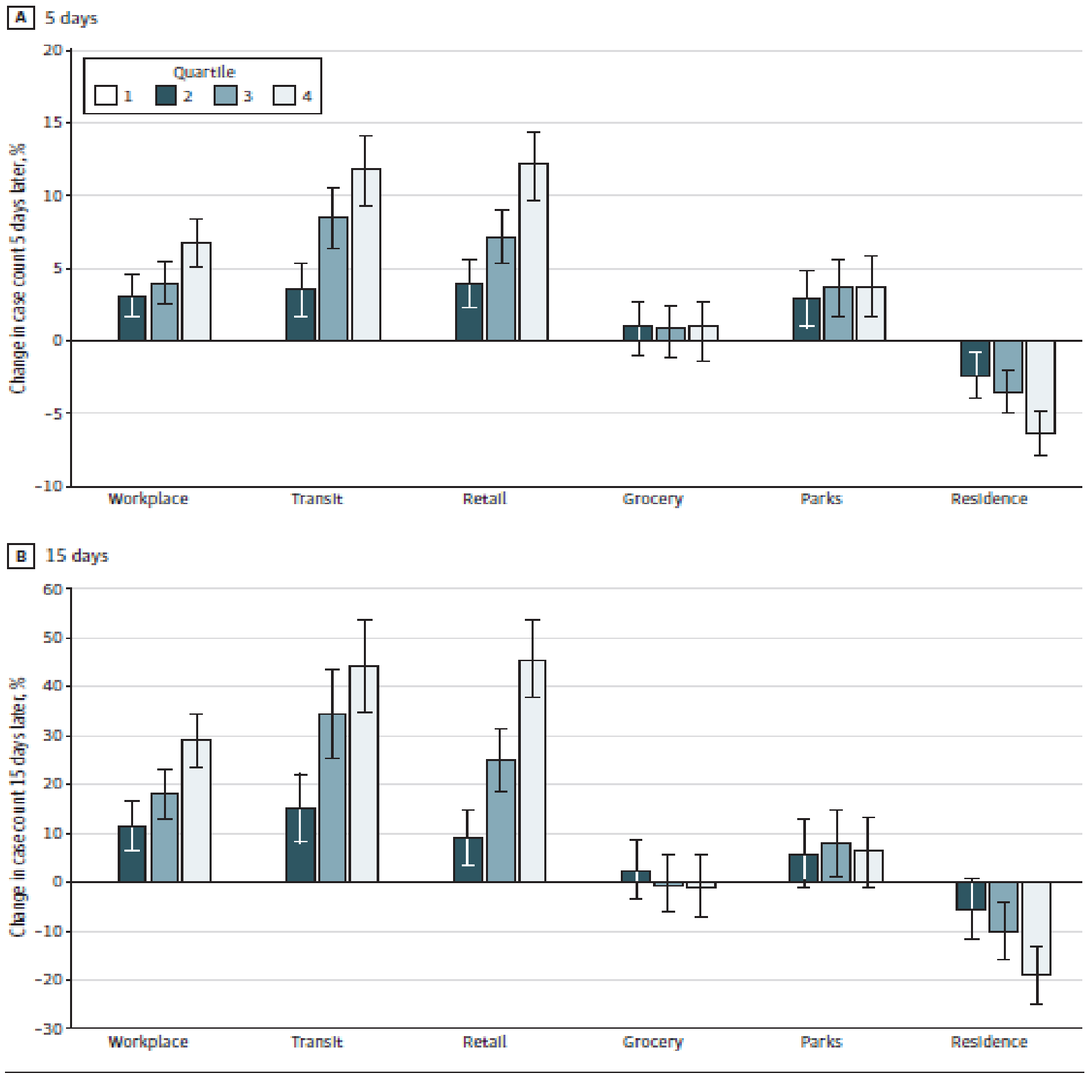
Findings (Cont'd)

- Urban counties (higher population &higher COVID-19 cases/unit population) had a larger decline in activity outside residence place and a greater increase in residential activity after the stay-at-home order.
- A waning adherence over time since the institution of stay-at-home order suggests an explanation to increase activity in the workplace. As shown in Figure 2, the adjusted percentage growth in cases 5 days (A) and 15 days (B) after the index day by quartile of relative change in cell phone activity in different categories of places.
- All categories of place were tested in separate regression models. All analyses were adjusted for current new cases per day (and squared term), days from the stay-at-home order (and squared term), county population, rural vs urban county, and state factors. Error bars indicate 95% CIs.

Conclusion

- Findings supports the hypothesis that greater reductions in cell phone activity in the workplace and retail locations, and greater increases in activity at the residence, are associated with lesser growth in COVID-19 cases.
- Using county-level cell phone location data may aid in assessing activities that may presage increases/decreases in COVID-19 cases.

Figure 2. Growth in Cases by Quartile of Cell Phone Activity in Different Categories of Place



THANK YOU

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