مركز أبوظبي
للصحة العامة
ABU DHABI PUBLIC
HEALTH CENTRE

SCIENTIFIC RESEARCH MONITORING ON COVID-19

23 OCTOBER 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 534)

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

COVID-19 in New Zealand and the Impact of the National Response: A Descriptive Epidemiological Study

Public Health Response

SARS-CoV-2 Immunity: Review and Applications to Phase 3 Vaccine Candidates

Epidemiology

Epidemiological Changes on the Isle of Wight After the Launch of the NHS Test and Trace Programme: A Preliminary Analysis

EPIDEMIOLOGY

FROM 21 JAN TO 22 OCT PT 2020

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

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

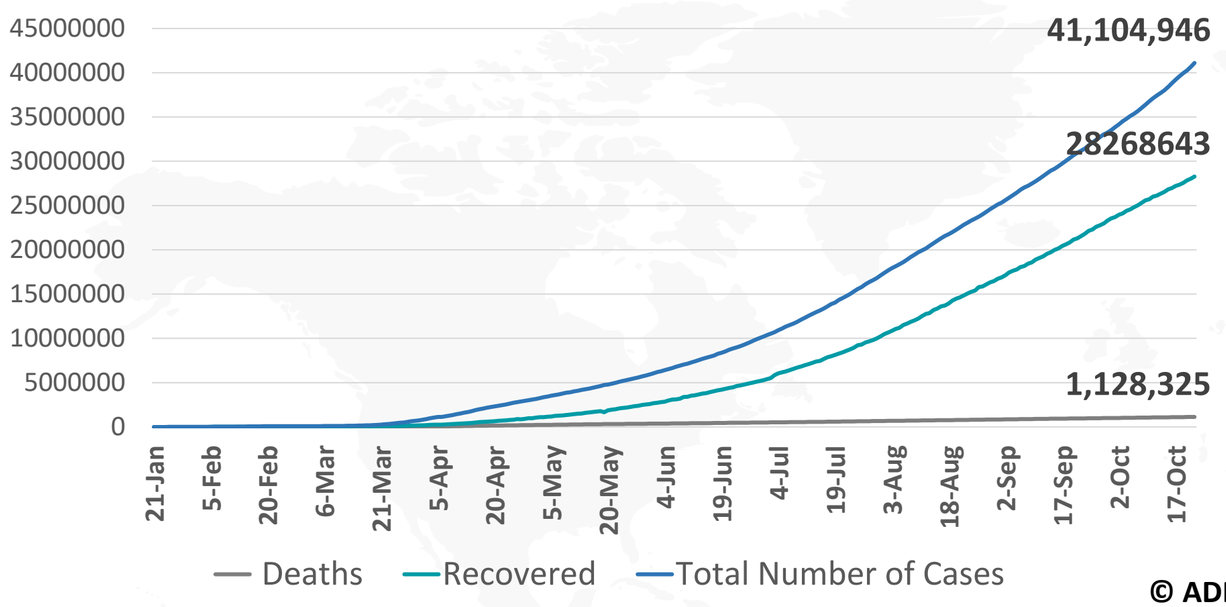


Figure 3: Total Number of Death Due to COVID-19 (china and result of the world)

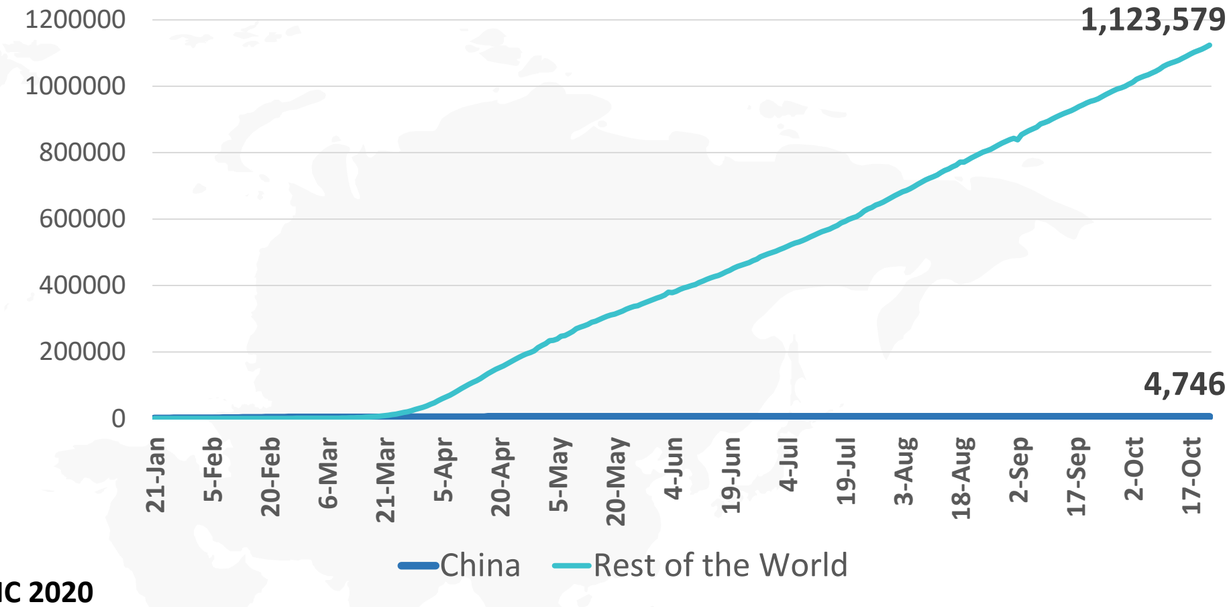


Figure 2: Daily New Infected COVID-19 Cases (China and rest of the world)

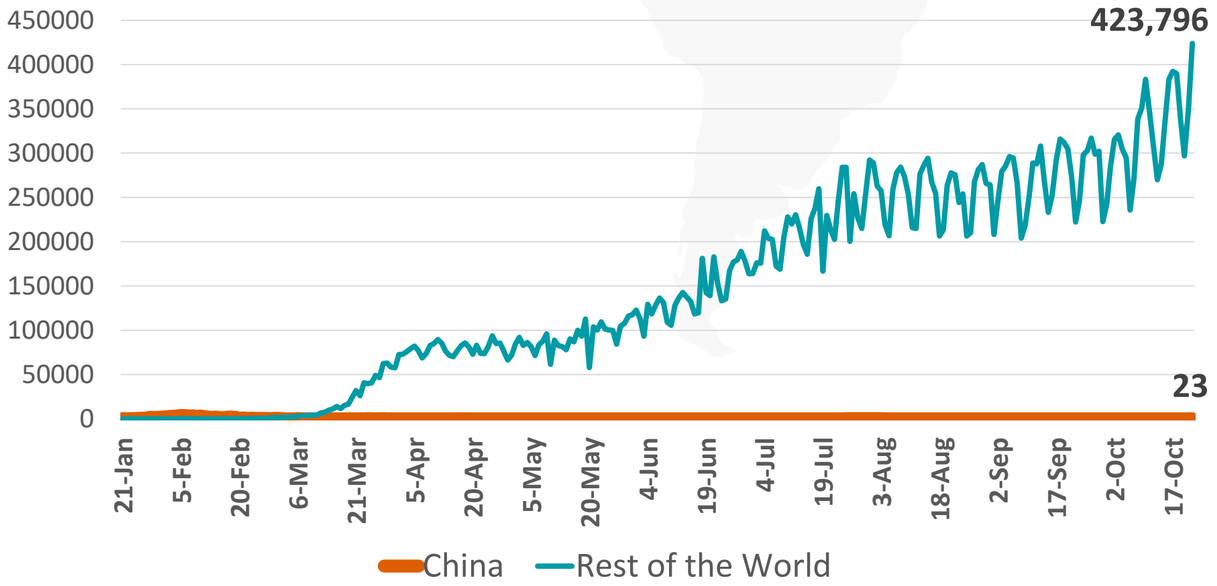
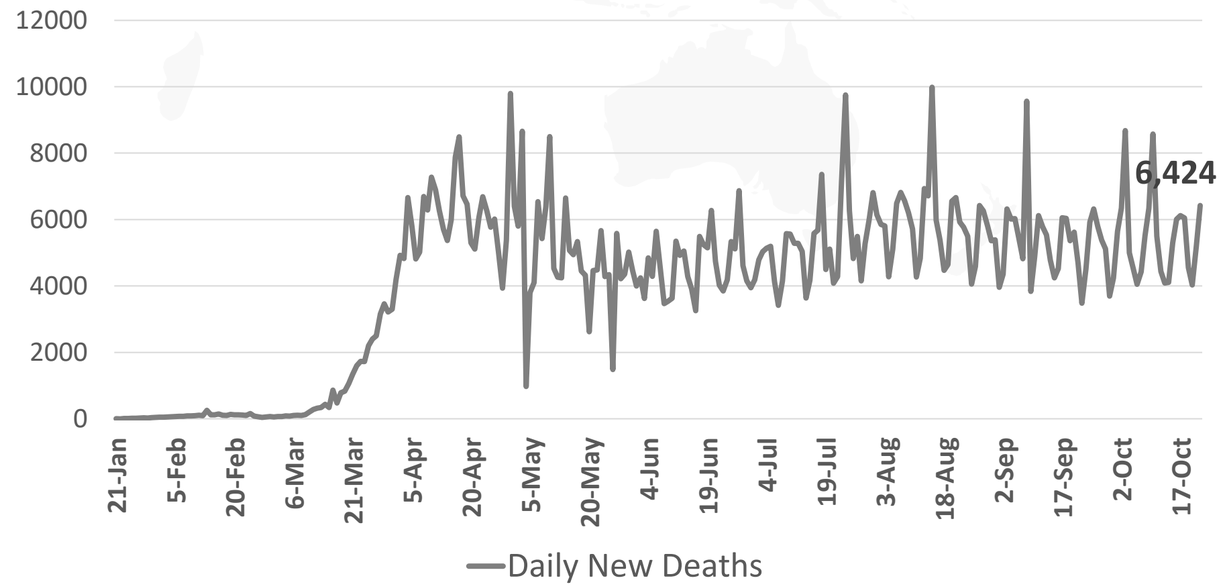


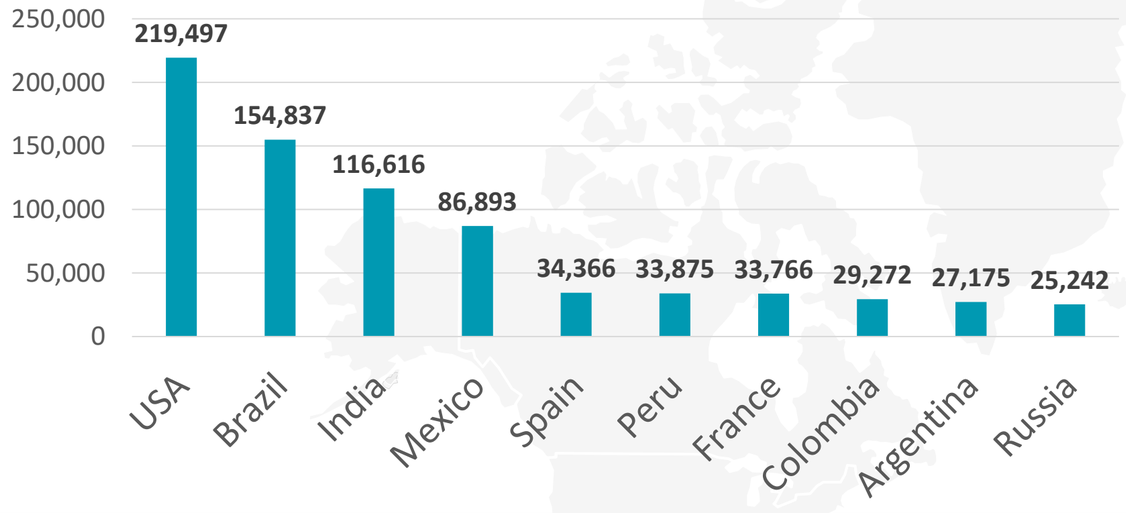
Figure 4: Global Daily New Deaths Due to COVID-19 (china and rest of the world)



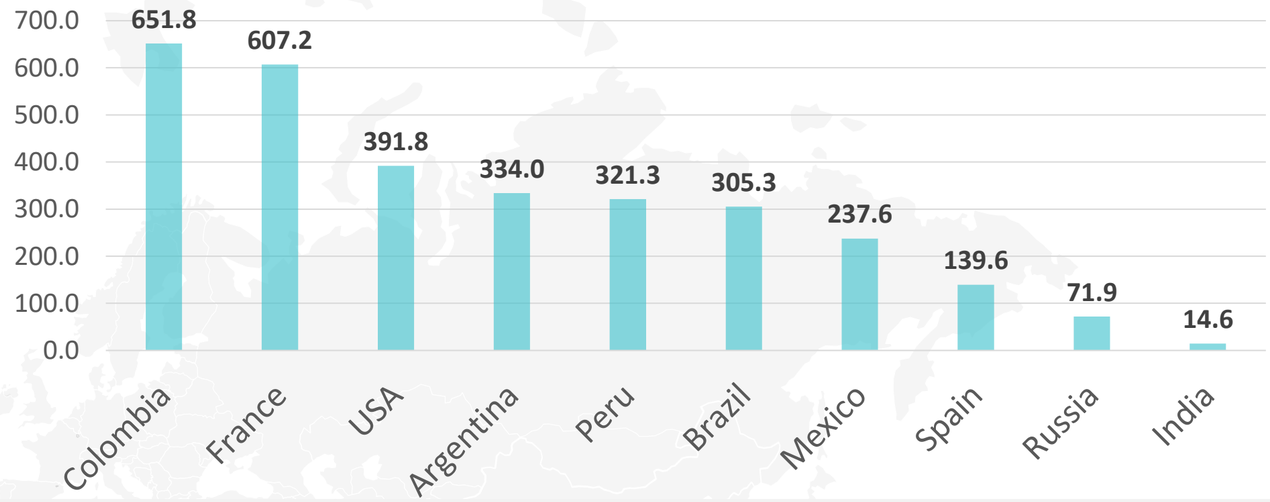
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: John Hopkins, WHO

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

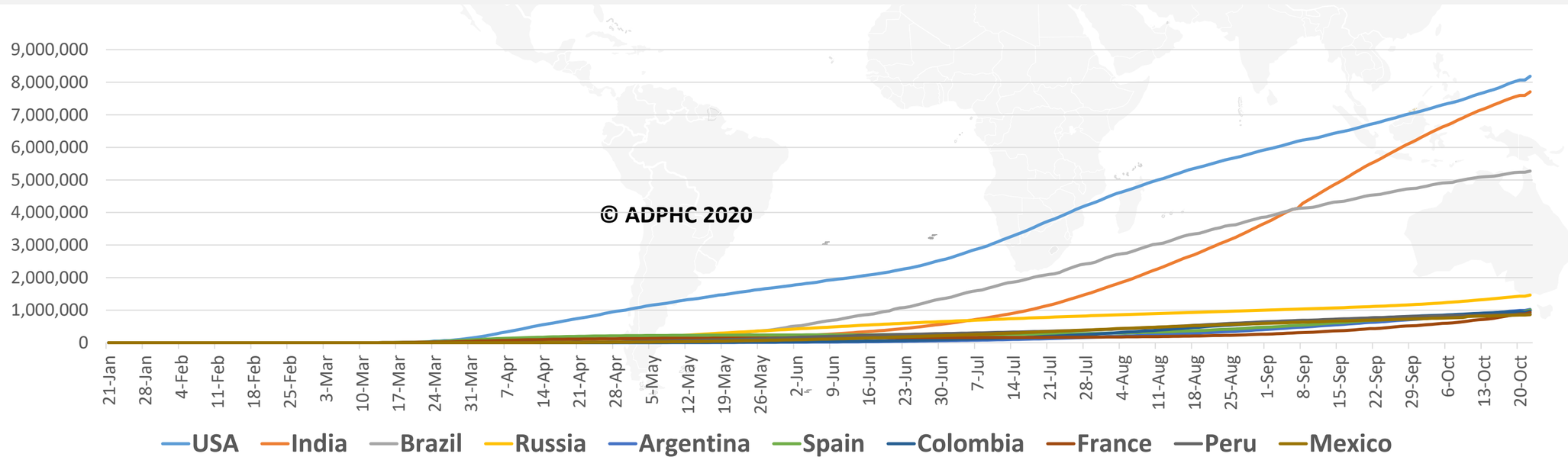
TOTAL DEATHS



DEATHS PER MILLION



TOTAL INFECTED CASES



USA	8,184,788
India	7,706,946
Brazil	5,273,954
Russia	1,463,306
Argentina	1,021,397
Spain	1,005,295
Colombia	974,139
France	927,193
Peru	874,118
Mexico	860,714

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

EPIDEMIOLOGY

FROM 21 JAN TO 22 OCT PT 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

110,291.4 Average Tests

1,115.1 per 100k population

1.2% Positive Rate

Daily Cases

1,324.7 Average Cases

13.4 per 100k population

Daily Recovered

1,434.1 Average Recovered

14.5 per 100k population

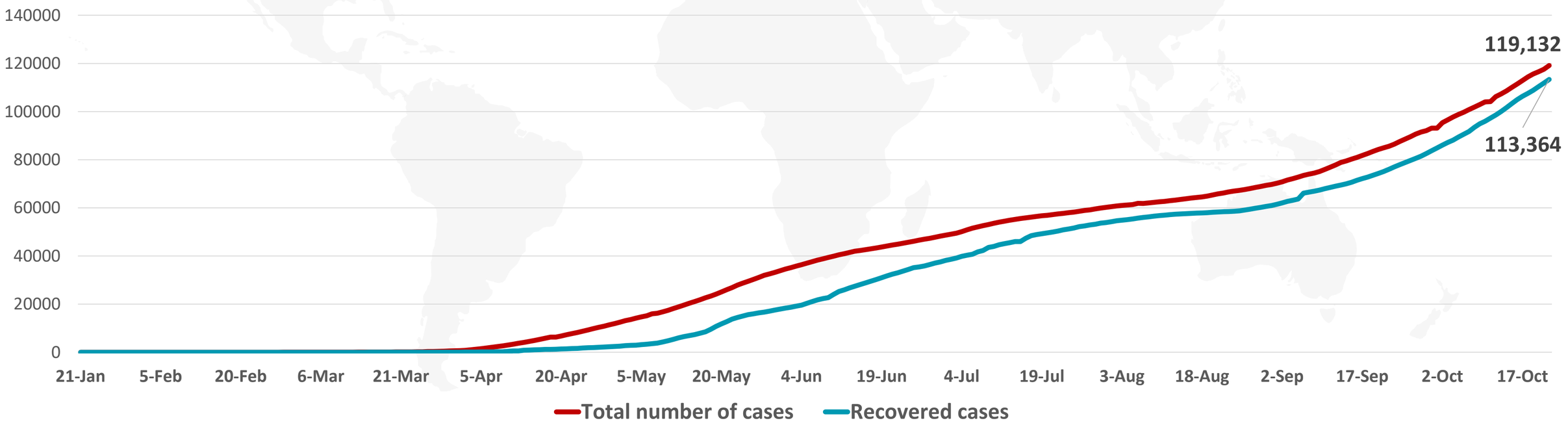
Daily Deaths

3.1 Average Deaths

0.0 per 100k population

0.2% Case Fatality Rate

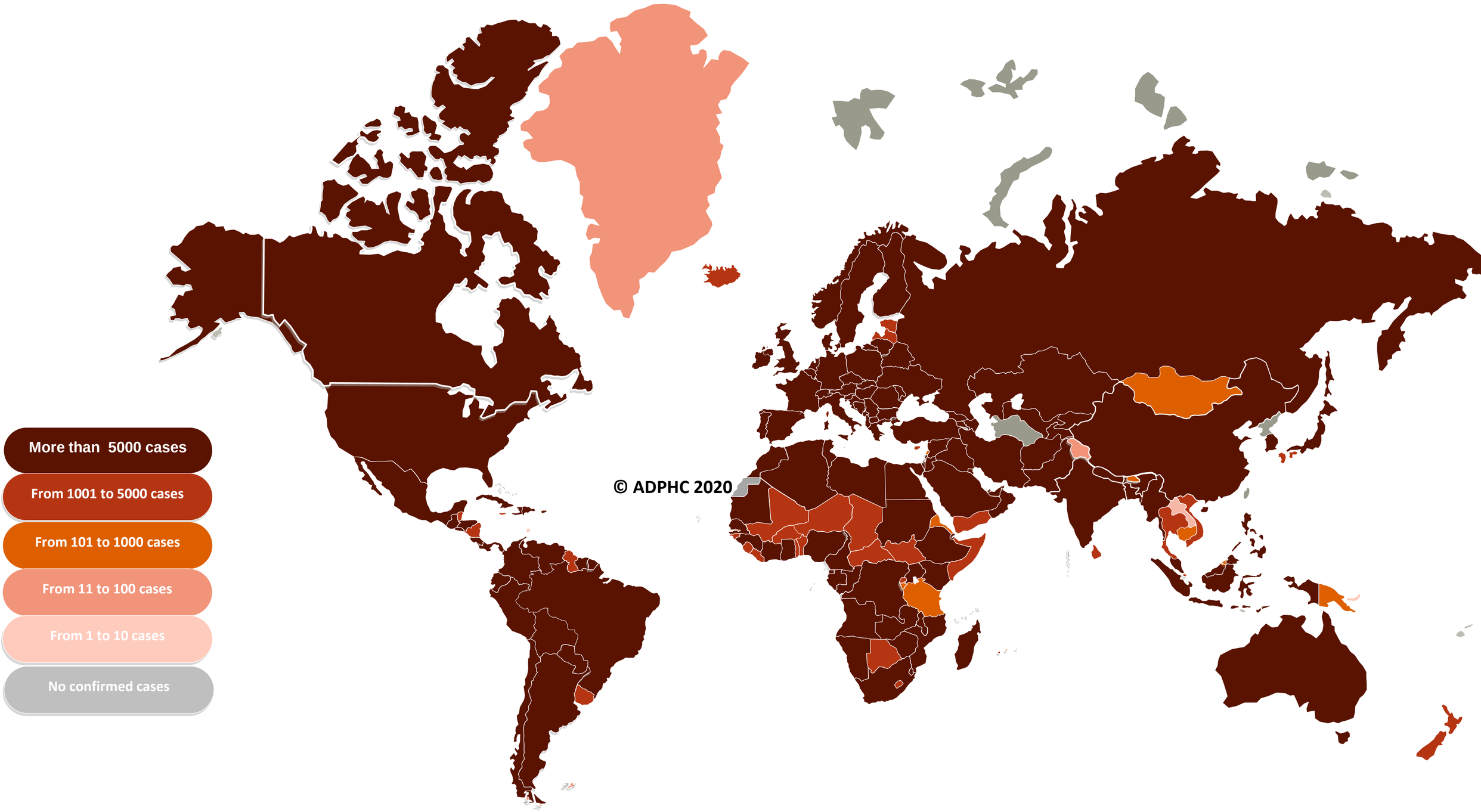
TOTAL NUMBER OF INFECTED AND RECOVERED CASES DUE TO COVID-19 REPORTED BY THE UAE



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

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

Figure 7A : Global Distribution of COVID-19 Cases



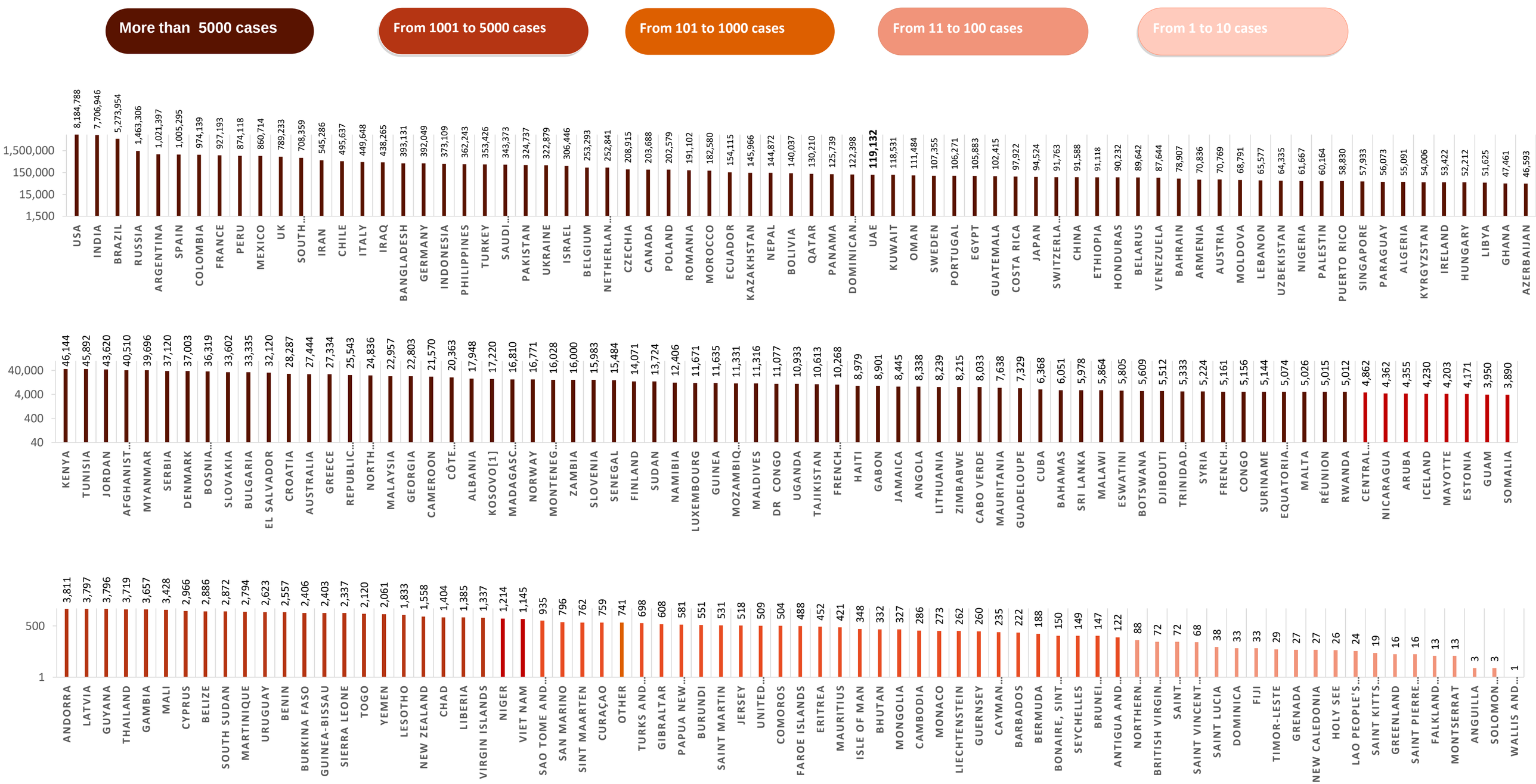
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

EPIDEMIOLOGY

Date: 22 OCT 2020

مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

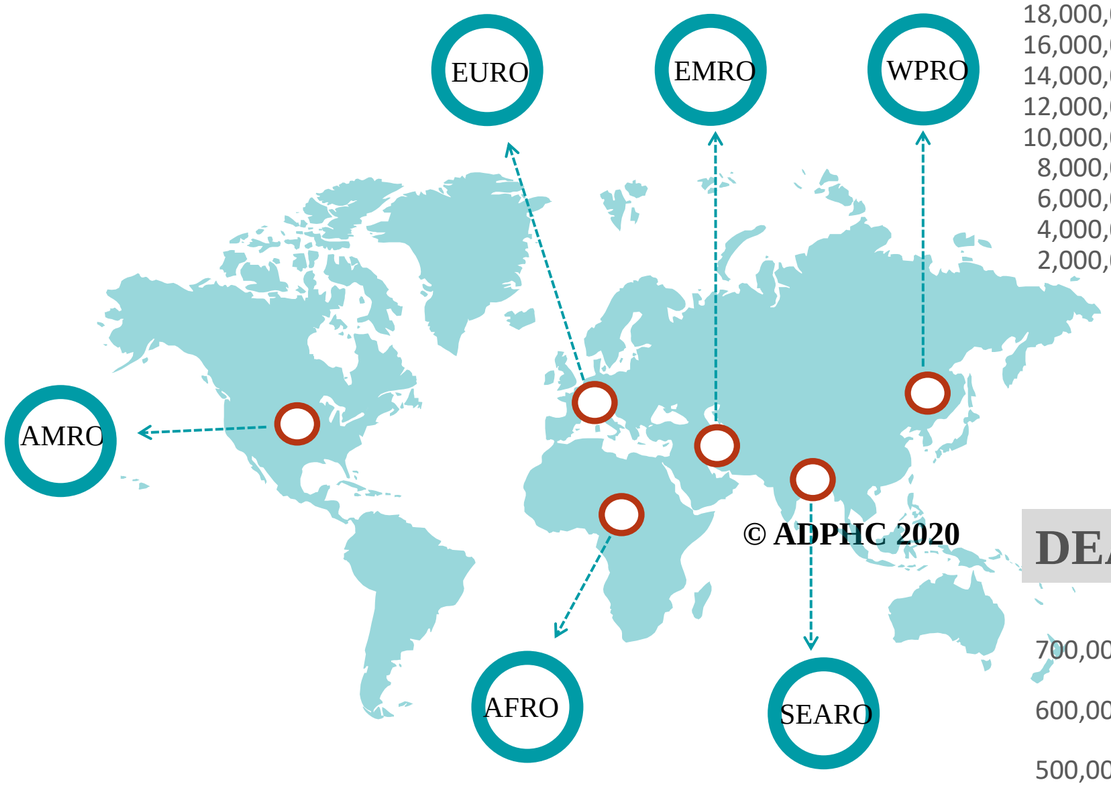
Figure 7B: Bar Chart Illustrates the Global Distribution of COVID19 Cases



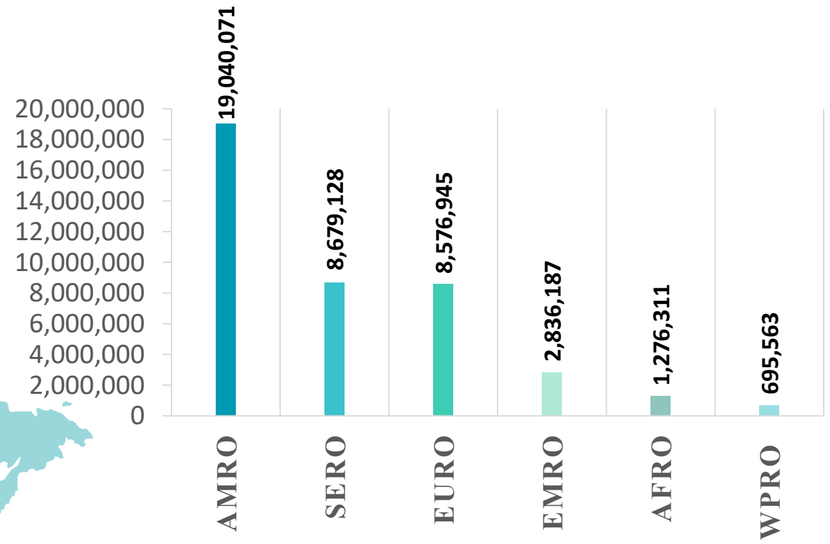
Other*:includes cases and deaths reported under the international conveyance(Diamond Princess)

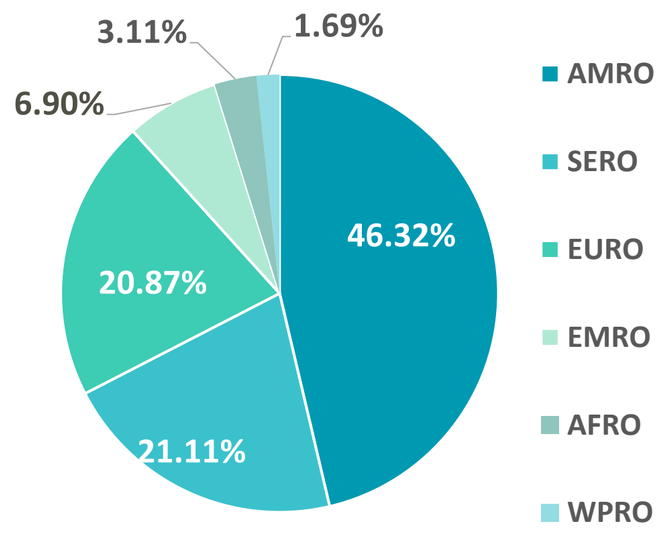
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

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

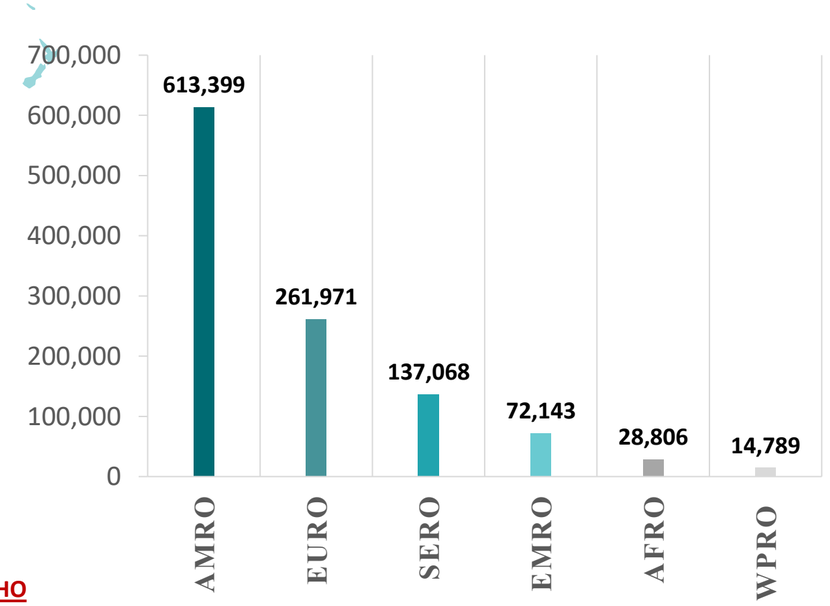


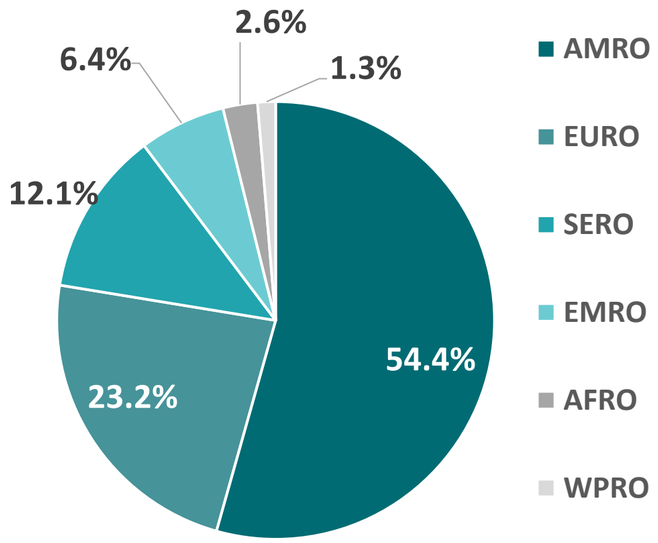
INFECTED





DEATHS

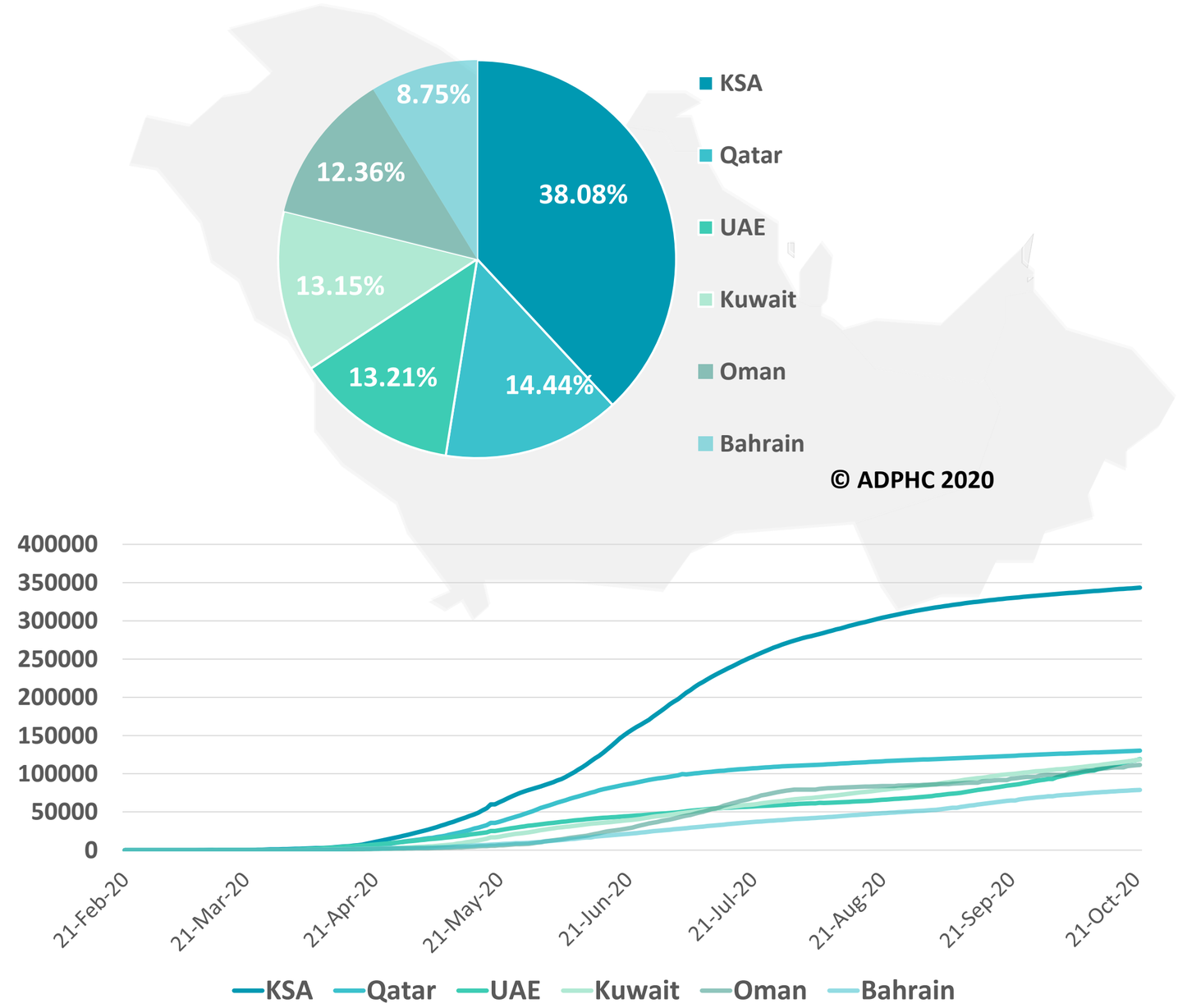




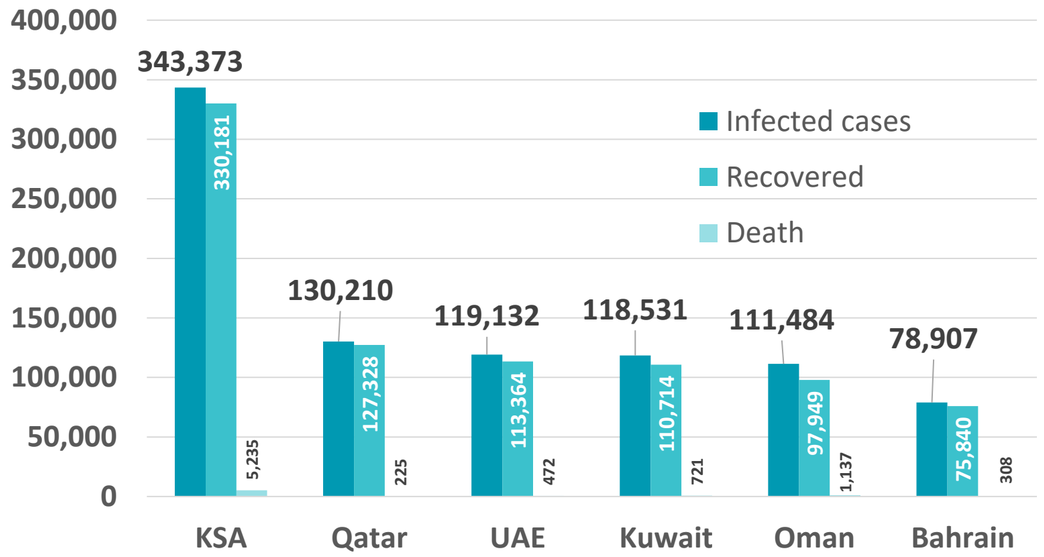
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

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

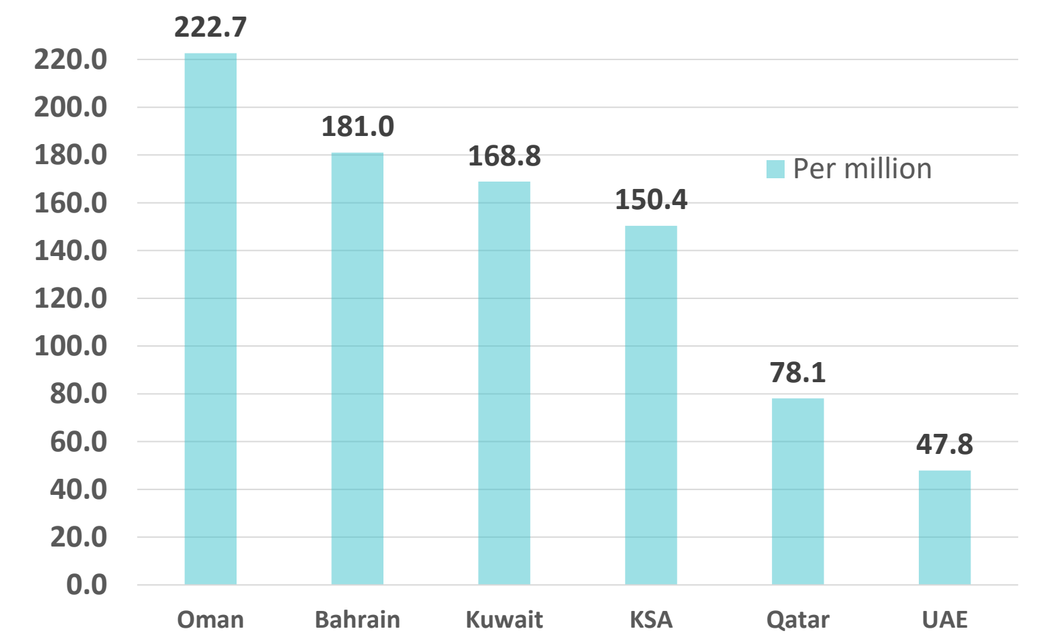
TOTAL NUMBER OF INFECTED CASES



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

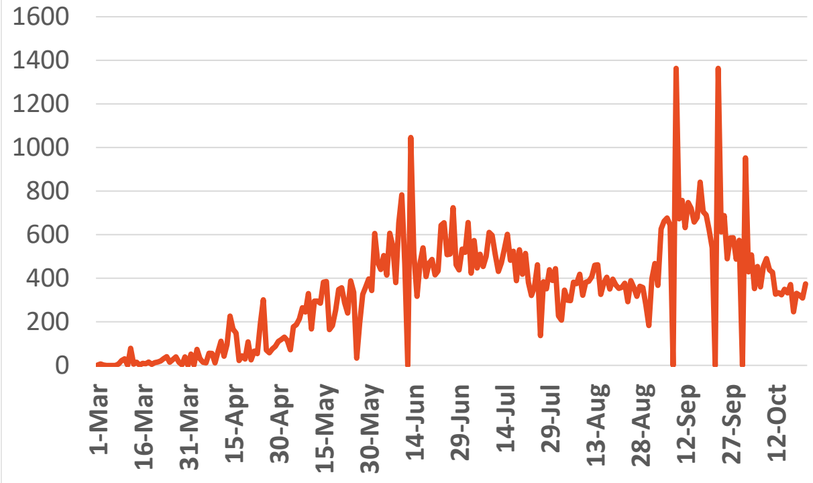
UAE

Source : National Emergency Crisis and Disaster Management Authority

KSA

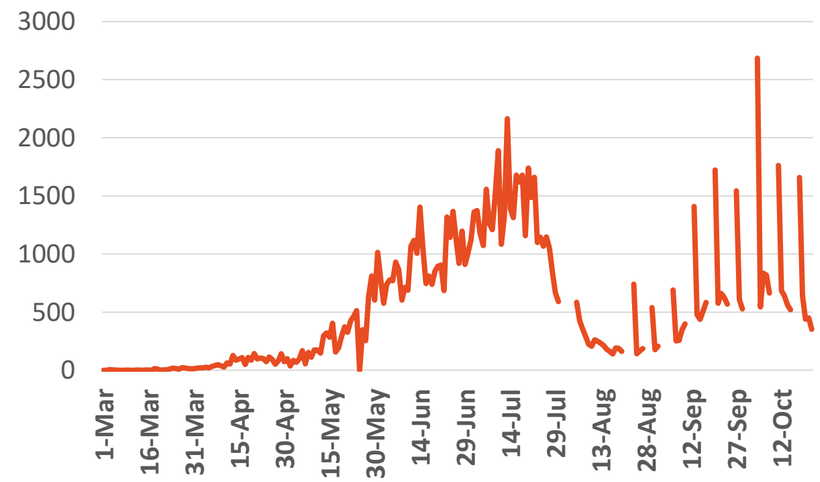
Source : KSA ministry of health

Bahrain



Source :WHO

Oman

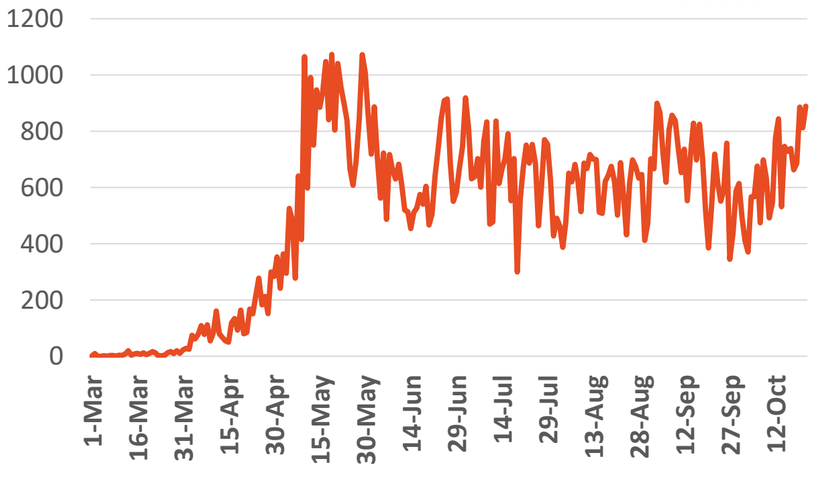


Source :Oman ministry of health

*No announced statistic data from 31 July to 4 August, 21,23,28,30 August 2, 4، 5,11,12,18,19,25 ,26,30 September,1,2,9,10,16 &17 October

*No announced statistic data on weekends and official holidays.

Kuwait

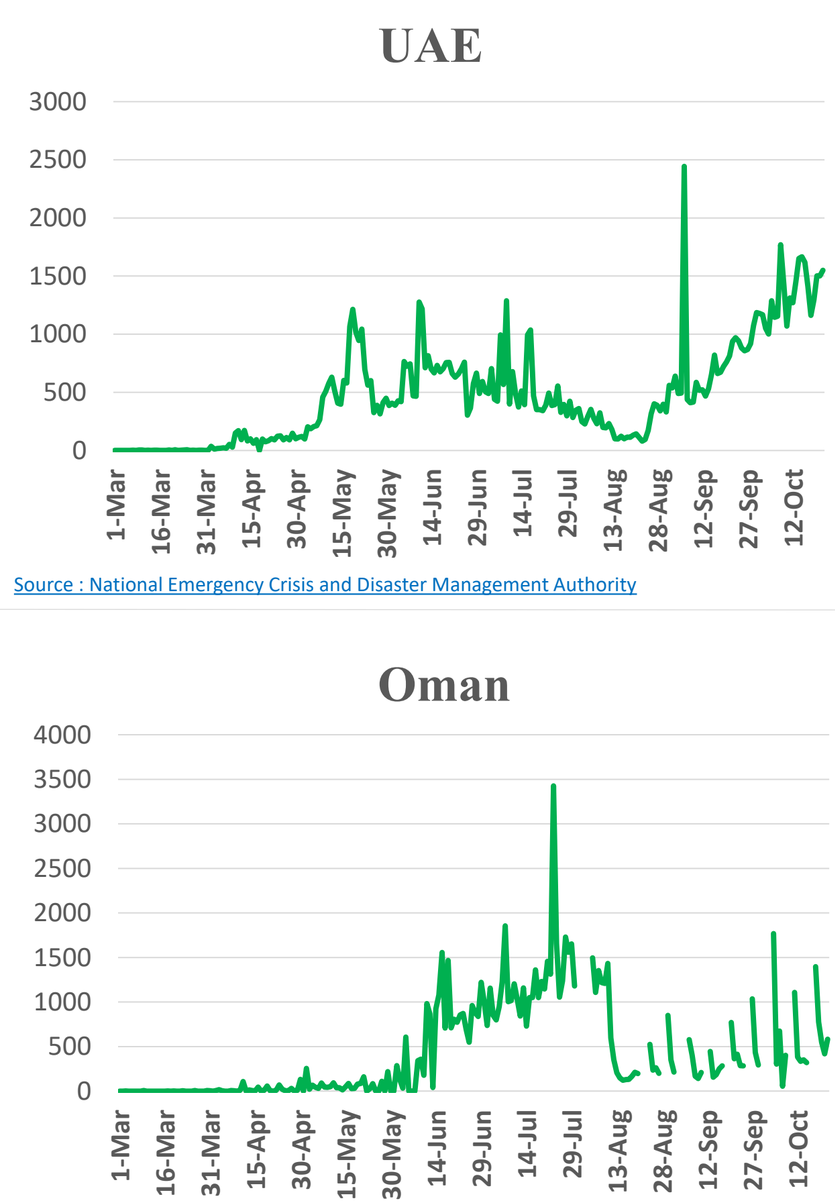


Source : Kuwait ministry of health

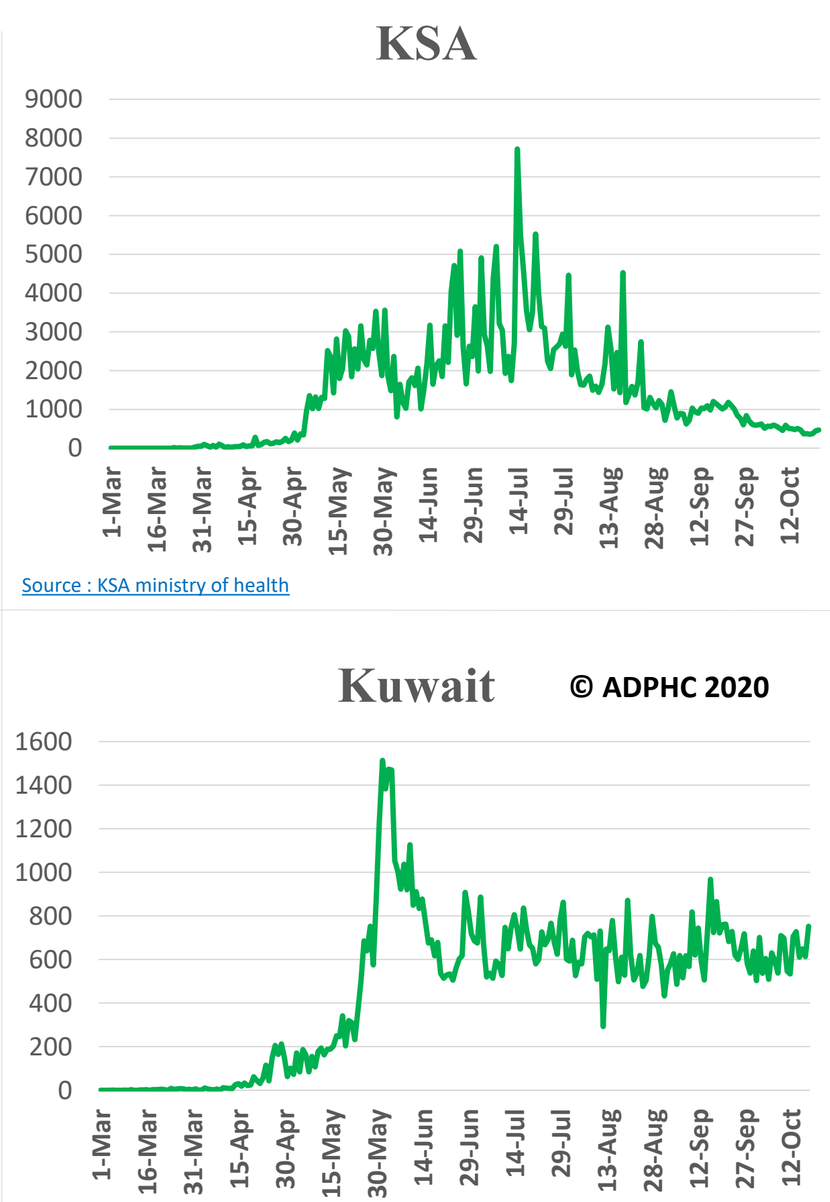
Qatar

Source : Qatar ministry of health

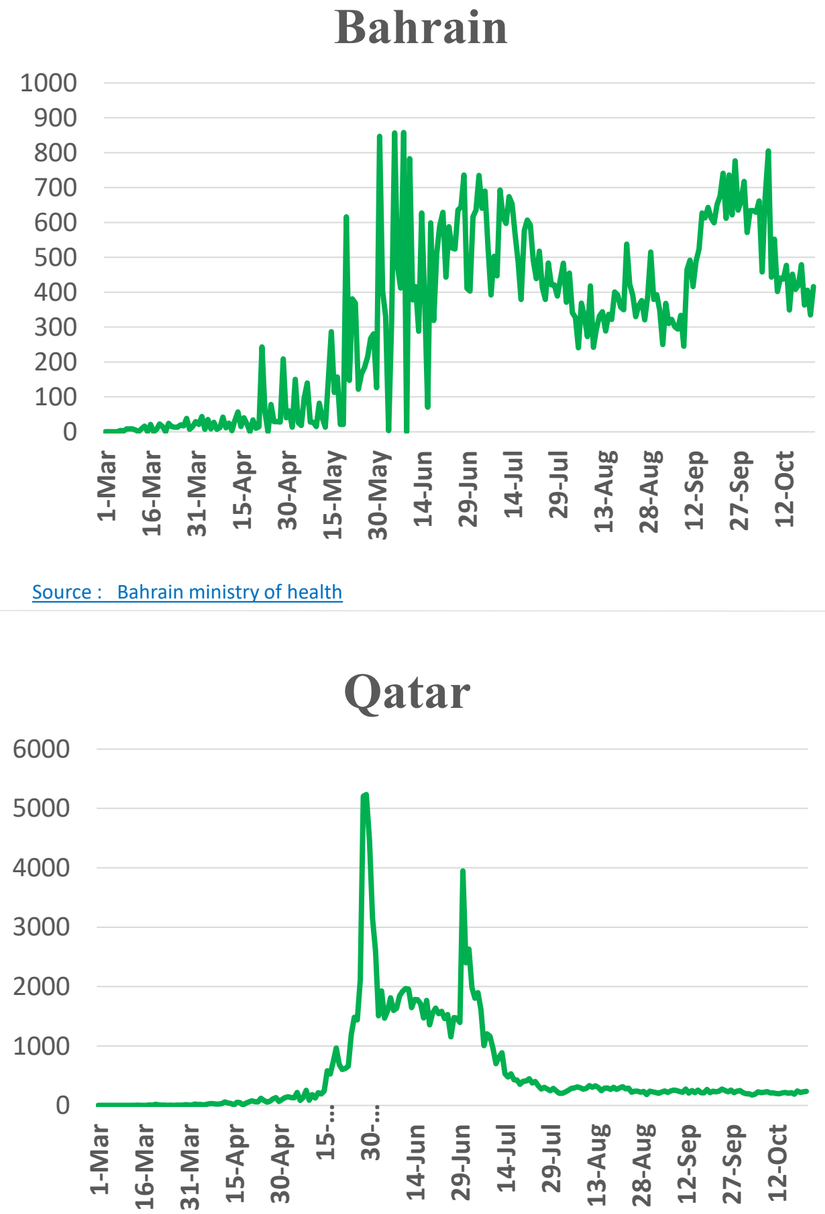
Figure 11: Comparative Analysis of the Distribution of COVID-19 Newly Recovered Cases in GCC Countries



Source : National Emergency Crisis and Disaster Management Authority



Source : KSA ministry of health



Source : Bahrain ministry of health

Source :Oman ministry of health

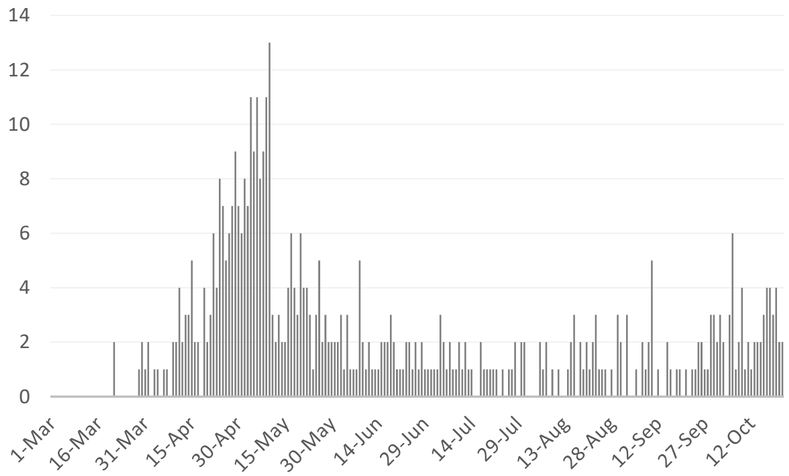
Source : Kuwait ministry of health

Source : Qatar ministry of health

*No announced statistic data from 31 July to 4 August, 21,23,28,30 August 2, 4، 5,11,12,18,19,25 ,26,30 September, 1,2,9,10,16 &17 October
*No announced statistic data on weekends and official holidays.

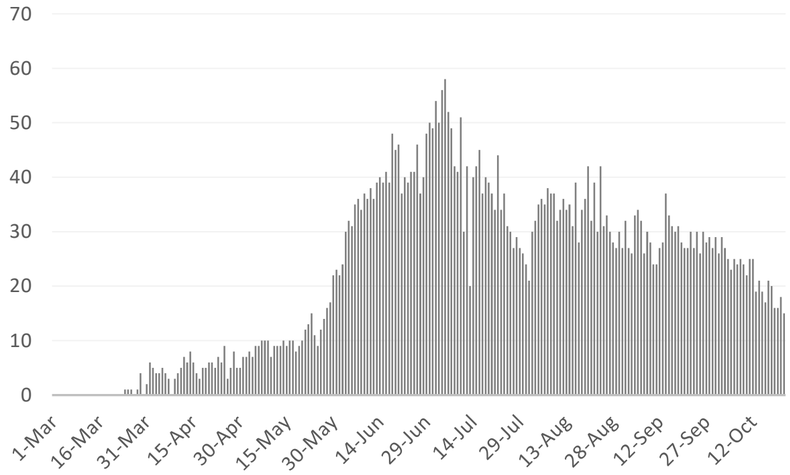
Figure 12: Comparative Analysis of the Distribution of COVID-19 New Death Cases in GCC Countries

UAE



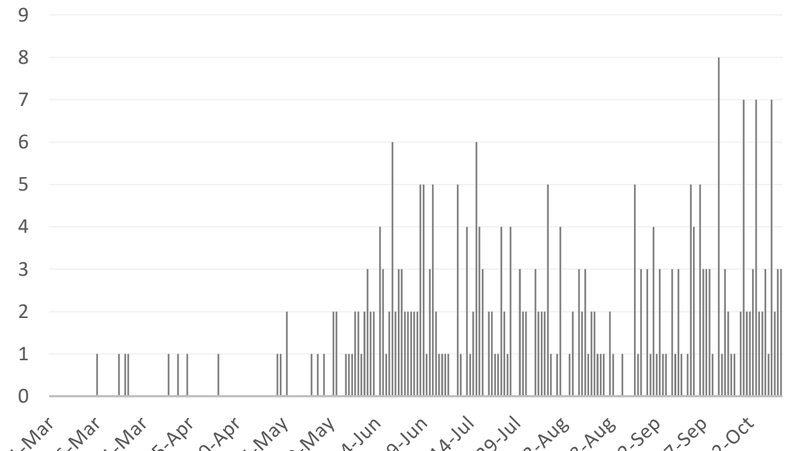
Source : National Emergency Crisis and Disaster Management Authority

KSA



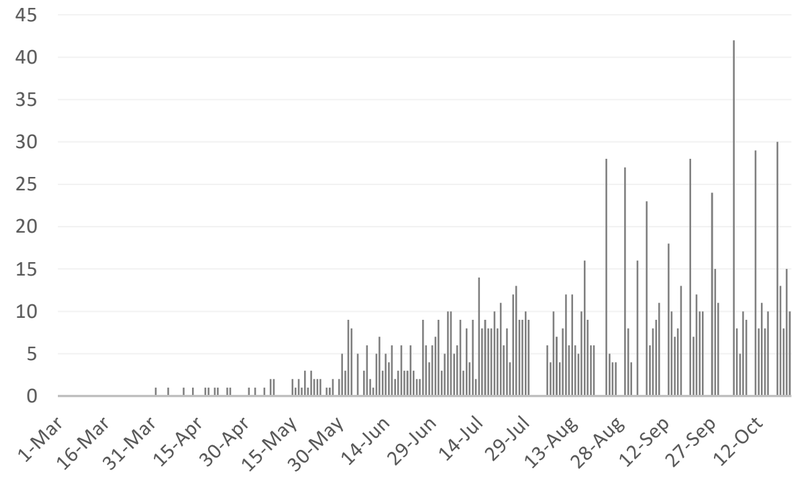
Source : KSA ministry of health

Bahrain



Source :WHO

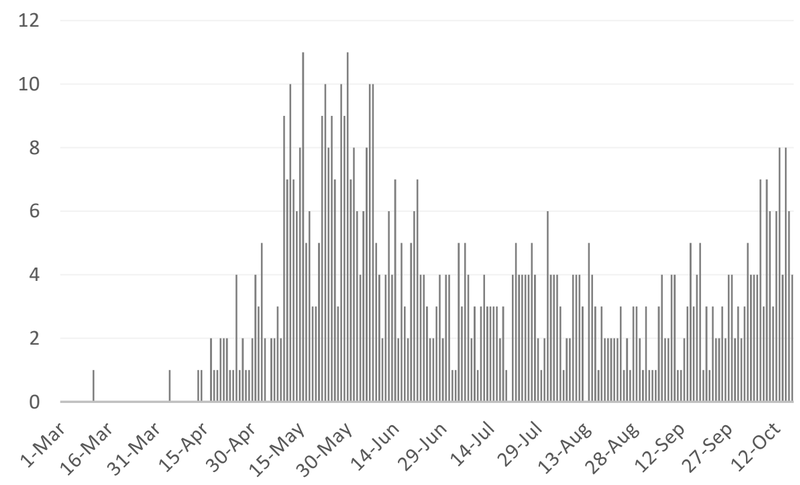
Oman



Source :Oman ministry of health

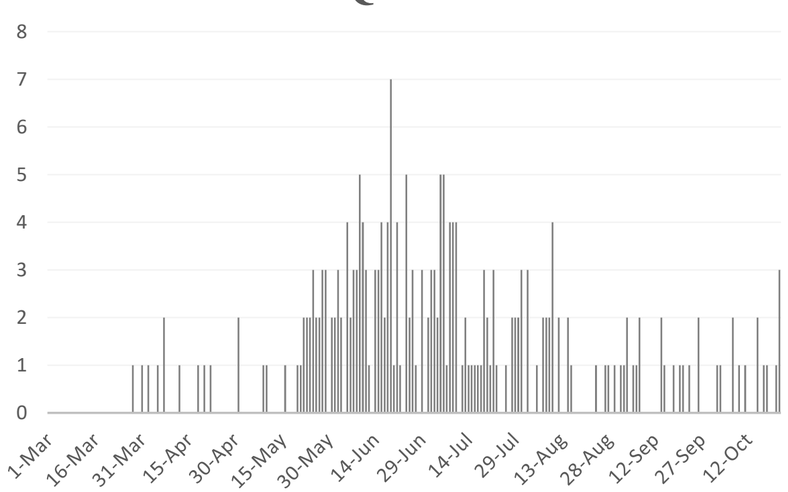
*No announced statistic data from 31 July to 4 August, 21,23,28,30 August 2, 4، 5,11,12,18,19,25 ,26,30 September, 1,2,9,10,16 &17 October
*No announced statistic data on weekends and official holidays.

Kuwait



Source : Kuwait ministry of health

Qatar



Source : Qatar ministry of health

Article 1

COVID-19 in New Zealand and the Impact of the National Response: A Descriptive Epidemiological Study

Published October 13, 2020 The Lancet Public Health

Background

- In early 2020, during the COVID-19 pandemic, New Zealand implemented graduated, risk-informed national COVID-19 suppression measures aimed at disease elimination.
- The impact on the epidemiology of the first wave of COVID-19 in the country and response performance measures are reported in this article.

Methods

- Study design:
  - Descriptive epidemiological study.
- Study population:
  - All laboratory-confirmed and probable cases of COVID-19 and all patients tested for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in New Zealand from Feb 2 to May 13, 2020, after which time community transmission ceased.
- Data sources:
  - National notifiable diseases database and the national SARS-CoV-2 test results repository.
- Outcome measures and analysis:
  - Demographic features and disease outcomes
  - Transmission patterns (source of infection, outbreaks, household transmission)
  - Time-to-event intervals
  - Testing coverage

  The above were described over five phases of the response, capturing different levels of non-pharmaceutical interventions.
  - Risk factors for severe outcomes (hospitalization or death) were examined with multivariable logistic regression
  - Time-to-event intervals were analyzed by fitting parametric distributions using maximum likelihood estimation.

PUBLIC HEALTH RESPONSE

Continued

Findings

- There were 1503 cases detected over the study period, including 95 (6·3%) hospital admissions and 22 (1·5%) COVID-19 deaths.
- The estimated case infection rate per million people per day peaked at 8·5 (95% CI 7·6–9·4) during the 10 days of rapid response escalation, declining to 3·2 (2·8–3·7) in the start of lockdown and progressively thereafter.
- 1034 (69%) cases were imported or import-related, tending to be younger adults, of European ethnicity, and higher socioeconomic status.
- 702 (47%) cases were linked to 34 outbreaks.
- Severe outcomes were associated with:
  - Locally acquired infection (crude odds ratio [OR] 2·32 [95% CI 1·40–3·82] compared with imported)
  - Older age (adjusted OR ranging from 2·72 [1·40–5·30] for 50–64-year-olds to 8·25 [2·59–26·31] for people aged ≥80 years compared with 20–34-year-olds),
  - Aged residential care residency (adjusted OR 3·86 [1·59–9·35]) and
  - Pacific peoples (adjusted OR 2·76 [1·14–6·68]) and Asian (2·15 [1·10–4·20]) ethnicities relative to European or other
- Times from illness onset to notification and isolation progressively decreased
- Testing increased over the study period, with few disparities and increasing coverage of females, Māori, Pacific peoples, and lower socioeconomic groups.

Interpretation

New Zealand’s response resulted in:

- Low relative burden of disease
- Low levels of population disease disparities
- Initial achievement of COVID-19 elimination

Article 2

SARS-CoV-2 Immunity: Review and Applications to Phase 3 Vaccine Candidates

Published October 13, 2020 THE LANCET

Review Focus

- What is currently known about human humoral and cellular immune responses to severe acute respiratory syndrome coronavirus 2.
- Relate the above knowledge to the COVID-19 vaccines currently in phase 3 clinical trials.

Conclusion

- Much remains to be learned regarding coronavirus immunity in general and SARS-CoV-2 immunity in particular, including the protective immunity induced by vaccines and the maintenance of immunity against this virus.
- Multiple vaccine types will probably be needed across different populations (eg, immuneimmature infants, children, pregnant women, immunocompromised individuals, and immunosenescent individuals aged ≥65 years).
- In addition to the adaptive immune response, some data are suggesting that trained innate immunity might also have a role in protection against COVID-19. Multiple clinical trials are examining whether unrelated vaccines, such as the measles, mumps and rubella vaccine and the Bacillus Calmette–Guérin vaccine, can elicit trained innate immunity and confer protection against COVID-19.
- It is crucial that research focuses on understanding the genetic drivers of infection and vaccine-induced humoral and cellular immunity to SARS-CoV-2, defining detailed targets of humoral and cellular immune responses at the epitope level, characterizing the B-cell receptor and T-cell receptor repertoire elicited by infection or vaccination, and establishing the long-term durability, and maintenance, of protective immunity after infection or vaccination.
- A safe regulatory pathway leading to licensing must also be defined for use of these vaccines in children, pregnant women, immunocompromised people, and nursing home residents.
- Some have called for further shortening of the vaccine development process through the use of controlled human challenge models. As of Oct 5, 2020, no such studies have occurred, but the UK is considering initiating such trials in early 2021.

Article 3

Published October 14, 2020 The Lancet

Epidemiological Changes on the Isle of Wight After the Launch of the NHS Test and Trace Programme: A Preliminary Analysis

Background

- In May 2020, the UK National Health Service (NHS) Test and Trace program was launched in England in response to the COVID-19 pandemic.
- The program was first rolled out on the Isle of Wight and included version 1 of the NHS contact tracing app. The study aimed to make a preliminary assessment of the epidemiological impact of the Test and Trace program using publicly available data.

Methodology

- The authors used COVID-19 daily case data from Public Health England to infer incidence of new infections and estimate the reproduction number (R) for each of the 150 Upper-Tier Local Authorities (UTLAs) in England and nationally, before and after the launch of the Test and Trace program on the Isle of Wight.
- Bayesian and maximum-likelihood methods were used to estimate R and compared the Isle of Wight with other UTLAs using a synthetic control method.

Results

- The daily number of new infections on the Isle of Wight was generally decreasing from mid-April, although there was no data to discern the extent to which this was the impact of non-pharmaceutical interventions versus the effect of insufficient test availability.
- **A significant decreases in incidence and R was observed on the Isle of Wight immediately after the launch of the Test and Trace program.**
- On the Isle of Wight, R declined rapidly after the Test and Trace launch from a value of 1.0 on May 5, to 0.25 on May 23.
- The R-value then fluctuated and gradually increased to 0.54 on June 14. **However, COVID-19 incidence was low towards the end of the study, with just one new case every 5–10 days**.
- Both synthetic control scenarios (first using weekly averages of the estimates of R alone, and second using additional demographic information) showed that R was lower for the Isle of Wight than for its synthetic control for most of the period after the Test and Trace launch.

EPIDEMIOLOGY

Continued

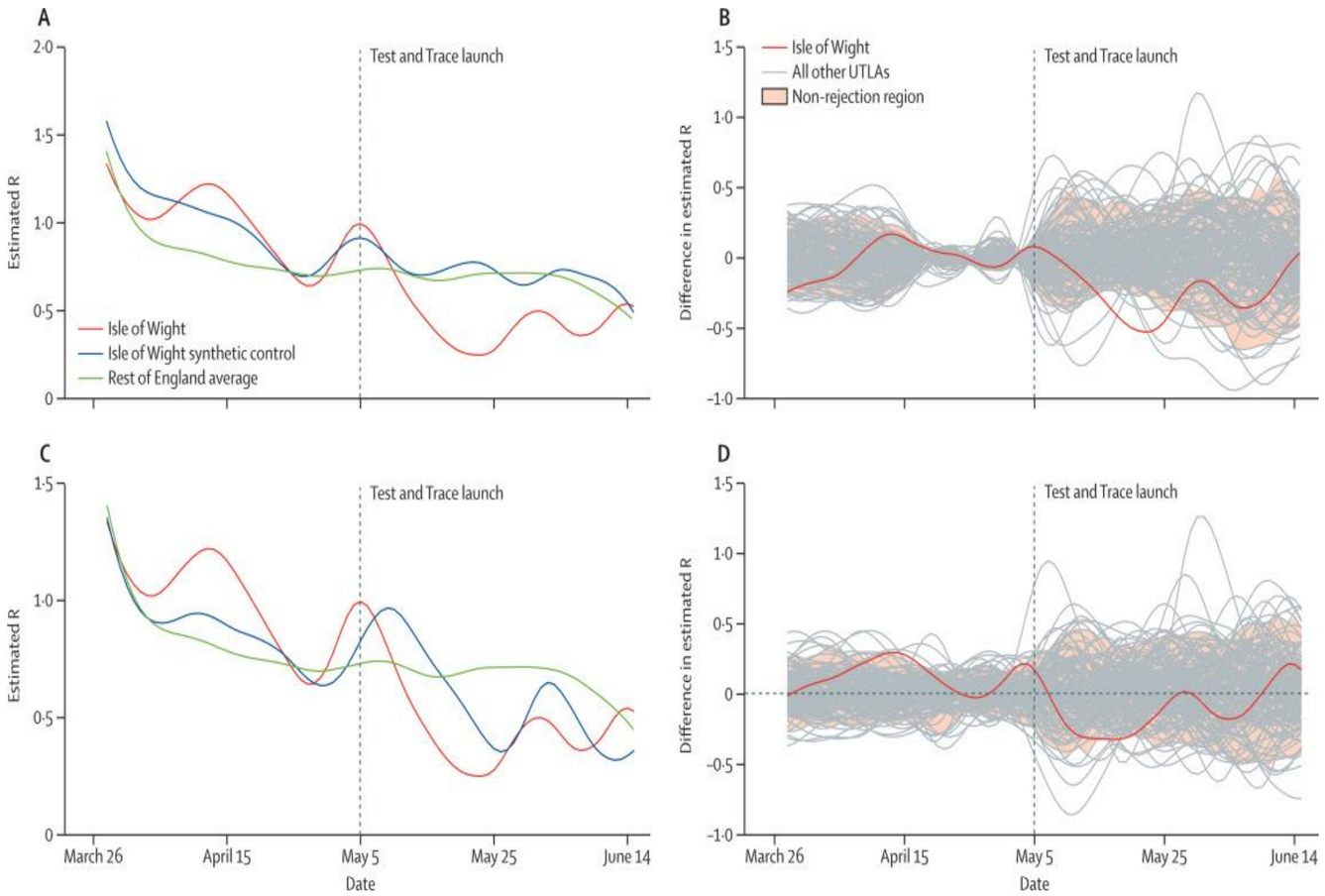


Figure. Comparison between R on the Isle of Wight and other UTLAs in England using a synthetic control approach and pillar 1 data.

(A) Synthetic control using the mean R in each of the three weeks of the training or validation period as matching variables. This scenario gives 71% weight to the East Ridings of Yorkshire, 28% to Doncaster, and 1% to Sandwell in constructing the synthetic control. (B) Difference between each UTLA and its respective synthetic control (scenario 1). The non-rejection region (red shading) contains 95% of all UTLAs. A line outside the area is classified as significantly different from zero at the 5% level. (C) Synthetic control using the mean R in each of the 3-week periods and age and ethnicity variables (proportion of the population aged 0–19 years, 20–44 years, 45–64 years, 65–74 years, and ≥75 years, and the proportion of the population who were white, Asian, Black, and African Caribbean) as matching variables. This approach gives 64% weight to Dorset, 32% to North Somerset, 3% to the East Ridings of Yorkshire, and 1% to Kensington and Chelsea in constructing the synthetic control. (D) Difference between each UTLA and its respective synthetic control (scenario 2). The non-rejection region (red shading) contains 95% of all UTLAs. A line outside the area is classified as significantly different from zero at the 5% level. Dashed vertical lines indicate the date of the Test and Trace programme launch. In all figure subparts, results are truncated on June 14. UTLA=Upper-Tier Local Authorities.

Public Health Message

- **Immediately after the launch of the Test and Trace program, a significant decrease in incidence and R on the Isle of Wight was observed**.
- The results support that Test and Trace programs could be effective in suppressing the COVID-19 epidemic and future studies to assess the combined and individual effects of each aspect of test and trace interventions are needed.
- Determining the exact causes of successful suppression of local epidemics will be crucial for informing national non-pharmaceutical intervention strategies.

THANK YOU

ADPHCAE ADPHC_AE ADPHC_AE ADPHC.AE ADPHC-AE 056 2312171