



Scientific Research Monitoring on COVID-19

24 April 2020

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.
- SARS-COV2 stay viable in aerosol for hours and in surface up to 3 days.
- Two strain have been identified for SARS-COV2 (L type (more aggressive) and S type .

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).
- Isolation is the best measure to control transmission.

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. No evidence of transmission through breast milk.

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.
- WHO forum held 11-12 Feb 2020 to mobilize research on COVID19 vaccinations and therapies.

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)



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

Public Health Response: The Singapore University of Technology and Design have published in their website a prediction model for ending COVID19 in multiple countries including UAE which predict it as May 11, 2020.

Treatment: discussed the WHO recommendation of using Non-invasive ventilation instead of unnecessary early treatment using Invasive ventilation just to avoid health care worker transmission.

Clinical features: a study of 5700 cases in the US showed mortality are less compared to the Chinese data.

Due to abundant COVID19 information resources and given the urgent need to keep up with the updates .Below is a cluster of other academic articles for interested reviewer..

Others

[Epidemiological Assessment of Imported Coronavirus Disease 2019 \(COVID-19\) Cases in the Most Affected City Outside of Hubei Province, Wenzhou, China](#)

[Patient-derived mutations impact pathogenicity 1 of SARS-CoV-2](#)

[After COVID-19—Thinking Differently About Running the Health Care System](#)



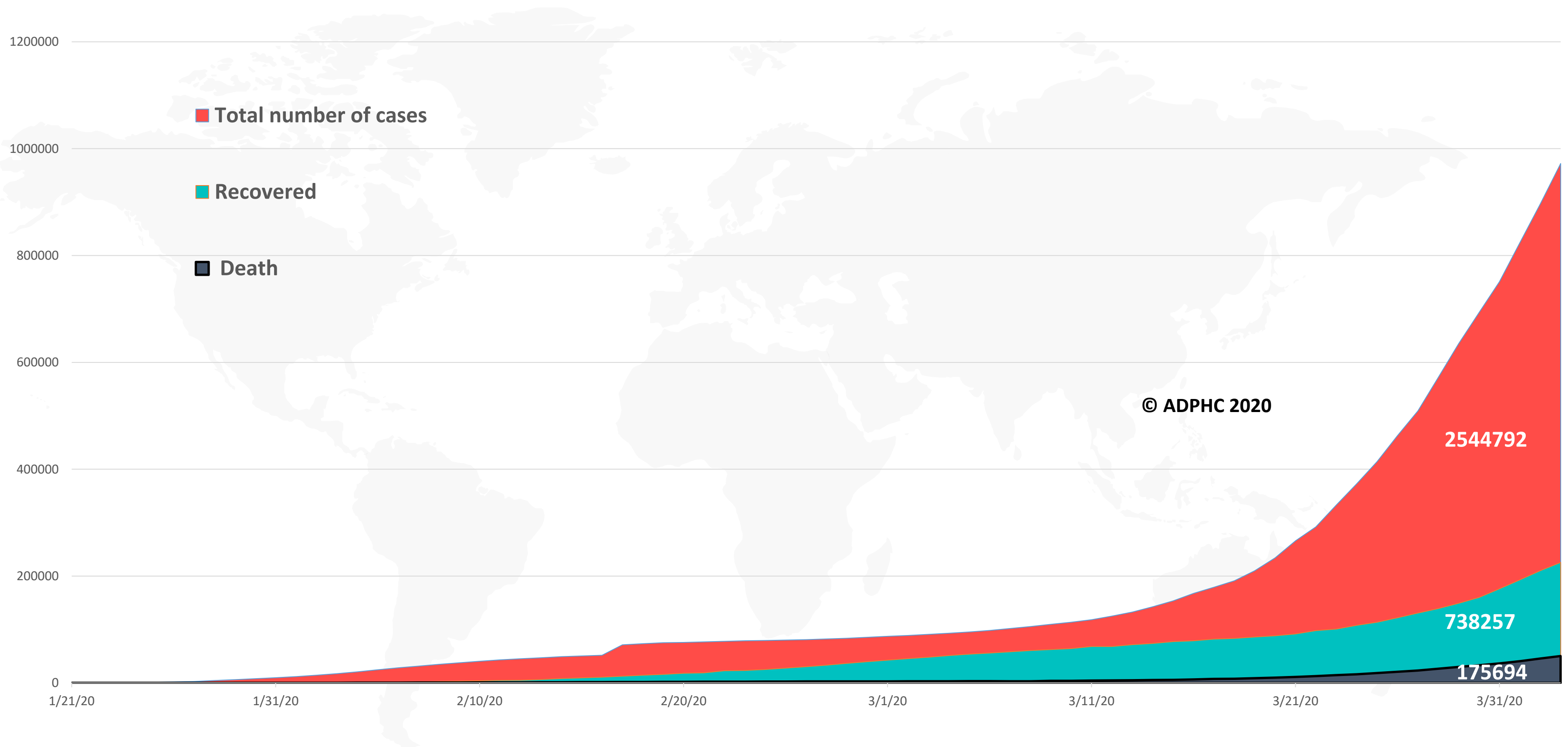
WHO daily report 23 April 2020

- The Global Outbreak Alert and Response Network (GOARN) has launched a GOARN COVID-19 Knowledge hub. The hub is designed as a central repository of quality public health information, guidance, tools and webinars which can be accessed freely at any point.
- WHO Director-General Dr. Tedros, in his regular media briefing yesterday, cautioned that “we have a long way to go. This virus will be with us for a long time”. He added that “the world cannot go back to the way things were. There must be a “new normal” – a world that is healthier, safer and better prepared”.
- WHO has published guidance ‘Addressing Human Rights as Key to the COVID-19 Response’. The guidance document highlights the importance of integrating a human rights-based approach into the COVID-19 response and highlights key considerations in relation to addressing stigma and discrimination, prevention of violence against women, support for vulnerable populations, quarantine and restrictive measures, and shortages of supplies and equipment.
- All available evidence for COVID-19 suggests that SARS-CoV-2 has a zoonotic source. Many researchers have been able to look at the genomic features of SARS-CoV-2 and have found that evidence does not support that SARS-CoV-2 is a laboratory construct. **A constructed virus would show a mix of known elements within genomic sequences – this is not the case. The WHO still investigating the virus source.**

Epidemiology



Figure 1: Total number of infected, recovered , and death cases (January 21st to April 23 , 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 April 23, 2020).



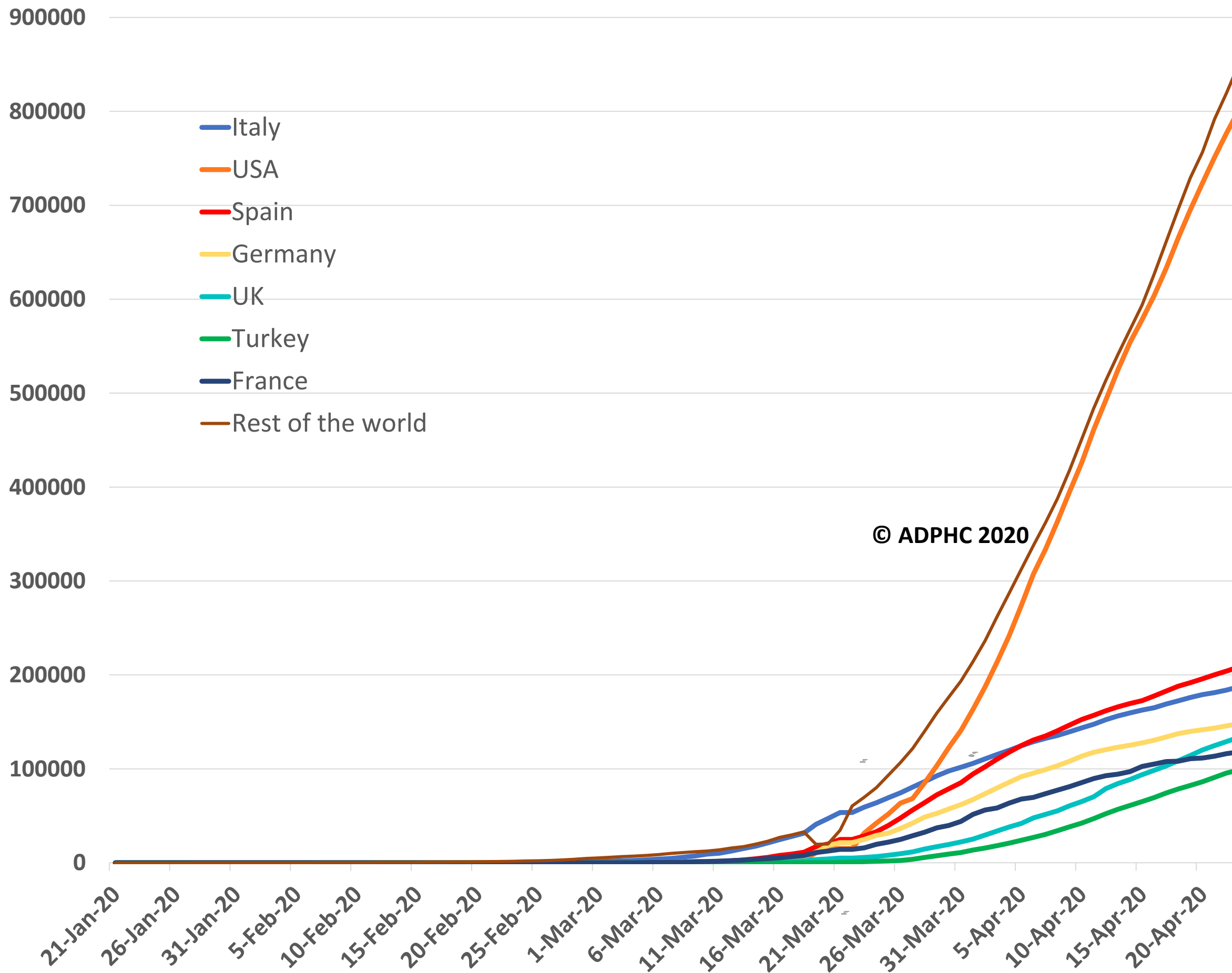
Line graph published by Abu Dhabi Public Health Center 2020.

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

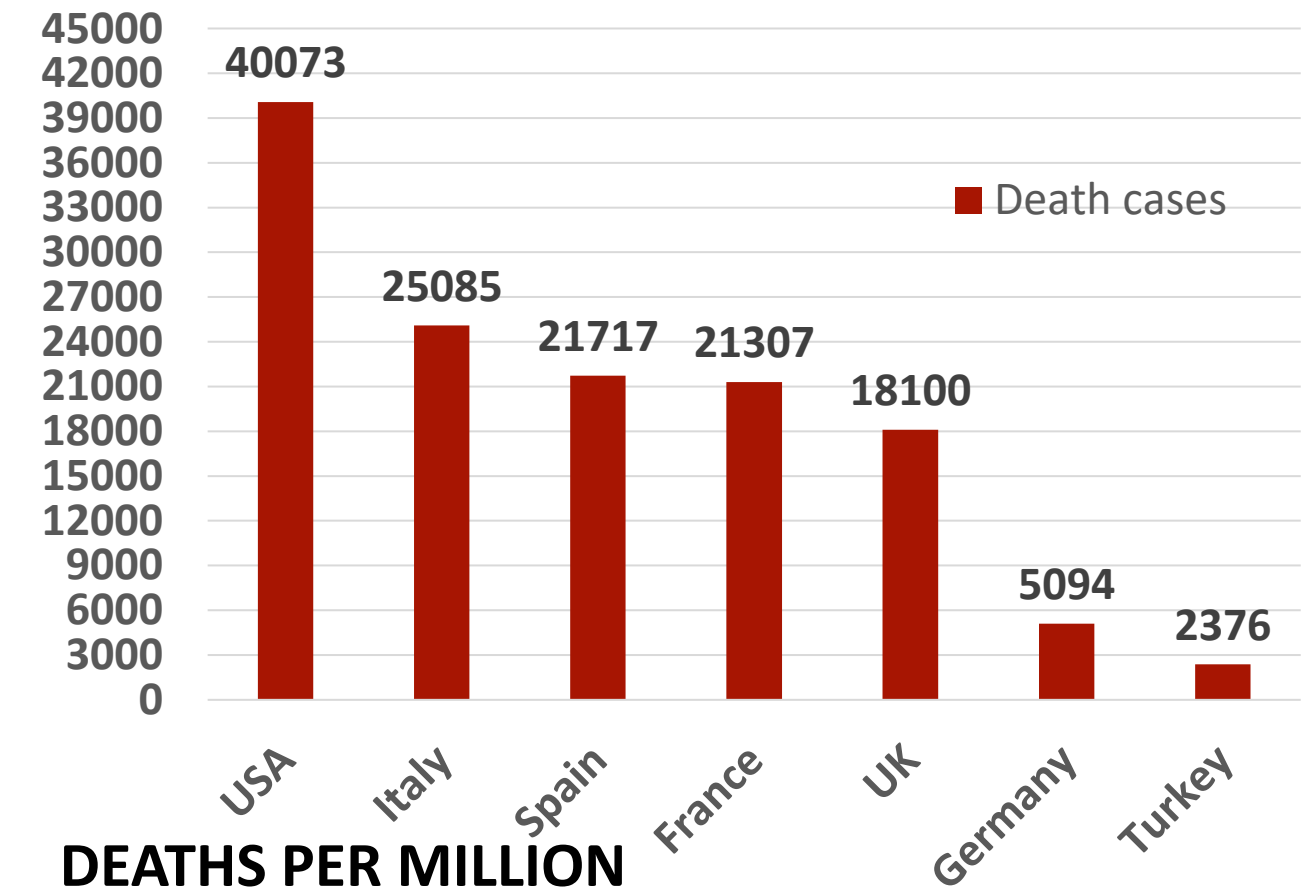
Epidemiology



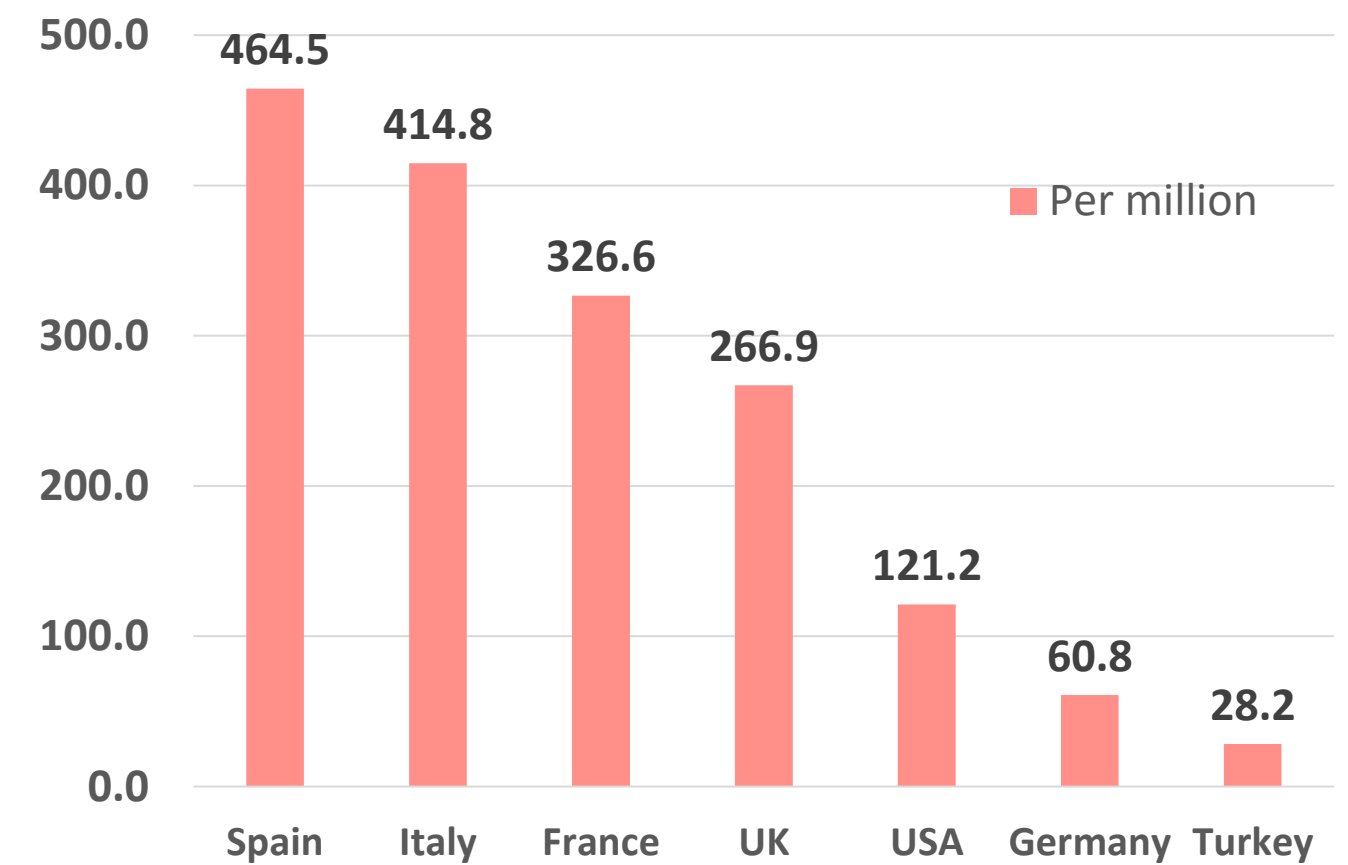
Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to April 23 , 2020).



TOTAL DEATHS



DEATHS PER MILLION



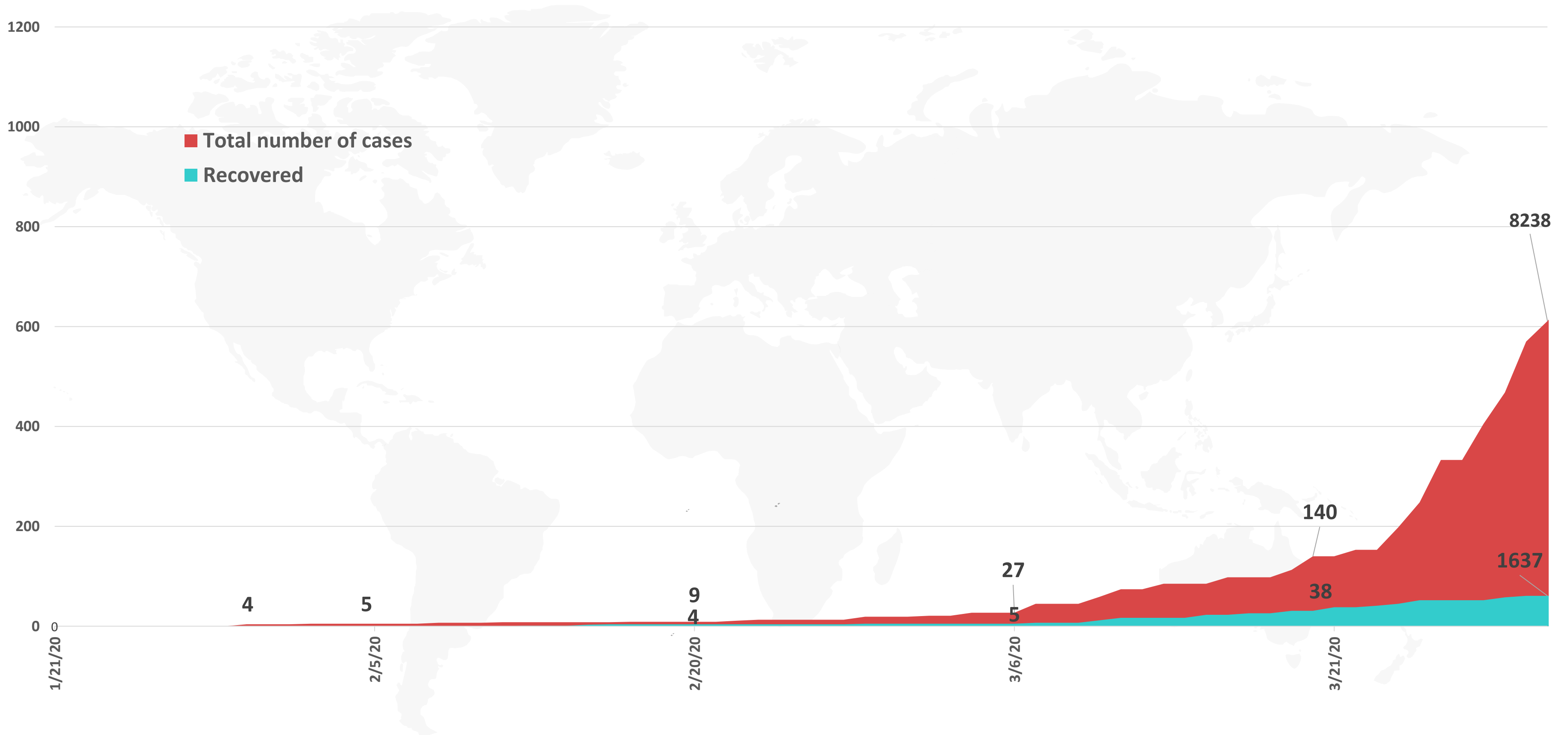
Line graph published by Abu Dhabi Public Health Center 2020.

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

Epidemiology



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



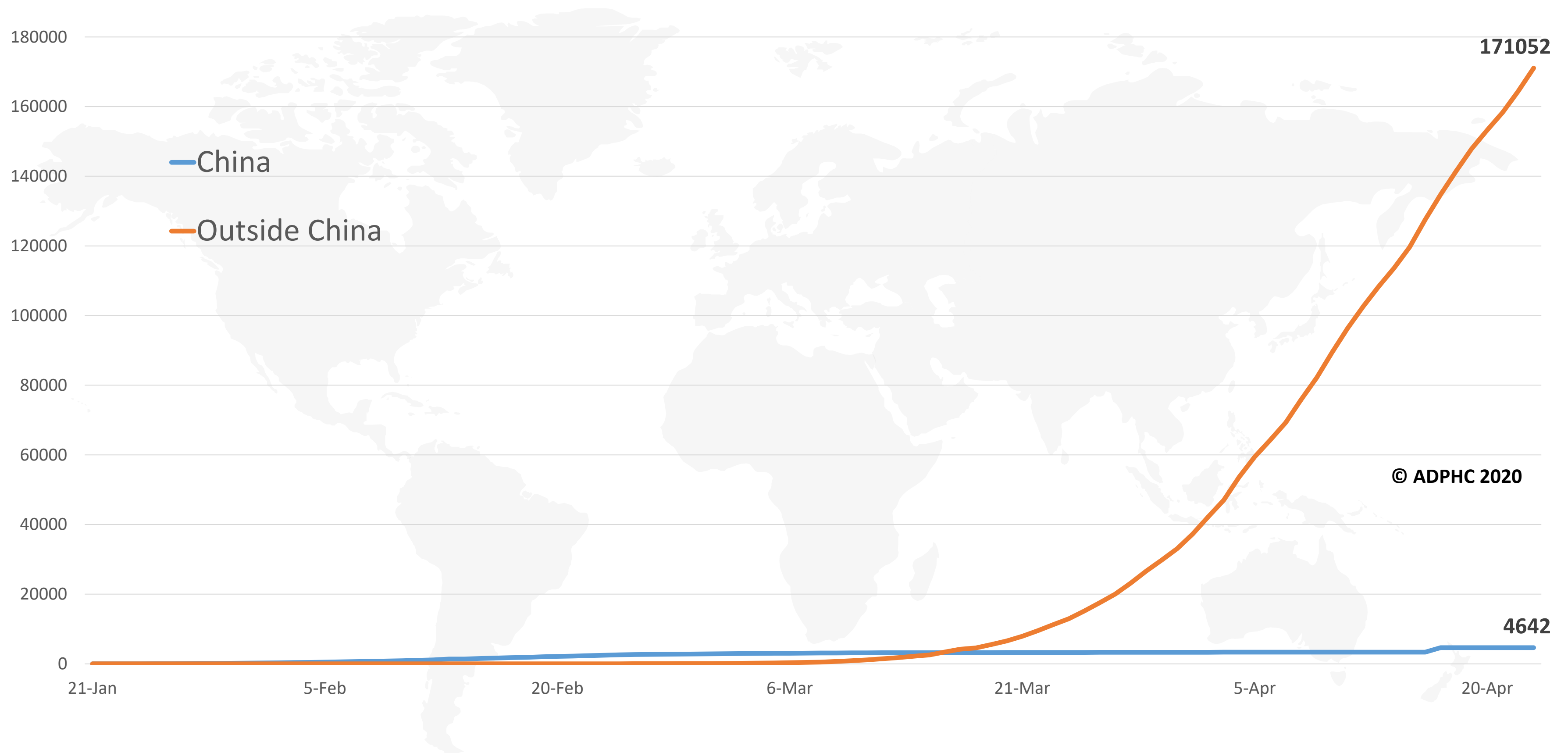
Line graph published by Abu Dhabi Public Health Center 2020.

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 April 23, 2020).



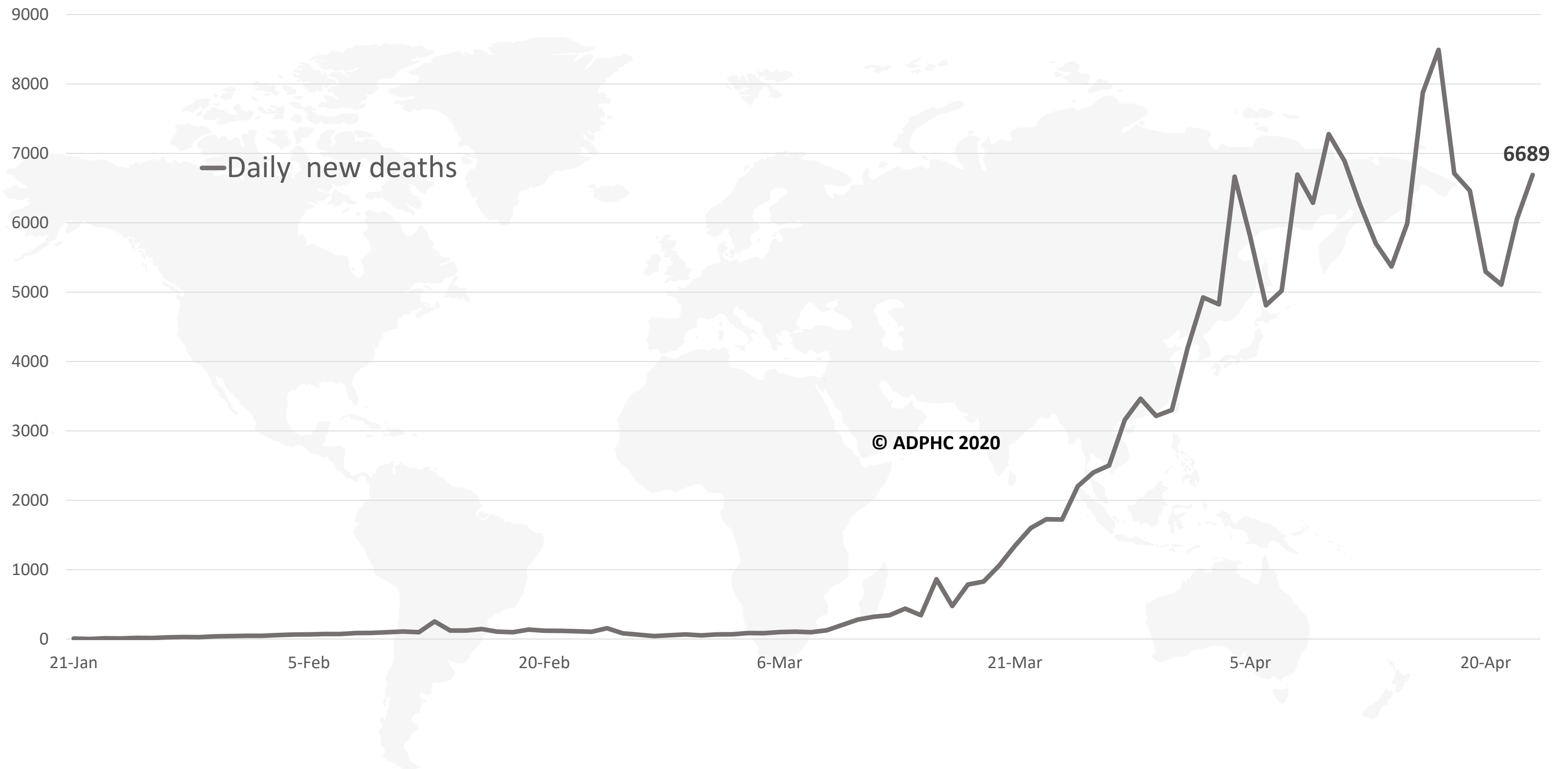
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Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 6: Global daily new deaths due to COVID-19 (January 22 to April 23, 2020).



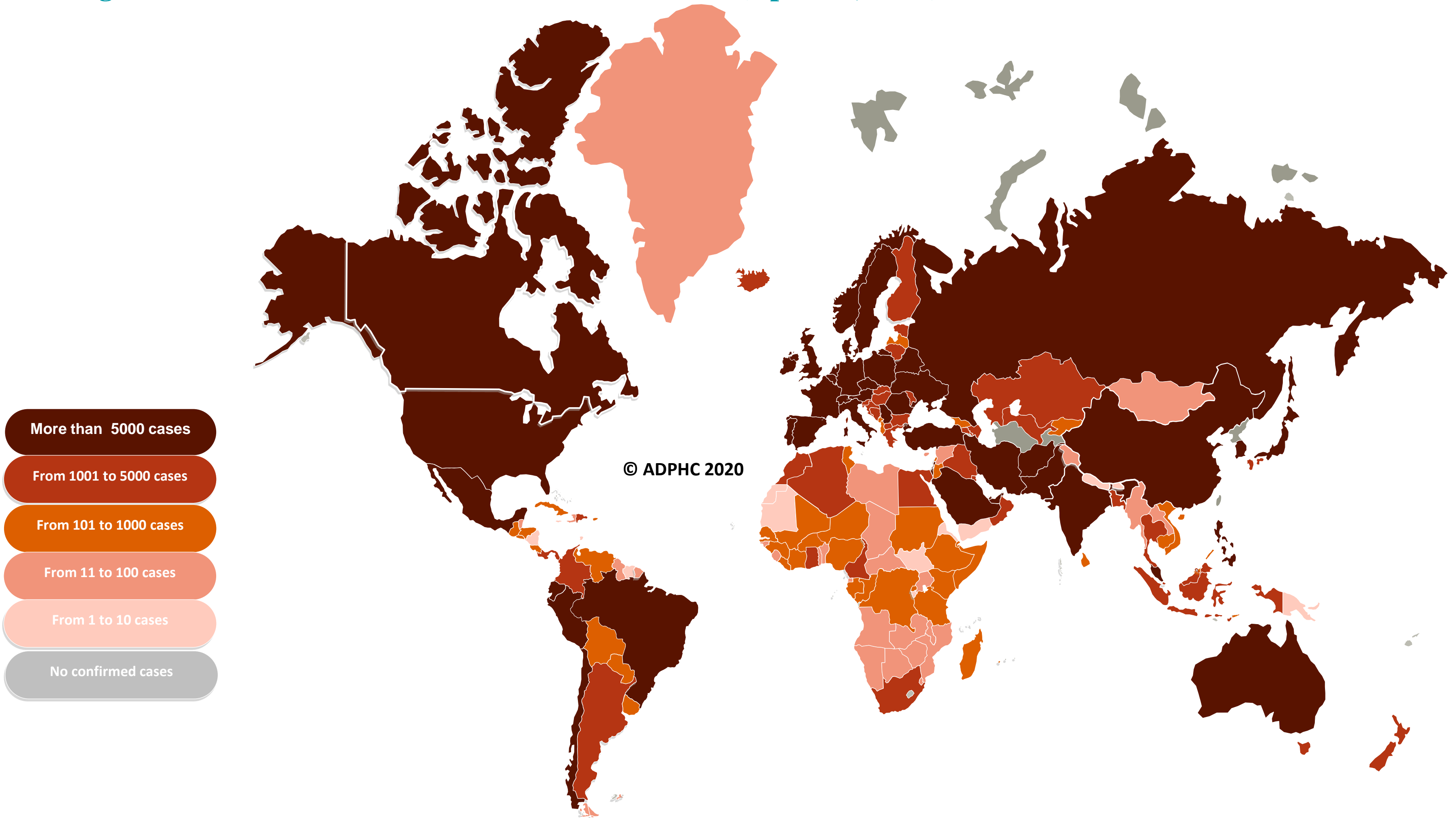
Line graph published by Abu Dhabi Public Health Center 2020.

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

Epidemiology



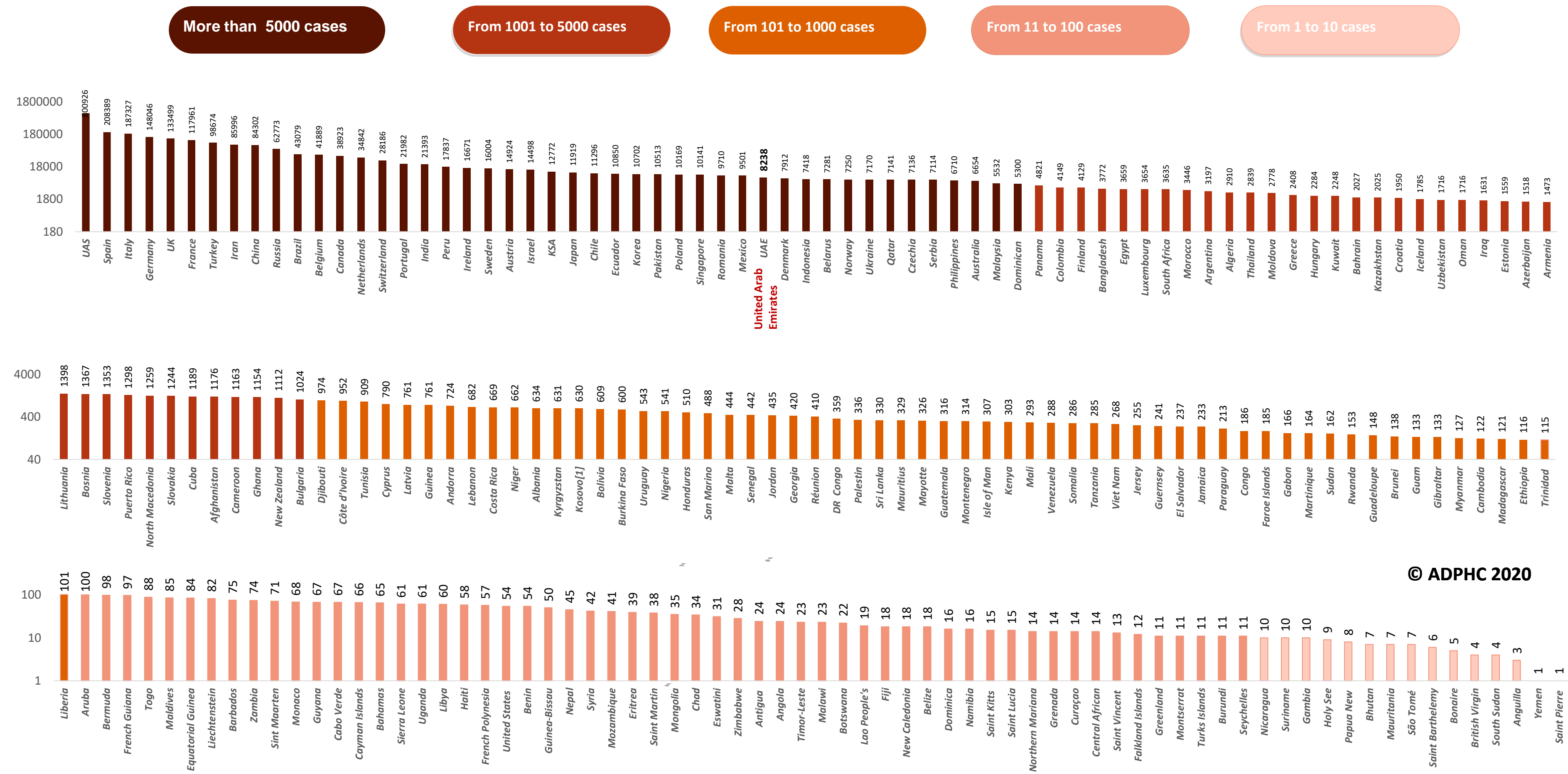
Figure 7a : Global distribution of COVID-19 cases (April 23, 2020).



Map chart published by Abu Dhabi Public Health Center 2020.



Figure 7B: Bar chart illustrate the global distribution of COVID19 cases April 23, 2020)



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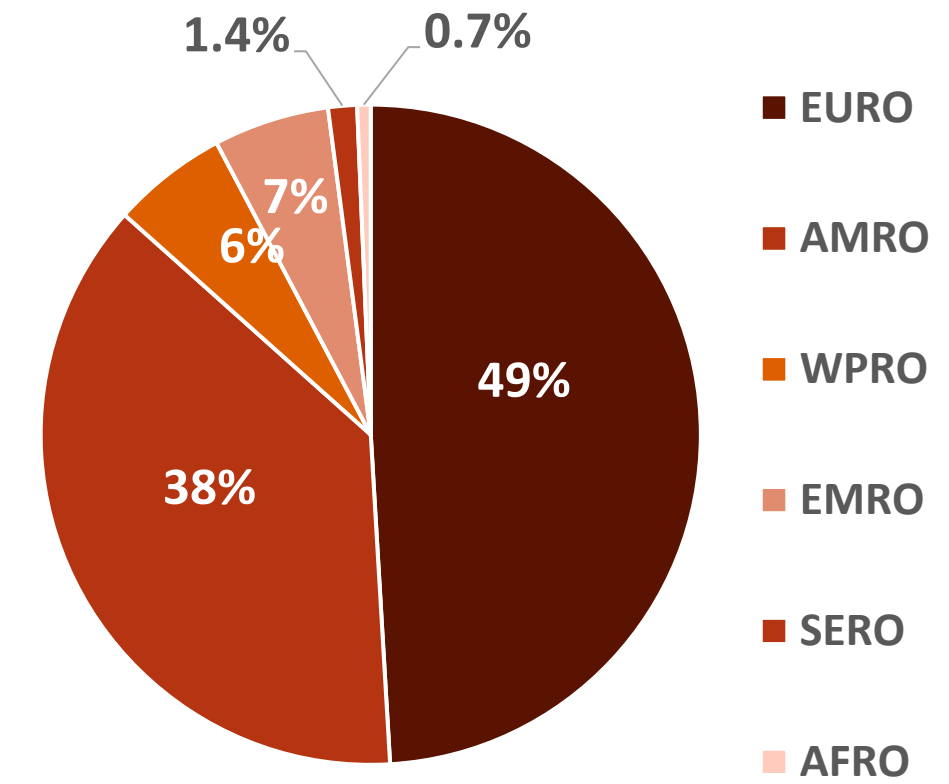
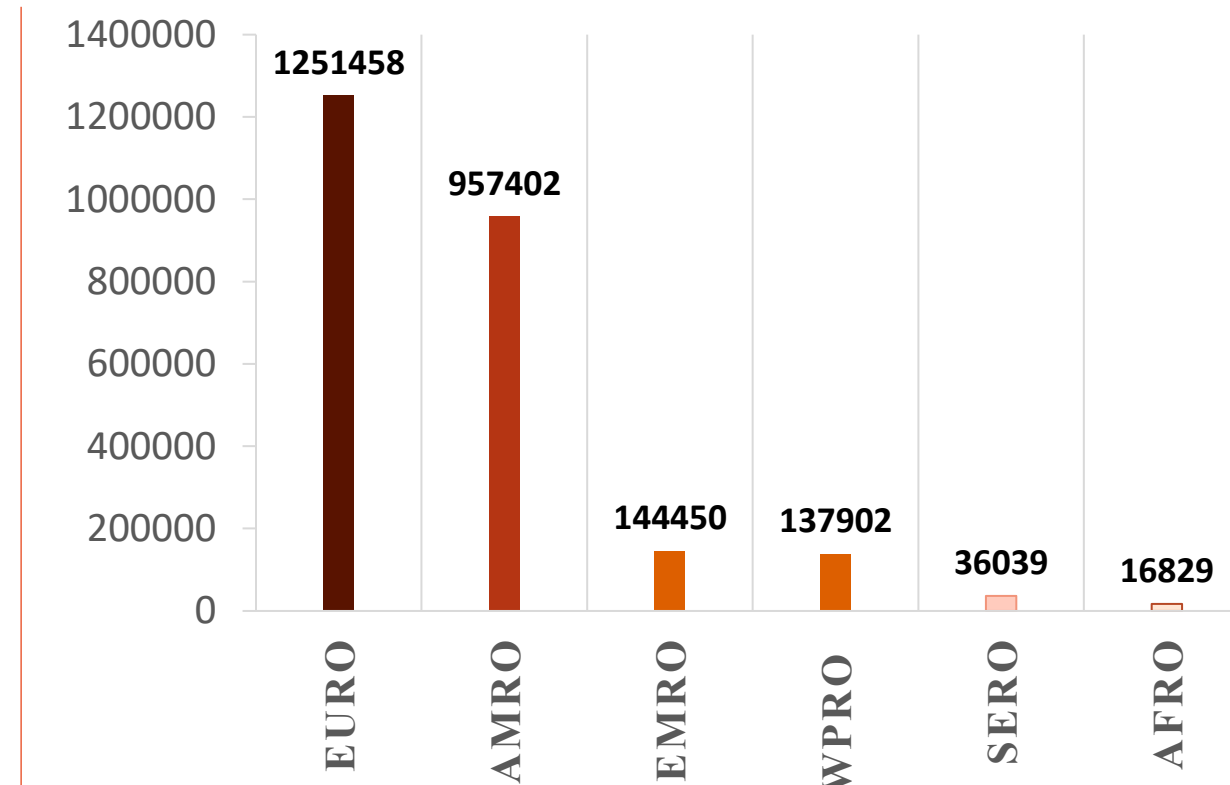
Map chart published by Abu Dhabi Public Health Center 2020.

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



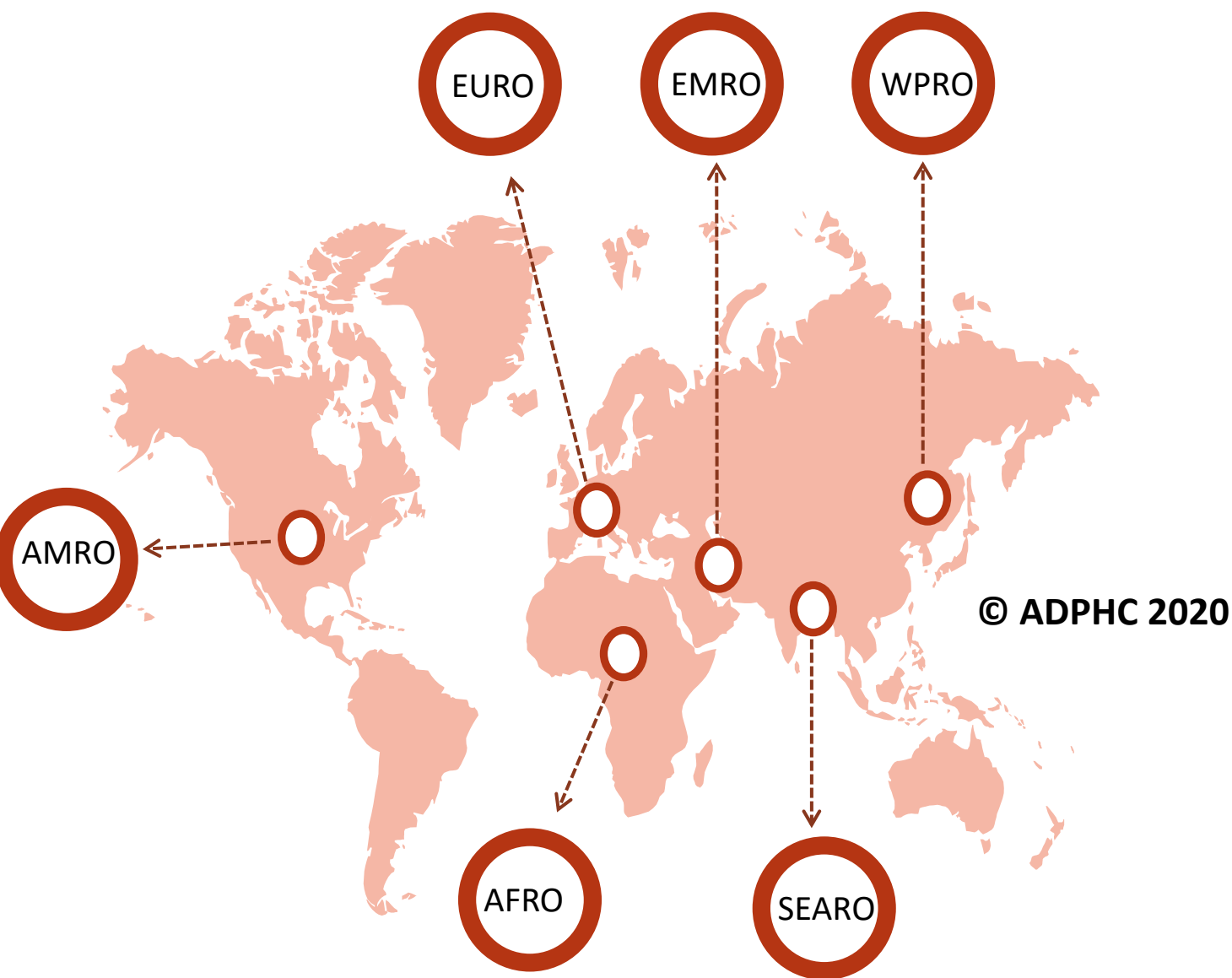
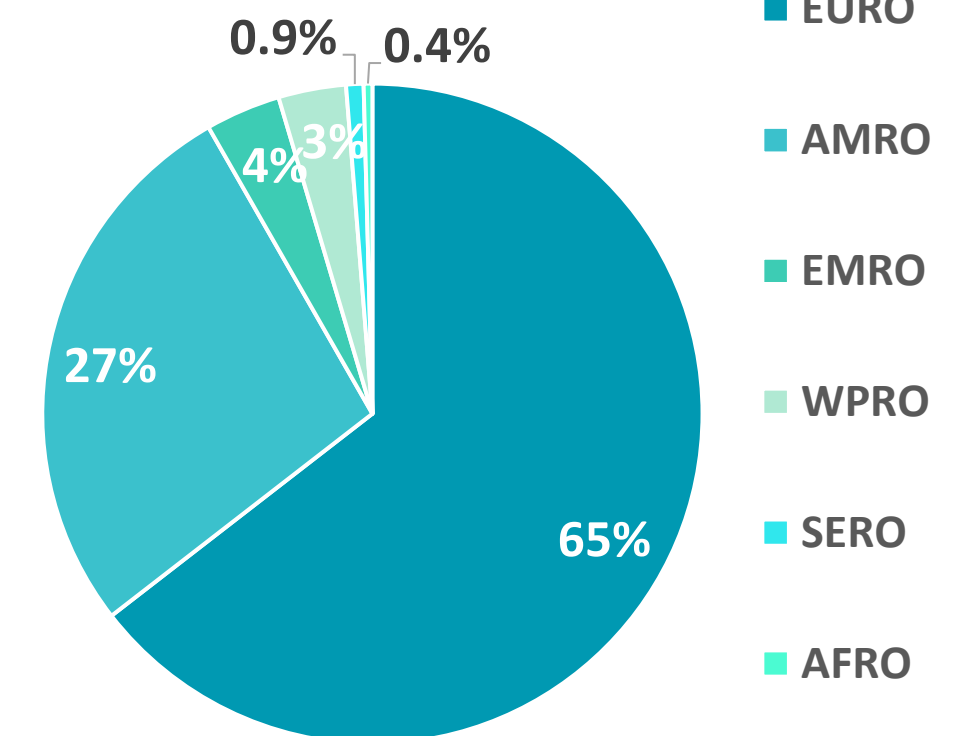
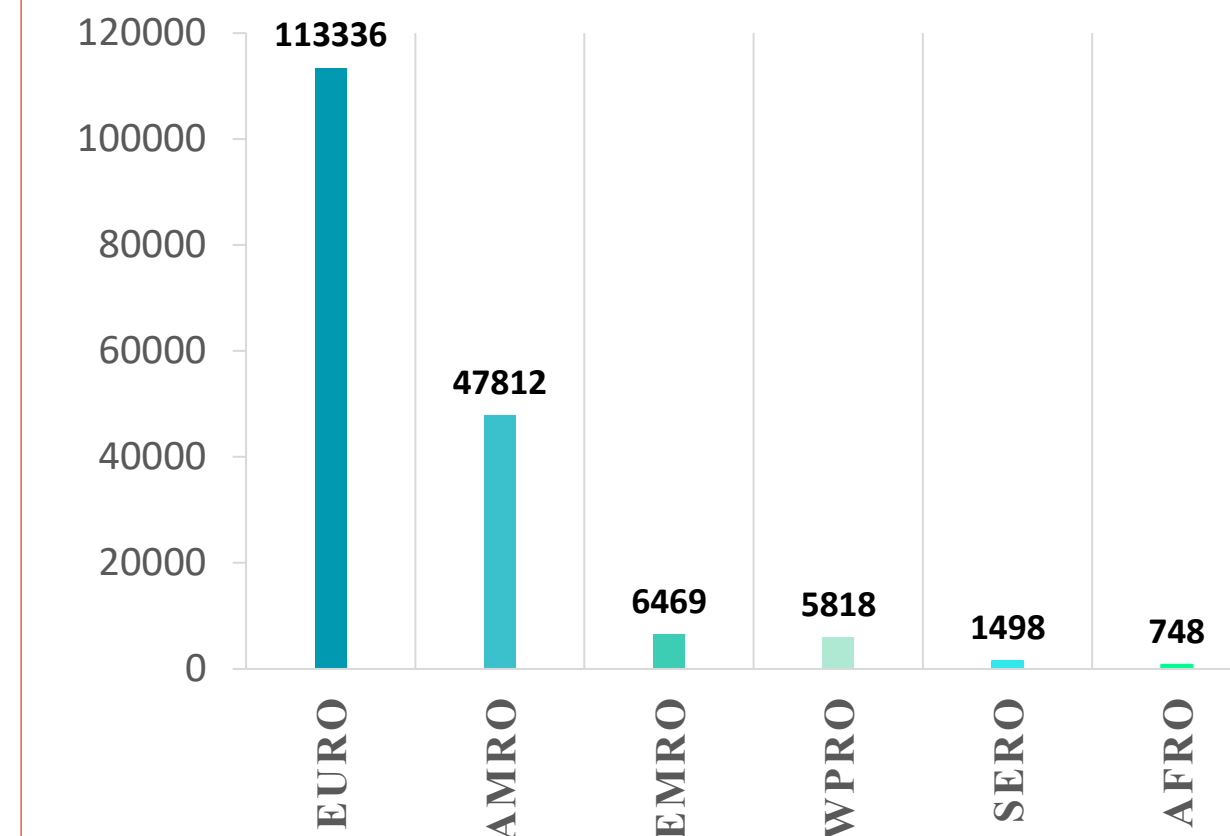
Figure 8: illustrate the Global distribution of COVID19 cases per region (April 23, 2020)

INFECTED



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DEATH



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Map chart published by Abu Dhabi Public Health Center 2020.

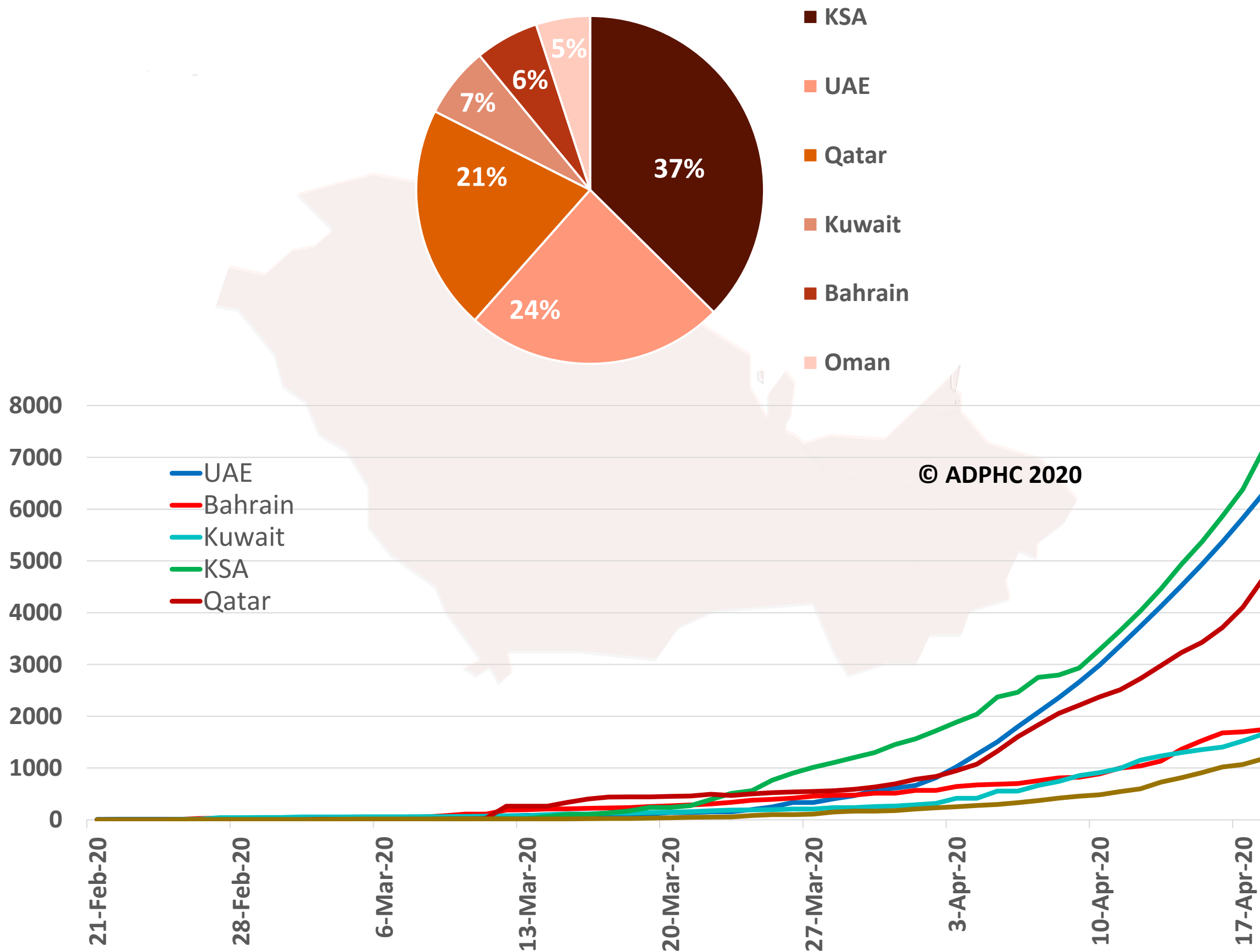
Data resources: [WHO](https://www.who.int/)

Epidemiology

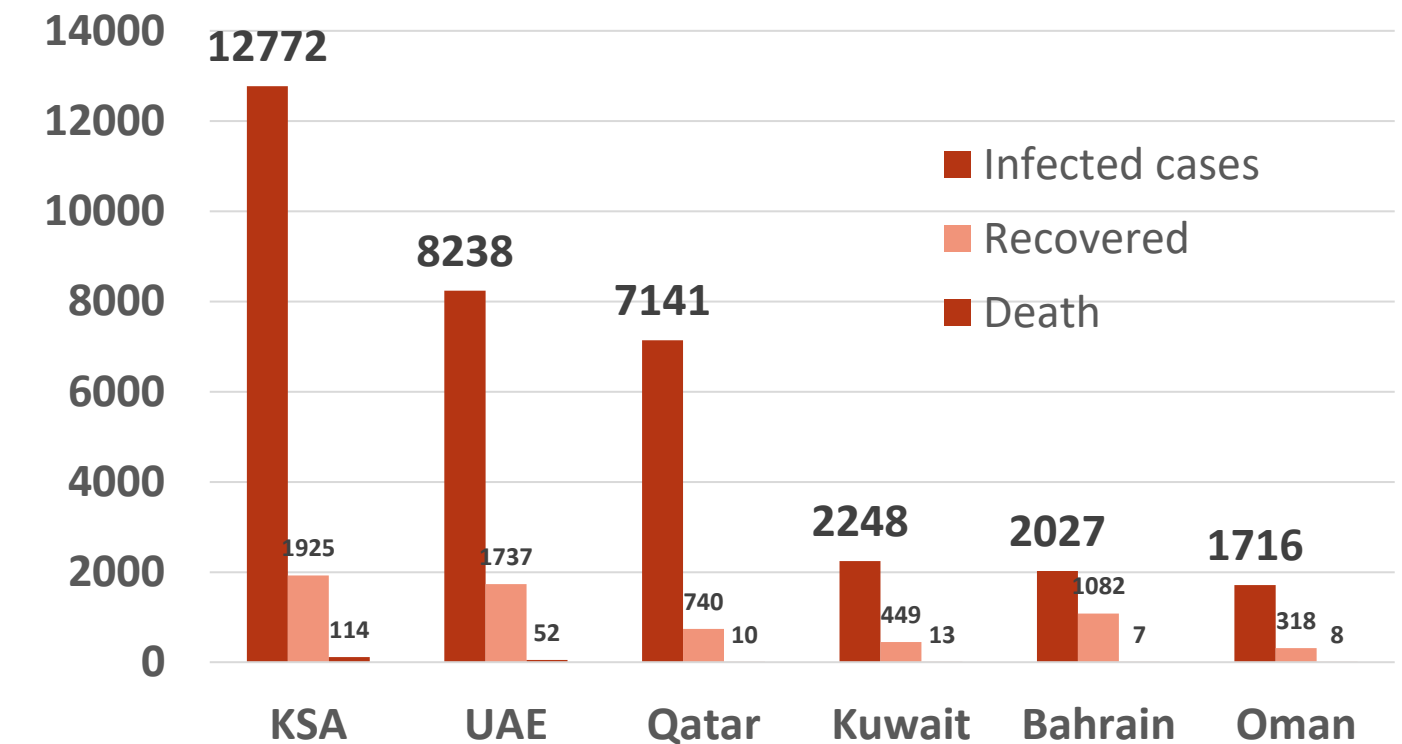


Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (April 23, 2020)

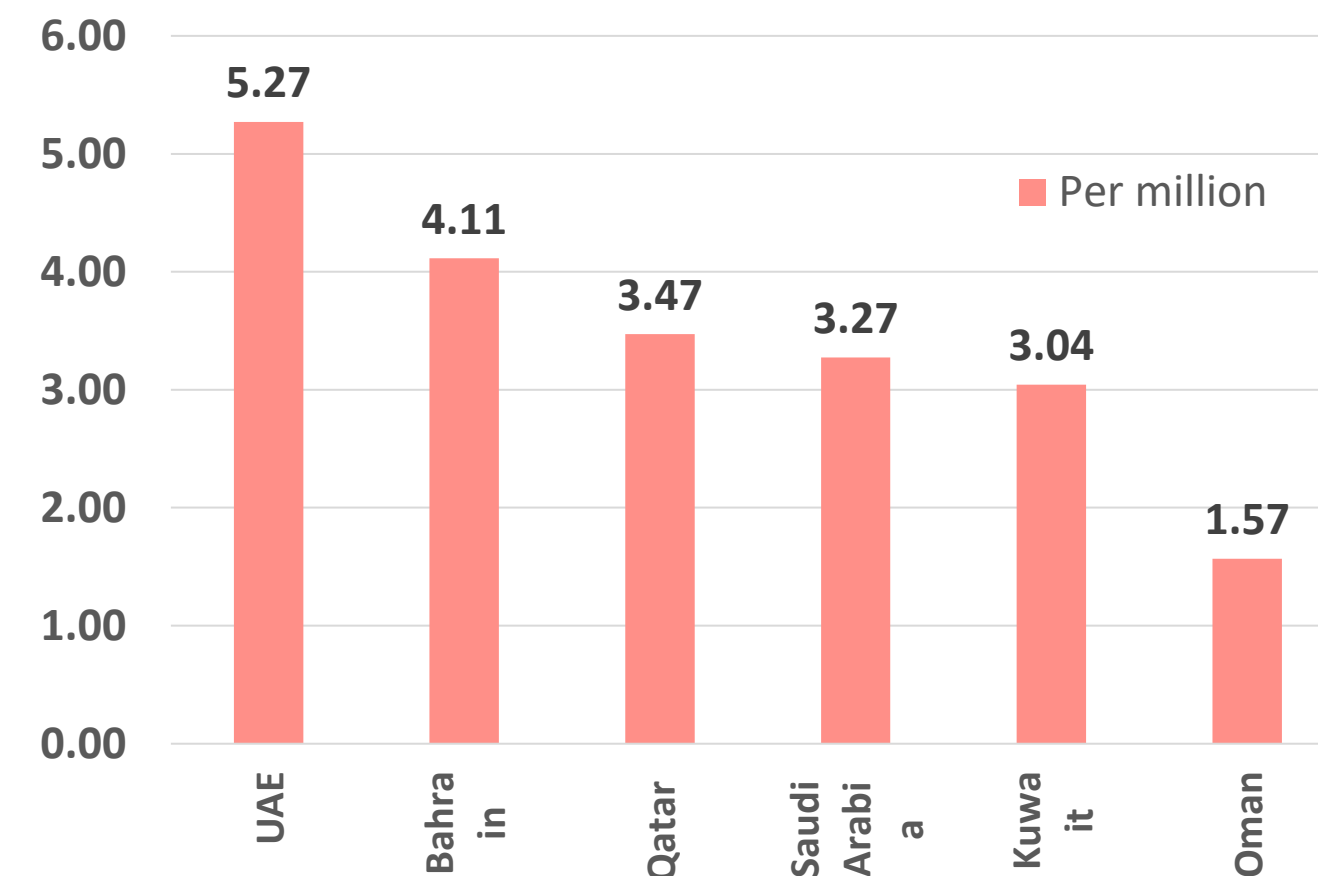
TOTAL NUMBER OF INFECTED CASES



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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Article 1 : Use of non-invasive ventilation for patients with COVID-19: a cause for concern?

Published: :April 20, the [lancet](#)

Summary:

There was a notion that non-invasive ventilation and CPAP is associated with increased health care worker infection therefore , patient were intubated at earlier stage of the disease.

- WHO recommendation came later to emphasis that there is no need to early unnecessary intubation on patients who would have otherwise improved on CPAP or NIV or what might be lifesaving treatment for another patient in resource-limited settings
- the author provide data on multiple studies that stated that most of data in relation to health worker infection was related to not having full PPEs.

Conclusion: the risk of COVID-19 transmission to health-care workers is not negligible and that many healthcare workers have been infected at work. however , with full PPE health care worker shall introduce less invasive procedure to patient and reserve resource for more invasive procedure for patient who needed it most.

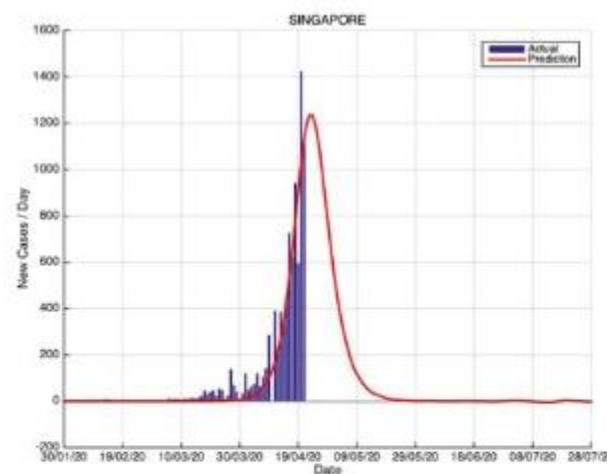
Public health response



Article 2 : When Will COVID-19 End

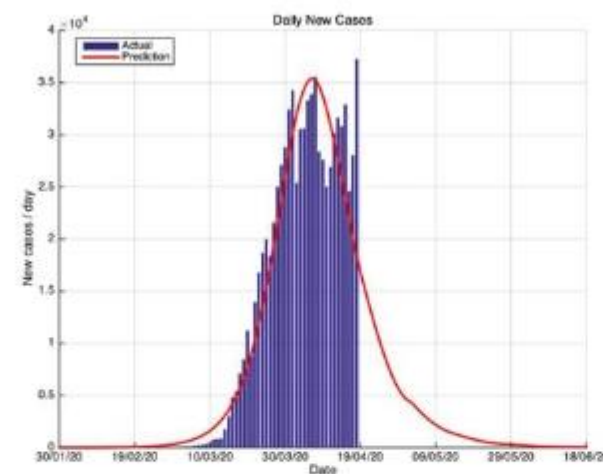
Published: April 22, 2020 in Singapore University of Technology and Design (SUTD)

Summary: the university of Singapore have published Data-Driven Estimation of End Dates for multiple countries including UAE, using SIR (susceptible-infected-recovered) epidemic model



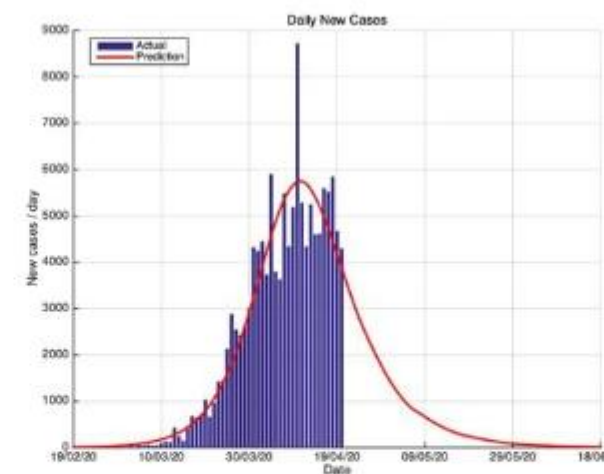
Singapore

End around May 9



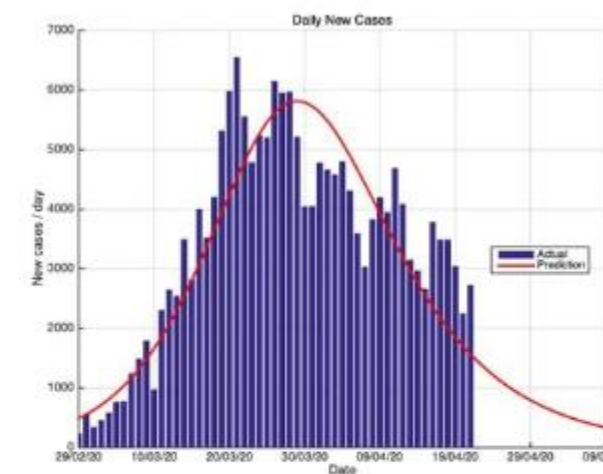
United States

End around May 4



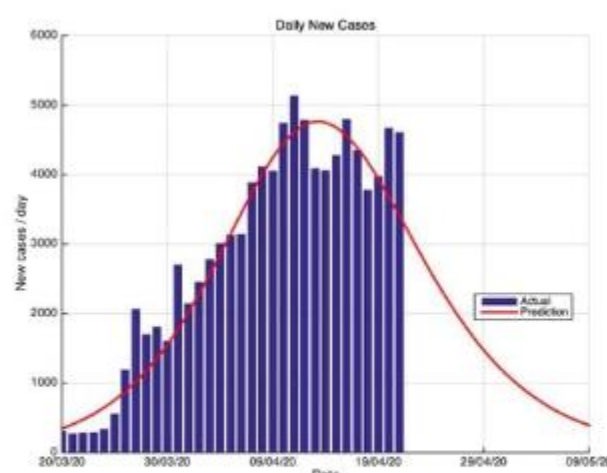
United Kingdom

End around May 11



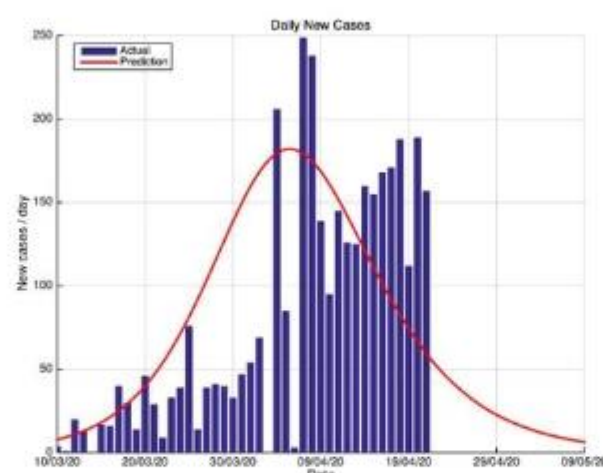
Italy

End around May 3



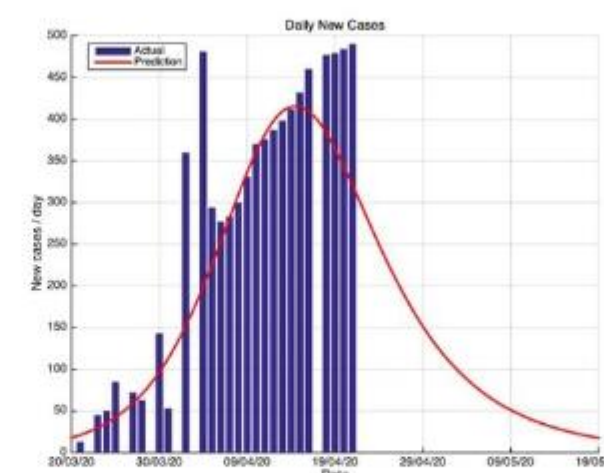
Turkey

End date around May 9



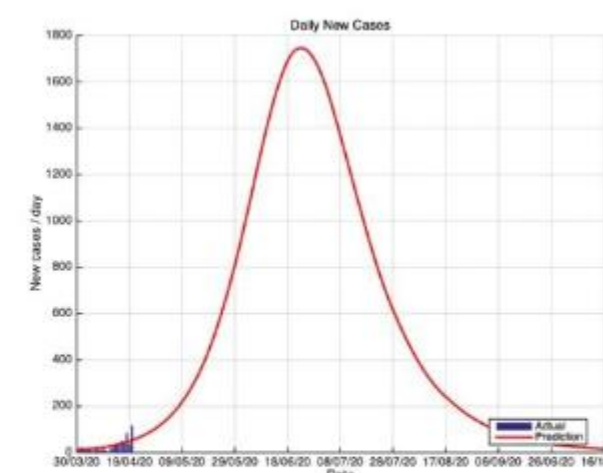
Egypt

End around May 4



United Arab Emirates

End around May 11



Nigeria

End around August 24

Clinical Feature



Article 3 :Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area

Published: April 22, 2020 in [JAMA](#)

Summary:

This case series that included 5700 patients hospitalized with COVID-19 in the New York City area, the most common comorbidities were hypertension, obesity, and diabetes. Among patients who were discharged or died (n=2634), 14.2% were treated in the intensive care unit, 12.2% received invasive mechanical ventilation, 3.2% were treated with kidney replacement therapy, and 21% died.

Table 1. Baseline Characteristics of Patients Hospitalized With COVID-19

	No. (%)
Demographic information	
Total No.	5700
Age, median (IQR) [range], y	63 (52-75) [0-107]
Sex	
Female	2263 (39.7)
Male	3437 (60.3)
Race^a	
No.	5441
African American	1230 (22.6)
Asian	473 (8.7)
White	2164 (39.8)
Other/multiracial	1574 (28.9)
Ethnicity^a	
No.	5341
Comorbidities	
Total No.	5700
Cancer	320 (6)
Cardiovascular disease	
Hypertension	3026 (56.6)
Coronary artery disease	595 (11.1)
Congestive heart failure	371 (6.9)
Chronic respiratory disease	
Asthma	479 (9)
Chronic obstructive pulmonary disease	287 (5.4)
Obstructive sleep apnea	154 (2.9)
Immunosuppression	
HIV	43 (0.8)
History of solid organ transplant	55 (1)
Kidney disease	
Chronic ^c	268 (5)
End-stage ^d	186 (3.5)
Liver disease	
Cirrhosis	19 (0.4)
Chronic	
Hepatitis B	8 (0.1)
Hepatitis C	3 (0.1)
Metabolic disease	
Obesity (BMI ≥30)	1737 (41.7)
No.	4170
Morbid obesity (BMI ≥35)	791 (19.0)
No.	4170
Diabetes ^e	1808 (33.8)

Clinical Feature



Article 3 :Cont.,

Summary:

This study compared to chines data showed the mortality rates in this case series were significantly lower, possibly due to differences in thresholds for hospitalization.

Table 4. Discharge Disposition by 10-Year Age Intervals of Patients Hospitalized With COVID-19

Age intervals, y	Patients discharged alive or dead at study end point				Patients in hospital at study end point			
	Died, No./No. (%)		Length of stay among those who died, median (IQR), d ^a	Discharged alive, No./No. (%)		Length of stay among those discharged alive, median (IQR), d ^a	No./No. (%)	Length of stay, median (IQR), d ^a
	Male	Female		Male	Female			
0-9	0/13	0/13	NA	13/13 (100)	13/13 (100)	2.0 (1.7-2.7)	7/33 (21.2)	4.3 (3.1-12.5)
10-19	0/1	0/7	NA	1/1 (100)	7/7 (100)	1.8 (1.0-3.1)	9/17 (52.9)	3.3 (2.8-4.3)
20-29	3/42 (7.1)	1/55 (1.8)	4.0 (0.8-7.4)	39/42 (92.9)	54/55 (98.2)	2.5 (1.8-4.0)	52/149 (34.9)	3.2 (1.9-6.4)
30-39	6/130 (4.6)	2/81 (2.5)	2.8 (2.4-3.6)	124/130 (95.4)	79/81 (97.5)	3.7 (2.0-5.8)	142/353 (40.2)	5.1 (2.5-9.0)
40-49	19/233 (8.2)	3/119 (2.5)	5.6 (3.0-8.4)	214/233 (91.8)	116/119 (97.5)	3.9 (2.3-6.1)	319/671 (47.5)	4.9 (2.9-8.2)
50-59	40/327 (12.2)	13/188 (6.9)	5.9 (3.1-9.5)	287/327 (87.8)	175/188 (93.1)	3.8 (2.5-6.7)	594/1109 (53.6)	4.9 (2.8-8.0)
60-69	56/300 (18.7)	28/233 (12.0)	5.7 (2.6-8.2)	244/300 (81.3)	205/233 (88.0)	4.3 (2.5-6.8)	771/1304 (59.1)	5.0 (2.4-8.2)
70-79	91/254 (35.8)	54/197 (27.4)	5.0 (2.7-7.8)	163/254 (64.2)	143/197 (72.6)	4.6 (2.8-7.8)	697/1148 (60.7)	4.5 (2.3-8.2)
80-89	94/155 (60.6)	76/158 (48.1)	3.9 (2.1-6.5)	61/155 (39.4)	82/158 (51.9)	4.4 (2.7-7.7)	369/682 (54.1)	4.1 (2.1-7.4)
≥90	28/44 (63.6)	39/84 (46.4)	3.0 (0.7-5.5)	16/44 (36.4)	45/84 (53.6)	4.8 (2.8-8.4)	106/234 (45.3)	3.2 (1.5-6.4)

Abbreviations: COVID-19, coronavirus disease 2019; IQR, interquartile range; NA, not applicable.

^a Length of stay begins with admission time and ends with discharge time, time

at death, or midnight on the last day of data collection for the study. It does not include time in the emergency department.