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HEALTH CENTRE

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# Scientific Research Monitoring on COVID-19

2 May 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:** Bill Gates writing in NEJM about how governments shall prevent pandemic from happening again.
- **Clinical Feature and transmission:** a study in homeless shelter recommends that if there is a symptomatic individual with COVID-19 in a sheltered homeless residence then all asymptomatic residents should be offered PCR testing.
- **Public Health Response:** a study measuring the impact of lockdown in one Italian city.
- **Clinical Feature:** Study showed younger individuals admitted to hospital ICU for COVID19 were more likely to be obese

*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

- [COVID-19: remaking the social contract](#)
- [The Potential Effects of Coronavirus on National Health Expenditures](#)
- [COVID-19 Reveals Urgent Need to Strengthen the World Health Organization](#)





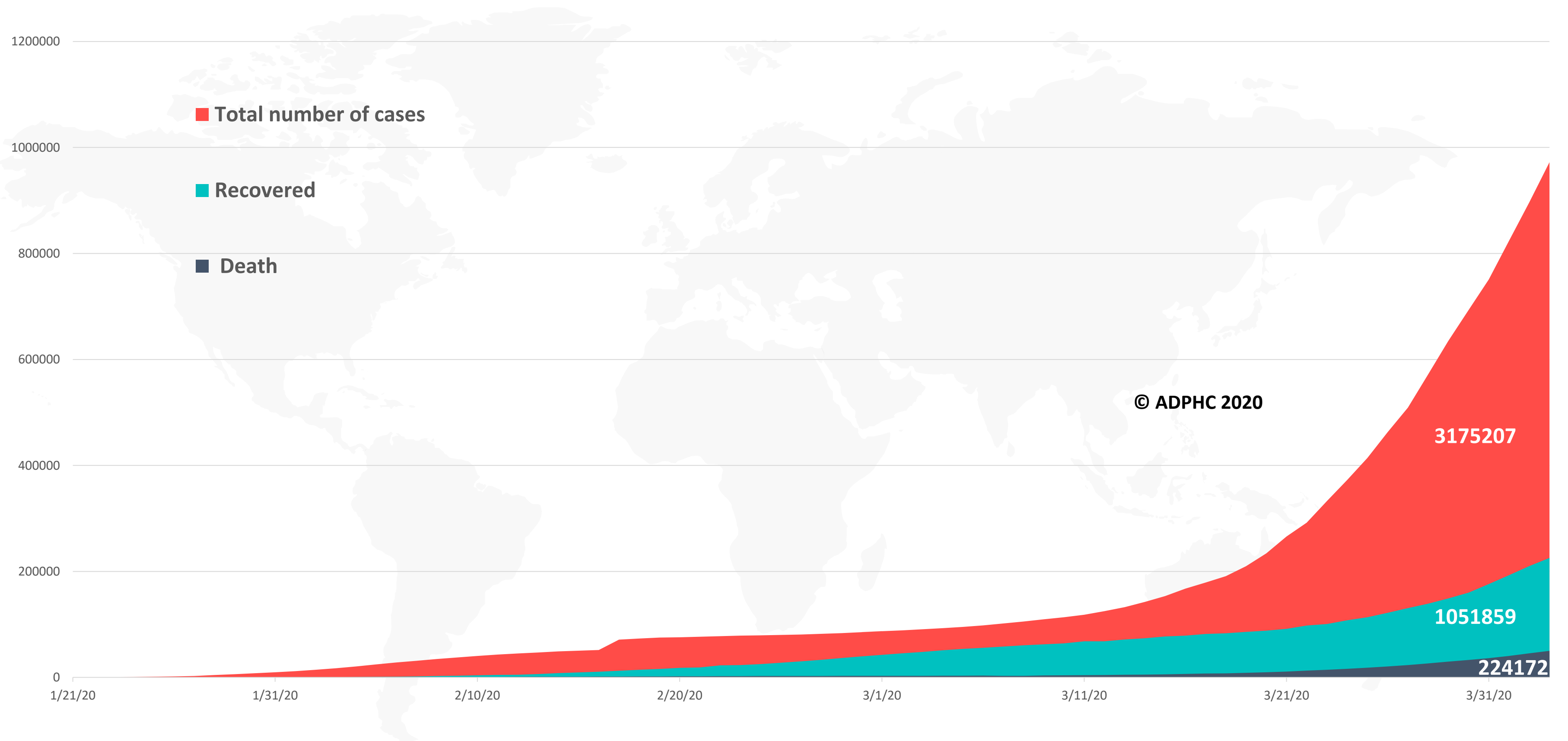
## WHO daily report 1 May 2020

- Two new Member States (Comoros and Tajikistan) reported cases of COVID-19 in the past 24 hours.
- The **third meeting of the Emergency Committee** was convened by the WHO Director-General under the International Health Regulations (2005) (IHR) regarding COVID-19.
- The WHO Regional Director for Europe, Dr. Hans Henri P. Kluge mentioned that “**we will defeat COVID-19 by disseminating knowledge in all transparency, by personalized support in the field and by unfailing solidarity**”. In another statement, he emphasized that “**we cannot allow the impact of COVID-19 to be amplified by neglecting other vital health protection measures**”.
- The WHO Regional Office for the Americas urged health authorities to **take specific steps to protect health care workers and communities during essential immunization activities** throughout the COVID-19 pandemic.
- WHO **virtually convened vaccine manufacturers and national regulatory authorities from its South-East Asia Region** to discuss COVID-19 vaccines.
- WHO’s work to ensure that shipping and seafarers can continue to deliver vital goods, including medical supplies and food during the COVID-19 pandemic.
  - The three organizations strongly encourage governments to facilitate ship movements, including docking, crew changes, ship inspection and the issuance of Ship Sanitation Certificates (SSCs) during the COVID-19 pandemic.

# Epidemiology



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

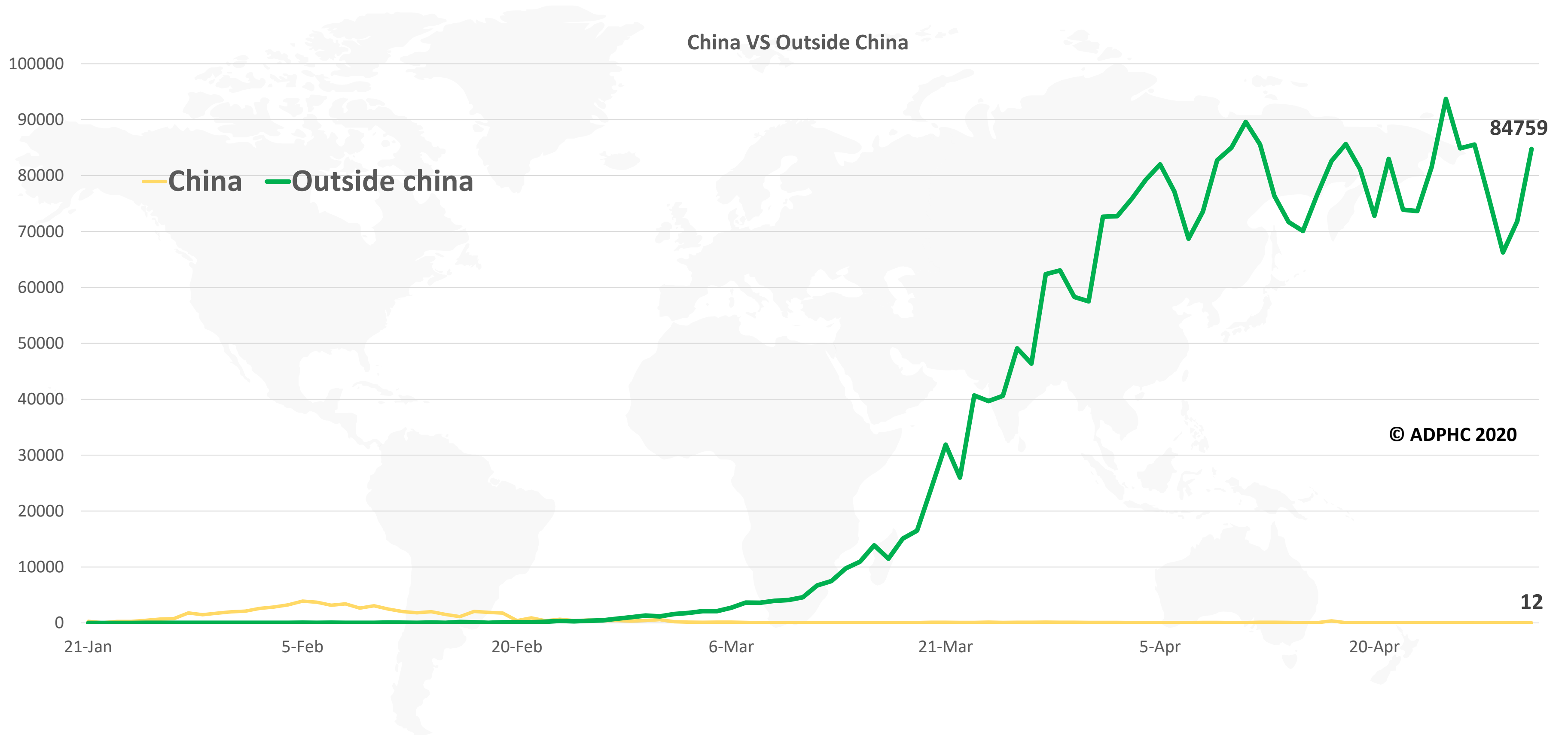


Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 2: Daily new infected COVID-19 cases reported between (January 21 to May 1<sup>st</sup>, 2020).



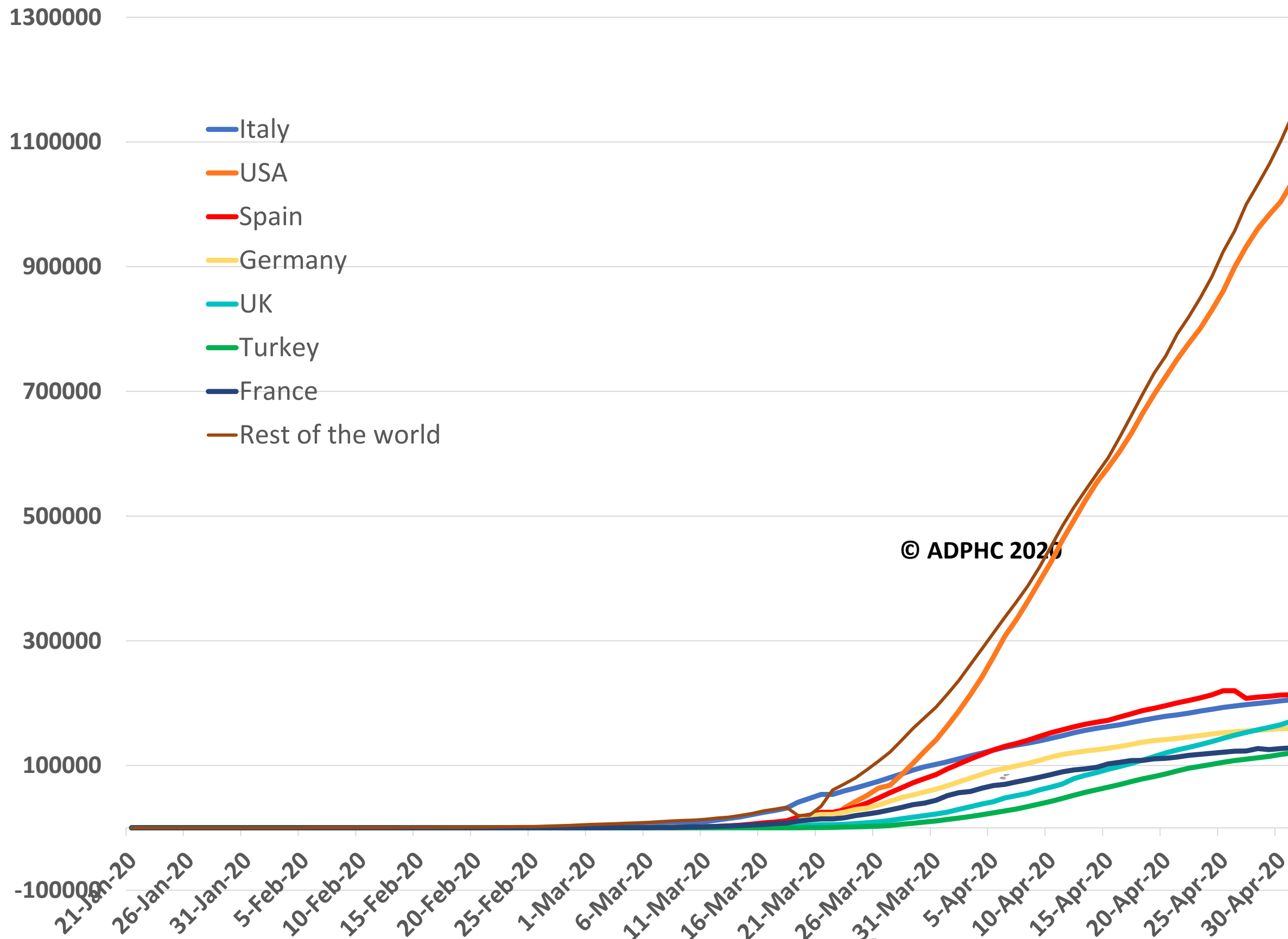
Line graph published by Abu Dhabi Public Health Center 2020.

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

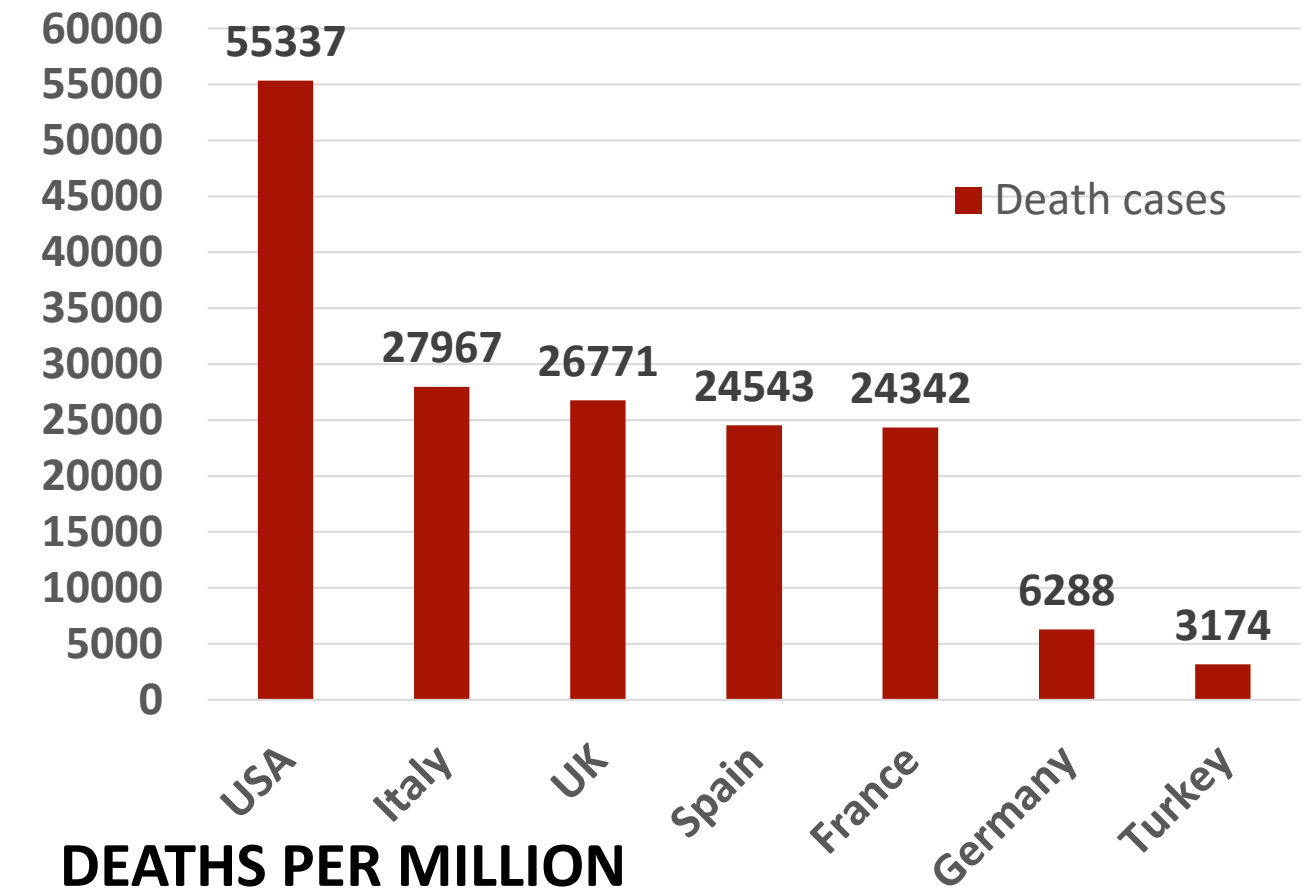
# Epidemiology



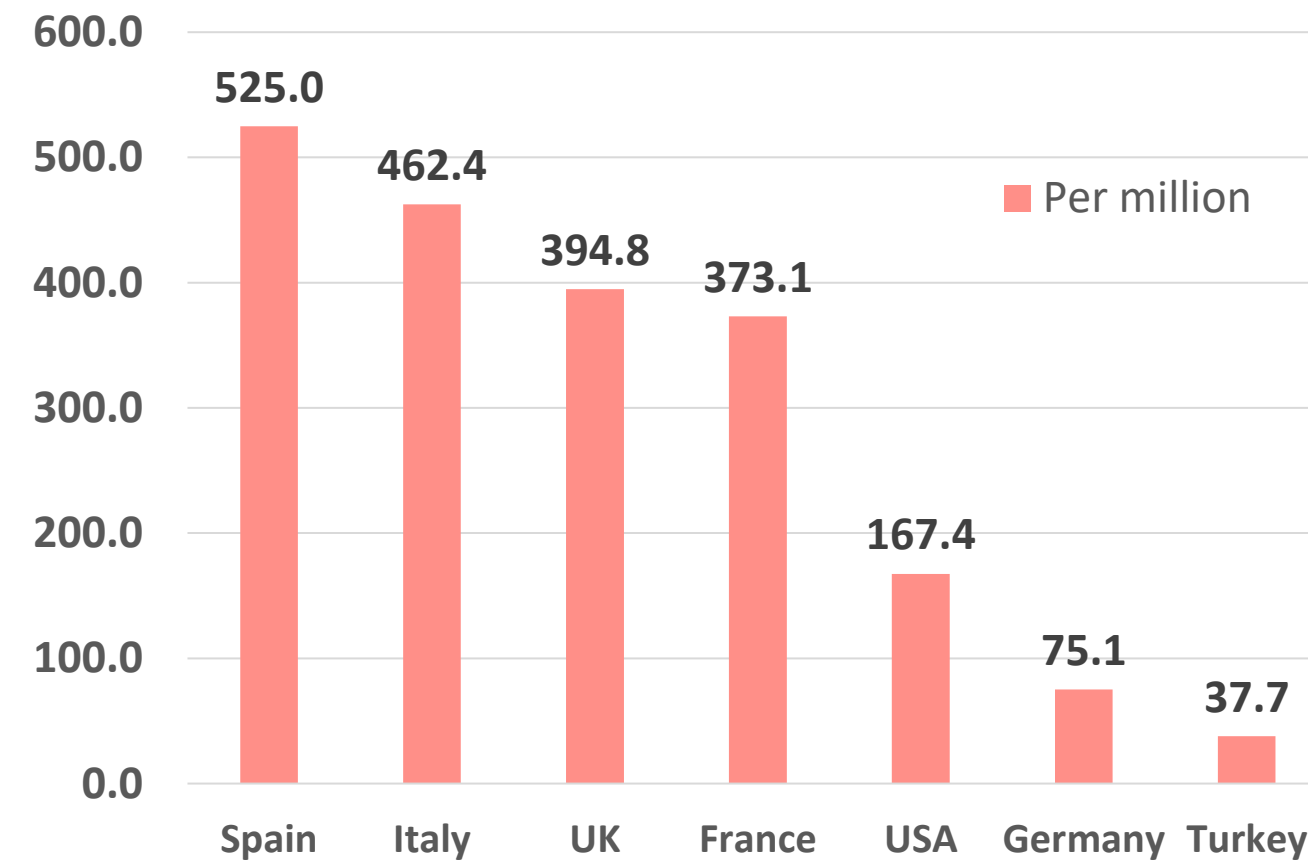
Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to May 1<sup>st</sup>, 2020).



## TOTAL DEATHS



## DEATHS PER MILLION



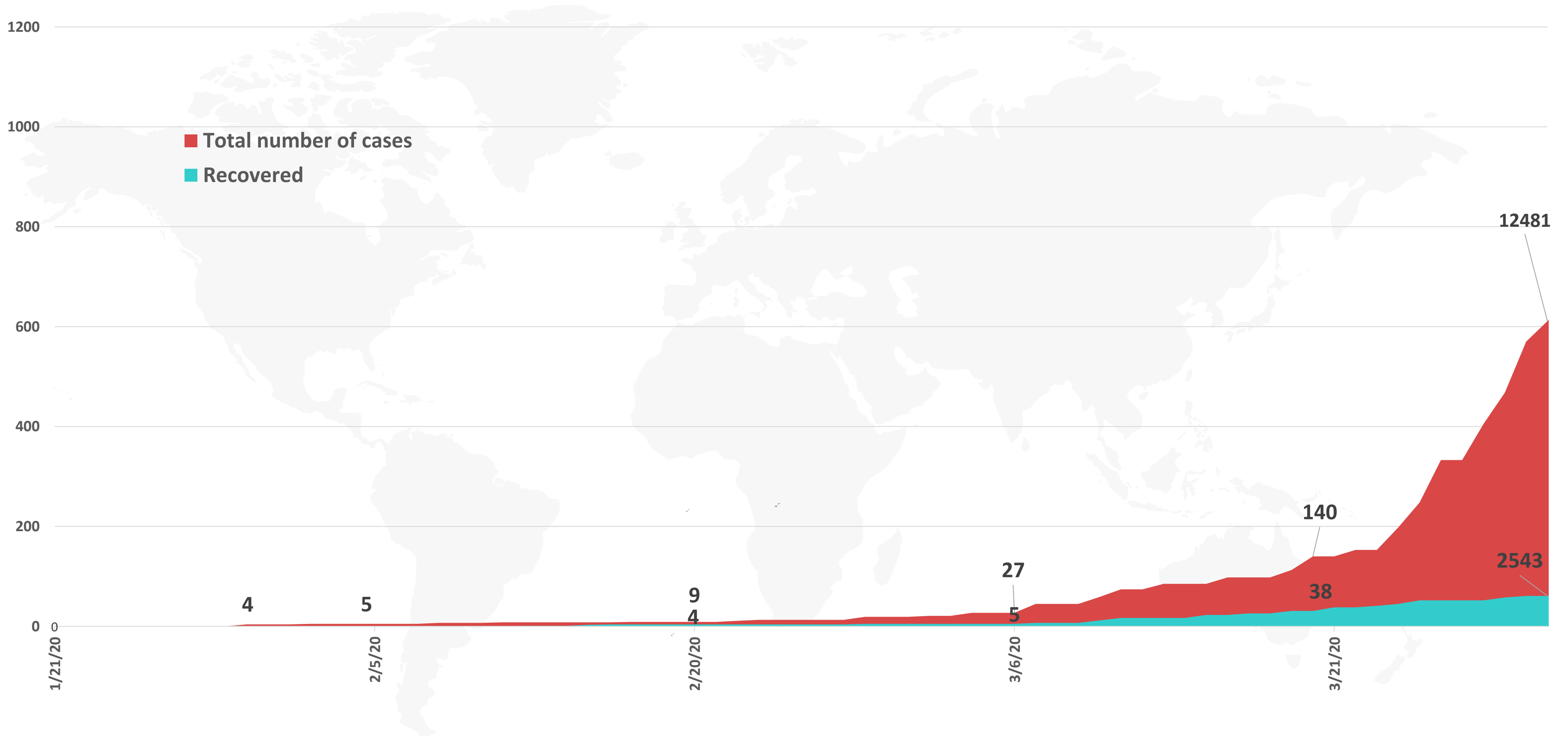
Line graph published by Abu Dhabi Public Health Center 2020.

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





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



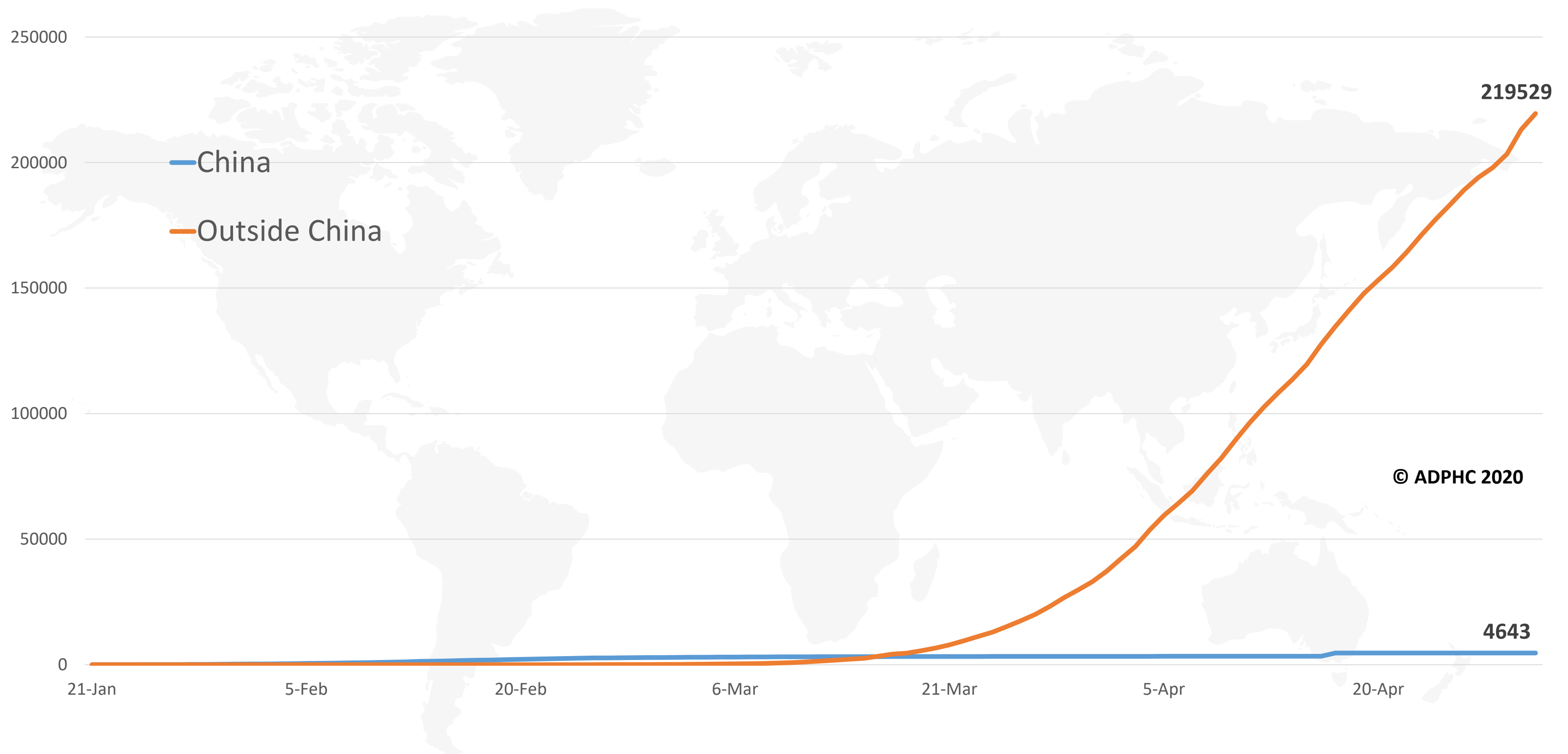
Line graph published by Abu Dhabi Public Health Center 2020.

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 May 1<sup>st</sup>, 2020).**

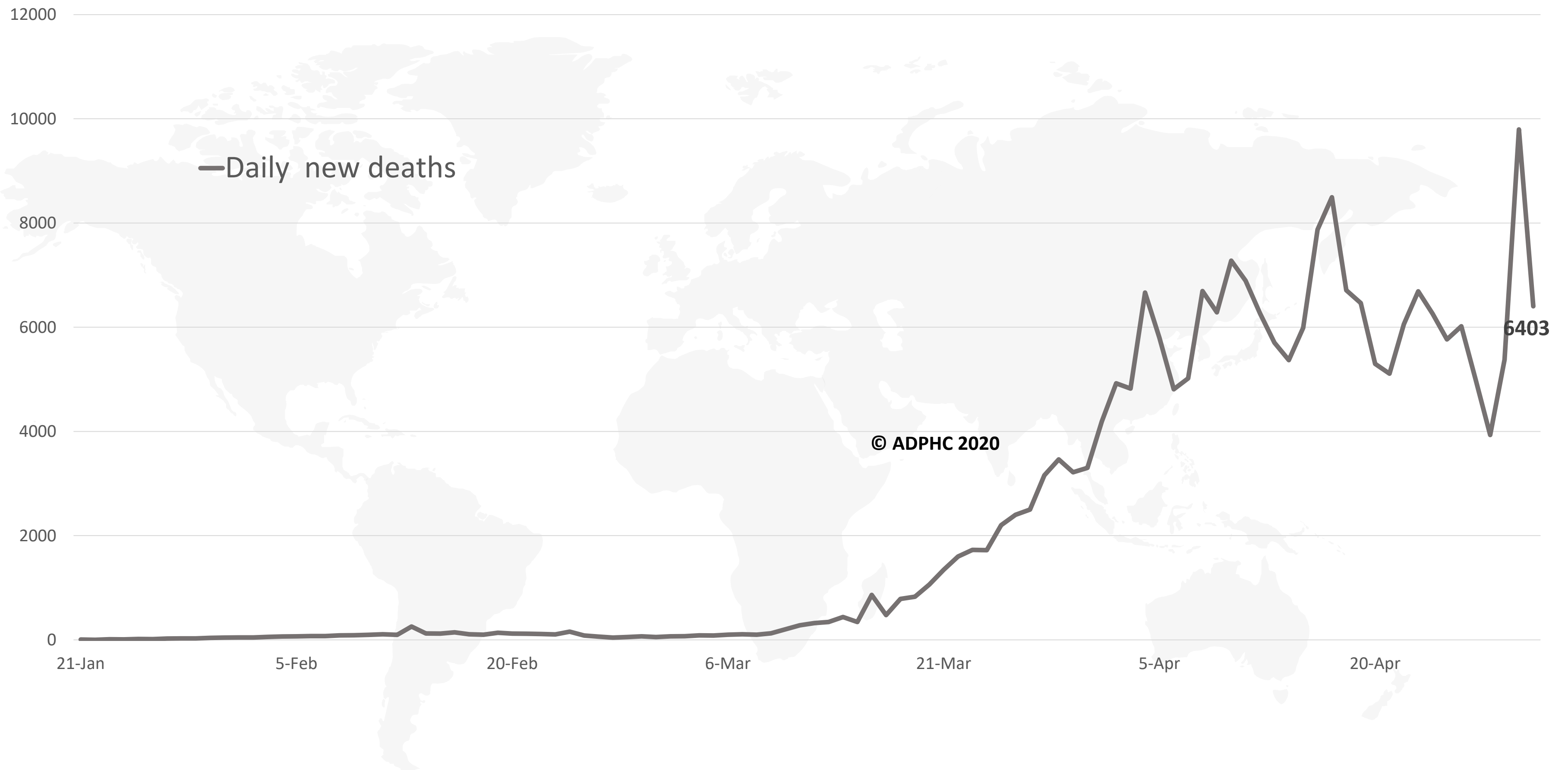


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)



**Figure 6: Global daily new deaths due to COVID-19 (January 22 to May 1<sup>st</sup>, 2020).**



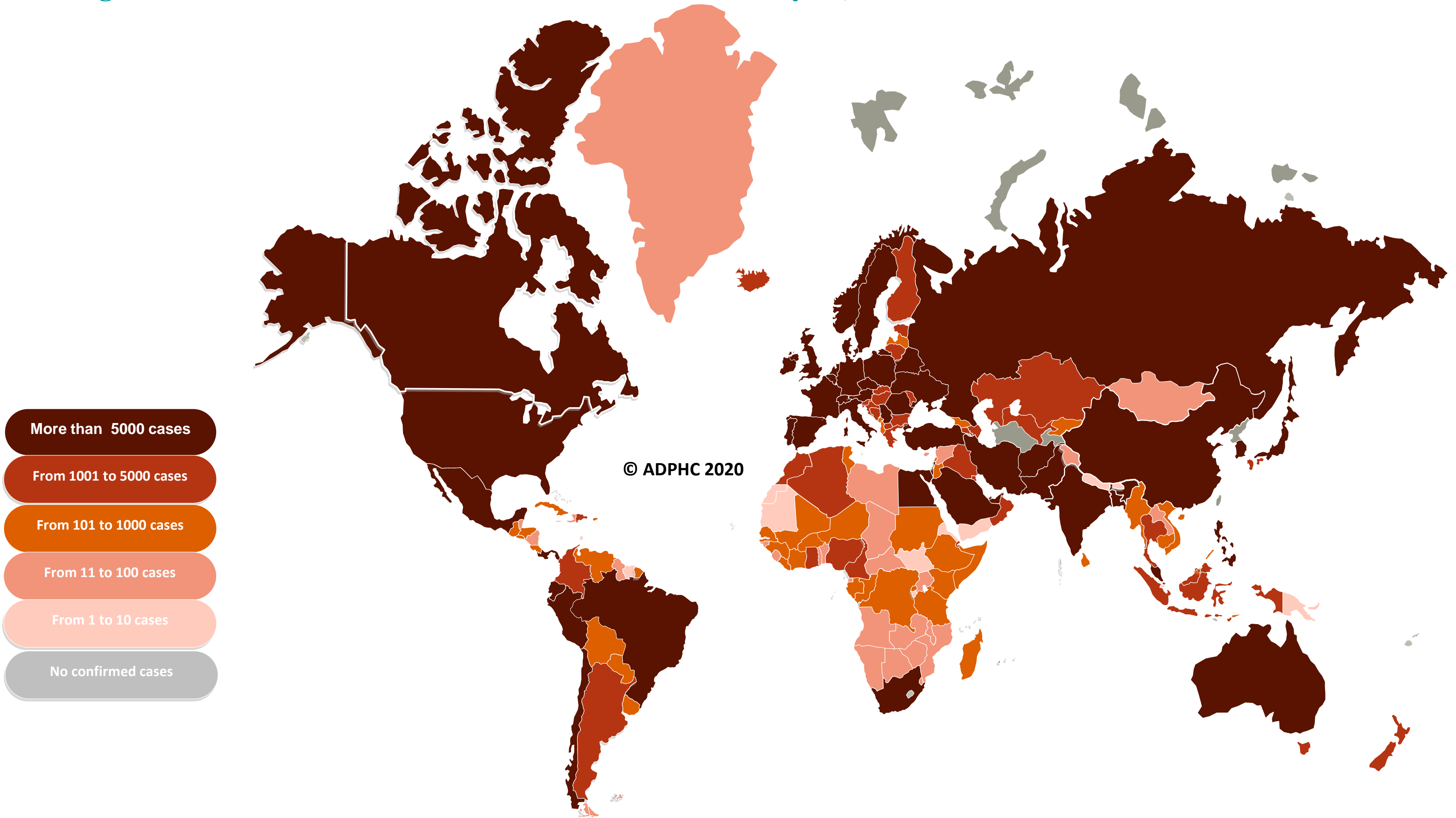
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)

# Epidemiology



Figure 7a : Global distribution of COVID-19 cases (May 1<sup>st</sup>, 2020).



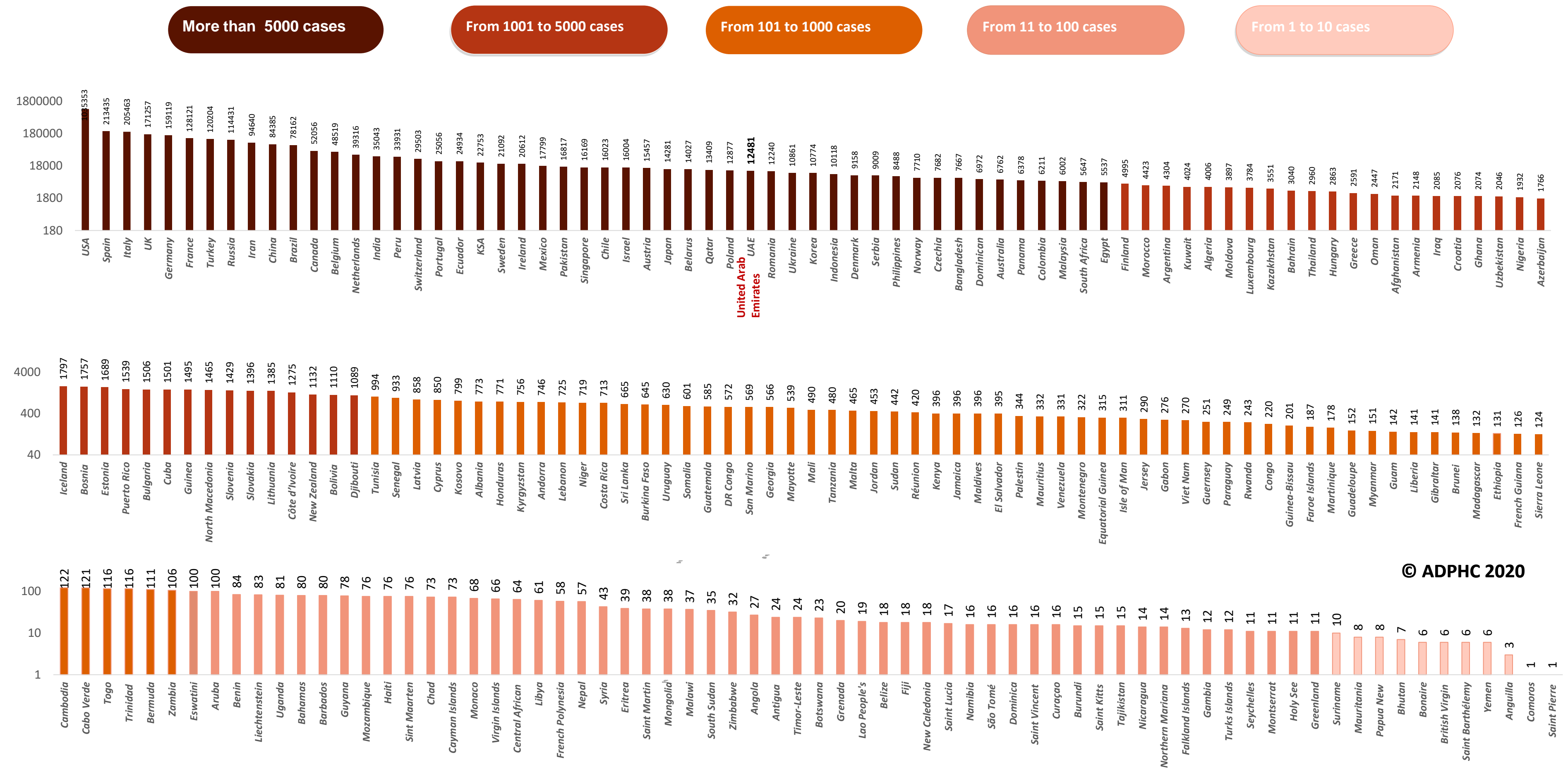
Map chart published by Abu Dhabi Public Health Center 2020.



# Epidemiology



Figure 7B: Bar chart illustrate the global distribution of COVID19 cases May 1<sup>st</sup>, 2020)



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Map chart published by Abu Dhabi Public Health Center 2020.

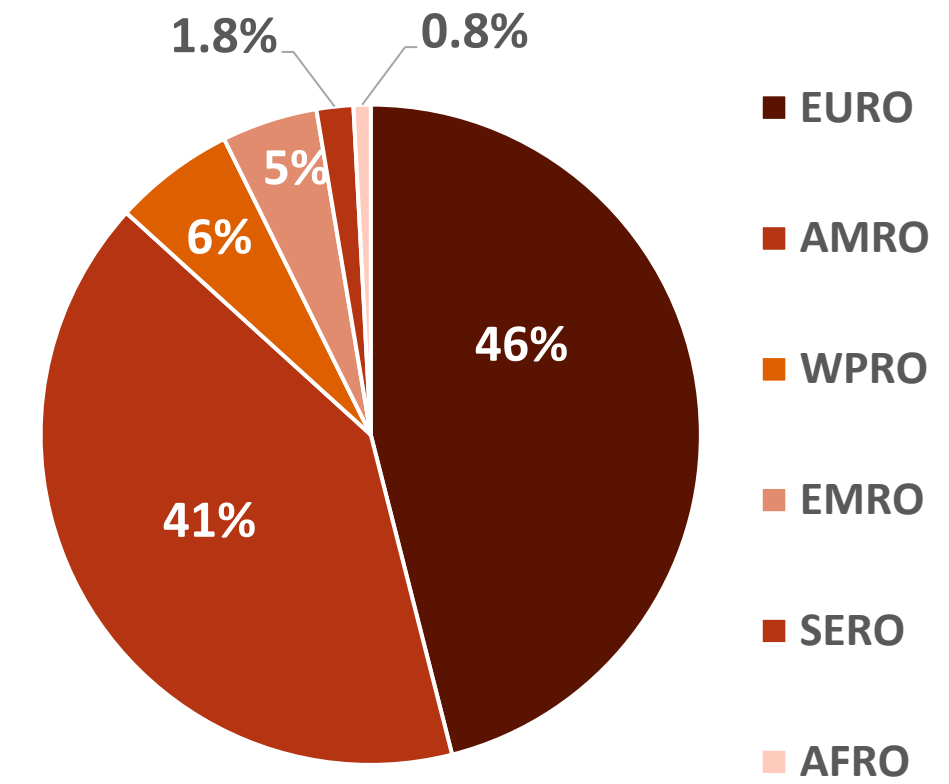
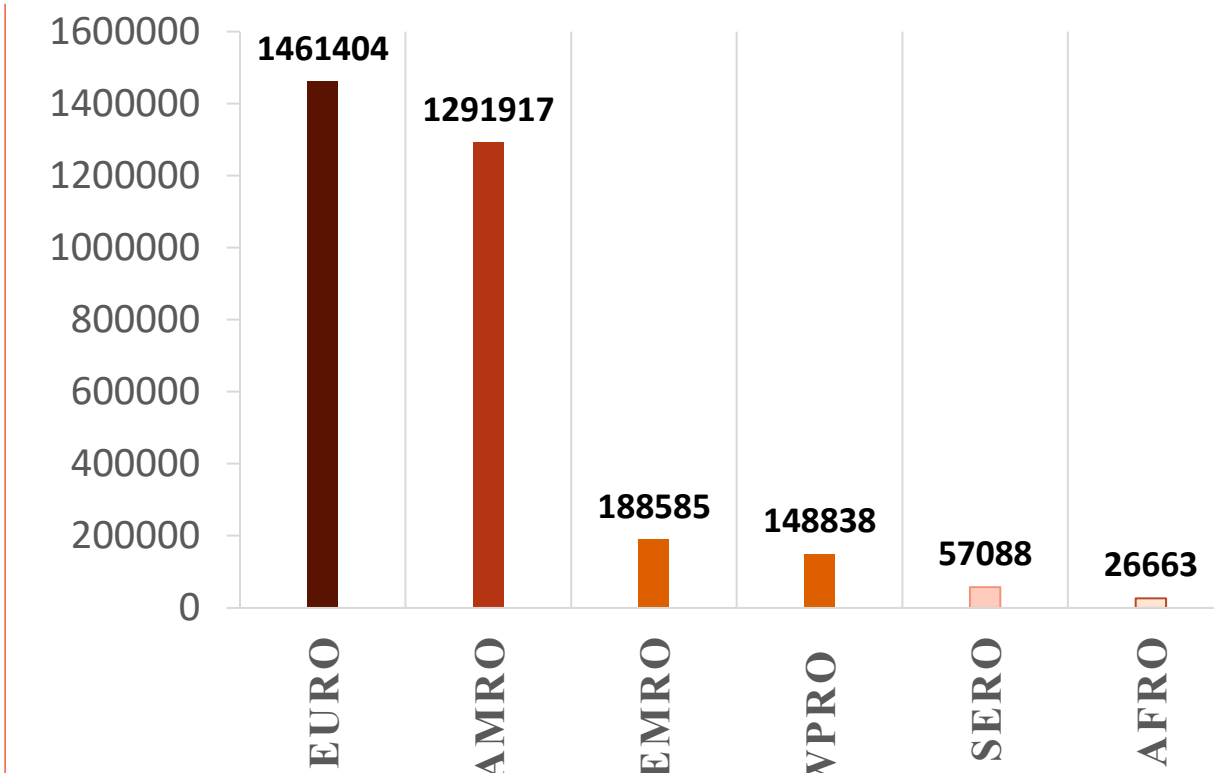
Data resources: [WHO](https://www.who.int/)





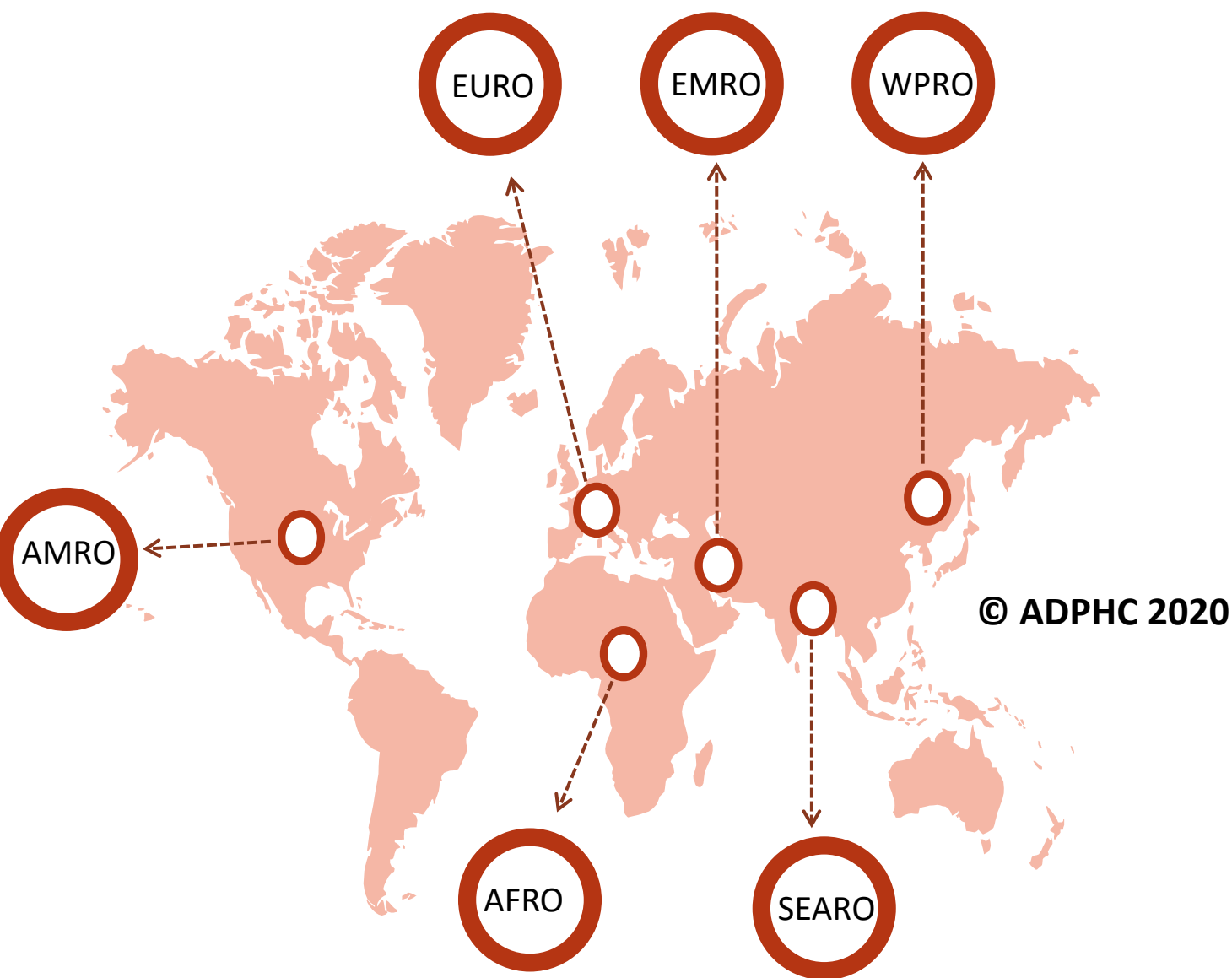
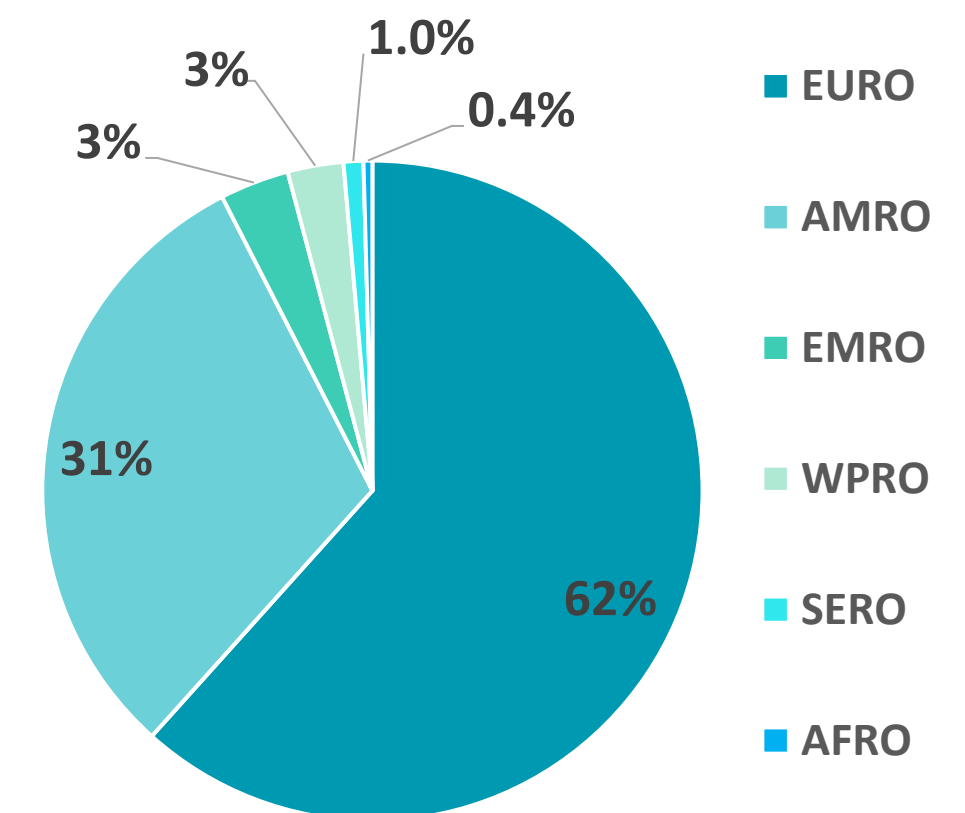
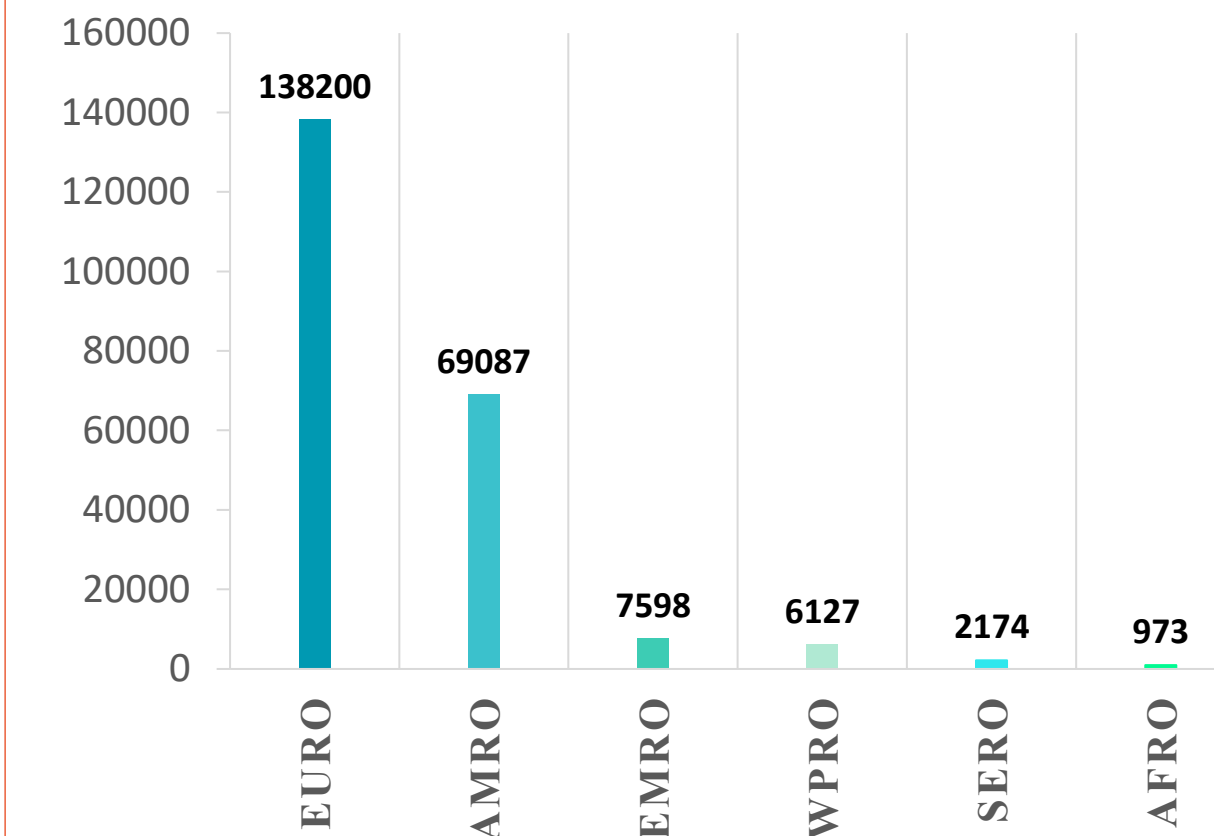
Figure 8: illustrate the Global distribution of COVID19 cases per region (May 1<sup>st</sup>, 2020)

## INFECTED



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## DEATH



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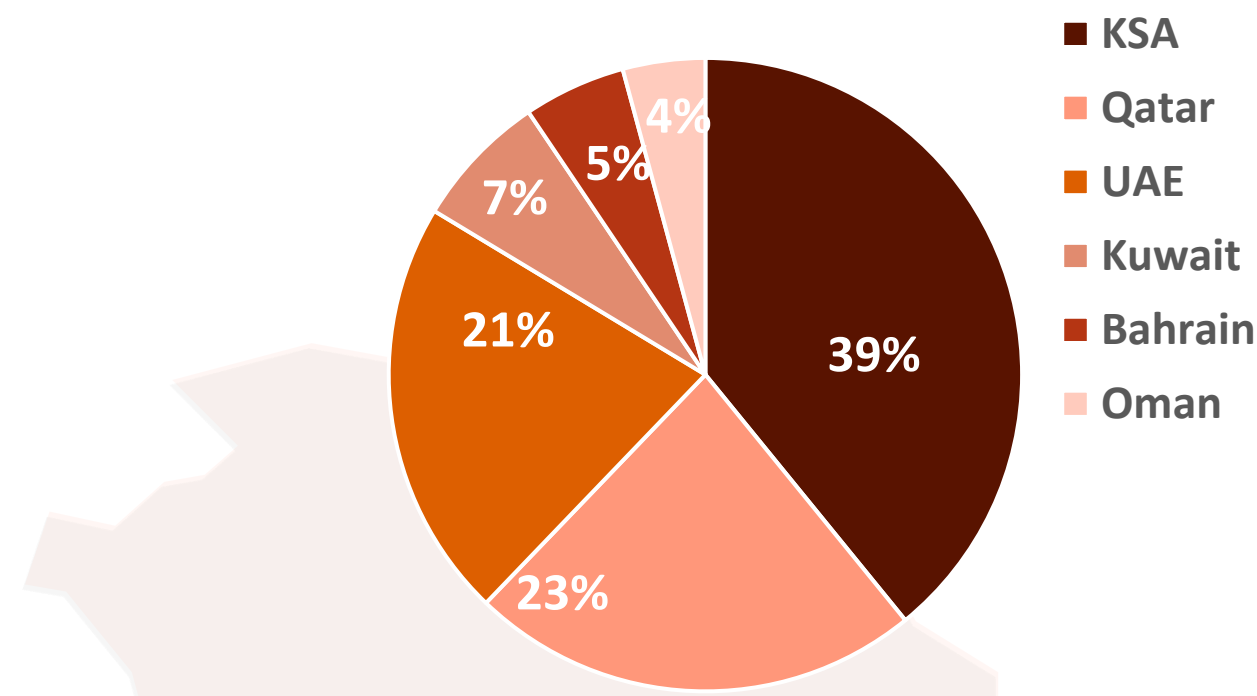
Map chart published by Abu Dhabi Public Health Center 2020.

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

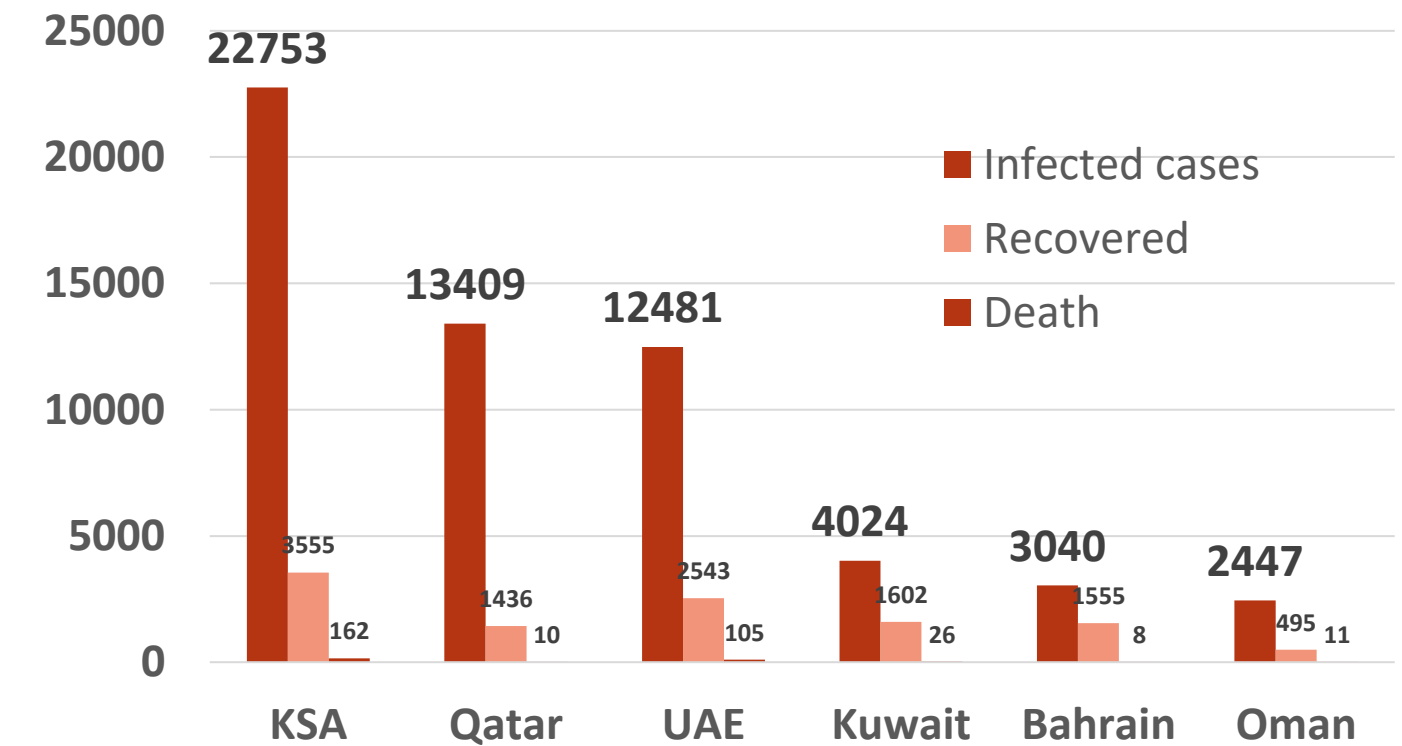


**Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (May 1<sup>st</sup>, 2020)**

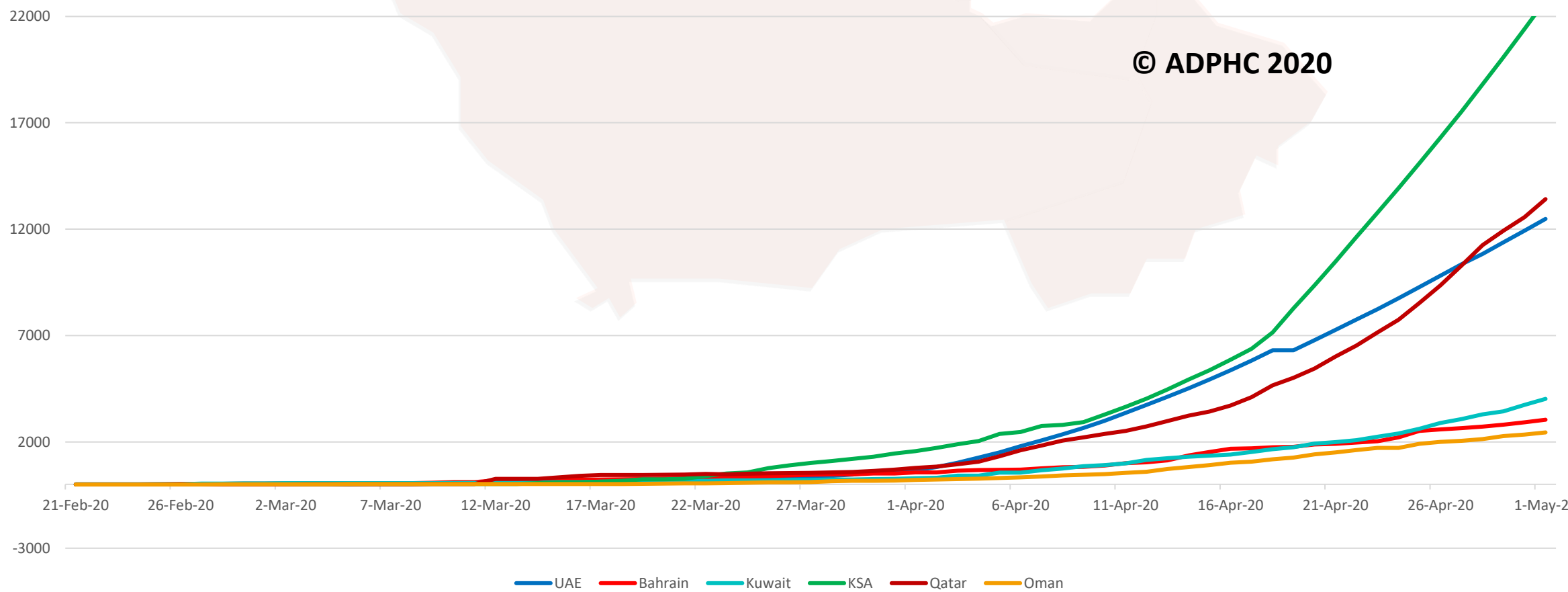
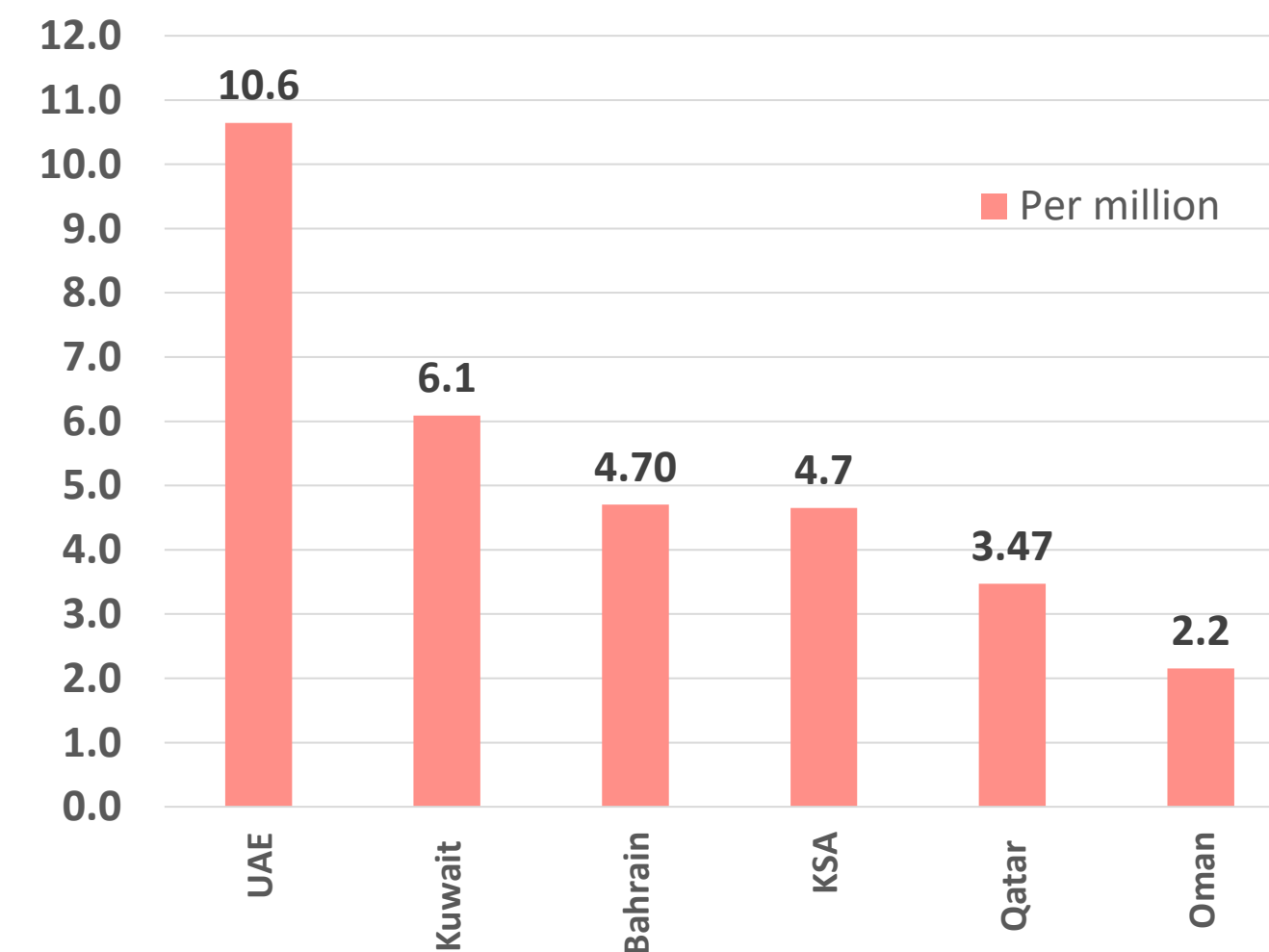
## TOTAL NUMBER OF INFECTED CASES



## 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 : Suppression of COVID-19 outbreak in the municipality of Vo', Italy**  
**Published: : April 18 2020 [Medrxiv](#)**

Summarized by subject matter experts

## Summary:

- After the first COVID-19 death recorded in 21<sup>st</sup> of Feb 2020 in the municipality of Vo', Italy, the authorities **imposed the lockdown of the whole municipality for 14 days** (Figure 1).
- **Two population-based surveys** collected nasopharyngeal swabs for COVID-19 testing were carried out.
- The first survey was **carried out just around the time the town lockdown started. 2.6% (95% CI 2.1-3.3%)** of the collected swabs from 85.9% of the of the population of Vo' were **COVID-19 positive** (Figure 2).
- The second survey was **carried out at end of the lockdown, after 14 days. 1.2% (95% CI 0.8-1.8%)** of the collected swabs from 71.5% of the population of Vo' were **COVID-19 positive** (Figure 2).
- **43.2% (95% CI 32.2-54.7%)** of the confirmed COVID-19 infections detected across the two surveys were **asymptomatic** (Figure 3).
- The weekly effective **reproduction number dropped by 89-99% from 3.0 (95% CI 2.5-3.5) to 0.14 (95% CI 0.0-0.29)** by the end of the lockdown (Table 1).

## Conclusions

- The **combined interventions** implemented in Vo' **effectively suppressed the transmission of COVID-19** with unprecedented efficacy and **demonstrate that COVID-19 suppression in similar epidemiological and demographic settings can be achieved.**
- **Enhanced surveillance and the early detection** of COVID-19 transmission in places that have not yet been affected by the virus **are key to control** its spread and reduce the substantial public health, economic and societal burden posed by COVID-19 worldwide.

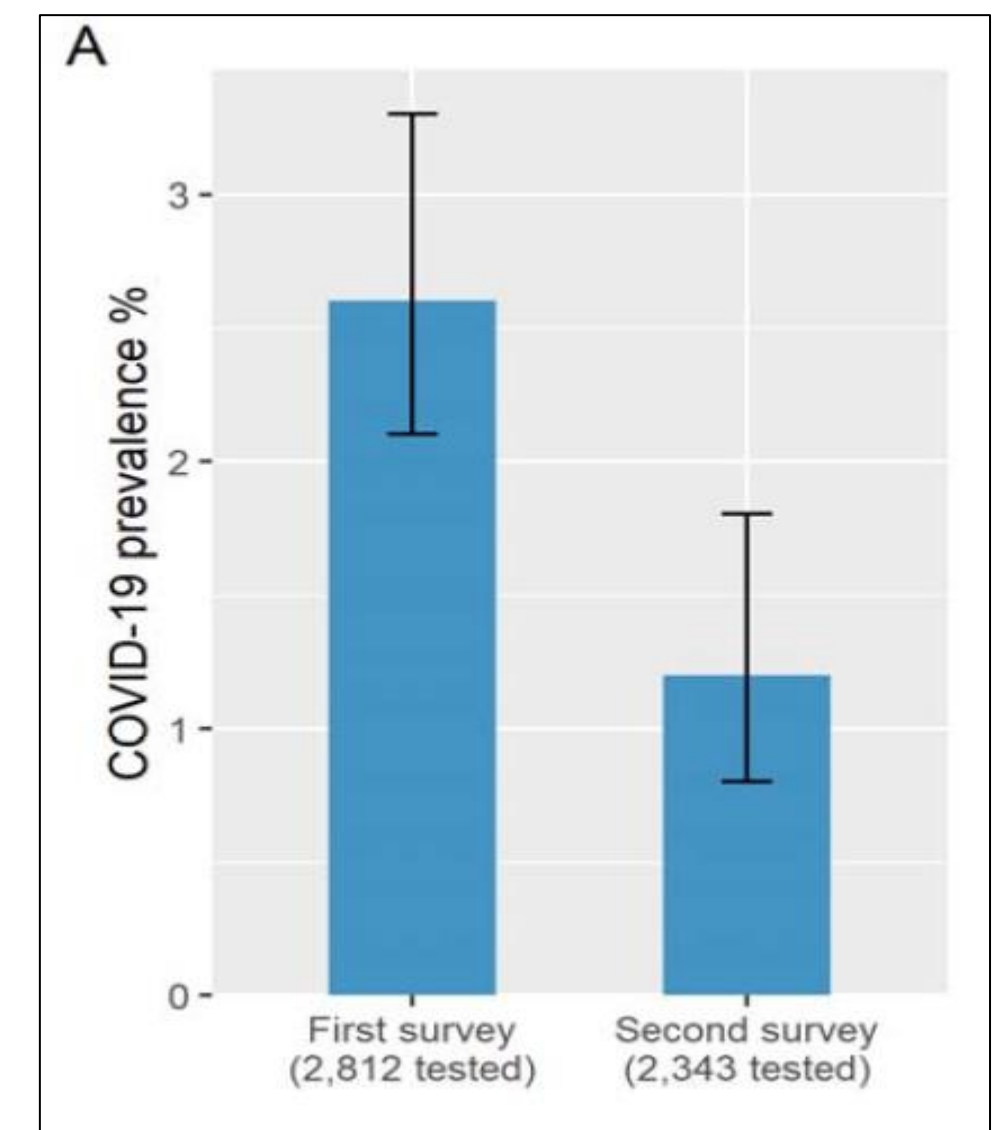


Figure 2: Prevalence of COVID-19 infection at the first and second survey.



# Public health response



## Article 2 : Prevalence of SARS-CoV-2 infection in Residents of a Large Homeless Shelter in Boston: a Research Letter

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

Summarized by subject matter experts

### Summary:

- Homelessness poses multiple challenge that can exacerbate and amplify the spread of COVID-19. Homeless shelters are often crowded, making social distancing difficult. Many persons experiencing homelessness are older or have underlying medical conditions, placing them at higher risk for severe COVID-19.
- This is a research letter on a cross-sectional study done between March 28, 2020 and April 1, 2020 in the Boston Health Care for the Homeless Program (BHCHP). Prior to this study all staff and residents were screened for respiratory symptoms at the shelter front doors and symptomatic individuals were referred for isolation and further investigations. A cluster of cases of COVID-19 was suspected few days earlier.
- All individuals residing in the shelter (N=408) underwent symptom assessment and SARS-CoV-2 PCR testing. Participants were asked about their age, sex, race, ethnicity and history of cough & shortness of breath. They were also given the option to report other symptoms. Body temperature was measured and nasopharyngeal specimens collected. There were no known refusals.
- 147 participants (36%) were PCR positive for SARS-CoV-2 and off these 87.8% were asymptomatic; from the remaining the symptoms reported were cough (7.5%), shortness of breath (1.4%), and fever (0.7%). Results are reported in the Table below.
- Study has few limitations such as type of study and several symptomatic individuals were excluded through previous symptom screening or self-referral to outside care.
- It is recommended that if there is a symptomatic individual with COVID-19 in a sheltered homeless residence then all asymptomatic residents should be offered PCR testing.

# Public health response



## Article 2 : Cont.,

### Summary:

Table. Characteristics of Participants in a Study of the Prevalence of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection in a Homeless Shelter in Boston

Characteristic	No. (%)		
	All participants (N = 408)	Positive SARS-CoV-2 PCR test result (n = 147)	Negative SARS-CoV-2 PCR test result (n = 261)
<b>Demographic</b>			
Age, mean (SD), y	51.6 (12.8)	53.1 (12.8)	50.8 (12.7)
Age group, y			
18-34	44 (10.8)	11 (7.5)	33 (12.6)
35-49	119 (29.2)	40 (27.2)	79 (30.3)
≥50	245 (60.1)	96 (65.3)	149 (57.1)
<b>Sex</b>			
Men	292 (71.6)	124 (84.4)	168 (64.4)
Women	115 (28.2)	22 (15.0)	93 (35.6)
Other	1 (0.3)	1 (0.7)	0
<b>Race<sup>a</sup></b>			
White	184 (46.5)	68 (47.2)	116 (46.0)
Black/African American	131 (33.1)	46 (31.9)	85 (33.7)
Asian	8 (2.0)	4 (2.8)	4 (1.6)
American Indian/Alaskan Native	4 (1.0)	2 (1.4)	2 (0.8)
Other	58 (14.7)	21 (14.6)	37 (14.7)
Multiple	11 (2.8)	3 (2.1)	8 (3.2)
Hispanic/Latino <sup>a</sup>	71 (18.6)	22 (16.1)	49 (20.0)
<b>Clinical</b>			
Body temperature ≥100 °F (37.8 °C)	4 (1.0)	1 (0.7)	3 (1.2)
<b>Symptoms</b>			
Any	47 (11.5)	18 (12.2)	29 (11.1)
Cough	33 (8.1)	11 (7.5)	22 (8.4)
Shortness of breath	3 (0.7)	2 (1.4)	1 (0.4)
Other	24 (5.9)	10 (6.8)	14 (5.4)
Nasal/sinus symptoms	6 (1.5)	2 (1.4)	4 (1.5)
Diarrhea	5 (1.2)	2 (1.4)	3 (1.2)
Subjective fever/chills	4 (1.0)	3 (2.0)	1 (0.4)
Miscellaneous	9 (2.2)	3 (2.0)	6 (2.3)



# Public health response



## Article 3 : Responding to Covid-19 - A Once-in-a-Century Pandemic?

Published: April 30, 2020 in [NEJM](#)

Author: Bill Gates

### Summary:

- Scientists have already developed several promising vaccine candidates for clinical trials. Some of the vaccine could be ready for large scale trials if they prove effective and safe in animal. Drug discovery can also be accelerated by drawing on libraries of compounds that have been tested for safety and by applying new screening techniques to identify antivirals that could be ready for large-scale trials.
- When a health clinic is built, it is necessary to create part of the infrastructure for combating epidemics. Trained health care professionals (HCPs) not only deliver vaccines but also monitor disease patterns, serving as part of the early warning systems that alert for potential outbreaks. **Governments should have access to lists of trained HCPs who are prepared to deal with an epidemic immediately as well as lists of supplies to be stockpiled or redirected in an emergency.**
- **A new system** needs to be established that can **develop effective and safe vaccines and antivirals, get them approved, and deliver after the discovery of a fast moving pathogen. Platforms** need to be developed that are predictably safe, so regulatory reviews can happen quickly, and that make it easy for manufacturers to produce doses at low cost on a massive scale.
- Governments and other donors funding are needed to support manufacturing facilities that can generate a quick supply of vaccine and antivirals. There will be an agreement between government and industries that vaccines and antivirals cannot be sold to the highest bidder during a pandemic. These medications should be available for people who are in greatest need and at the outbreak. Such distribution is the appropriate strategy for preventing future pandemics.

# Clinical Features



## Article 4 : Obesity could shift severe COVID-19 disease to younger ages

Published: April 30 , 2020 in [The lancet](#)

### Summary:

- This study which was done in the US considered obesity as an underappreciated risk factor for severe COVID-19.
- Researchers examined the correlation between body-mass index (BMI) and age in patients with COVID-19 admitted to ICU at university hospitals at Johns Hopkins, University of Cincinnati, New York University, University of Washington, Florida Health, and University of Pennsylvania

### Findings :

- In the dataset of 265 patients (58% male patients), they found a significant inverse correlation between age and BMI, in **which younger individuals admitted to hospital were more likely to be obese.**
- There was no difference by sex ( $p=0.9$ ).
- The median BMI was  $29.3 \text{ kg/m}^2$ , with only 25% of individuals having a BMI of less than  $26 \text{ kg/m}^2$ , and 25% exceeding a BMI of  $34.7 \text{ kg/m}^2$ .

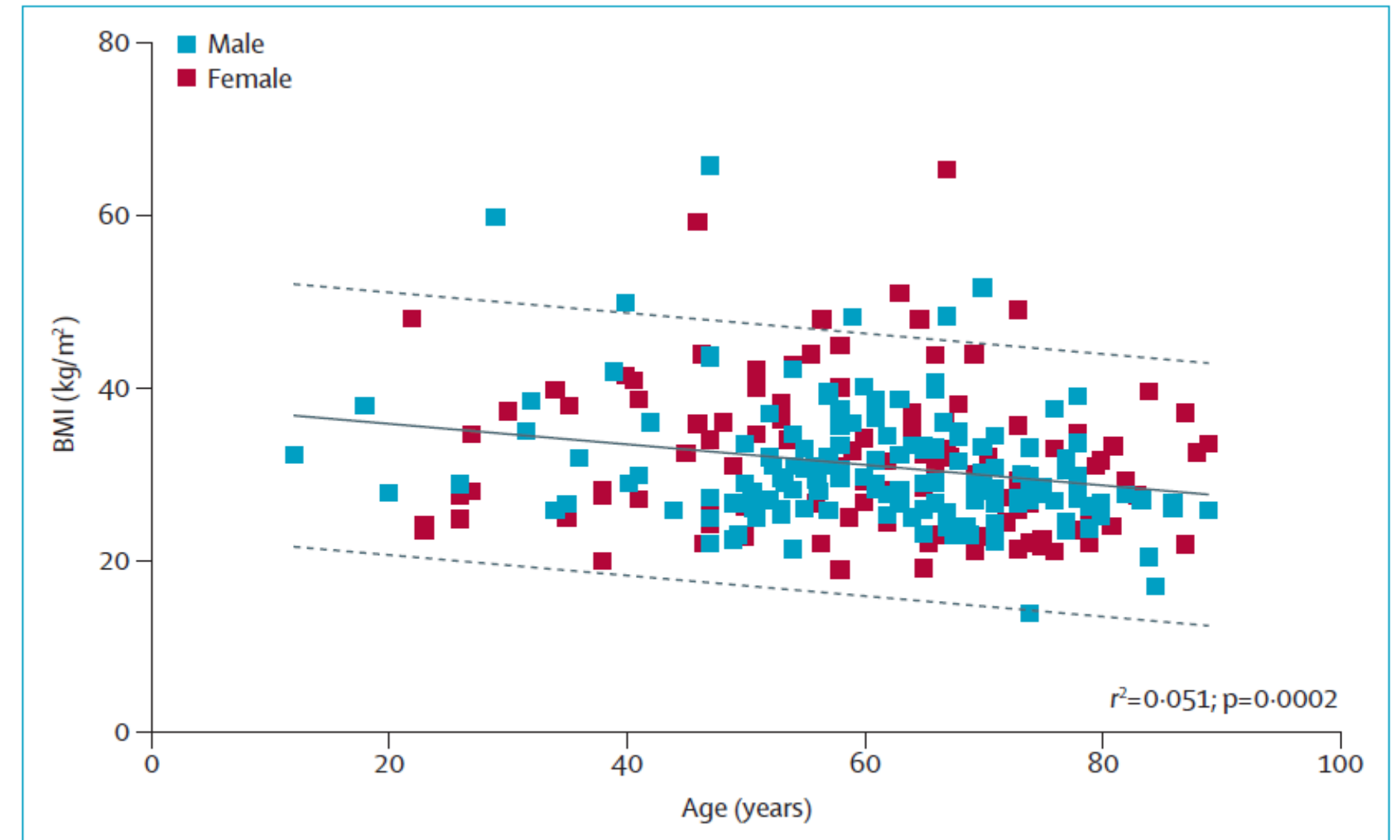


Figure: Negative correlation between BMI and age in 265 patients with coronavirus disease 2019 in intensive care units in the USA

- The study conclude that in populations with a high prevalence of obesity, COVID-19 will affect younger populations more than previously publicly reported.
- the prevalence of obesity in the US is around 40%, versus a prevalence of 6.2% in China, 20% in Italy, and 24% in Spain therefore with higher prevalence of obesity shall have low threshold for recognizing obesity as risk factor for severe COVID19