



Scientific Research Monitoring on COVID-19

11 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



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

Today's Highlights



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

Scientific Research

- **Treatment:** a Randomized clinical trial of 103 patients with COVID-19 found there was no significant difference in the time to clinical improvement between patients who received convalescent plasma transfusion therapy combined with standard treatment vs those who received standard treatment alone.
- **Public Health response:** viewpoint article stated that a different modelling shall be used to estimate and predict transmission in long term Care facilities.
- **Vaccine:** article listing the 10 vaccine which are reaching advanced stage in research trials. Also discussing different approach to speed up the delivery of these trial (challenge and umbrella trials).
- **Public Health Response:** reports from Australia found that covid19 tracing apps interfere with diabetic monitoring apps.



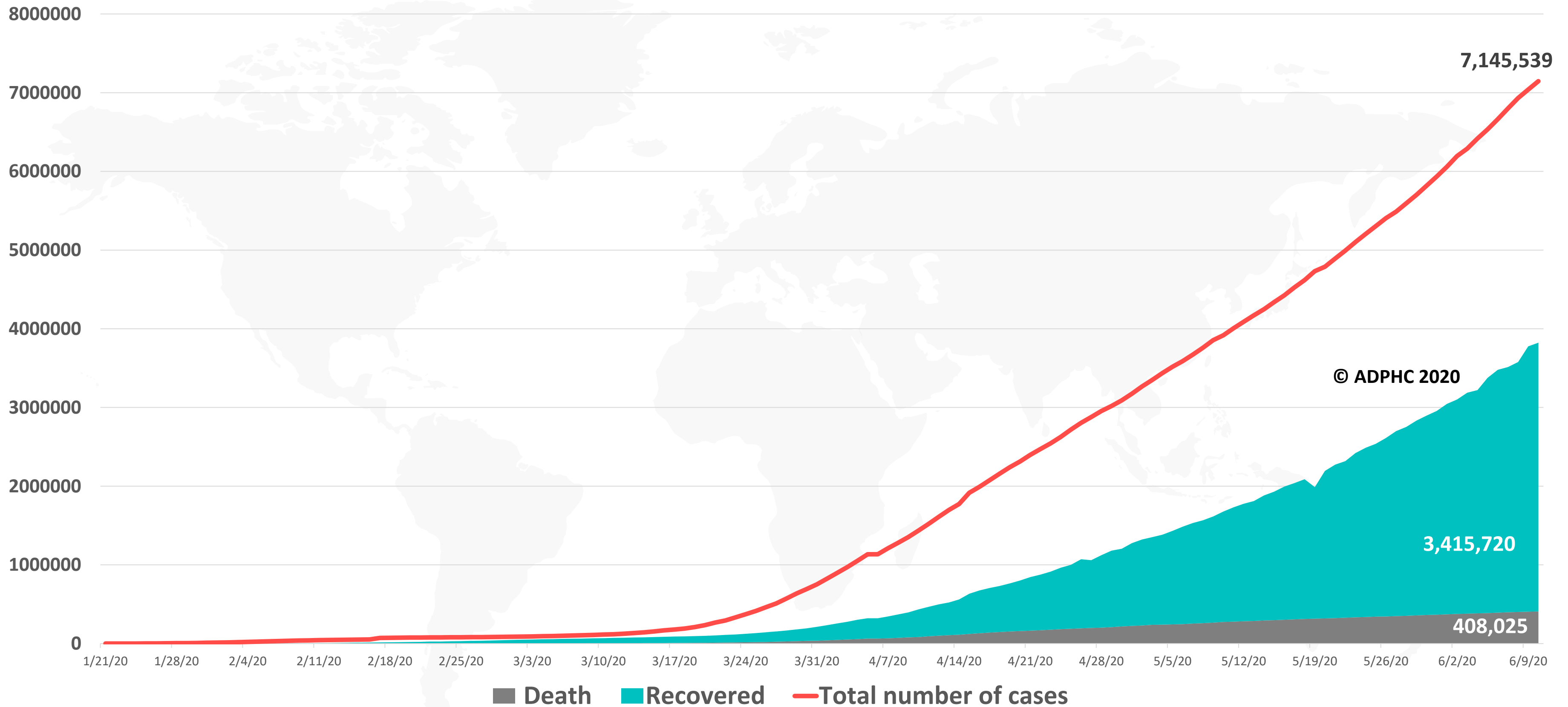
WHO Daily Report 10 June 2020

- The Ministry of Health and the Advisory Team of the Venezuelan National Assembly seek funds for COVID-19 Response from WHO.
- South America need to prepare for winter and hurricane season as it complicate the efforts of covid19 response.
- The WHO Regional Office is sending team of laboratory specialists from Germany, the Russian Federation and the United Kingdom to Tajikistan during the coming weeks, upon request from the government.
- update on operations support and logistics supplies:
 - **Personal protective equipment** supplies: To date, WHO has shipped more than 5 million items of personal protective equipment (PPE) to 112 countries.
 - **Diagnostics** Through the diagnostics purchasing consortium, WHO has received commitments from suppliers for 16 million manual PCR tests.
 - **Biomedical Equipment:** Through the BioMed consortium, WHO has placed orders for 14 000 oxygen concentrators and 9 700 pulse oximeters, which are being prepared for shipment.

Epidemiology



Figure 1: Total number of infected, recovered , and death cases (January 21st to Jun 10, 2020)

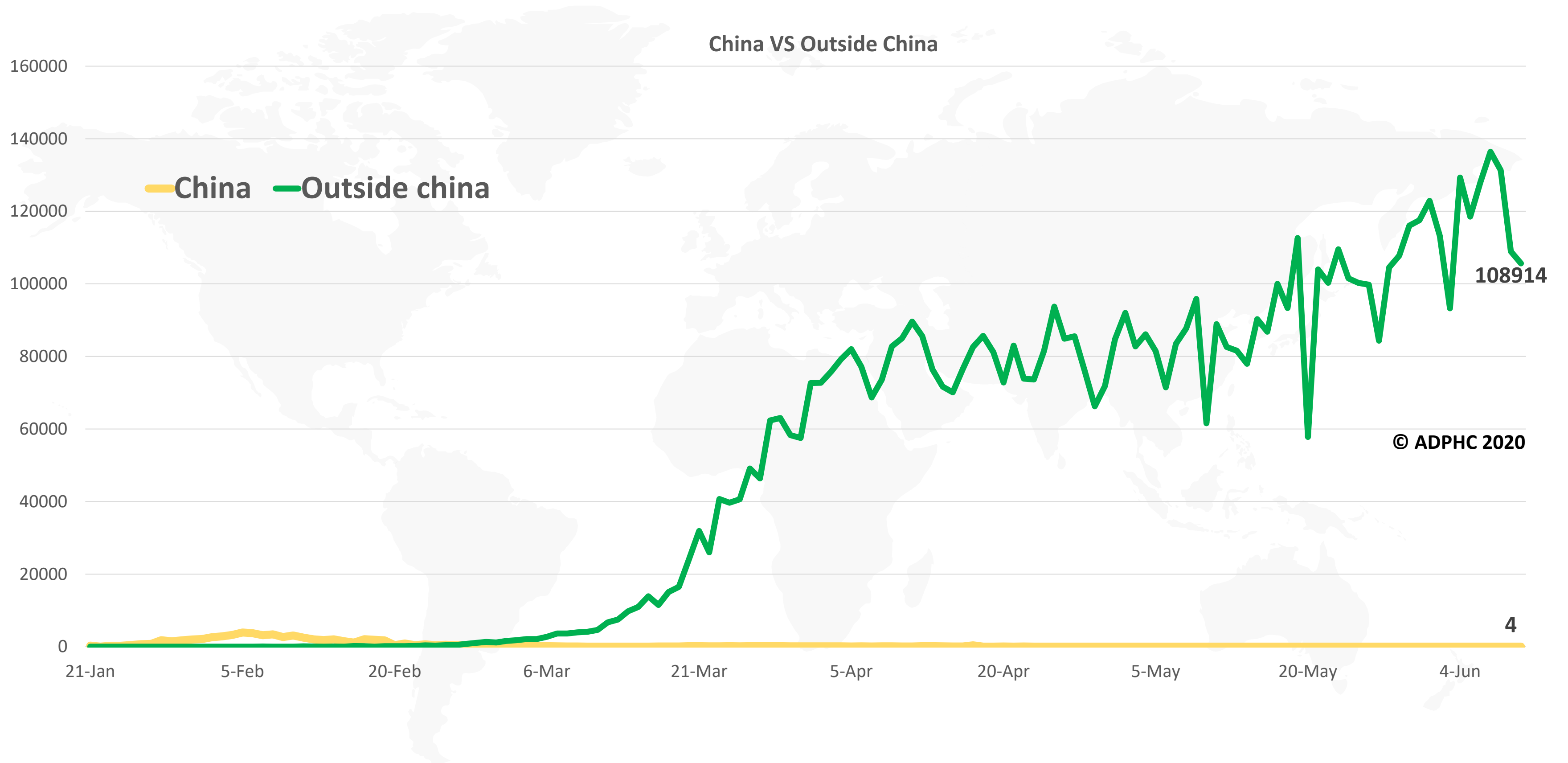


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#), : [John Hopkins University](#)



Figure 2: Daily new infected COVID-19 cases reported between (January 21 to Jun 10, 2020).



Line graph published by Abu Dhabi Public Health Center 2020.

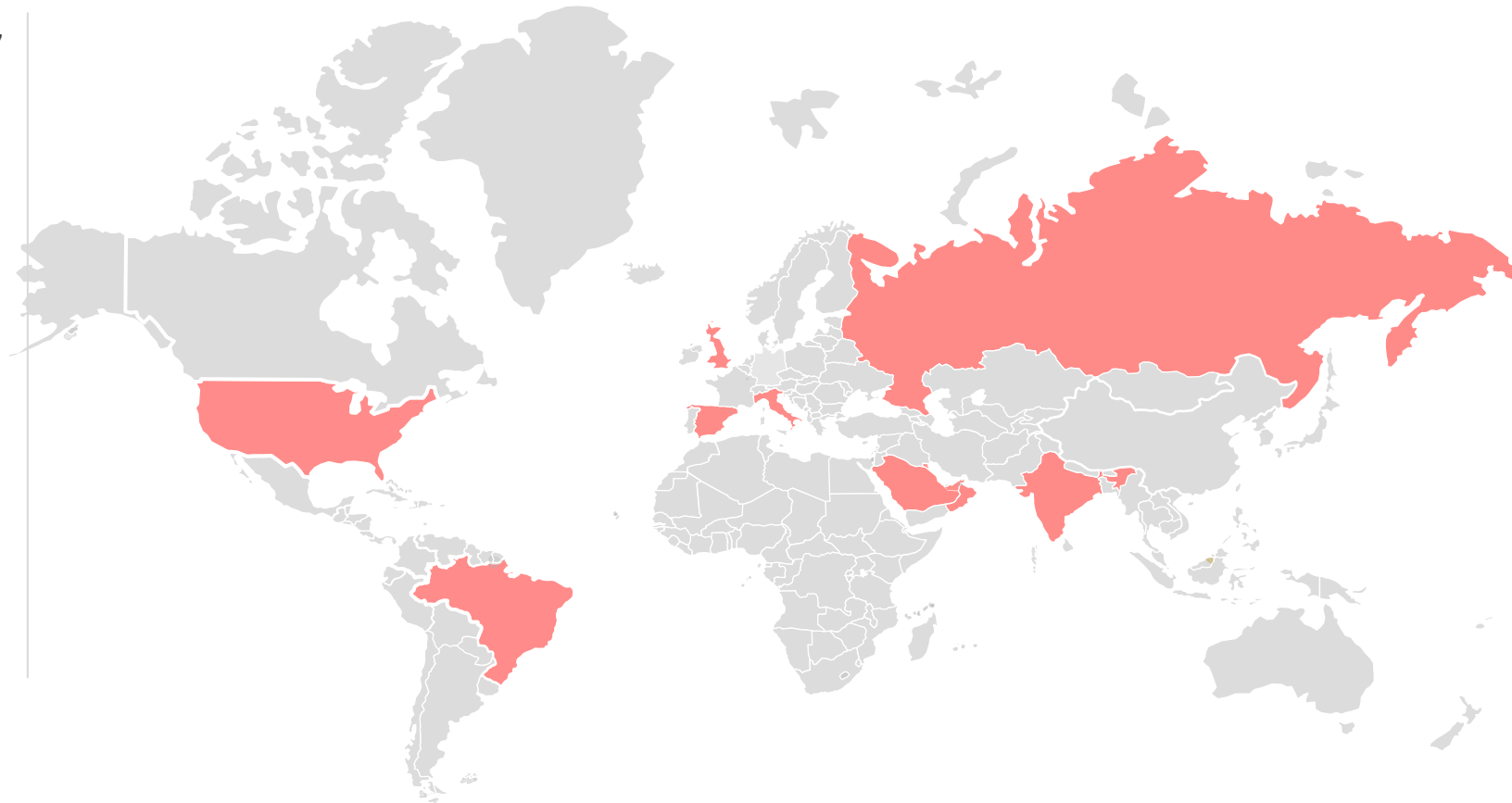
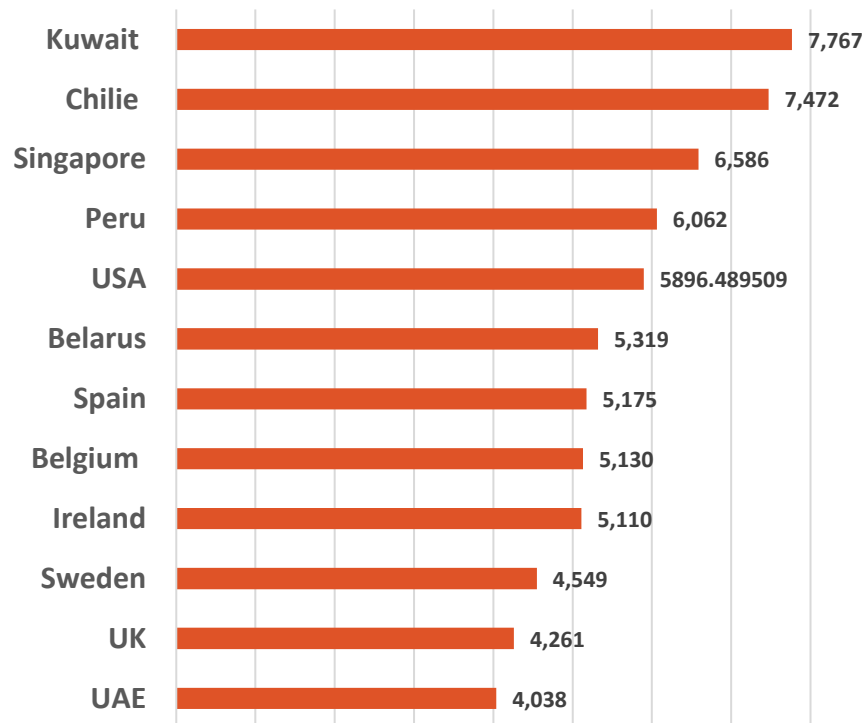
Data resources: [WHO](https://www.who.int/)

Epidemiology

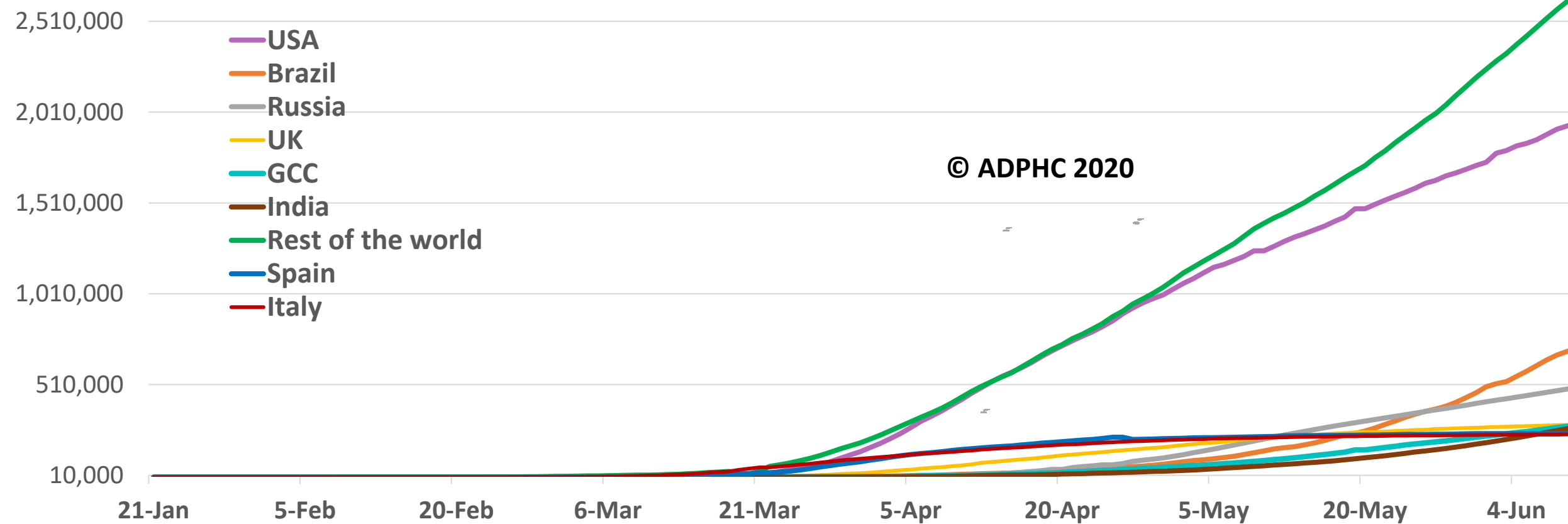
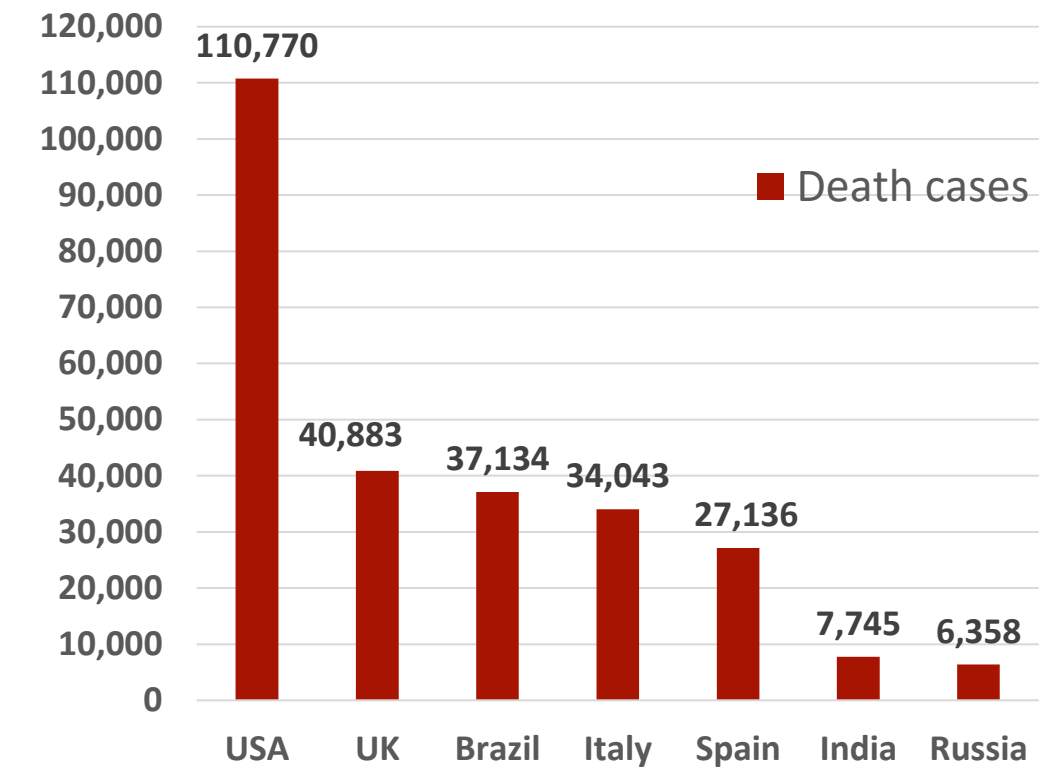


Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to Jun 10, 2020).

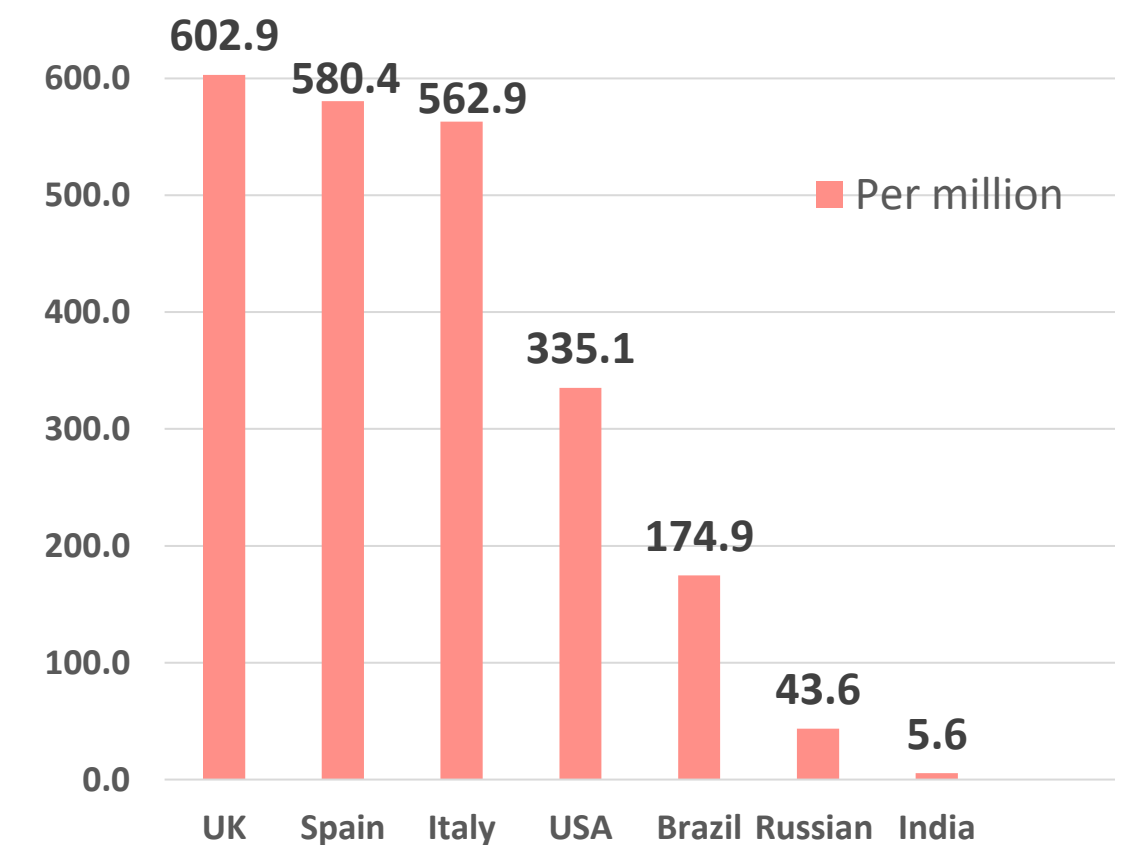
COVID-19 CASES PER MILLION



TOTAL DEATHS



DEATHS PER MILLION

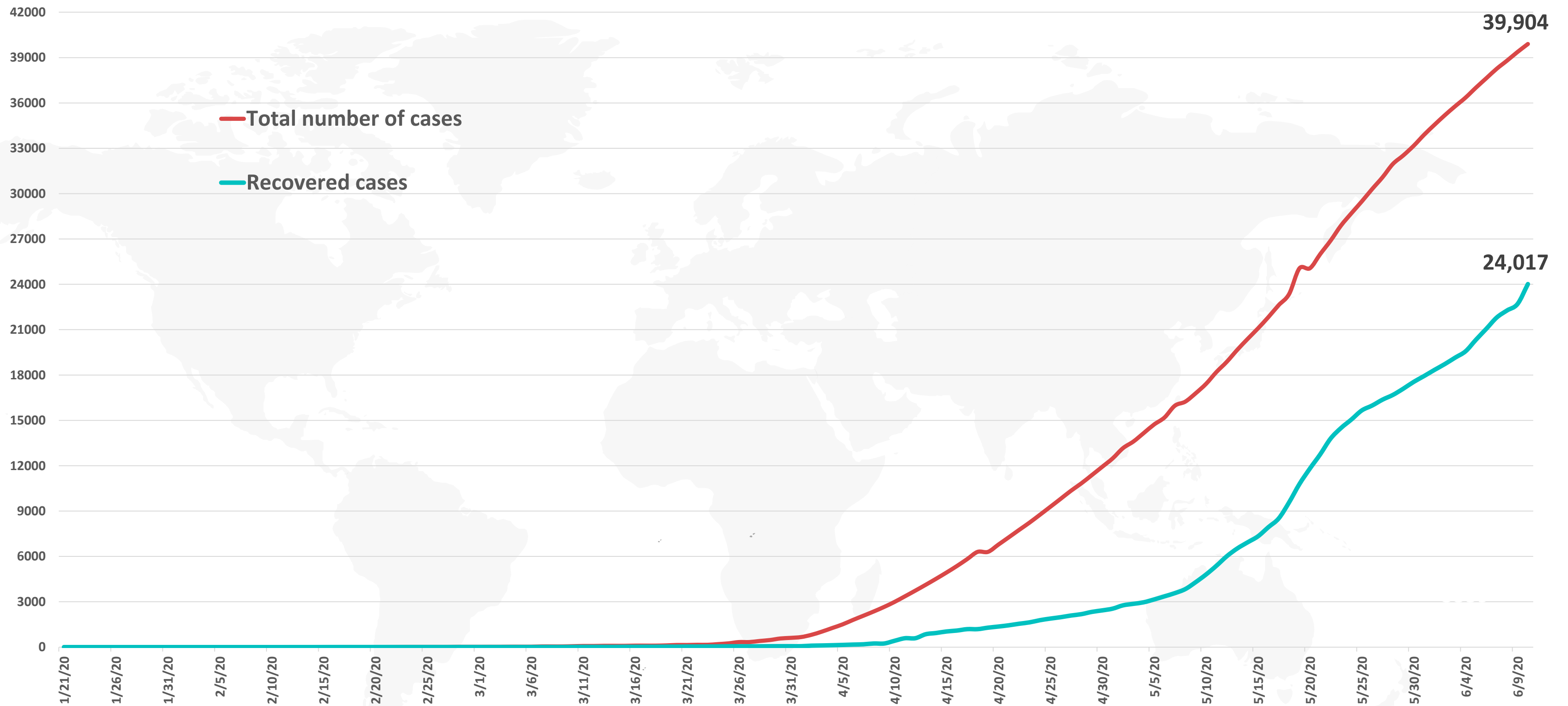


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](https://www.who.int)



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



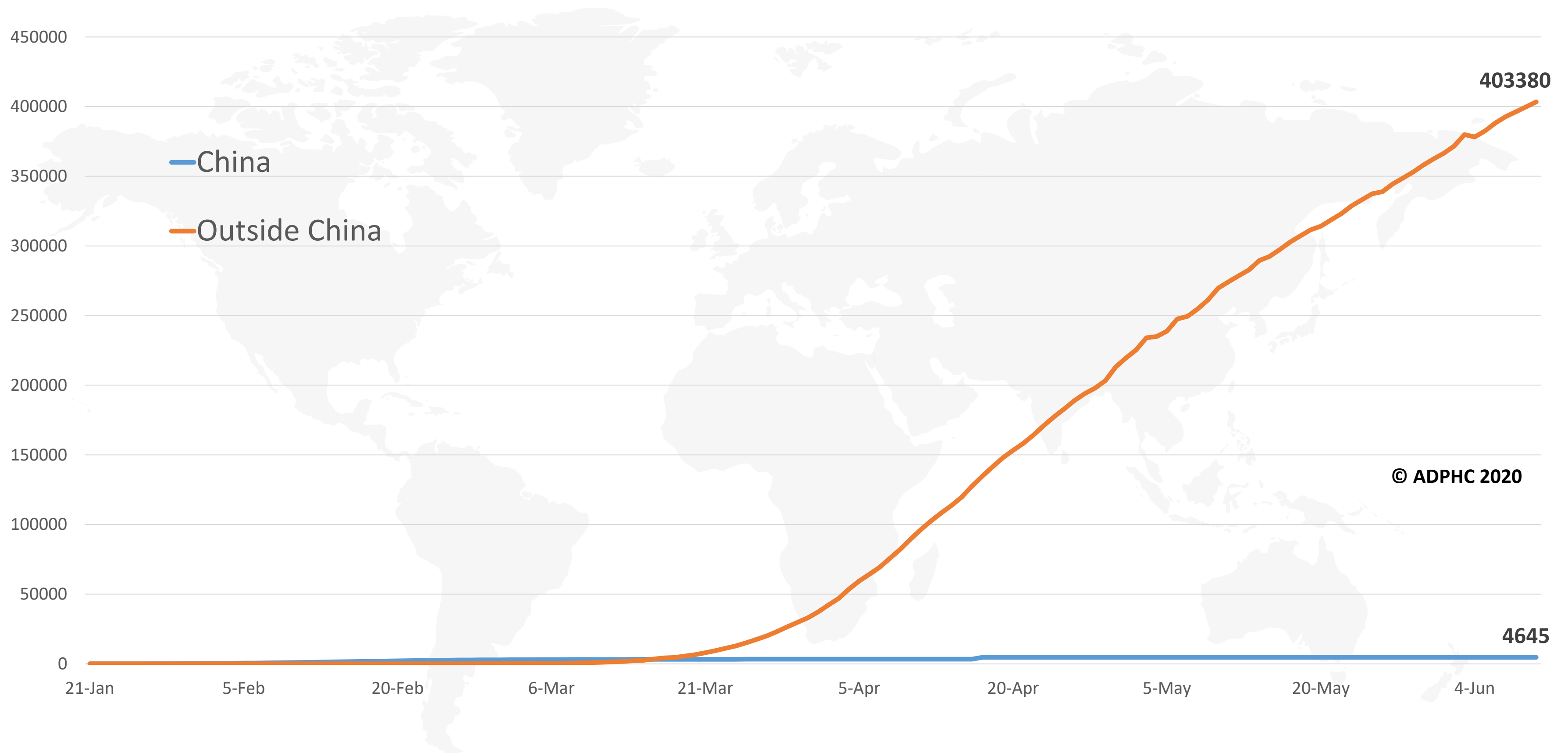
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#), [John Hopkins University](#)

Epidemiology



Figure 5: Total number of death due to COVID-19 reported by China and the rest of the world (January 22 to Jun 10, 2020).



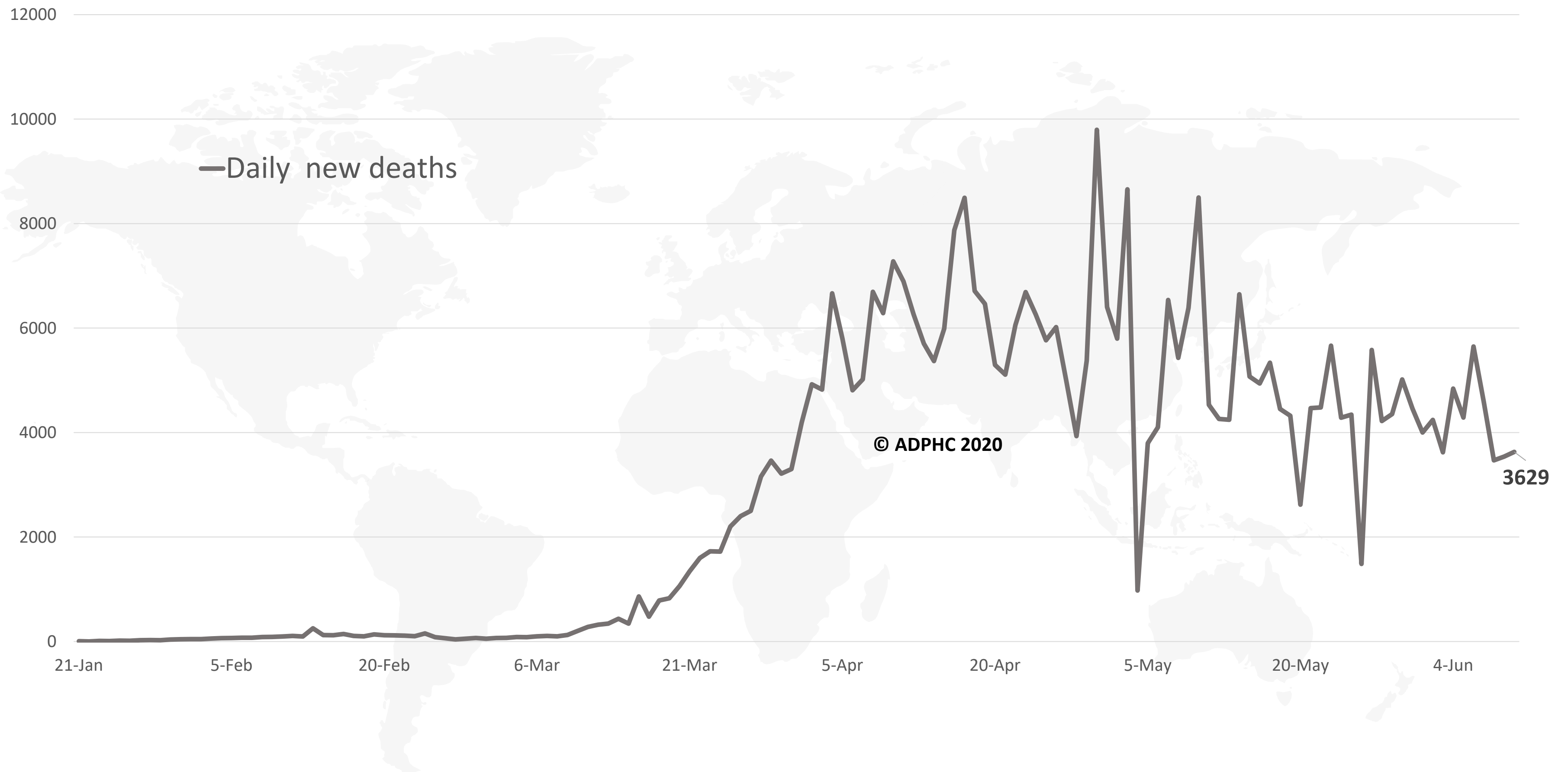
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Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)



Figure 6: Global daily new deaths due to COVID-19 (January 22 to Jun 10, 2020).



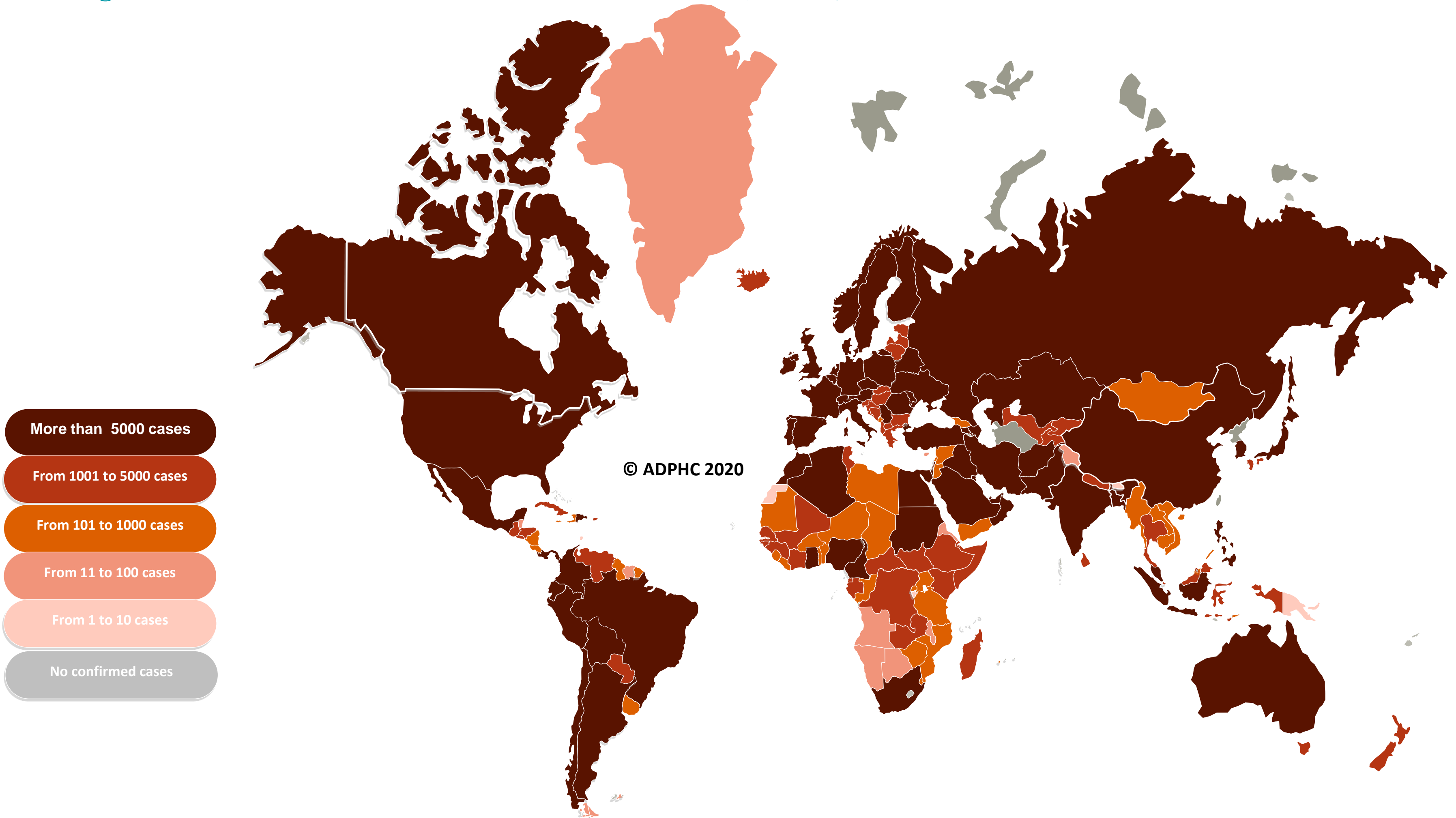
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](https://www.who.int/)

Epidemiology



Figure 7a : Global distribution of COVID-19 cases (Jun 10, 2020).

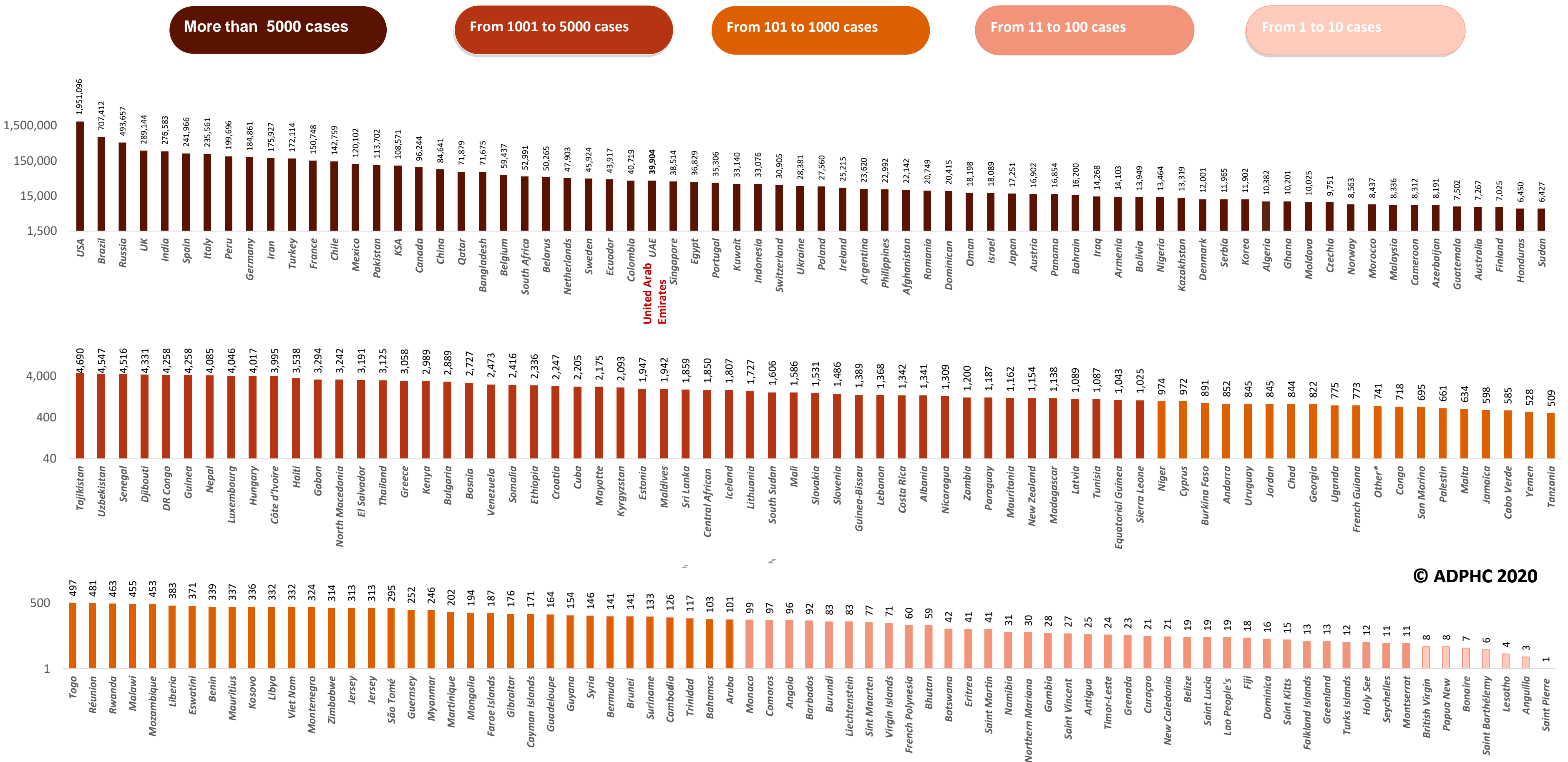


Map chart published by Abu Dhabi Public Health Center 2020.

Epidemiology



Figure 7B: Bar chart illustrate the global distribution of COVID19 cases Jun 10, 2020)



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

Map chart published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](https://www.who.int/)

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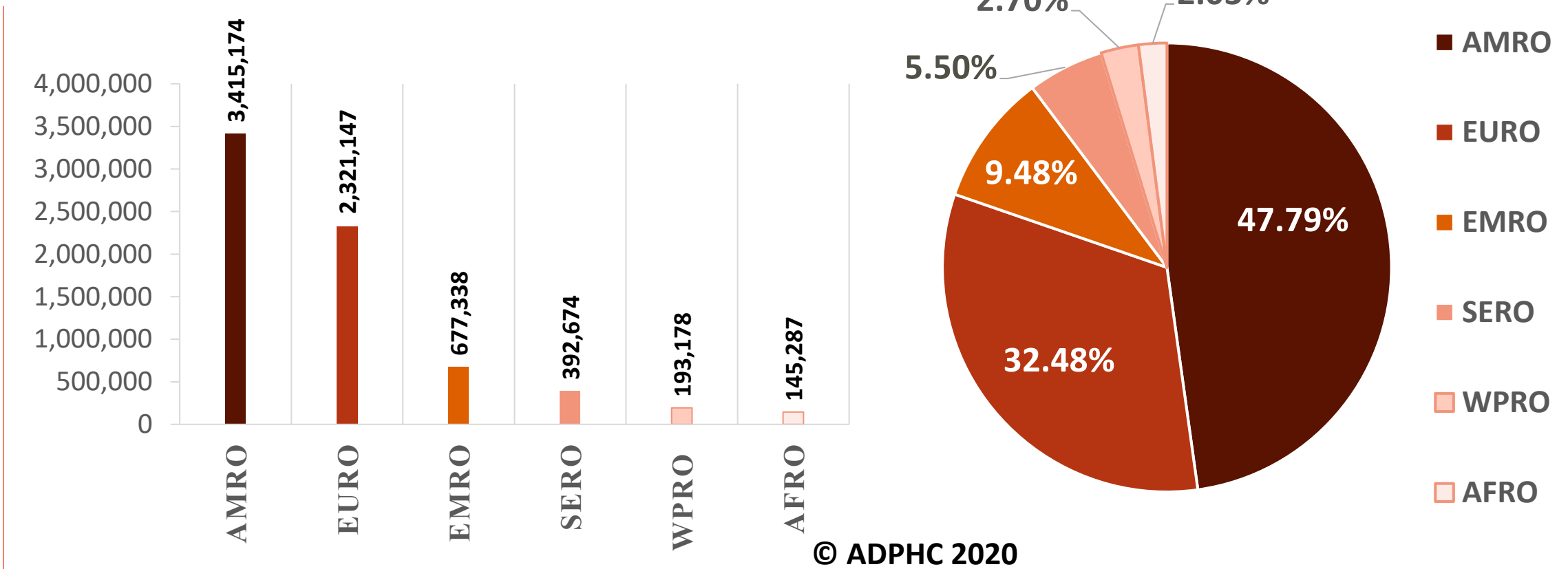
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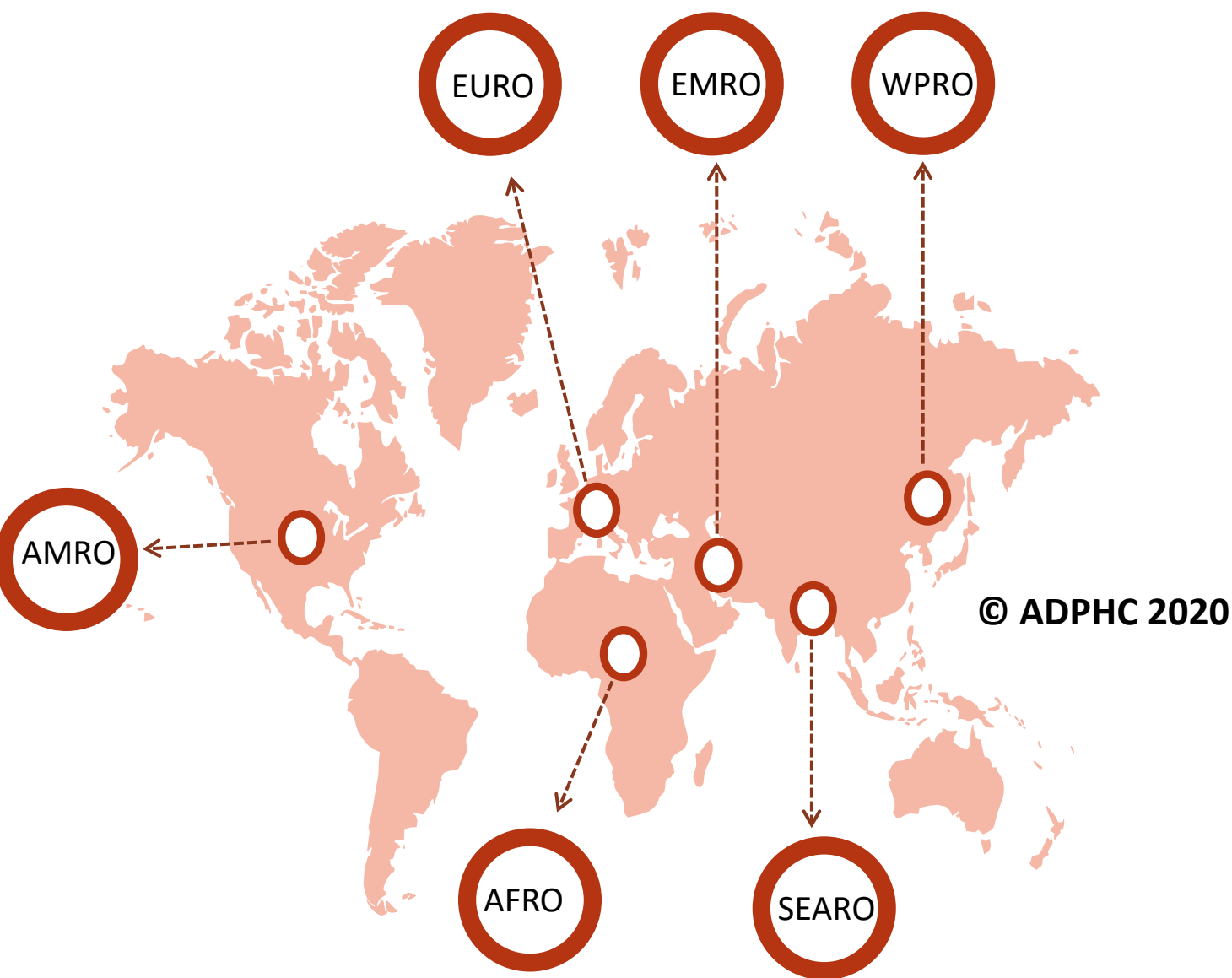
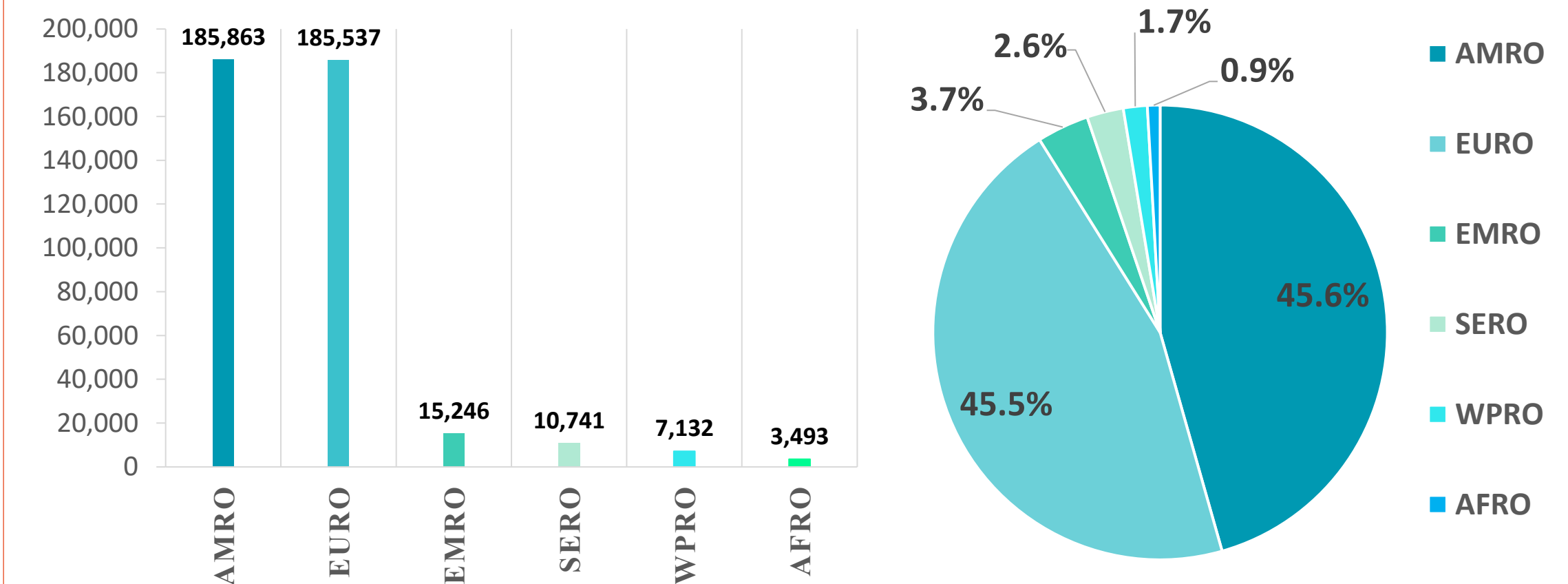


Figure 8: illustrate the Global distribution of COVID19 cases per region (Jun 10, 2020)

INFECTED



DEATH



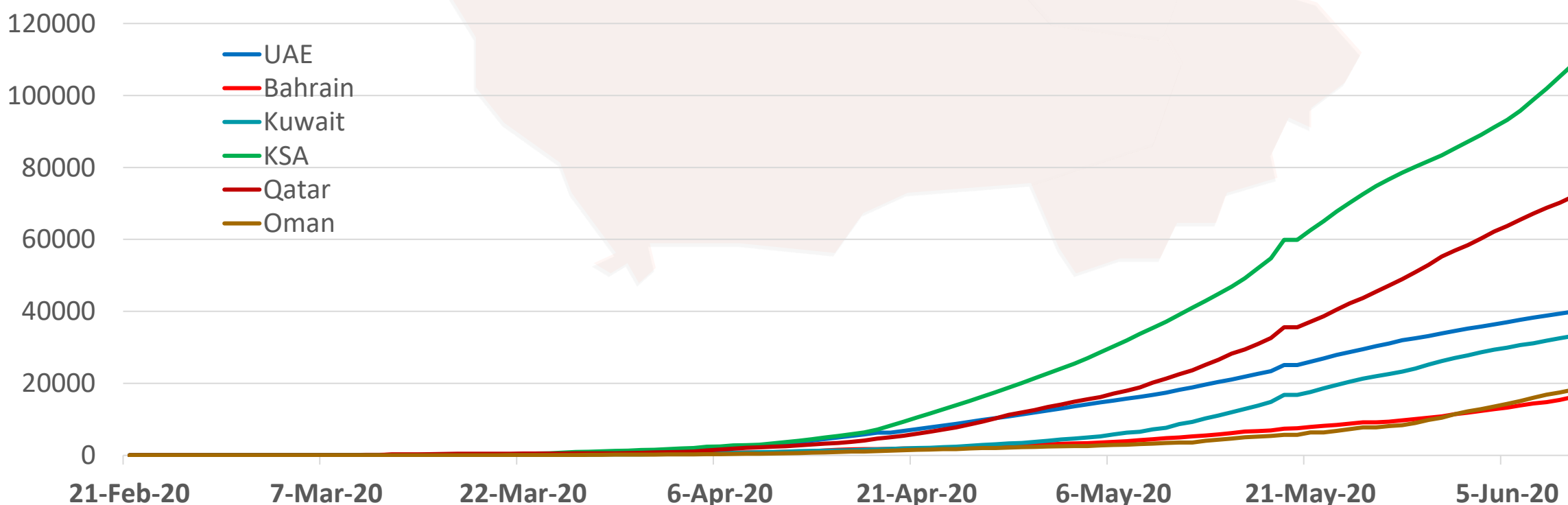
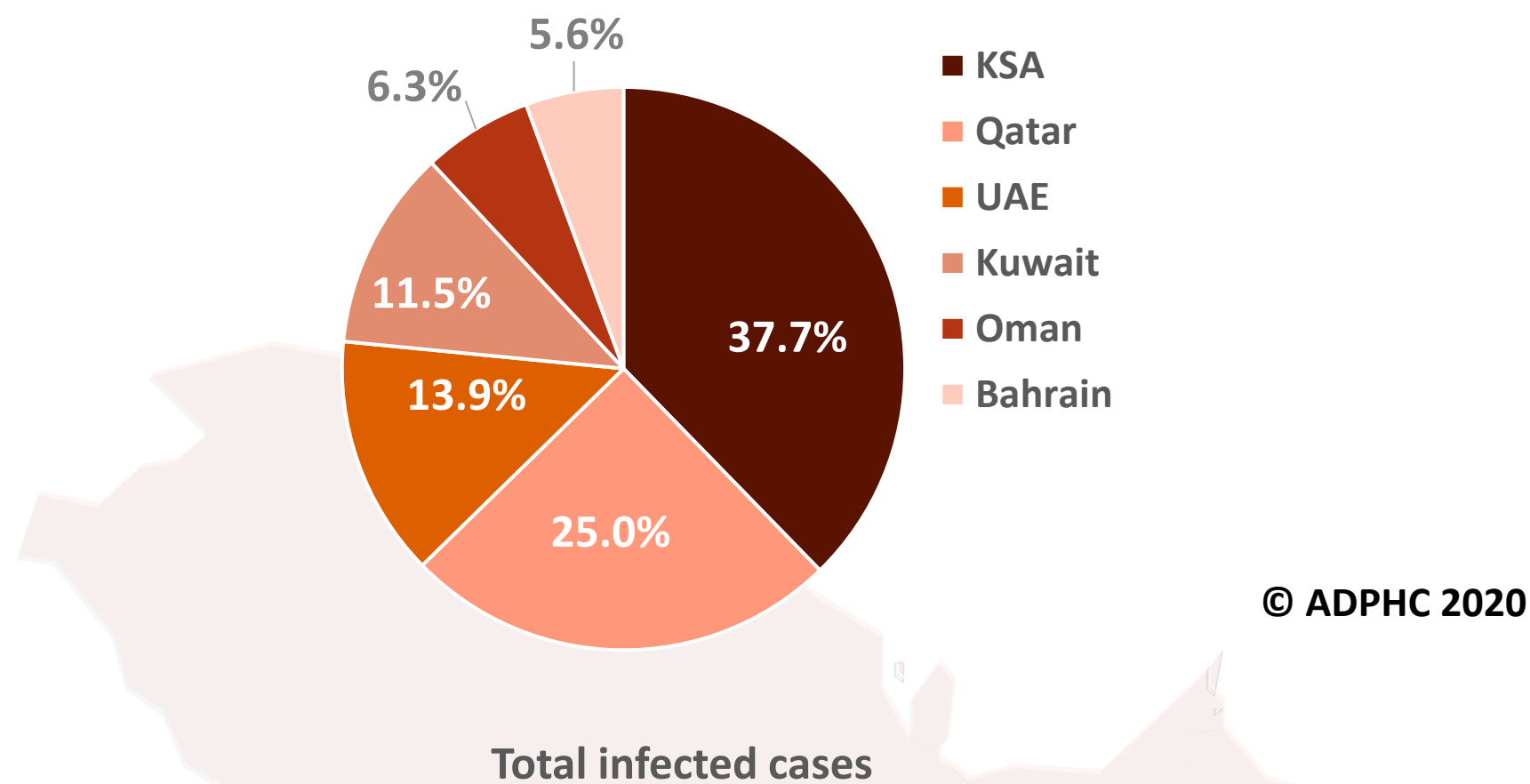
Map chart published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](https://www.who.int/)

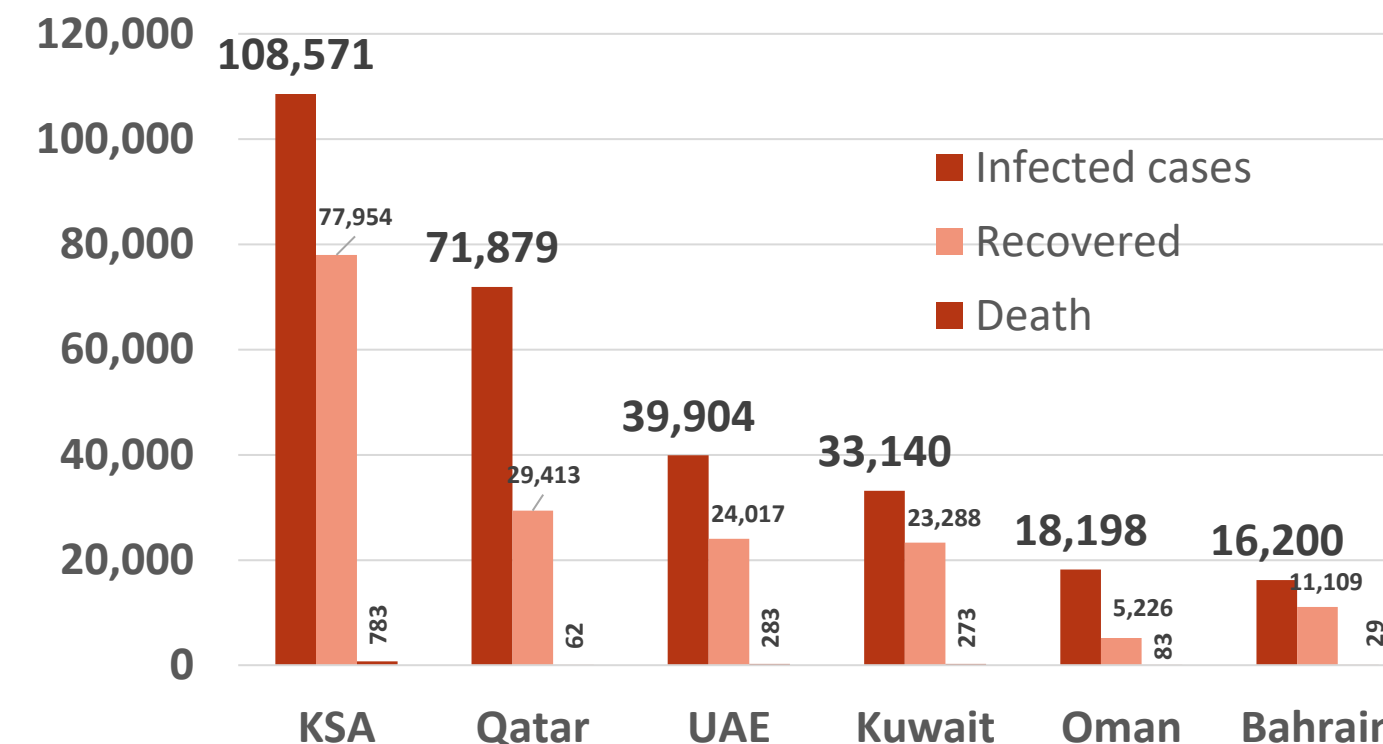


Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (Jun 10, 2020)

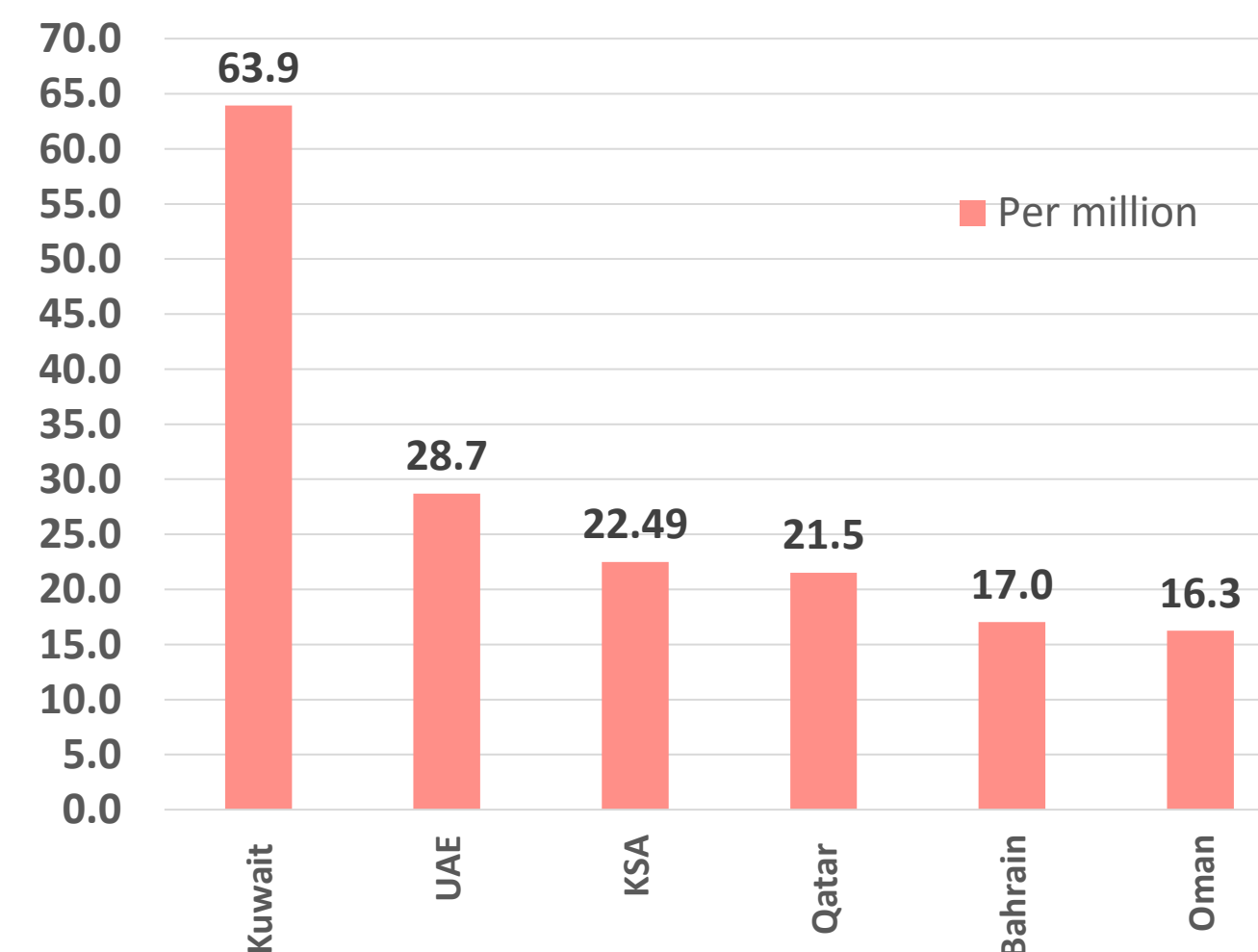
TOTAL NUMBER OF INFECTED CASES



Total number of infected, recovered and Deaths



Death per million



charts published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](https://www.who.int/)

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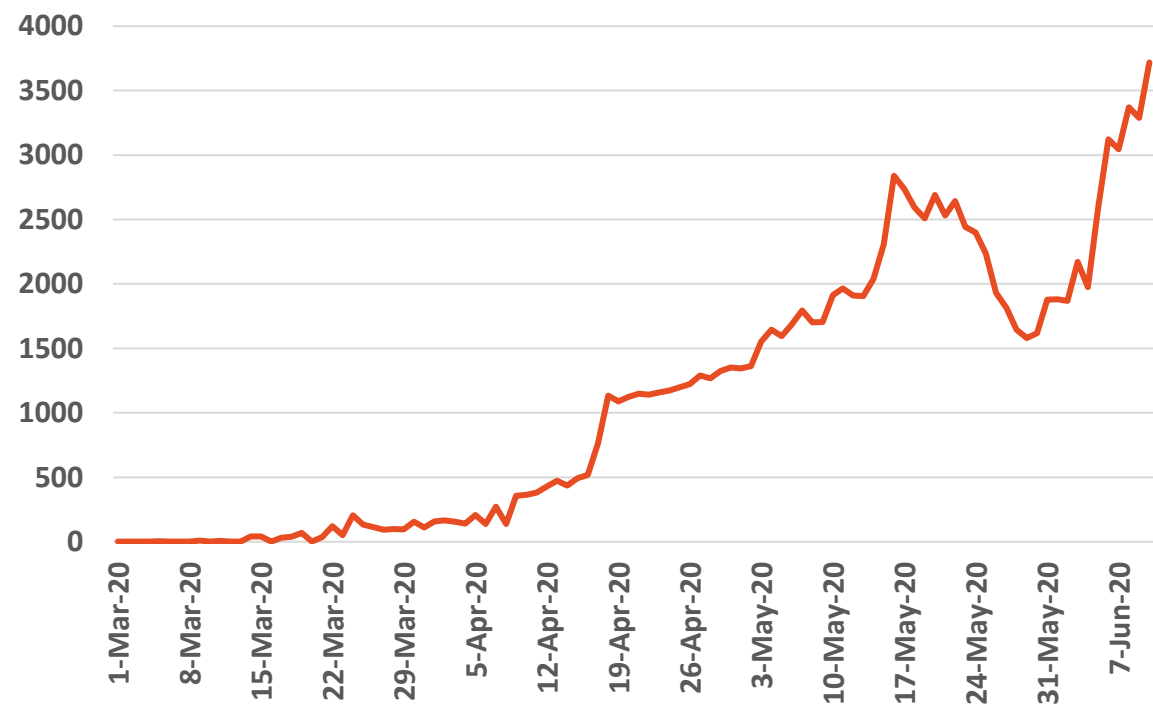
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Epidemiology



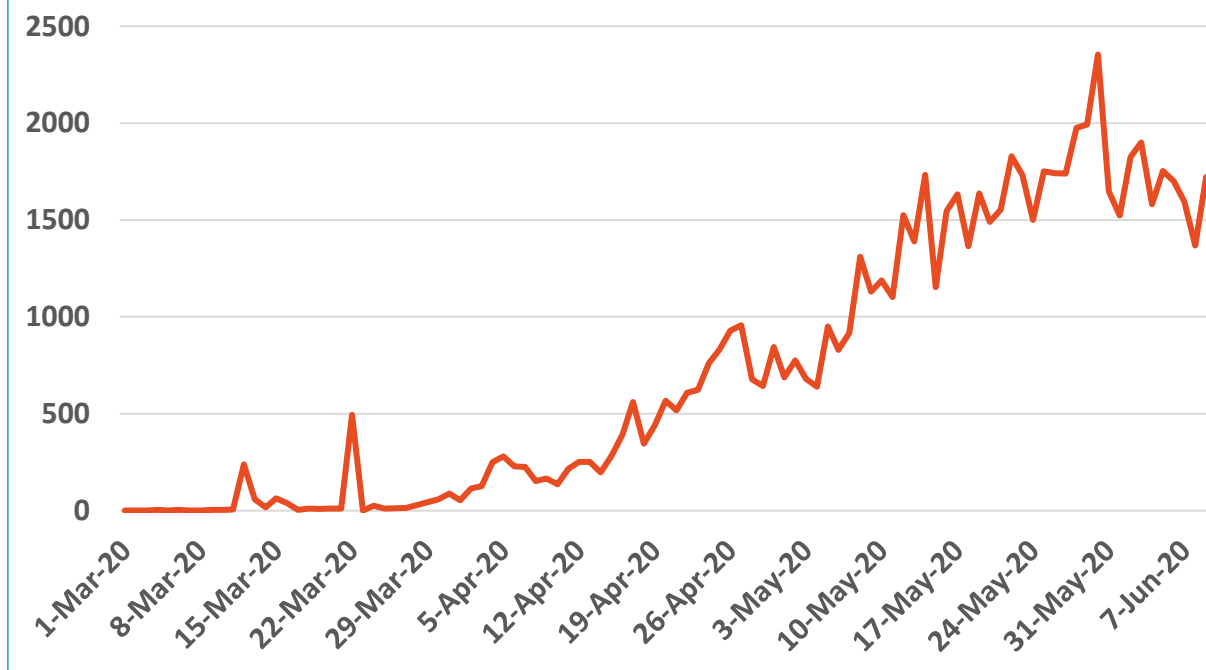
Figure 10: Comparative analysis of the distribution of COVID19 new cases in GCC countries (June 10, 2020)

KSA



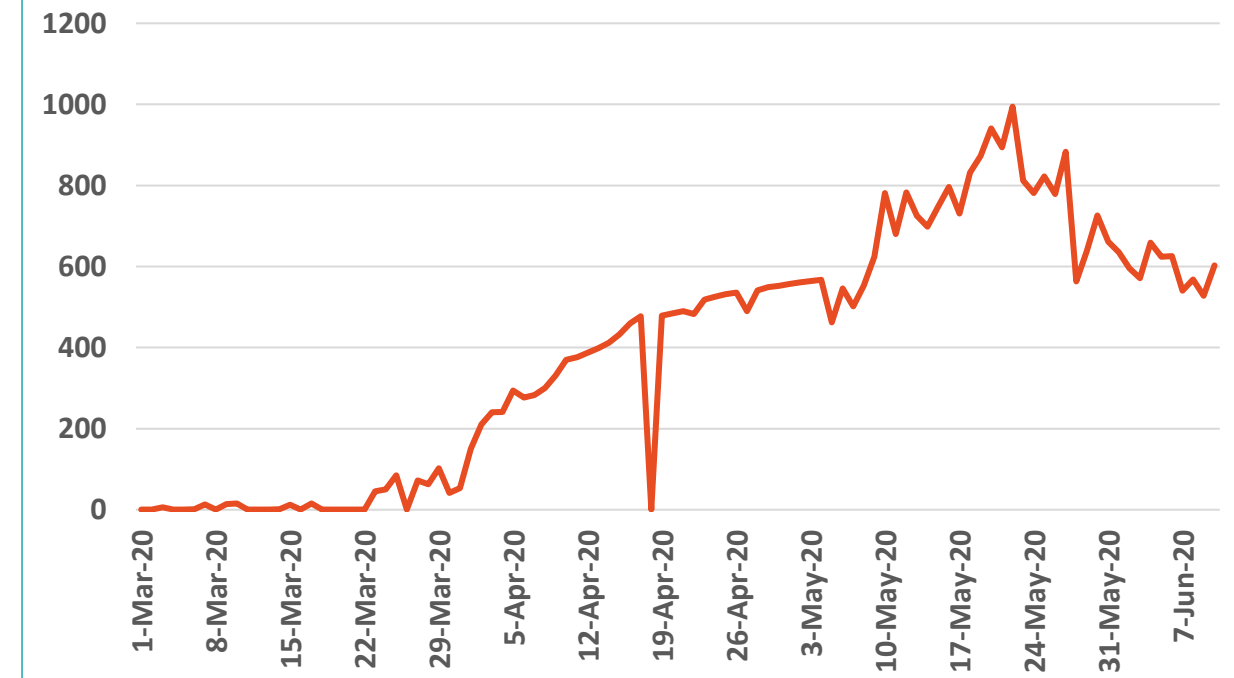
Source : KSA ministry of health

Qatar



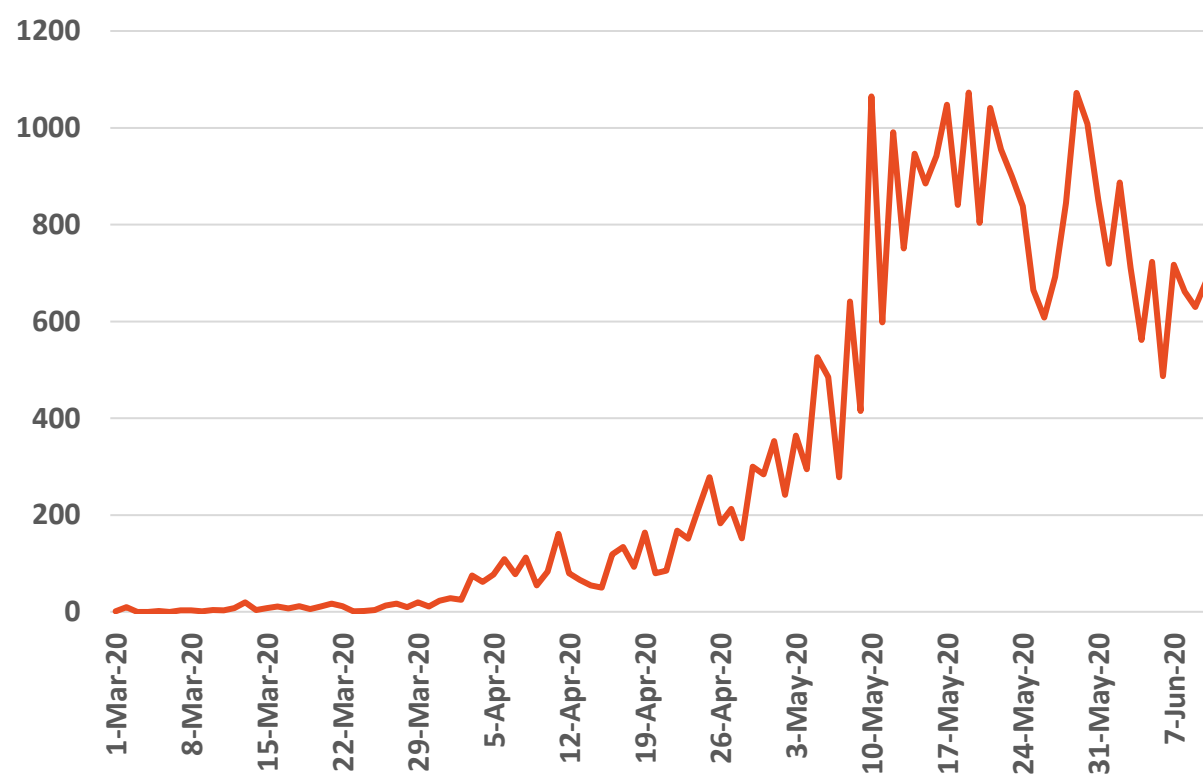
Source : Qatar ministry of health

UAE



Source : UAE ministry of health

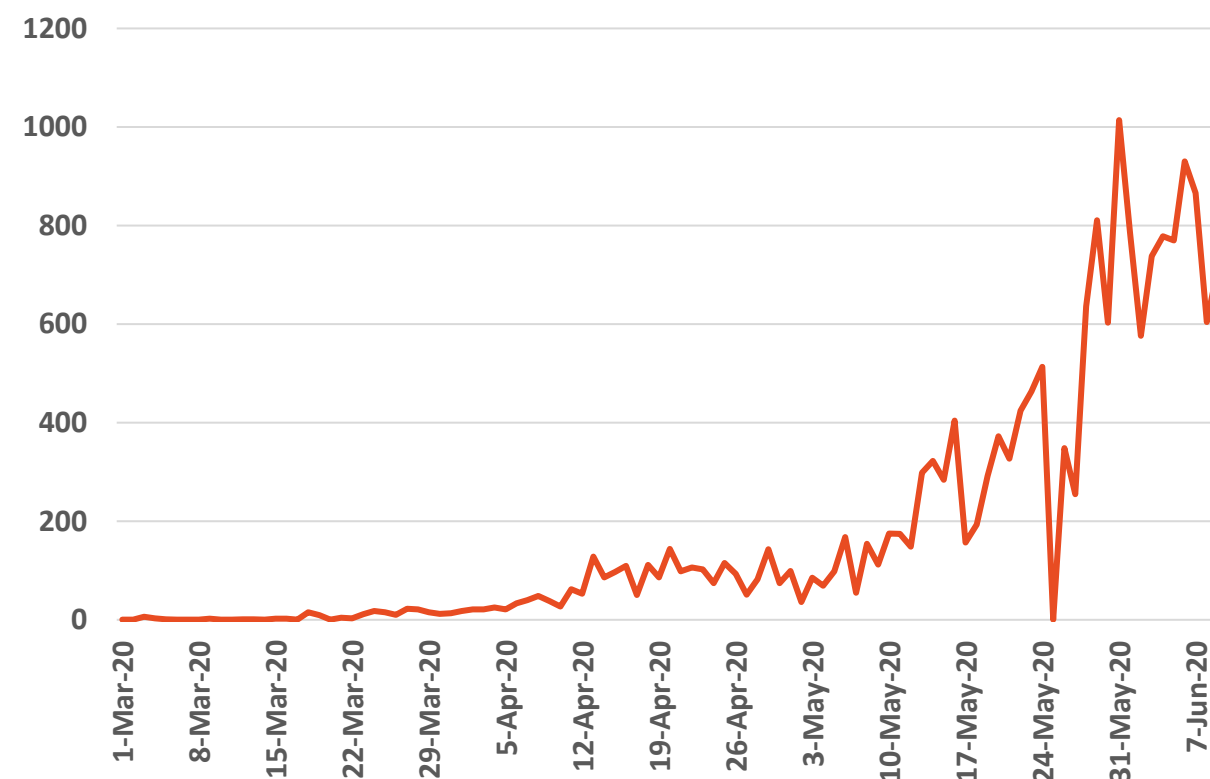
Kuwait



Source : Kuwait ministry of health

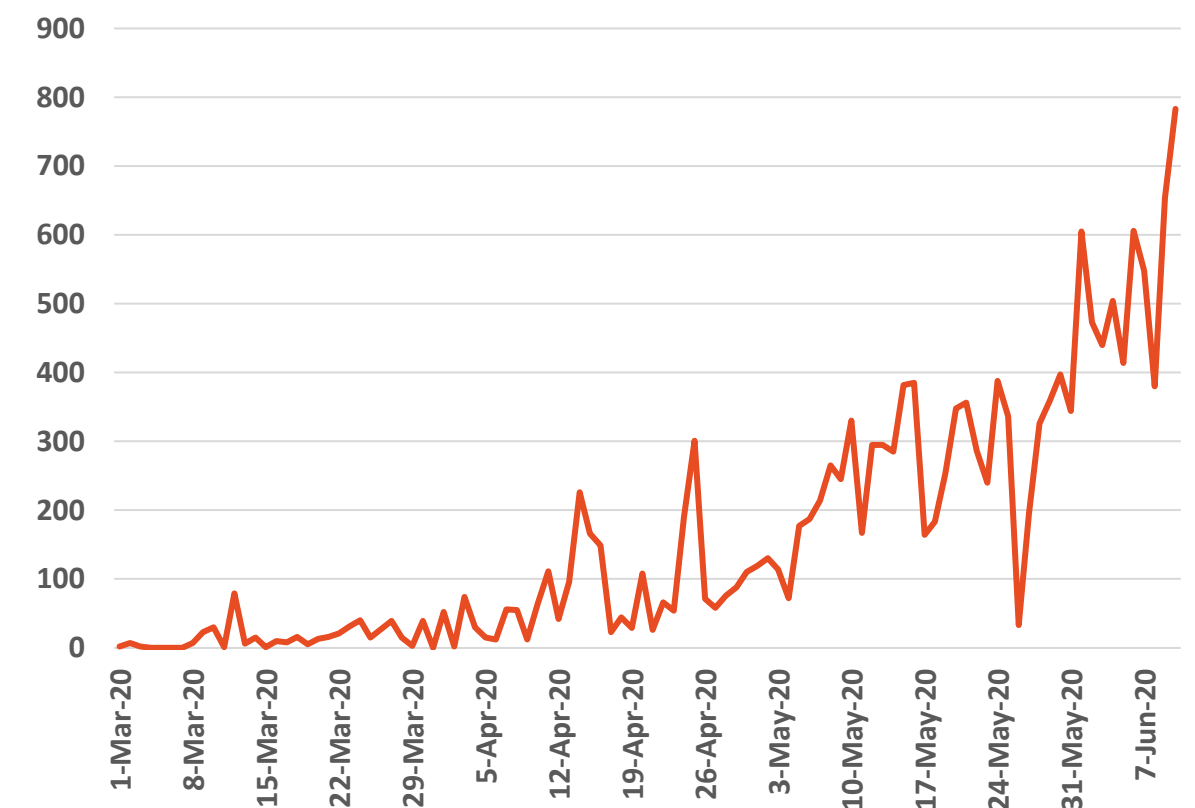
Oman

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Source :Oman ministry of health

Bahrain



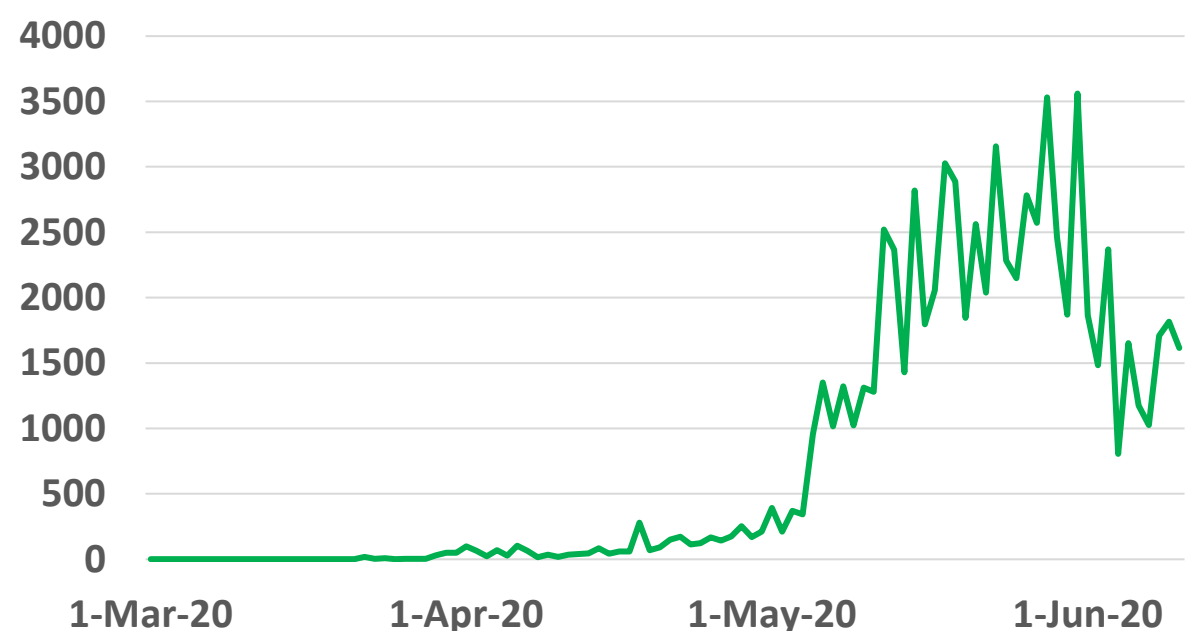
Source :WHO

Epidemiology



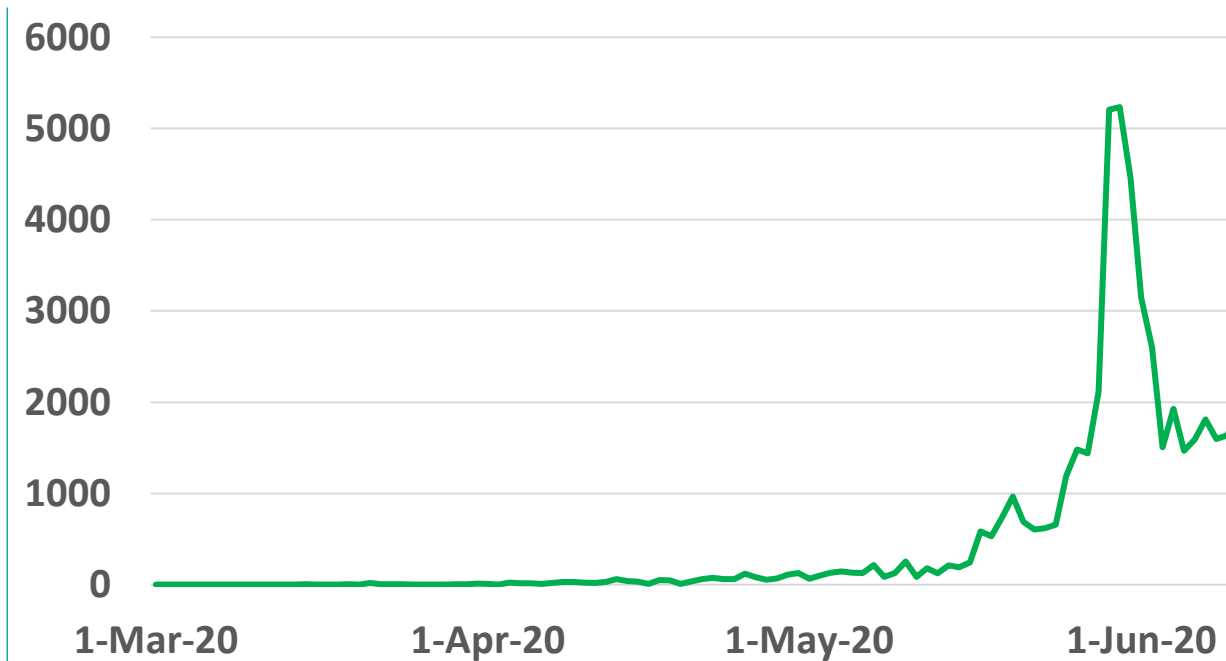
Figure 11 : Comparative analysis of the distribution of COVID19 newly recovered cases in GCC countries (June 10, 2020)

KSA



Source : KSA ministry of health

Qatar



Source : Qatar ministry of health

UAE



Source : UAE ministry of health

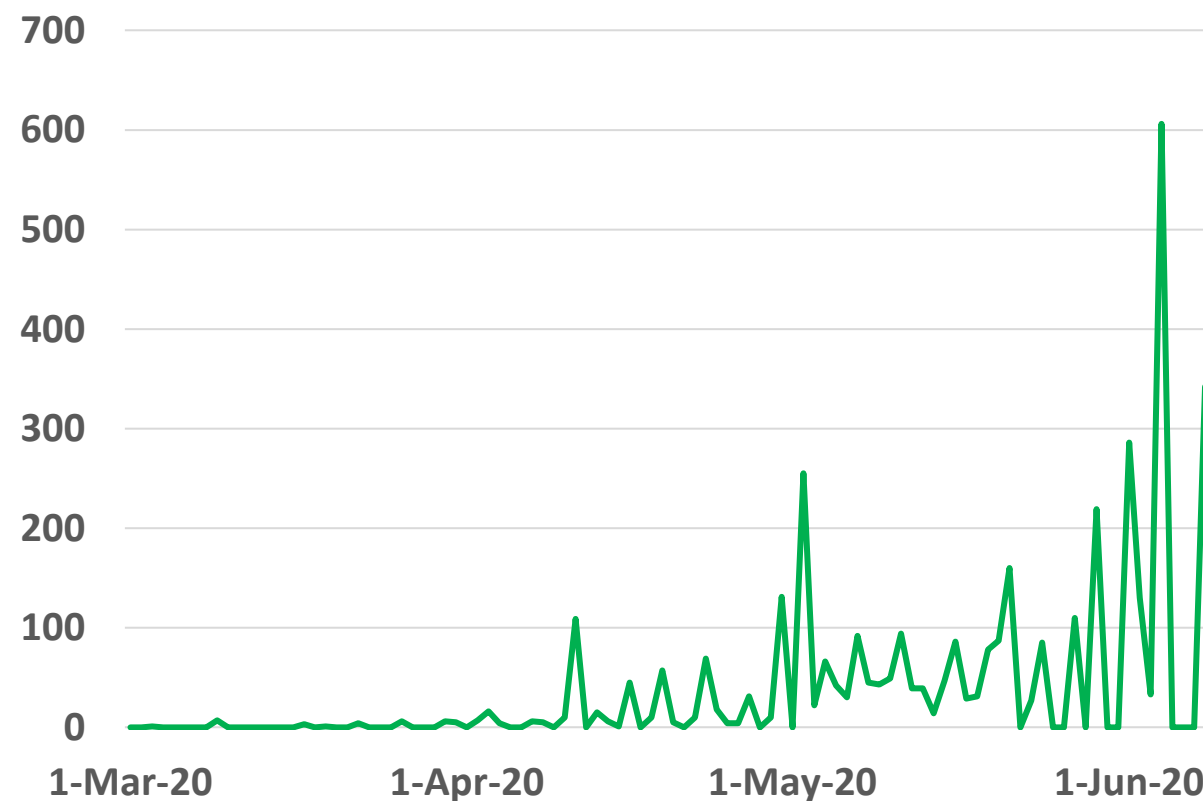
Kuwait



Source : Kuwait ministry of health

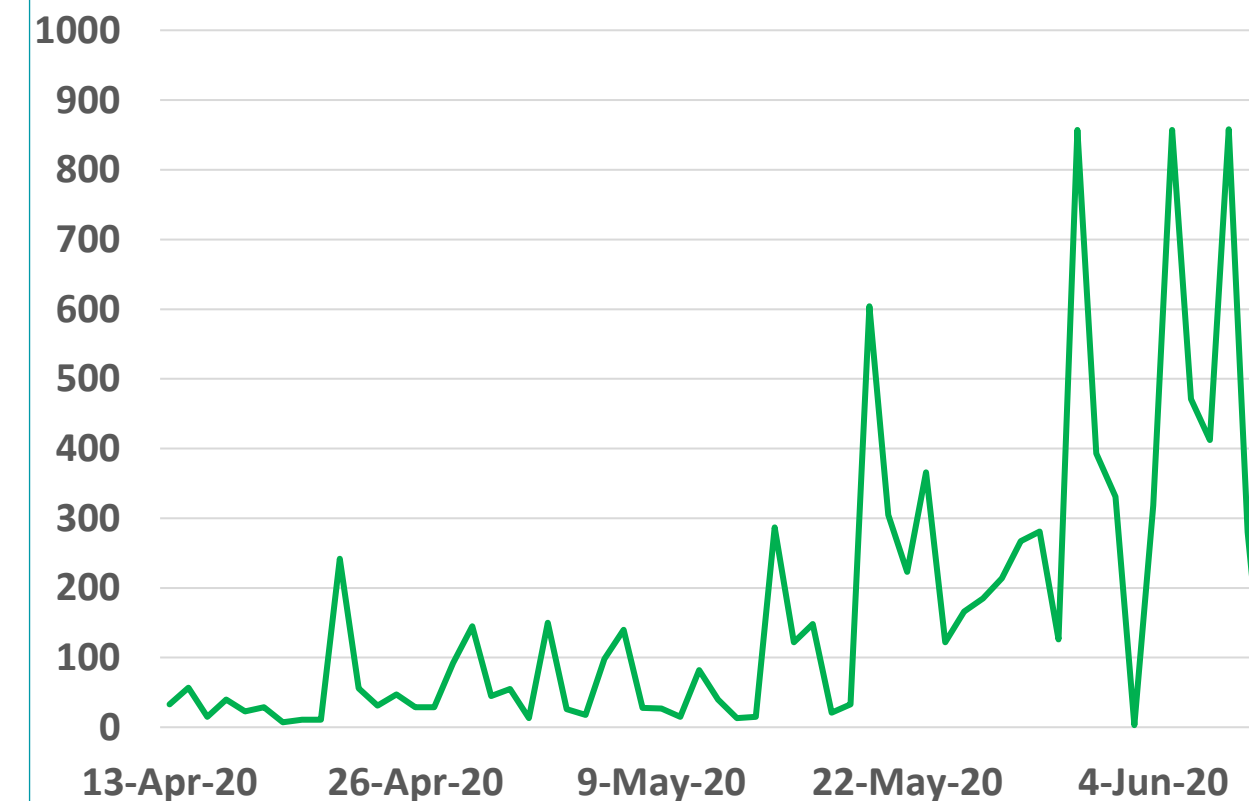
Oman

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Source : Oman ministry of health

Bahrain



Source : GCCStat

Epidemiology



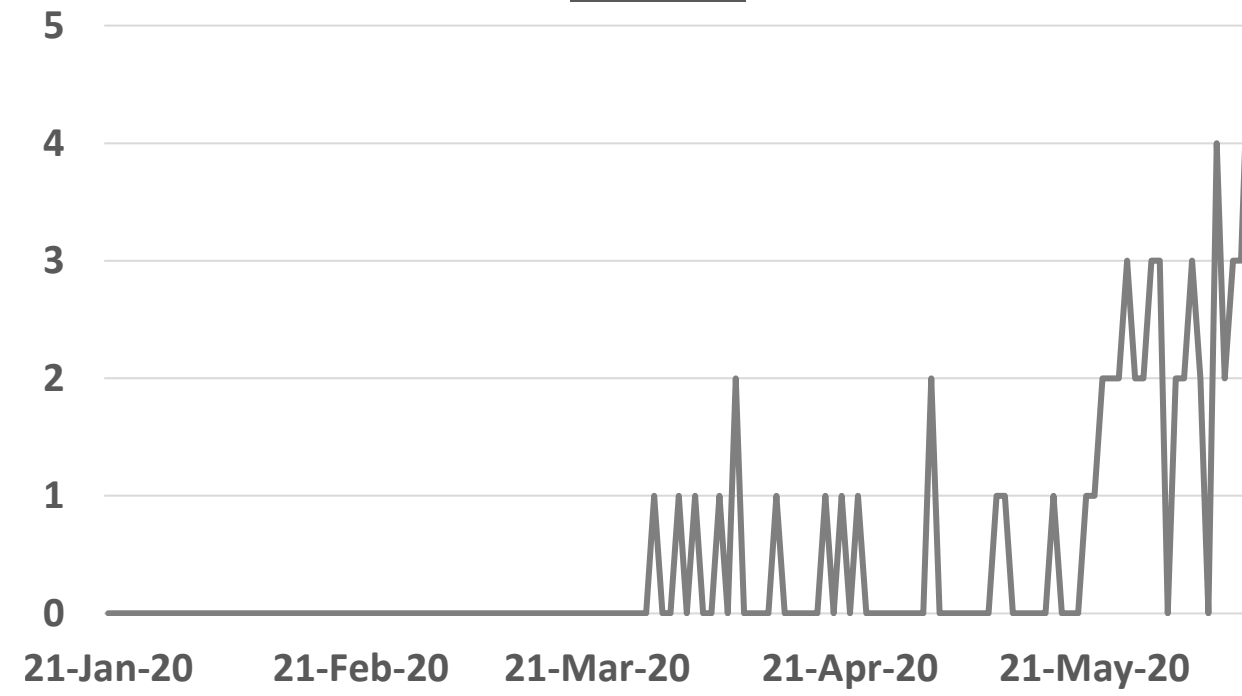
Figure 12: Comparative analysis of the distribution of COVID19 newly death cases in GCC countries (June 10, 2020)

KSA



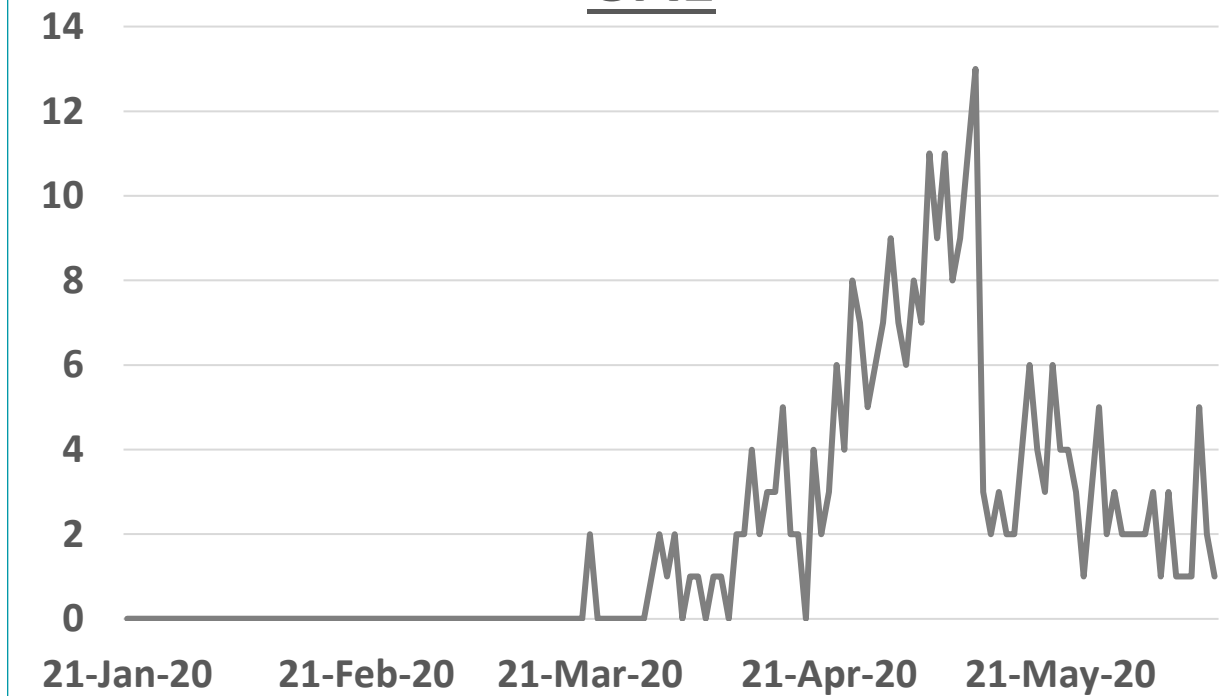
Source : KSA ministry of health

Qatar



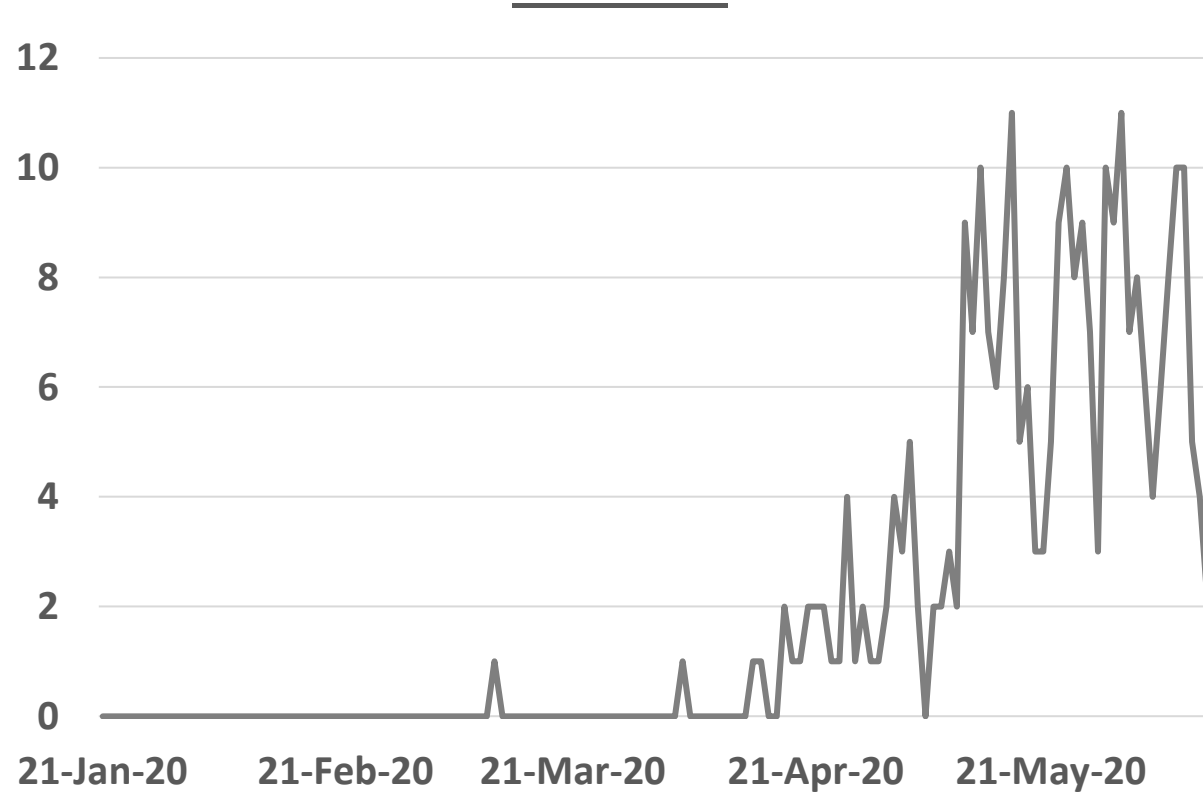
Source : Qatar ministry of health

UAE



Source : UAE ministry of health

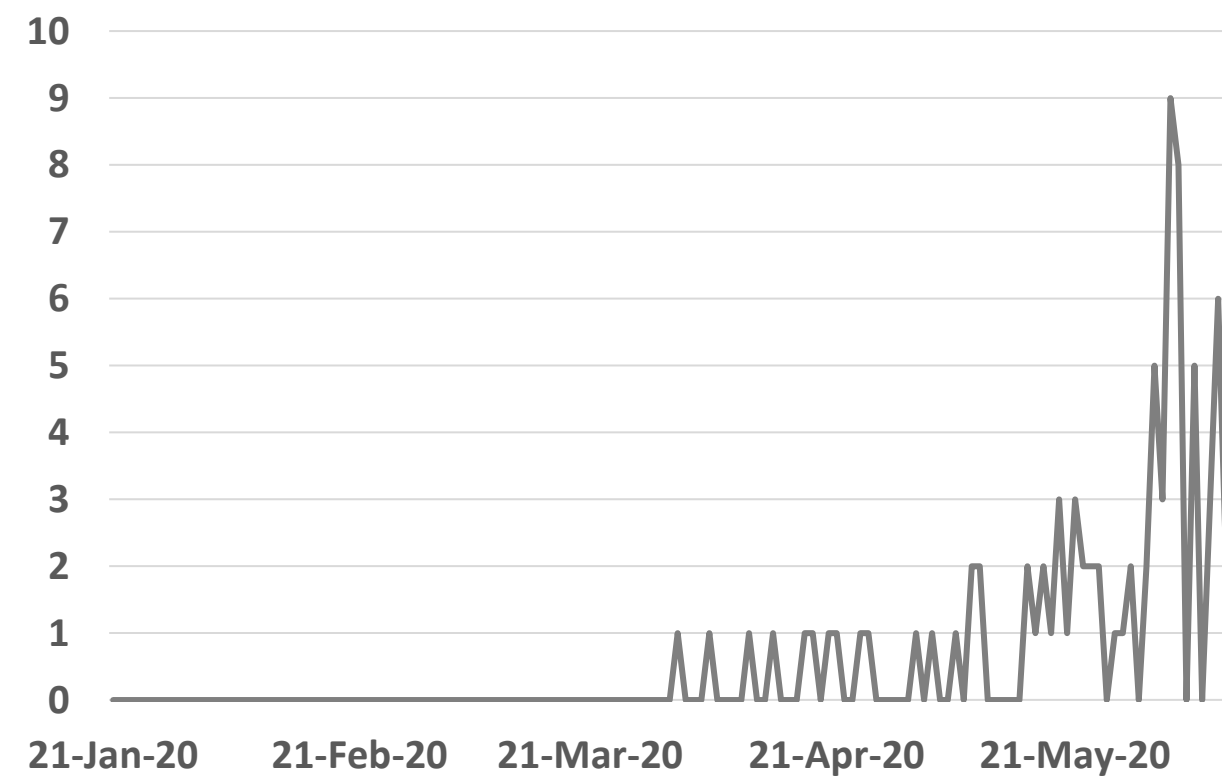
Kuwait



Source : Kuwait ministry of health

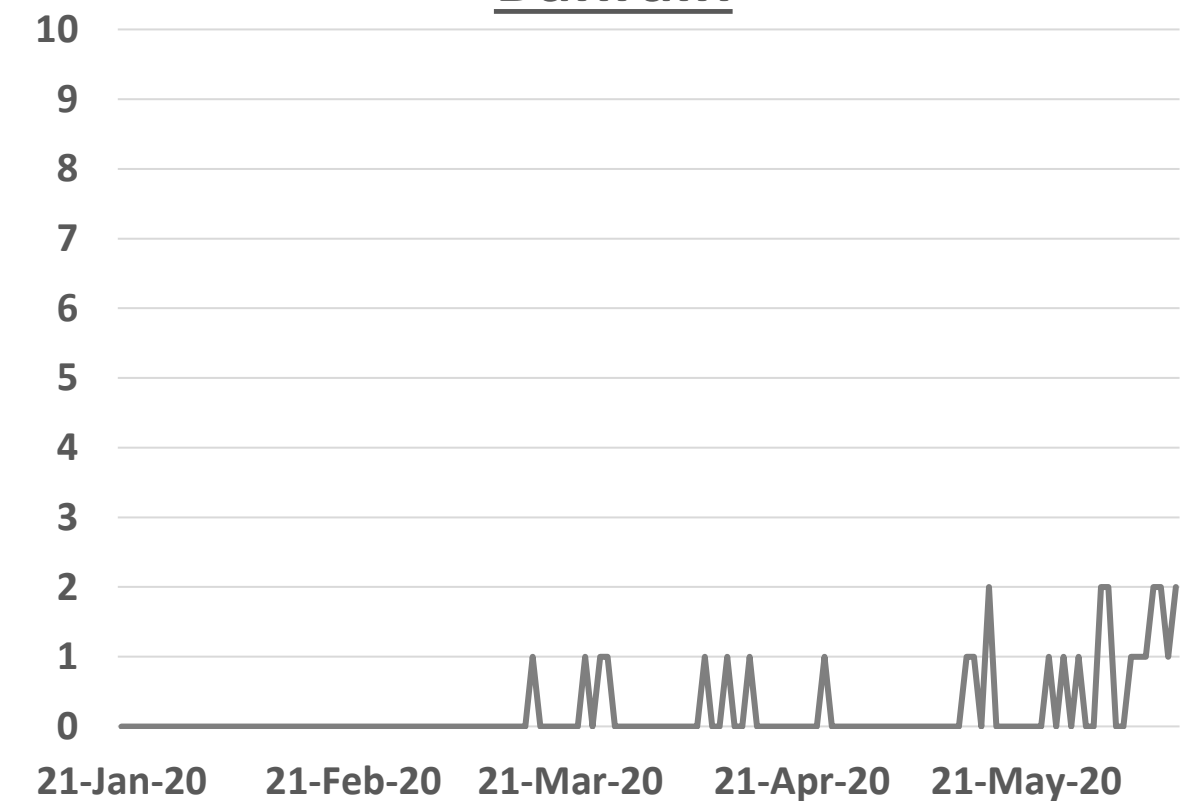
Oman

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Source :Oman ministry of health

Bahrain



Source :WHO



Treatment

Article 1: Effect of Convalescent Plasma Therapy on Time to Clinical Improvement in Patients With Severe and Life-threatening COVID-19 A Randomized Clinical Trial.

Published: June 3, 2020 in [the JAMA](#)

Summary:

An open label randomized control trial studied the effect of Convalescent plasma therapy compared to placebo in china.

Patient were recruited from Feb to 28 of March.

Planned to have 200 participant , however , the study was terminated prematurely with 103 participant due to the containment of epidemic in Wuhan and lack of patients.

Method: participant status as in Table 2. plan to study clinical improvement post 28 day of treatment. Secondary point was 28-day mortality and duration of hospitalization.

Table 2. Patients' Clinical Status at Randomization and Medications Received^a

	Convalescent plasma group (n = 52)	Control group (n = 51)
All patients		
Time between symptom onset and randomization, median (IQR), d	27 (22-39) [n = 49]	30 (19-38) [n = 48]
≤14 d, No. (%)	3/49 (6.1)	5/48 (10.4)
>14 d, No. (%)	46/49 (93.9)	43/48 (89.6)
Interval between symptom onset and admission, median (IQR), d	12 (5-20) [n = 49]	10 (6-16) [n = 48]
6-Point scale at study day 1, No. (%)		
2- Hospitalization, no supplemental oxygen	1/51 (2.0)	1/50 (2.0)
3- Hospitalization, requiring supplemental oxygen (not high-flow or noninvasive ventilation)	15/51 (29.4)	15/50 (30.0)
4- Hospitalization, requiring noninvasive ventilation and/or high-flow supplemental oxygen	21/51 (41.2)	23/50 (46.0)
5- Hospitalization, requiring extracorporeal membrane oxygenation and/or invasive mechanical ventilation	14/51 (27.5)	11/50 (22.0)
Medications used after randomization		
Antiviral	41/46 (89.1)	44/49 (89.8)
Antibacterial	38/46 (82.6)	39/49 (79.6)
Chinese herbal medicine	26/46 (56.5)	30/49 (61.2)
Steroids	21/46 (45.7)	16/49 (32.7)
Antifungal	15/46 (32.6)	13/49 (26.5)
Human immunoglobulin	13/46 (28.3)	11/49 (22.5)
Interferon	12/46 (26.1)	7/49 (14.3)

Treatment



Cont.,

Finding:

mean age of participant was 70

Clinical improvement occurred within 28 days in 51.9% of the convalescent plasma group vs 43.1%

There was no significant difference in 28-day mortality or time from randomization to discharge.

Convalescent plasma treatment was associated with a negative conversion rate of viral PCR at 72 hours in 87.2% of the convalescent plasma group vs 37.5% of the control group; $P < .001$).

Two patients in the convalescent plasma group experienced adverse events within hours after transfusion that improved with supportive care.

Conclusion:

Did not result in a statistically significant improvement in time to clinical improvement within 28 days

Table 3. Primary and Secondary Clinical Outcomes at Day 28^a

	Convalescent plasma group (n = 52)	Control group (n = 51)	Absolute difference (95% CI) ^b	Effect estimate (95% CI)	P value ^c
All patients					
Primary clinical outcome					
Time to clinical improvement, median (IQR), d ^d	28.00 (13.00-Indeterminate)	Indeterminate (18.00-Indeterminate)	-2.15 (-5.28 to 0.99)	HR, 1.40 (0.79-2.49)	.26
Clinical improvement rate, No./total (%) ^e					
At day 7	5/52 (9.6)	5/51 (9.8)	-0.2% (-11.6% to 11.2%)	OR, 0.98 (0.30-3.19)	.97
At day 14	17/52 (32.7)	9/51 (17.6)	15.0% (-1.4% to 31.5%)	OR, 1.85 (0.91-3.77)	.08
At day 28	27/52 (51.9)	22/51 (43.1)	8.8% (-10.4% to 28.0%)	OR, 1.20 (0.80-1.81)	.37
Secondary clinical outcomes					
Discharge rate at 28 d, No./total (%)	26/51 (51.0)	18/50 (36.0)	15.0% (-4.1% to 34.1%)	OR, 1.42 (0.90-2.24)	.13
Time from randomization to discharge, median (IQR), d ^d	28.00 (13.00-Indeterminate)	Indeterminate (19.00-Indeterminate)	-2.43 (-5.56 to 0.69)	HR, 1.61 (0.88-2.93)	.12
Time from hospitalization to discharge, median (IQR), d ^d	41.00 (31.00-Indeterminate)	53.00 (35.00-Indeterminate)	-11.95 (-26.33 to 2.43)	HR, 1.68 (0.92-3.08)	.09
Mortality at 28 d, No./total (%)	8/51 (15.7)	12/50 (24.0)	-8.3% (-23.8% to 7.2%)	OR, 0.65 (0.29-1.46)	.30
Time from randomization to death, median (IQR), d ^d	Indeterminate	Indeterminate (26.00-Indeterminate)	0.52 (-2.10 to 3.14)	HR, 0.74 (0.30-1.82)	.52
Viral nucleic acid negative rate, No./total (%)					
At 24 h	21/47 (44.7)	6/40 (15.0)	29.7% (11.7% to 47.7%)	OR, 4.58 (1.62-12.96)	.003
At 48 h	32/47 (68.1)	13/40 (32.5)	35.6% (15.9% to 55.3%)	OR, 4.43 (1.80-10.92)	.001
At 72 h	41/47 (87.2)	15/40 (37.5)	49.7% (32.0% to 67.5%)	OR, 11.39 (3.91-33.18)	<.001

Public health response



Article 2: The Importance of Long-term Care Populations in Models of COVID-19

Published: June 5, 2020 in the [JAMA](#)

Summary:

- This is the “Viewpoint” article by the authors suggesting to create separate models that reflect how COVID-19 has affected the long-term-care (LTC) facilities.
- COVID-19 is not a unitary pandemic but affects differentially in the residential settings/institutions depending on the vulnerability of their residents, presence of comorbidities and risk factors and the availability of their proper care arrangements.
- Most current COVID models assume similar transmission of SARS-CoV-2 to calculate the number of susceptible, exposed, infectious, and recovered individuals in an entire population, estimating the chance that individuals of different ages come into contact with one another and accounting for age-based risks of becoming infected or having worse outcomes. So, these models may not capture the complexities that how COVID-19 is spreading in the LTC settings.
- LTC facilities are substantially different than in the general population; residents usually are older adults with multiple illnesses, functional impairment, dementia, and have high mortality following exposure to the SARS-CoV-2. Many aspects of community-wide **protective measures cannot be implemented in LTC settings such as physical distancing, face masks because of their frailty and close living quarters**. Quarantine and isolation of exposed or symptomatic residents are also challenging. **Furthermore, staff members who provide intimate personal care for multiple LTC residents often do not have access to adequate personal protective equipment (PPE)**. Staff members thus can contribute to transmission of SARS-CoV-2 within a facility, and some staff members work across several different facilities. Staff may not have sufficient paid time off, incentivizing working while symptomatic.

Conclusion:

It is proposed that separate projections are required for the LTC settings and the general population.

Public Health response



Article 3: COVID-19 vaccine development pipeline gears up

Published: June 6, 2020 [the lancet](#)

Summary:

- It takes approximately ten years to develop a vaccine. However, with the COVID-19 crisis, it is expected that the time will be different. **There are already ten vaccines in different stages of clinical trials and some researchers expect to receive phase 3 data during this summer.** A few companies focus on whole virus approaches in which weakened or killed SARS-CoV-2 is used to teach the immune system what to recognize.
- **Ineffective vaccines could aggravate disease through antibody dependent enhancement or other mechanisms.** Vaccine developers will need to align behind correlates of immunity, the immune response biomarkers that are measured to assess the effects of vaccines. When successes are claimed, independent validation will be needed to ensure that only the best candidates are moved forward.
- **There are other options such as challenge trials, in which participants are vaccinated and then treated with live virus, could speed things up.** However, this approach remain up for debate from ethical and scientific point of view. **Umbrella trials** could be used to test multiple vaccines under a single trial protocol. Advantage of this trial is the ability to use a single placebo to reduce the overall size and cost.

	Developer	Properties	Development status
mRNA-1273	Moderna and NIAID	mRNA vaccine	Phase 2
BNT162	BioNTech and Pfizer	mRNA vaccine	Phase 1/2
INO-4800	Inovio Pharmaceuticals	DNA vaccine	Phase 1
AZD1222	University of Oxford and AstraZeneca	Adenovirus vaccine	Phase 2b/3
Ad5-nCoV	CanSino Biologics	Adenovirus vaccine	Phase 2
Unnamed	Wuhan Institute of Biological Products and Sinopharm	Inactivated virus	Phase 1/2
Unnamed	Beijing Institute of Biological Products and Sinopharm	Inactivated virus	Phase 1/2
PiCoVacc	Sinovac	Inactivated virus, plus adjuvant	Phase 1/2
Unnamed	Institute of Medical Biology and Chinese Academy of Medical Sciences	Inactivated virus	Phase 1
NVX-CoV2373	Novavax	Protein subunit	Phase 1/2

Table: COVID-19 vaccines in clinical trials

- Vaccine developers have started to scale up production now in spite of the risk that their favored candidates will fall short. **Distribution, delivery, and accessibility need to be worked out.** There are growing calls for universal vaccine accessibility with the public sector investing heavily in the development of these vaccines. However, nationalistic, geographical, and commercial factors could stand in the way.

Public Health response



Article 4 : Technology in the COVID-19 era: pushing the boundaries

Published: June 8, 2020 in [the Lancet](#)

Summary:

- This article addresses the potential issue associated with contact tracing apps besides privacy and data protection. As in April 2020, the Diabetes of Australia reported several **diabetic people experiences connection problems with their continuous glucose monitoring(CGM) apps** after downloading the **COVID Safe app**. That is used for monitoring diabetic patients to limit direct contact. This concern prompted Google and Apple partnering to develop global contact-tracing systems shared among countries. Therefore, the editorial stated the importance of addressing the possible contact-tracing app interference with medical devices, to prevent fear and confusion of this technology.