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HEALTH CENTRE

SCIENTIFIC RESEARCH MONITORING ON COVID-19

06 DECEMBER 2020

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SCIENTIFIC RESEARCH MONITORING ON COVID-19 (ISSUE 307)

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

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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Update

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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

Repurposed Antiviral Drugs for Covid-19 — Interim WHO Solidarity Trial Results

Epidemiology

Estimated SARS-CoV-2 Seroprevalence in the US as of September 2020

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Assessment of 135794 Pediatric Patients Tested for Severe Acute Respiratory Syndrome Coronavirus 2 Across the United States

Public Health Response

How Iceland hammered COVID with science

Vaccine

Newcastle disease virus (NDV) expressing the spike protein of SARS-CoV-2 as a live virus vaccine candidate

Clinical Feature

Pregnancy Outcomes Among Women With and Without Severe Acute Respiratory Syndrome Coronavirus 2 Infection

Others

Global 30-day outcomes after bariatric surgery during the COVID-19 pandemic (GENEVA): an international cohort study

Clinical Feature

Recent endemic coronavirus infection is associated with less severe COVID-19

Diagnosis

Antibodies, Immunity, and COVID-19

EPIDEMIOLOGY

FROM 21 JAN TO 5 DEC 2020

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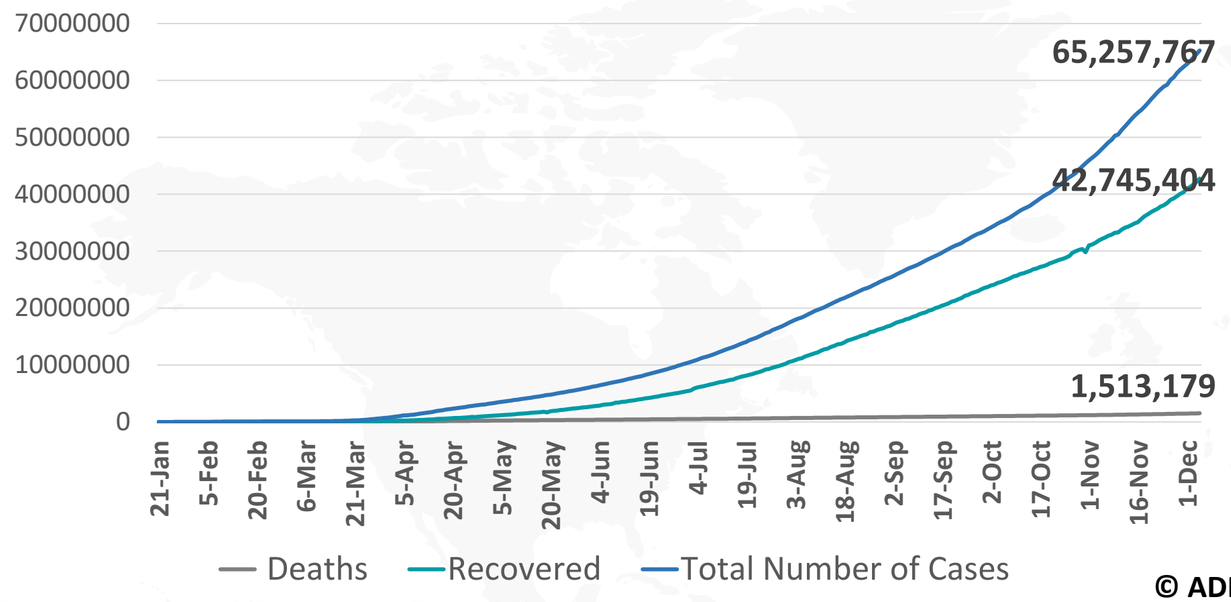
Figure 1: Total Number of Infected, Recovered, and Death Cases



Note: the number of recovered cases in 31th October recorrected from 30 million to 29 million in Johns Hopkins website

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

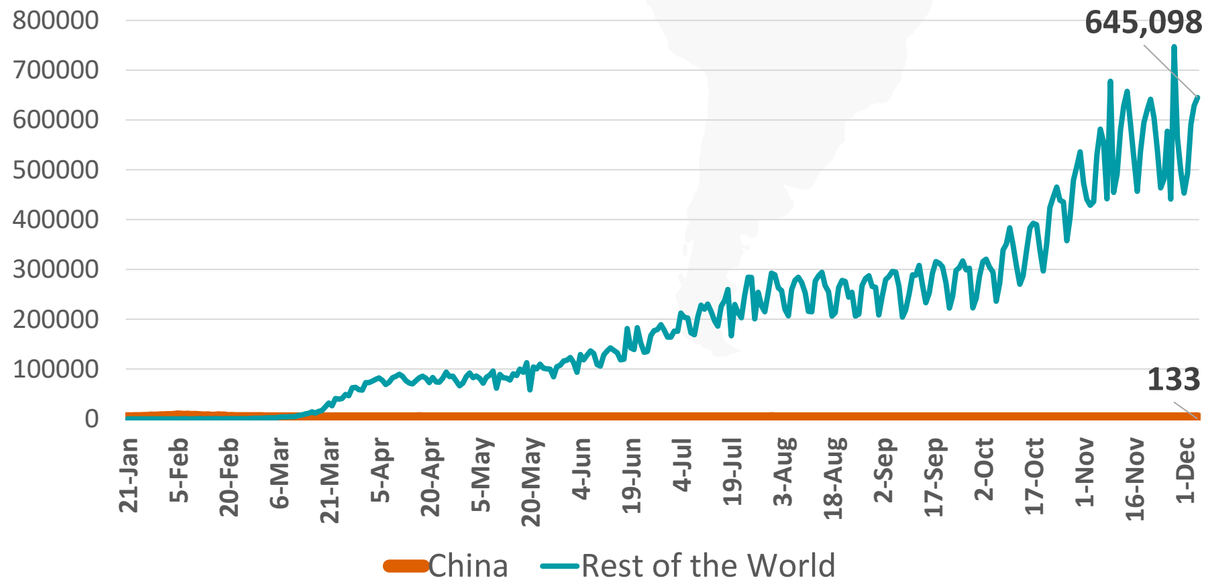


Figure 3: Total Number of Death Due to COVID-19 (china and result of the world)

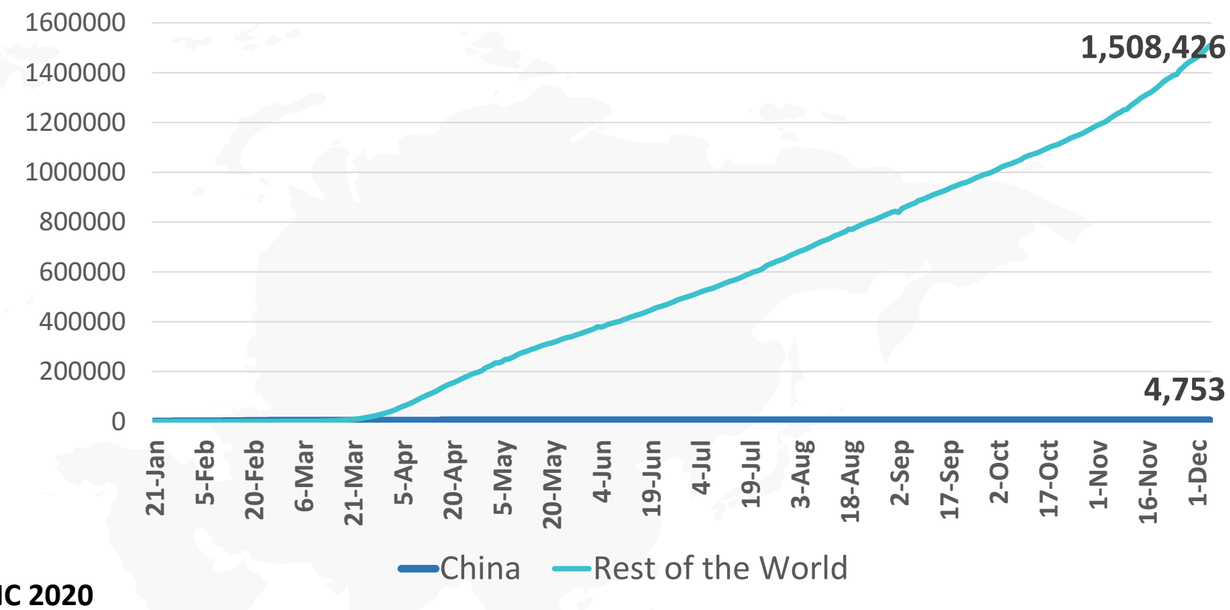
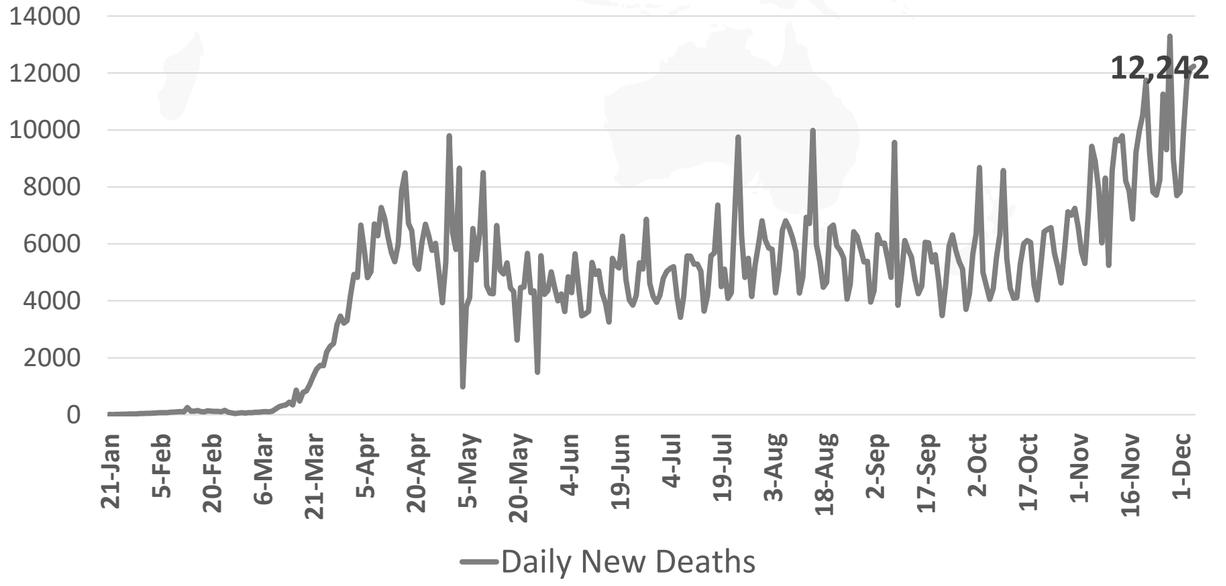


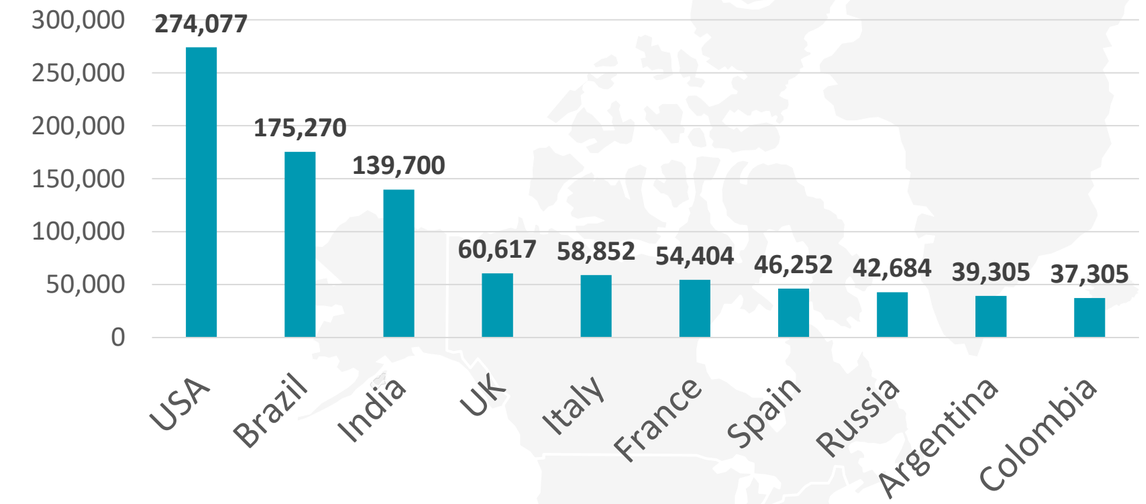
Figure 4: Global Daily New Deaths Due to COVID-19 (china and rest of the world)



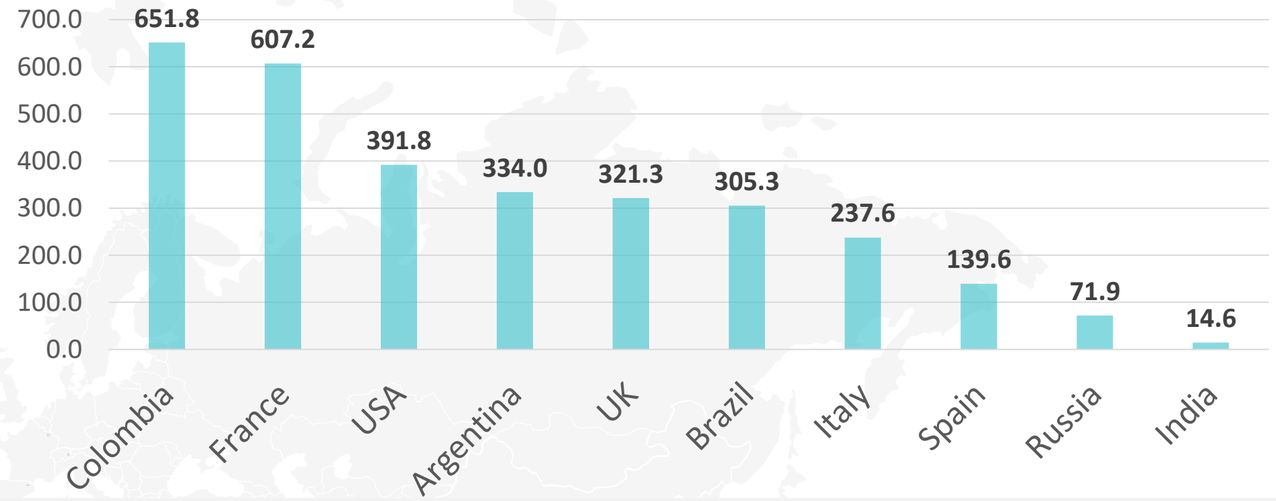
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: John Hopkins, WHO

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

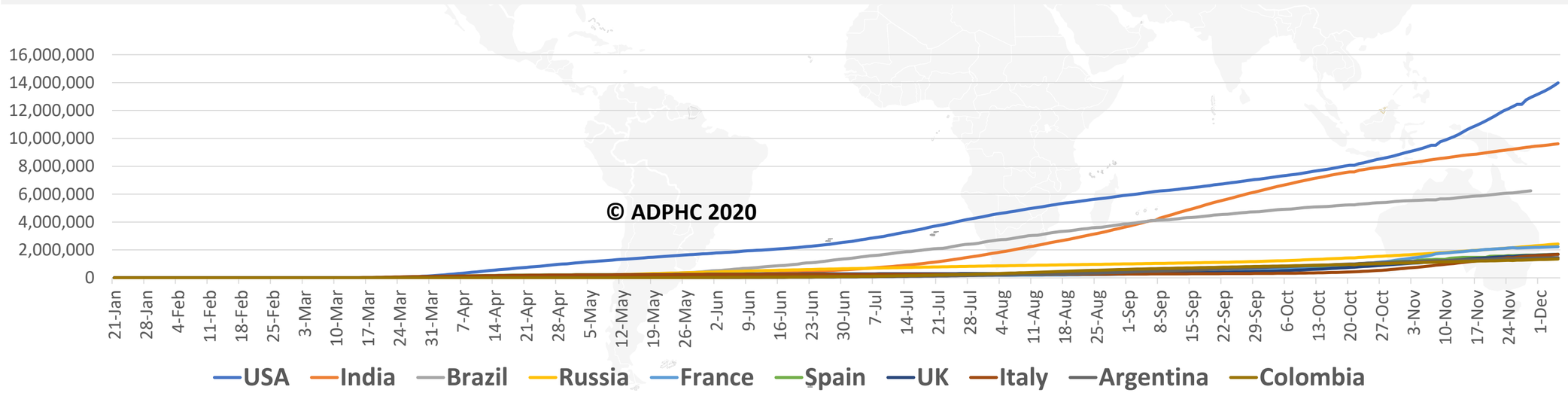
TOTAL DEATHS



DEATHS PER MILLION



TOTAL INFECTED CASES



USA	13,978,171
India	9,608,211
Brazil	6,487,084
Russia	2,431,731
France	2,228,980
UK	1,690,436
Italy	1,688,939
Spain	1,684,647
Argentina	1,447,732
Colombia	1,343,322

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

EPIDEMIOLOGY

FROM 21 JAN TO 5 DEC 2020

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

Daily Tests

117,222.0 Average Tests

1,185.2 per 100k population

1.1% Positive Rate

Daily Cases

1,253.4 Average Cases

12.7 per 100k population

Daily Recovered

721.3 Average Recovered

7.3 per 100k population

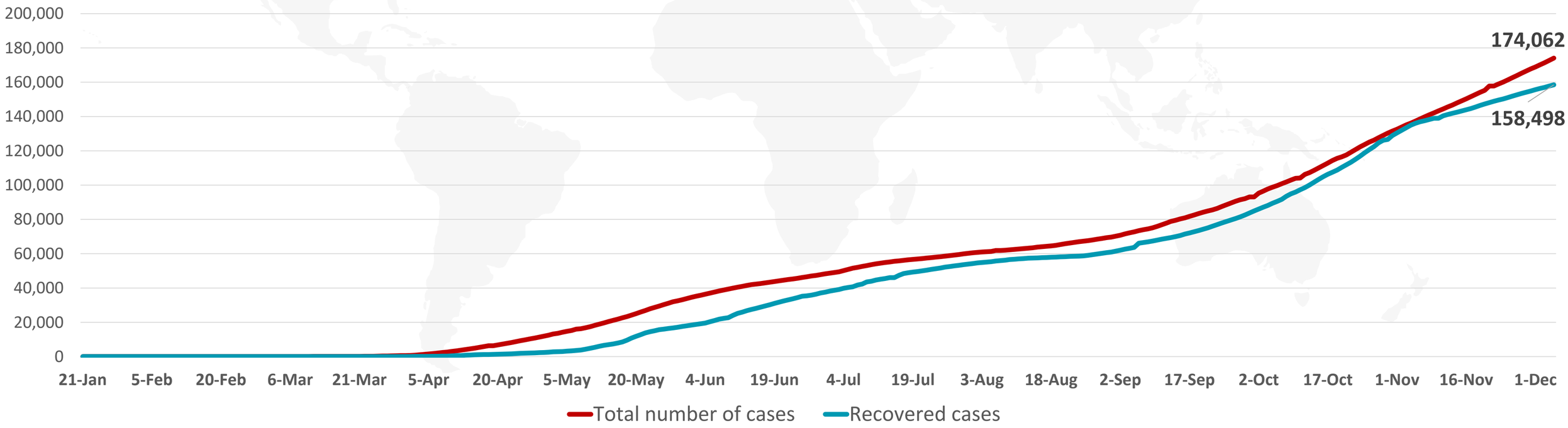
Daily Deaths

2.9 Average Deaths

0.0 per 100k population

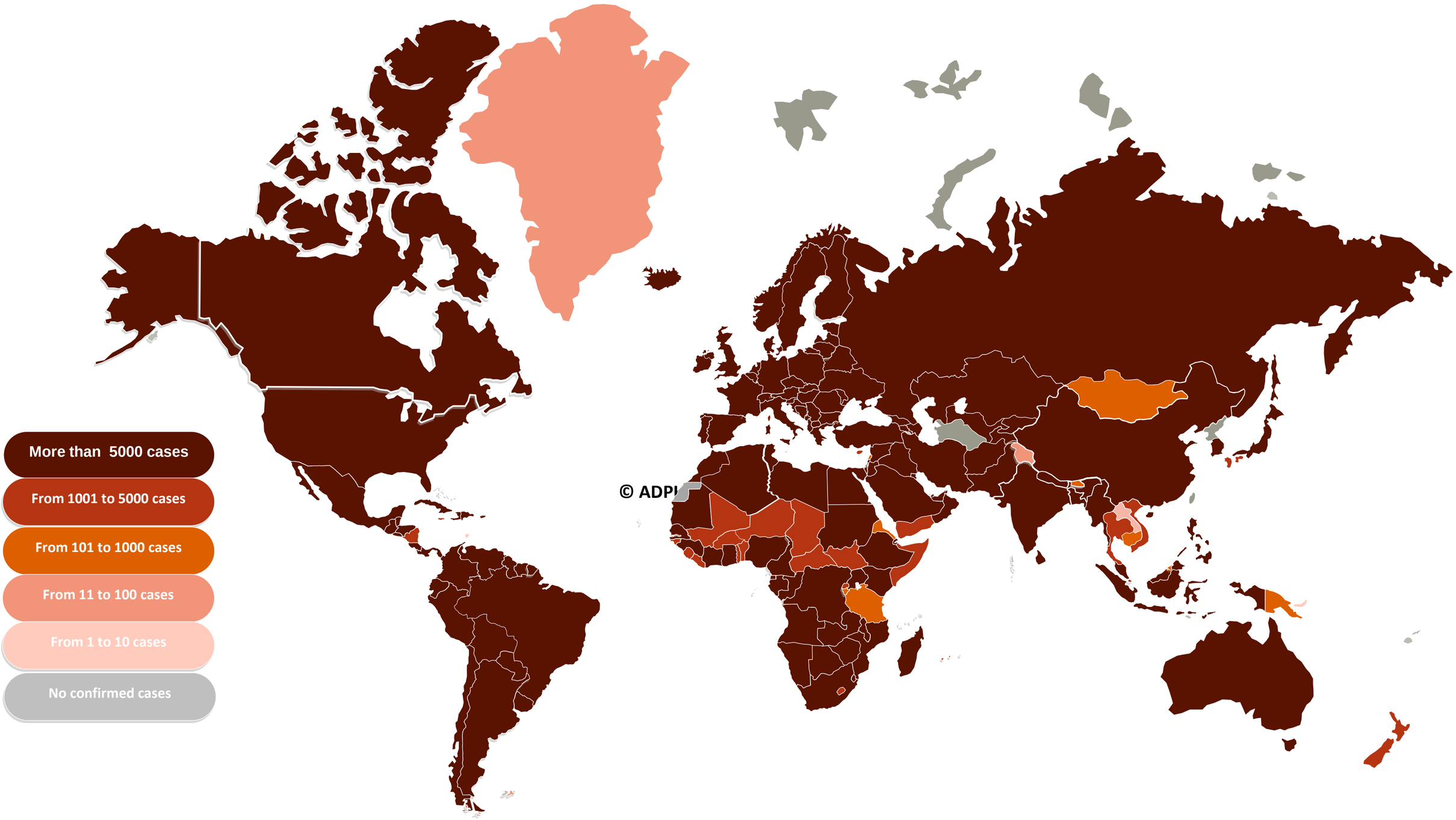
0.2% Case Fatality Rate

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: 5 DEC 2020

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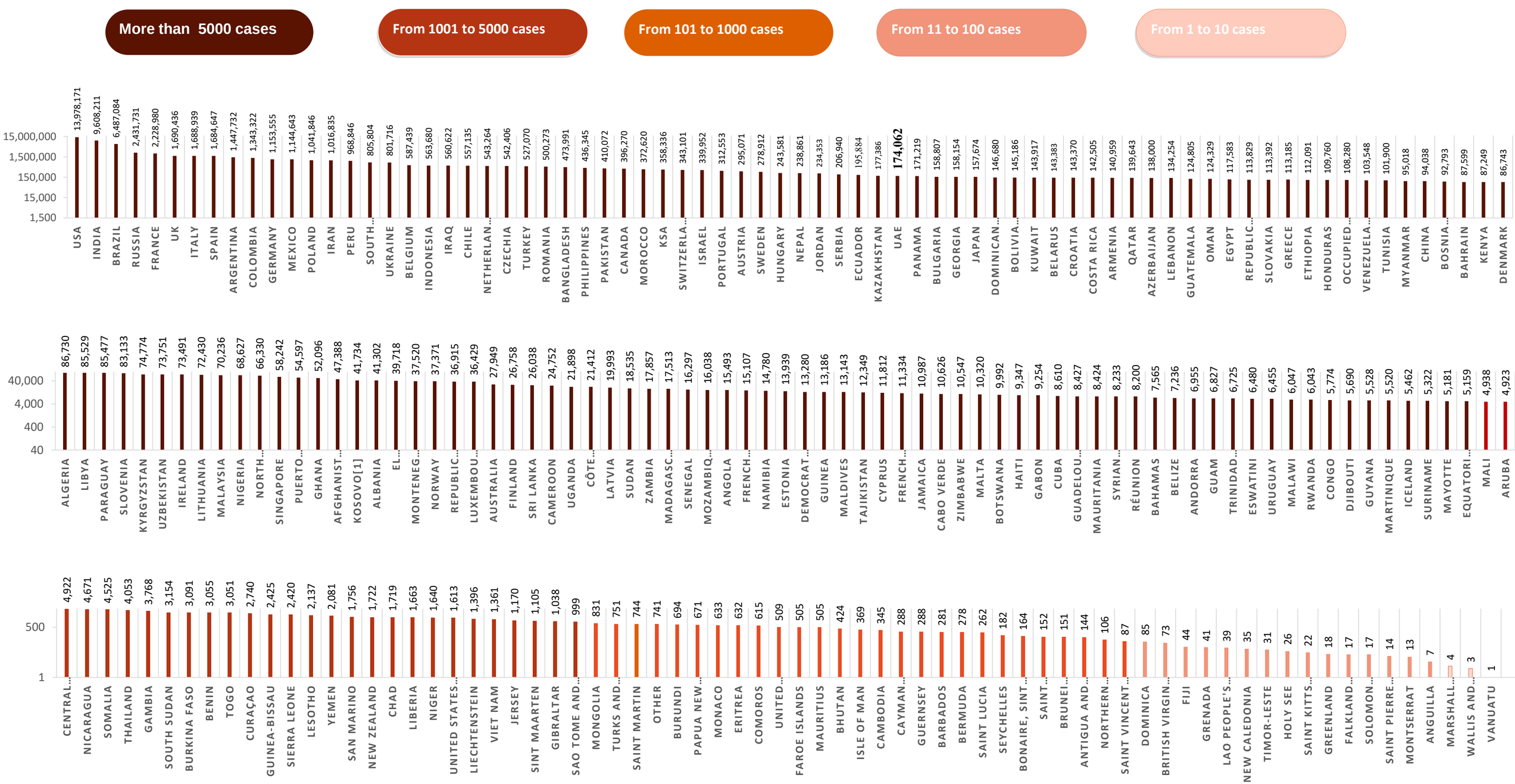
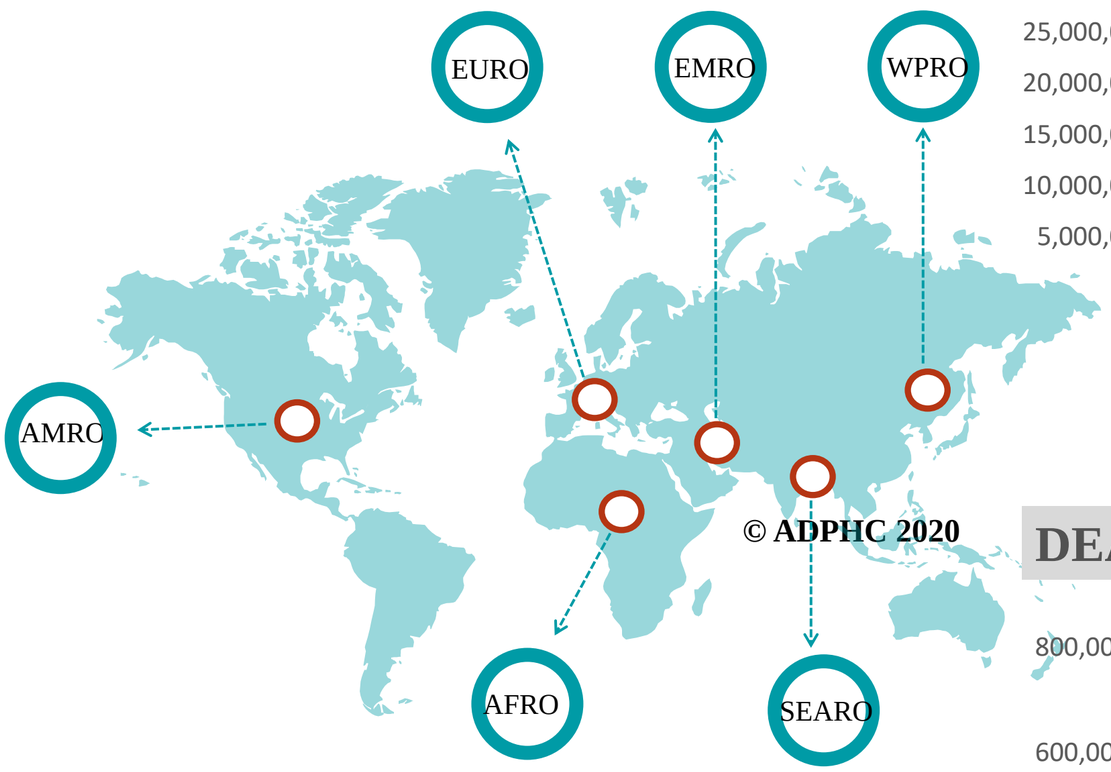
Figure 7B: Bar Chart Illustrates the Global Distribution of COVID19 Cases



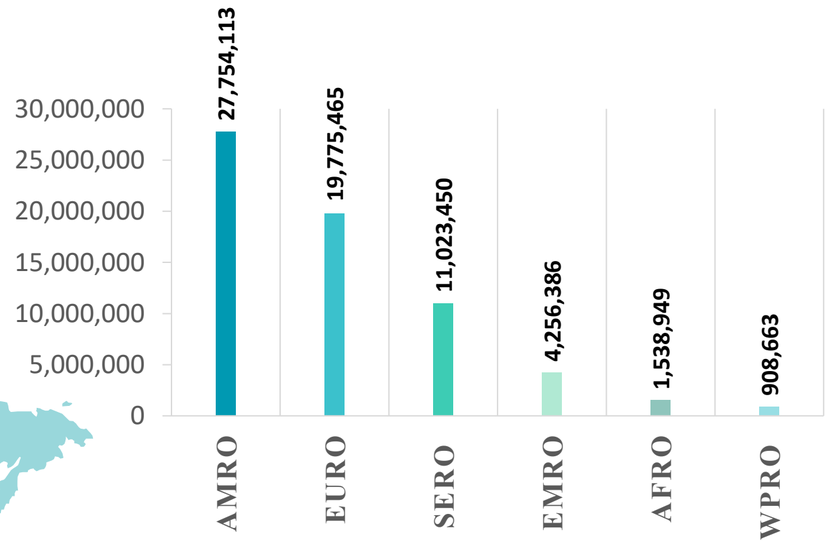
Other*:includes cases and deaths reported under the international conveyance(Diamond Princess)

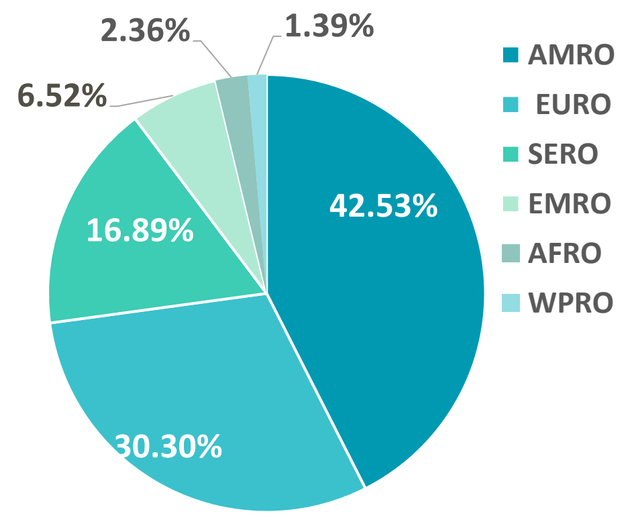
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

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

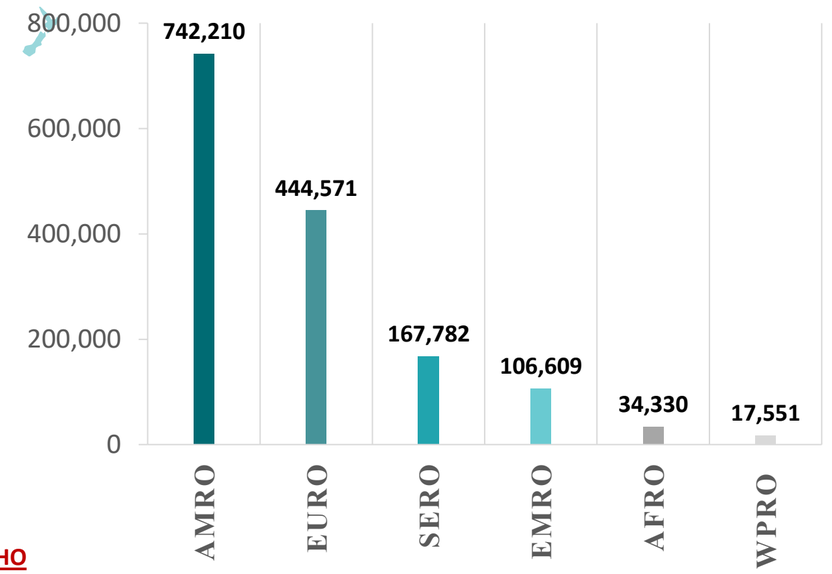


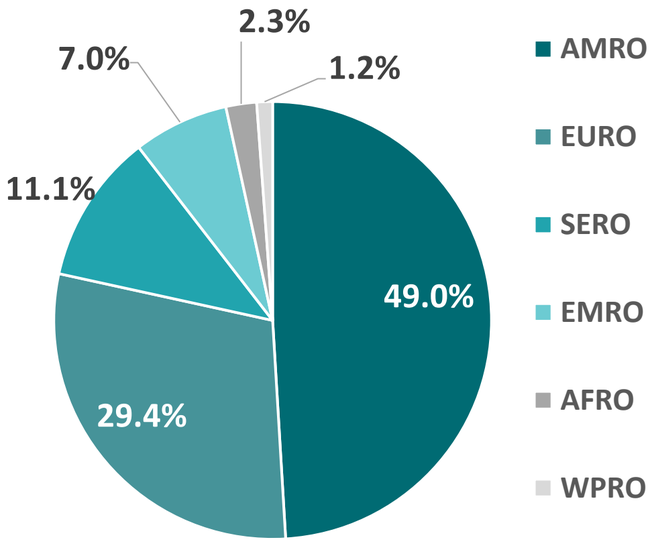
INFECTED





DEATHS

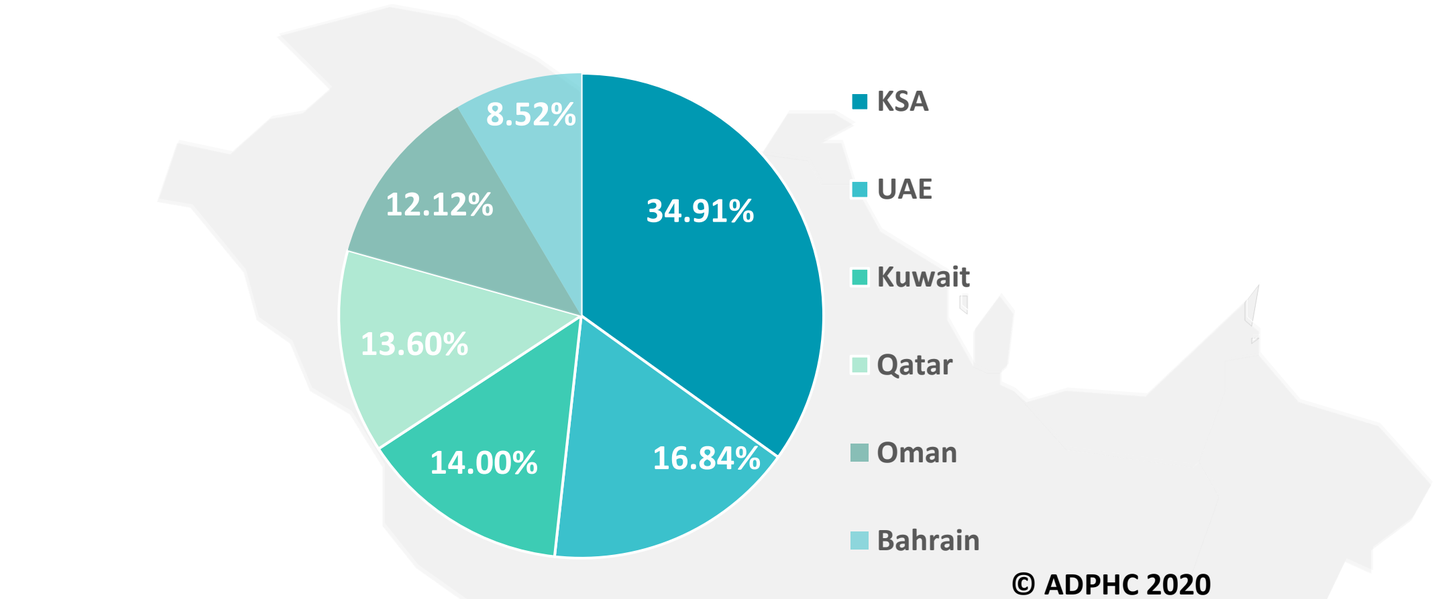


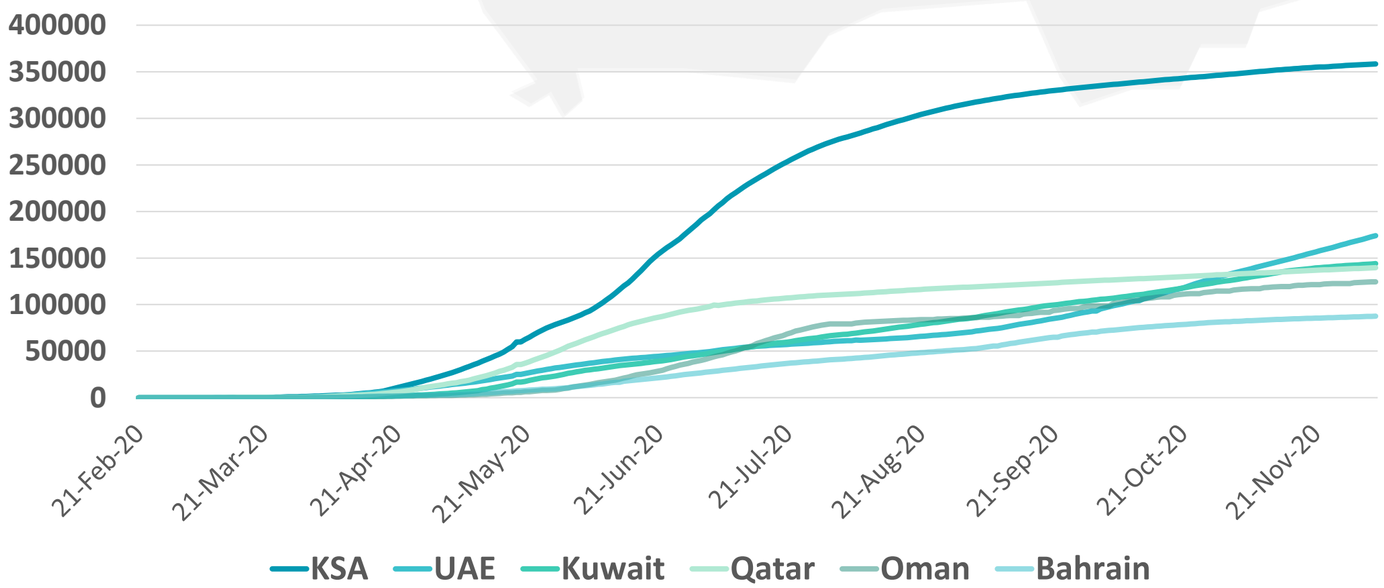


Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

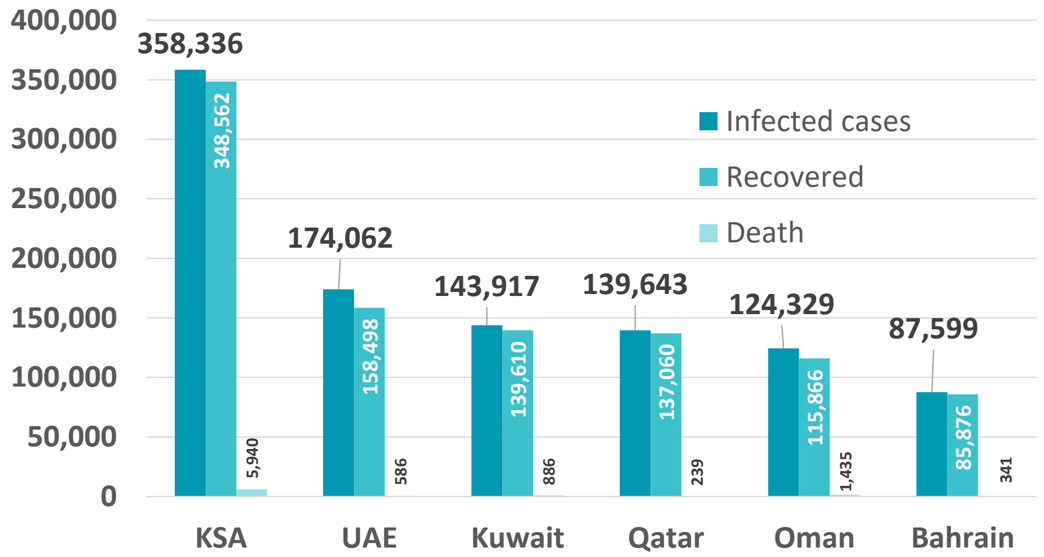
Figure 9: Comparative Analysis of the Distribution of COVID-19 Cases in GCC Countries

TOTAL NUMBER OF INFECTED CASES

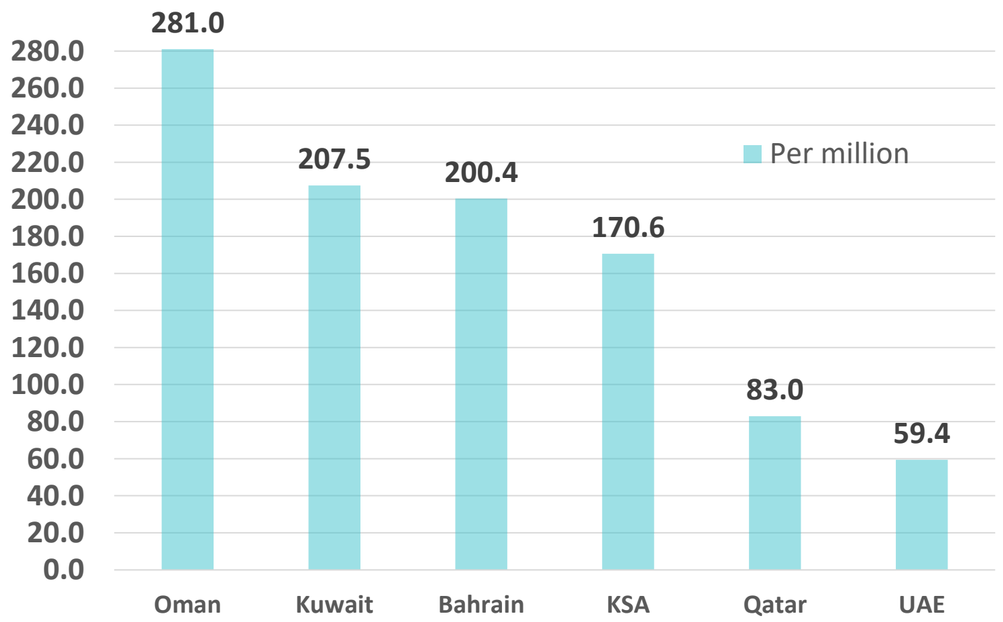




TOTAL NUMBER OF INFECTED, RECOVERED AND DEATHS

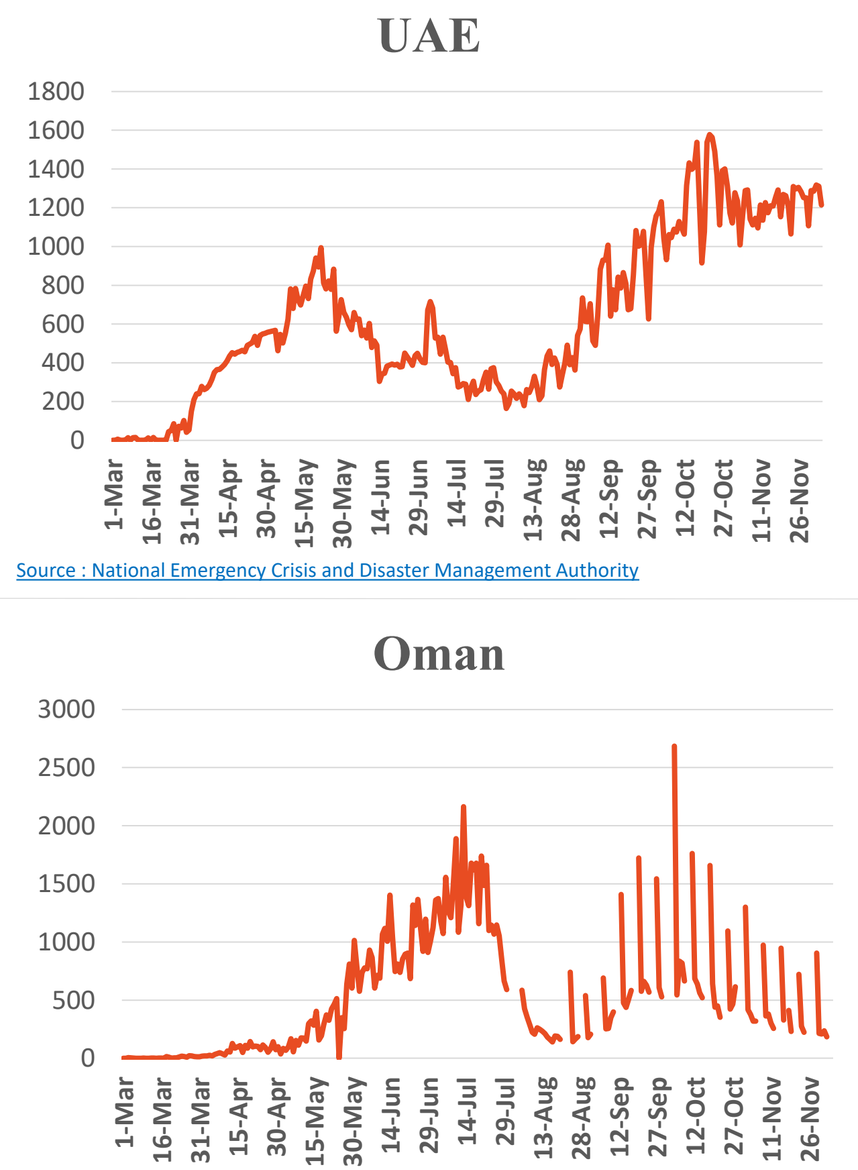


DEATHS PER MILLION

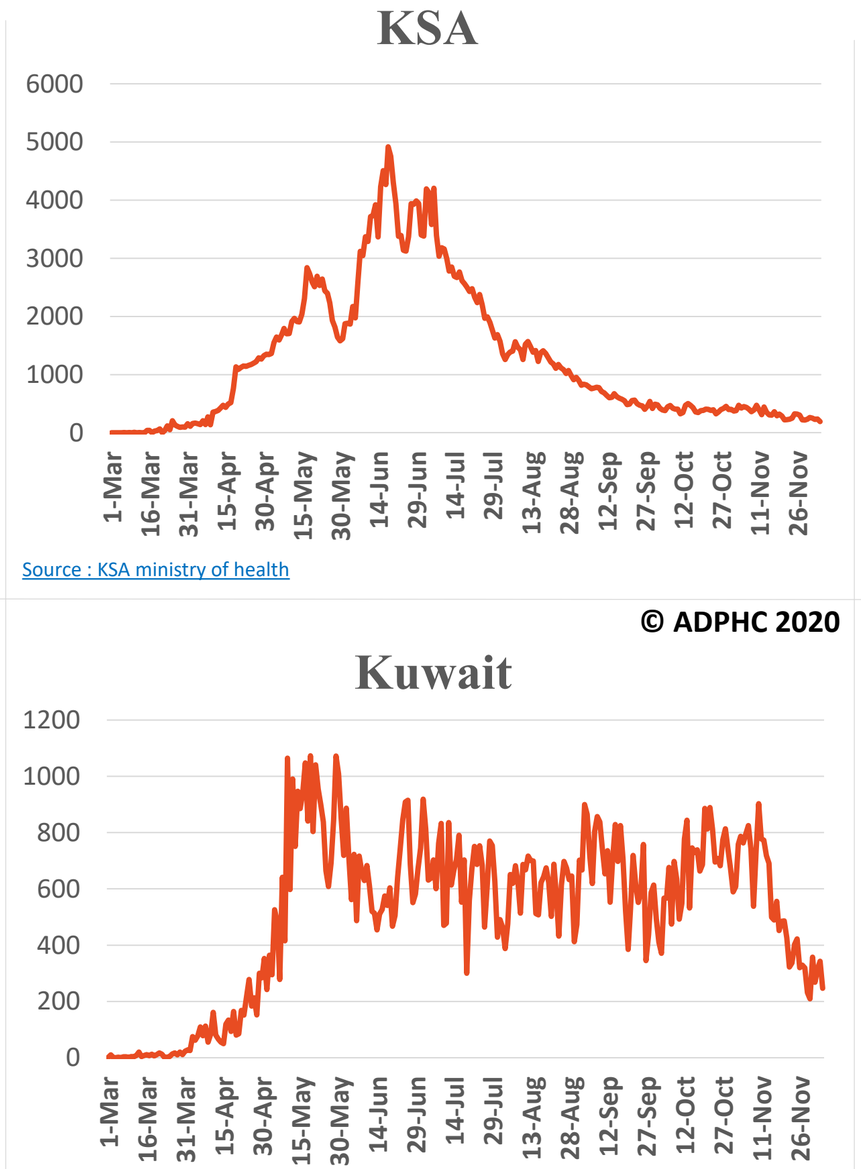


Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: John Hopkins, WHO

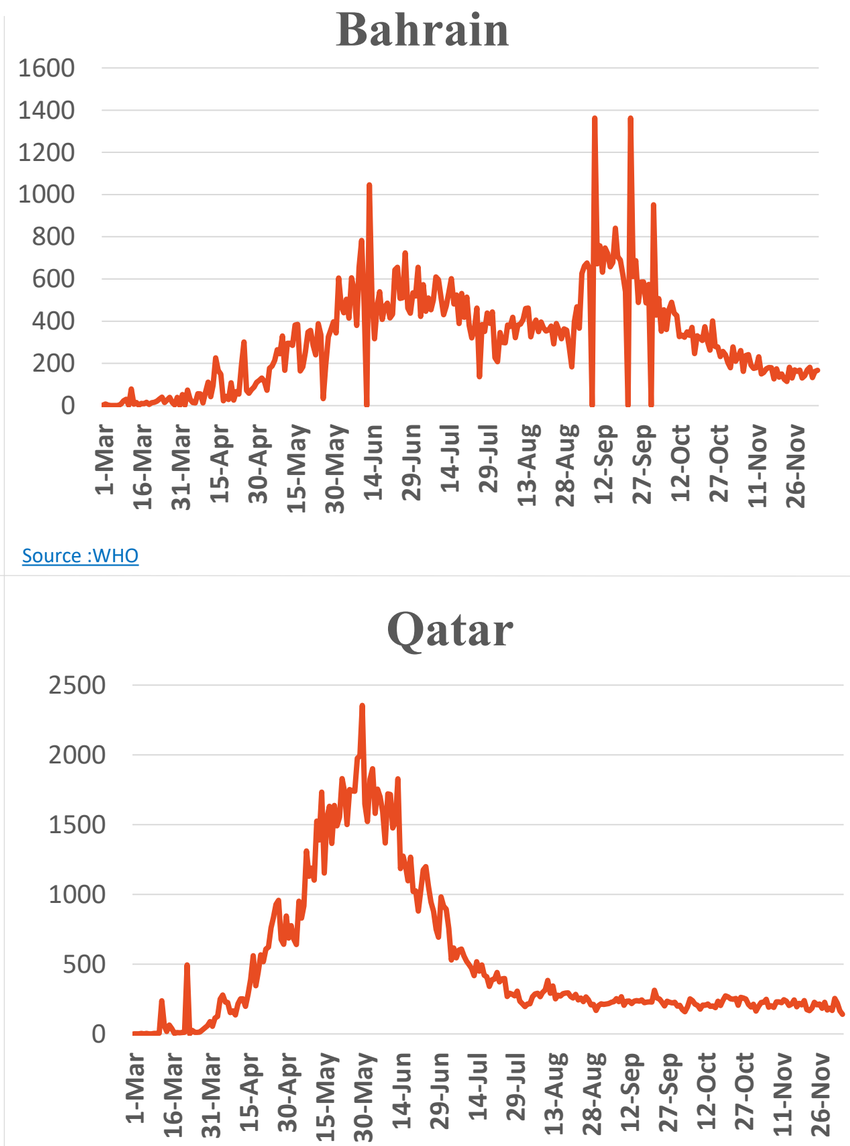
Figure 10: Comparative Analysis of the Distribution of COVID-19 New Cases in GCC Countries



Source : National Emergency Crisis and Disaster Management Authority



Source : KSA ministry of health



Source :WHO

Source :Oman ministry of health

*No announced statistic data from 31 JUL to 4 AUG, 21,23,28,30 AUG 2,4، 5,11,12,18,19,25 ,26,30 SEP,1,2,9,10,16,17,23,24,30,21 OCT, 6,7,13,14,17,20,21, 25,26,5 DEC

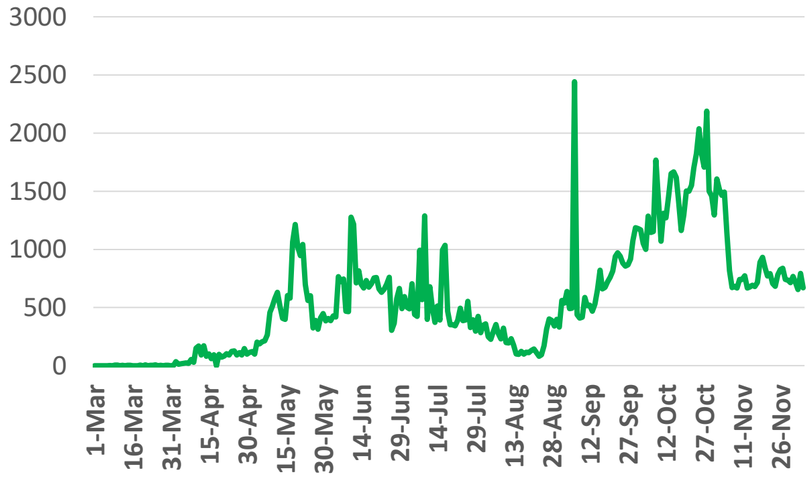
*No announced statistic data on weekends and official holidays.

Source : Kuwait ministry of health

Source : Qatar ministry of health

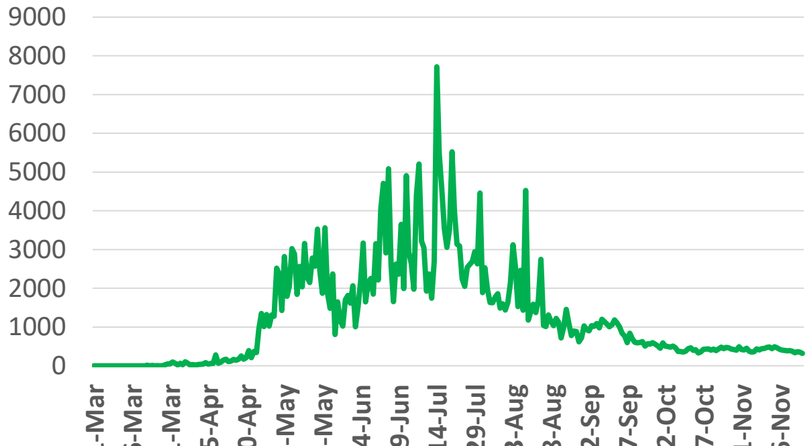
Figure 11: Comparative Analysis of the Distribution of COVID-19 Newly Recovered Cases in GCC Countries

UAE



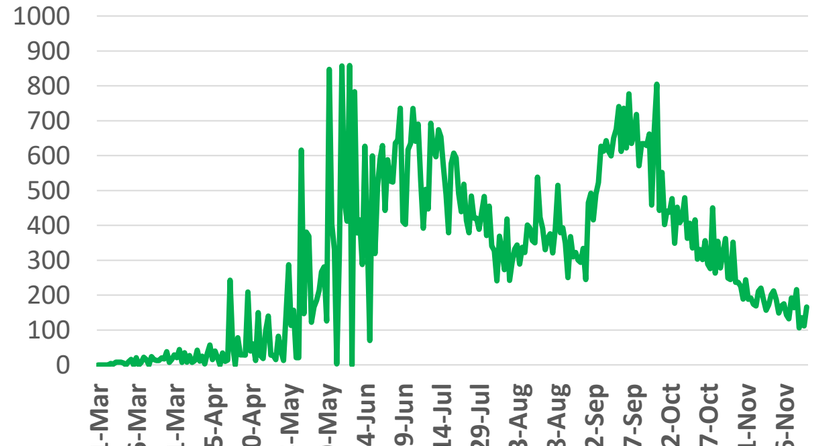
Source : National Emergency Crisis and Disaster Management Authority

KSA



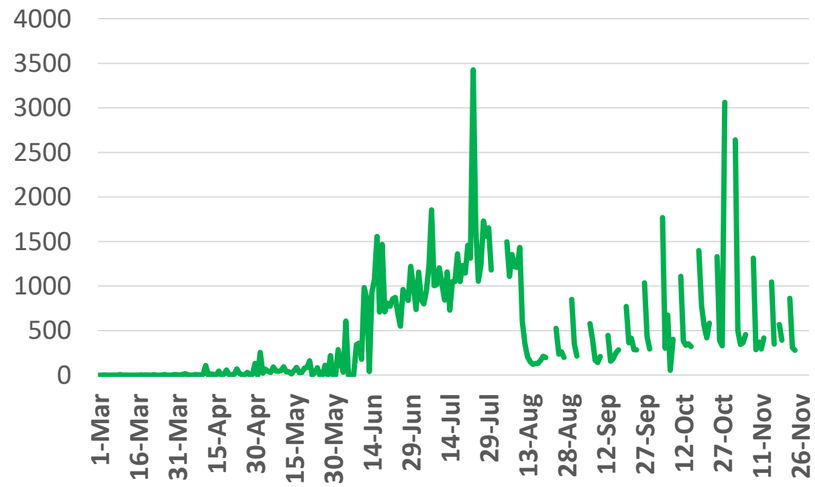
Source : KSA ministry of health

Bahrain



Source : Bahrain ministry of health

Oman

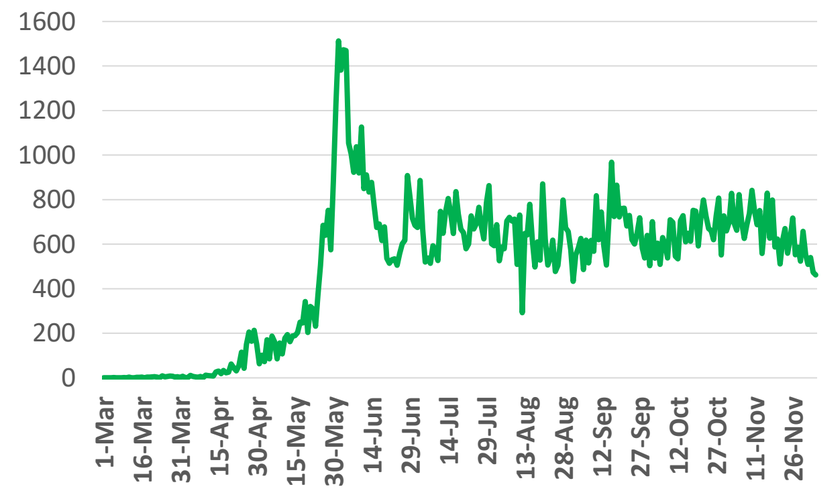


Source :Oman ministry of health

*No announced statistic data from 31 JUL 4 AUG, 21,23,28,30 AUG 2, 4، 5,11,12,18,19,25 ,26,30 SEP,1,2,9,10,16,17,23,24,30,21 OCT, 6,7,13,14,17,20,21, 25,26,5 DEC

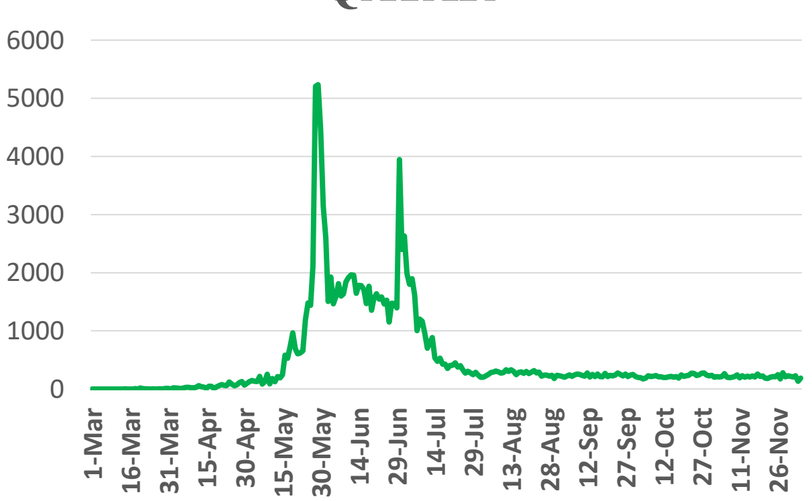
*No announced statistic data on weekends and official holidays.

Kuwait



Source : Kuwait ministry of health

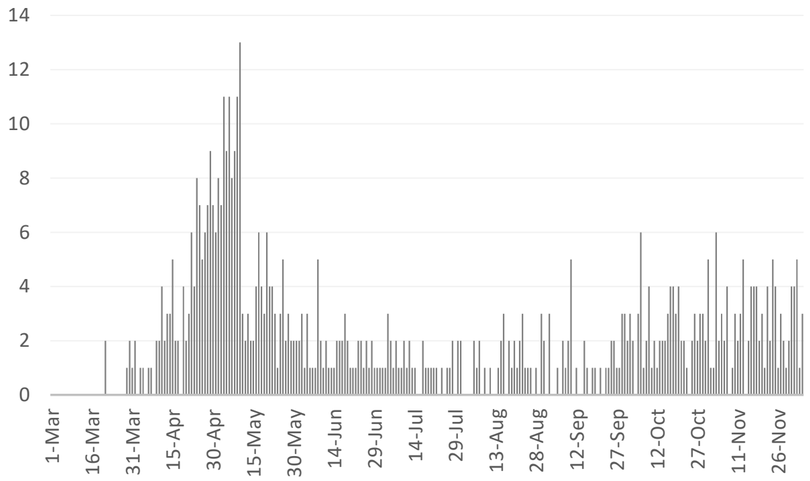
QATAR



Source : Qatar ministry of health

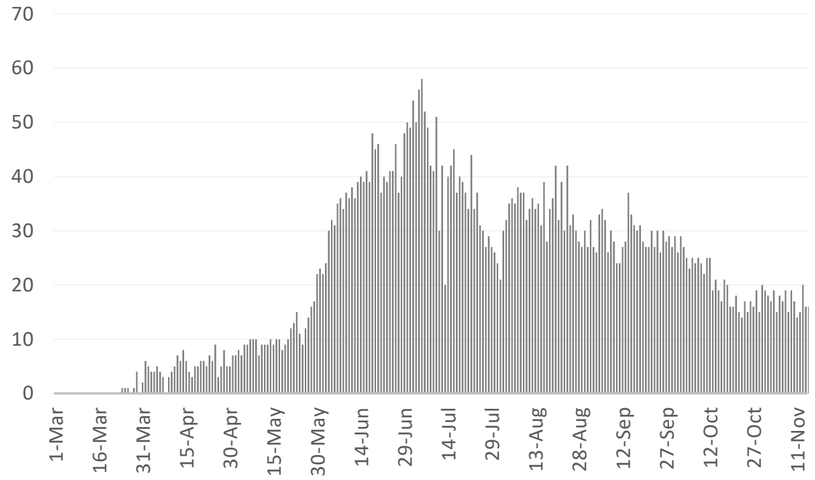
Figure 12: Comparative Analysis of the Distribution of COVID-19 New Death Cases in GCC Countries

UAE



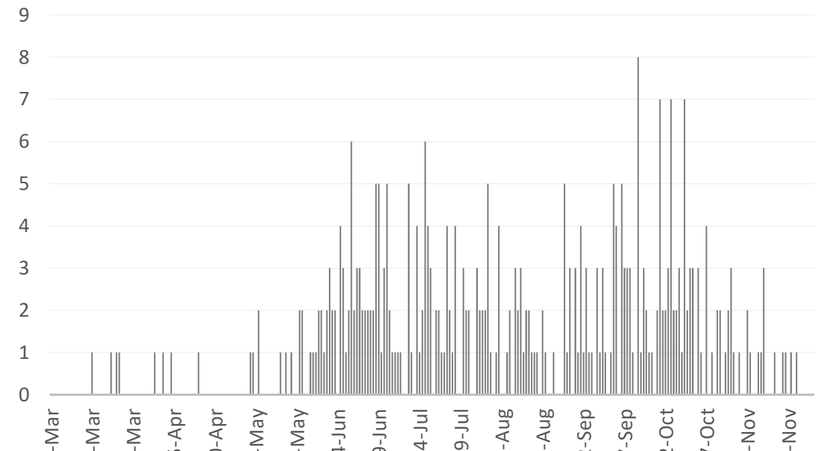
Source : National Emergency Crisis and Disaster Management Authority

KSA



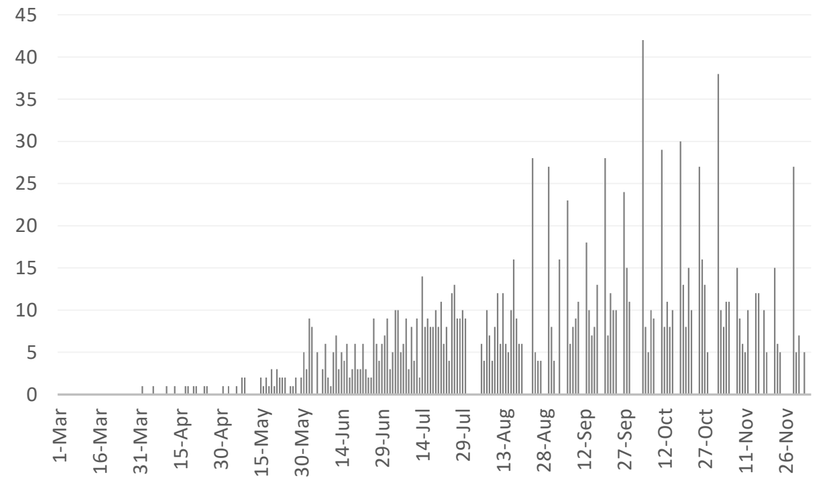
Source : KSA ministry of health

Bahrain



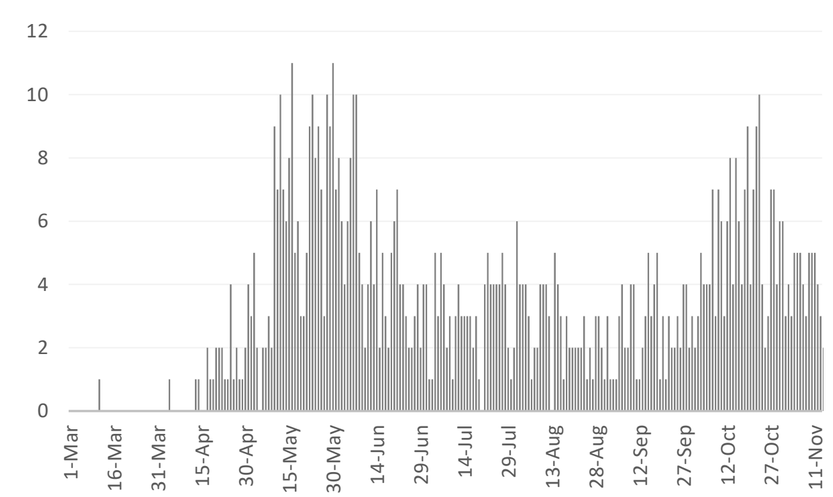
Source :WHO

Oman



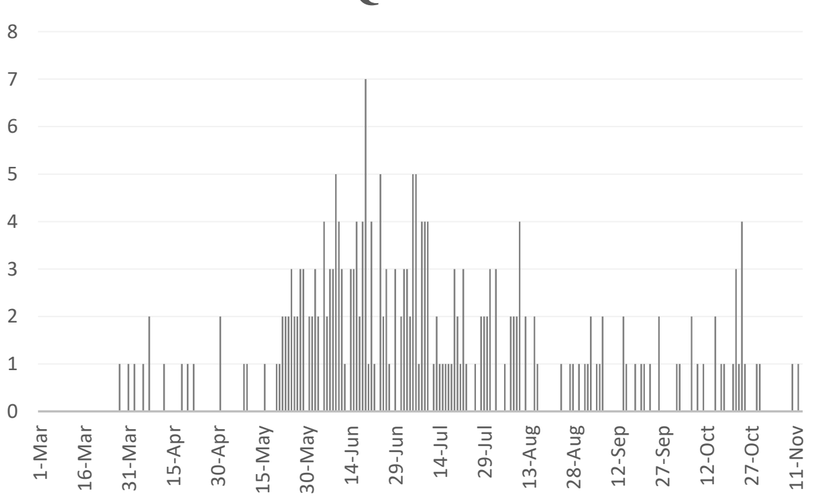
Source :Oman ministry of health

Kuwait



Source : Kuwait ministry of health

Qatar



Source : Qatar ministry of health

*No announced statistic data from 31 JUL 4 AUG, 21,23,28,30 AUG 2, 4، 5,11,12,18,19,25 ,26,30 SEP,1,2,9,10,16,17,23,24,30,21 OCT, 6,7,13,14,17,20,21,25,26,5 DEC

*No announced statistic data on weekends and official holidays.

TREATMENT

Article 1

Published

December 2 , 2020 NEJM

Repurposed Antiviral Drugs for Covid-19 — Interim WHO Solidarity Trial Results

World Health Organization expert groups conducted a trials for four repurposed antiviral drugs — remdesivir, hydroxychloroquine, lopinavir, and interferon beta-1a — in 11,330 patients hospitalized with coronavirus disease 2019 (Covid-19). The trial conducted in 405 hospitals in 30 .

Results

	Remdesivir	Control	Hcq	Control	Lopinavir	Control	Interferon	Control
Number Of Participants	2750	2708	954	906	1411	1399	2050 *	2050
Number Of Death Cases	301	303	104	84	148	146	243	216

Conclusions

These regimens had little or no effect on hospitalized patients with covid-19, as indicated by overall mortality, initiation of ventilation, and duration of hospital stay.

Article 2

Published November 24, 2020 JAMA

Estimated SARS-CoV-2 Seroprevalence in the US as of September 2020

Large-scale seroprevalence surveys can better estimate infection across many geographic regions.

This study aimed to estimate the prevalence of persons with SARS-CoV-2 antibodies using residual sera from commercial laboratories across the US and assess changes over time.

Design, Setting, And Participants

- Cross-sectional study conducted across all 50 states, the District of Columbia, and Puerto Rico
- Convenience sample of residual serum specimens originally submitted for routine screening or clinical management
- Persons of all ages
- 2 private clinical commercial laboratories.
- Samples were obtained during 4 collection periods between July 27 to September 24, 2020.

Main Outcomes And Measures

- The proportion of persons previously infected with SARS-CoV-2 measured by the presence of antibodies to SARS-CoV-2. Seroprevalence estimates were adjusted using the demographic profile and urbanicity of each jurisdiction.
- Seroprevalence was estimated by jurisdiction, sex, age group and metropolitan/nonmetropolitan status.

Results

- Of 177 919 serum samples tested, 58.3% were from women, 15.0% from persons 17 years or younger, 26.7% from persons 65 years or older, and 14.8% from individuals living in nonmetropolitan areas.
- Jurisdiction-level seroprevalence over 4 collection periods ranged from less than 1% to 23%.
- In 42 of 49 jurisdictions with sufficient samples across all periods, fewer than 10% of people had detectable SARS-CoV-2 antibodies.

EPIDEMIOLOGY

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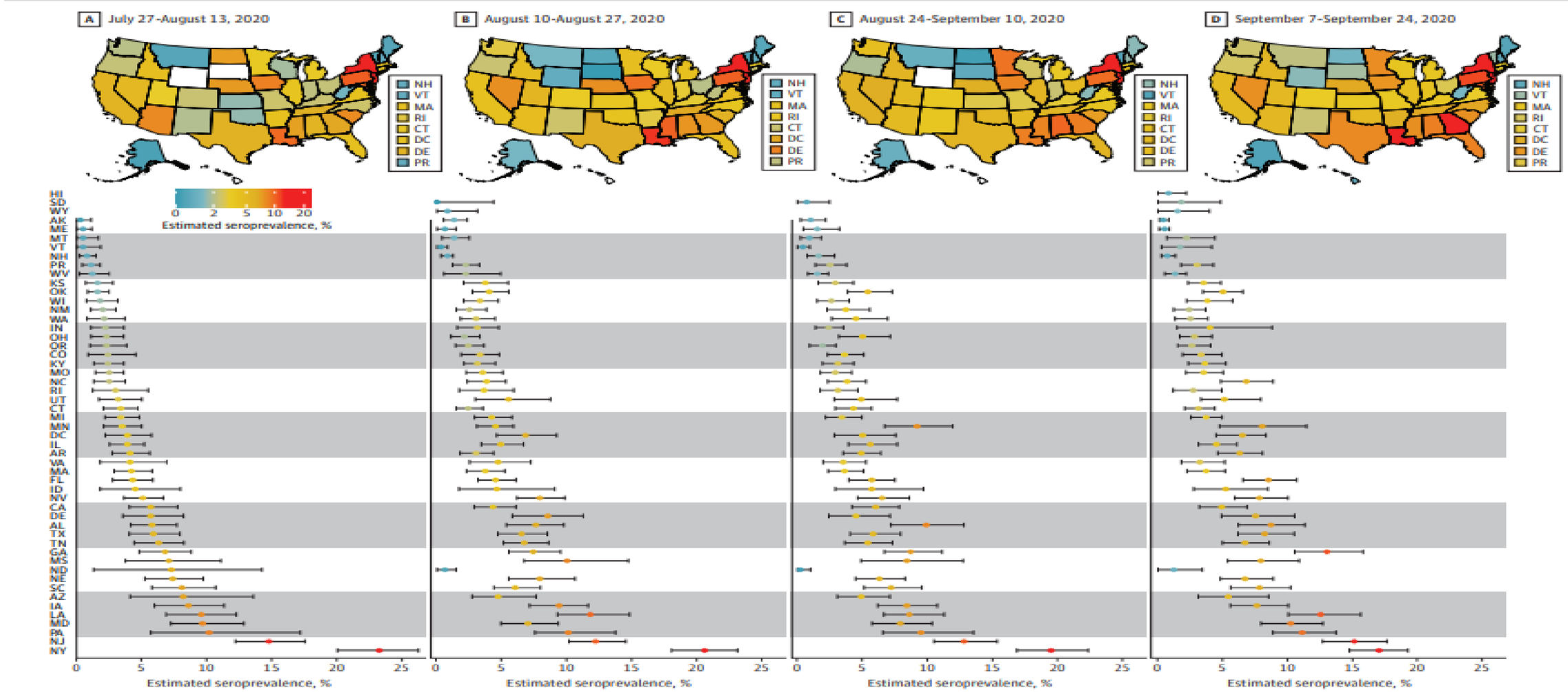
Continued

Figure 1. SARS-CoV-2 Prevalence Estimates by US Jurisdiction During Testing Periods From July 27 to August 13, August 10 to 27, August 24 to September 10, and September 7 to 24, 2020



Estimates are shown with 95% bootstrap CIs. Estimates could not be calculated for Hawaii, North Dakota, South Dakota, and Wyoming during select periods during which there were fewer than 75 samples.

Conclusions

- This cross-sectional study found that as of September 2020, most persons in the US did not have serologic evidence of previous SARS-CoV-2 infection, although prevalence varied widely by jurisdiction.
- Biweekly nationwide testing of commercial clinical laboratory sera can play an important role in helping track the spread of SARS-CoV-2 in the US.

CLINICAL FEATURE

Article 3

Published

November 23, 2020 The JAMA

Assessment of 135794 Pediatric Patients Tested for Severe Acute Respiratory Syndrome Coronavirus 2 Across the United States

Objective

This study describes the epidemiology across the United States of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection among pediatric patients undergoing diagnostic testing for the virus.

Design, Setting, and Participants:

- Retrospective cohort study was conducted
- It included 135794 patients younger than 25 years who were tested for SARS-CoV-2 from January 1 through September 8, 2020.
- Electronic health record data were from PEDSnet, a network of 7 US pediatric health systems, comprising 6.5 million patients primarily from 11 states.

Findings

- 96% of patients tested had negative results.
- Rates of severe cardiorespiratory presentation of coronavirus disease 2019 (COVID-19) illness were low.
- Minority race/ethnicity, chronic illness, and increasing age were associated with SARS-CoV-2 infection.

Meaning

- This study suggests that for most pediatric patients, the risk of SARS-CoV-2 infection appears low, but higher concern may be warranted for patients with medically complex conditions or those of minority race/ethnicity.

CLINICAL FEATURE

continued

Table 1. SARS-CoV-2 Testing Patterns by Health System

Characteristic	Overall	Health system[a]							
		A	B	C[b]	D	E	F	G	H
Recent patients, No.[c]	2 425 942	225 762	537 652	198 332	331 408	351 973	311 441	197 848	271 526
Patients tested, No. (%)									
Recurring[d]	111 785 (82)	9872 (93)	25 513 (93)	8657 (61)	22 920 (82)	10 594 (86)	15 684 (82)	11 929 (71)	6616 (95)
Nonrecurring	24 009 (18)	798 (7)	1961 (7)	5555 (39)	5043 (18)	1783 (14)	3539 (18)	4982 (29)	348 (5)
Test result, No. (%)									
Positive	5374 (4)	425 (4)	1152 (4)	952 (7)	1046 (4)	751 (6)	503 (3)	250 (1)	295 (4)
Negative	130 420 (96)	10 245 (96)	26 322 (96)	13 260 (93)	26 917 (96)	11 626 (94)	18 720 (97)	16 661 (99)	6669 (96)
No. tested per 10 000 recent patients	338	314	375	239	555	235	341	426	161
No. of cases of SARS-CoV-2 infection per 10 000 recent patients	13	13	16	11	17	15	10	6	8

CLINICAL FEATURE

continued

Figure 2. Rates of Kawasaki Disease Diagnosis in the PEDSnet Population

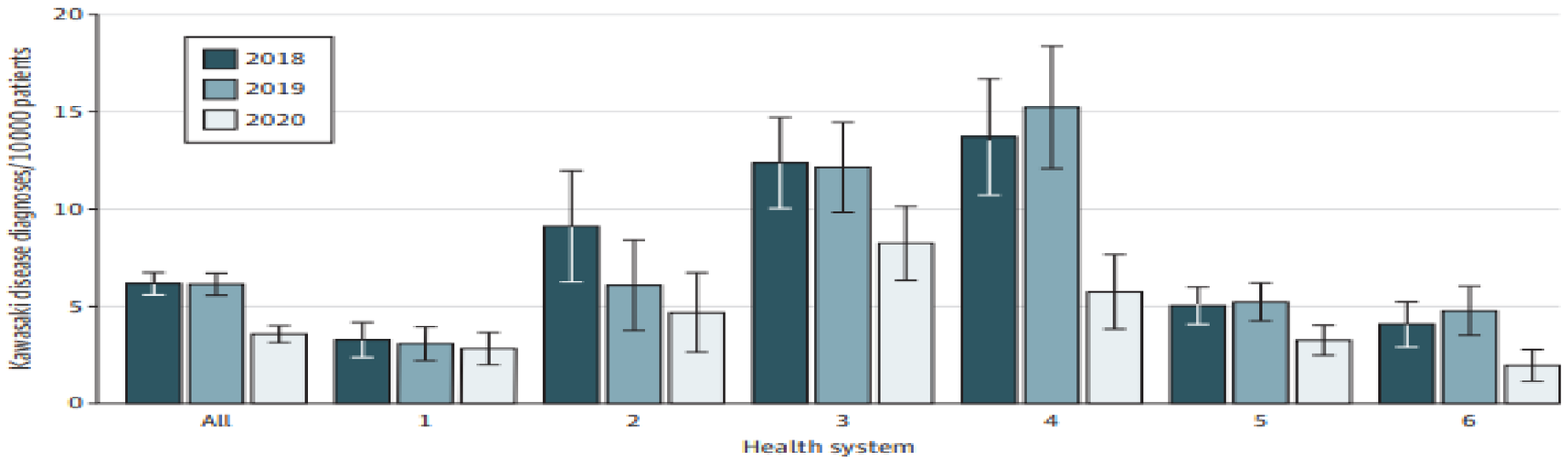


Table 2. Characteristics of Patients Tested for SARS-CoV-2 Infection

Characteristic	Patients, No. (%)		
		SARS-CoV-2–positive test result	
	SARS-CoV-2–negative test result (n = 130 420)	Asymptomatic or mild illness (n = 5015)	Severe illness[a] (n = 359)
Age, y			
<1	17 431 (13)	494 (10)	72 (20)
1-4	32 619 (25)	808 (16)	40 (11)
5-11	35 617 (27)	1029 (21)	72 (20)
12-17	32 362 (25)	1521 (30)	117 (33)
18-24	12 391 (10)	1163 (23)	58 (16)
Sex			
Female	61 637 (47)	2527 (50)	172 (48)
Male	68 701 (53)	2485 (50)	187 (52)
Obese			
Yes	23 553 (18)	944 (19)	132 (37)
No	106 867 (82)	4071 (81)	227 (63)
Chronic condition			
None	72 972 (56)	3132 (63)	172 (48)
1 Body system	25 222 (19)	1040 (21)	52 (15)
≥2 Body systems	32 226 (25)	843 (17)	135 (38)

Article 4

How Iceland hammered COVID with science

Published November 25, 2020 Nature

High-powered partnership:

- deCODE genetics, a human-genomics company and Iceland's Directorate of Health, the government agency that oversees health-care services, worked hand-in-hand. The teams have tracked the health of every person who has tested positive for SARS-CoV-2, sequenced the genetic material of each viral isolate and screened more than half of the island's 368,000 residents.

Careful steps

- The Icelandic government was better prepared, enacting a national pandemic preparedness plan at the beginning of January, two months before COVID-19 arrived. As part of that plan, isolation, quarantine and contact tracing was used and the microbiology laboratory at the university hospital began testing citizens in early February.
- In March, the deCODE company begun screening the general public and repurposed a large phenotyping centre that it had been using to study the genetics of Icelanders for more than two decades into a COVID-19 testing centre.
- If the test is positive, it triggers two chains of action: one at the hospital for telehealth monitoring and one at the lab for genetic tracing (molecular epidemiology).

Findings:

- The data showed that almost half of infected people are asymptomatic, that children are much less likely to become sick than adults and that the most common symptoms of mild COVID-19 are muscle aches, headaches and a cough — not fever.
- deCODE's team found that anti-SARS-CoV-2 antibodies remained high in the blood of 91% of infected people for 4 months after diagnosis
- The infection fatality ratio (IFR) was found to be 0.3%.

PUBLIC HEALTH RESPONSE

Continued

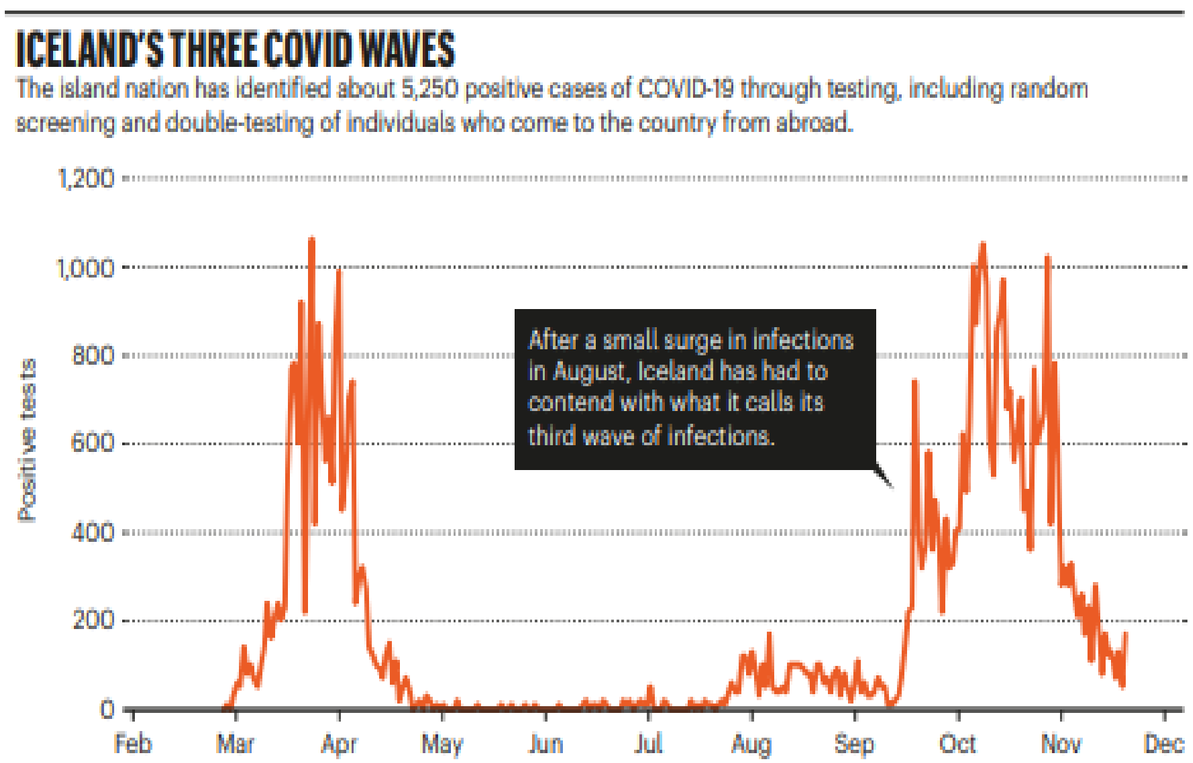
Highlights

- Iceland's science has been credited with preventing deaths — the country reports fewer than 7 per 100,000 people, compared with around 80 per 100,000 in the United States and the United Kingdom.
- It has also managed to prevent outbreaks while keeping its borders open, welcoming tourists from 45 countries since mid-June.
- The partnership again kicked into high gear in September, when a second large wave of infections threatened the nation.

Next Steps

Research continues to analyse the:

- Effect of viral loads on patient outcomes and viral transmission
- Contact-tracing data to tease out the risk factors for a super-spreading event.
- Cellular immune responses
- Whether people with COVID-19 who are very sick produce antibodies directed against their own tissues
- Long-term effects of COVID
- How genetics affects susceptibility and responses to the disease



Contact-tracing data from the current COVID-19 surge reveals where domestic infections are coming from. Transmission within households is a key driver.

VACCINE

Article 5

Published

November 21, 2020, the LANCET

Newcastle disease virus (NDV) expressing the spike protein of SARS-CoV-2 as a live virus vaccine candidate

- Newcastle disease virus (NDV) vector vaccines expressing the spike protein of SARS-CoV-2 in its wild type format or a membrane anchored format lacking the polybasic cleavage site. These vaccines grow to high titers in embryonated chicken eggs. The immunogenicity and efficacy of these vaccines were investigated in a proof of principle mouse study. They induce high levels of antibodies that are neutralizing when administered intramuscularly in mice. These vaccine candidates protect mice from a mouse adapted SARS-CoV-2 challenge with no detectable viral titer and viral antigen in the lungs.

- The NDV vector can be amplified in embryonated chicken eggs that allows for high yields and low costs per dose. Furthermore, the NDV vector is not a human pathogen, therefore the delivery of the foreign antigen would not be compromised by any preexisting immunity in humans. NDV has a very good safety record in humans as it has been used in many oncolytic virus trials.

- For the NDV based SARS-CoV-2 vaccine, the existing egg based influenza virus vaccine manufactures
- in the United States (US) and worldwide would have the capacity to rapidly produce millions of doses to reduce the consequences of the COVID-19 pandemic.

CLINICAL FEATURE

Article 6

Published

November 19, 2020, THE JAMA

Pregnancy Outcomes Among Women With and Without Severe Acute Respiratory Syndrome Coronavirus 2 Infection

- In the United States (US), an observational cohort study was conducted (between March 18 and August 22, 2020) with delivered women (n=3,374) with and without COVID-19 during pregnancy. Participants were included if they were tested for SARS-CoV-2 during pregnancy and delivered. Testing was performed on the basis of symptoms (fever, cough, dyspnea, myalgia, loss of smell or taste, vomiting, diarrhea, or sore throat) or specific risk criteria. The primary outcome was a composite of preterm birth, preeclampsia with severe features, or cesarean delivery for abnormal fetal heart rate among women delivered after 20 weeks of gestation.
- Out of 3,374 women, 252 (7.4%) tested positive for SARS-CoV-2. There were no statistically significant differences in age, parity, or diabetes among women with or without SARS-CoV-2. No difference was found in the composite primary outcome [21% vs. 23%; relative risk - 0.94; 95% CI: 0.73-1.21]. Early neonatal SARS-CoV-2 infection occurred in 6/188 (3%) tested infants primarily born to asymptomatic or mildly symptomatic women. Maternal illness at initial presentation was asymptomatic or mild in 239 women. Of those, 6 (3%) developed severe or critical illness. Fourteen women (6%) were hospitalized for the indication of COVID-19.
- The results suggest that during pregnancy SARS-CoV-2 infection is not associated with adverse pregnancy outcomes. Further study is needed to explore if maternal infection with SARS-CoV-2 is associated with long term maternal or infant health.

CLINICAL FEATURE

Continued

Table 3. Illness Severity, Progression, and Hospitalization Among Delivered Women Diagnosed With SARS-CoV-2 Infection During Pregnancy

COVID-19 illness severity at initial presentation	Patients, No. (%)		Clinical progression among pregnant women diagnosed with SARS-CoV-2 infection					
	Total	Admitted within 14 d for obstetric indication[a]	Asymptomatic	Mild	Moderate	Severe	Critical	Admitted within 14 d for COVID-19 pneumonia[a]
Asymptomatic	107 (42)	99 (93)	98 (92)	7 (6)	0	0	2 (2)	1 (1)[b]
Mild	132 (52)	62 (47)	NA	126 (95)	2 (2)	4 (3)	0	4 (3)
Moderate	10 (4)	2 (20)	NA	NA	6 (60)	4 (40)	0	6 (60)
Severe	3 (1)	0 (0)	NA	NA	NA	1 (33)	2 (67)	3 (100)
Critical	0	NA	NA	NA	NA	NA	NA	NA
Total	252	163 (65)	98 (39)	133 (53)	8 (3)	9 (4)	4 (2)	14 (6)

Table 4. Early Neonatal SARS-CoV-2 Infections by Trimester of Maternal Diagnosis and Maternal Illness Severity

Trimester of SARS-CoV-2 diagnosis	Infants with early neonatal SARS-CoV-2 infection, No.								
	Abortus	Live-born infants	Multiples	Maternal illness severity					
				Asymptomatic	Mild	Moderate	Severe	Critical	Total
First	4	0	0	NA	NA	NA	NA	NA	NA
Second	3	16	2	0/2 tested (3 live-born)	0/1 tested (13 live-born)	0	0 tested (1 live-born)	0/1 tested (1 live-born)	0/4 tested (18 live-born)
Third	0	229	4	4/90 tested (95 live-born)	1/82 tested (120 live-born)	0/4 tested (8 live-born)	1/6 tested (8 live-born)	0/2 tested (2 live-born)	6/184 tested (233 live-born)
Total	7	245	6	4/92 tested (98 live-born)	1/83 tested (133 live-born)	0/4 tested (8 live-born)	1/6 tested (9 live-born)	0/3 tested (3 live-born)	6/188 tested (251 live-born)

OTHERS

Article 7

Published

November 27, 2020, The Lancet

Global 30-day outcomes after bariatric surgery during the COVID-19 pandemic (GENEVA): an international cohort study

- An international cohort study (GENEVA) was conducted (between May 1 and July 10, 2020) to investigate the 30-day morbidity and mortality of primary bariatric and metabolic surgery (BMS) done among adults (≥18 years). Data collection included demographic information and clinical data, details of the surgery done, preoperative COVID-19 testing protocols and outcomes, and in-hospital and 30-day COVID-19 related and surgery specific morbidity and mortality.
- A total of 2,116 patients from 133 hospitals in 38 countries underwent primary BMS. Of those, 2001 (94.6%) patients from 127 hospitals in 35 countries had complete 30-day morbidity and mortality data. At 30 days, 138 complications were reported in 137 of 2001 patients (6.8%) including ten cases of COVID-19. Over half (83/137; 60.6%) of the complications were mild (CD grade I or II). Patients who developed complications tended to be older and were more likely to be current or ex-smokers. The overall 30-day mortality of 0.05% (1/2001) seen in this study is consistent with the pre-pandemic data reported in other BMS studies (0.04% - 0.1%).
- These findings suggest that 30-day morbidity and mortality following BMS during this pandemic with appropriate perioperative COVID-19 protocols in place seemed to be similar to pre-pandemic levels. However, with the evolving pandemic situation, BMS teams need to carefully monitor outcome data.

CLINICAL FEATURE

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

Article 8

Published

Recent endemic coronavirus infection is associated with less severe COVID-19

September 30, 2020, The Journal Of Clinical Investigation

- Four different endemic coronaviruses (eCoVs) are among the most common etiologic agents for seasonal common cold and these eCoVs share extensive sequence homology with SARS-CoV-2. In the United States (US), a retrospective study was conducted using data obtained from patients with a comprehensive respiratory panel polymerase chain reaction (CRP-PCR) result from May 18, 2015 to March 11, 2020 in the electronic medical record (EMR). SARS-CoV-2 infections have been examined in patients who had previously been assessed with a CRP-PCR that detects nucleic acids for the four eCoVs with sixteen other pathogens.

- A total of 15,928 patients had at least one CRP-PCR test. An eCoV was detected in 875 (eCoV+) and 15,053 never had an eCoV infection (eCoV-). 1,812 (11.4%) of the patients under investigation had an SARS-CoV-2 result. A significantly higher proportion of eCoV+ (15.2%) patients were tested for SARS-CoV-2 as compared to eCoV- (11.2%) patients [odds ratio (OR) -1.4; 95% CI: 1.2-1.7]. The eCoV+ as compared to eCoV- hospitalized patients were less likely to have intensive care unit (ICU) admission [OR-0.1; 95% CI: 0.1-0.9] and mechanical ventilation [OR-0.0; 95% CI: 0.0-1.0].

- These results suggest that pre-existing immune responses against eCoVs can reduce disease manifestations from SARS-CoV-2 infection. Future studies should determine if lung localized heterotypic immunity is induced by prior eCoV infection and is capable to improve COVID-19 symptoms. The durability and extent of the potential immune protection and distinct effects of different eCoVs will also need to be investigated.

Article 9

Antibodies, Immunity, and COVID-19

Published

November 24, 2020, THE JAMA

This paper reported the comments on Bajema et al. (2020) article.

- In the United States (US), Bajema and colleagues provided new information on the shifting nature of SARS-CoV-2 seroprevalence. They reported that in New York the highest level of seroprevalence surged from 6.9% in March to 25% in August 2020. Seroprevalence remained below 10% for all but a few states. From these reports it is anticipated that most people do not have evidence of prior COVID-19 infection by antibodies to SARS-CoV-2 in spite of the pandemic raging across the US.
- The strength of their study is its reliance on residual serum that had been sent for clinical testing rather than from patients suspected of having COVID-19. The samples were not enriched for people suspected of having infection and thus provides an accurate read of seroprevalence across diverse populations. The limitation is those most likely to have positive results for antibodies (clinical concern for prior infection) were excluded that could result in an underestimate of true population based seroprevalence.
- The development of adequate population level herd immunity might stop continuing cycles of infection and disease. However, there is no data to define the exact threshold necessary to achieve herd immunity. Modeling from similar diseases suggest that 60% - 80% of the population may need immunity for the viral replication rate to drop below one, enabling a modest level of disease control.
- Natural immunity and public health measures are the primary approaches to manage this pandemics until effective vaccines are available. It is not known whether detection of anti SARS-CoV-2 antibodies is associated with protective immunity. The protection might require achieving a specific quantity of a specific subtype of antibody. The limited number of reinfections of SARS-CoV-2 and experience with natural infections with other viruses suggest that protective immunity to COVID-19 should result a signal for the success of vaccines.

THANK YOU

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