مركز أبوظبي
للصحة العامة
ABU DHABI PUBLIC
HEALTH CENTRE

SCIENTIFIC RESEARCH MONITORING ON COVID-19

1 SEPTEMBER 2020

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SCIENTIFIC RESEARCH MONITORING ON COVID-19 (ISSUE 212)

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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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

Air travel in the Time of COVID-19

Vaccine

A Single-Dose Intranasal ChAd Vaccine Protects Upper and Lower Respiratory Tracts Against SARS-CoV-2

Vaccine

Vaccines Targeting SARS-CoV-2 Tested in Humans

WHO WEEKLY EPIDEMIOLOGICAL UPDATE

In the week ending 30 August, there was a 1% increase in the number of cases and 3% decrease in the number of deaths compared to the previous week (17 to 23 August) (Figure 1).

Eastern Mediterranean Region

The Eastern Mediterranean Region has observed a fluctuating incidence of new cases in recent weeks. In Pakistan, cases have fallen from over 5 000 per day in mid-June to 2 871 cases in the past week. The highest number of new cases have been seen in Iraq, Iran, Morocco, Saudi Arabia, and Kuwait.

Region of the Americas

Increasing trends are now being seen n Peru, Mexico, Colombia, and Argentina. The USA has witnessed a decline in new cases from previous peaks in July an average of 41 000 new cases per day this past week.

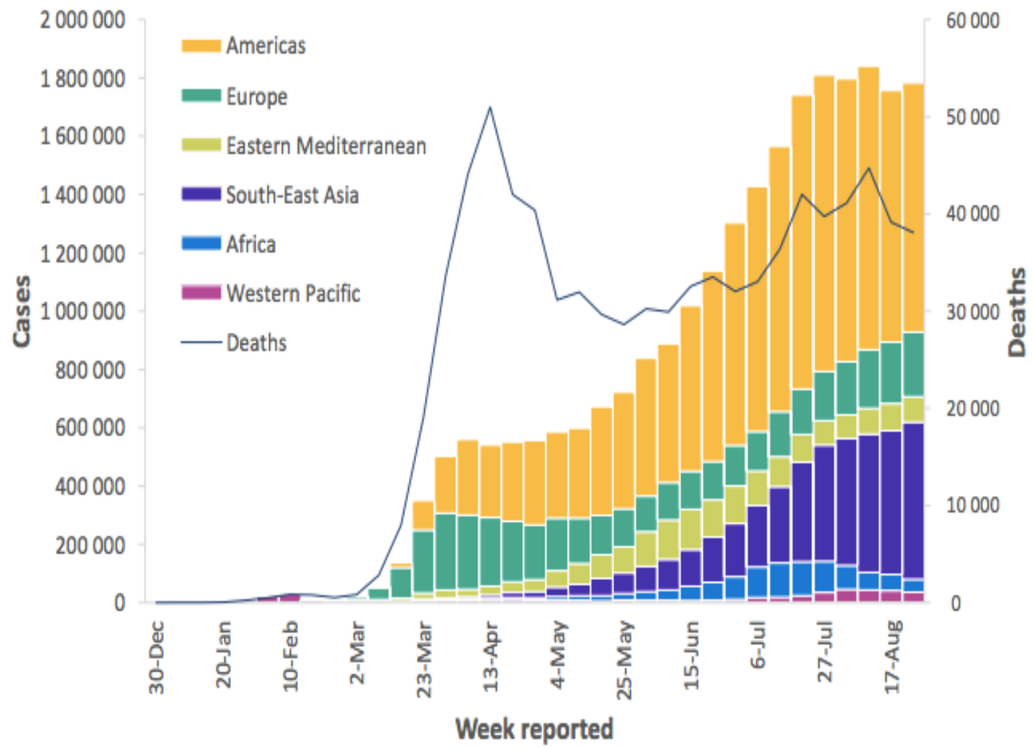
South-East Asia Region

India cases increased by 9% compared to the previous seven days. In Indonesia, cases have been gradually increasing.

Western Pacific Region

The Philippines and Japan are reporting the highest number of new cases in the region this week, although cases in Japan have been decreasing since the end of June.

Figure 1: Number of COVID-19 cases and deaths reported weekly by WHO region, 30 December to 30 August 2020**



European Region

Gradual increases continue to be observed in the European Region with Spain, Russia, France, and Ukraine. Cases in Italy have shown a marked increase in the past seven days, up by 85% overall compared to last week.

EPIDEMIOLOGY

FROM 21 JAN TO 31 AUG 2020

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

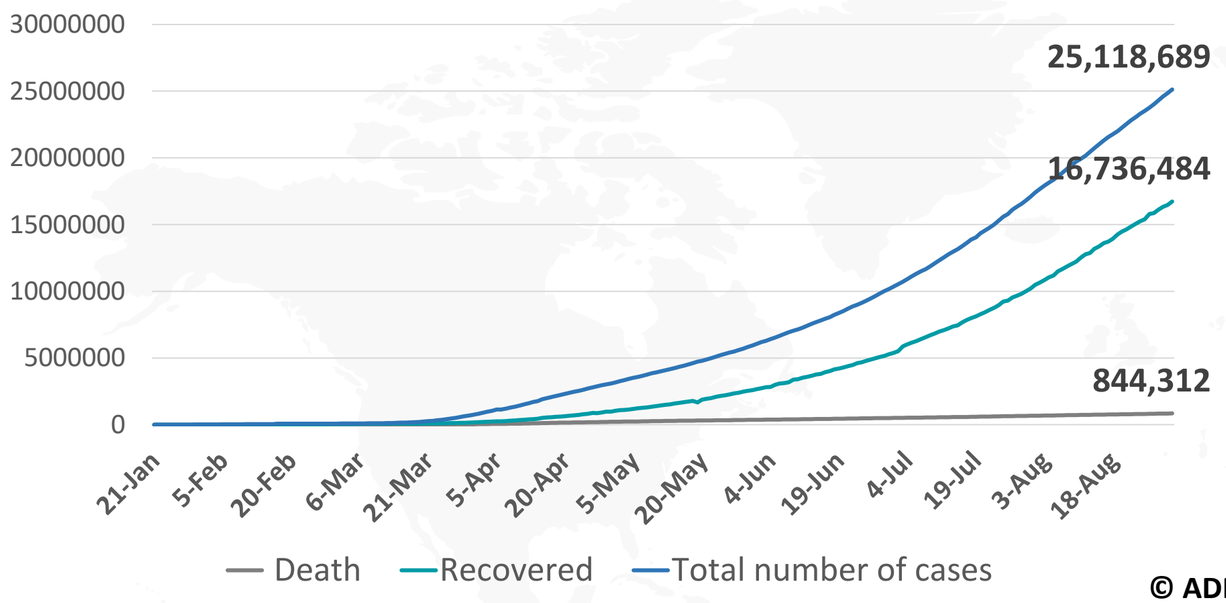


Figure 3: Total Number of Death Due to COVID-19 (china and result of the world)

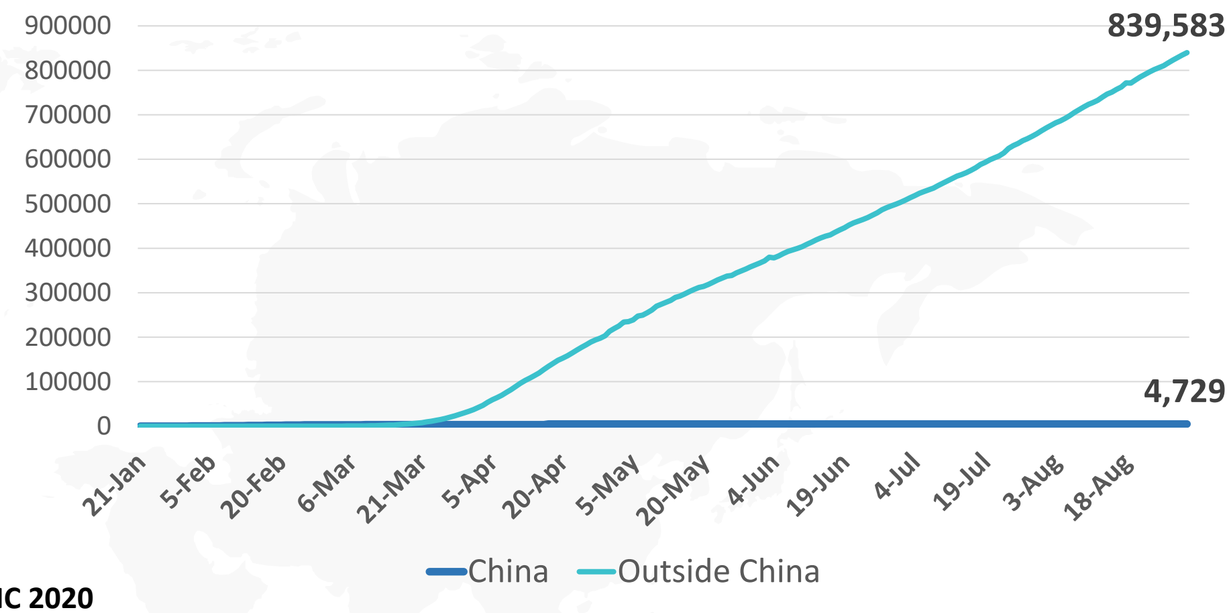


Figure 2: Daily New Infected COVID-19 Cases (China and rest of the world)

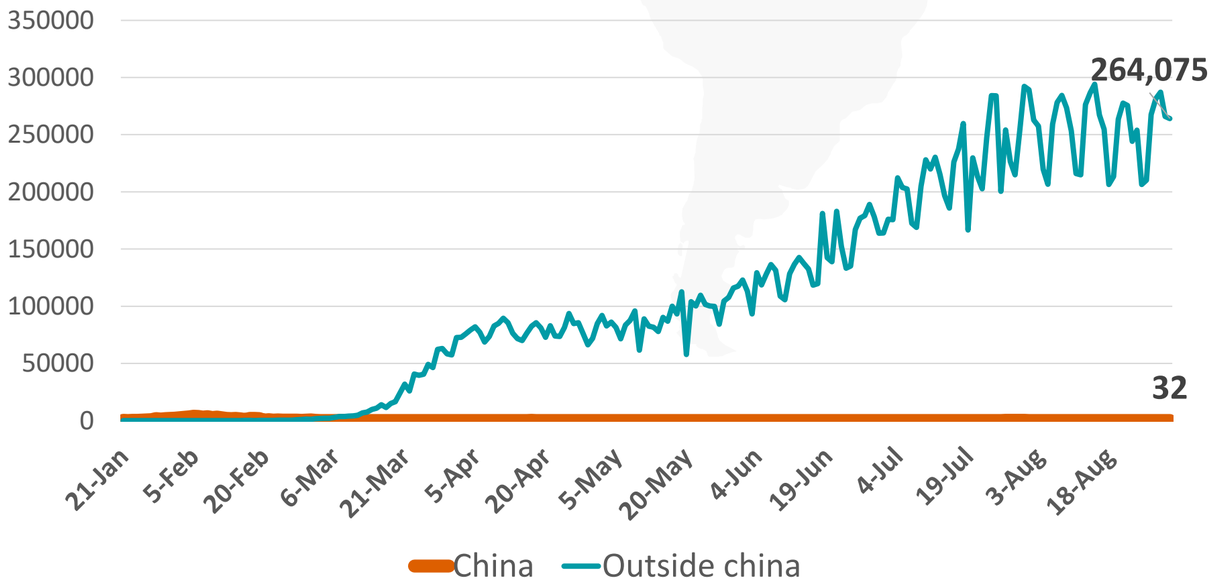
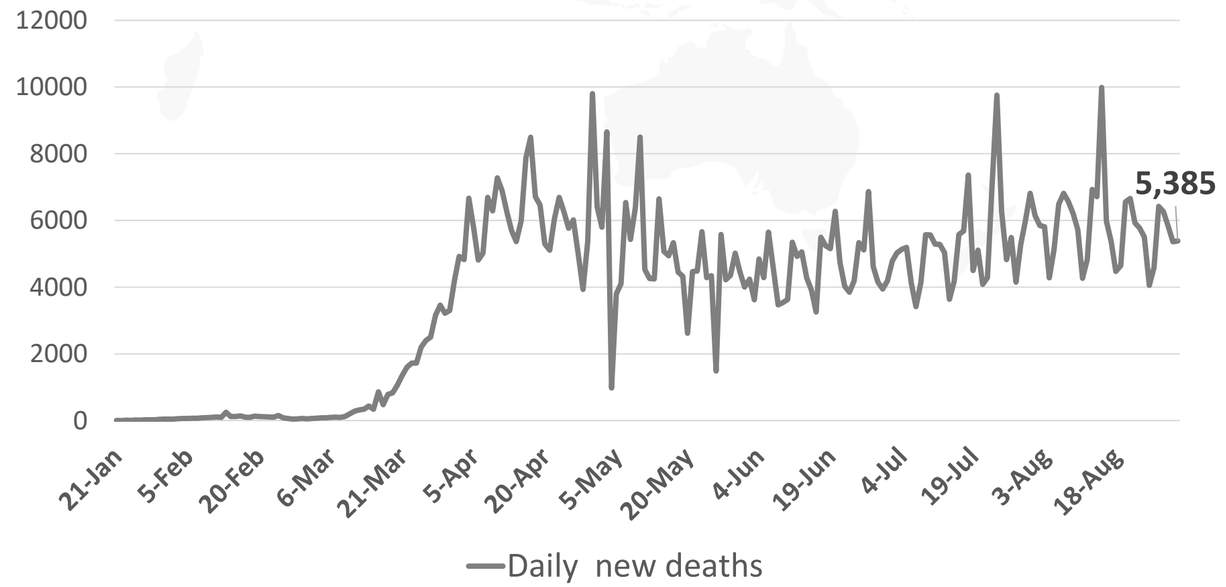


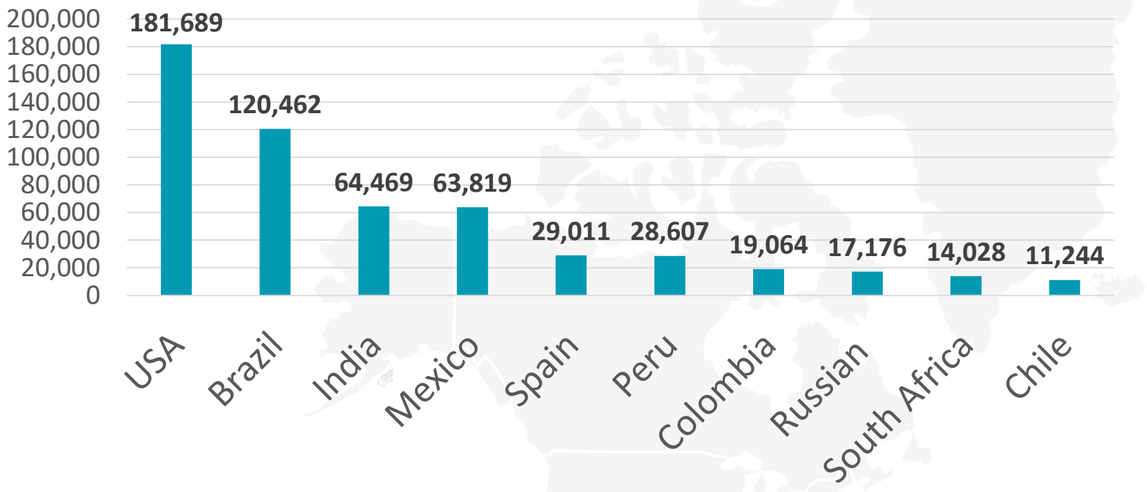
Figure 4: Global Daily New Deaths Due to COVID-19 (china and rest of the world)



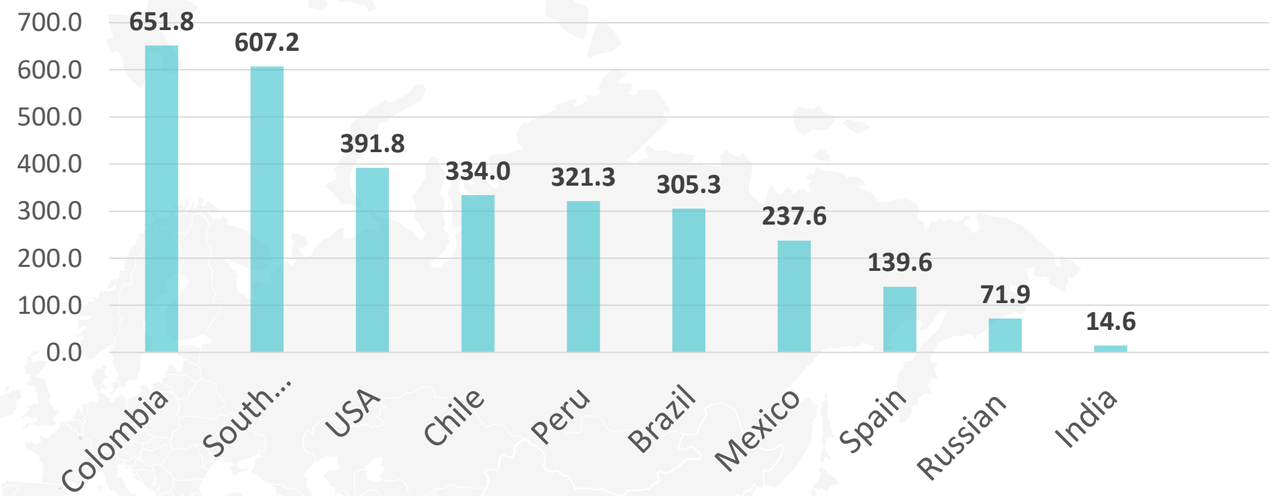
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

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

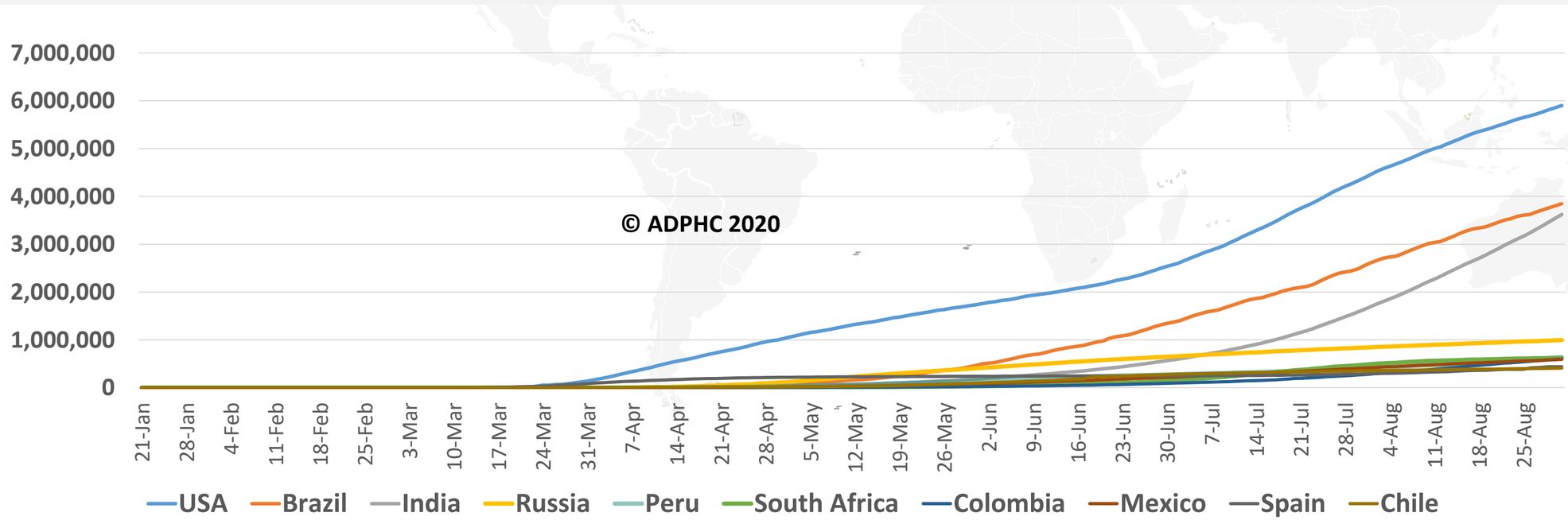
TOTAL DEATHS



DEATHS PER MILLION



TOTAL INFECTED CASES



USA	5,899,504
Brazil	3,846,153
India	3,621,245
Russia	995,319
Peru	639,435
South Africa	625,056
Colombia	599,914
Mexico	591,712
Spain	439,286
Chile	409,974

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

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

Daily Tests

76,281.7 Average Tests

771.3 per 100k population

0.6% Positive Rate

Daily Cases

421.3 Average Cases

4.3 per 100k population

Daily Recovered

335.6 Average Recovered

3.4 per 100k population

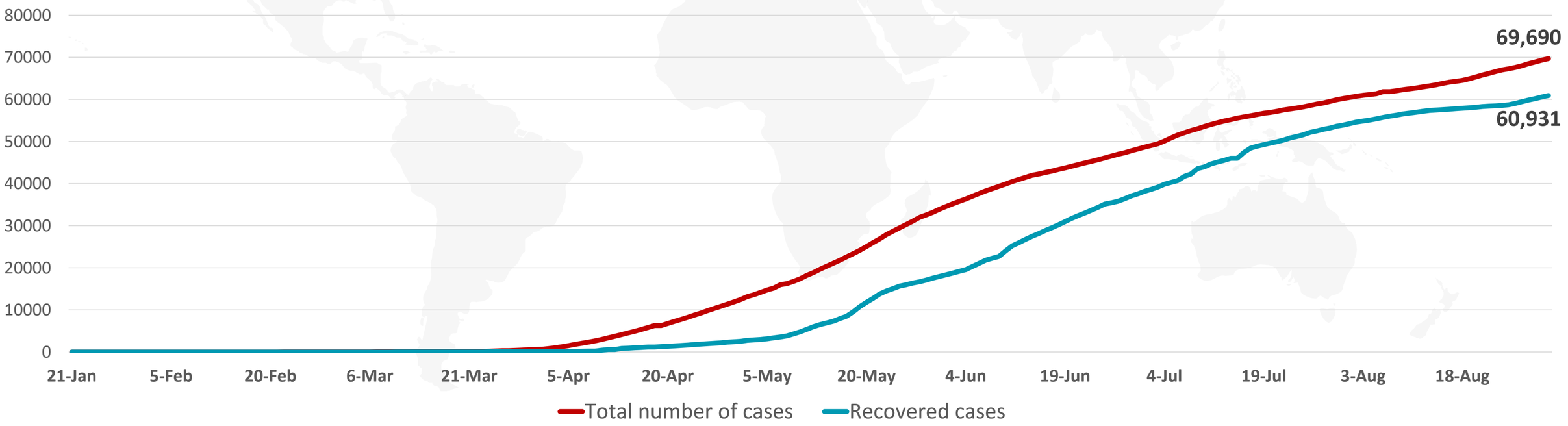
Daily Deaths

1.1 Average Deaths

0.0 per 100k population

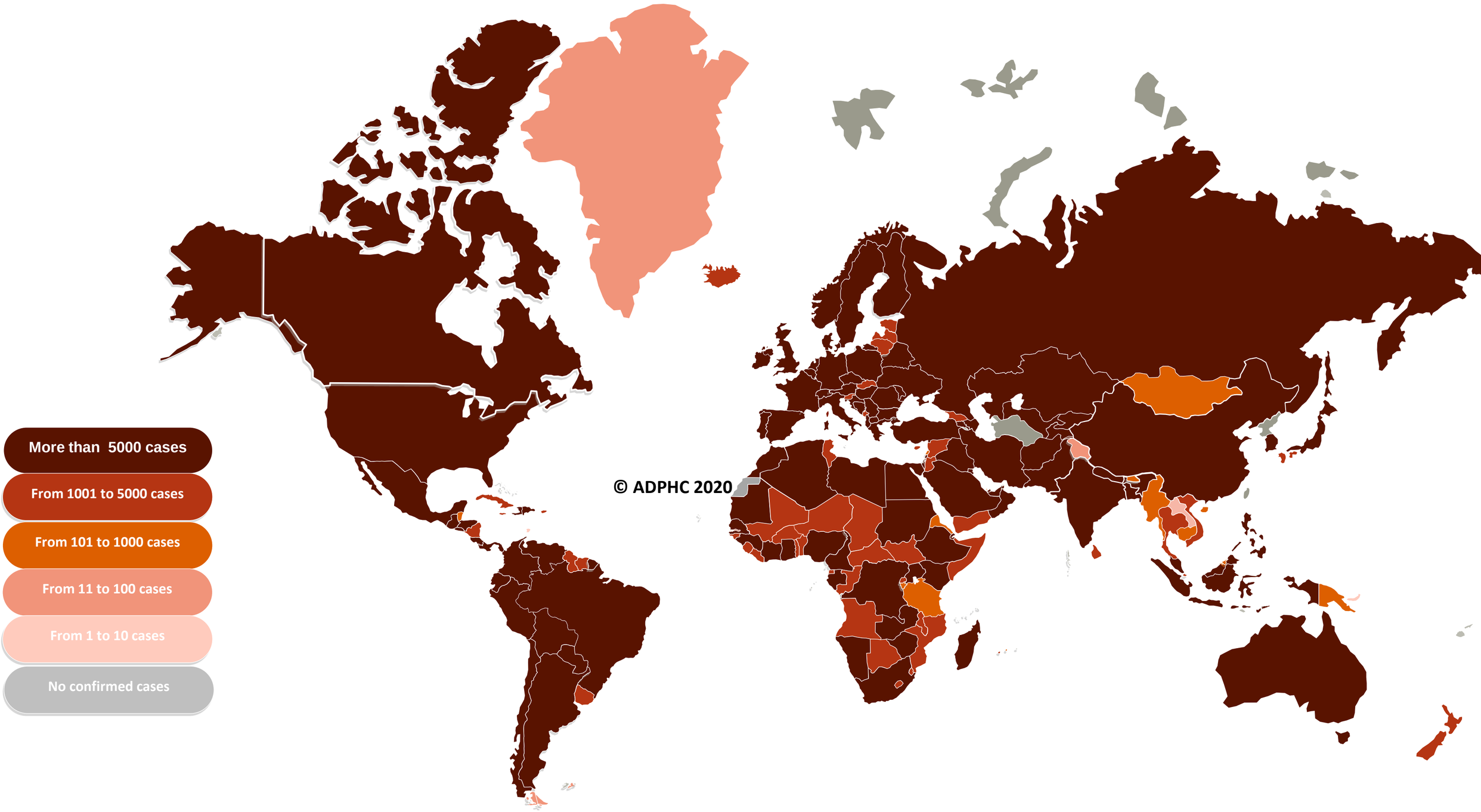
0.3% Case Fatality Rate

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,

Figure 7A : Global Distribution of COVID-19 Cases



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

EPIDEMIOLOGY

Date: 31 AUG 2020

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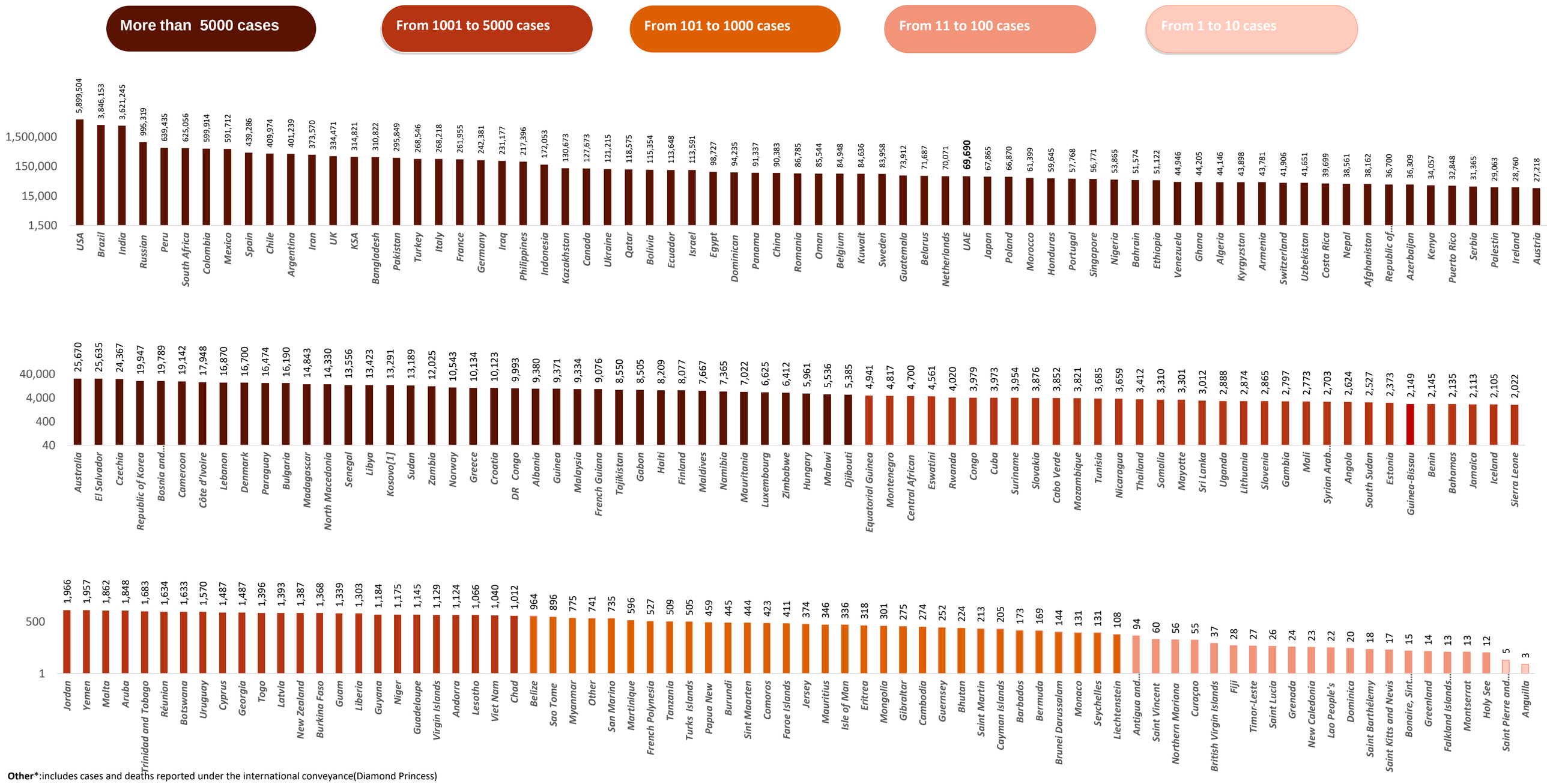
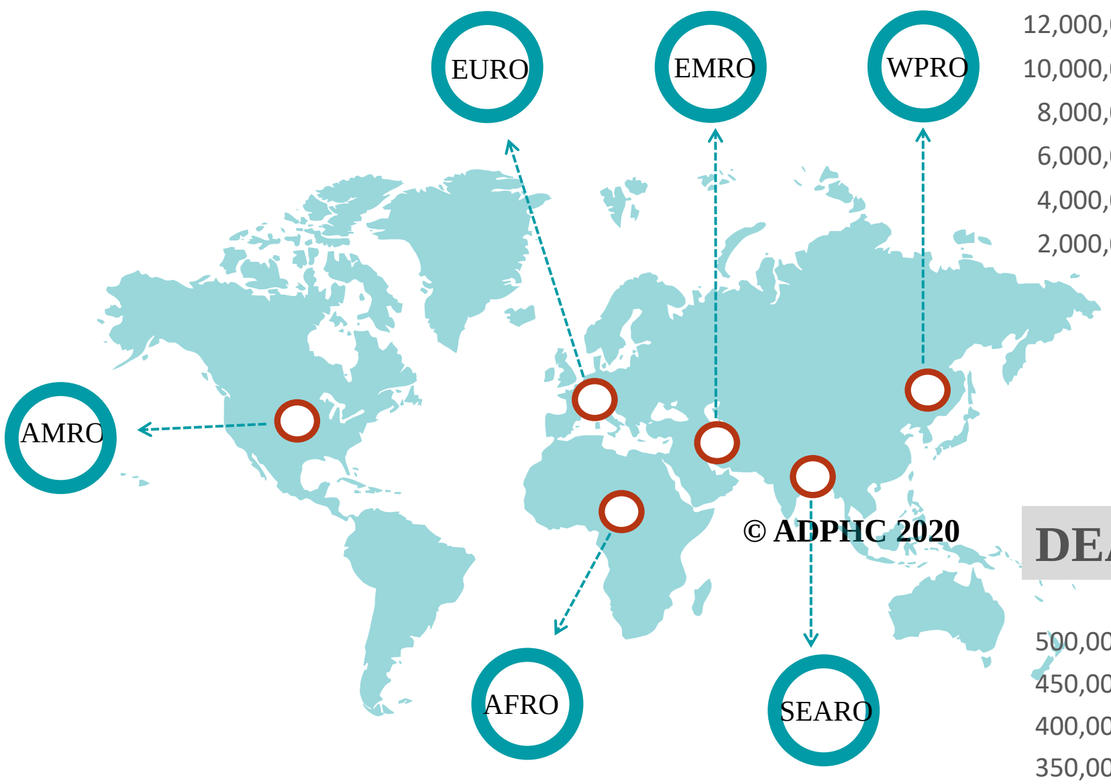
Figure 7B: Bar Chart Illustrates the Global Distribution of COVID19 Cases



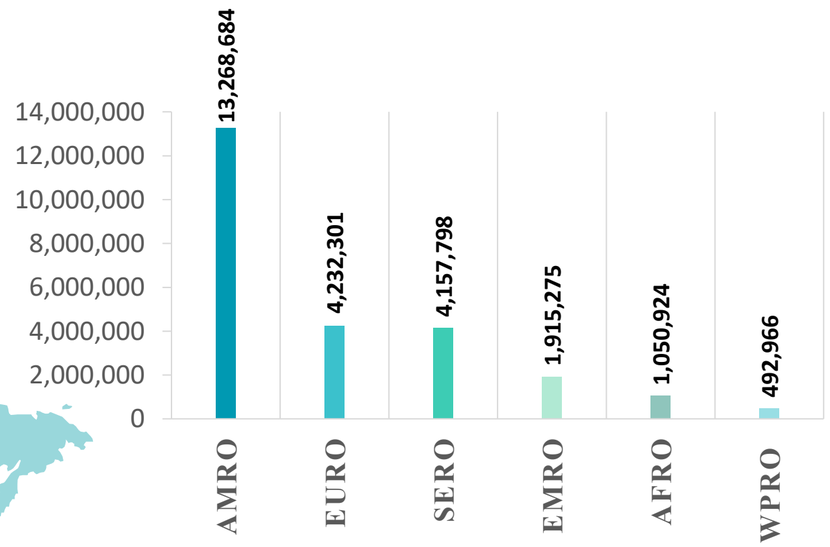
Other*:includes cases and deaths reported under the international conveyance(Diamond Princess)

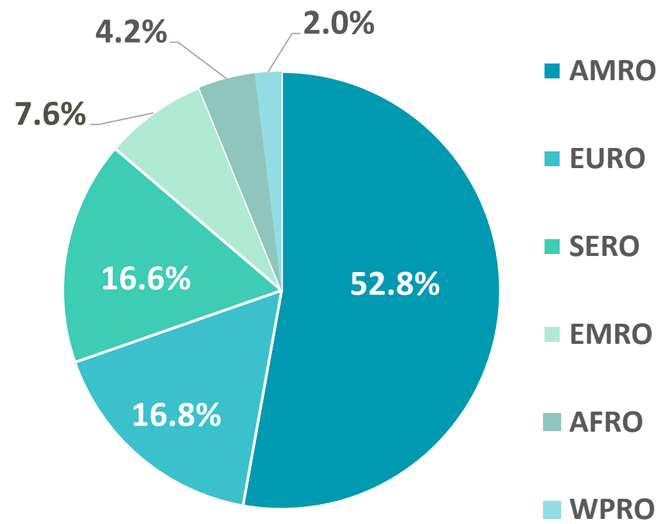
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

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

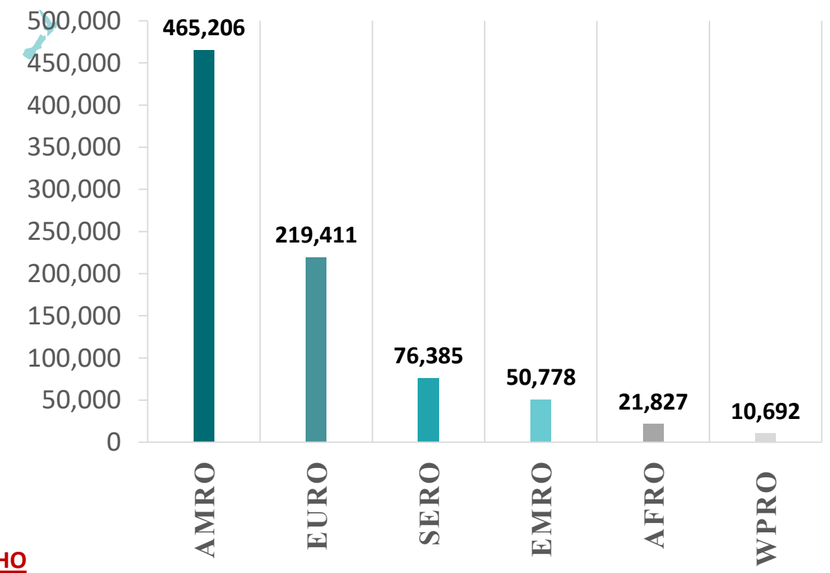


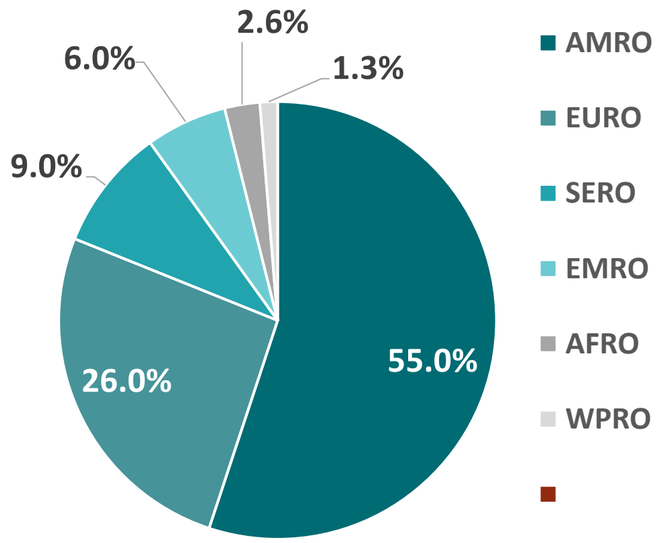
INFECTED





DEATHS





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

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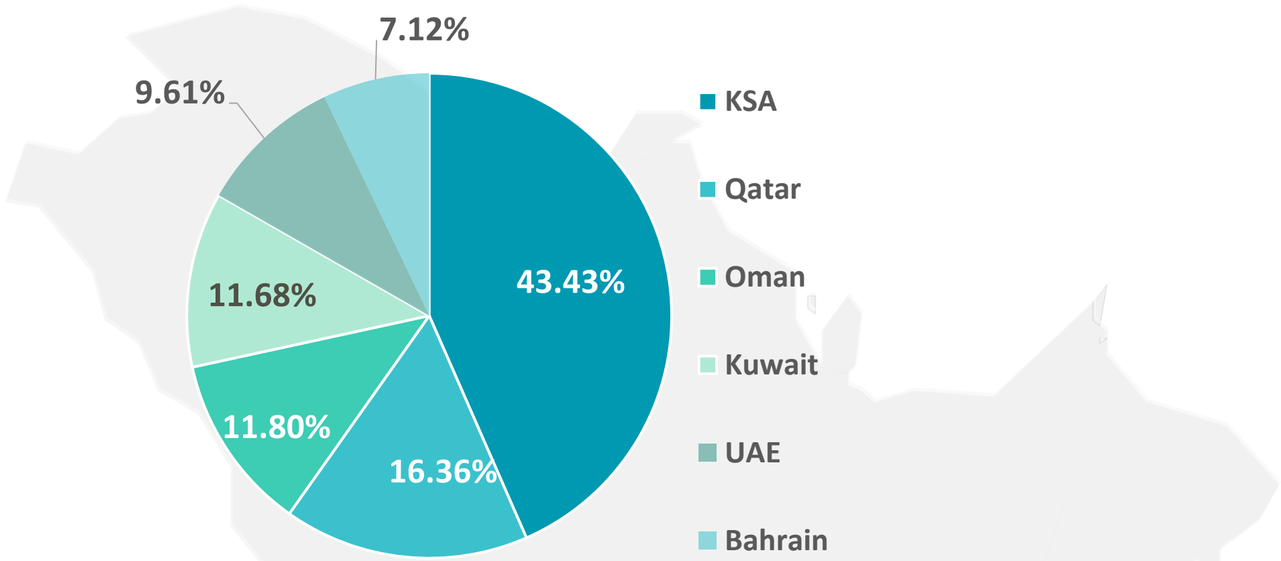
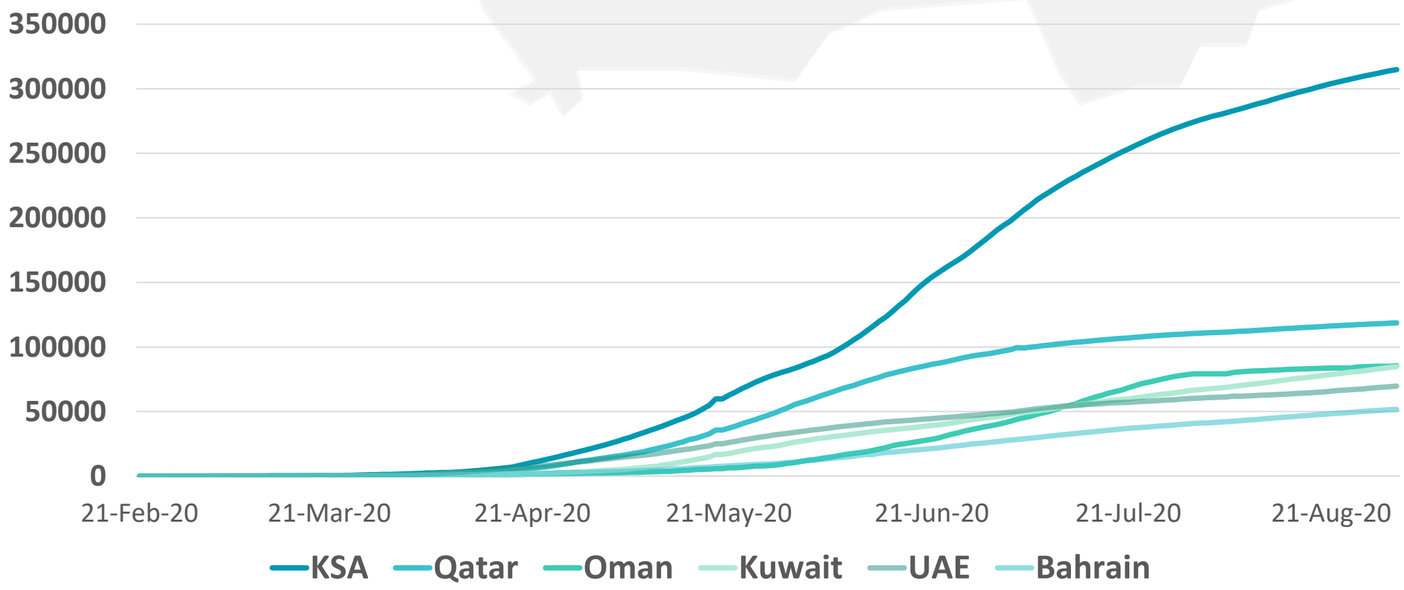
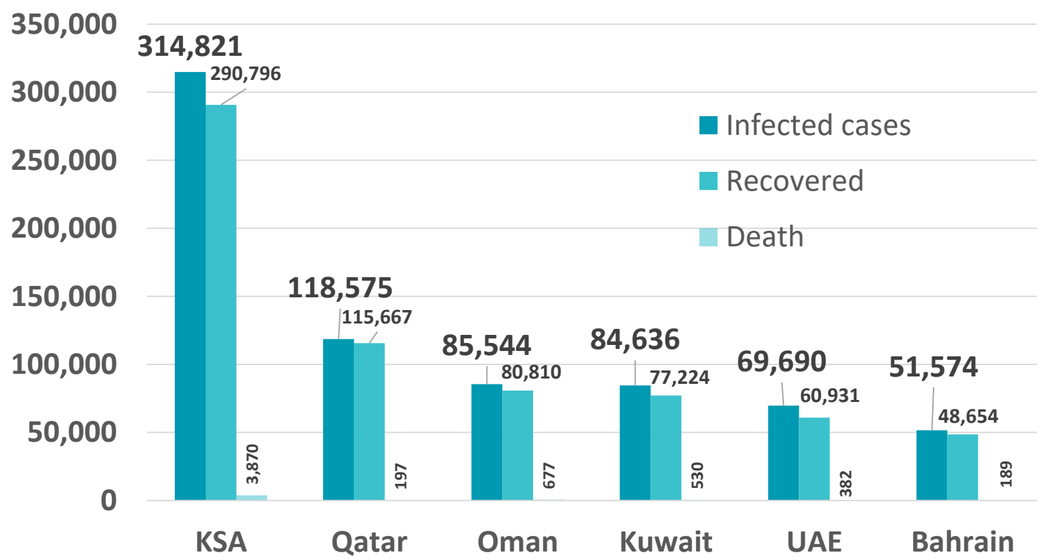
Figure 9: Comparative Analysis of the Distribution of COVID-19 Cases in GCC Countries

TOTAL NUMBER OF INFECTED CASES

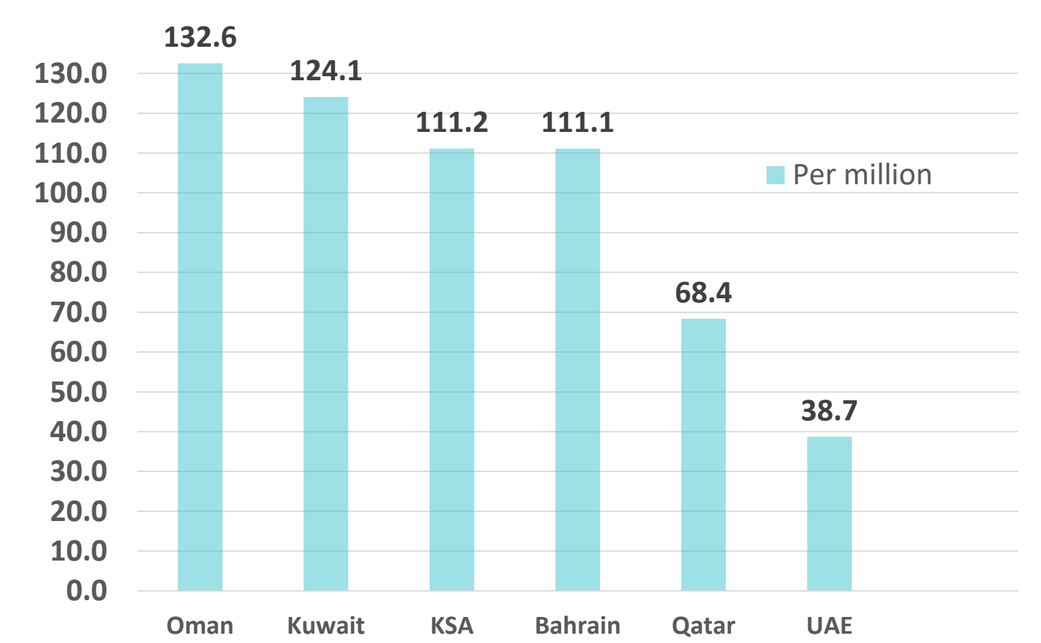




TOTAL NUMBER OF INFECTED, RECOVERED AND DEATHS



DEATHS PER MILLION



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

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

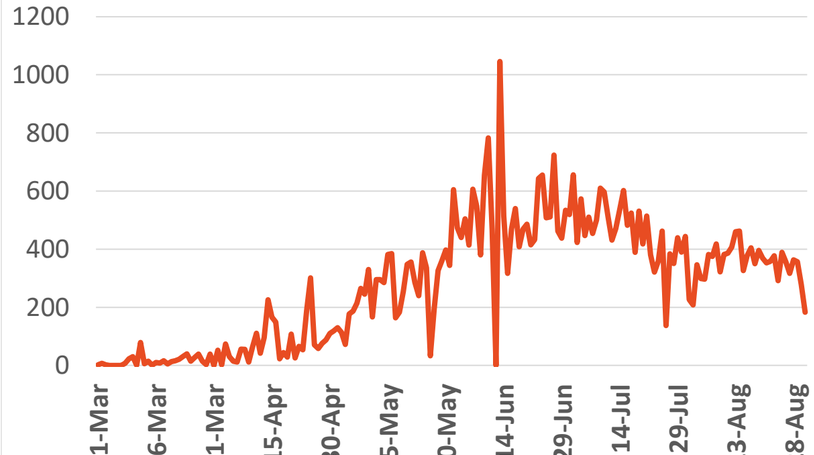
UAE

Source : National Emergency Crisis and Disaster Management Authority

KSA

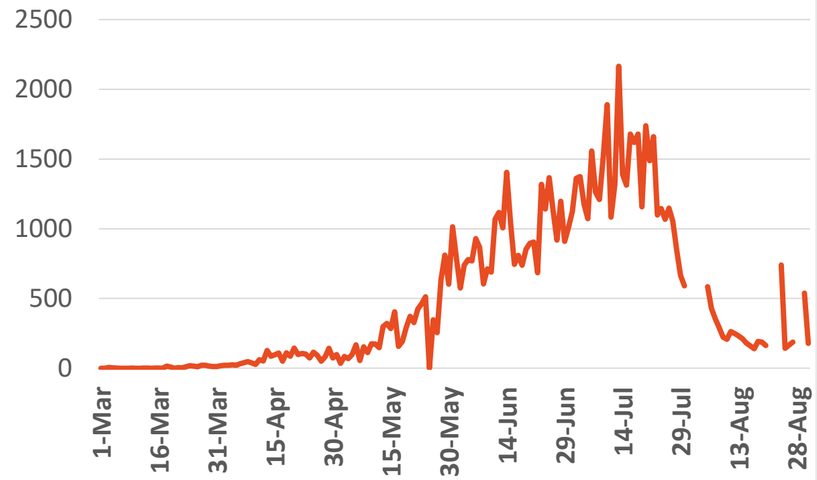
Source : KSA ministry of health

Bahrain



Source :WHO

Oman

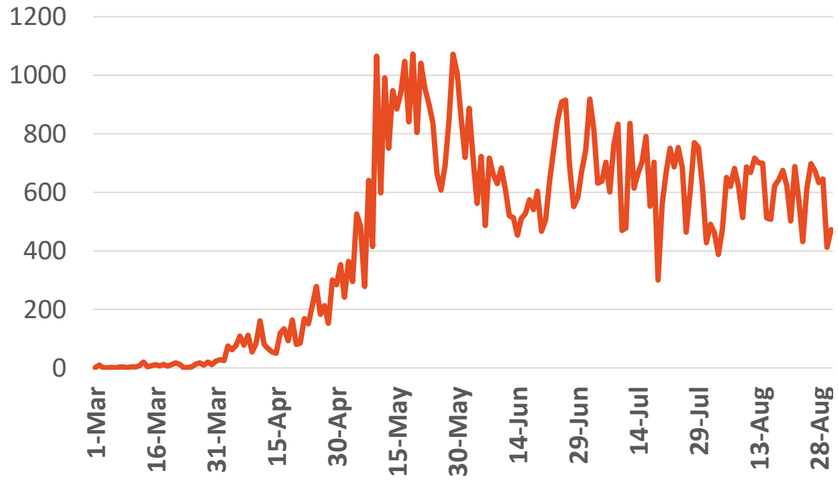


Source :Oman ministry of health

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

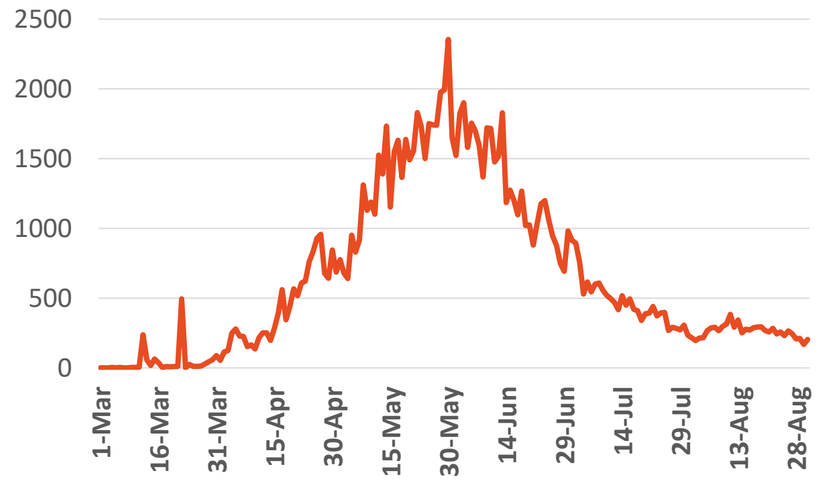
*No announced statistic data on weekends and official holidays.

Kuwait



Source : Kuwait ministry of health

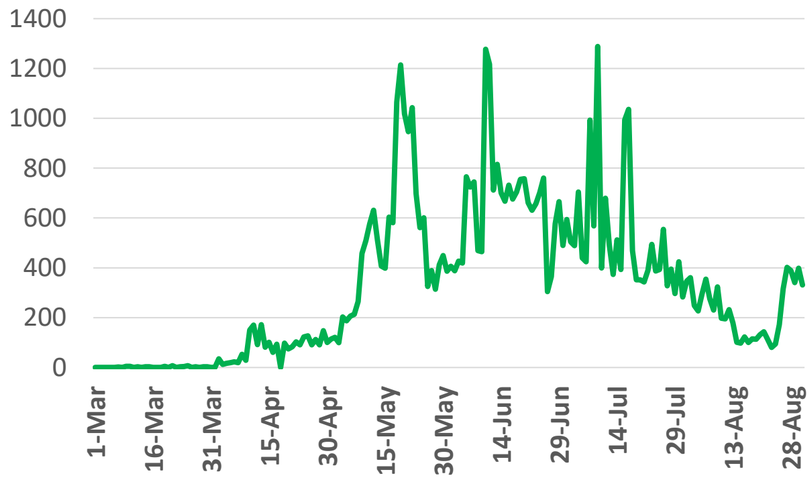
Qatar



Source : Qatar ministry of health

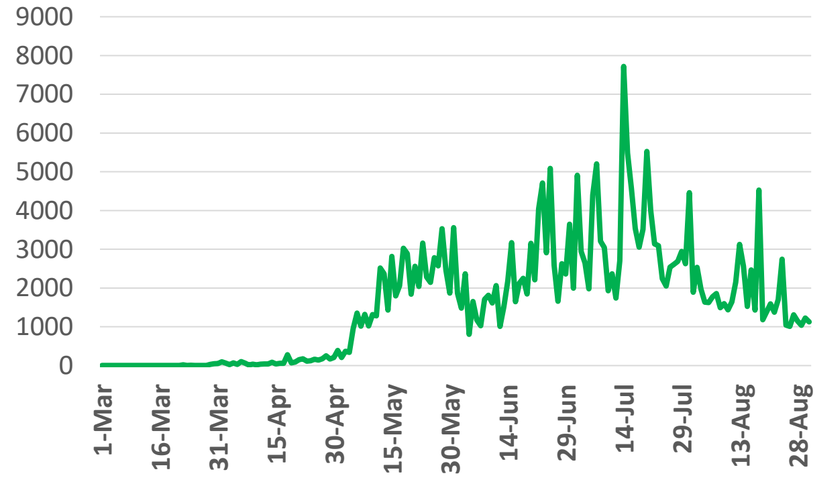
Figure 11: Comparative Analysis of the Distribution of COVID-19 Newly Recovered Cases in GCC Countries

UAE



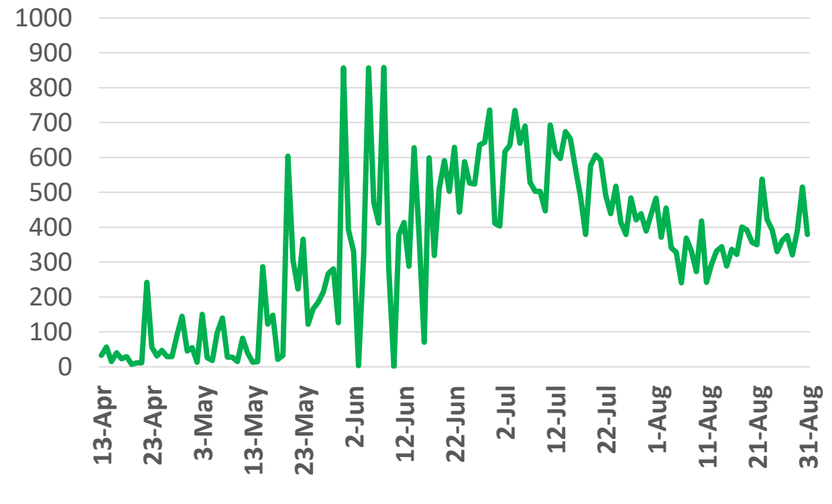
Source : National Emergency Crisis and Disaster Management Authority

KSA



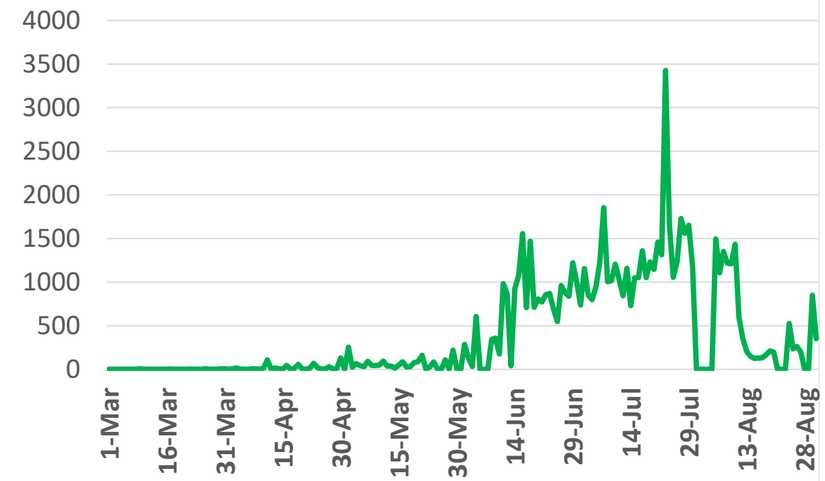
Source : KSA ministry of health

Bahrain



Source : GCCStat

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

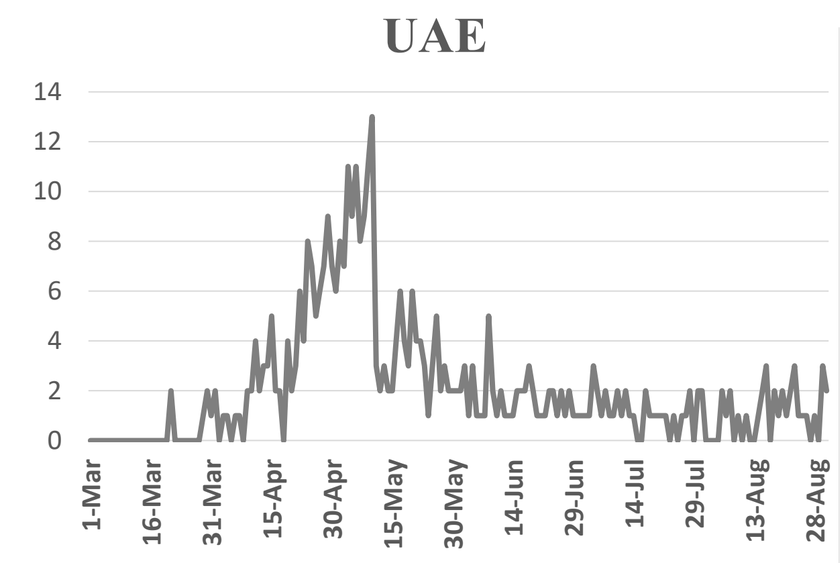
Source : Kuwait ministry of health

Qatar

Source : Qatar ministry of health

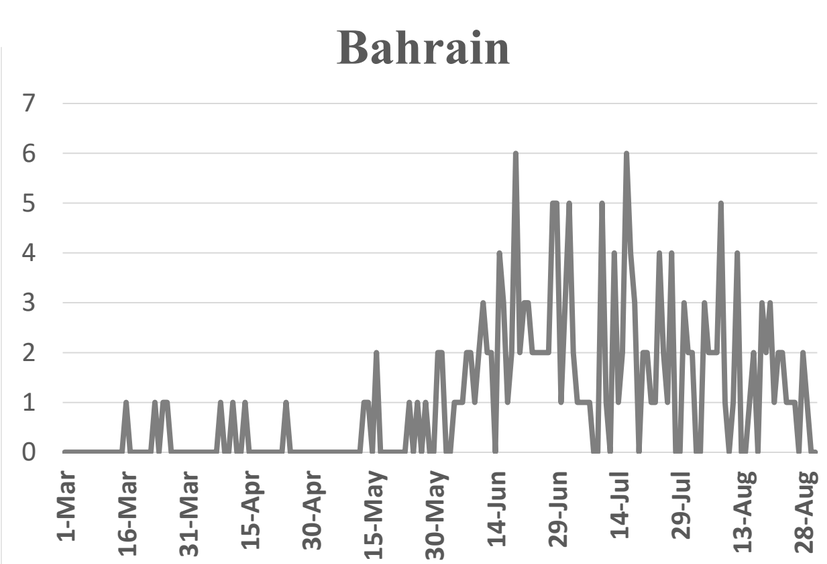
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

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

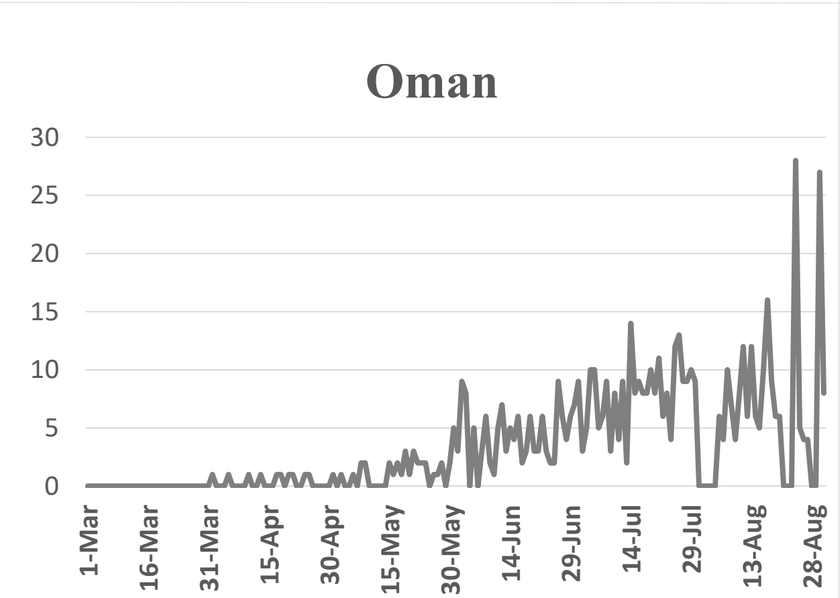


Source : National Emergency Crisis and Disaster Management Authority

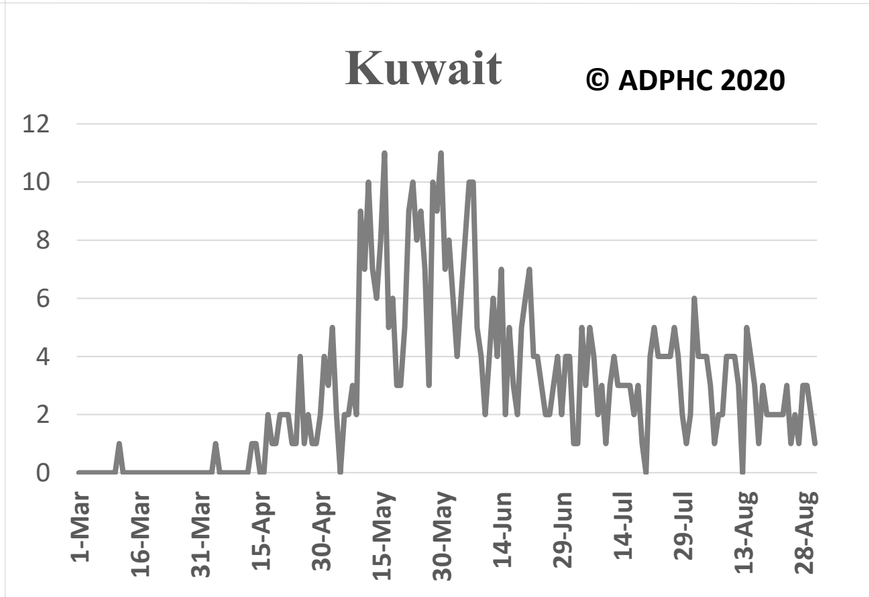
Source : KSA ministry of health



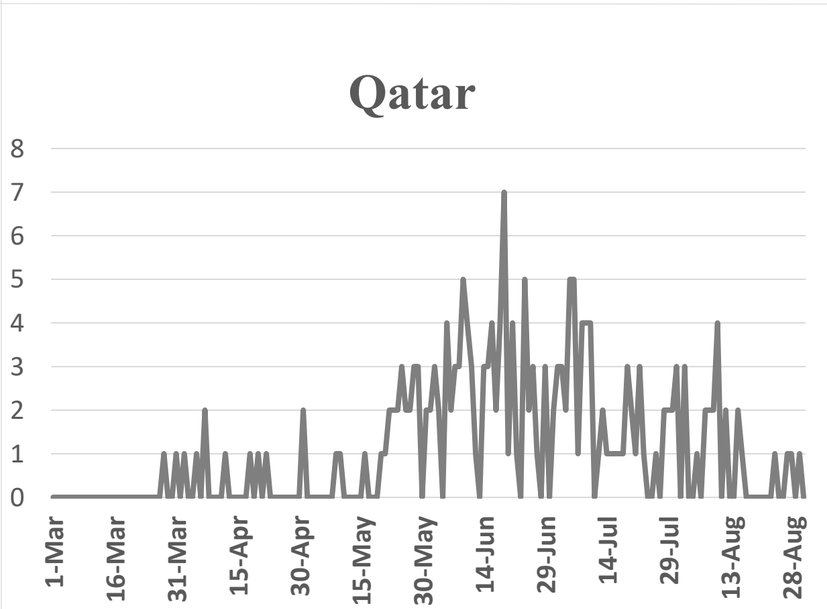
Source :WHO



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.

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

Article 1

Air Travel in the Time of COVID-19

Published 01 SEPTMEBER 2020 THE LANCET

- Most countries adopted some measures to reduce transmission of SARS-CoV-2, lockdown or restriction to movement and ease the burden of admissions in struggling health systems.
- The decision of border closure for countries that rely on tourism came with heavy implication for the economy.
- Instead of full border closure in some countries, quarantine is required for any traveler coming from countries where COVID-19 is rife, or they are introducing travel bubbles (opening for countries they deem safe while maintaining more rigid restrictions for the rest of the world).
- Airlines and airports introduced new rules:
  - Wearing masks.
  - Expanded cleaning of public spaces to reduce the presence of the virus on inanimate surfaces.
  - Physical distancing (at least 2 m).
  - Hand sanitising.
  - Reduced the number of passengers.
- Airplanes uses high efficacy particulate filters in the air-conditioning system, which removes almost all particles of the typical size of coronavirus.
- What does the future hold for travelers?
  - Limit so-called touch points by cutting services such as meals, drinks, and free magazines.
  - Rapid testing for COVID-19 for both crew members and passengers
  - Cleanliness, sanitization, and masks or other protective equipment will become the norm.
  - Touchless technology.
- COVID-19 will redefine what is normal for travelers, with a potentially positive outcome of reducing the risk of transmission of many other infections.

Article 2

Published

A Single-Dose Intranasal ChAd Vaccine Protects Upper and Lower Respiratory Tracts Against SARS-CoV-2

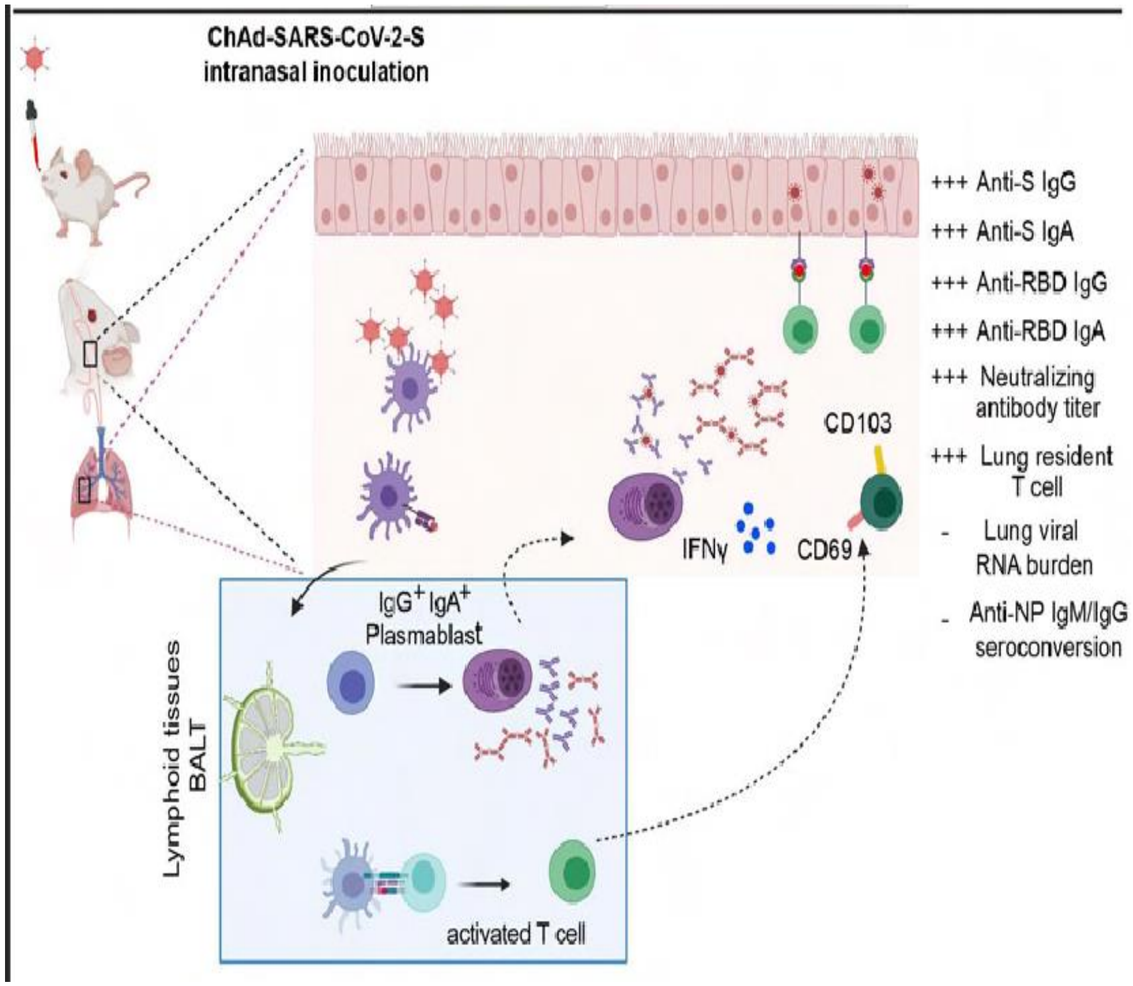
Accepted 14 Aug 2020 Cell

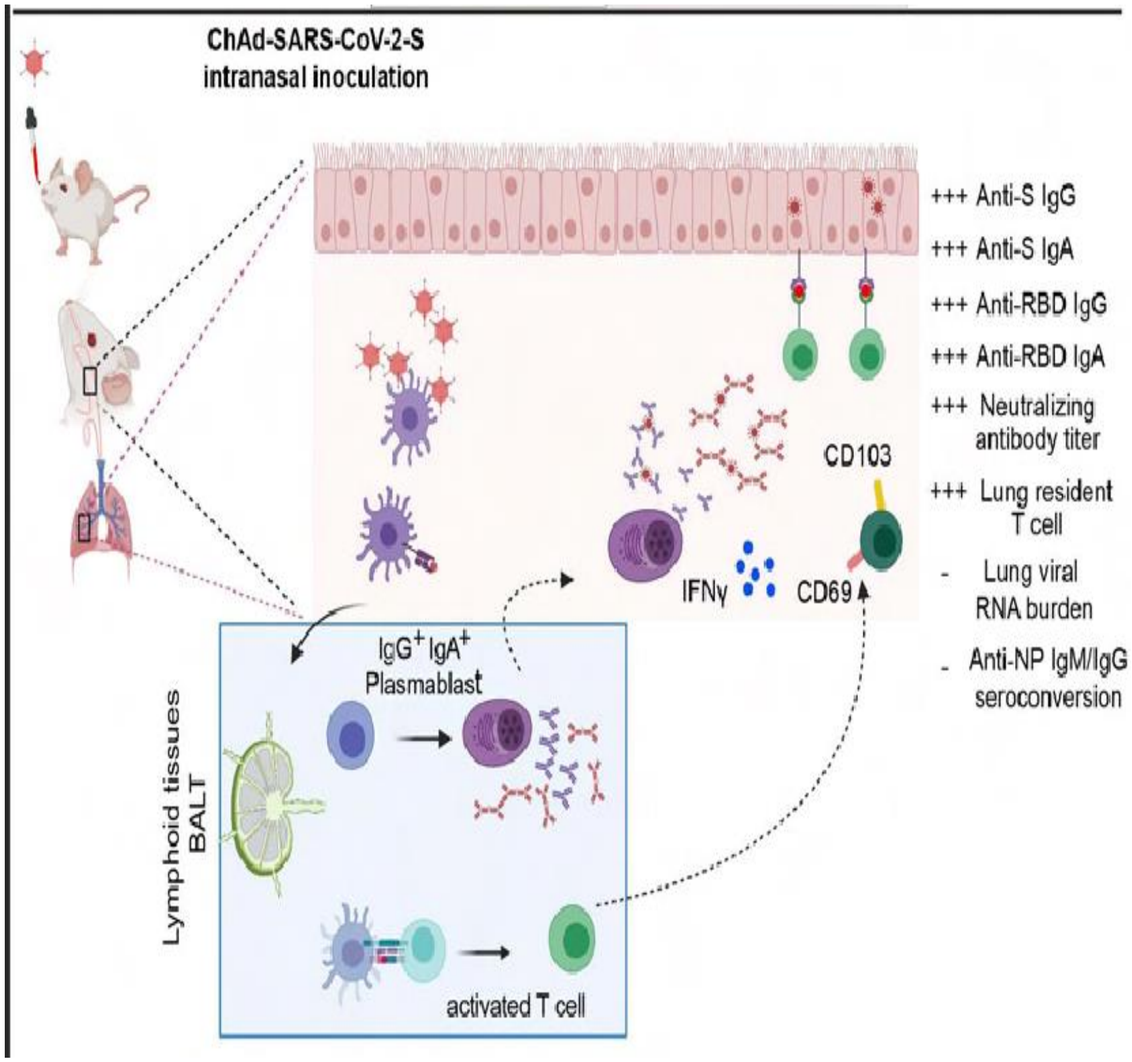
- Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a positive-sense single-stranded RNA virus. Several vaccine candidates (e.g., lipid-encapsulated mRNA, DNA, inactivated, and viral-vectored) rapidly advanced to human clinical trials in an expedited effort; however, few studies have demonstrated efficacy in pre-clinical models.
- The SARS-CoV-2 RNA genome is approximately 30,000 nucleotides in length. The 5’ two-thirds encode nonstructural proteins that enable genome replication and viral RNA synthesis. The remaining one-third encode structural proteins such as spike (S), envelope, membrane, and nucleoprotein (NP) that form the spherical virion, and accessory proteins that regulate cellular responses. The S protein forms homotrimeric spikes on the virion and engages the cell-surface receptor angiotensin-converting enzyme 2 (ACE2) to promote coronavirus entry into human cells. This form of the S protein is recognized by potently neutralizing monoclonal antibodies and could serve as a promising vaccine target.
- The investigators evaluated the protective activity of a chimpanzee adenovirus vectored vaccine encoding a pre-fusion stabilized spike protein (ChAd-SARS-CoV-2-S) in challenge studies with Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and mice expressing the human angiotensin-converting enzyme 2 receptor. Intramuscular dosing of ChAd-SARS-CoV-2-S induces robust systemic humoral and cell-mediated immune responses and protects against lung infection, inflammation, and pathology but does not confer sterilizing immunity, as evidenced by detection of viral RNA and induction of anti-nucleoprotein antibodies after SARS-CoV-2 challenge.
- In contrast, a single intranasal dose of ChAd-SARS-CoV-2-S induces high levels of neutralizing antibodies, promotes systemic and mucosal IgA and T cell responses, and virtually completely prevents SARS-CoV-2 infection in both the upper and lower respiratory tracts.

VACCINE

Article 2

Continued





Article 3

Vaccines Targeting SARS-CoV-2 Tested in Humans

Published 24 Aug 2020 Nature-Infectious Disease

There is a rapid generation of vaccines which was the result of groundwork provided by previous phase 1 studies in humans of vaccines against SARS-CoV-1 and the Middle East respiratory syndrome. Additionally, the prior experience with the mRNA and adenovirus-vectored platforms and the evolution of new vaccine technologies.

- One study published in the *N Engl. J. Med.* For moderna company vaccine called mRNA-1273. The authors reported the safety and immunogenicity of the mRNA vaccine administered to 45 healthy volunteers 18–55 years of age. Two doses of vaccine were administered 1 month apart at three different doses. The authors found that the immune responses raised by participants after the second vaccine dose neutralized SARS-CoV-2 and generated TH1 cellular responses, the immune signatures projected to be associated with protection. The experimental vaccine was associated with mild to moderate local and systemic adverse events, including local pain and tenderness at the injection site and headache, fever and malaise, with more-severe reactions noted at the highest vaccine dose.

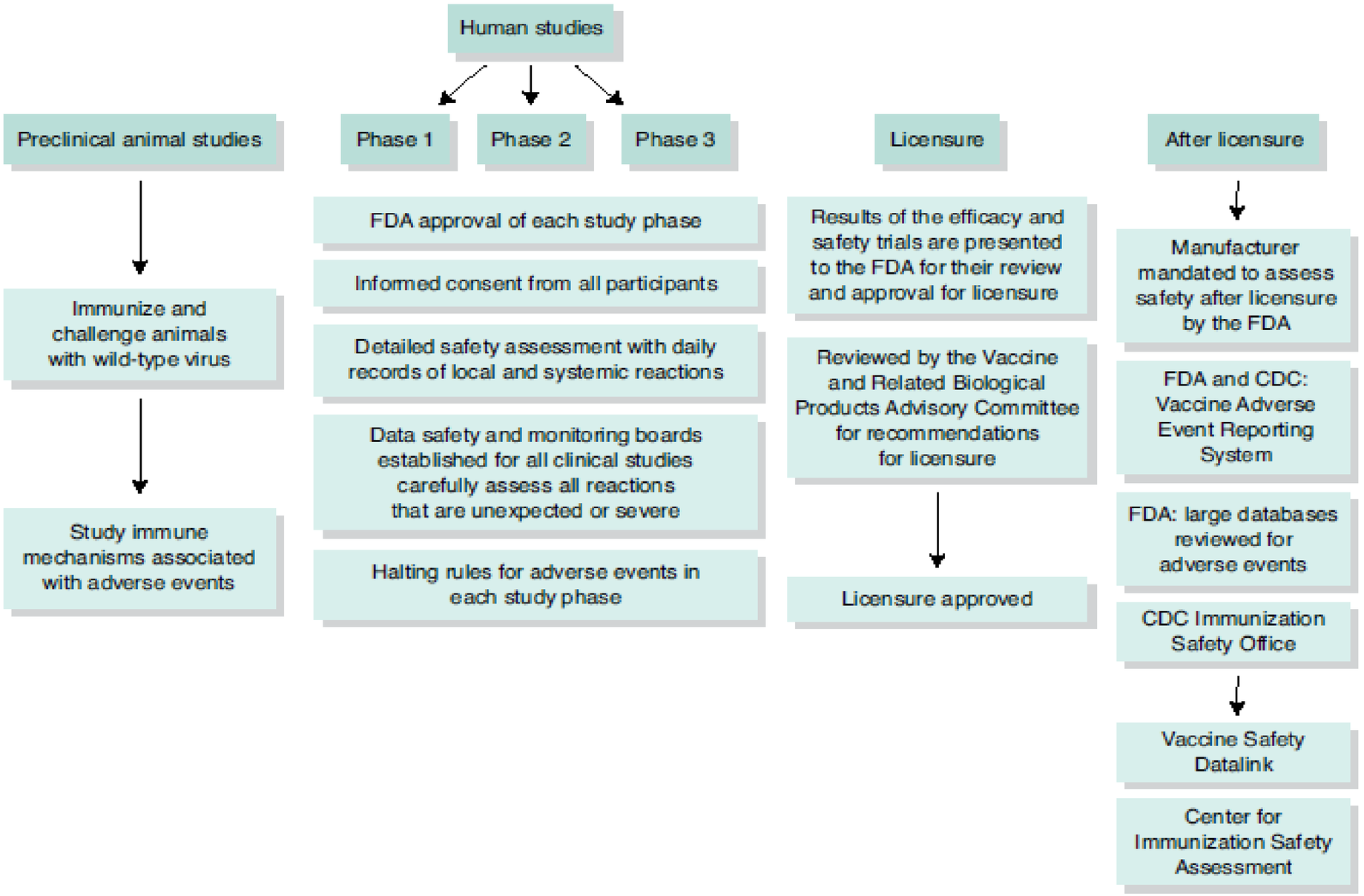
- In another study, published in Nature for the Pfizer and BioNtech called BNT162, a lipid nanoparticle–formulated mRNA vaccine that encodes the trimerized SARS-CoV-2 spike glycoprotein receptor-binding domain was administered to 45 healthy adults 18–55 years of age who were randomly assigned to receive one of three different vaccine dosages or a placebo. Antibody concentrations were dose-dependent, were boosted by the second vaccine dose and generated a functional neutralizing antibody that exceeded levels seen in a panel of COVID-19 convalescent human serum Local reactions and systemic events were dose-dependent and were generally mild to moderate and self-limited.

- The existing vaccine-safety infrastructure of the FDA and the CDC for post-licensure vaccine monitoring is currently being enhanced to allow careful follow-up of vaccine recipients for any unexplained adverse events.

VACCINE

Article 3

Continued



THANK YOU

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