



Scientific Research Monitoring on COVID-19

29 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

- **Country profile:** addressing the public health response to COVID19 pandemic in Singapore.
- **Treatment:** using prophylactic anticoagulant in patient with high D dimer is recommended to prevent cytokine storm in COVID19 patients.
- **Clinical feature:** Five cases of COVID19 in the US presented with stroke

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

[Decolonising COVID-19](#)
[Mental health services in Italy during the COVID-19 outbreak](#)
[Nursing homes or besieged castles: COVID-19 in northern Italy](#)



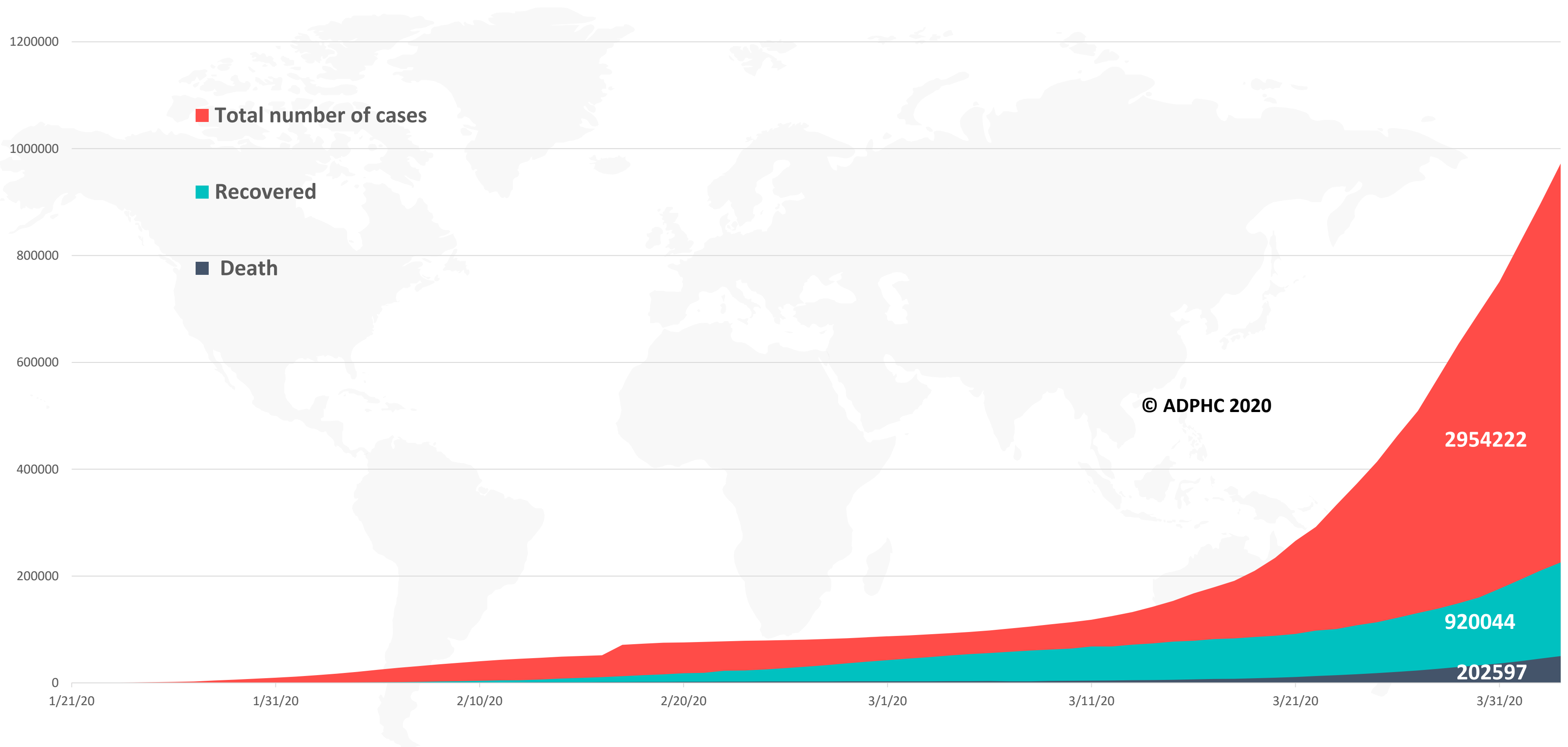
WHO daily report 28 April 2020

- WHO has published the ‘R&D Blueprint: COVID-19 Experimental Treatments’, which lists drug and non-drug experimental treatments for COVID-19. This can be found [here](#).
- WHO has called on countries to ensure that usual immunization is maintained wherever possible and surveillance for vaccine-preventable diseases is not disrupted during the ongoing pandemic.
- WHO Director-General Dr. Tedros, in his regular media briefing, highlighted “As lockdowns in Europe ease with declining numbers of new cases, we continue to urge countries **to find, isolate, test and treat all cases** of COVID-19 and **trace every contact**, to ensure these **declining trends continue**”.
- WHO continues to source millions of dollars of medical equipment and supplies to help Member States access global markets, which are overwhelmed by unprecedented demand. WHO is also supporting design and installation of COVID-19 treatment centers in a number of countries.
 - Testing kits : has secured commitment for five million tests to be procured over the next four weeks.
 - Medical equipment: approximately US\$400 million in clinical care equipment has been identified from oxygen production, biomedical equipment and accessories manufacturers
 - personal protective equipment : The first batch of purchases are expected to be placed for 75 million masks, 50 million respirators, 28 million gloves and 10 million face shields. (Jack Ma Foundation for an additional provision of 100 million surgical masks and one million respirators.)

Epidemiology



Figure 1: Total number of infected, recovered, and death cases (January 21st to April 28, 2020)

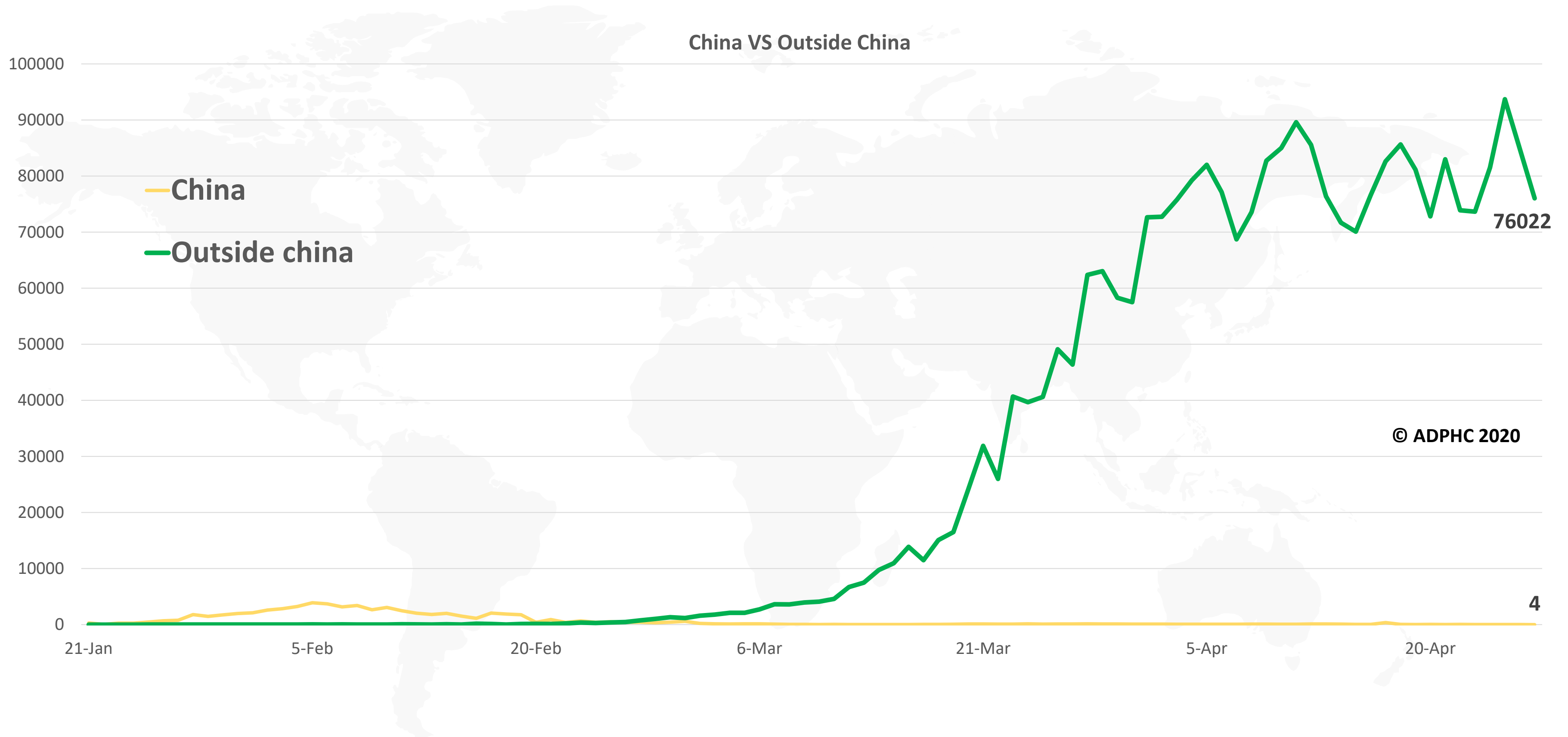


Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 2: Daily new infected COVID-19 cases reported between (January 21 to April 28, 2020).



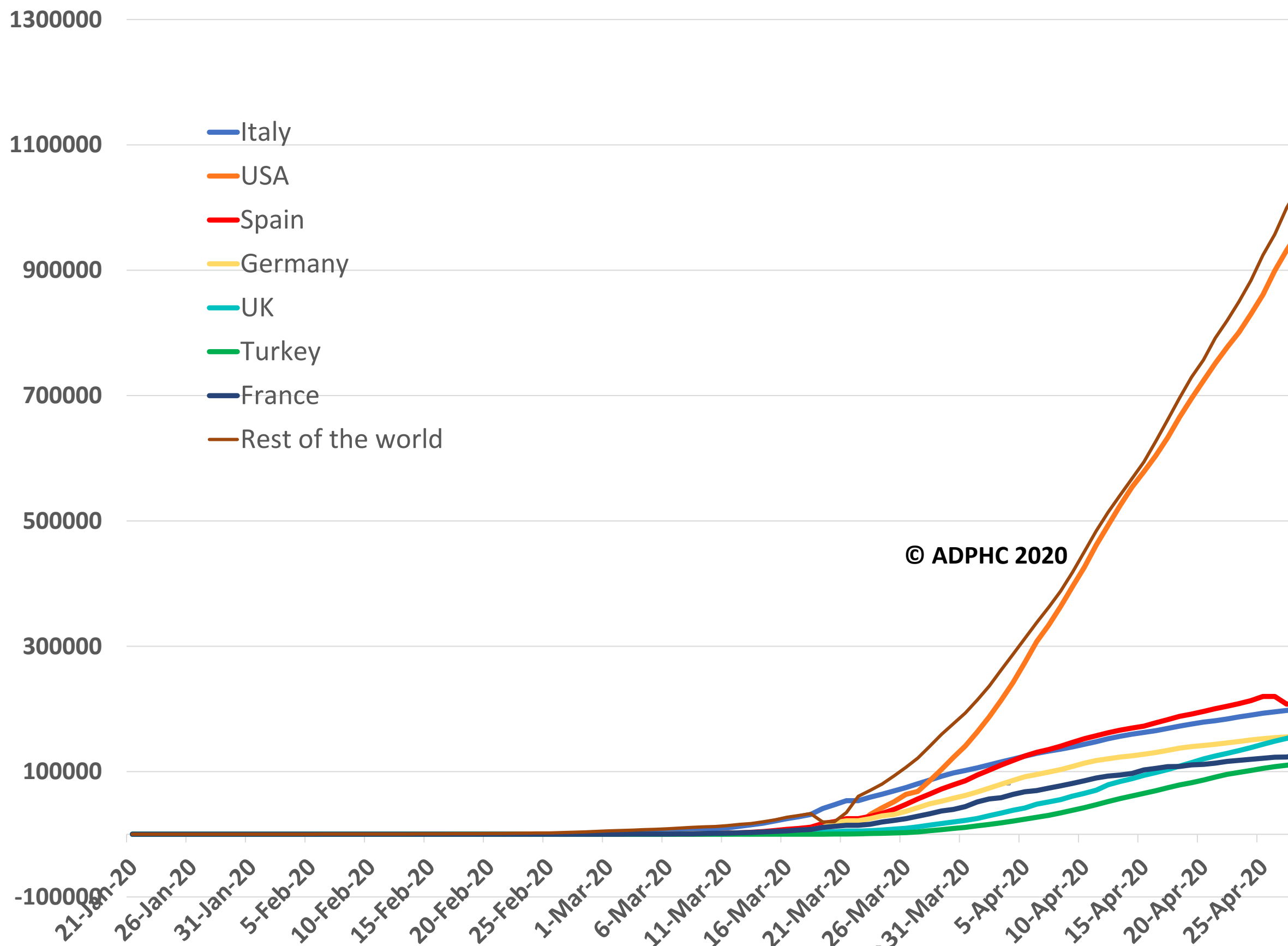
Line graph published by Abu Dhabi Public Health Center 2020.

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

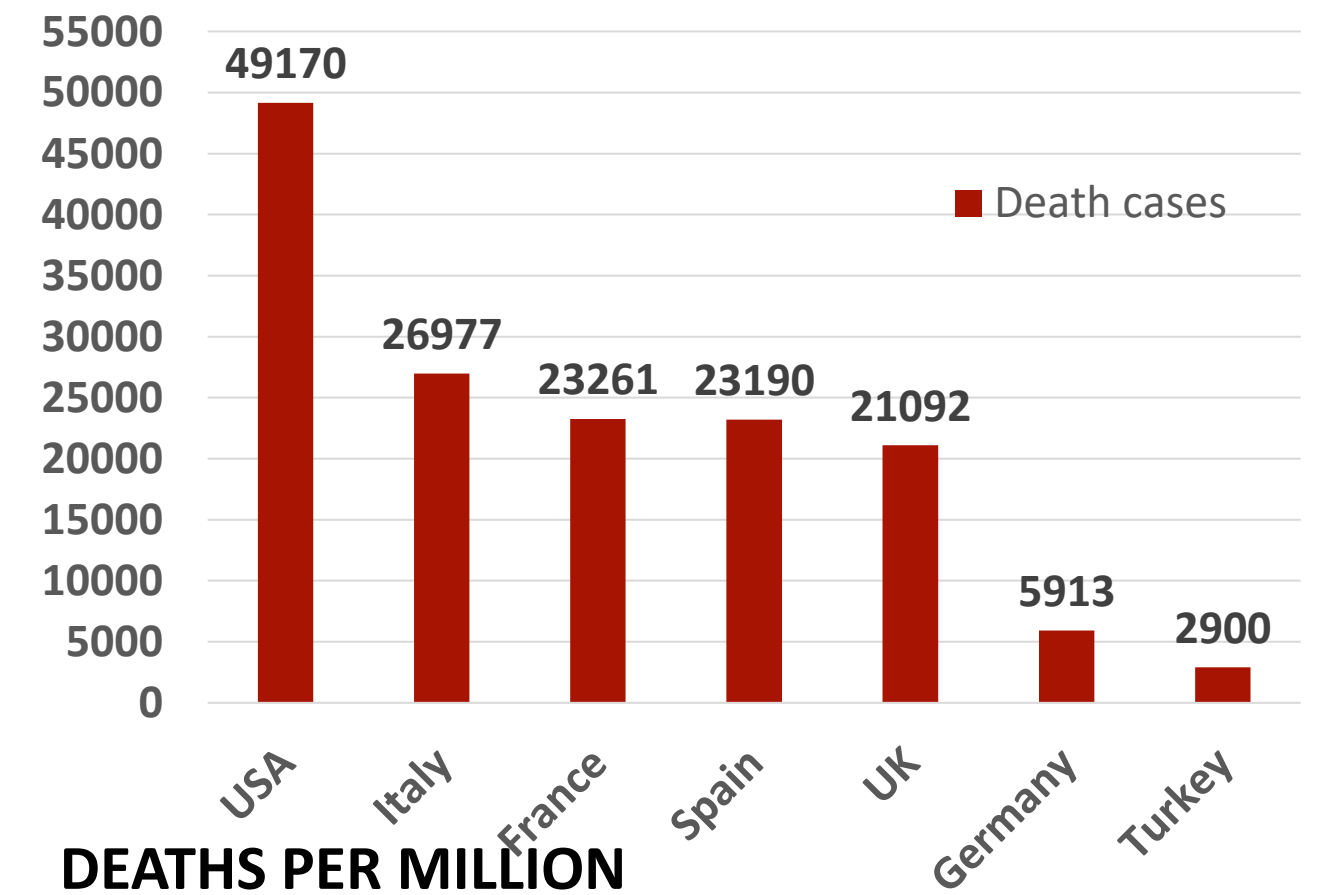
Epidemiology



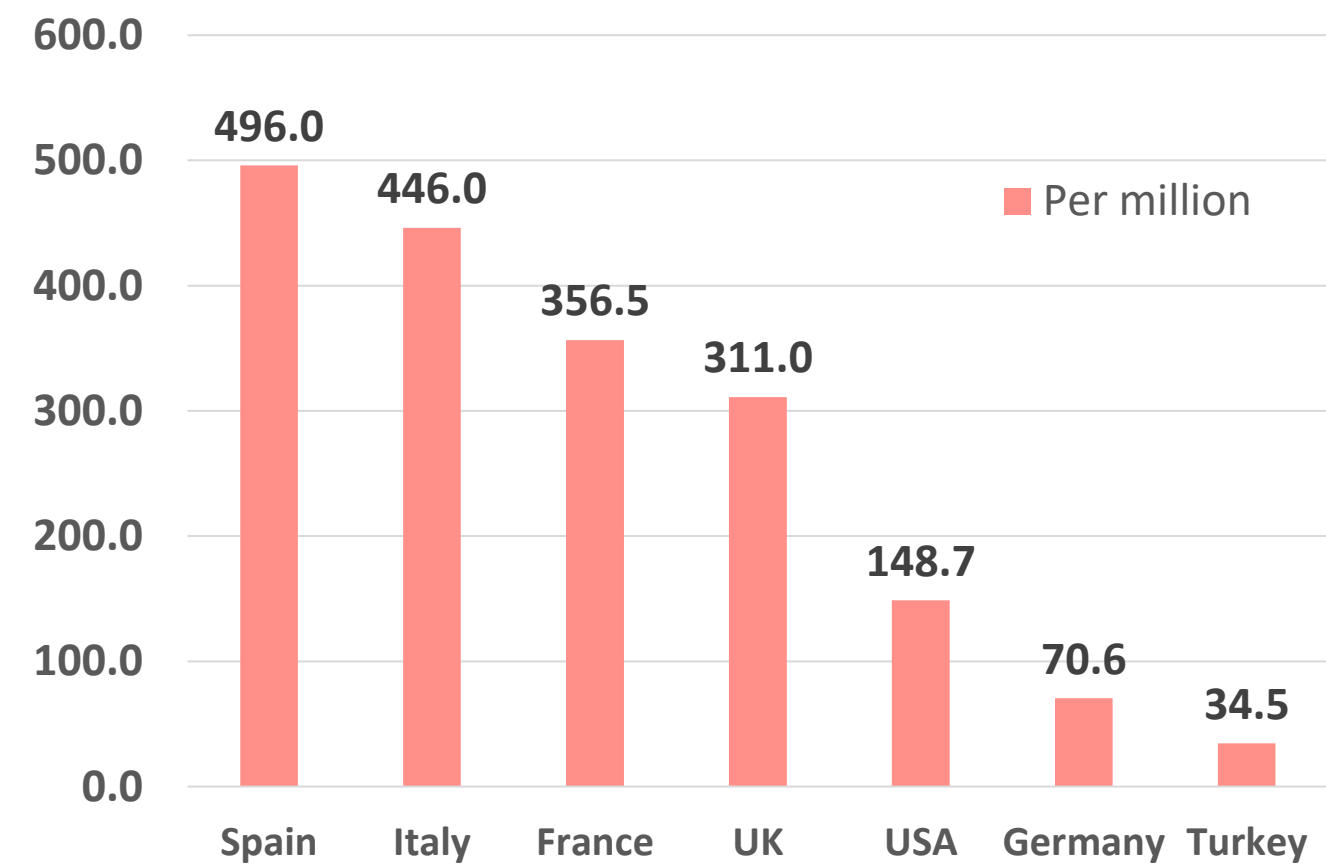
Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to April 28, 2020).



TOTAL DEATHS



DEATHS PER MILLION

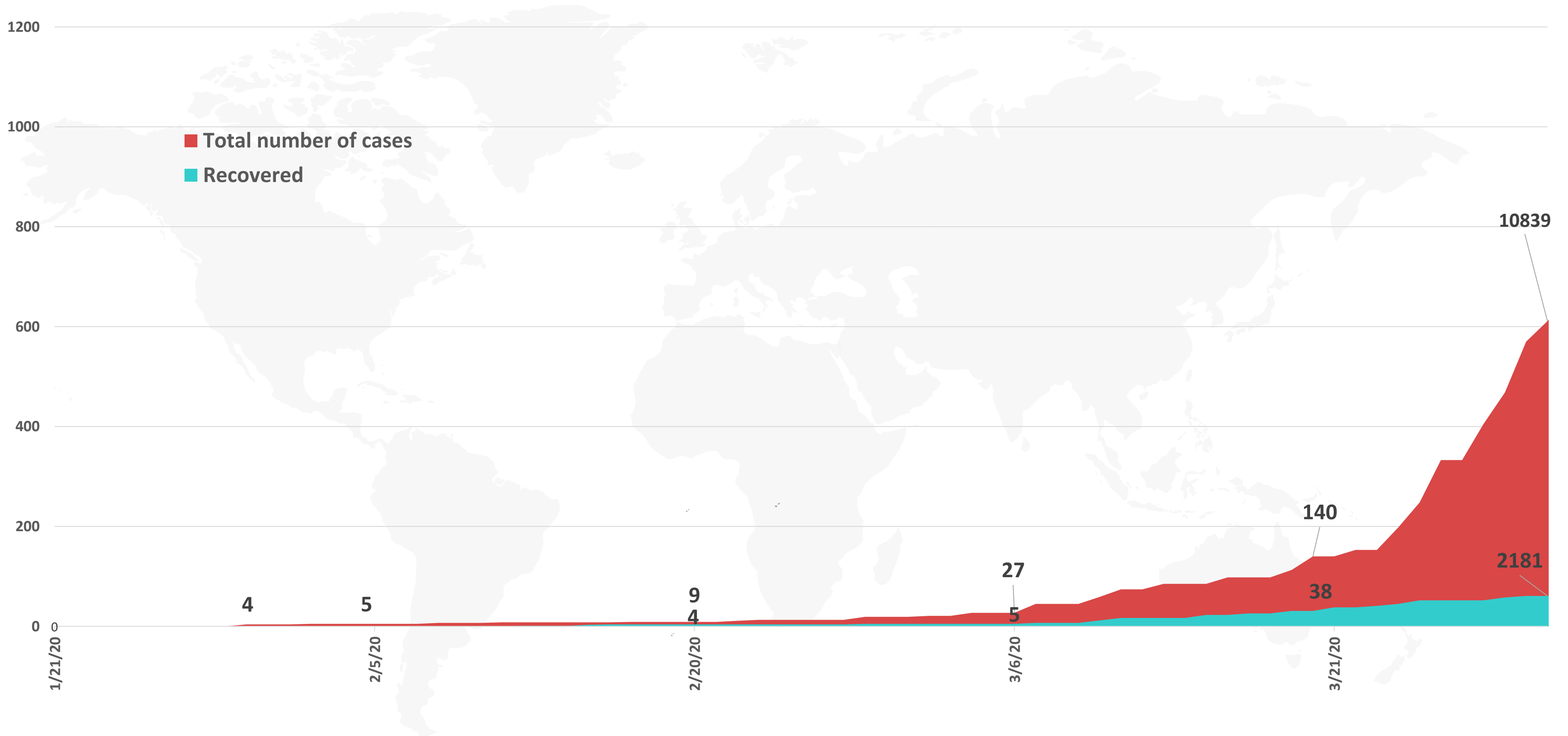


Line graph published by Abu Dhabi Public Health Center 2020.

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



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



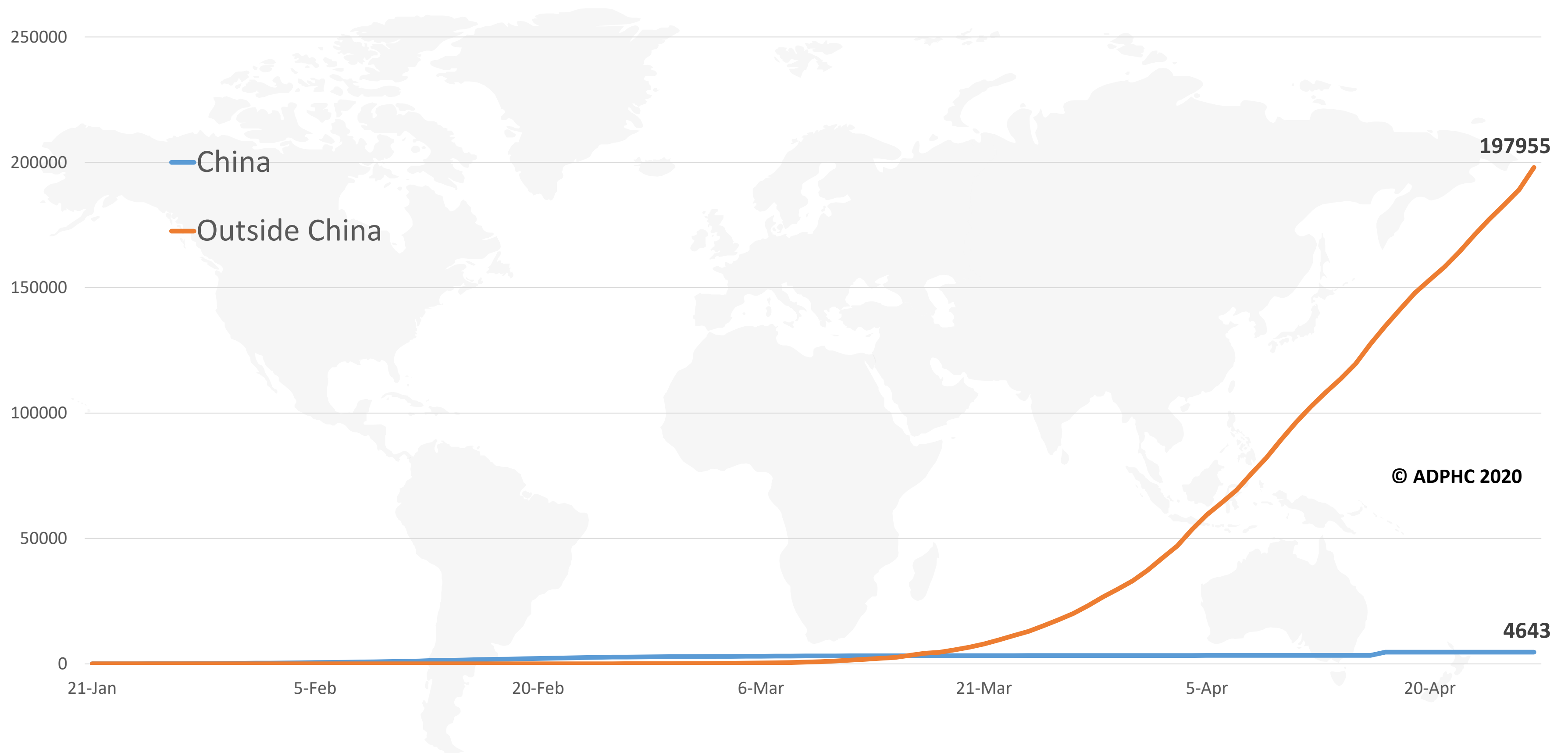
Line graph published by Abu Dhabi Public Health Center 2020.

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 April 28, 2020).



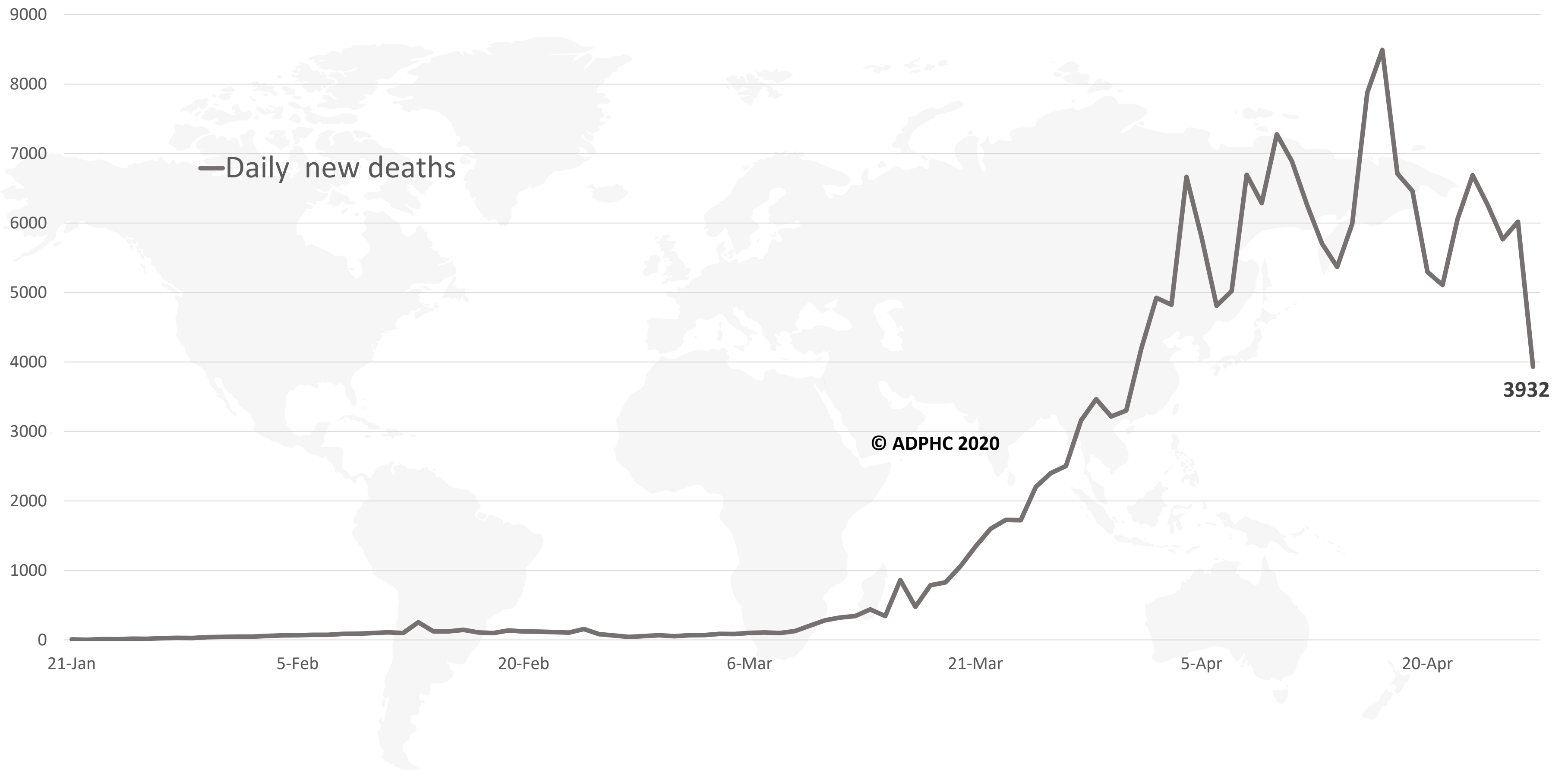
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Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 6: Global daily new deaths due to COVID-19 (January 22 to April 28, 2020).



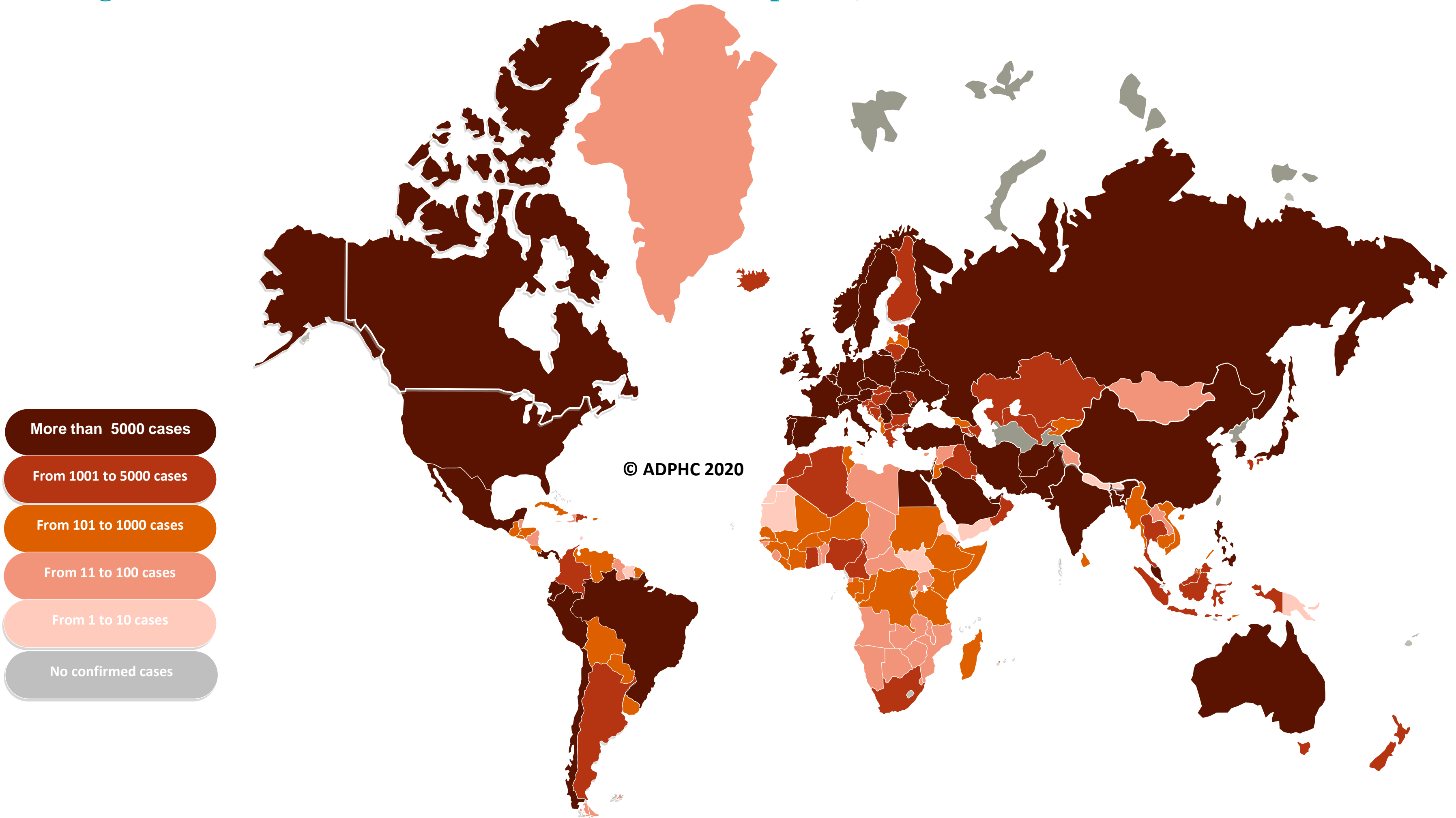
Line graph published by Abu Dhabi Public Health Center 2020.

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

Epidemiology



Figure 7a : Global distribution of COVID-19 cases (April 28, 2020).



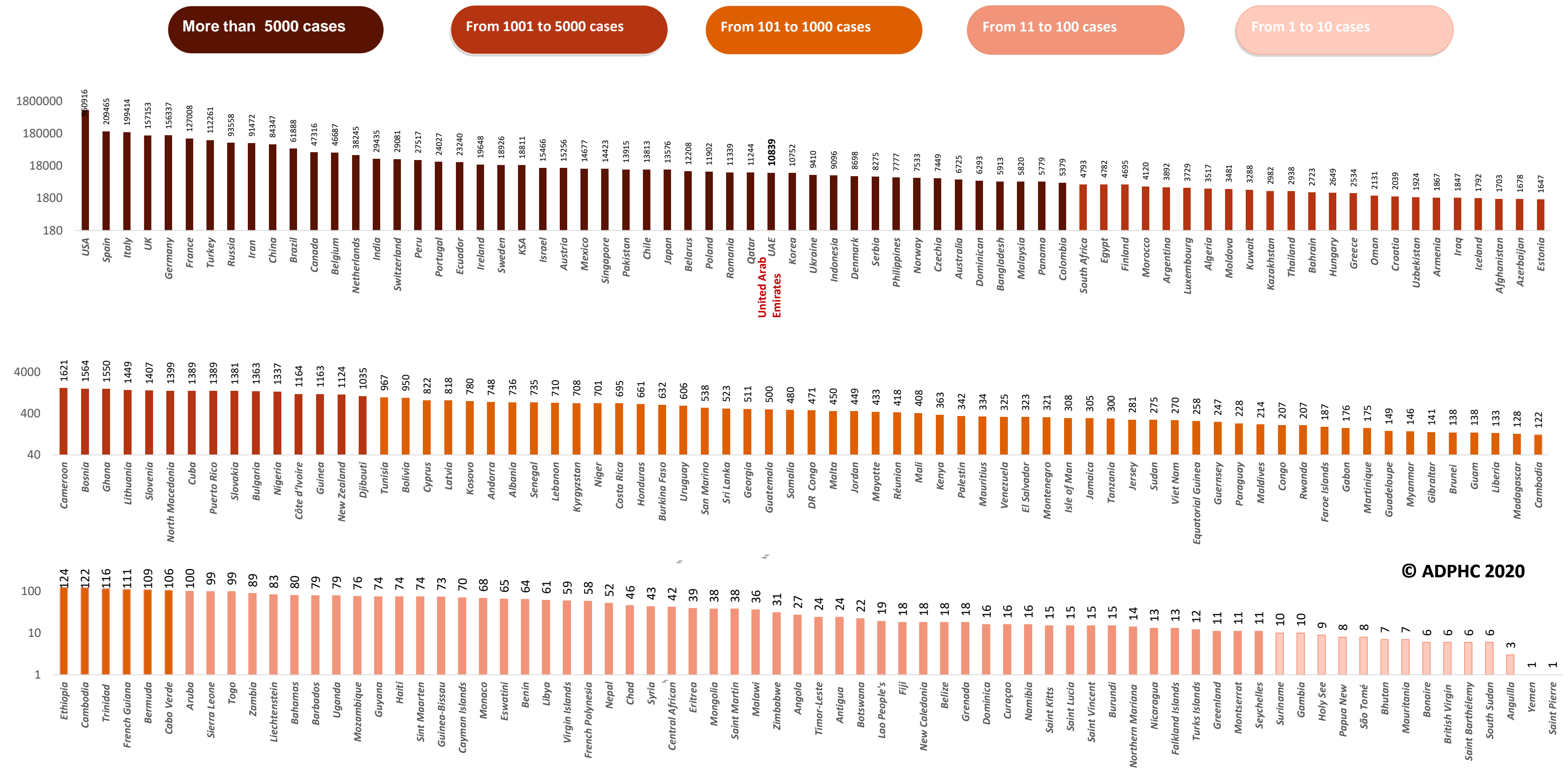
- More than 5000 cases
- From 1001 to 5000 cases
- From 101 to 1000 cases
- From 11 to 100 cases
- From 1 to 10 cases
- No confirmed cases

Map chart published by Abu Dhabi Public Health Center 2020.

Epidemiology



Figure 7B: Bar chart illustrate the global distribution of COVID19 cases April 28, 2020)



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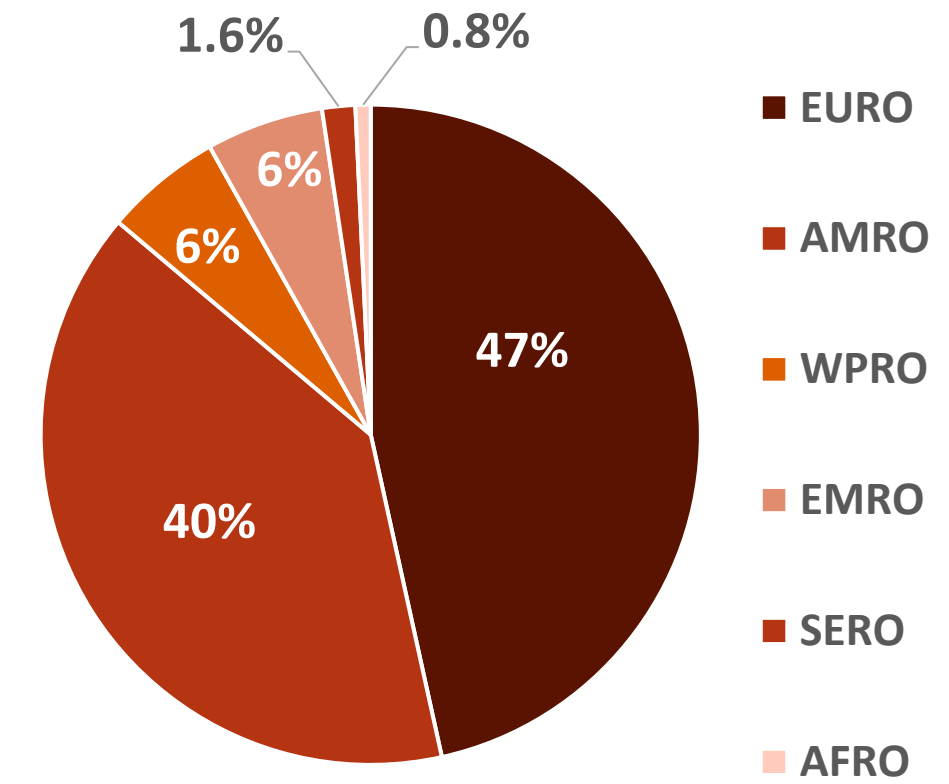
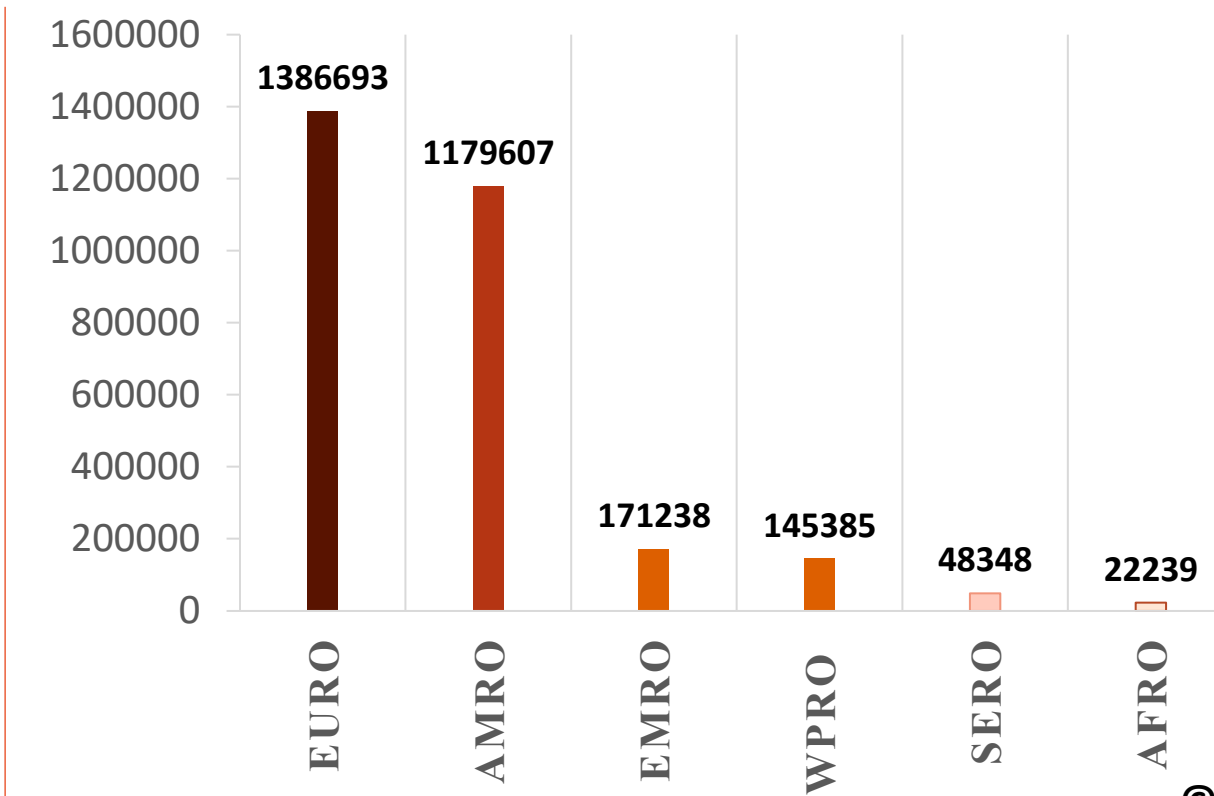
Map chart published by Abu Dhabi Public Health Center 2020.

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



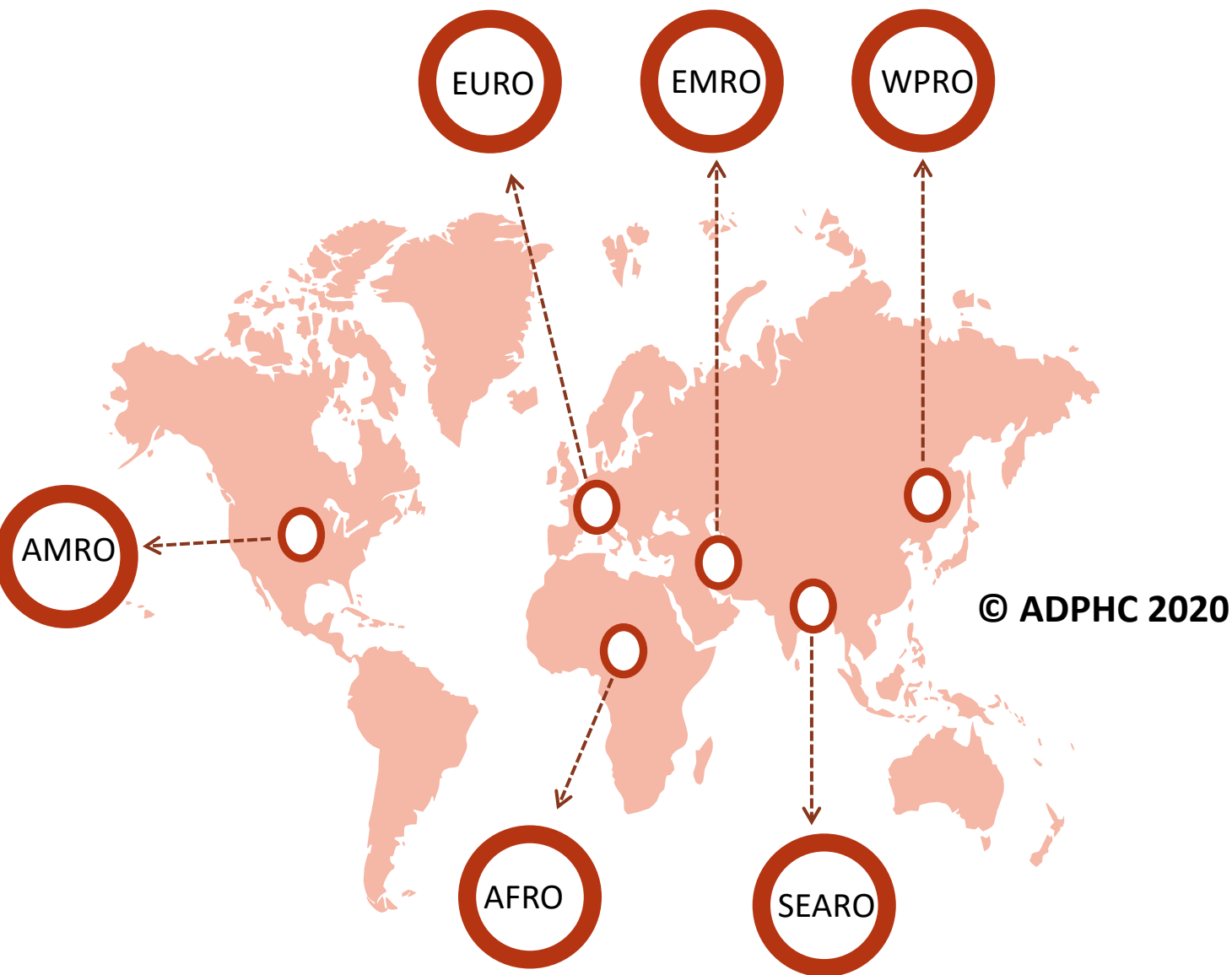
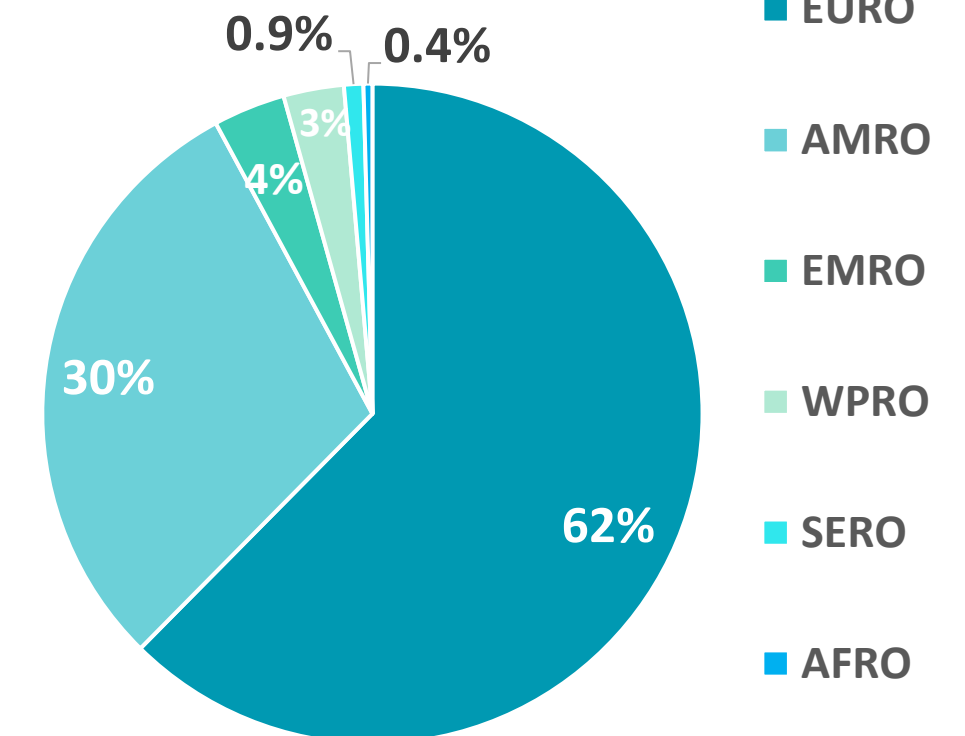
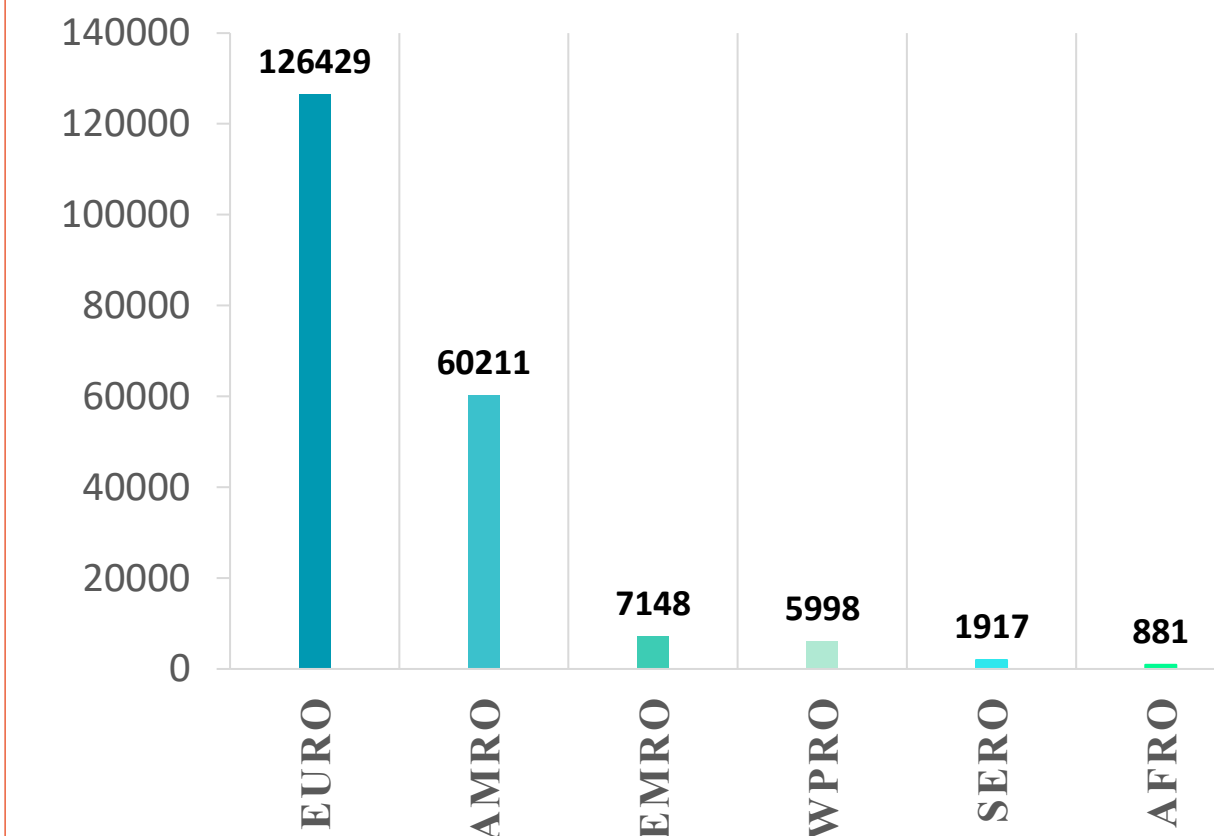
Figure 8: illustrate the Global distribution of COVID19 cases per region (April 28, 2020)

INFECTED



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DEATH



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Map chart published by Abu Dhabi Public Health Center 2020.

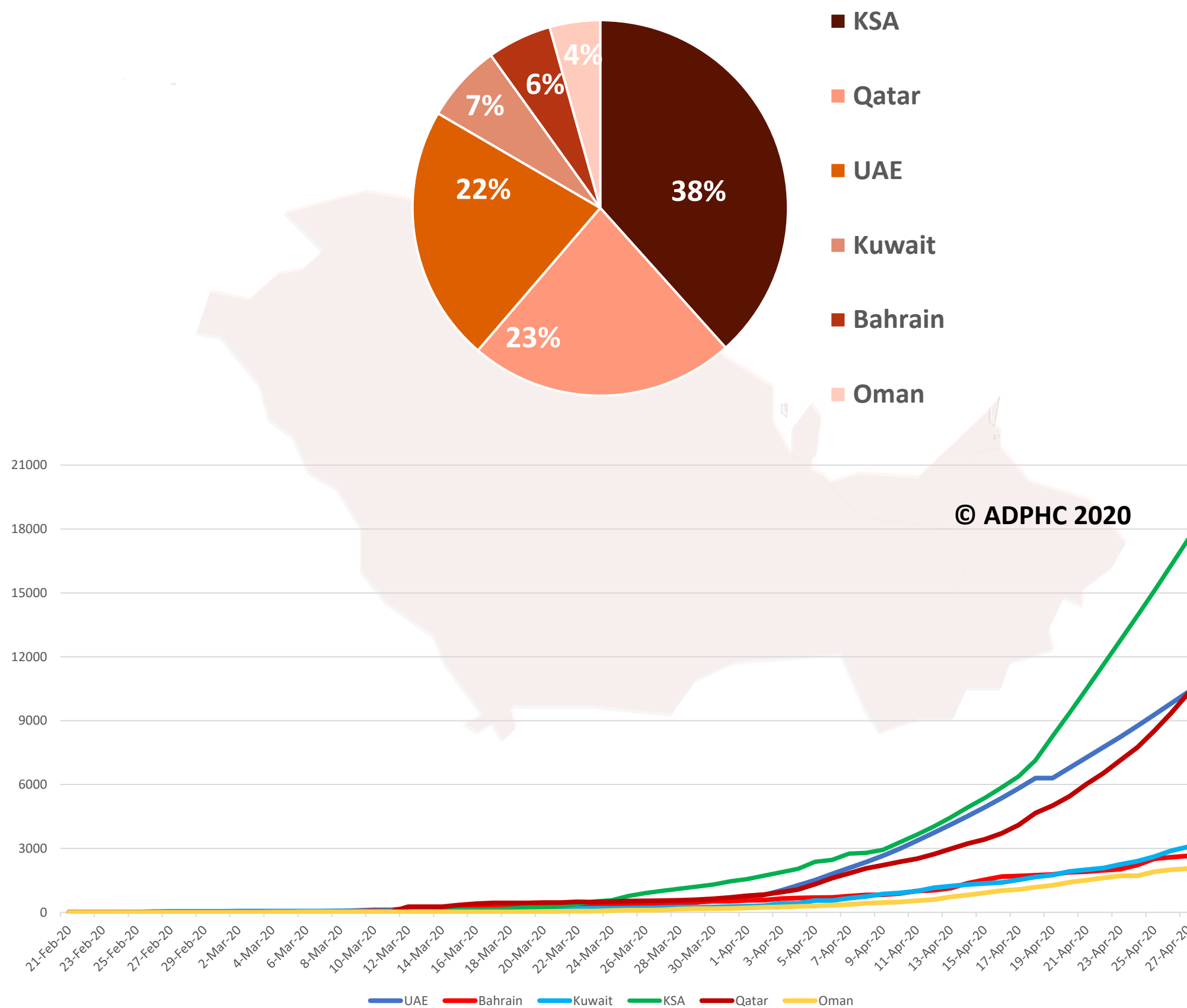
Data resources: [WHO](https://www.who.int/)

Epidemiology

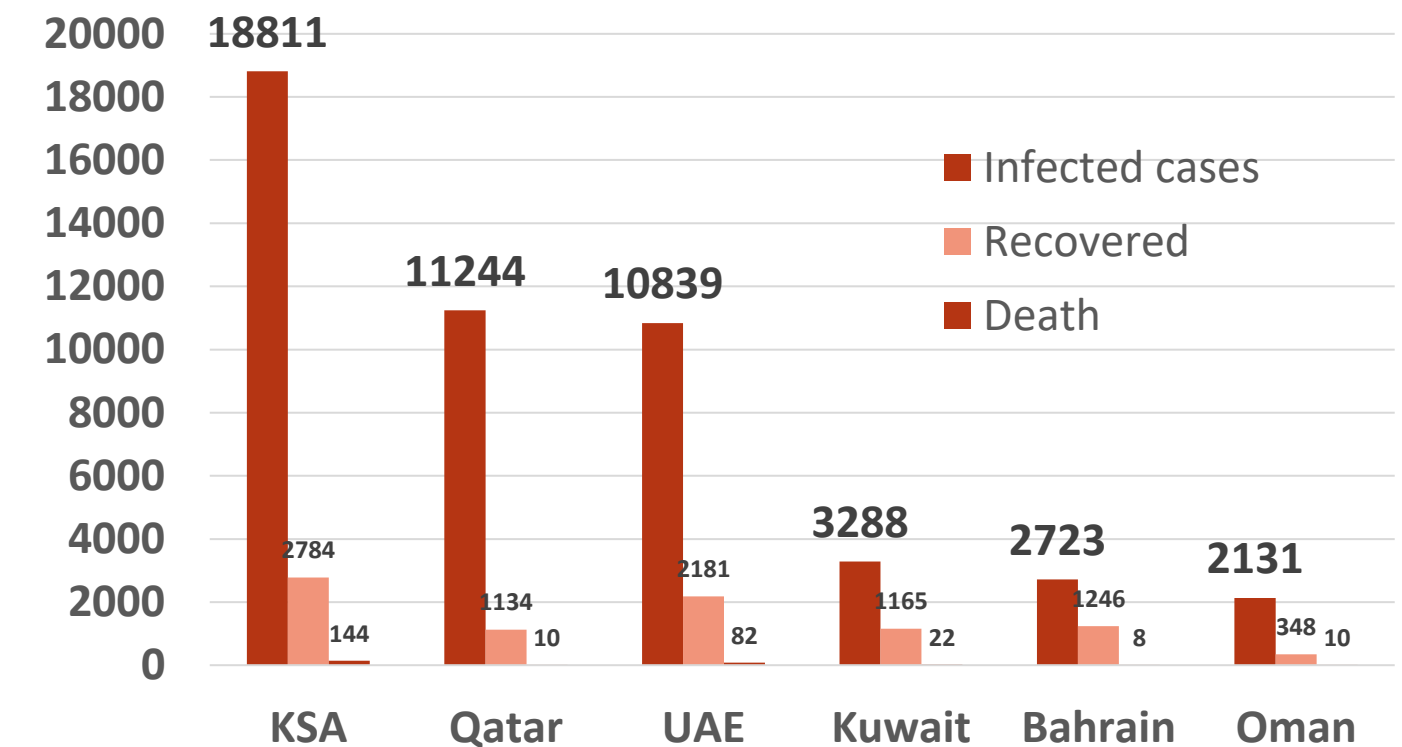


Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (April 28, 2020)

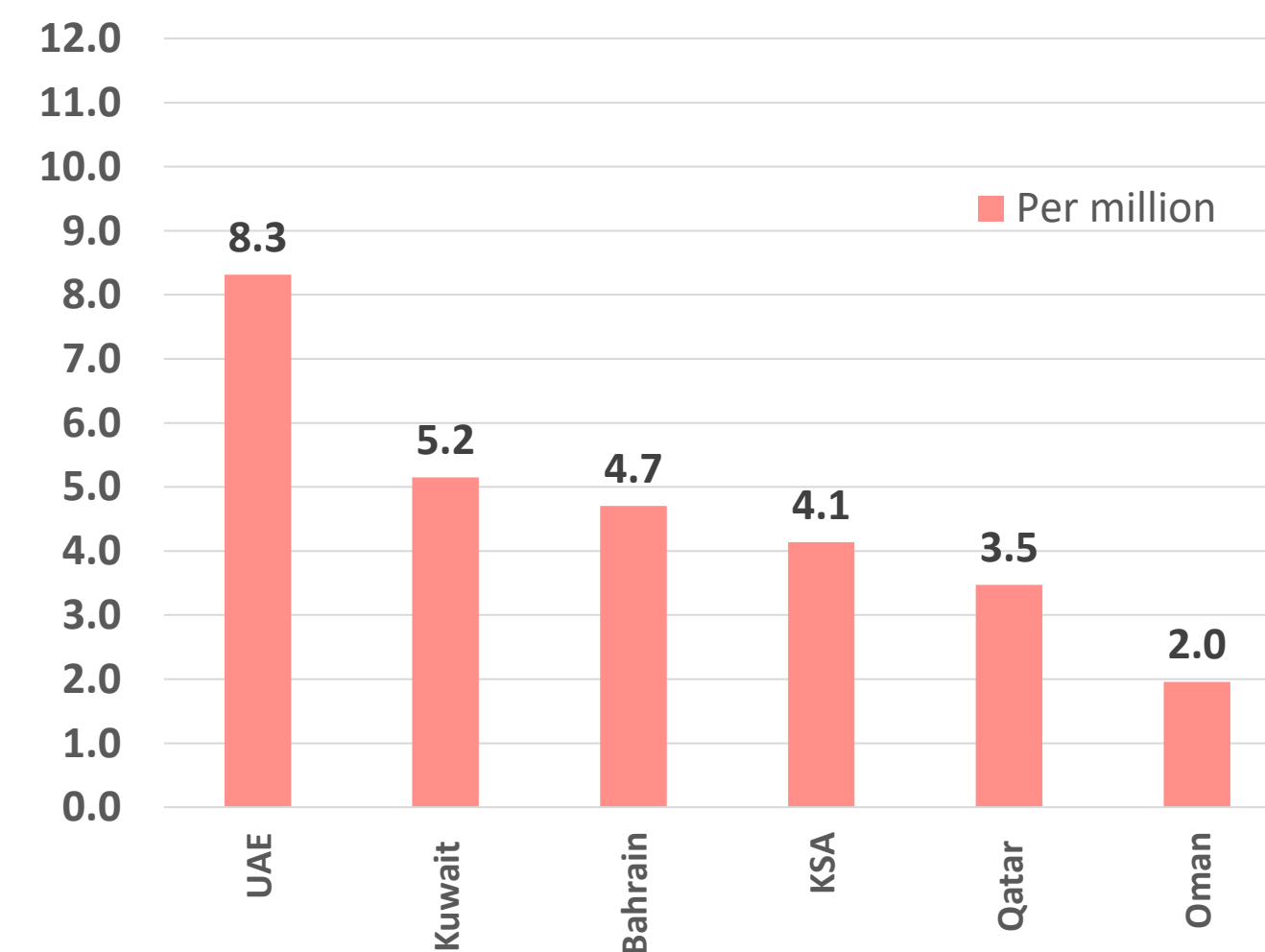
TOTAL NUMBER OF INFECTED CASES



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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COUNTRY Profile Singapore (1/3)

Singapore has been amongst the leading bodies in the world for its's swift community action and countries preparedness in controlling outbreak of COVID19. Here we outline information taken from expert and official Singaporean website and identify the action plans taken by the government to prevent a possible outbreak

Controlling COVID-19 Pandemic



Strengths:

- Well developed system to respond to outbreak (pre-planned strategy a 10 years old especially after SARS outbreak)
- Developing internal capabilities and training them with multiple exercises in order to prepare them for an out break .
- Cultural factors : **culture of Fear** , half of the population is military trained (so discipline is a major factor to compliance to social distancing measures)

Communication with high risk groups



- Communication with multinational labor is still a challenge.
- Singapore has multinational workers, currently doing visits to dormitories and with a translator to communicate with them. (most of the outbreaks are from dormitories)

Managing Medical supply



- Singapore have a Stockpile of PPE/ vaccines enough for 6 months (was part of the 10 years of work on developing a governmental response to pandemic)
- In addition, hospitals have their own 6 months supply for PPE/ vaccines as per Government contract mandate.
- Singapore is expanding the supply by working with internal manufacturers and biotechnology companies to ensure enough supply.

Acknowledgement: Dr Hishamuddin Badaruddin BMBS MPH FAMS, Previous Deputy Director (Integrated Operations), Ministry of Health Singapore; Director(Healthcare), Deloitte Consulting South East Asia

COUNTRY Profile Singapore (2/3)

Tracing



- Mainly dependent on active surveillance (400 trained staff in the surveillance team and 100 from military, they trace 1000 cases per day, target to complete 80% of index contacts in 48hours.
- New: Voluntary tracing App (Trace Together)
- Police support

Transportation



- Public transportation have hygiene and social distancing measures.
- Have extensive instructions for taxi drivers (majority of the population uses taxis) (these are part of the preplanned measures for the government preparedness response to outbreak)
- **Gaps:** Taxi driver instructions are not compulsory and no tracking and monitoring system for compliance developed

Lifting the restriction



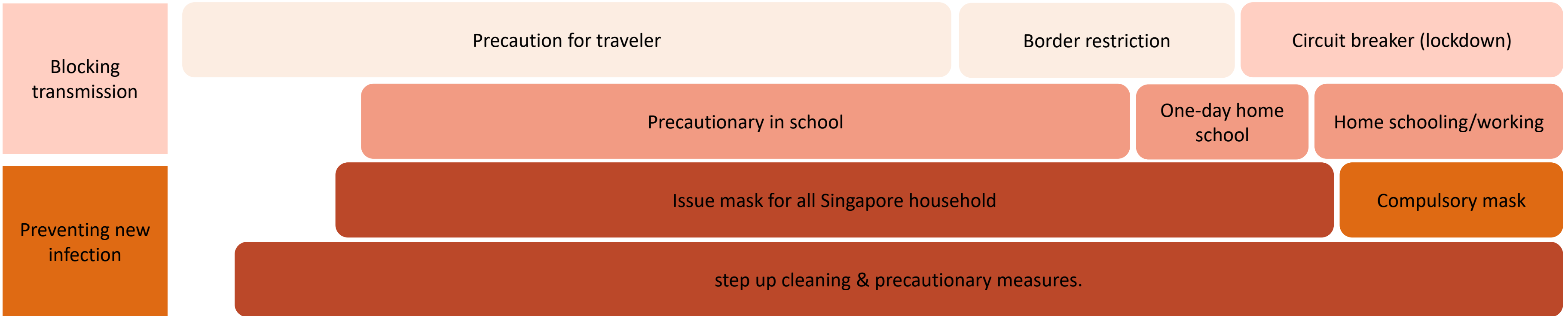
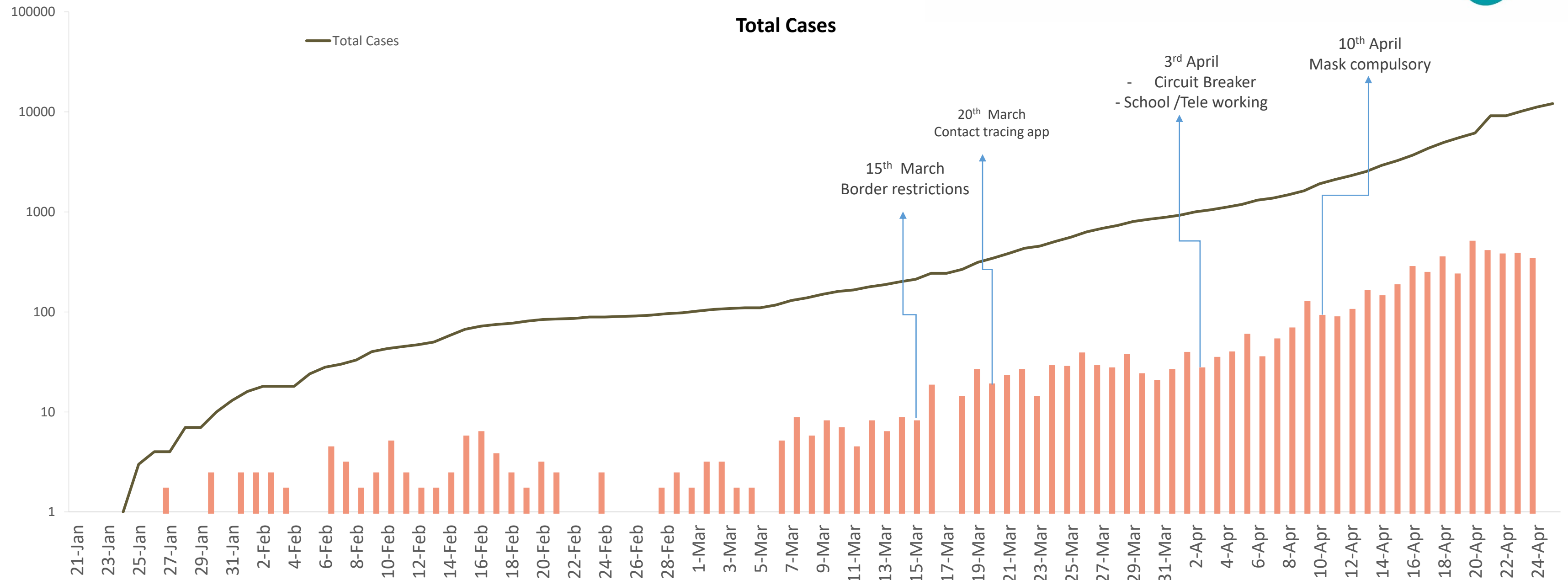
- Government do not rely on modeling studies to determine lifting of the restriction alone (as it is based more on assumptions) .
- working with universities on the modeling studies.
- Extend date of restrictions (called circuit breaker) planned 4th of May then 1st of June 2020

Acknowledgement: Dr Hishamuddin Badaruddin BMBS MPH FAMS, Previous Deputy Director (Integrated Operations), Ministry of Health Singapore; Director(Healthcare), Deloitte Consulting South East Asia

COUNTRY Profile Singapore (3/3)

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Public Health Response:



Article 1: COVID-19 cytokine storm: the interplay between inflammation and coagulation

Published: April 27, 2020 [the lancet](#)

Summary:

High response inflammatory **cytokines** and **factor Xa** in COVID-19 infection results in activation of coagulation pathways and an increased risk of vascular hyperpermeability, multiorgan failure, and eventually death. Therefore, **anticytokine therapies** or immunomodulators have been considered **but this must be balanced with maintaining an adequate inflammatory response for pathogen clearance.**

D-dimer concentration is an evidence of poor prognosis in severe COVID-19 pneumonia. Hence **Prophylactic dose low molecular weight heparin (LMWH) is recommended for hospitalised COVID-19 patients with significantly raised d-dimer** to prevent pulmonary thrombosis. but LMWH also has anti-inflammatory properties that might be beneficial in COVID-19.

Conclusion: The benefits of anticoagulants might outweigh the risk of bleeding in this pro-coagulant state, and reversal drugs for the anticoagulant effects now exist. Anti coagulants might be an attractive approach to reduce SARS-CoV-2 microthrombosis, lung injury, and associated poor outcomes

Treatment:



Article 2: Large-Vessel Stroke as a Presenting Feature of Covid-19 in the Young

Published: April 28, 2020, [NEJM](#)

Summary:

Five positive COVID19 cases presented to the ER department in New York with stroke symptoms. All of these patients are younger than 50 year old.

Two patients of these patient delayed calling an ambulance because they were concerned about going to a hospital during the pandemic.

Studies from china showed that the incidence of stroke among hospitalized patients with Covid-19 was approximately 5%; the youngest patient in that series was 55 years of age.

Table 1. Clinical Characteristics of Five Young Patients Presenting with Large-Vessel Stroke.*

Variable	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
Age—yr	33	37	39	44	49
Sex	Female	Male	Male	Male	Male
Medical history and risk factors for stroke†	None	None	Hyperlipidemia, hypertension	Undiagnosed diabetes	Mild stroke, diabetes
Medications	None	None	None	None	Aspirin (81 mg), atorvastatin (80 mg)
NIHSS score‡					
On admission	19	13	16	23	13
At 24 hr	17	11	4	19	11
At last follow-up	13 (on day 14)	5 (on day 10)	NA; intubated and sedated, with multiorgan failure	19 (on day 12)	7 (on day 4)
Outcome status	Discharged to rehabilitation facility	Discharged home	Intensive care unit	Stroke unit	Discharged to rehabilitation facility
Time to presentation—hr	28	16	8	2	8
Signs and symptoms of stroke	Hemiplegia on left side, facial droop, gaze preference, homonymous hemianopia, dysarthria, sensory deficit	Reduced level of consciousness, dysphasia, hemiplegia on right side, dysarthria, sensory deficit	Reduced level of consciousness, gaze preference to the right, left homonymous hemianopia, hemiplegia on left side, ataxia	Reduced level of consciousness, global dysphasia, hemiplegia on right side, gaze preference	Reduced level of consciousness, hemiplegia on left side, dysarthria, facial weakness
Vascular territory	Right internal carotid artery	Left middle cerebral artery	Right posterior cerebral artery	Left middle cerebral artery	Right middle cerebral artery
Imaging for diagnosis	CT, CTA, CTP, MRI	CT, CTA, MRI	CT, CTA, CTP, MRI	CT, CTA, MRI	CT, CTA, CTP
Treatment for stroke	Apixaban (5 mg twice daily)	Clot retrieval, apixaban (5 mg twice daily)	Clot retrieval, aspirin (81 mg daily)	Intravenous t-PA, clot retrieval, hemicraniectomy, aspirin (81 mg daily)	Clot retrieval, stent, aspirin (325 mg daily), clopidogrel (75 mg daily)
Covid-19 symptoms	Cough, headache, chills	No symptoms; recently exposed to family member with PCR-positive Covid-19	None	Lethargy	Fever, cough, lethargy