



Scientific Research Monitoring on COVID-19

28 May 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.)



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

- **UAE Research:** Dr Humaid Al shamsi and his colleagues published in **JAMA** about the screening strategy of asymptomatic patient with cancer in the UAE. 8% of the cases were positive. Recommendation is to screen all cancer patients.
- **Treatment:** Research identified potent monoclonal antibody from convalescent patient plasma serve as potential prophylactic and therapeutic candidate.
- **Public Health Response:** a study recommend against recommendations for the use of N95 masks by the general public during the COVID-19 pandemic showed only 12% of participant passed the visual mask fit .
- **Vaccine:** a trial on vaccine in phase 1 trial show safety and efficiency to produce immune response in china



WHO Daily Report 27 May 2020

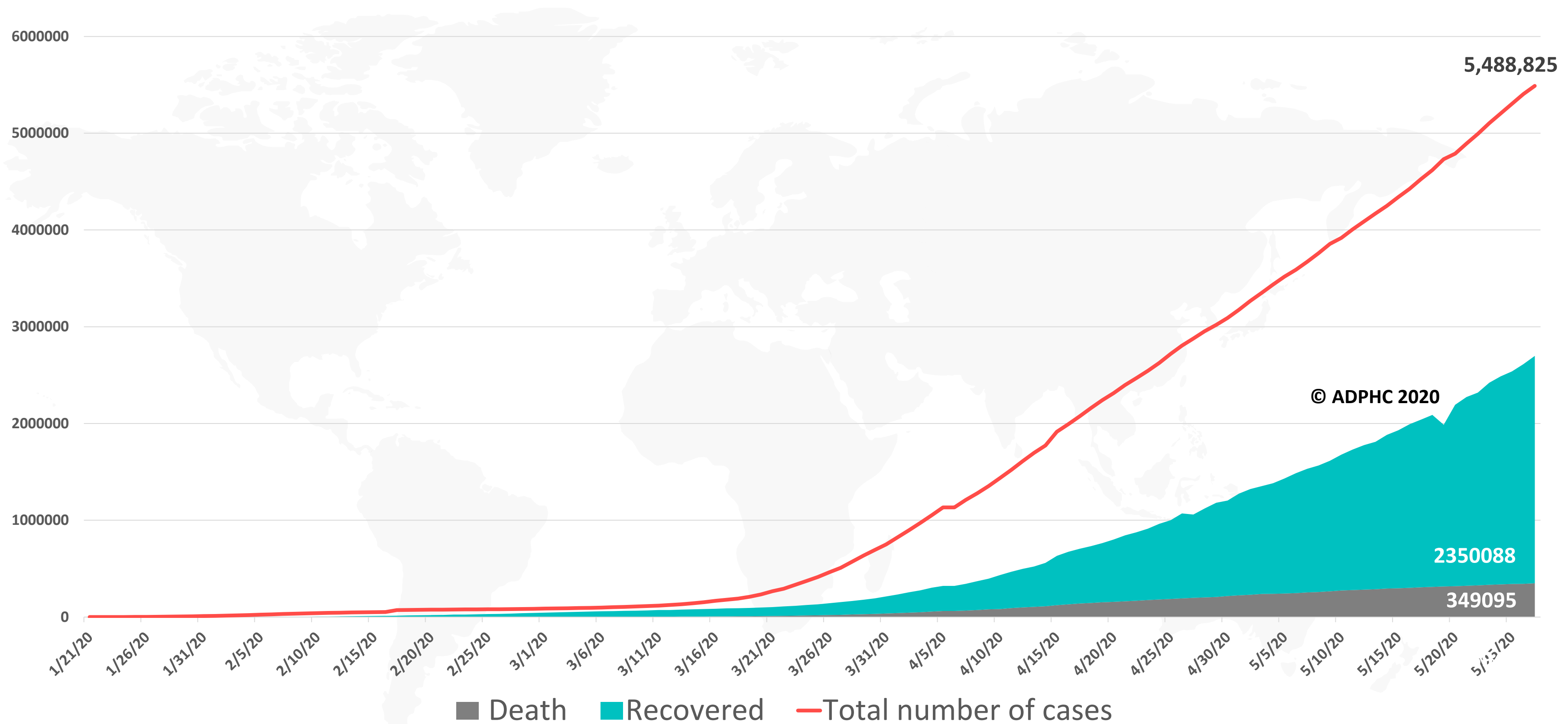
- WHO has published a case-control protocol for the assessment of risk factors for coronavirus disease 2019 (COVID-19) **in health workers**. The primary objective of this **study is to characterize and assess the risk factors for SARS-CoV-2 infection in health workers exposed to COVID-19 patients**.
- A scientific brief has been published by WHO investigating any **association between smoking and an increased risk for COVID-19**. At the time of this review, the **available evidence suggests that in hospitalized COVID-19 patients, smoking is associated with increased severity of disease and death**.
- WHO has published a **population-based age-stratified seroepidemiological investigation protocol** for COVID-19 virus infection. This **protocol was designed to investigate the extent of infection**, as determined by positive blood tests in the general population, in any country in which COVID19 virus infection has been reported.
- **[Elements of the COVID-19 Strategic Response and Preparedness Plan \(SPRP\)](#)** have been updated and are reviewed on a regular basis by WHO in consultation of all six regional offices. These elements are laid out in the COVID-19 WHO Appeal

*More details on the study and the impact in this report

Epidemiology



Figure 1: Total number of infected, recovered, and death cases (January 21st to May 27, 2020)

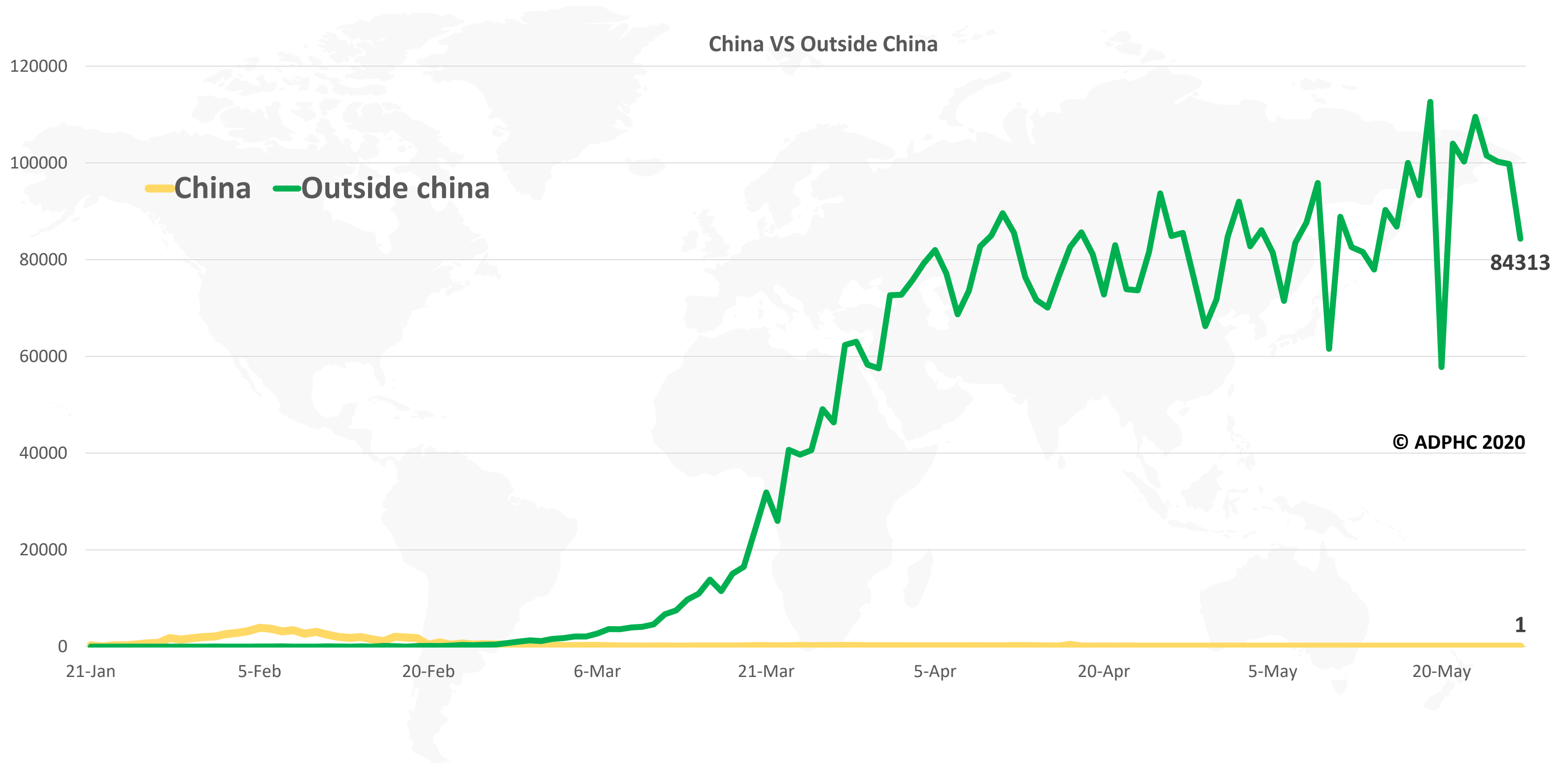


Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 2: Daily new infected COVID-19 cases reported between (January 21 to May 27, 2020).



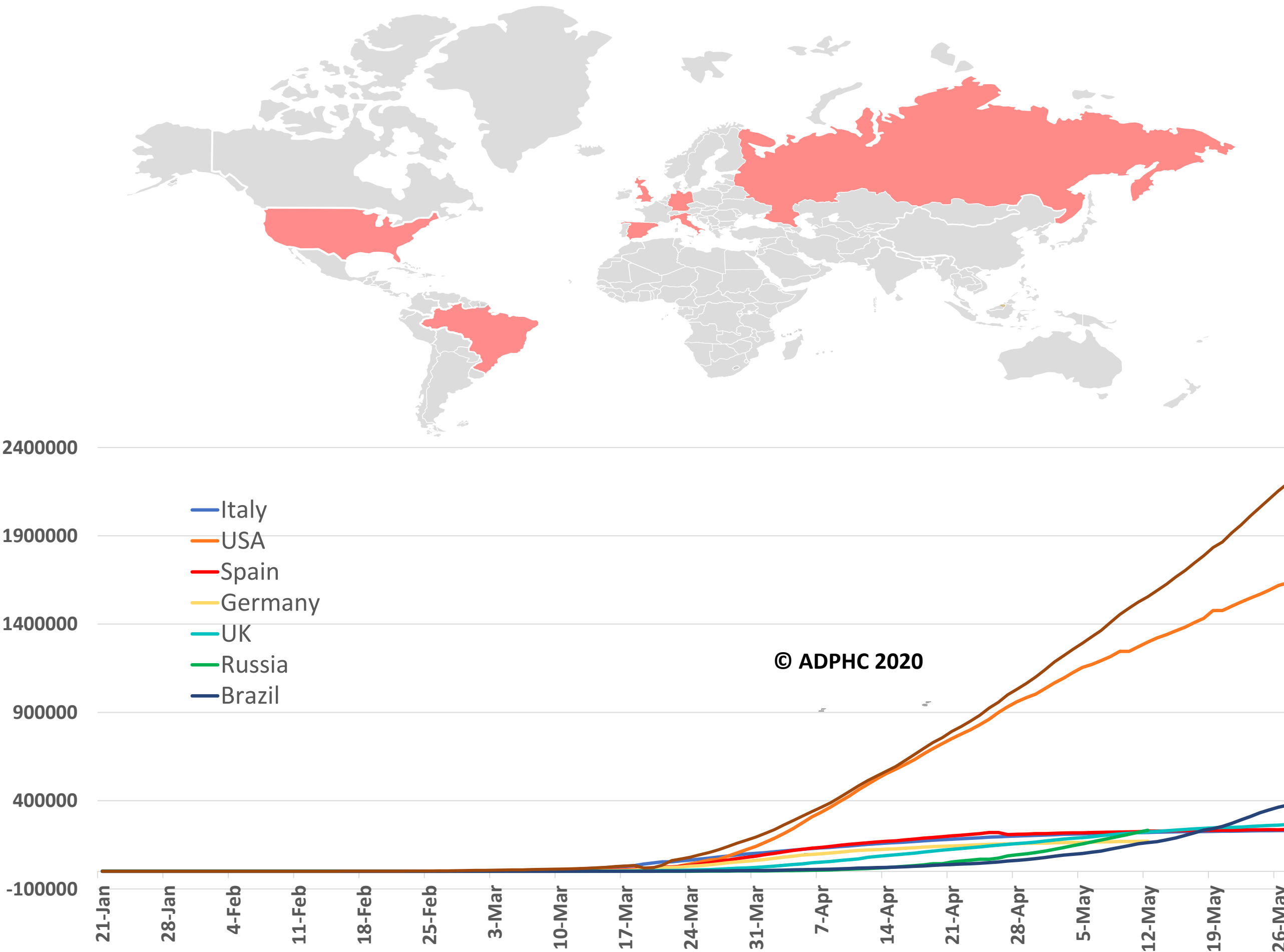
Line graph published by Abu Dhabi Public Health Center 2020.

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

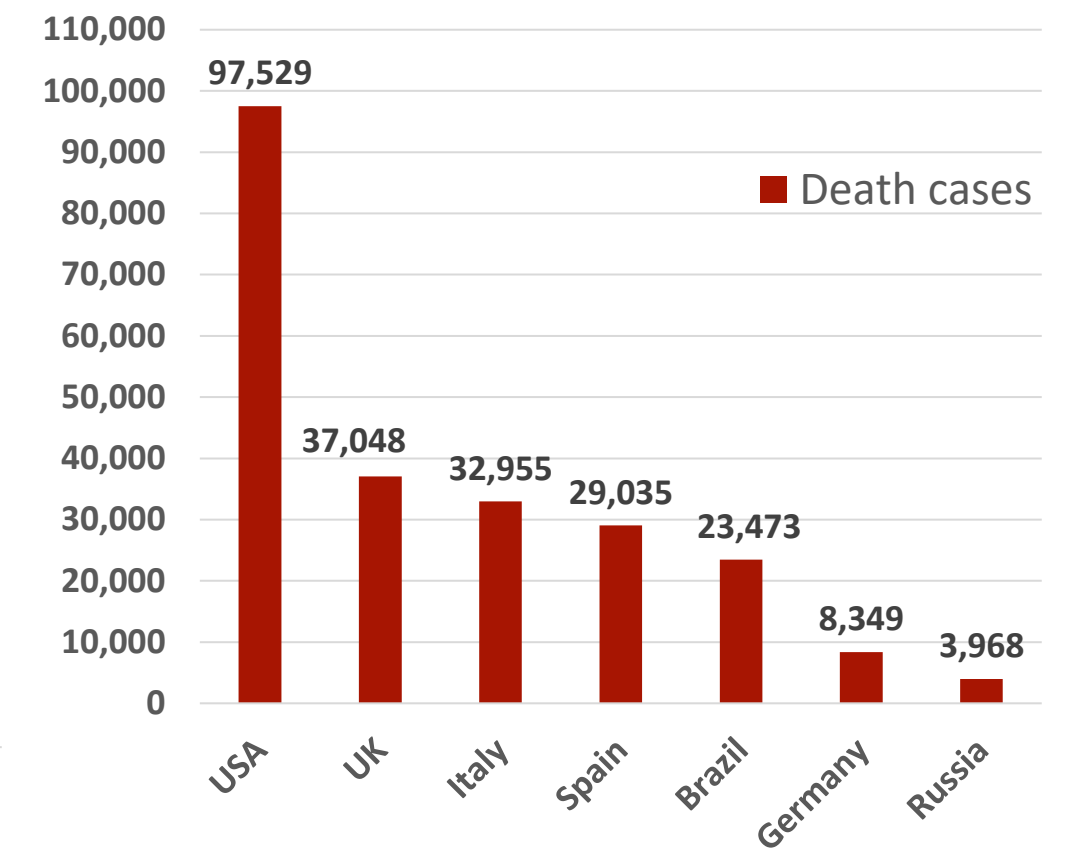
Epidemiology



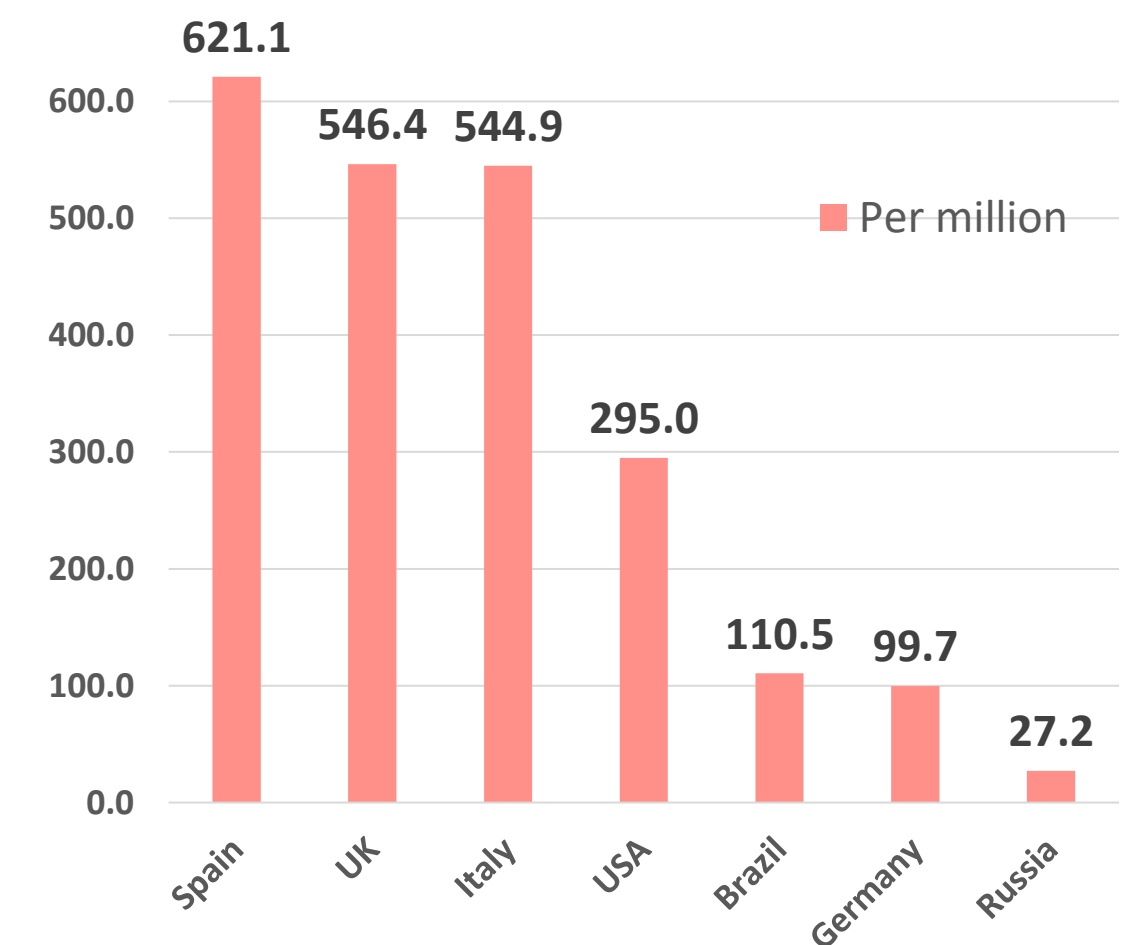
Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to May 27, 2020).



TOTAL DEATHS



DEATHS PER MILLION



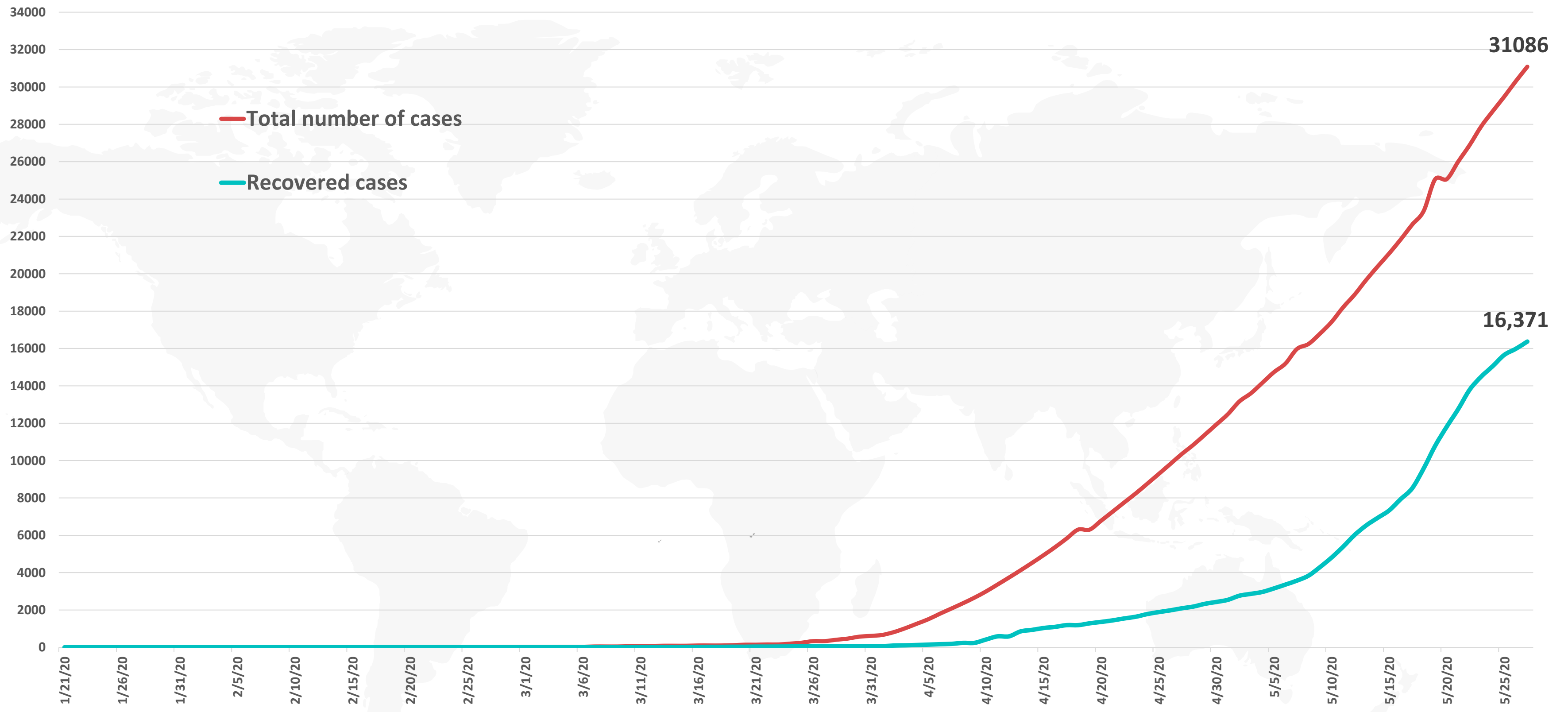
Line graph published by Abu Dhabi Public Health Center 2020.

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

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



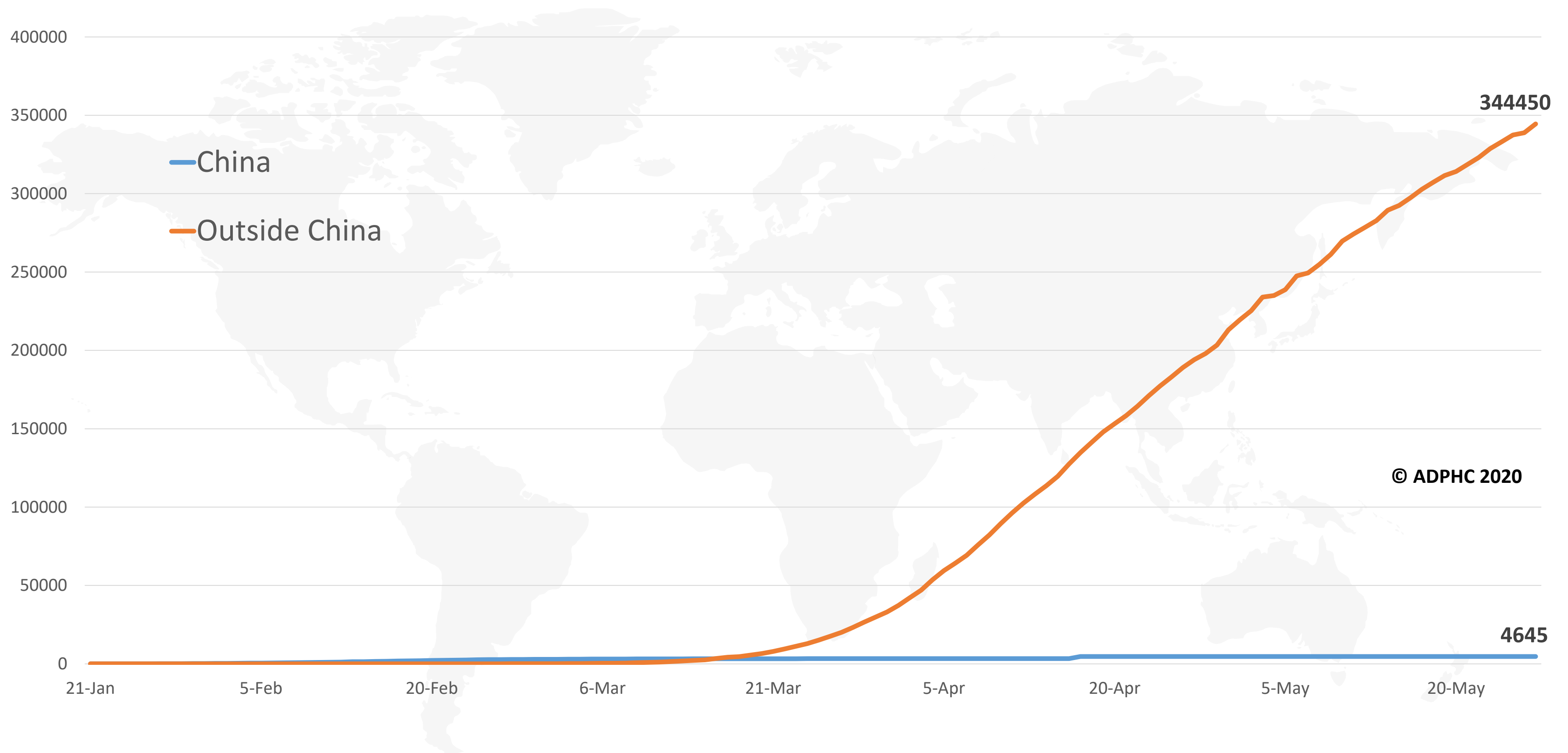
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#), [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 May 27, 2020).



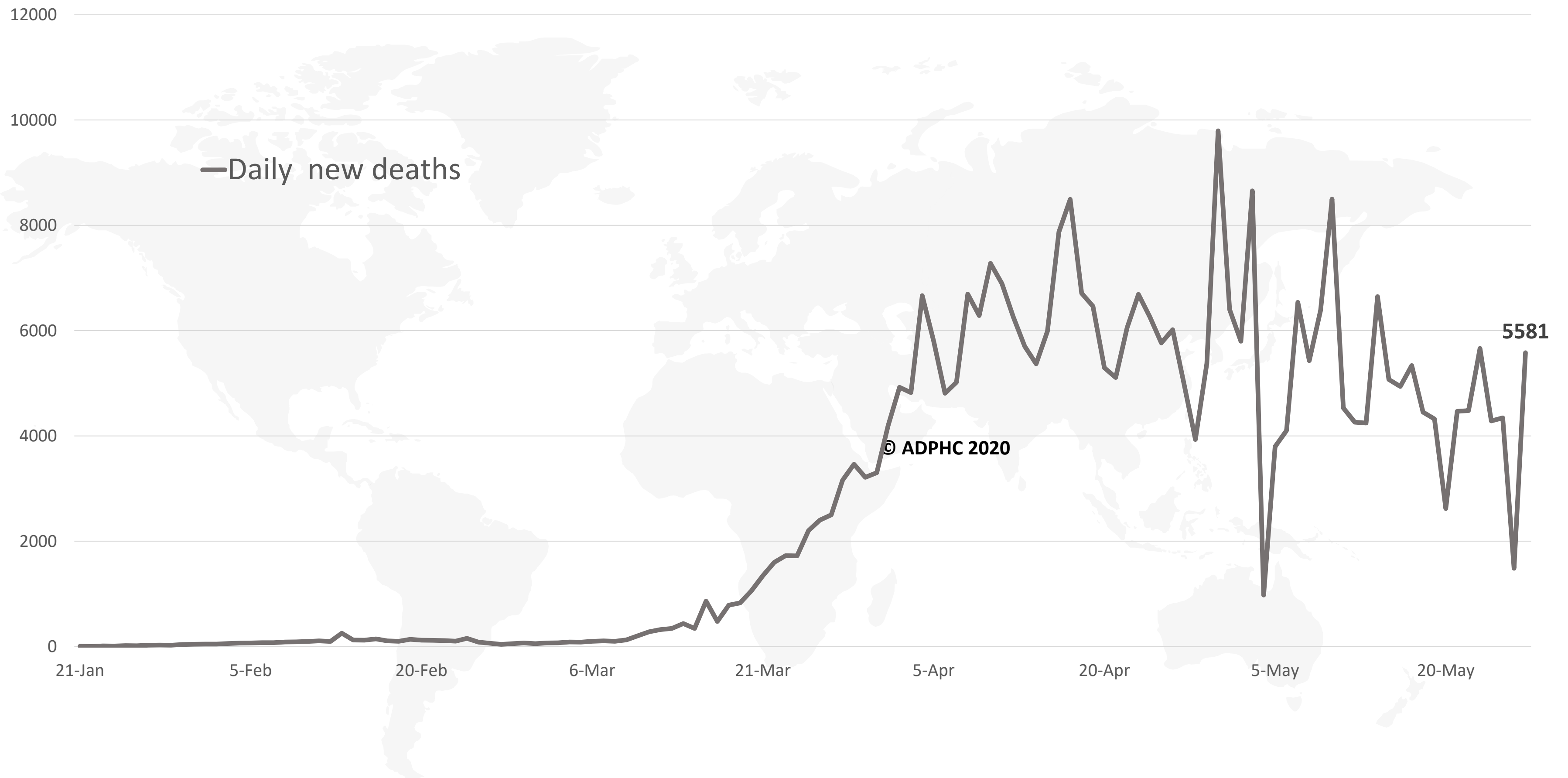
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Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 6: Global daily new deaths due to COVID-19 (January 22 to May 27, 2020).



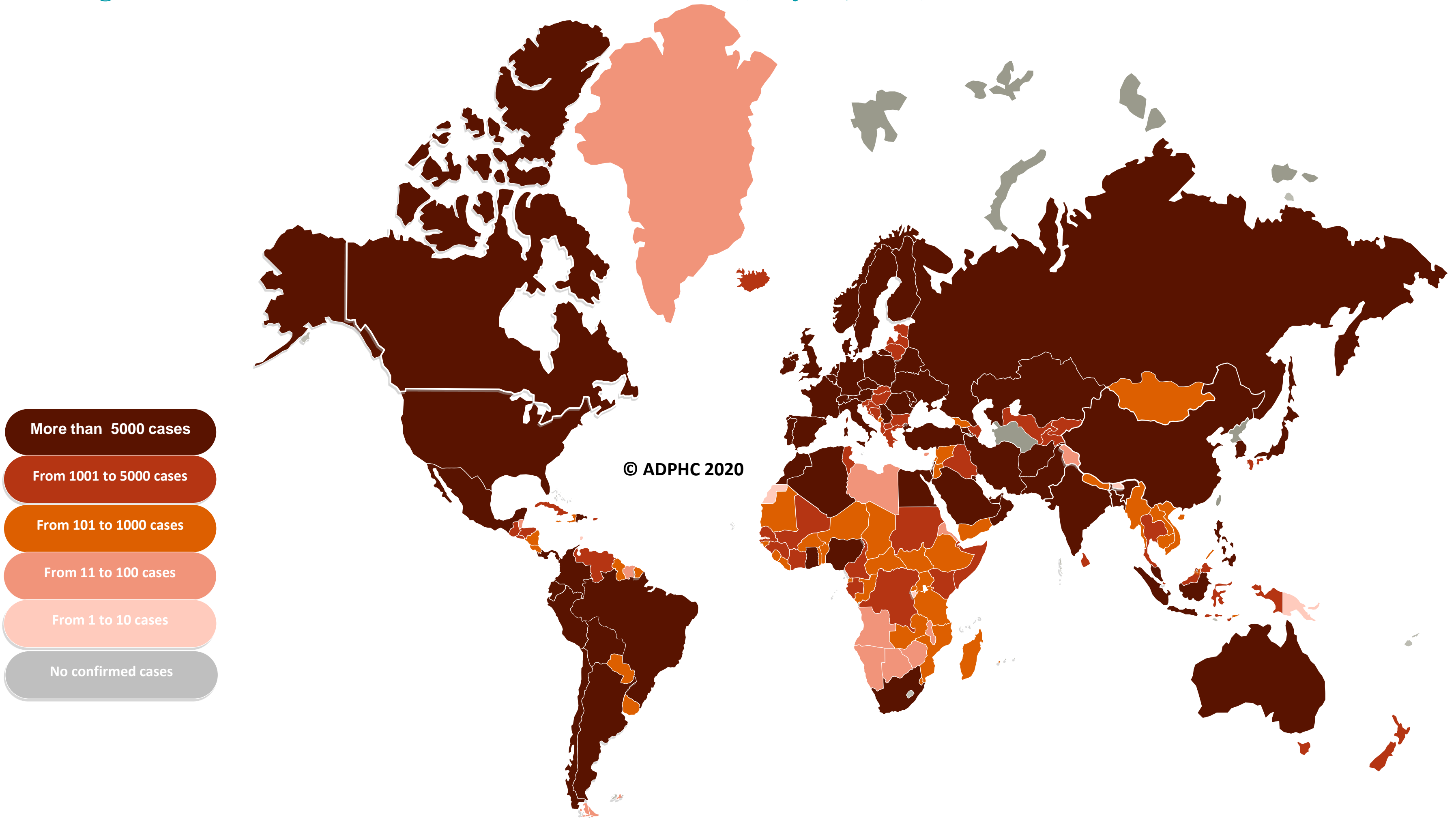
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)

Epidemiology



Figure 7a : Global distribution of COVID-19 cases (May 27, 2020).

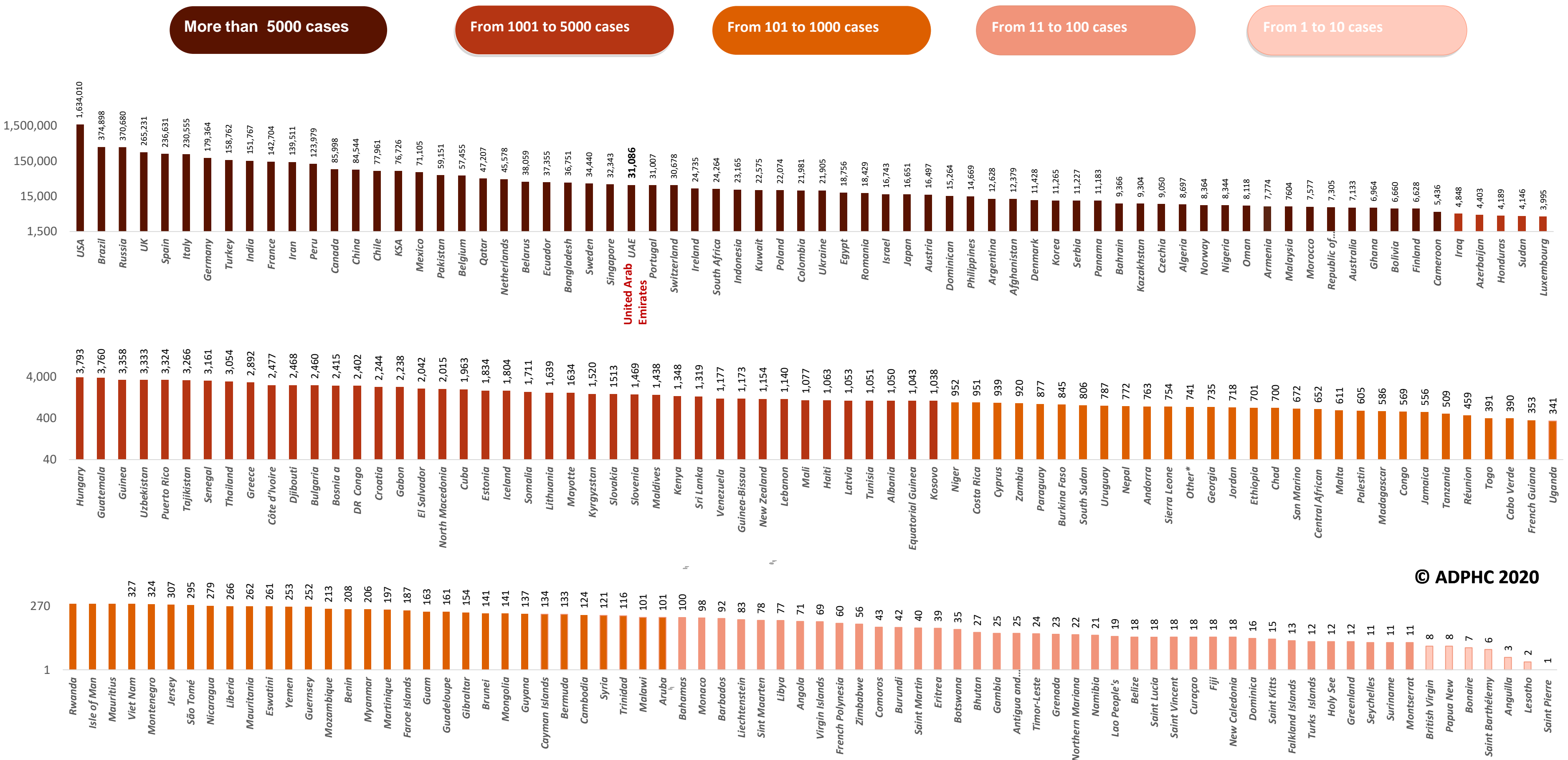


Map chart published by Abu Dhabi Public Health Center 2020.

Epidemiology



Figure 7B: Bar chart illustrate the global distribution of COVID19 cases (May 27, 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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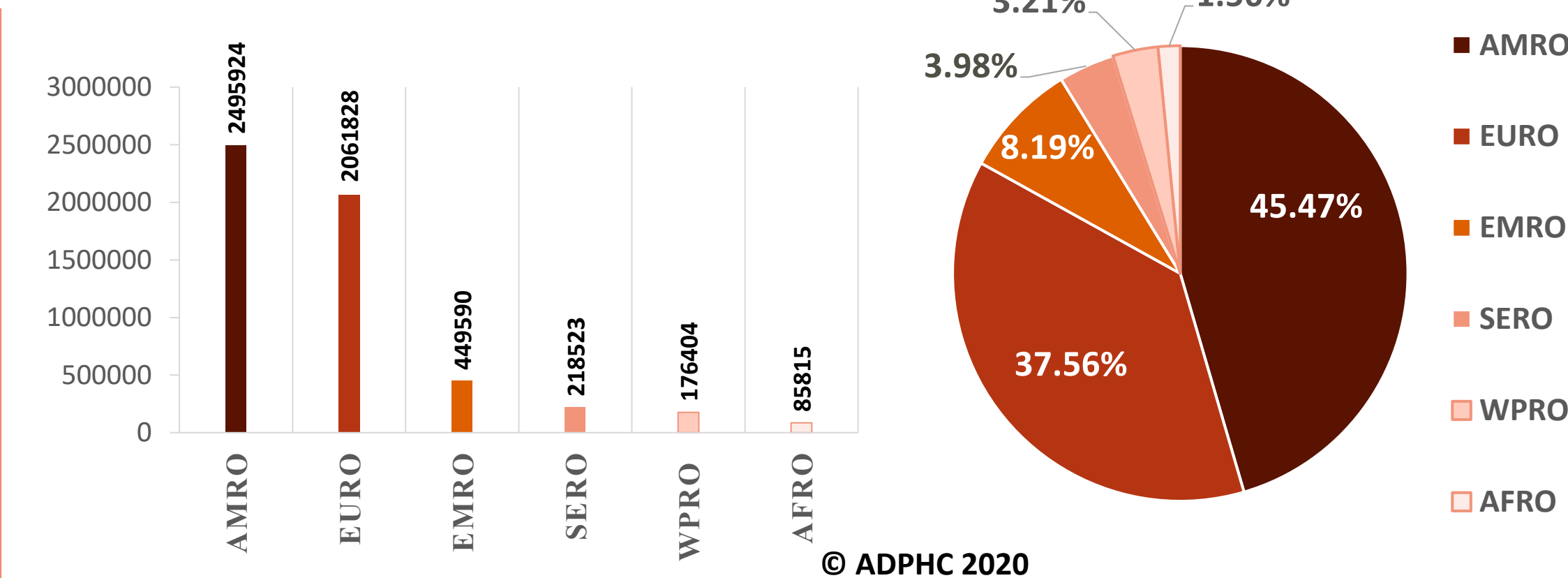
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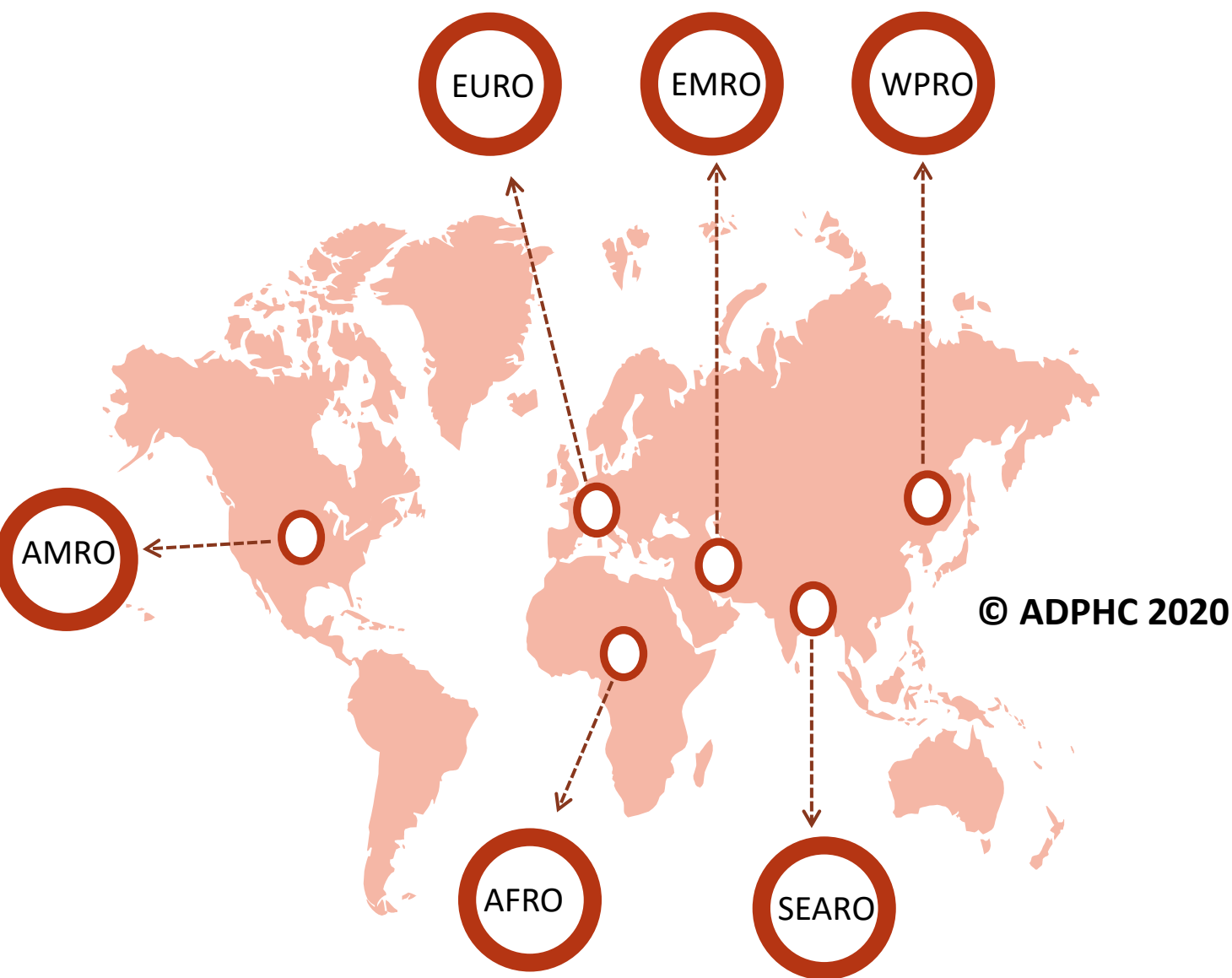
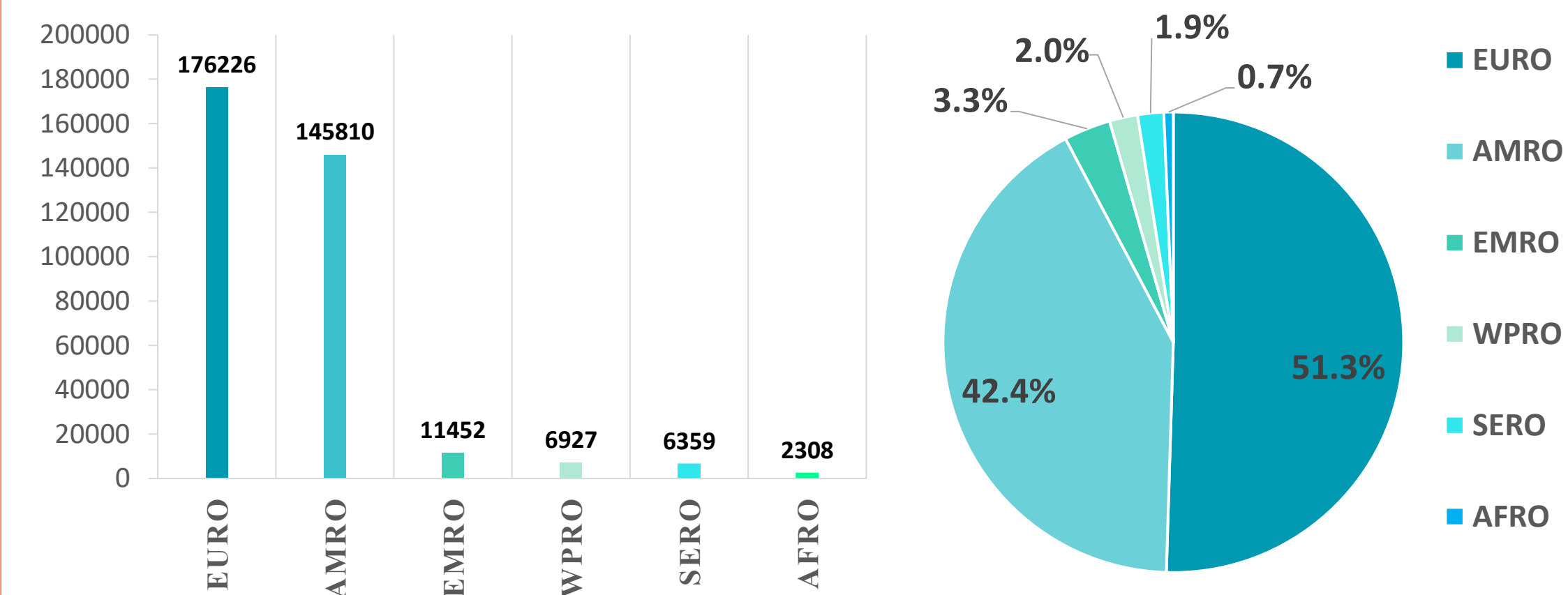


Figure 8: illustrate the Global distribution of COVID19 cases per region (May 27, 2020)

INFECTED



DEATH



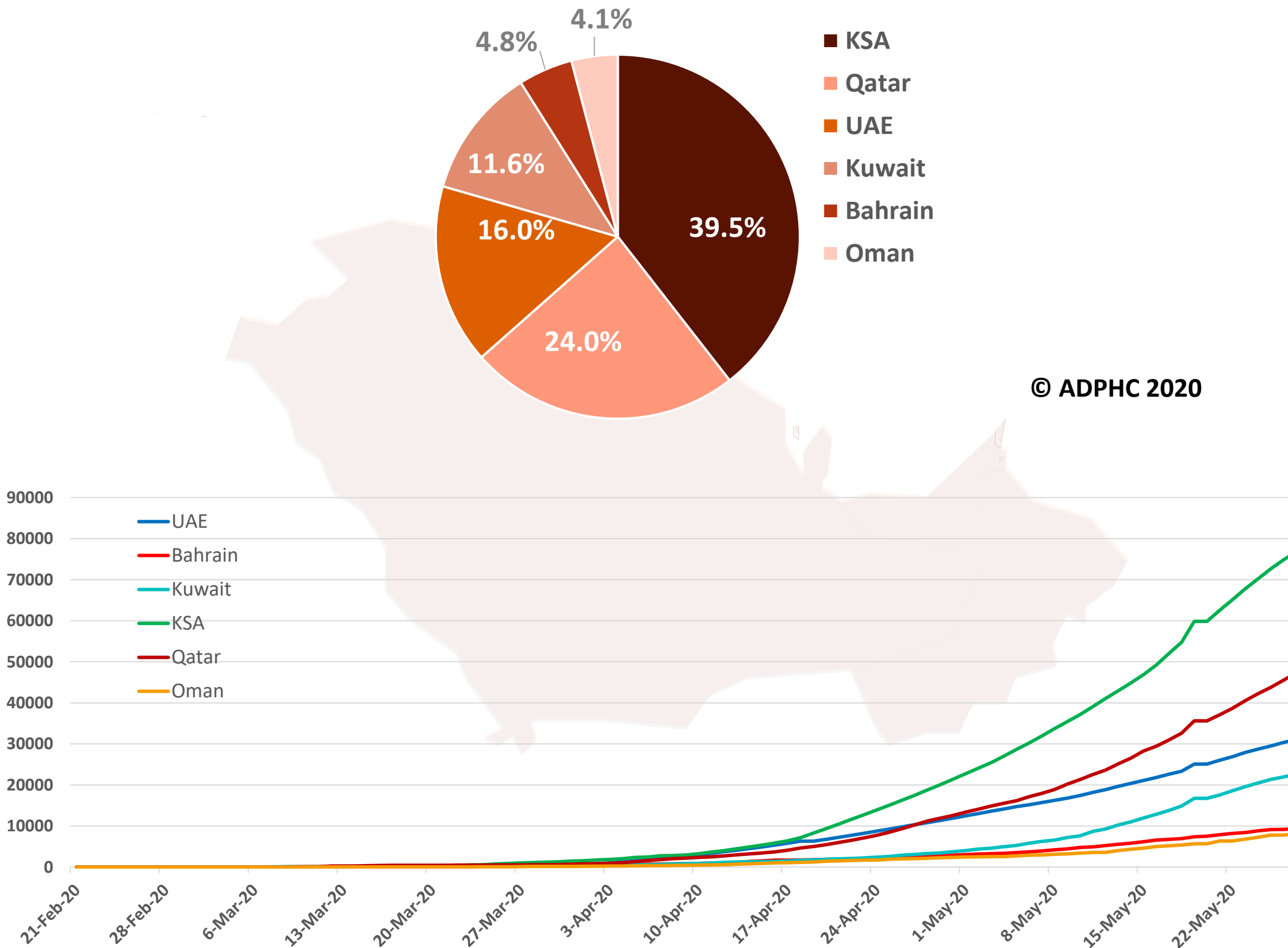
Map chart published by Abu Dhabi Public Health Center 2020.

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

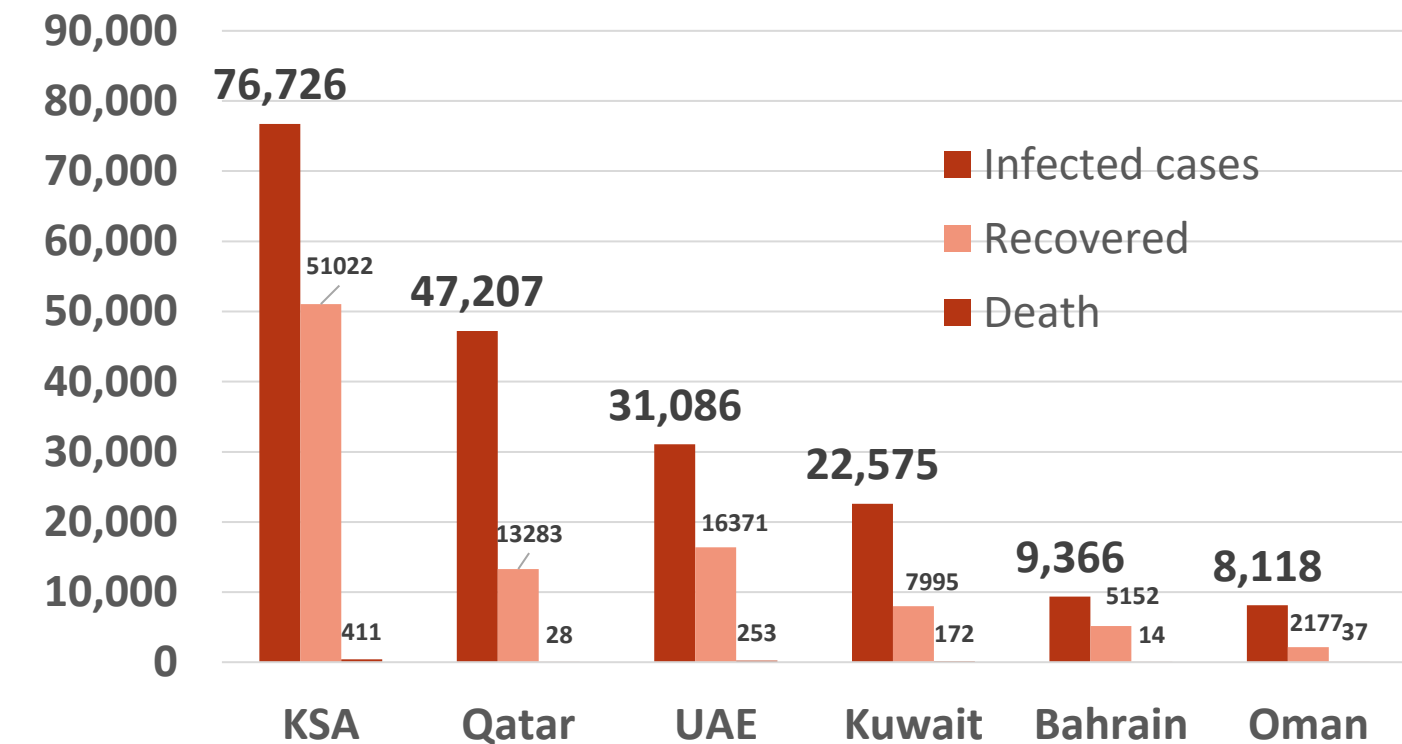


Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (May 27, 2020)

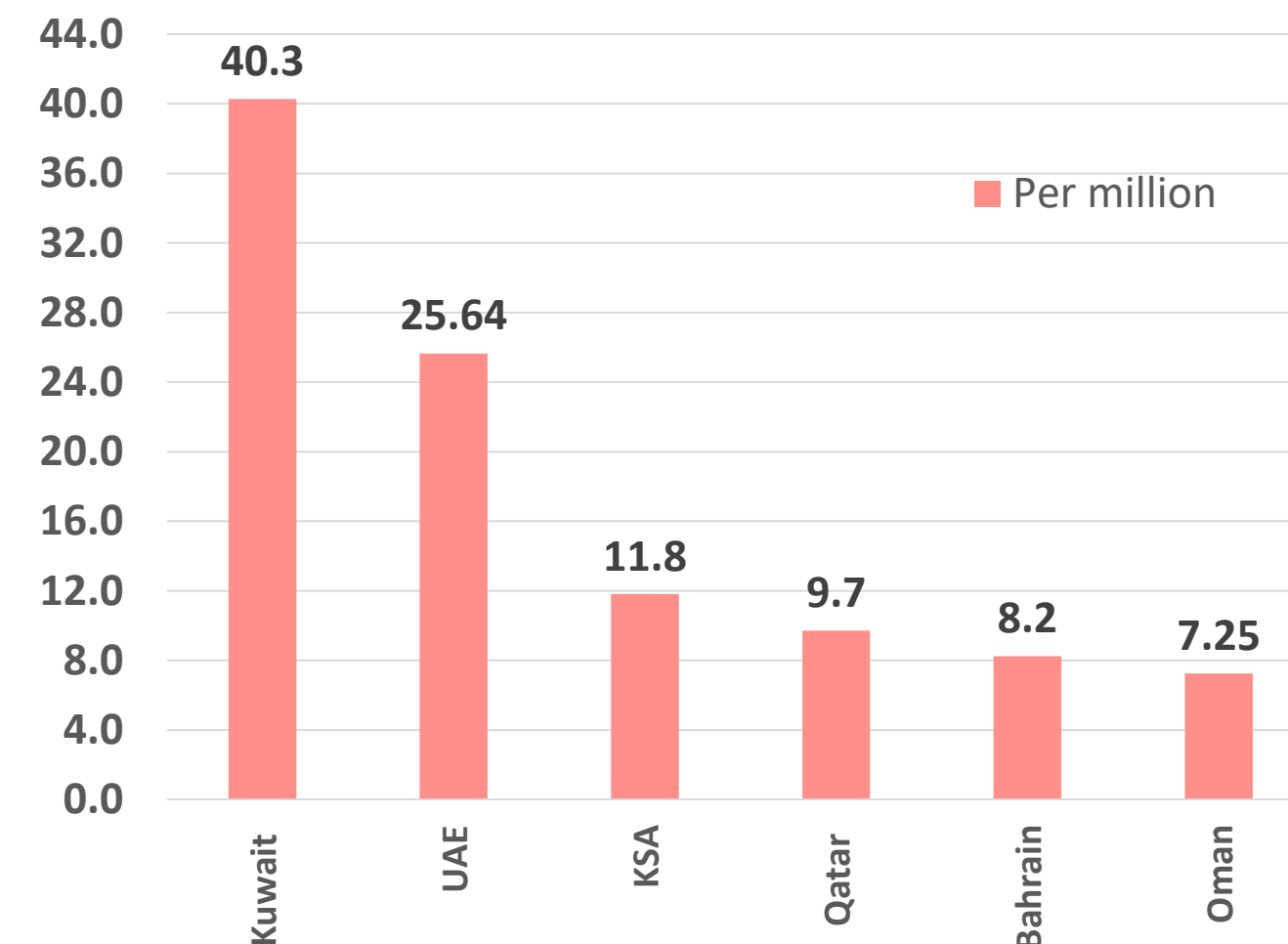
TOTAL NUMBER OF INFECTED CASES



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 : Screening for COVID-19 in Asymptomatic Patients With Cancer in a Hospital in the United Arab Emirates

Published: May 27, 2020 [in the JAMA](#)

Authors: Humaid O. Al-Shamsi; Eric A. Coomes; MD; Sadir Alrawi.

Summary :

An 85 cancer cases were enrolled Between March 13 to April 4, 2020, 85 asymptomatic patients with cancer were consecutively enrolled for microbiologic screening.

Results: as in the figure1.

Conclusion:

prospective universal microbiologic screening strategy revealed that 8% (7 of 85) of asymptomatic patients with cancer had COVID-19 at our institution

patients may pose particular risk for nosocomial transmission if they are not recognized to have COVID-19

Universal microbiologic screening for SARS-CoV-2 should be considered in oncology centers for patients undergoing anticancer therapy, particularly in regions with a high prevalence of COVID-19.

Table. Demographic Characteristics and Clinical Outcomes of Patients Screened for COVID-19

Characteristic	No. (%)		
	Overall cohort (n = 85)	Asymptomatic with COVID-19 (n = 7)	Asymptomatic without COVID-19 (n = 78)
Age, median (range), y	55 (28-76)	51.6 (40-76)	56 (33-74)
Female	48 (56.5)	5 (71.4)	43 (55.1)
Cancer type			
Breast	25 (29.4)	2 (28.6)	23 (29.5)
Colorectal	22 (25.9)	2 (28.6)	20 (25.6)
Thyroid	10 (11.8)	0	10 (12.8)
Other	28 (32.9)	3 (42.9)	25 (32.1)
Outcomes			
Hospitalization	7 (8.2)	2 (28.6)	5 (6.4) ^a
ICU	2 (2.4)	2 (28.6)	0
Death	1 (1.2)	1 (14.3)	0
Anticancer therapy delay	15 (17.6)	7 (100)	8 (10.3) ^a



Article 2 : Potent Neutralizing Antibodies against SARS-CoV-2 Identified by High-Throughput Single-Cell Sequencing of Convalescent Patients' B Cells

Published: May 17, 2020 [in the Cell Press Journal](#)

Summary:

- The researchers in this study were able to isolate more than 8500 antigen-binding B antibodies were from 60 convalescent patient's memory B cells (B cells are the immune cell which produce antibodies against infectious agents) out of which 14 potent neutralizing mAbs were identified. From the 14 , the most potent monoclonal Ab, called BD-368-2, exhibited the strongest response in experimental cells and also on mice with COVID-19. the BD-368-2 was injected in mice as a prophylactic and also as therapeutic and results showed normal weight in the treated mice. (they considered loss of weight in mice as an indicator of disease).

In conclusion:

- The Monoclonal antibodies have been used previously as a treatment in non-infectious disease and also for some infectious disease like HIV with good results.
- The potent neutralizing antibodies the researchers identified may provide an effective therapeutic and prophylactic solution for COVID-19 . According to the author Clinical trials using BD-368-2 are underway.

For further information on this topic :

Below link audio interview conducted on May 20, 2020, the speakers discuss recent advances involving convalescent plasma, **monoclonal antibodies**, and vaccine candidates.

By The New England Journal of Medicine.

https://www.nejm.org/doi/full/10.1056/NEJMe2019020?query=featured_home

Public Health response



Article 3: Assessment of Proficiency of N95 Mask Donning Among the General Public in Singapore

Published: May 20, 2020 in [the JAMA](#)

Summary:

- A cross-sectional study was conducted in Singapore from February 9 to 15, 2015. Inclusion criteria included Singapore citizens/permanent residents (≥ 21 years) who lived in Singapore from June to July 2013 and were able to independently put on N95 mask. These masks with multilingual pictorial instructions were distributed to the participants. The participant was asked to put on the mask, with no prompting to refer to the instruction sheet. Interviewers administered a visual mask fit (VMF) test and a user seal check following the manufacturer's instructions.
- 714 participants completed the survey. Of those, only 90 participants (12.6%) passed the VMF test. The most common mask fit criteria performed incorrectly were strap placement (73.0%), leaving a visible gap between the mask and skin (61.9%), and tightening the nose clip (60.4%). Younger age and previous mask fit training were independently associated with higher pass rates ($p < 0.001$). The use of the instruction leaflet provided, ownership of N95 masks, and previous mask use were not significantly associated with passing the test.
- The findings support recommendations against the use of N95 masks by the general public during the COVID-19 pandemic. Policy measures that encourage mask use must be coupled with effective training materials in addition to instruction leaflets. Other public health measures including social distancing, hand washing, and self isolation when sick are essential as well.

Vaccine



Article 4 : Safety, tolerability, and immunogenicity of a recombinant adenovirus type-5 vectored COVID-19 vaccine: a dose-escalation, open-label, non-randomised, first-in-human trial

Published: May 22, 2020, in [the lancet](#)

Summary:

This a dose-escalation, single-centre, open-label, non-randomised, phase 1 trial of an Ad5 vectored COVID-19 vaccine in Wuhan, China . The study aimed to assess the safety, tolerability, and immunogenicity of a recombinant adenovirus type-5 (Ad5) vectored COVID-19 vaccine expressing the spike glycoprotein of SARS-CoV-2 strain.

Healthy adults 108 participants enrolled and allocated to one of **three dose groups (5×10^{10} , 1×10^{11} , and 1.5×10^{11} viral particles)** to receive an intramuscular injection of vaccine. Between March 16 and March 27, 2020.

The primary outcome was adverse **events in the 7 days post-vaccination.**

Safety was assessed over 28 days post-vaccination.

Findings

The 108 participants (mean age 36.3 years) were recruited and received the low dose (n=36), middle dose (n=36), or high dose (n=36) of the vaccine.

At least one adverse reaction reported in 83% of participants (low dose and middle dose) in the first 7 days after the vaccination. , and 75% participants in the high dose group.

The most common injection site adverse reaction was pain, which was reported in 54% vaccine recipients, fever (50 [46%]), fatigue (47 [44%]), headache (42 [39%]), and muscle pain (18 [17%]). No serious adverse event was noted within 28 days post-vaccination.

ELISA antibodies and neutralising antibodies increased significantly at day 14, and peaked 28 days post-vaccination.

Specific T-cell response peaked at day 14 post-vaccination.

Conclusion:

The Ad5 vectored COVID-19 vaccine is tolerable and immunogenic at 28 days post-vaccination. Humoral responses against SARS-CoV-2 peaked at day 28 post-vaccination in healthy adults, and rapid specific T-cell responses were noted from day 14 post-vaccination.