ABU DHABI PUBLIC HEALTH CENTRE | مركز أبوظبي للصحة العامة

Scientific Research Monitoring on COVID-19

25 June 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

Summary on COVID19

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SARS-COV2 virus

- The virus have been sequenced and found to be similar to MERS-CoV and SARS-CoV. Research revealed that the virus originated in a bat reservoir.
- New designation for the disease and the virus: COVID-19 and SARS-COV2.
- Two strain have been identified for SARS-COV2 (L type (more aggressive) and S type .and 3 cluster groups.

Transmission

- Transmission from human to human has been confirmed. Incubation period ranges from 5 days and can reach up to 14 days.
- Suggested human-to-human transmission occurs through droplets, contact and fomites, similar to Severe Acute Respiratory Syndrome (SARS).

Clinical features and outcome

- Non-specific and the disease presentation can range from no symptoms (asymptomatic) to severe pneumonia and death.
- Highest risk for severe disease and death include people aged over 60 years and those with underlying conditions
- Pregnant women infected with SARS-COV2 may experience symptoms similar to those of non-pregnant adults. No evidence suggests transmission from mother to newborn if infected late in pregnancy.

Therapies and vaccination

- Efforts currently in developing therapies for this virus focus on previously known medications and vaccination for MERS-CoV and SARS-CoV. In addition to other type of medication.
- Also more therapies are currently under investigation including immunomodulatory, antimalarial and others.
- Vaccination are under clinical trial stage in many countries around the world.

Summary on COVID19 (Cont.)

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COVID19 in figure

- 80% of laboratory confirmed patients have had mild to moderate disease
- 13.8% have severe disease.
- 6.1% are critical
- Children account for 2.4% of all reported cases.(less than 19 years) data from china

Todays' Highlights

All articles presented in this report represents the authors' views and not necessarily represents Abu Dhabi Public Health Center views or directions.

Scientific Research

- **Epidemiology:** a modelling study found that self-isolation and effective contact tracing are enough measures to lower the Reproductive number to lower than 1.
- **Treatment:** In non-mechanically ventilated patients with severe COVID-19 pneumonia and systemic hyper-inflammation, Mavrilimumab treatment was associated with improved clinical outcomes compared with standard care and was well tolerated.
- **Mental health: an** article that discussed how delay in the court function because of COVID19 have affected negatively the mental health of prisoners. The article also suggests some recommendation on how to maintain mental health of prisoners.

WHO daily report

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WHO Daily Report 24 June 2020

- In collaboration with Mr. Bean and other partnerships WHO has been developed a cartoon about COVID-19 that aimed to remind the public to continue taking precautions to prevent COVID-19 infection and stop the spread.

- 23 June marked Olympic Day. This year, the International Olympic Committee and WHO, together with the United Nations, launched a partnership to encourage individuals and communities around the world to be #HEALTHYTogether.

- WHO has published a new scientific brief on Breastfeeding and COVID-19 examining the evidence of the risks of transmission of COVID-19 from an infected mother to her infant through breastfeeding, as well as evidence on the risks to child health from not breastfeeding.

- WHO recommends that mothers with suspected or confirmed COVID-19 should be encouraged to initiate or continue to breastfeed.

Epidemiology

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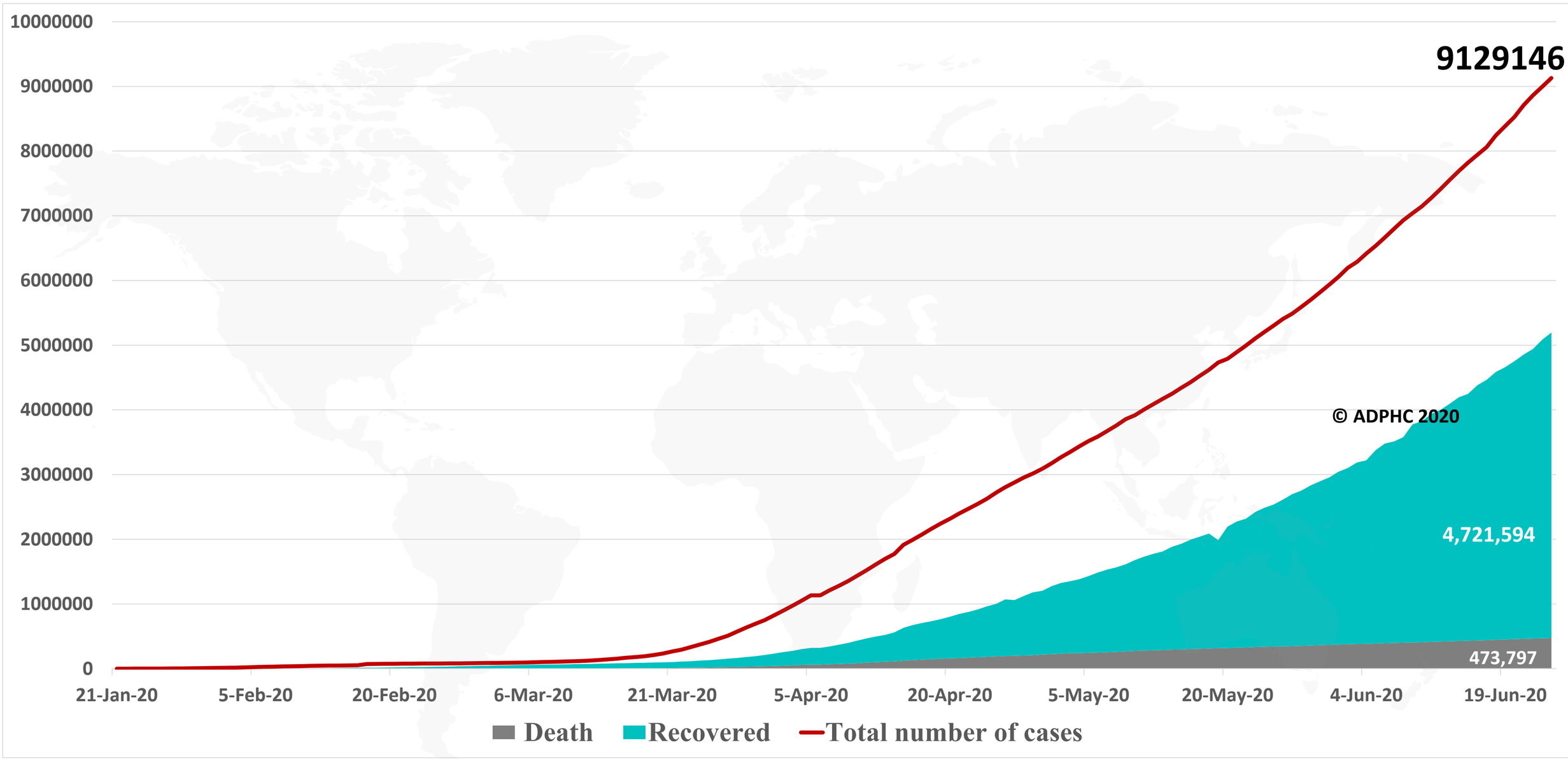
Figure 1: Total number of infected, recovered , and death cases (January 21st to Jun 24, 2020)

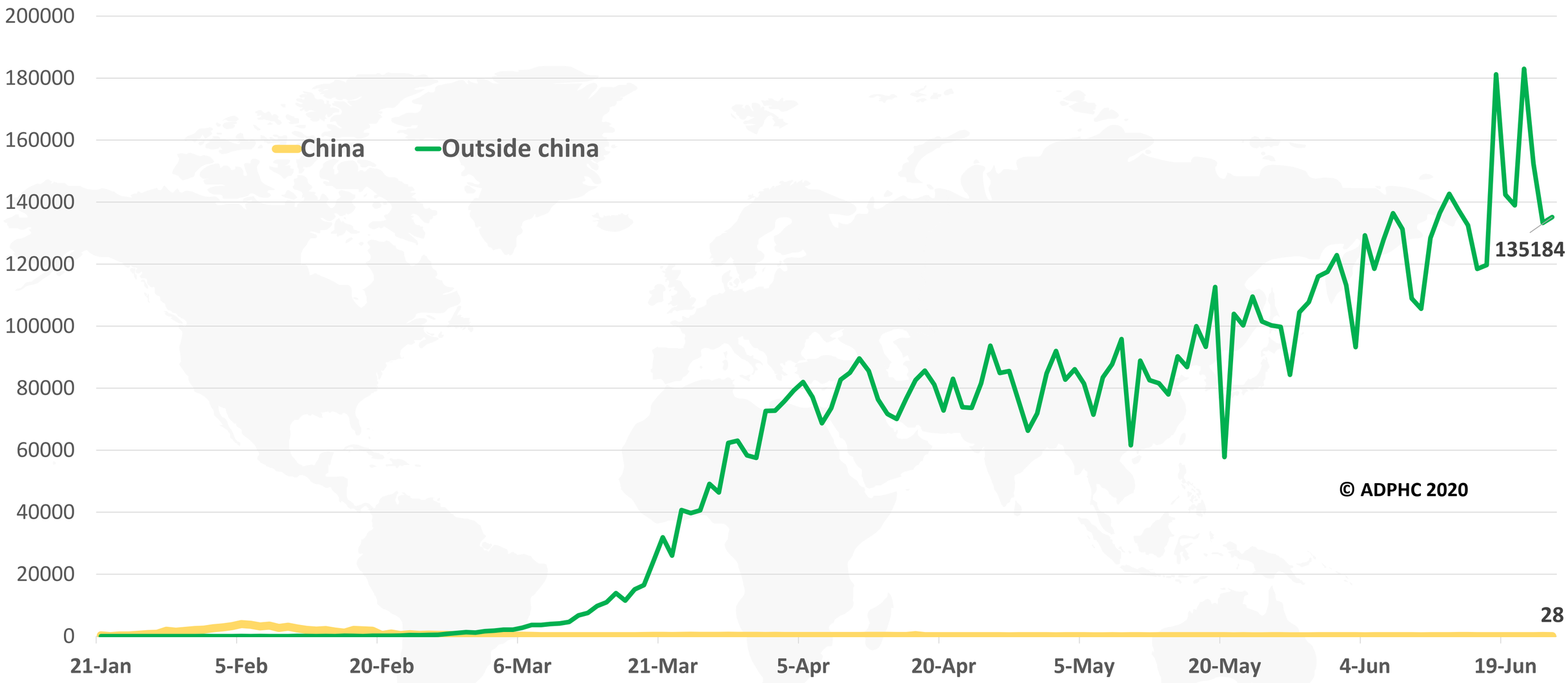


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

Epidemiology

Figure 2: Daily new infected COVID-19 cases reported between (January 21 to Jun 24, 2020).



Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

Epidemiology

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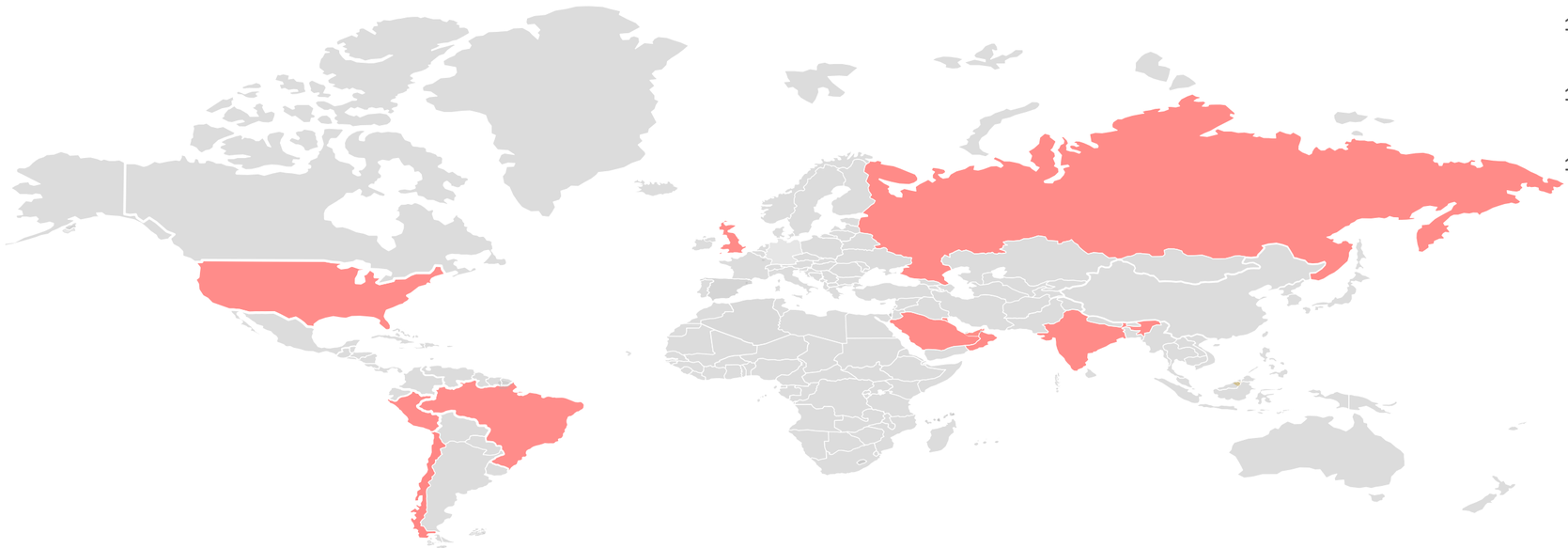
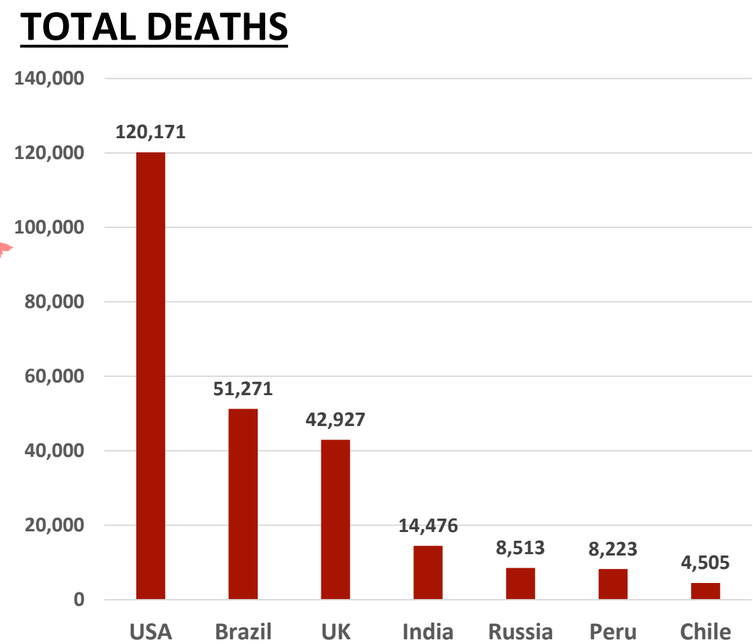
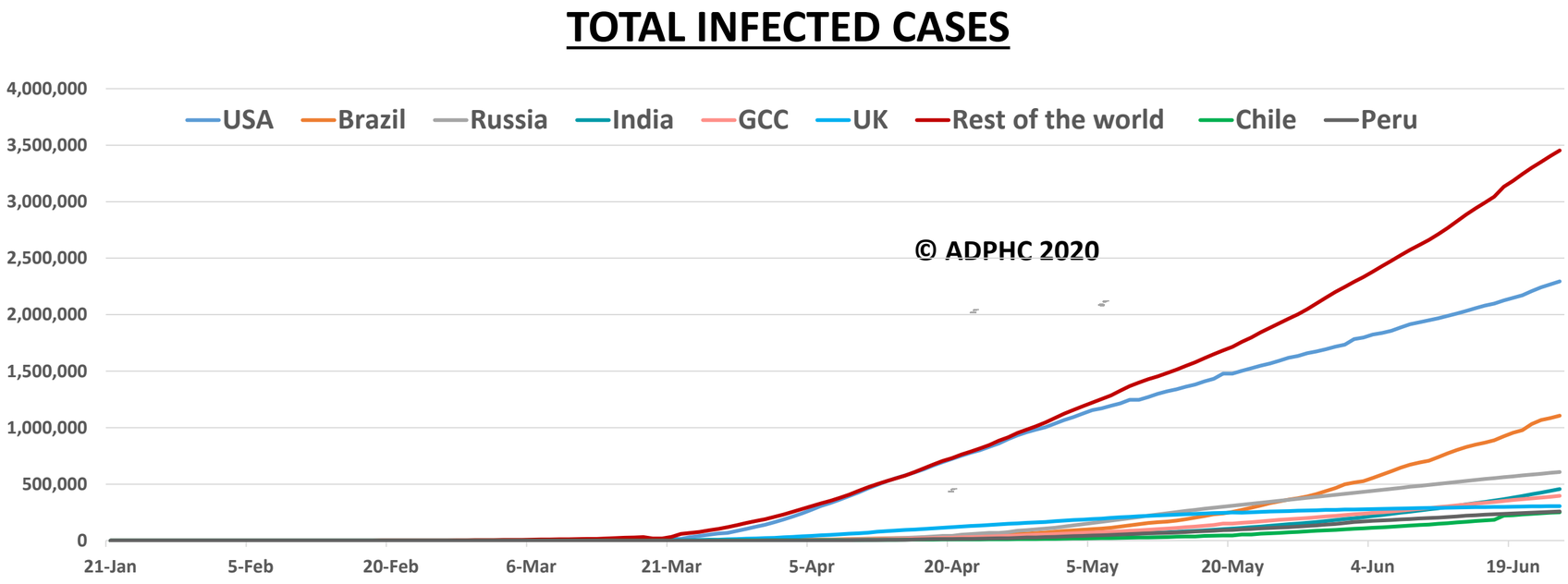
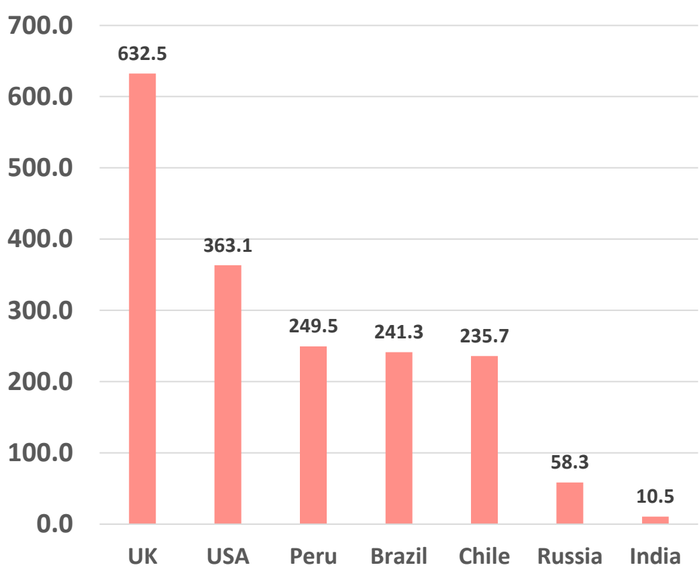
Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to Jun 24, 2020).









Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

Epidemiology

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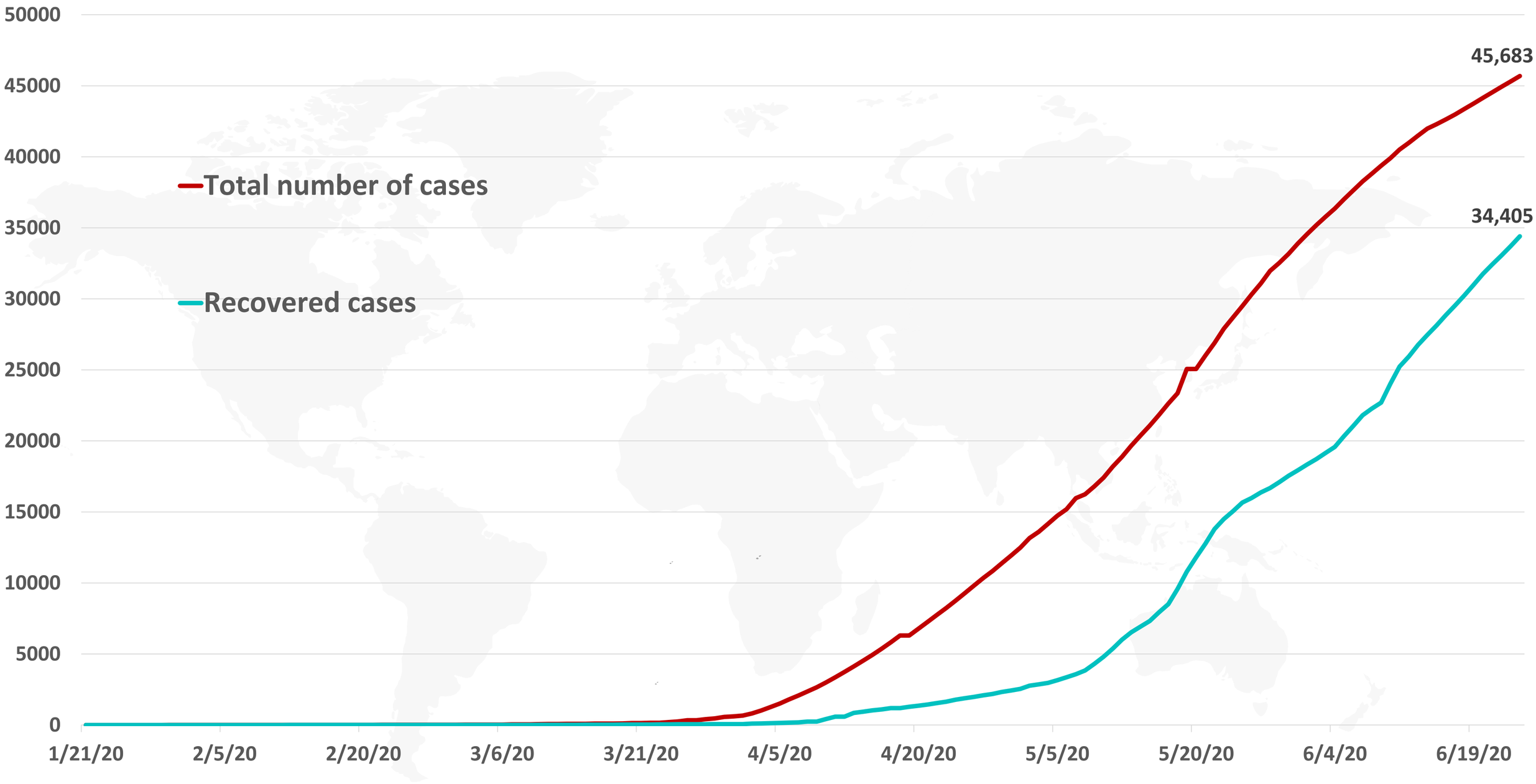
Figure 4: Total number of COVID-19 infected and recovered cases in UAE over time



Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

Epidemiology

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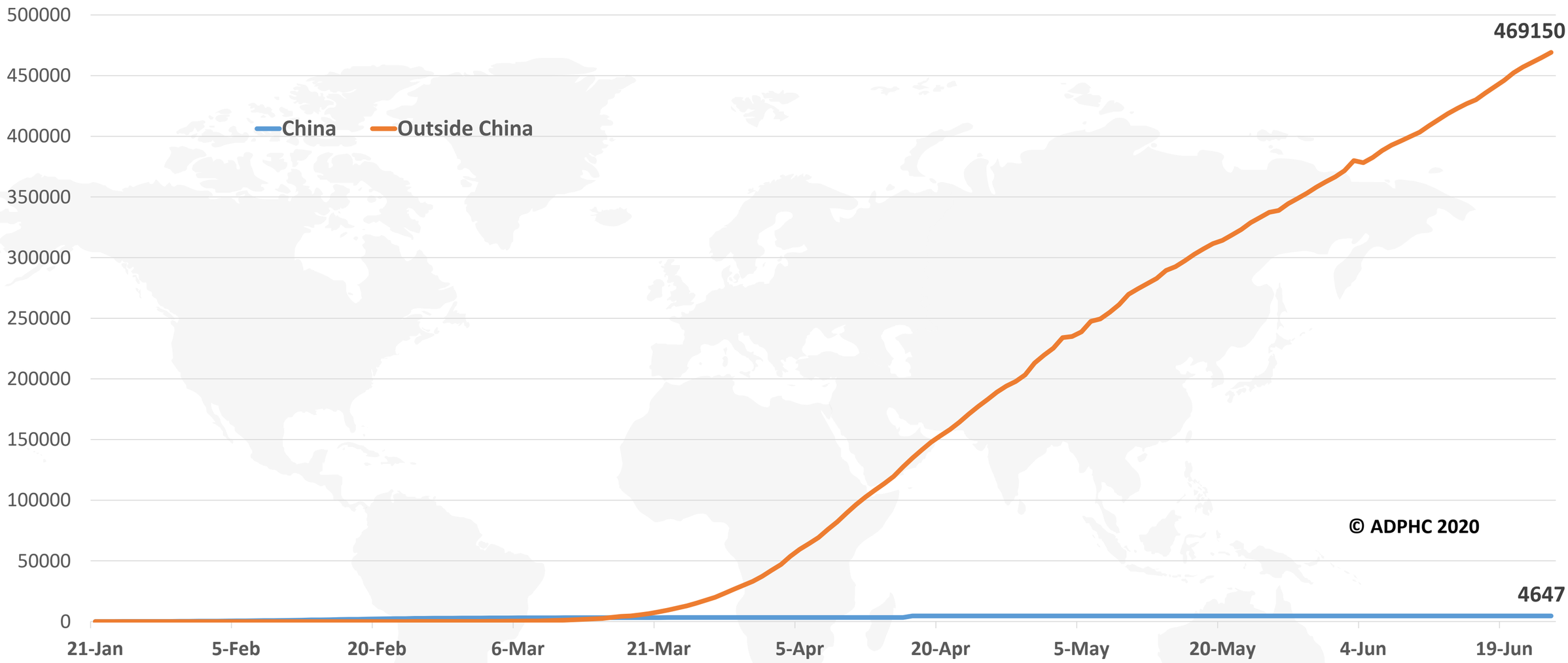
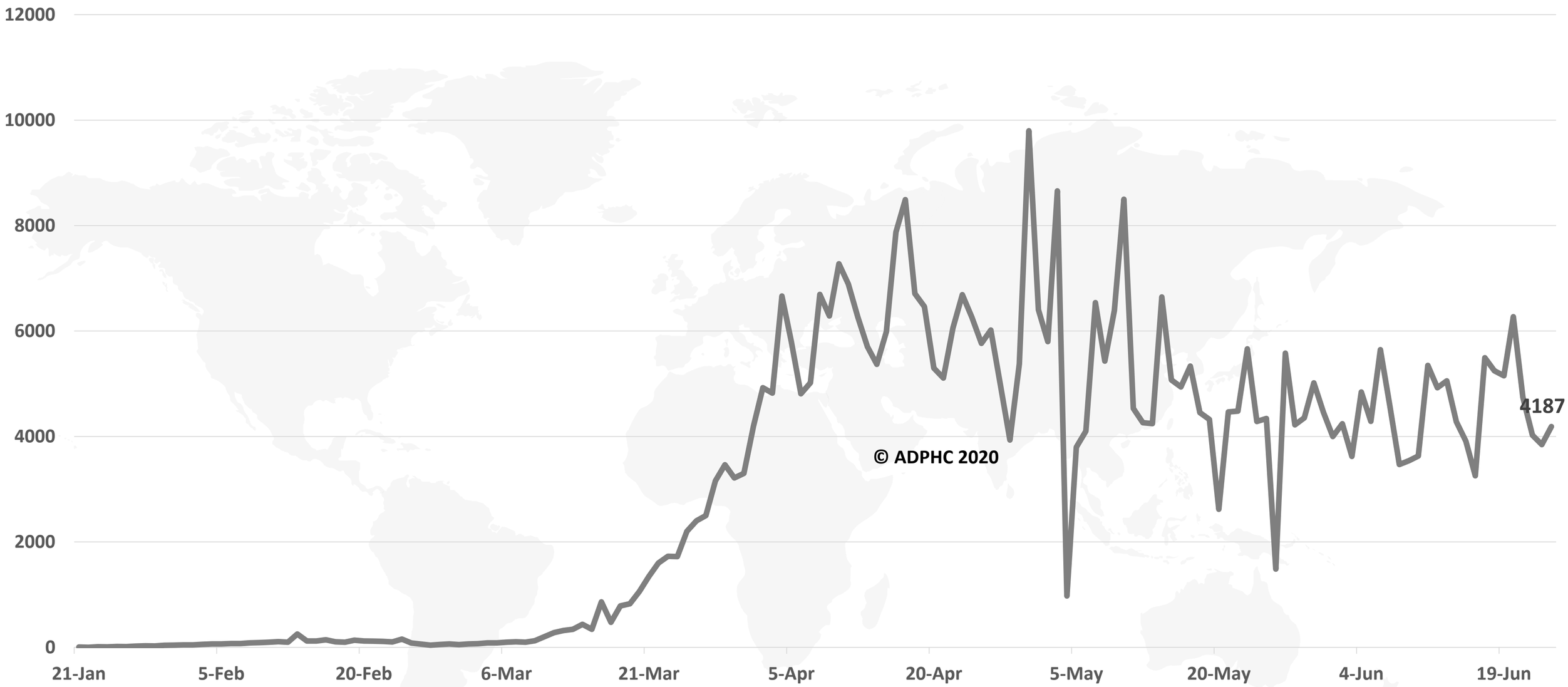
Figure 5: Total number of death due to COVID-19 reported by China and the rest of the world (January 22 to Jun 24, 2020).



Line graph published by Abu Dhabi Public Health Center 2020.

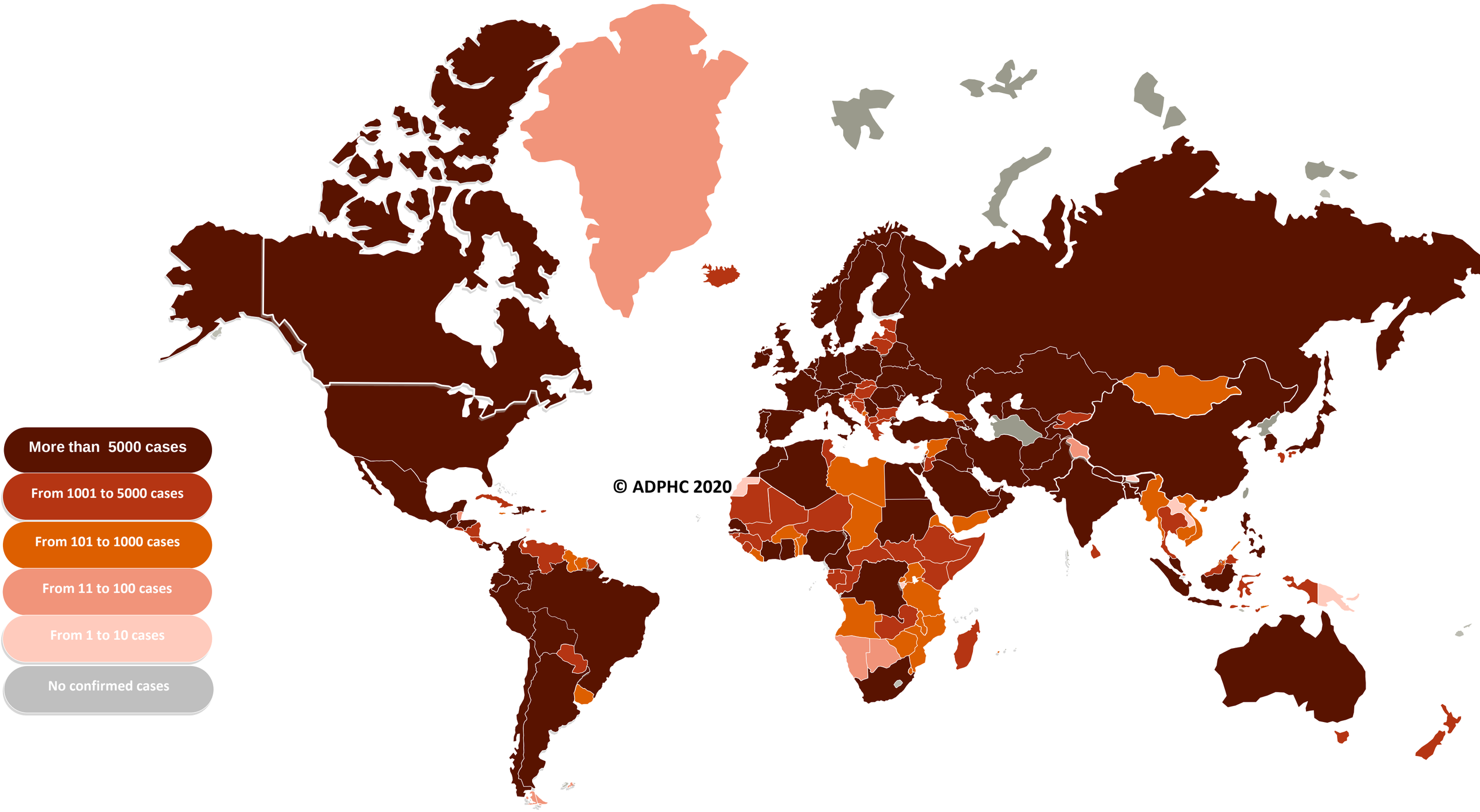
Data resources: WHO

Figure 6: Global daily new deaths due to COVID-19 (January 22 to Jun 24, 2020).



Line graph published by Abu Dhabi Public Health Center 2020.
Data resources: WHO

Figure 7a : Global distribution of COVID-19 cases (Jun 24, 2020).



Line graph published by Abu Dhabi Public Health Center 2020.
Data resources: WHO

Figure 7B: Bar chart illustrate the global distribution of COVID19 cases Jun 24, 2020)

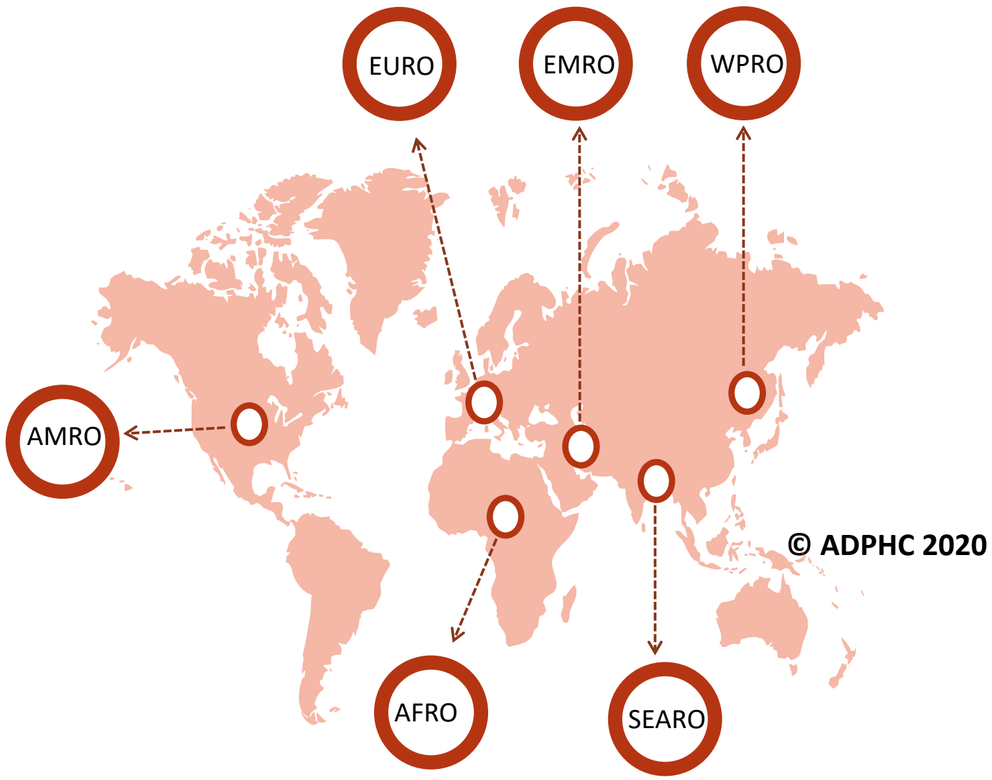
Other*:includes cases and deaths reported under the international conveyance(Diamond Princess)

Bar chart published by Abu Dhabi Public Health Center 2020.

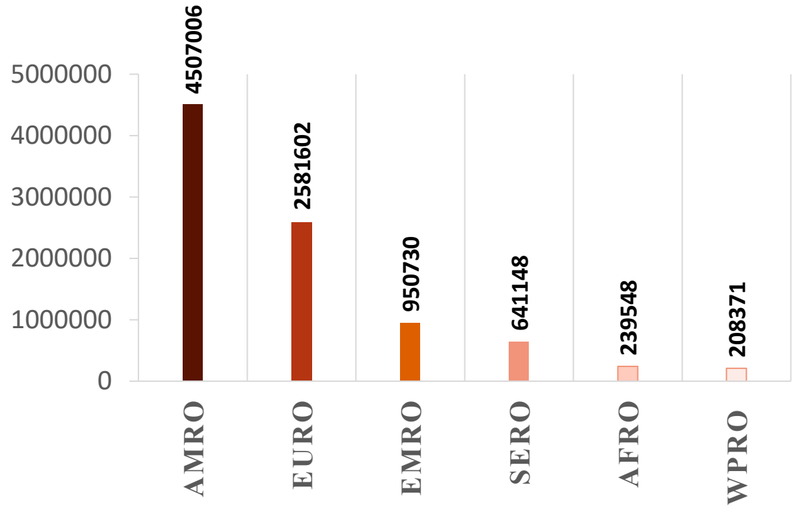
Data resources: WHO

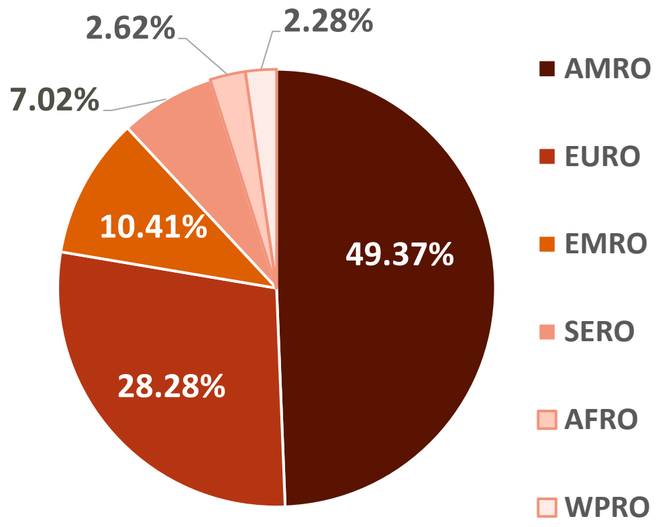
Epidemiology

Figure 8: illustrate the Global distribution of COVID19 cases per region (Jun 24, 2020)

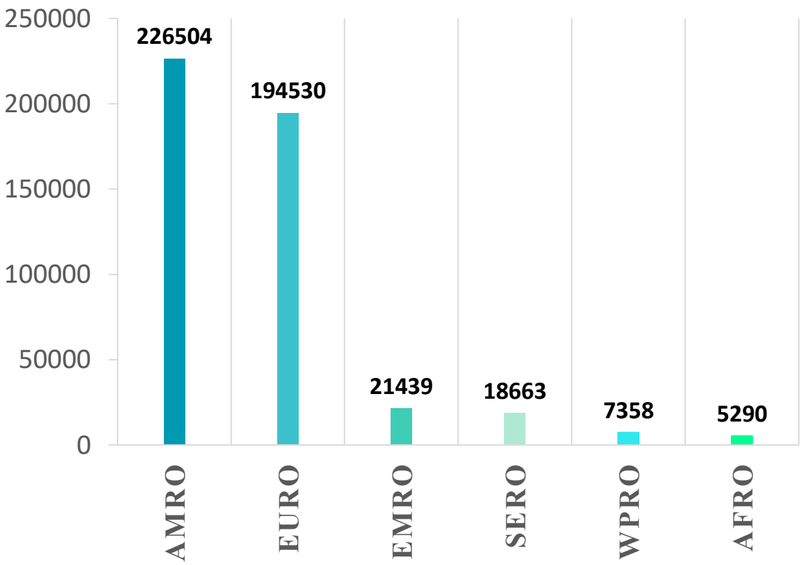


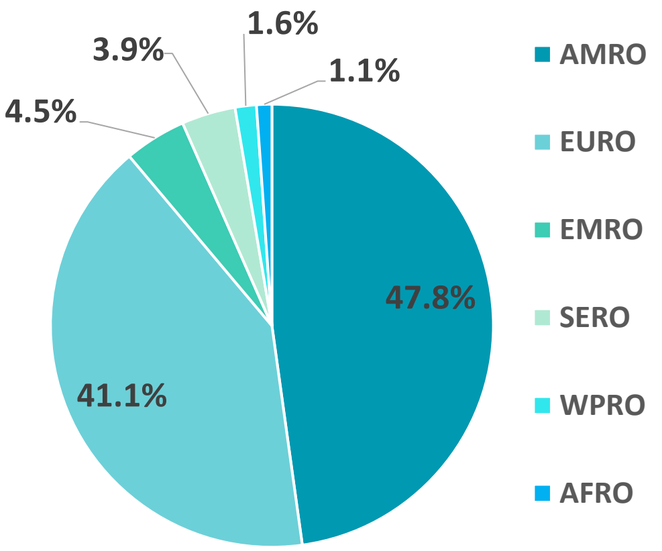
INFECTED





DEATH





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

Epidemiology

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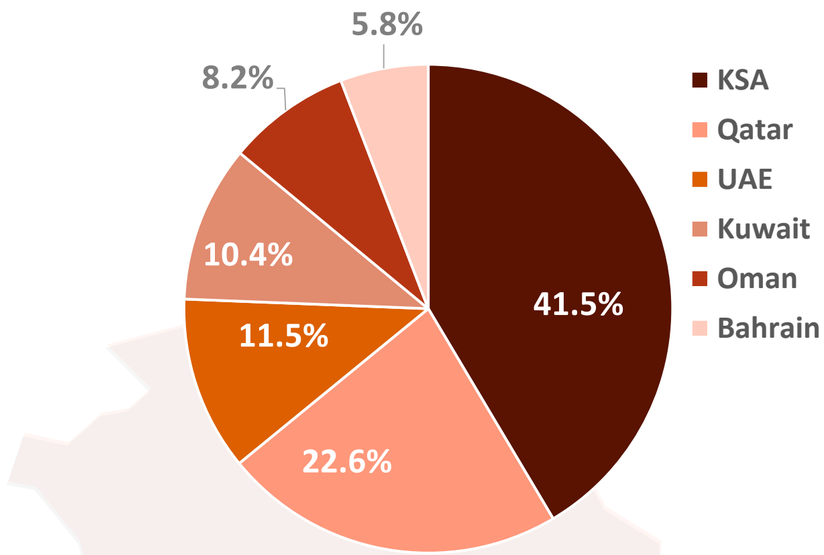
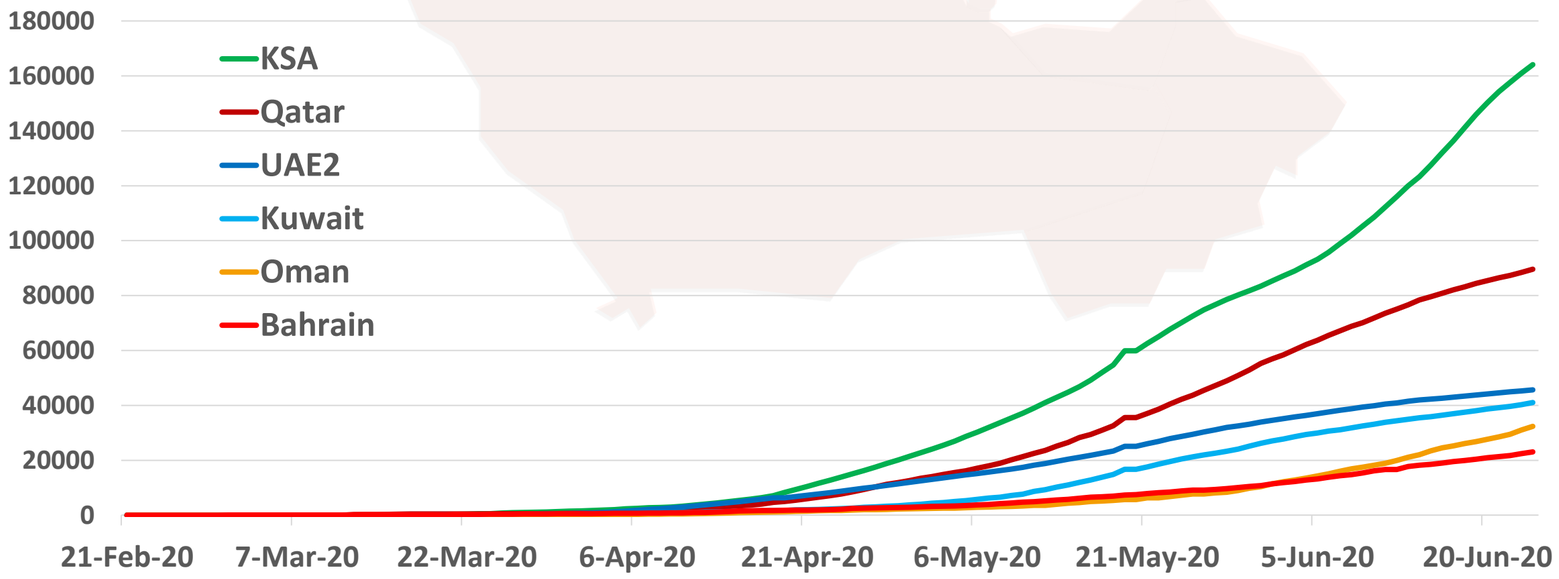
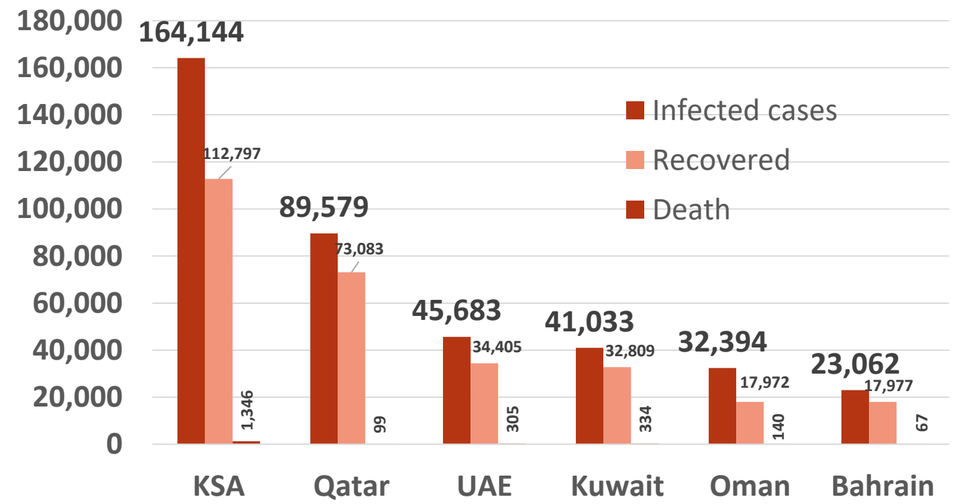
Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (Jun 24, 2020)

TOTAL NUMBER OF INFECTED CASES

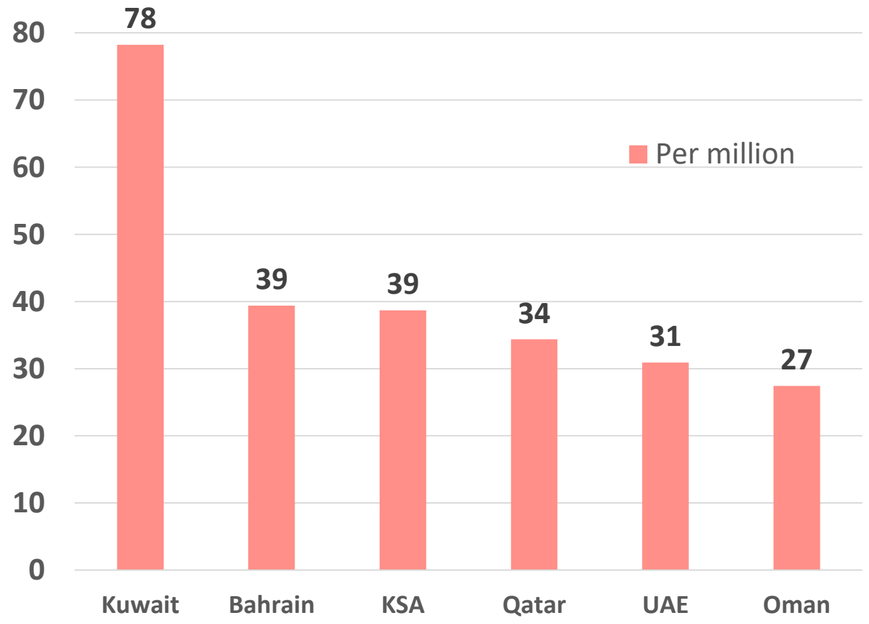




Total number of infected, recovered and Deaths



Death per million

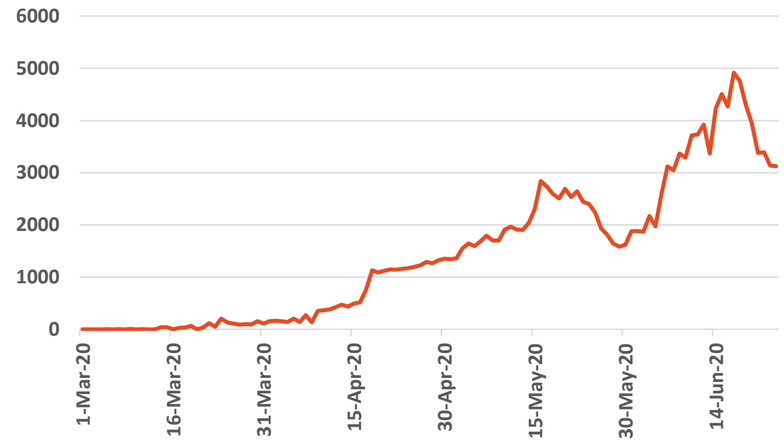


Graphs published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

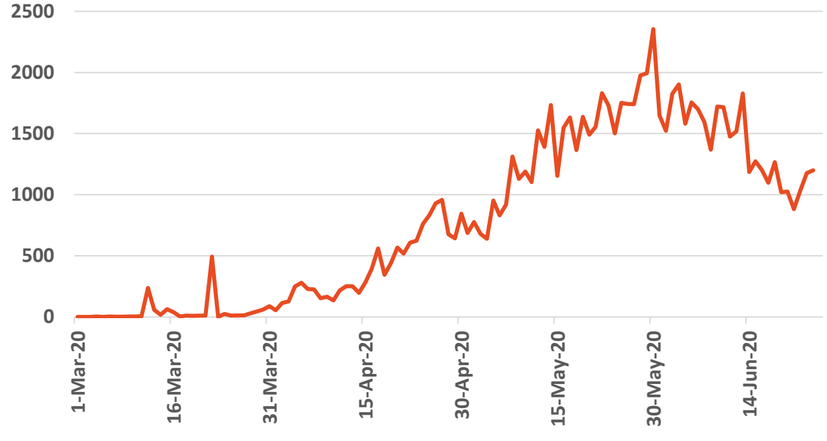
Figure 10: Comparative analysis of the distribution of COVID19 new cases in GCC countries (June 24, 2020)

KSA



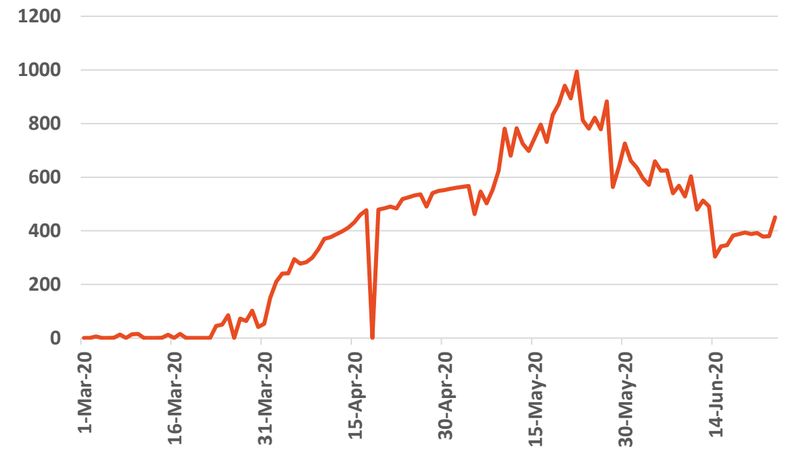
Source : KSA ministry of health

Qatar



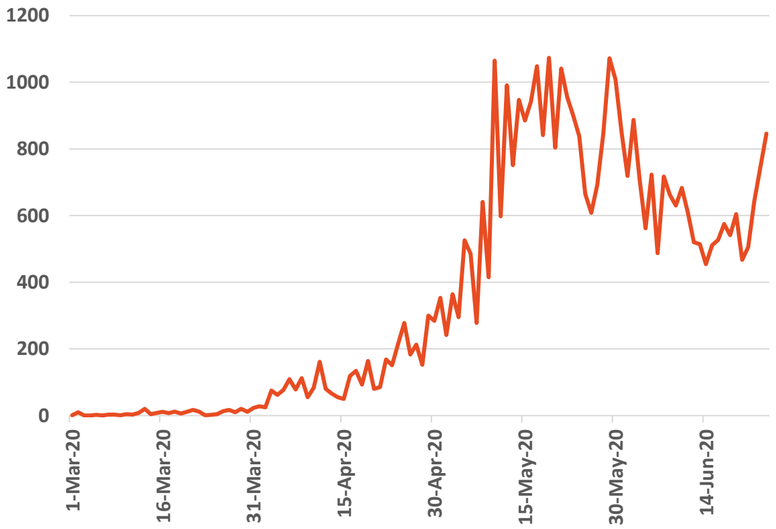
Source : Qatar ministry of health

UAE



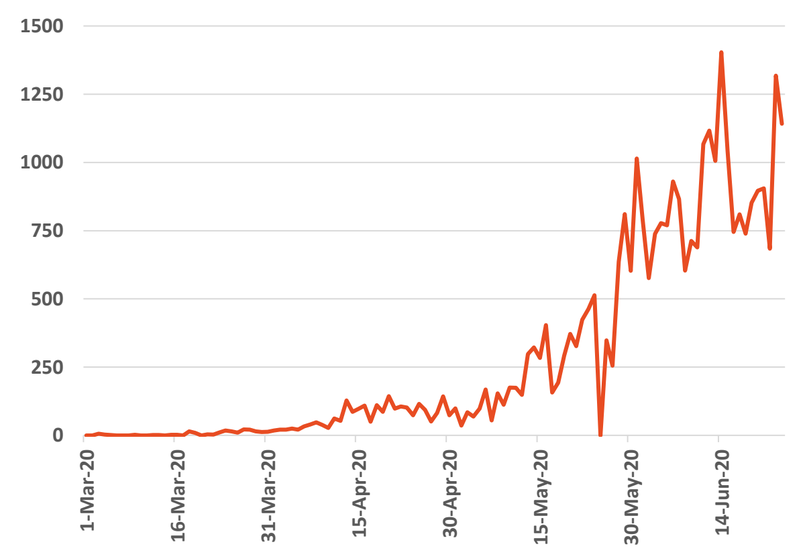
Source : National Emergency Crisis and Disaster Management Authority

Kuwait



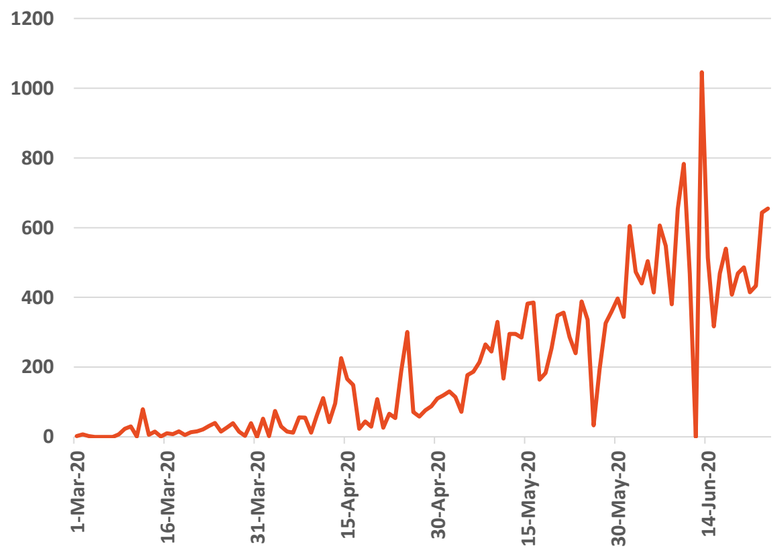
Source : Kuwait ministry of health

Oman



Source :Oman ministry of health

Bahrain



Source :WHO

Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

Epidemiology

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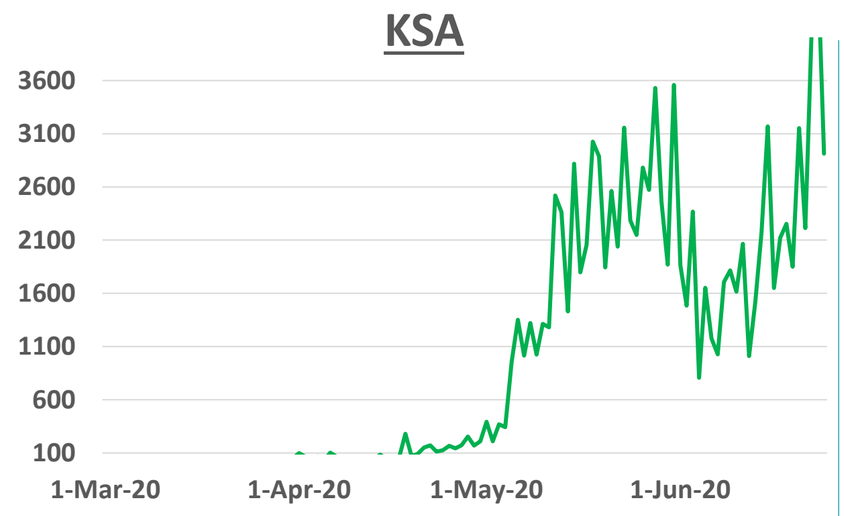
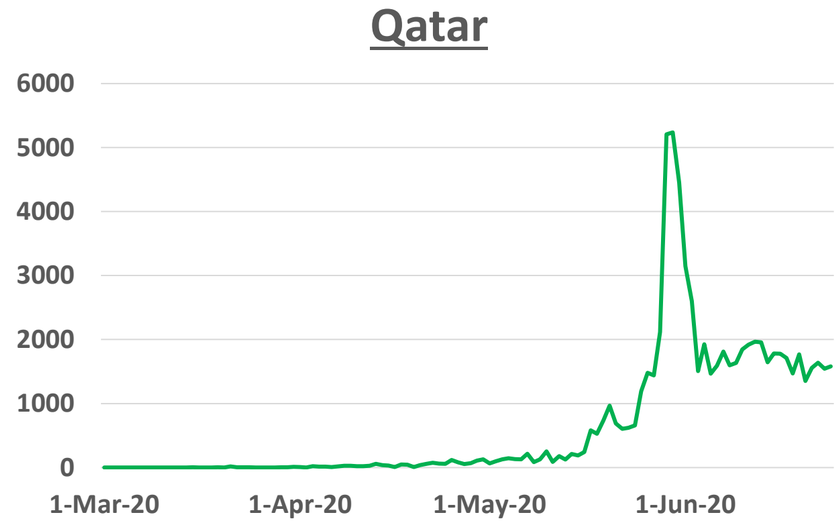
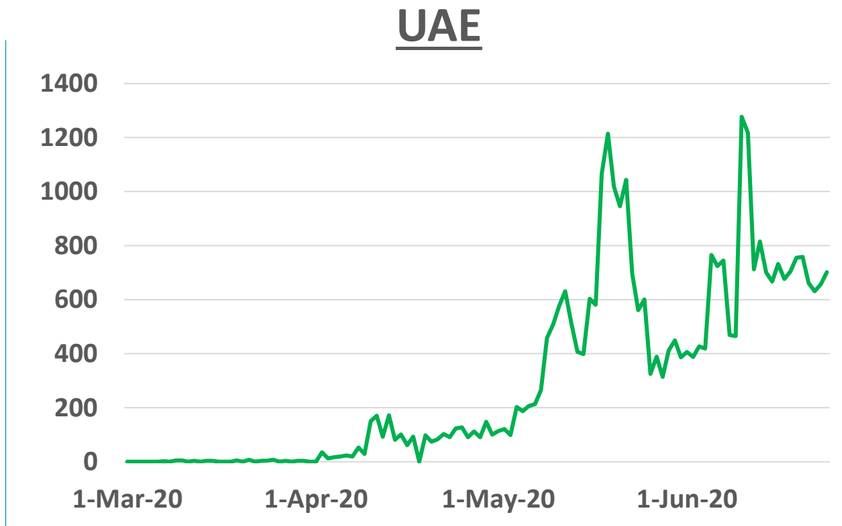
Figure 11 : Comparative analysis of the distribution of COVID19 newly recovered cases in GCC countries (June 24, 2020)



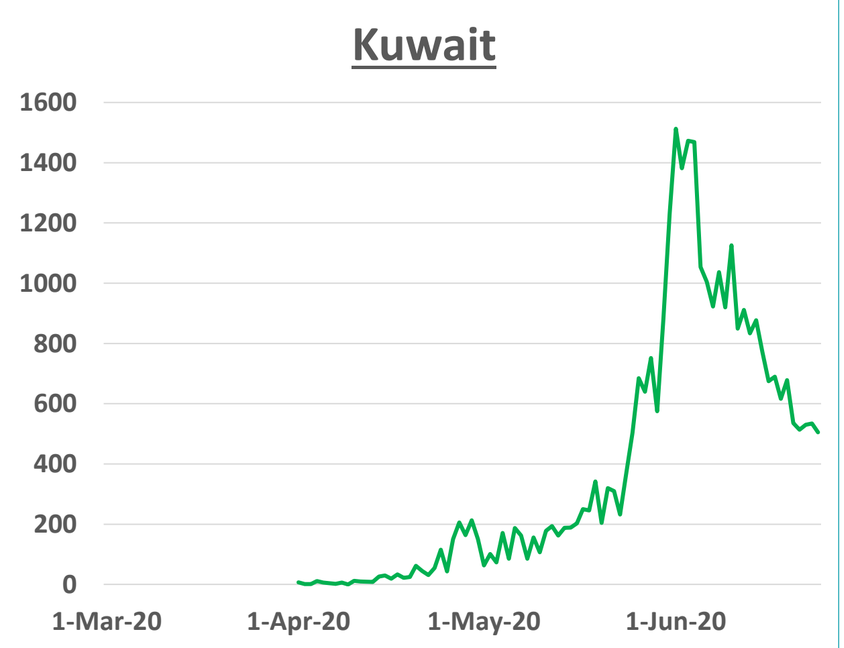
Source : KSA ministry of health



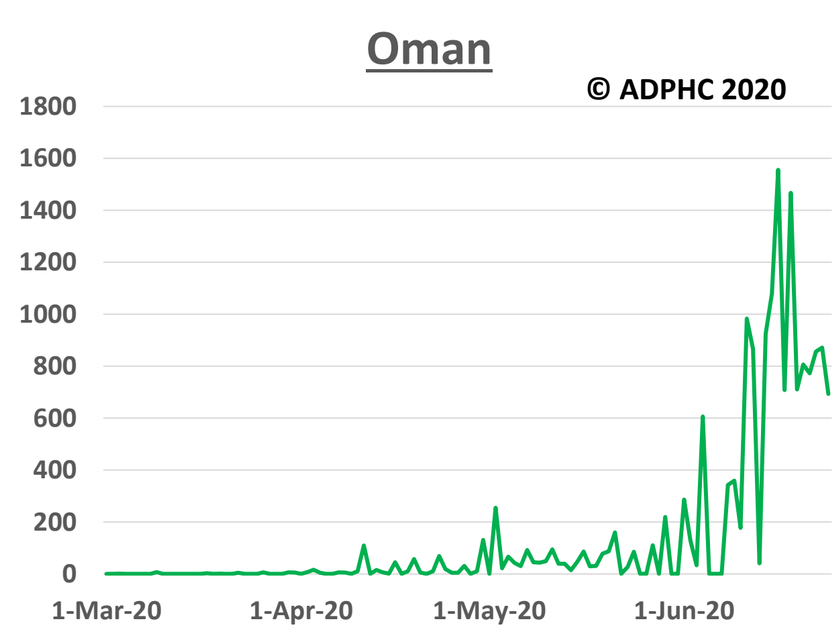
Source : Qatar ministry of health



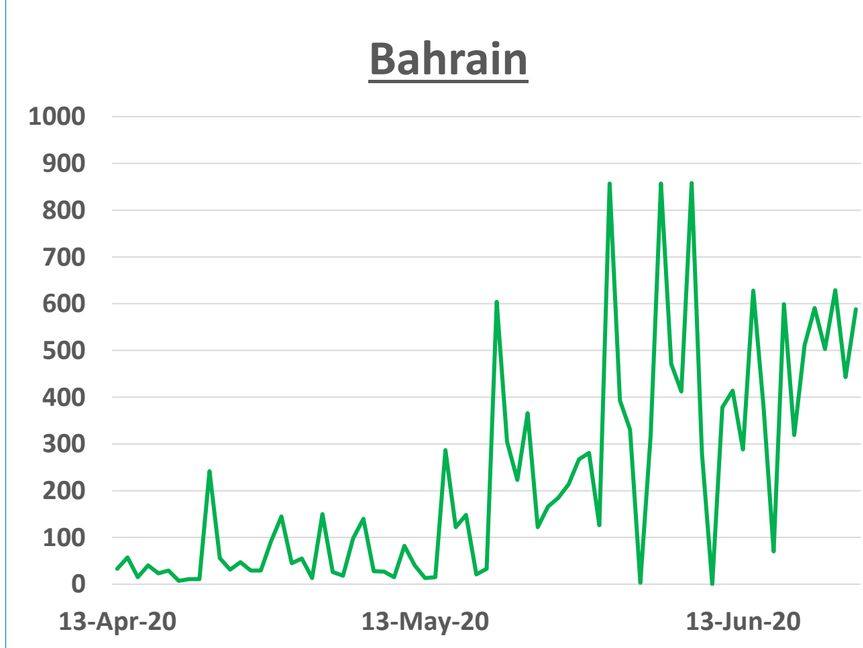
Source : National Emergency Crisis and Disaster Management Authority



Source : Kuwait ministry of health



Source :Oman ministry of health



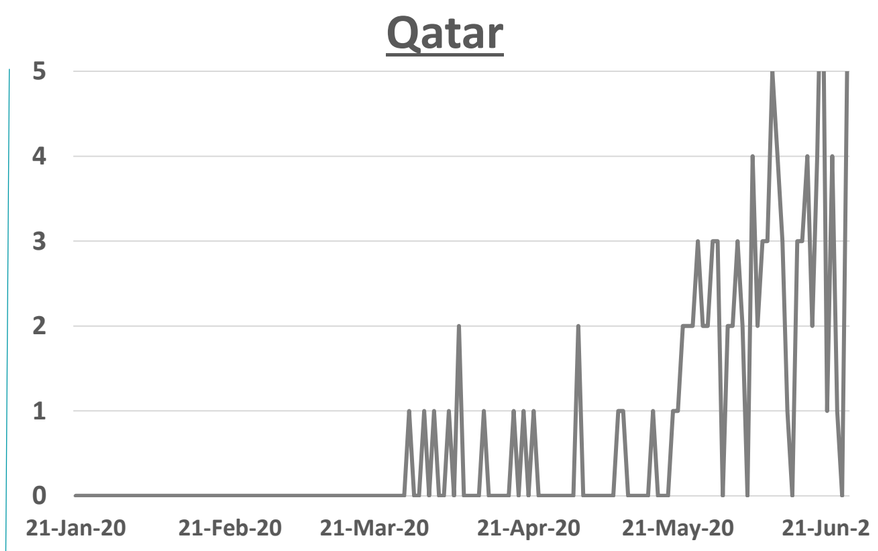
Source : GCCStat

Line graph published by Abu Dhabi Public Health Center 2020.

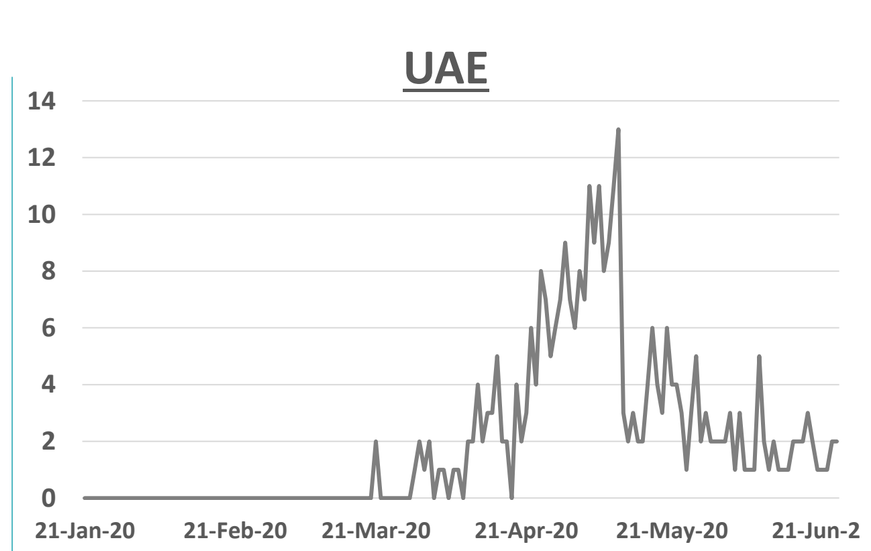
Data resources: WHO

Figure 12: Comparative analysis of the distribution of COVID19 newly death cases in GCC countries (June 24, 2020)

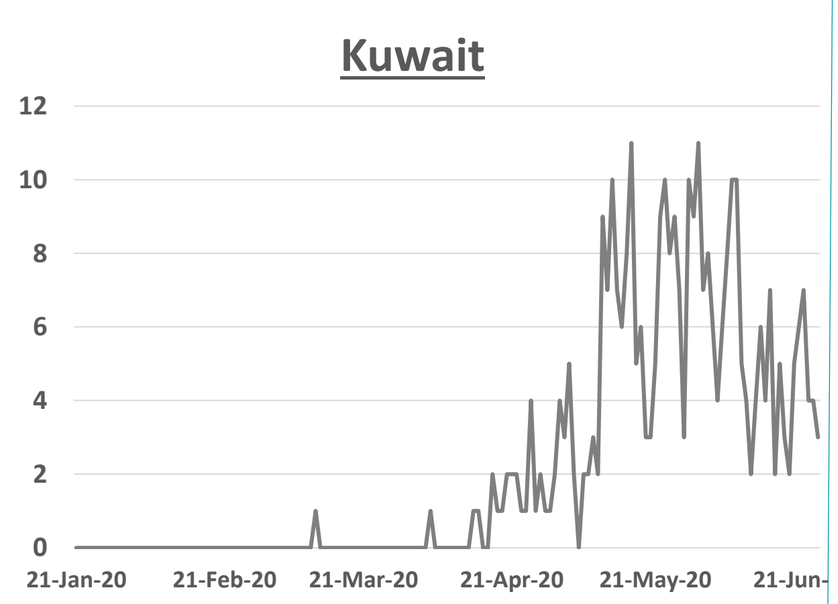
Source : KSA ministry of health



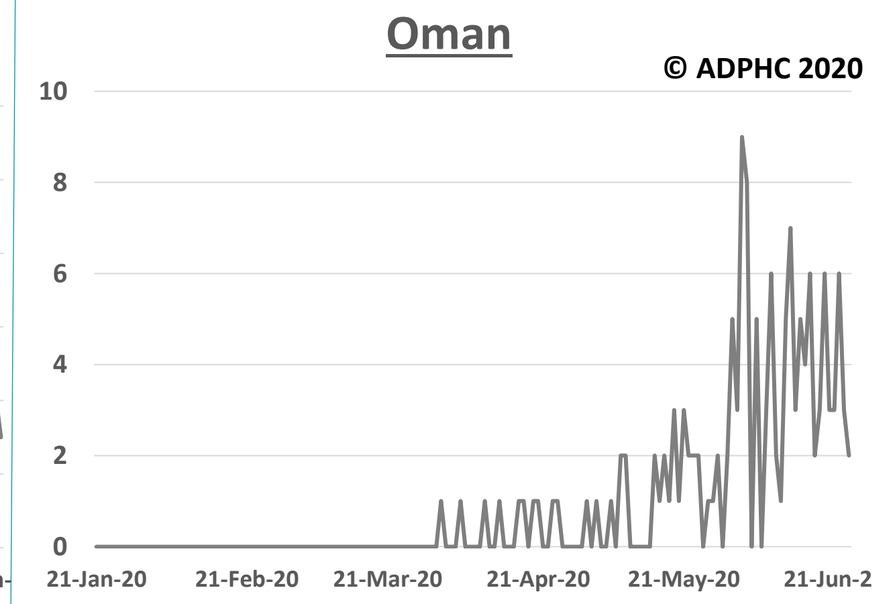
Source : Qatar ministry of health



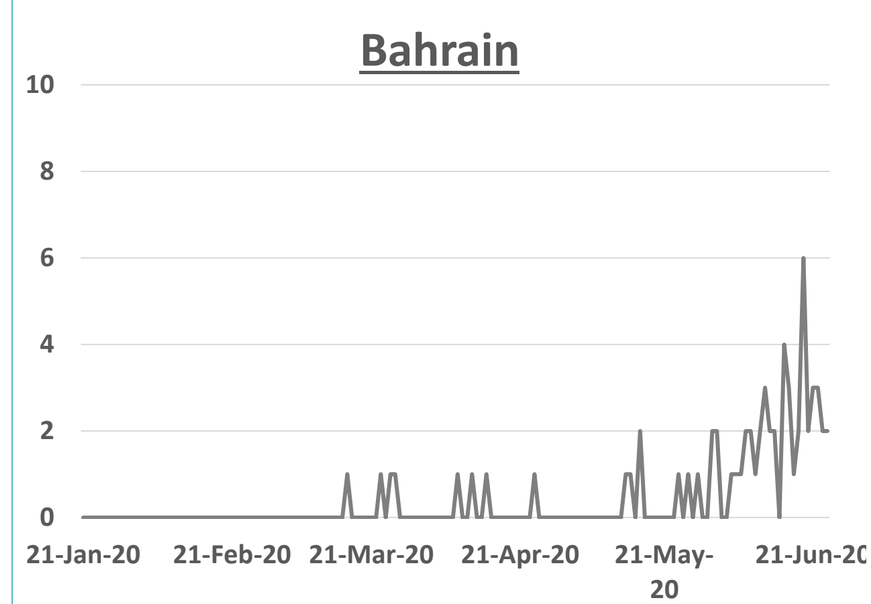
Source : National Emergency Crisis and Disaster Management Authority



Source : Kuwait ministry of health



Source :Oman ministry of health



Source :WHO

Article 1 : Effectiveness of isolation, testing, contact tracing, and physical distancing on reducing transmission of SARS-CoV-2 in different settings: a mathematical modelling study

Published: June 16, 2020 in the lancet

Summarized by subject matter expert

Summary

This study investigated the combination of the different control measures for COVID19 in reducing the transmission of the disease. These measures include **isolation, testing, contact tracing and social distancing**. In this mathematical modeling, the study have used a model of individual-level transmission st**ratified by setting (household, work, school, or other)** based on BBC Pandemic data and simulated the effect of a range of different control measures. The simulation result of this study shows that if a **high proportion of the cases self-isolates and a high proportion of the contacts are successfully traced, then the effective reproduction number is lower than 1, in the absence of other measures. On the other hand, if combined with moderate physical distancing measures, self-isolation and contact tracing, then a complete control of the COVD19 transmission will be achieved.**

Implication

There are many studies that aim to examin the effects of different measures in lowering the Ro. However, from the public health decision making point of view, some measures are logistically harder to implement and costly. So, this study gave an example of alternative solution to contain the epidemic.

Epidemiology

Article 1 : **Cont.,**

	Self-Isolation	Contact tracing	Non-HH contacts who are potentially traceable (%)	Cases who have R>1 (%)	R_{eff}	Mean reduction in R_{eff}
No control	No	No	NA	50%	2·6	0%
Self-isolation within home	Yes	No	NA	40%	1·8	29%
Self-isolation outside home	Yes	NA	NA	37%	1·7	35%
Self-isolation plus HHQ	Yes	HH	NA	35%	1·6	37%
Self-isolation plus HHQ plus work or school contact tracing	Yes	HH and work or school	100%	27%	1·2	53%
Self-isolation plus HHQ plus manual contact tracing of acquaintances	Yes	All	90% school, 79% work, and 52% other	26%	1·1	57%
Self-isolation plus HHQ plus manual contact tracing of all contacts	Yes	All	100%	21%	0·94	64%
Self-isolation plus HHQ plus app-based tracing	Yes	All	53%	30%	1·4	47%
Self-isolation plus HHQ plus manual contact tracing of acquaintances plus app-based tracing	Yes	All	90% school, 79% work, and 52% other with manual tracing; 53% with app tracing	23%	1	61%
Self-isolation plus HHQ plus manual contact tracing of acquaintances plus limit to four daily contacts with other individuals	Yes	All	90% school, 79% work, and 52% other	21%	0·93	64%
Self-isolation plus HHQ plus manual contact tracing of acquaintances plus app-based tracing plus limit to four daily contacts with other individuals	Yes	All	90% school, 79% work, and 52% other with manual tracing; 53% with app tracing	20%	0·87	66%
Mass testing of 5% of population per week	No	NA	NA	49%	2·5	2%

Results from 20 000 simulated setting-specific secondary transmissions, assuming a secondary attack rate of 20% among household contacts and 6% among other contacts. Results under the assumption of some workplace restrictions remaining in place are shown in table 4. Estimates are shown to two significant figures. HH=household. HHQ=household quarantine. NA=not applicable. R_{eff}=effective reproduction number.

Table 3: **Mean reduction in R_{eff} under different control measures**

Article 2: GM-CSF blockade with mavrilimumab in severe COVID-19 pneumonia and systemic hyper-inflammation: a single-centre, prospective cohort study

Published: June 16, 2020 in The Lancet

Study objective: Hyper-inflammation has been shown to be associated with poor prognosis in patients with severe COVID-19 pneumonia, which can lead to respiratory failure and mortality. Mavrilimumab is an anti-inflammatory drug that blocks granulocyte–macrophage colony-stimulating factor receptor signaling. **This study aimed to investigate whether mavrilimumab, in addition to standard care, improves clinical outcomes in patients admitted with severe COVID-19 pneumonia.**

Methodology used: This was a single-centre, prospective cohort study conducted in Italian hospital between March 17 and April 15, 2020. **Thirteen** patients (not on ventilation) (median age 57 years, 92% men) received mavrilimumab, while **26 patients** (median age 60, 65% men) in the control group received standard care. Patients were followed up-to 28 days. The main outcome measured was time to clinical improvement.

Results reported:

Mortality: There were no deaths in the mavrilimumab group, **while 7 (27%) patients died** in the control group **(p=0.086**), during the 28-day follow-up.

Clinical improvement: All patients in the mavrilimumab group vs. 17 (**65%**) patients in the control group showed clinical improvement **(p=0.030),** with **earlier improvement seen in the mavrilimumab** than in the control group (mean time to improvement 8 days vs 19 days, p=0.0001). There was no infusion reactions seen with Mavrilimumab. **Three (12%) patients in the control group developed infectious complications.**

Limitations: Patients were non-randomized; the follow-up period of 28 days was relatively short; the sample size was relatively small.

Study conclusion: In non-mechanically ventilated patients with severe COVID-19 pneumonia and systemic hyperinflammation, Mavrilimumab treatment was associated with improved clinical outcomes compared with standard care and was well tolerated.

Article 3 : Effects of the COVID-19 pandemic on the mental health of prisoners
Published: JUNE 18, 2020 in the lancet

Summary:

- In the United Kingdom (UK), suspension of jury trials and delays to court hearings during COVID-19 pandemic have increased the time spent on remand for many prisoners. During this period, they are especially vulnerable, think about legal outcomes, and have distress, uncertainty and anxiety about their future that could be escalated by the unpredictability of COVID-19. Suicide and self harm rates are increased among those who are on remand and extending this time could aggravate the risk.

- Increased time spent in prison cell, lack of activities, infrequent contact with other inmates due to COVID-19 will mimic solitary confinement that are associated with psychological consequences including anger, depression, anxiety, paranoia, psychosis, and exacerbation of underlying mental illness. Strategies for promoting mental wellbeing should be explored and evaluated.

- Prisoners who are at low risk of reoffending are eligible for early release that creates new challenges and adds further confusion and disappointment as they will be entering an anxious community that has undergone substantial changes due to this pandemic. Accurate and relevant information about the pandemic needs to be provided to the prisoners for ensuring preparation and improving adherence to physical distancing measures.

- Prison visits are temporarily suspended that could decrease the use of social support for mitigating against and coping with mental distress. **Therefore, contact with loved ones should be maintained wherever possible. Secure phone handsets and other communication methods including writing letters, increased access to telephone landlines, and use of the prison voicemail service should be encouraged.**

- The effects of the pandemic create opportunities for new, innovative methods of supporting prisoners as well as reinforce the links **between health care, criminal justice, and government agencies with long term benefits.**