مركز أبوظبي
للصحة العامة
ABU DHABI PUBLIC
HEALTH CENTRE

SCIENTIFIC RESEARCH MONITORING ON COVID-19

11 SEPTEMBER 2020

For accessing the full series of published scientific reports please visit the following link:
https://www.doh.gov.ae/ar/covid-19/Healthcare-Professionals/Scientific-Publication

SCIENTIFIC RESEARCH MONITORING ON COVID-19 (ISSUE 222)

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.

Click on icon to view content

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).

Click on icon to view content

Public Health Response

Opportunities for Research on the Treatment of Substance Use Disorders (SUD) in the Context of COVID-19

Treatment

Effect of Hydrocortisone on 21-Day Mortality or Respiratory Support Among Critically Ill Patients with COVID-19: A Randomized Clinical Trial

Public Health Response

Measuring Mobility to Monitor Travel and Physical Distancing Interventions: A Common Framework for Mobile Phone Data Analysis

EPIDEMIOLOGY

FROM 21 JAN TO 10 SEPT 2020

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

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

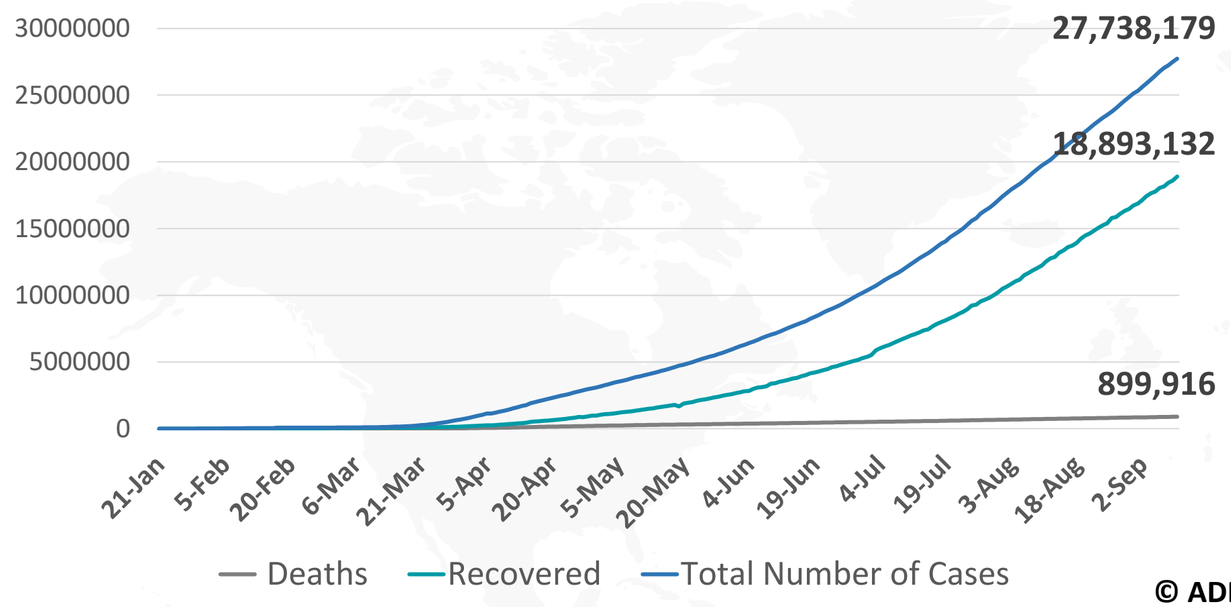


Figure 3: Total Number of Death Due to COVID-19 (china and result of the world)

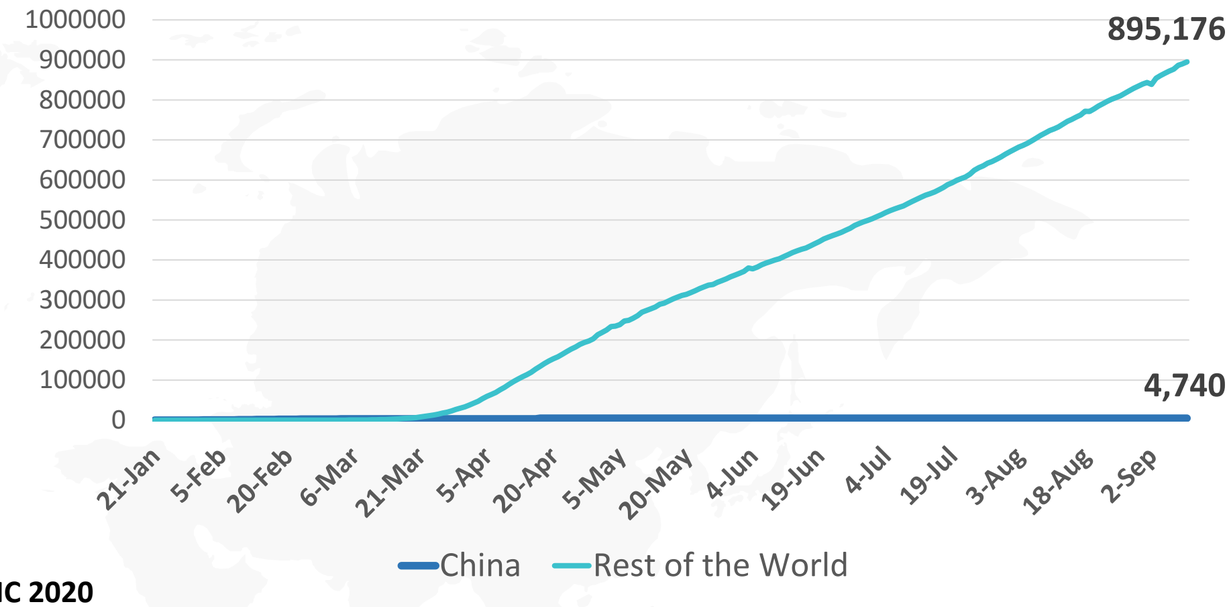


Figure 2: Daily New Infected COVID-19 Cases (China and rest of the world)

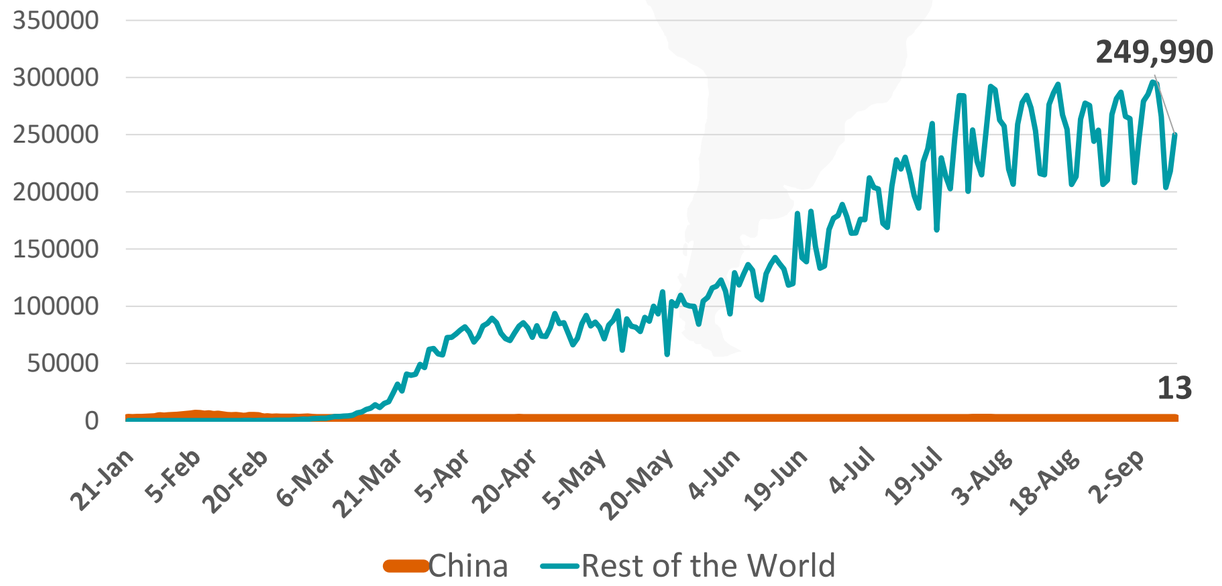
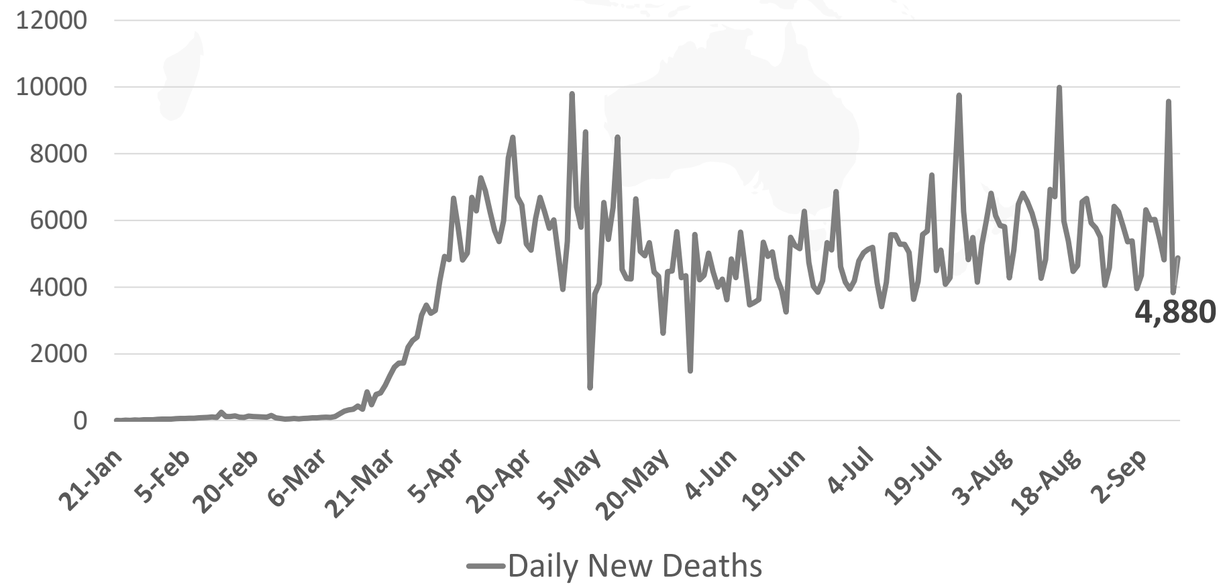


Figure 4: Global Daily New Deaths Due to COVID-19 (china and rest of the world)



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

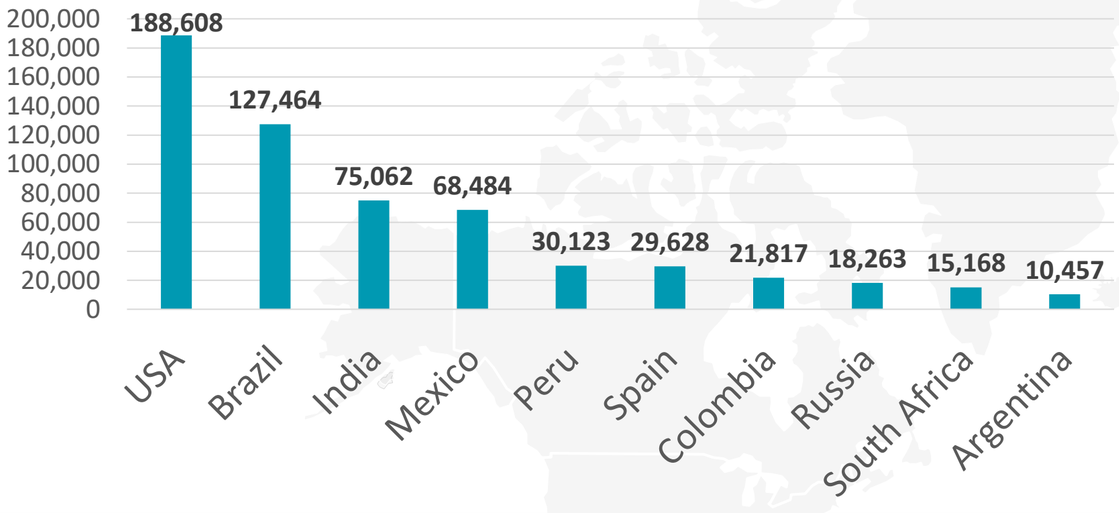
EPIDEMIOLOGY

FROM 21 JAN TO 10 SEPT 2020

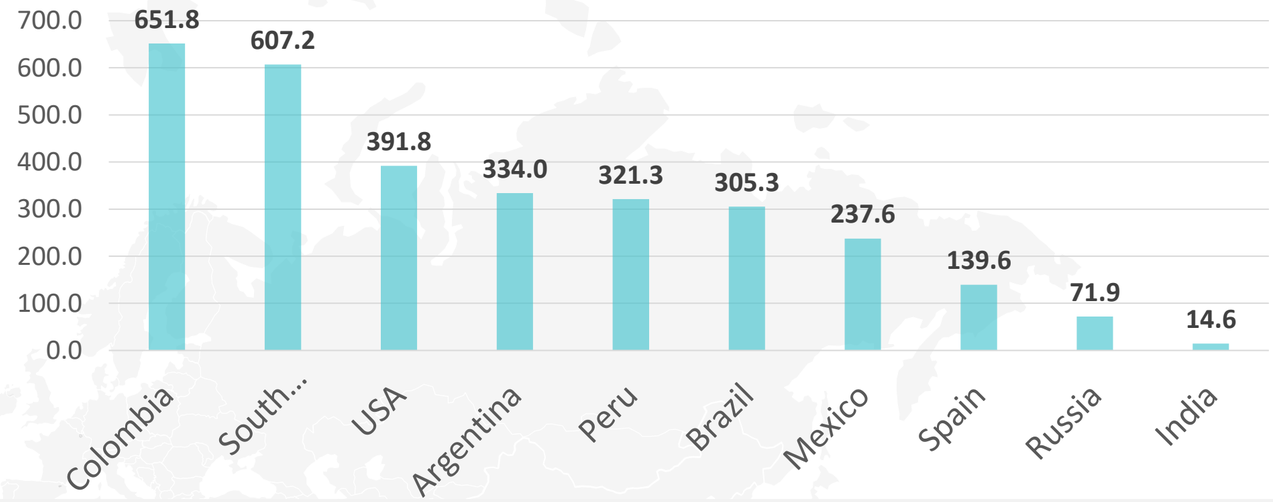
مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

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

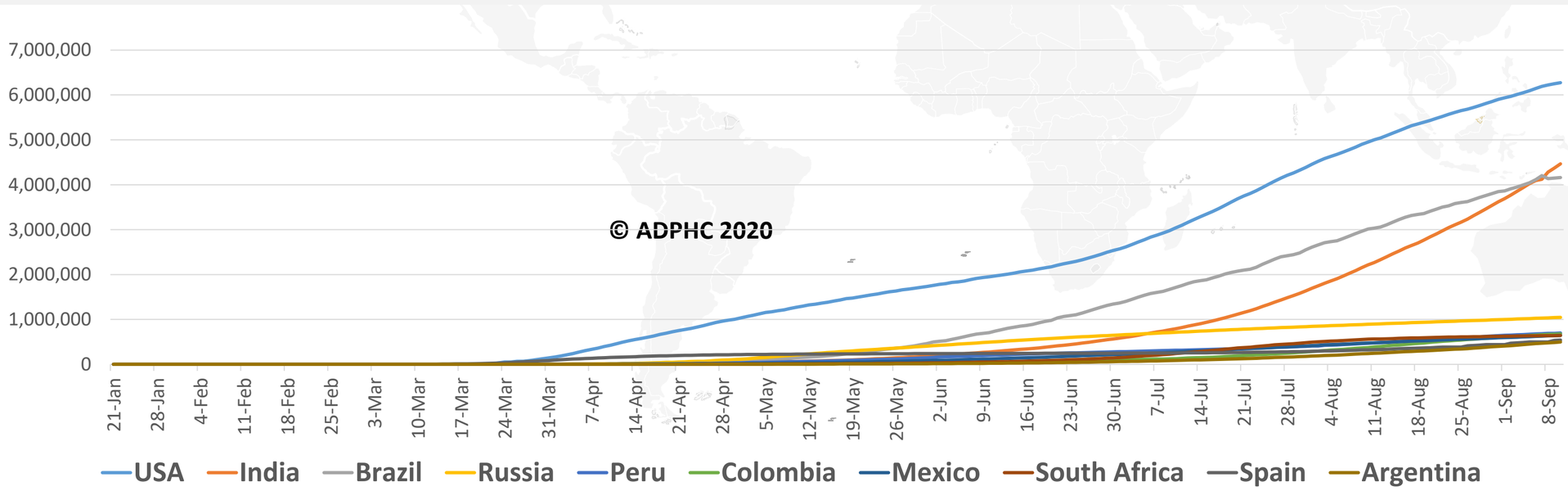
TOTAL DEATHS



DEATHS PER MILLION



TOTAL INFECTED CASES



USA	6,272,193
Brazil	4,465,863
India	4,162,073
Russia	1,046,370
Peru	696,190
Colombia	679,513
Mexico	642,860
South Africa	642,431
Spain	543,379
Argentina	500,034

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

EPIDEMIOLOGY

FROM 21 JAN TO 10 SEPT 2020

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

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

Daily Tests

78,205.3 Average Tests

790.7 per 100k population

0.9% Positive Rate

Daily Cases

679.6 Average Cases

6.9 per 100k population

Daily Recovered

753.9 Average Recovered

7.6 per 100k population

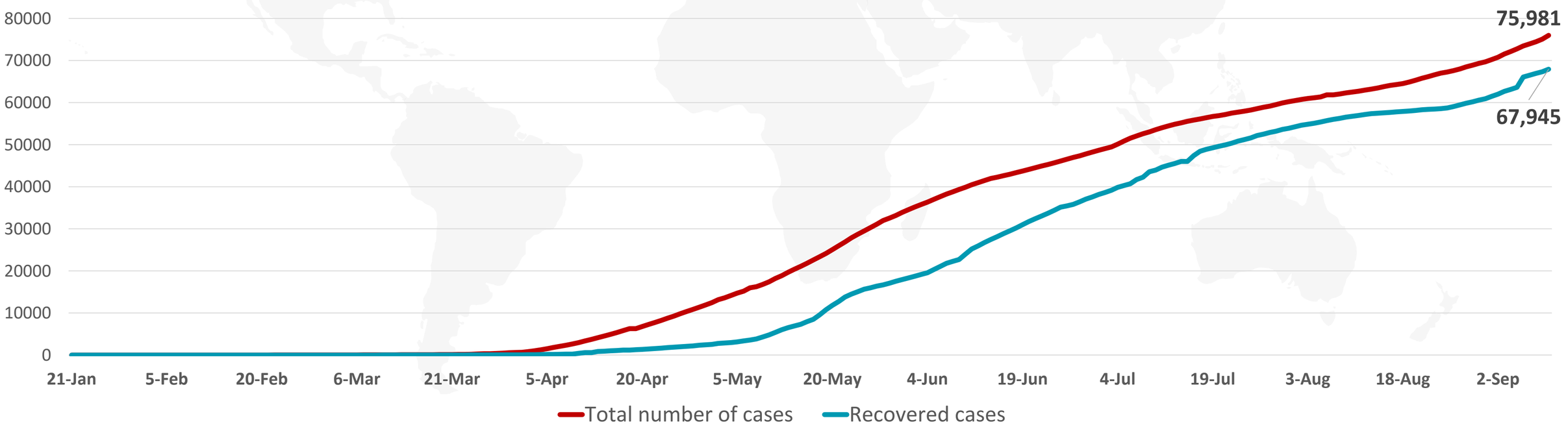
Daily Deaths

1.6 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



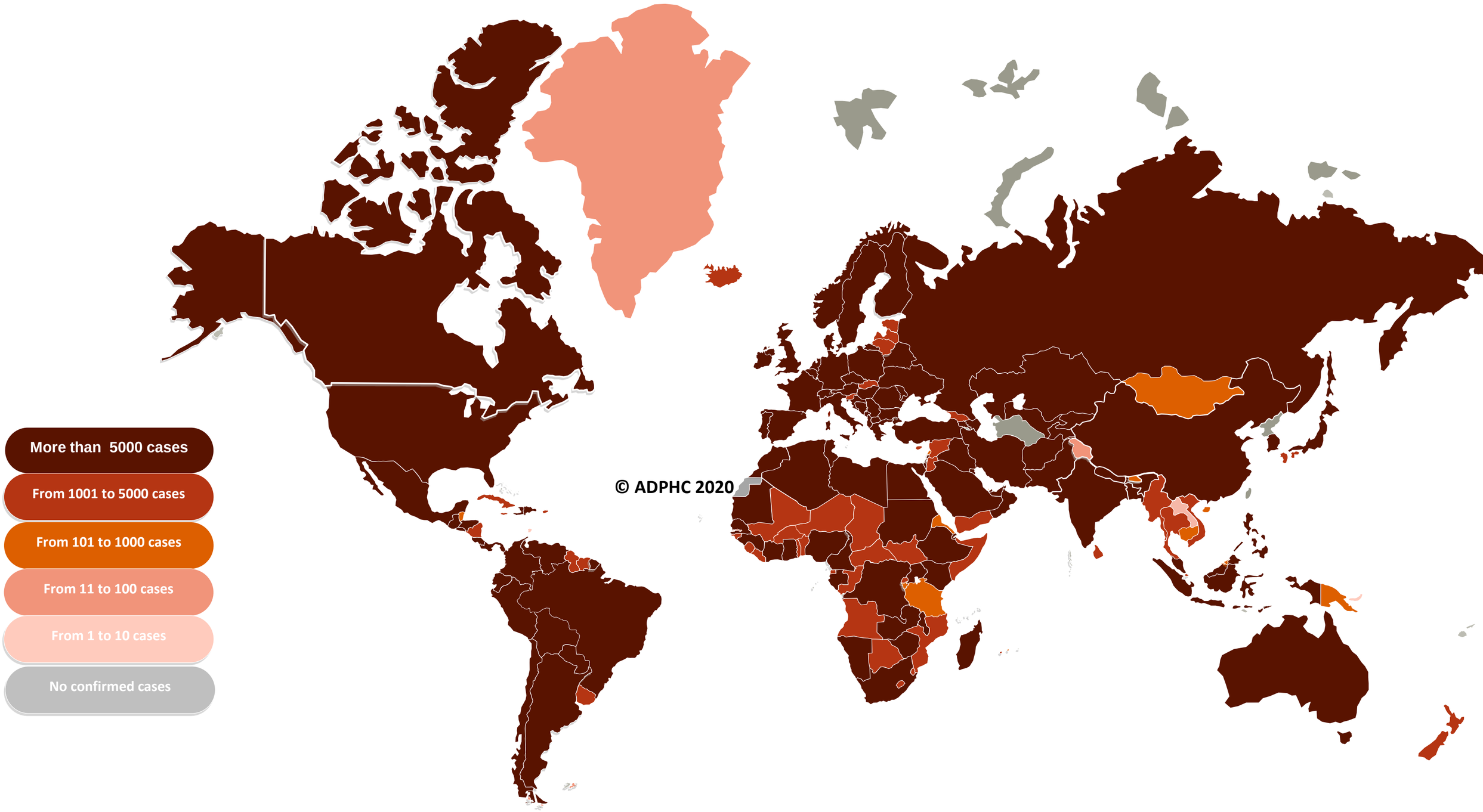
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: FCSA, WHO, John Hopkins

EPIDEMIOLOGY

Date: 10 SEPT 2020

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

Figure 7A : Global Distribution of COVID-19 Cases



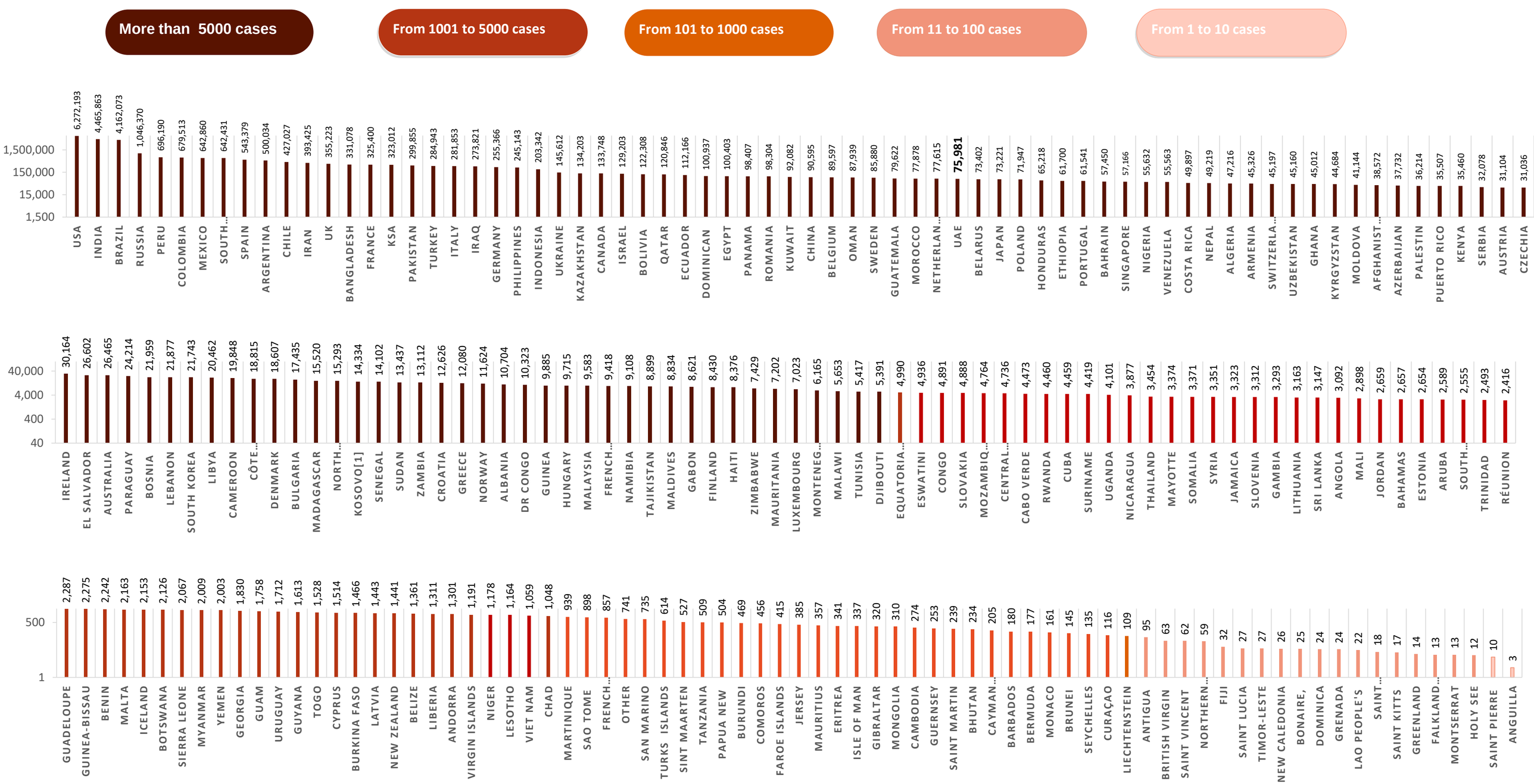
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

EPIDEMIOLOGY

Date: 10 SEPT 2020

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

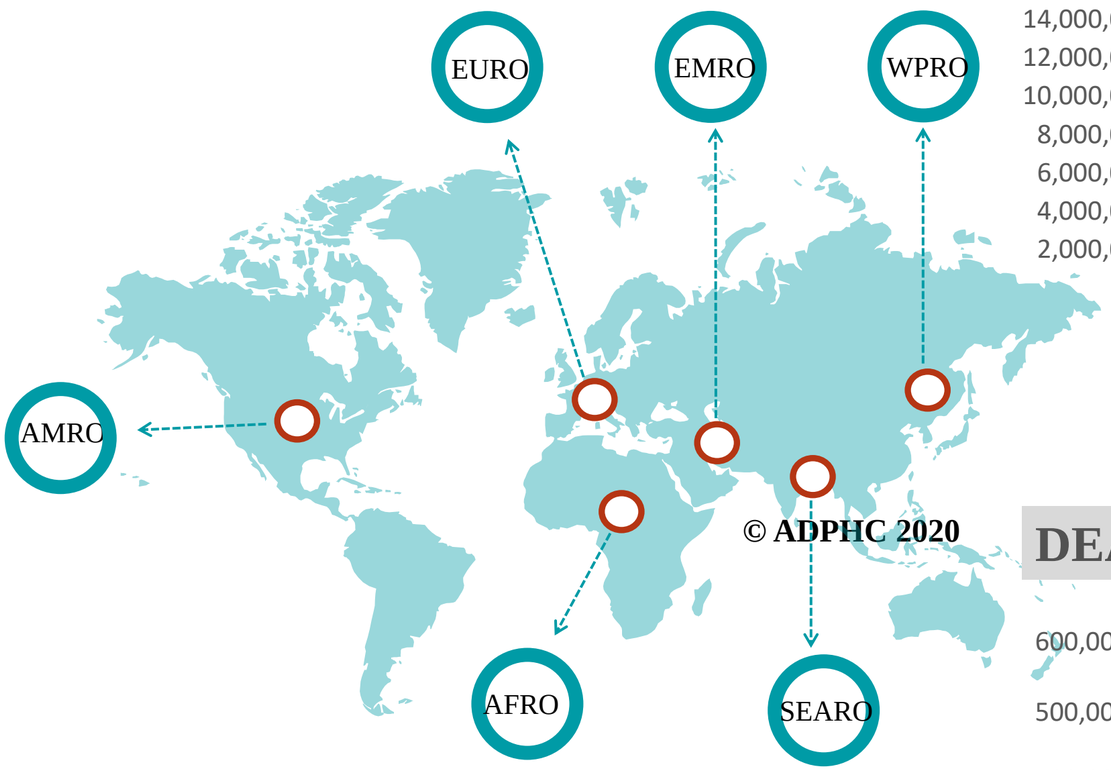
Figure 7B: Bar Chart Illustrates the Global Distribution of COVID19 Cases



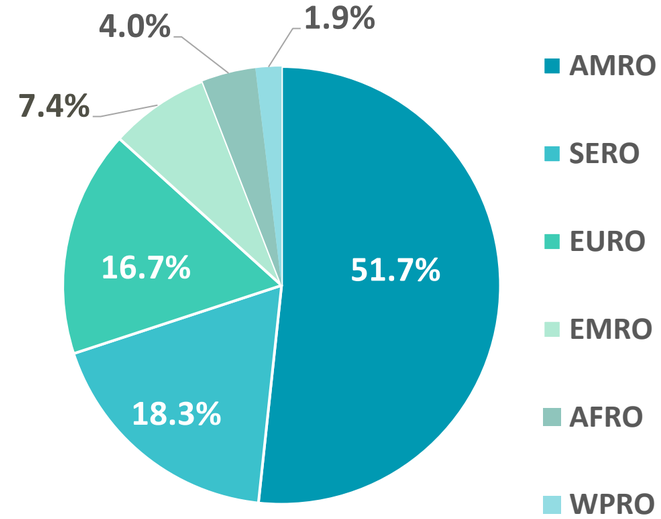
Other*:includes cases and deaths reported under the international conveyance(Diamond Princess)

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

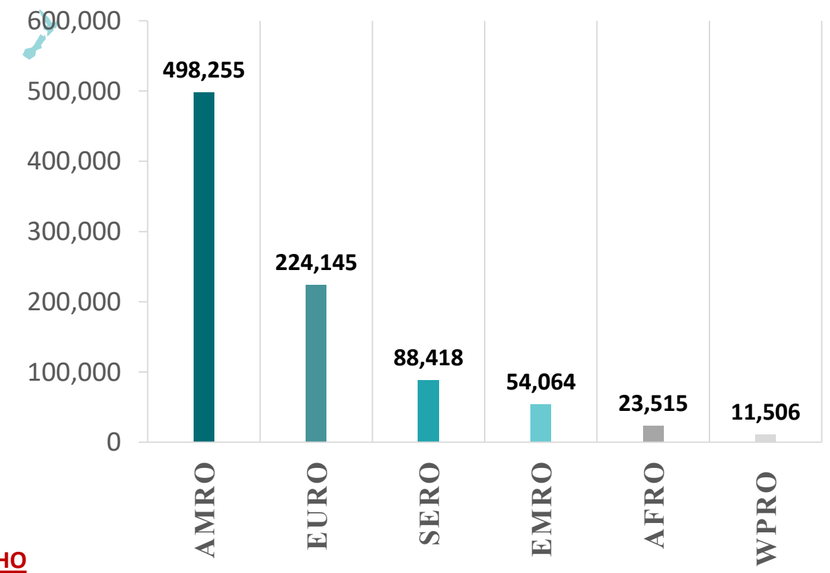
Figure 8: Global Distribution of COVID-19 Cases per Region

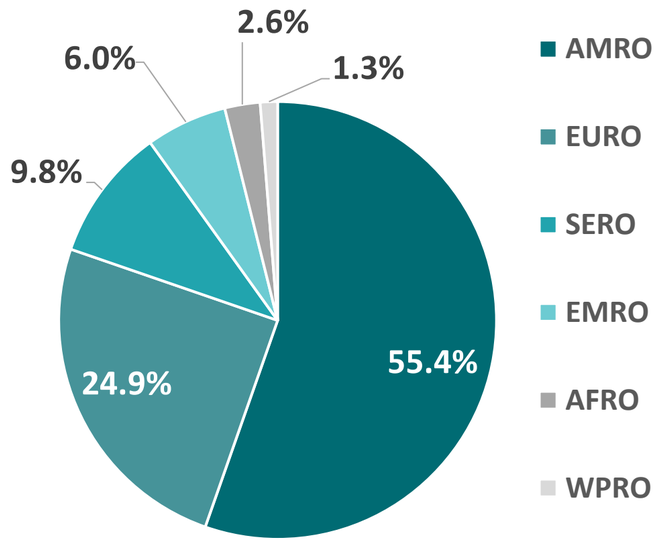


INFECTED



DEATHS





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

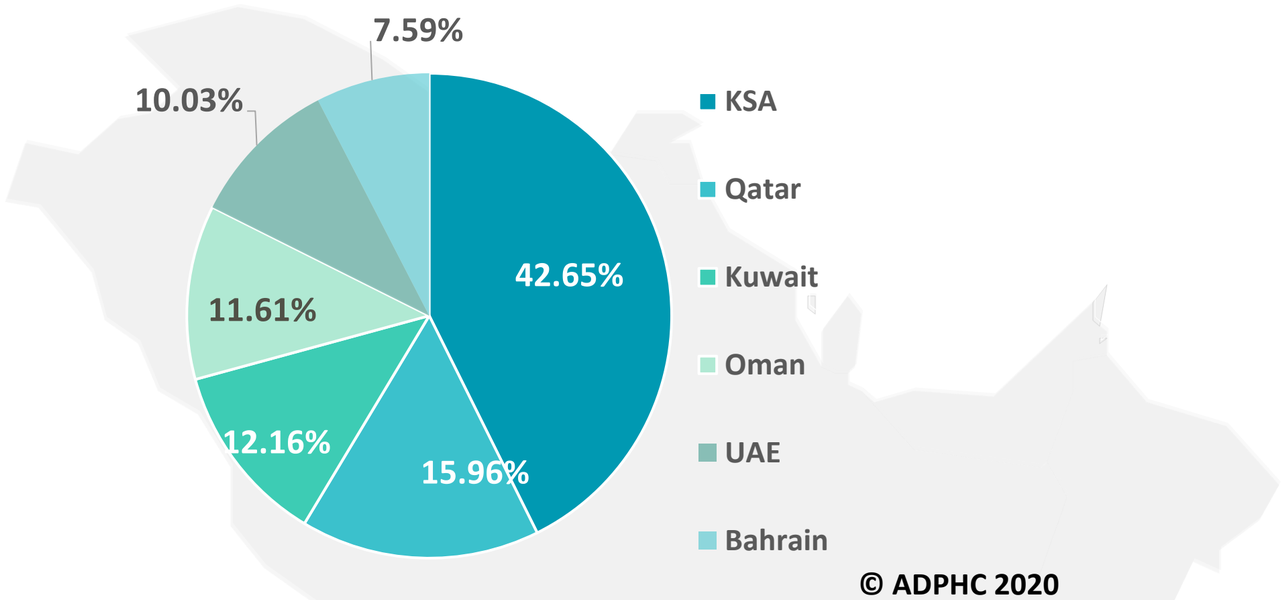
EPIDEMIOLOGY

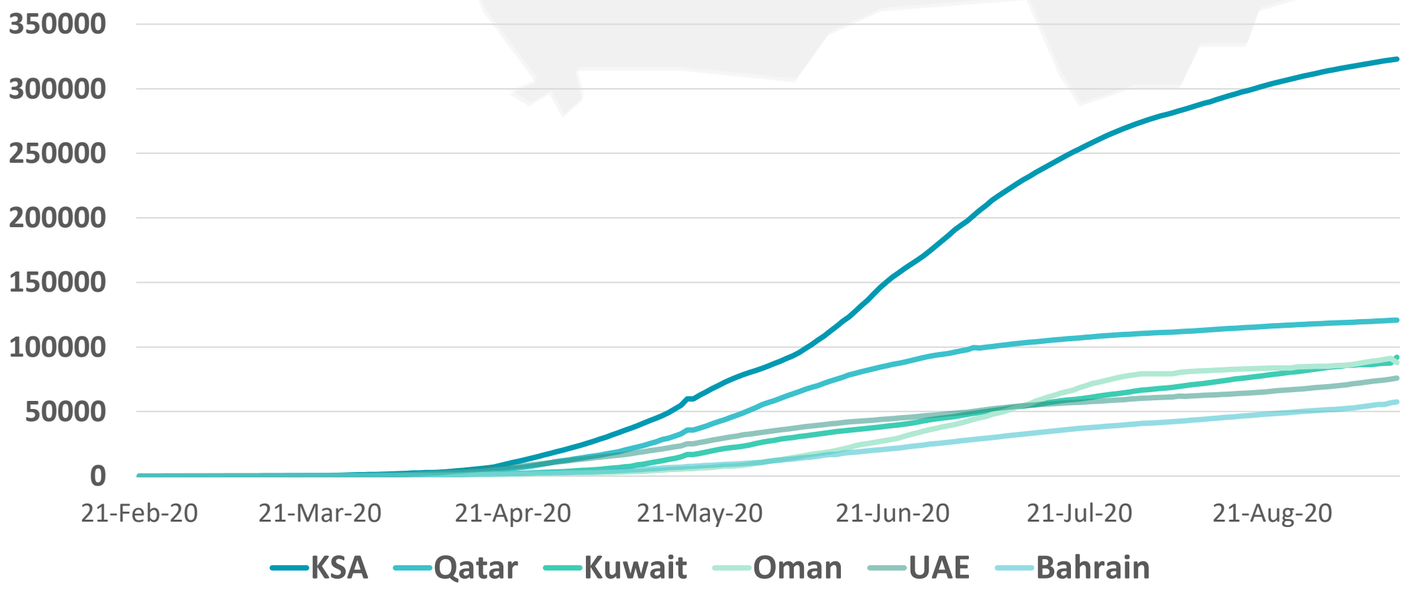
Date: 10 SEPT 2020

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

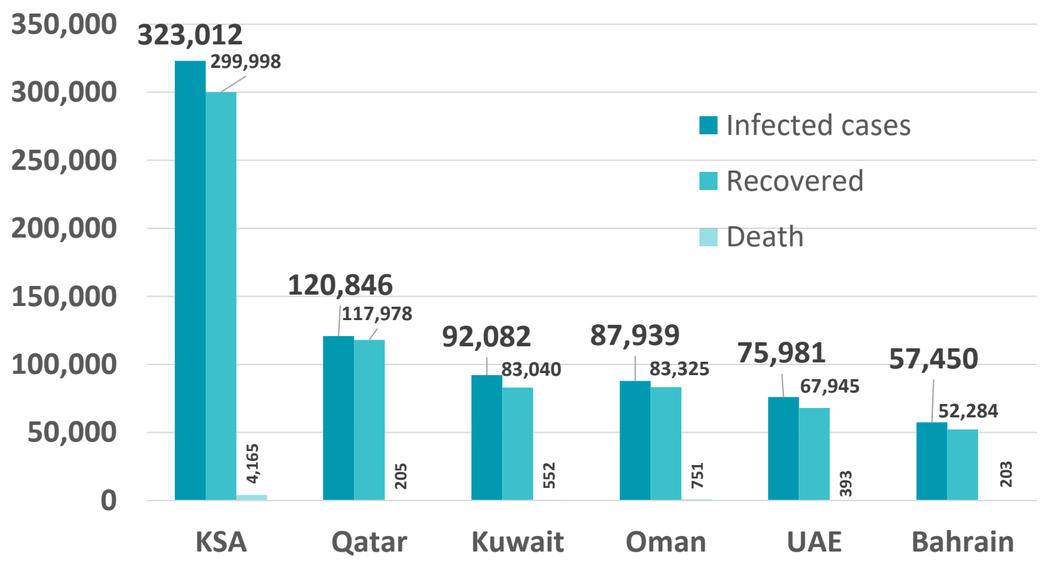
Figure 9: Comparative Analysis of the Distribution of COVID-19 Cases in GCC Countries

TOTAL NUMBER OF INFECTED CASES

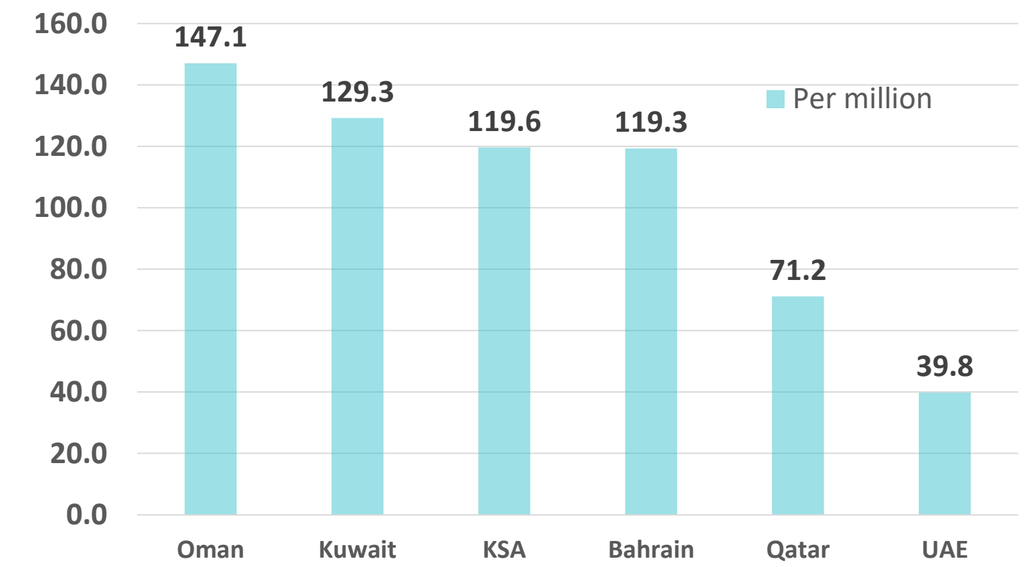




TOTAL NUMBER OF INFECTED, RECOVERED AND DEATHS



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

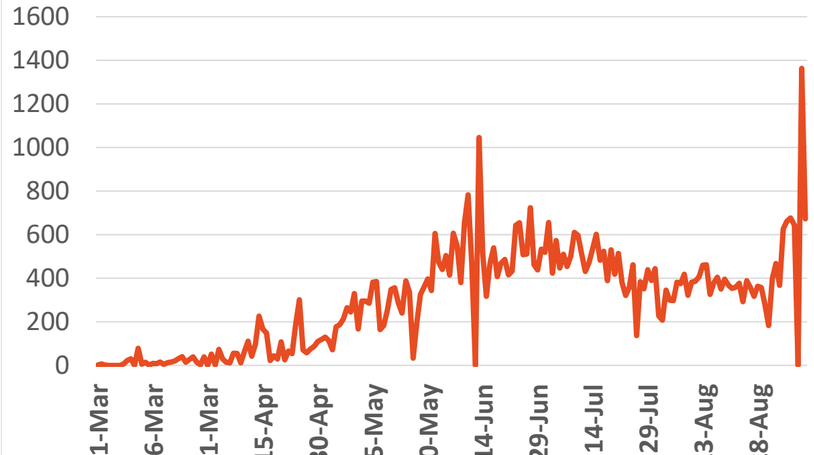
UAE

Source : National Emergency Crisis and Disaster Management Authority

KSA

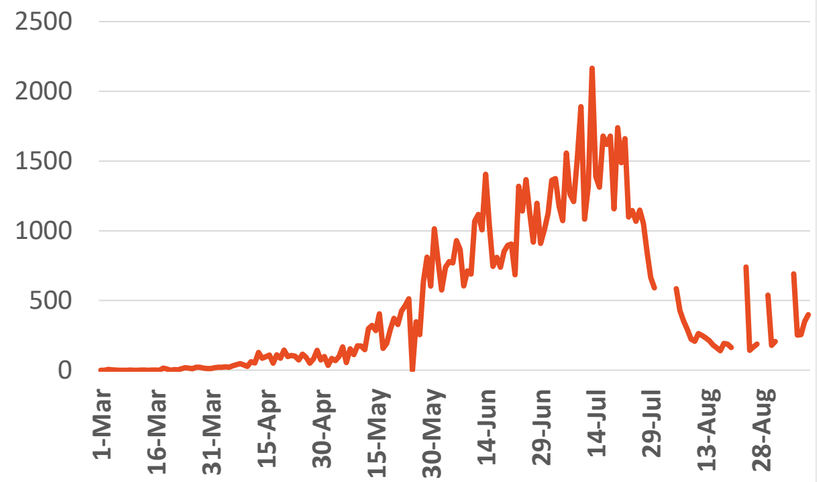
Source : KSA ministry of health

Bahrain



Source :WHO

Oman

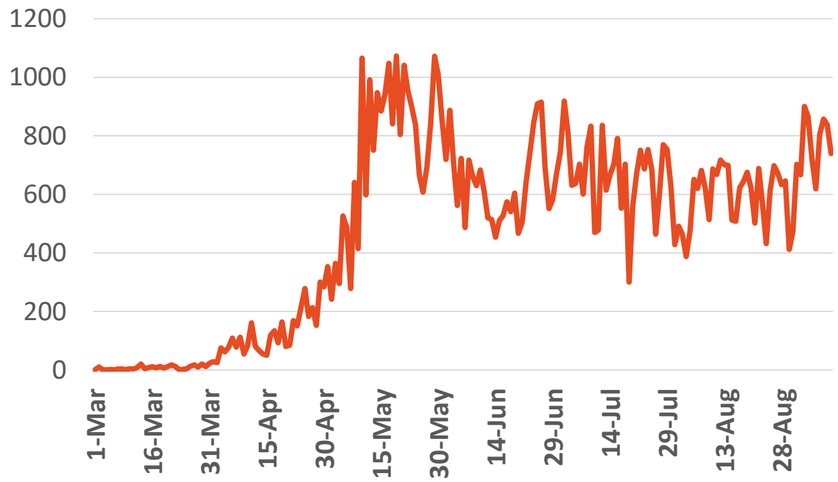


Source :Oman ministry of health

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

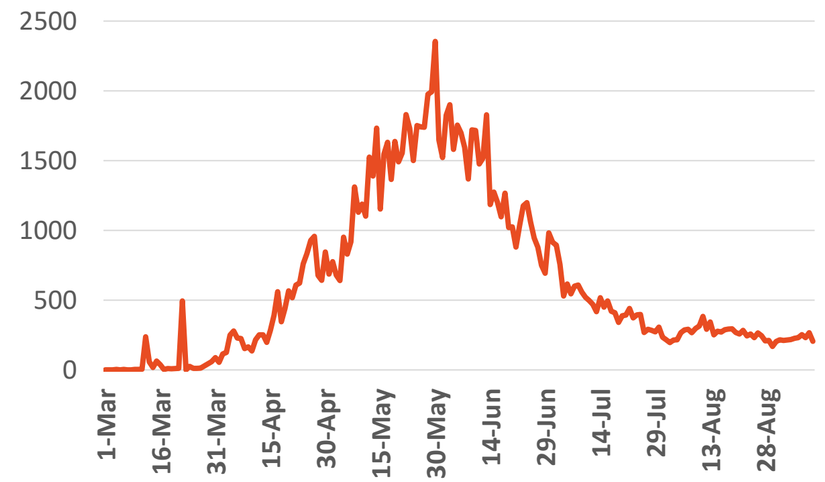
*No announced statistic data on weekends and official holidays.

Kuwait



Source : Kuwait ministry of health

Qatar



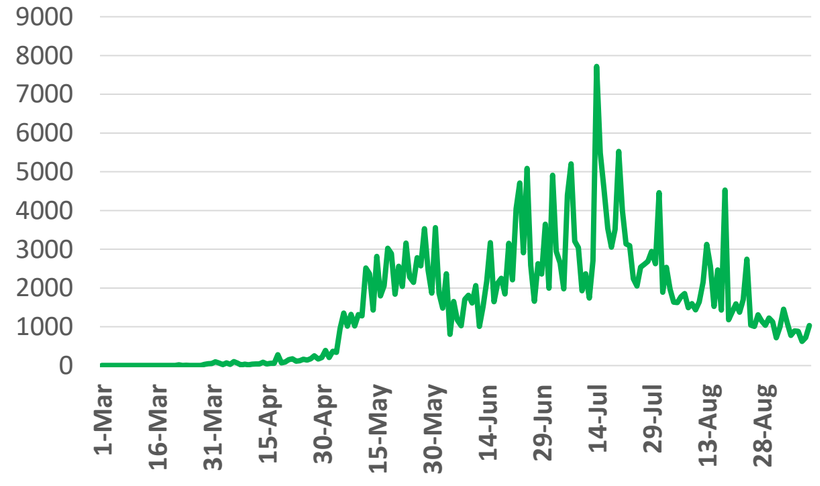
Source : Qatar ministry of health

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

UAE

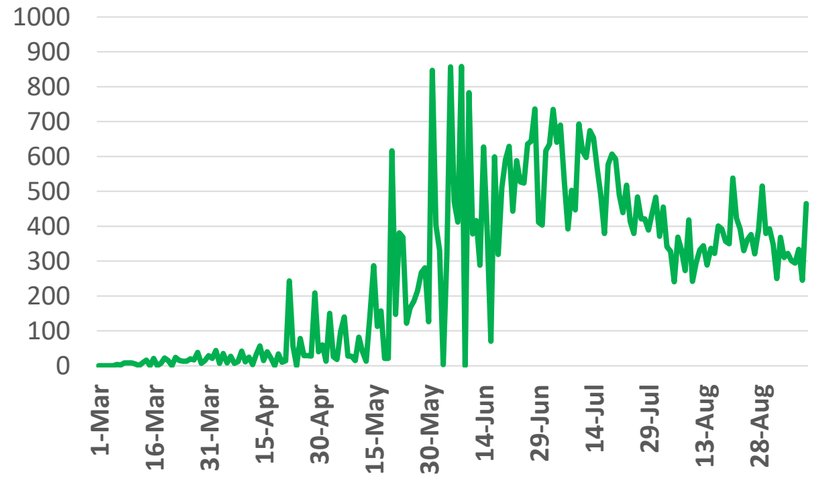
Source : National Emergency Crisis and Disaster Management Authority

KSA



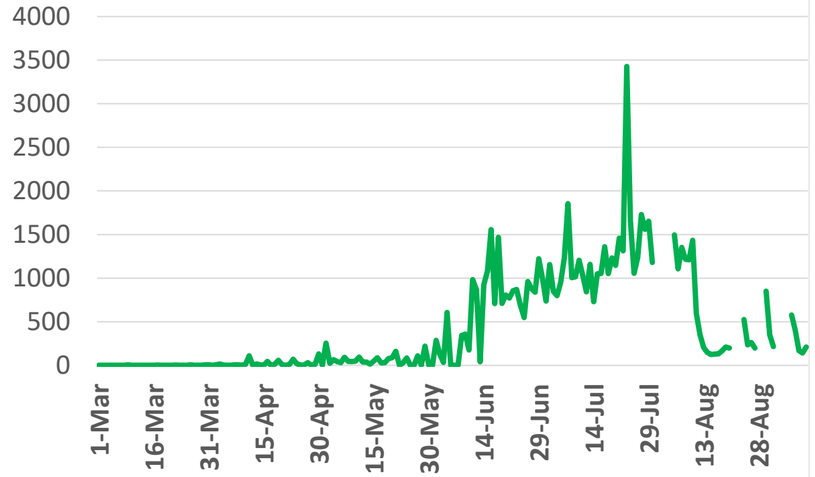
Source : KSA ministry of health

Bahrain



Source : Bahrain ministry of health

Oman



Source :Oman ministry of health

Kuwait

Source : Kuwait ministry of health

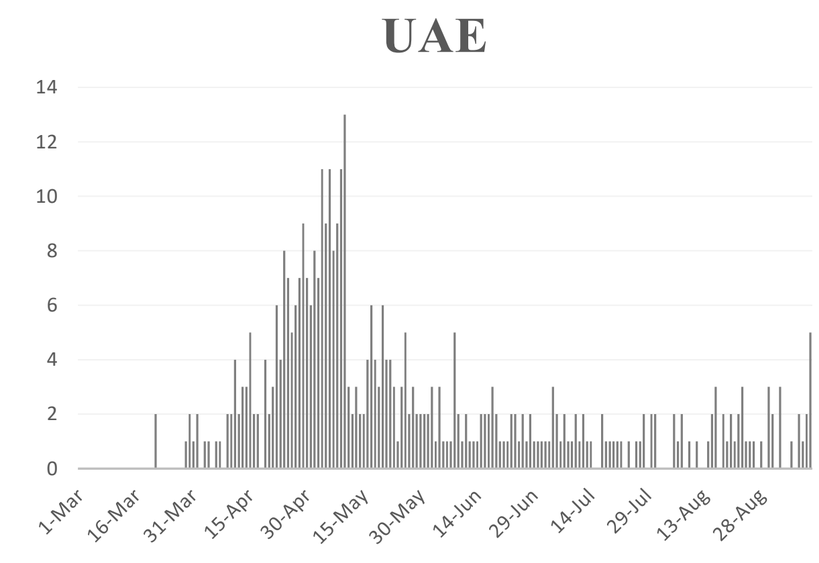
Qatar

Source : Qatar ministry of health

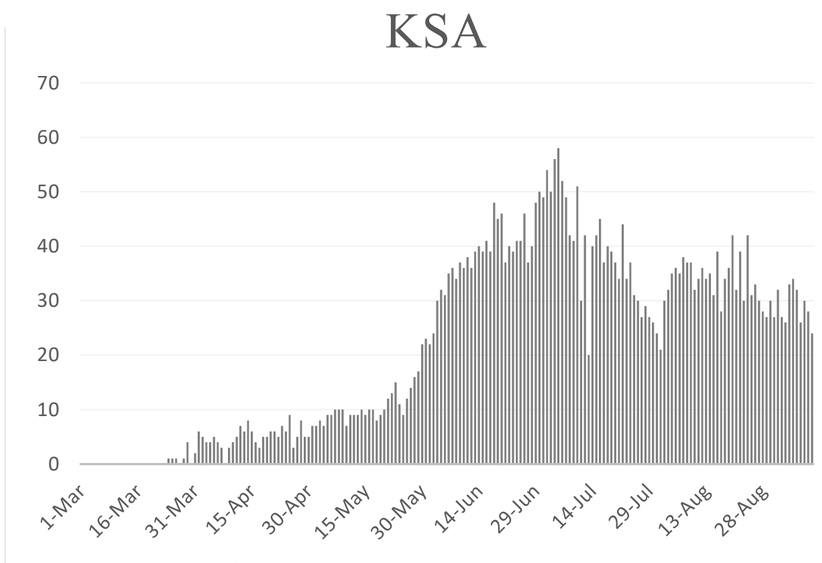
*No announced statistic data from 31 July to 4 August, 21 to 23 August & from 28 to 30 August, 2, 4& 5 September

*No announced statistic data on weekends and official holidays.

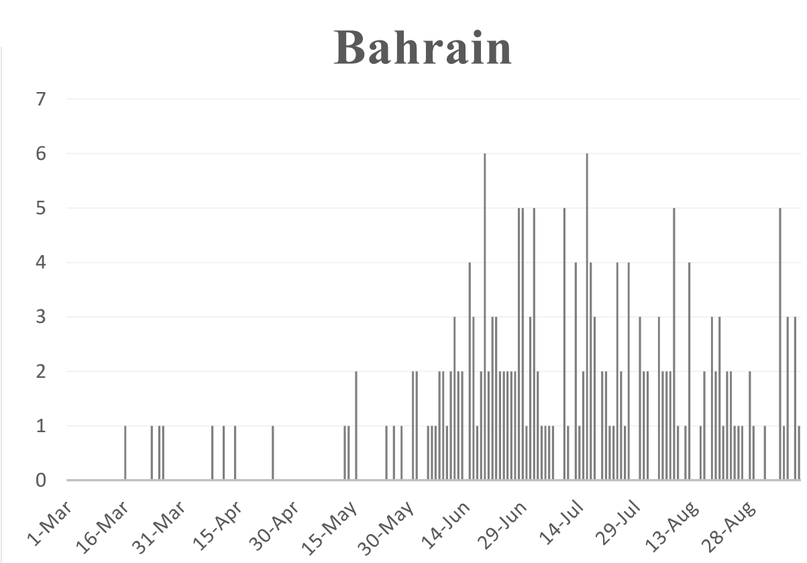
Figure 12: Comparative Analysis of the Distribution of COVID-19 New Death Cases in GCC Countries



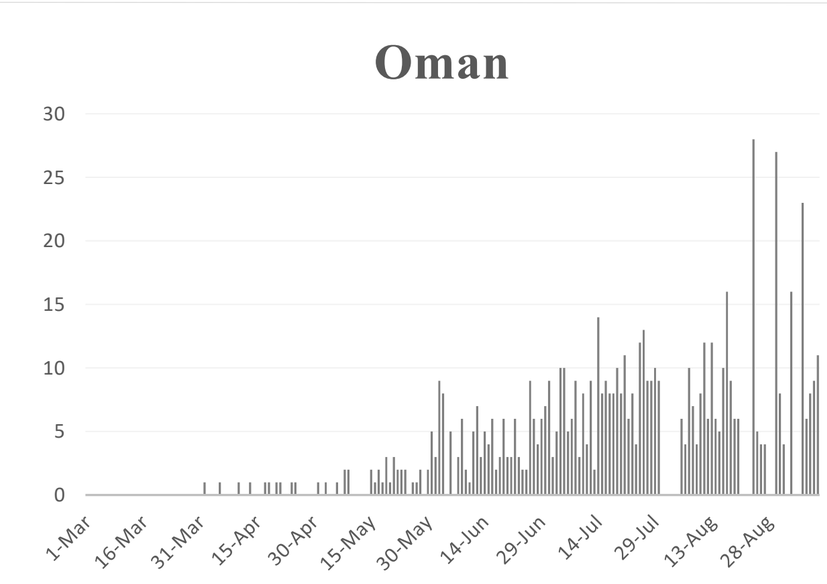
Source : National Emergency Crisis and Disaster Management Authority



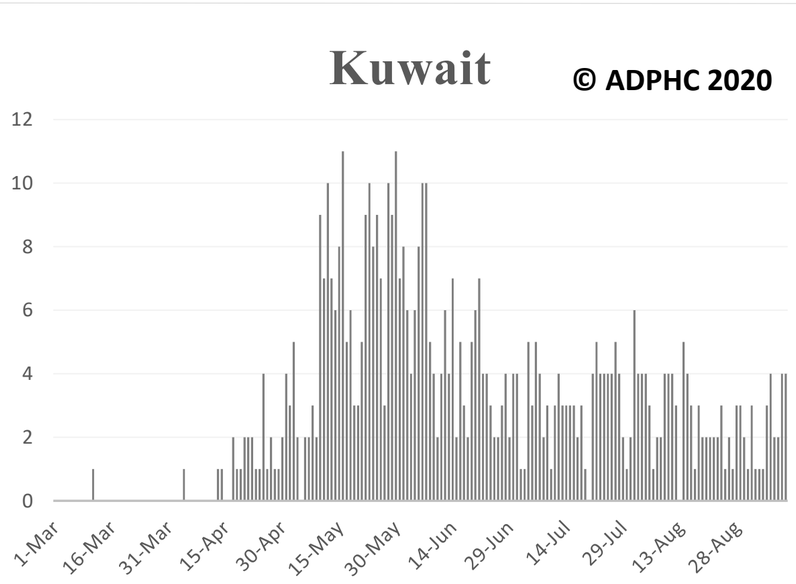
Source : KSA ministry of health



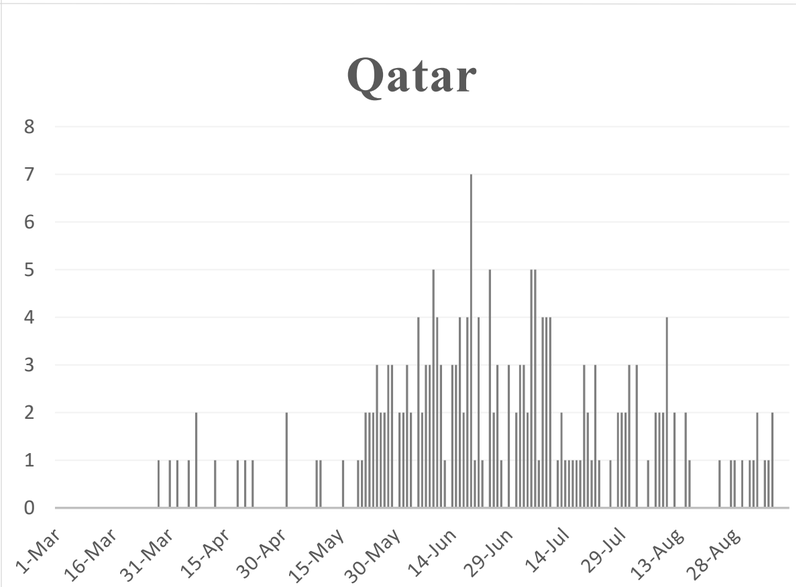
Source :WHO



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, 2, 4& 5 September

*No announced statistic data on weekends and official holidays.

PUBLIC HEALTH RESPONSE:

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

Article 1

Published

Opportunities for Research on the Treatment of Substance Use Disorders (SUD) in the Context of COVID-19

September 01, 2020 JAMA

- This pandemic led to an expansion of telehealth (videoconference and telephone). There is insufficient information on differences in efficacy and acceptability of telephone vs. videoconference consultations.

- It is important to learn which patients can benefit from digital modalities and telehealth as it is harder to conduct them for some patients such as those with suicidal ideation.

- Regulatory changes have increased flexibility for treatment with opioid agonists (e.g. buprenorphine induction can now be conducted, via telehealth); however, it may increase-negative outcomes such as increased diversion and non-adherence to treatment. Regulatory changes can be severely constrained; in the absence of reimbursement.

- The expansion of telehealth in jails and prisons has opened new opportunities for enhancing the capacity to provide treatment for SUDs and comorbid psychiatric disorders.

- The economic consequences of COVID-19 will affect populations in the short-term such as those with lower income and long-term such as changes in demand for certain jobs and workforce, although the connection with SUD is unknown.

- The lagging information collection hinders the ability to allocate resources in optimal ways to address changes in patterns of substance use or overdoses. Thus there is an urgent need to develop new approaches for data collection.

- Improvements to treatment and prevention systems will require ongoing dialogue between research, policy, and practice.

- Evidence-based interventions to promote equity could play a key role in developing these systems of care.

- The COVID-19 crisis allows us to evaluate new strategies and policies for improving the treatment of SUD and for reducing the racial inequalities that link drug use with justice settings.

TREATMENT

Article 2

Published September 02, 2020 JAMA

Effect of Hydrocortisone on 21-Day Mortality or Respiratory Support Among Critically Ill Patients With COVID-19A Randomized Clinical Trial

A multicenter randomized, double-blind sequential trial was conducted in France to evaluate the effect of hydrocortisone for the treatment of ICU patients with COVID-19–related acute respiratory failure.

Methodology

- Between March 7 and June 1, 2020, 149 patients were enrolled, of whom 76 were randomized to the hydrocortisone group and 73 to the placebo group. The median duration of study treatments was 10.5 days for hydrocortisone and 12.8 days for placebo.
- Randomization was centralized and performed electronically.
- Patients received a continuous intravenous infusion of hydrocortisone at an initial dose of 200mg/d.

Primary Outcome

- Treatment failure (death or persistent dependency on mechanical ventilation or high-flow oxygen therapy).

Secondary Outcome

- Use of tracheal intubation, prone position, extracorporeal membrane oxygenation, or inhaled nitric oxide.

TREATMENT

Continued

Results

- Primary, secondary, and post hoc outcomes are summarized in table 1.

Discussion

- Hydrocortisone compared with placebo did not reduce significantly the rate of treatment failure, and the proportions of patients receiving mechanical ventilation on day 21.
- The study was stopped early and likely was underpowered to find a statistically and clinically important difference in the primary outcome.
- The Data and Safety Monitoring Board recommended stopping this trail
- after the press release of the dexamethasone trail (it may reduce mortality on day 28 in mechanically ventilated patients and oxygen-dependent patients).

Limitations

- The trial was stopped early and lacked power.
- This study was impeded in an existing trail; thus, it had not planned to record certain data relevant to COVID-19.
- Diagnosis of nosocomial infections was not adjudicated.

Table 1: Treatment Failures, Secondary Outcomes, and Post Hoc Analyses in Trial

Outcomes		Hydrocortisone	Placebo
Primary	Treatment failure	32(42.1)	37(50.7)
Secondary	Endotracheal intubation	8/16(50)	12/16(75)
	Prone position	36(47.4)	39(53.4)
	Extracorporeal membrane oxygenation	2(2.7)	2(2.7)
	Inhaled nitric oxide	5(6.7)	11(15.0)
	Nosocomial infections on day 28	28(37.7)	30(41.4)
Post hoc	Death	11(14.7)	20(27.4)
	Mechanical ventilation	17(22.7)	17(23.3)
	High-flow oxygen therapy	3(4.0)	0
	Low-flow oxygen therapy	1(1.3)	4(5.5)
	Discharged from ICU	43(57.3)	32(43.8)

CLINICAL FEATURES

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

Article 3

Published September 01, 2020, THE LANCET

Measuring Mobility to Monitor Travel and Physical Distancing Interventions: A Common Framework for Mobile Phone Data Analysis

In this viewpoint, authors discuss how location date from mobile phones could be used for handling of Covid-19 pandemic.

Types of Location Data from Mobile Phones

Generally, there are two types of data:

- Data associated with SIM card is obtained from the cell tower which provides an approximate location for the user at the time of the call or text or as long as the phone is switched on.
- Global positioning system (GPS) traces are data obtained from smartphones and provide granular location data for the device over time and is precise concerning location but are sometimes limited in terms of coverage and representativeness.

Mobility Metrics

Authors defined six baseline mobility metrics:

- Population: A description of the unit of measurement that contributes data to the analysis, such as unique users or unique devices.
- Spatial resolution of categorization: A description of the dimensions of the user locations that are used for categorization, such as unique locations visited by a user may be defined by tile grids, tower catchment areas, or GPS radii from points of interest for internal analysis.
- Spatial resolution of aggregation: A description of the size of the regions of interest for which data are aggregated before being shared. For example, the metrics calculated for the population can be aggregated across all users in a region of interest such as neighborhood or county.
- Temporal resolution of categorization: A description of the time bins that are used to categorize every user's location. For example, the modal location ‘a’ that a user ‘i’ logs data in every hour.
- Temporal resolution of aggregation: A description of the time window for which data are aggregated for all users in region ‘A’. For example, we might be interested in the average numbers of locations ‘a’ (defined at top location per t min bin) overall space visited by users ‘i’ in region ‘A’ throughout an 8 h time window.
- Temporal thresholds: Rather than calculating locations by top location ‘a’ in every time bin t, providers may decide to calculate locations ‘a’ as those where the user ‘i’ spend at least a certain amount of time.

PUBLIC HEALTH RESPONSE

Continued

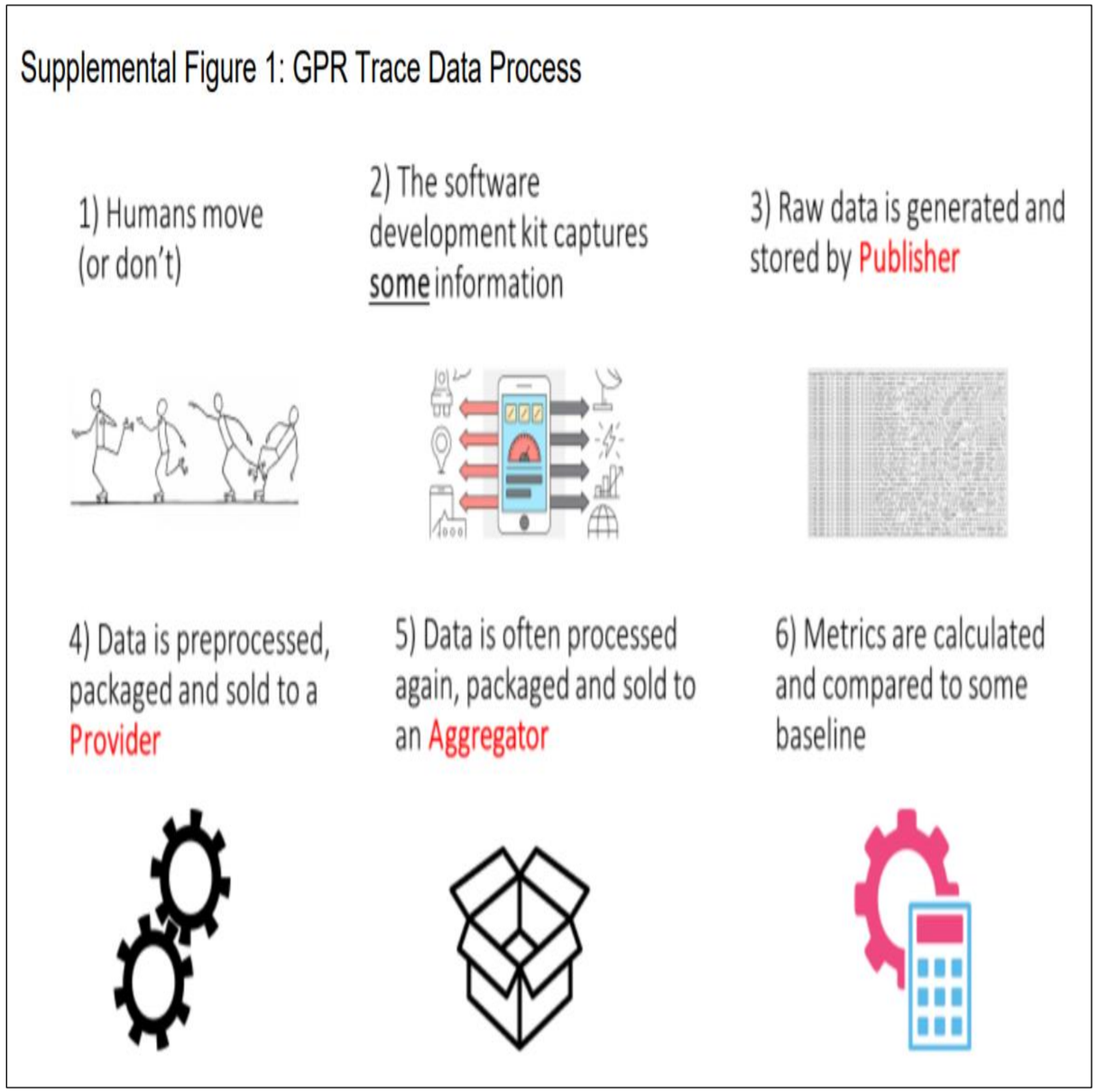
Explanation of Mobility Metrics and their Relation to Physical Distancing and COVID-19 Response

Population Distribution and Dynamics

- For most epidemiological analyses and modelling work, an estimate of the population residing in a specific region at a particular time provides an estimate of the denominator, which is the number of unique ‘i’ that spend most of their time in a given area. To estimate this quantity, we assign every user to a home location, which is typically either the night-time location of the user or the area where the user spends the most time in the set of locations.
- In the case of continuous GPS data collection, one can also use location at midnight local time, or a range around that time, if data availability is not continuous.

Number of Significant Locations

- The average number of significant locations indicates how many distinct places users spend a substantial amount of time. Normal human mobility entails very few significant locations: usually, home, work, or school. However, varying shelter-in-place orders can result in different types of behaviors. For example, strict never-leave-home orders would result in a reduction of significant locations to 1, whereas less strict orders might result in increased numbers of local significant locations as individuals attempt to leave their homes more frequently but briefly.



PUBLIC HEALTH RESPONSE

Continued

Transition Between Regions

- This value provides an estimate of mobility between locations, which can be used in models to estimate the spatial spread of SARS-CoV-2. Transition matrices should include number, index, or proportion of unique users ‘i’ who move from region ‘A’ to region ‘B’.
- It is important to note that this metric will vary with spatial scale and the time window considered. The authors recommend that this metric is, at most, 4 h for assessment of local travel networks, particularly those that might not cross time zones.

Distances Travelled

- This metric measures the amount of movement occurring within a population and is calculated for all start and stop points of the vectors of travel.
- Data obtained from cell towers should not be interpreted as movement patterns.

Radius of Gyration

- This metric provides a summary of travel that incorporates both the number of trips and the distance of every trip.

Regularity of Movement

- In general, human mobility is highly predictable. This predictability is important for urban planning, traffic forecasting, and public health. A formal measure of (un)predictability is location entropy. A low location entropy means an individual's time spent at their significant locations is highly predictable. Conversely, high location entropy suggests that predicting an individual's location is difficult. Therefore, the lowest location entropy would be achieved by a user who spends the same amount of time in the same places in every time window.

Average Co-location with Individuals in Other Regions

- This value provides an indication of how much contact individuals from one region have with individuals from other regions. This analysis is restricted to GPS trace data but provides the most direct measure of contact between different populations.

PUBLIC HEALTH RESPONSE

Continued

Measures of Staying Put

- This metric is a direct measure of how much time people are spending in one location versus moving around and is relevant to measuring the effect of shelter-in-place policies and other strict lockdowns. This metric should be inversely related to the measures of mobility above (average distance travelled and radius of gyration).

Measures of Travel to Points of Interest (Geofenced Locations)

- This metric will provide an indication of the nature of the travel that is being undertaken. First, define a set of locations of size a in region ‘A’ that are categorized as being locations of interest. These might include (but are not restricted to) parks, commercial areas, or grocery stores. These locations could either be grouped together in categories or specify different points of interest.

Public Health Message

- The Covid-19 pandemic has accelerated the use of aggregated mobility data from mobile devices, although without a universal governing framework for its application.
- Such data provide valuable insights, but without expertise and diligence, it is easy to misinterpret these data, or cause harm, even if inadvertent.
- As the Covid-19 pandemic continues, the metrics of interest and how they are used will also change. For example, the threshold of an optimal change in radius of gyration in response to a non-pharmaceutical intervention will be different now than when monitoring the same region for spikes in mobility 3 months from now.
- Authors shared this framework of data mobility to advance a common language of comparison across vast datasets, noting that a shared language will allow us to synchronize future analysis with the limitations of every metric.
- Together, considerations provide insights for policymakers and could inform epidemiological models about physical distancing and the spatial spread of Covid-19.
- Authors also argued that metrics from combining with clinical and public health data will have an important role in planning rollbacks of distancing because they help estimate the effect of various rollbacks on actual mobility patterns on the ground and, as a result, on epidemic spread.
- The benefits of using personal data should outweigh the risks to privacy, even during a pandemic, and should be an important central feature to guide partnerships with governments who make use of research products.

THANK YOU

ADPHCAE ADPHC_AE ADPHC_AE ADPHC.AE ADPHC-AE 056 2312171