

ABU DHABI PUBLIC  
HEALTH CENTRE

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# Scientific Research Monitoring on COVID-19

03 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

- **Clinical transmission:** article discusses the viral shedding observed by Nebreska institute.
- **Clinical transmission:** review on loss of smell as a symptom in COVID19 infected patient
- **Treatment:** preliminary study in china trial on Hydroxychloroquine showed no improvement compared to control group

*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.  
Listed articles may represent information that has been previously shared in the report and/or may target specific technical audience.*

## Others

[Estimates of the severity of coronavirus disease 2019: a model-based analysis](#)

[Universal Masking in Hospitals in the Covid-19 Era](#)

[Harnessing Our Humanity — How Washington's Health Care Workers Have Risen to the Pandemic Challenge](#)



## WHO daily report

- No new countries/territories/areas reported cases of COVID-19 in the past 24 hours.
- WHO has released a Medical Product Alert that warns consumers, healthcare professionals, and health authorities against a growing number of falsified medical products that claim to prevent, detect, treat or cure COVID-19. Find more here.
- WHO is working with Iraq to increase surveillance and response capacities. WHO has printed hundreds of thousands of prevention and transmission control messages, taken mobile health teams to the streets, and delivered urgent consignments of personal protective equipment (PPE) and laboratory test kits.
- WHO has been working with governments and partners around the world, across many areas of activity: conducting needs assessments, providing hand sanitizers and masks for health professionals, providing training on the clinical management of patients with COVID-19, collaborating with local media outlets and conducting awareness raising activities, delivering test kits, conducting simulation exercises, and shipping personal protective equipment through WHO logistical hubs. As an example, WHO EURO has released a photo story of WHO's activities in Kyrgyzstan.



## WHO daily report

WHO have summarized a brief overview of available evidence on transmission from symptomatic, pre-symptomatic and asymptomatic people infected with COVID-19.

- **Symptomatic transmission:**

- Studies provide evidence that COVID-19 is primarily transmitted from symptomatic people to others who are in close contact through respiratory droplets, by direct contact with infected persons, or by contact with contaminated objects and surfaces.
- That is, within the first 3 days from onset of symptoms. Preliminary data suggests that people may be more contagious around the time of symptom onset as compared to later on in the disease.

- **Pre-symptomatic transmission:**

- transmission from a pre-symptomatic case can occur before symptom onset. (5 days upto 14 days)
- people can test positive for COVID-19 from 1-3 days before they develop symptoms

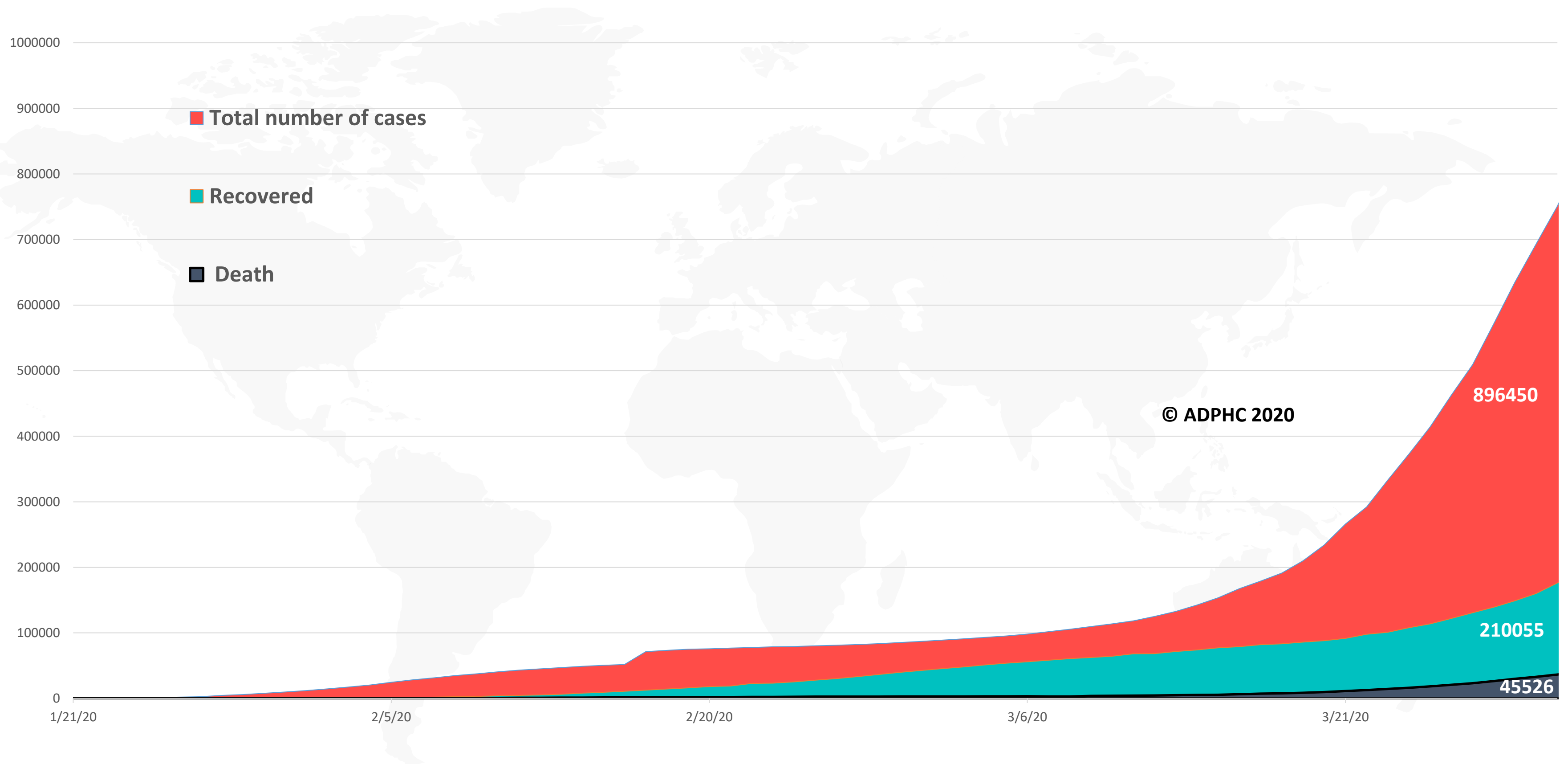
### **Asymptomatic transmission:**

- asymptomatic laboratory-confirmed case is a person infected with COVID-19 who does not develop symptoms
- There has been no documented asymptomatic transmission. This does not exclude the possibility that it may occur. Asymptomatic cases have been reported as part of contact tracing efforts in some countries.

# Epidemiology



Figure 1: Total number of infected, recovered, and death cases (January 21<sup>st</sup> to April 2<sup>ed</sup>, 2020)

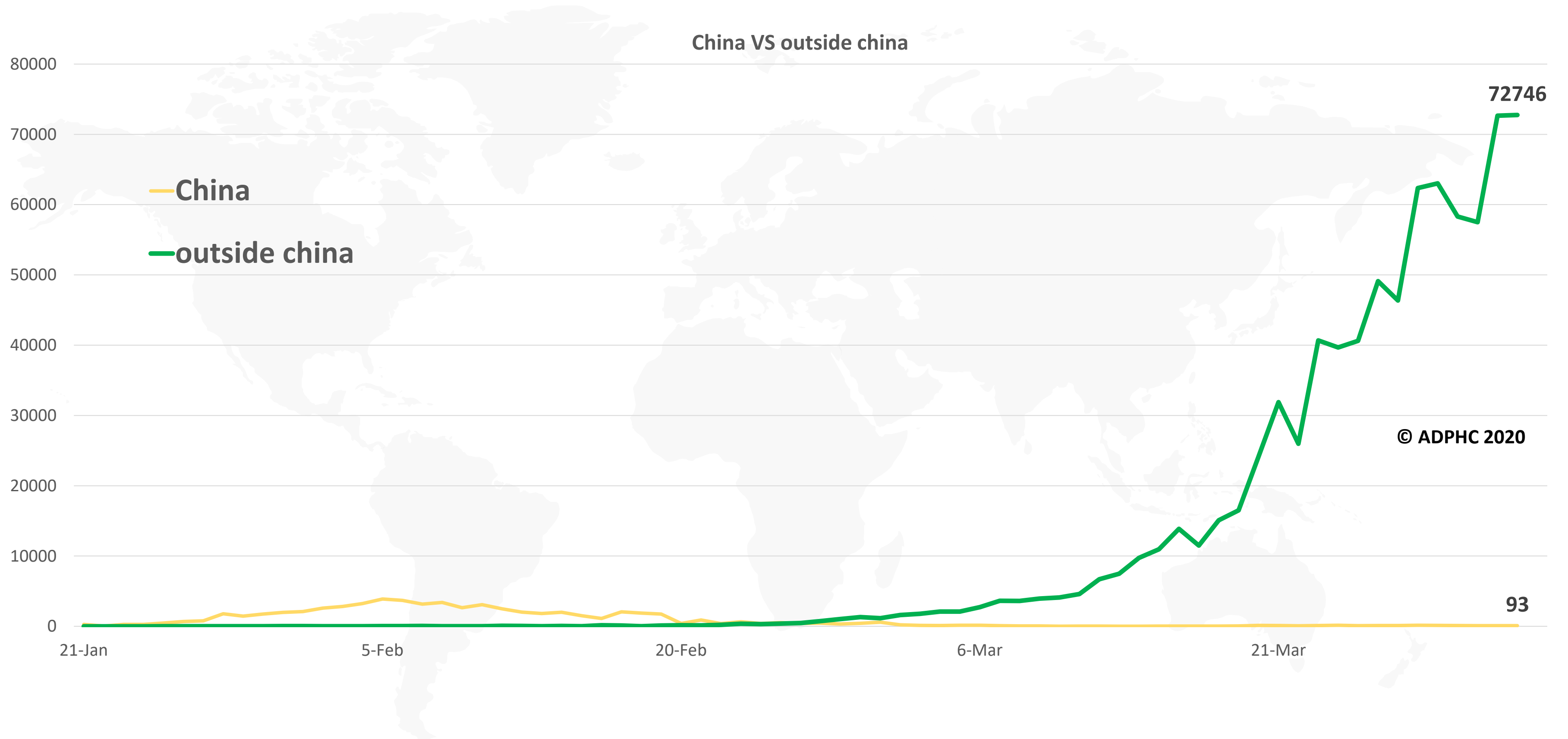


Line graph published by Abu Dhabi Public Health Center 2020.

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



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



Line graph published by Abu Dhabi Public Health Center 2020.

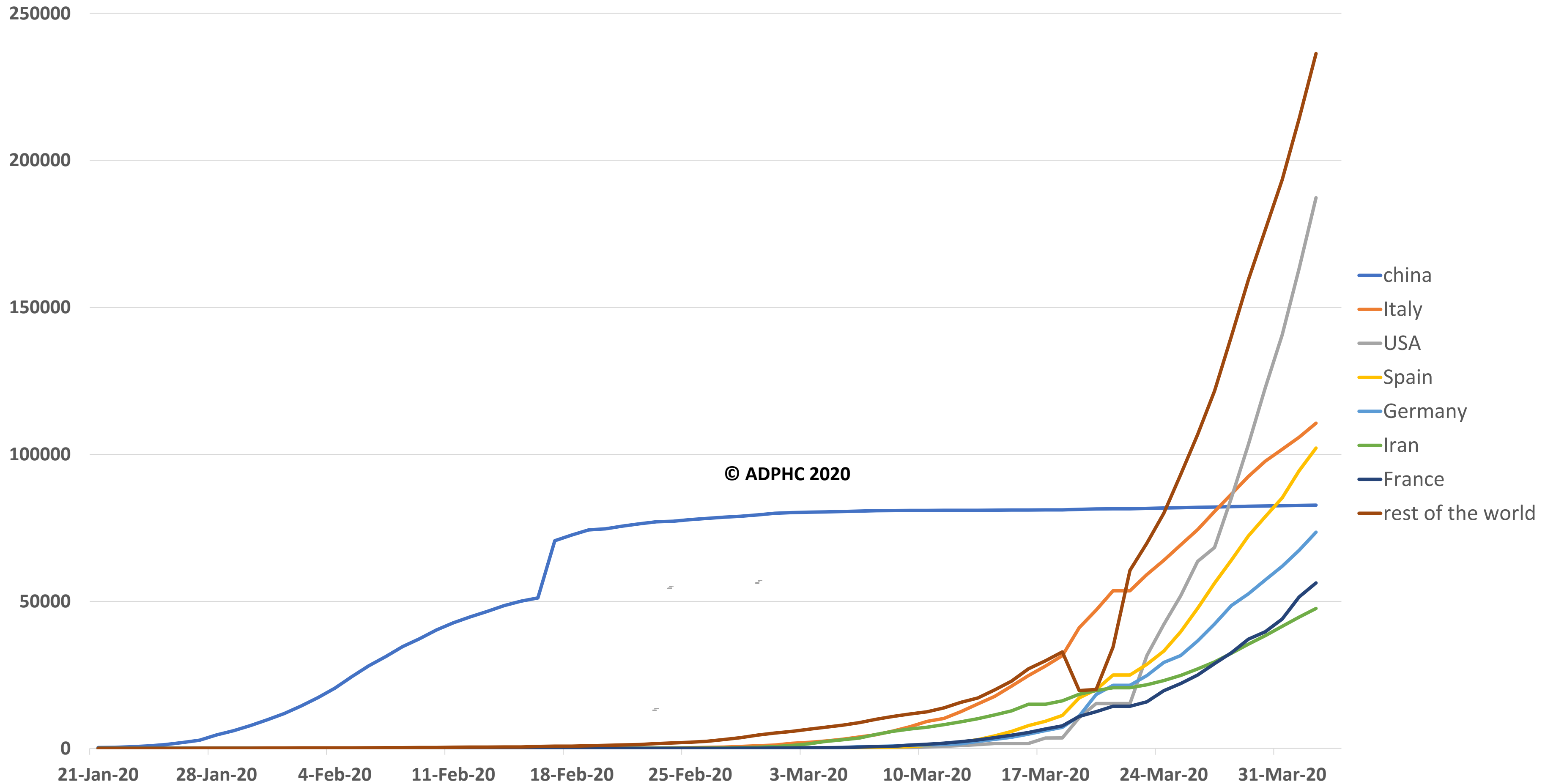
Data resources: [WHO](#)



# Epidemiology



Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to April 2<sup>ed</sup> , 2020).



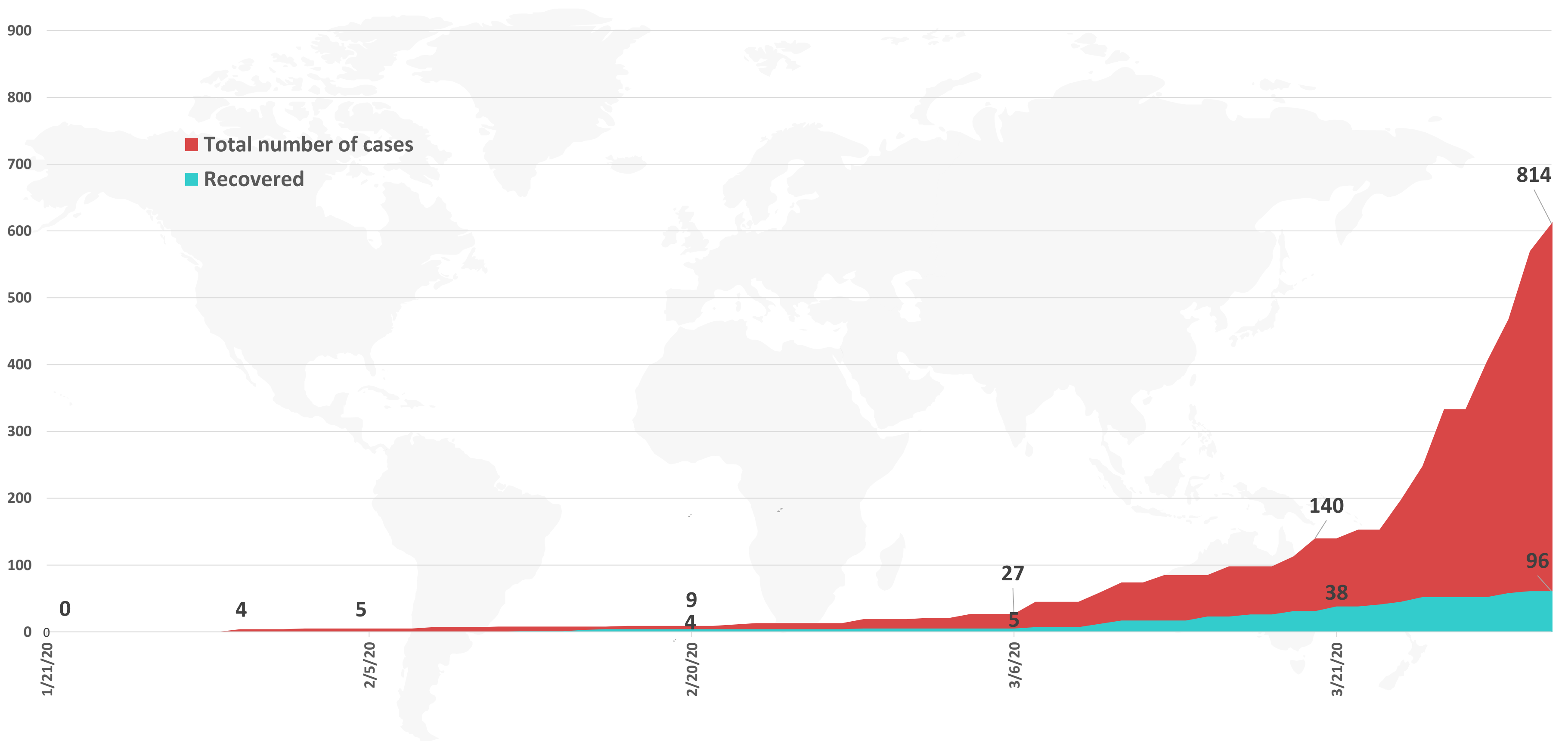
Line graph published by Abu Dhabi Public Health Center 2020.

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

# Epidemiology



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

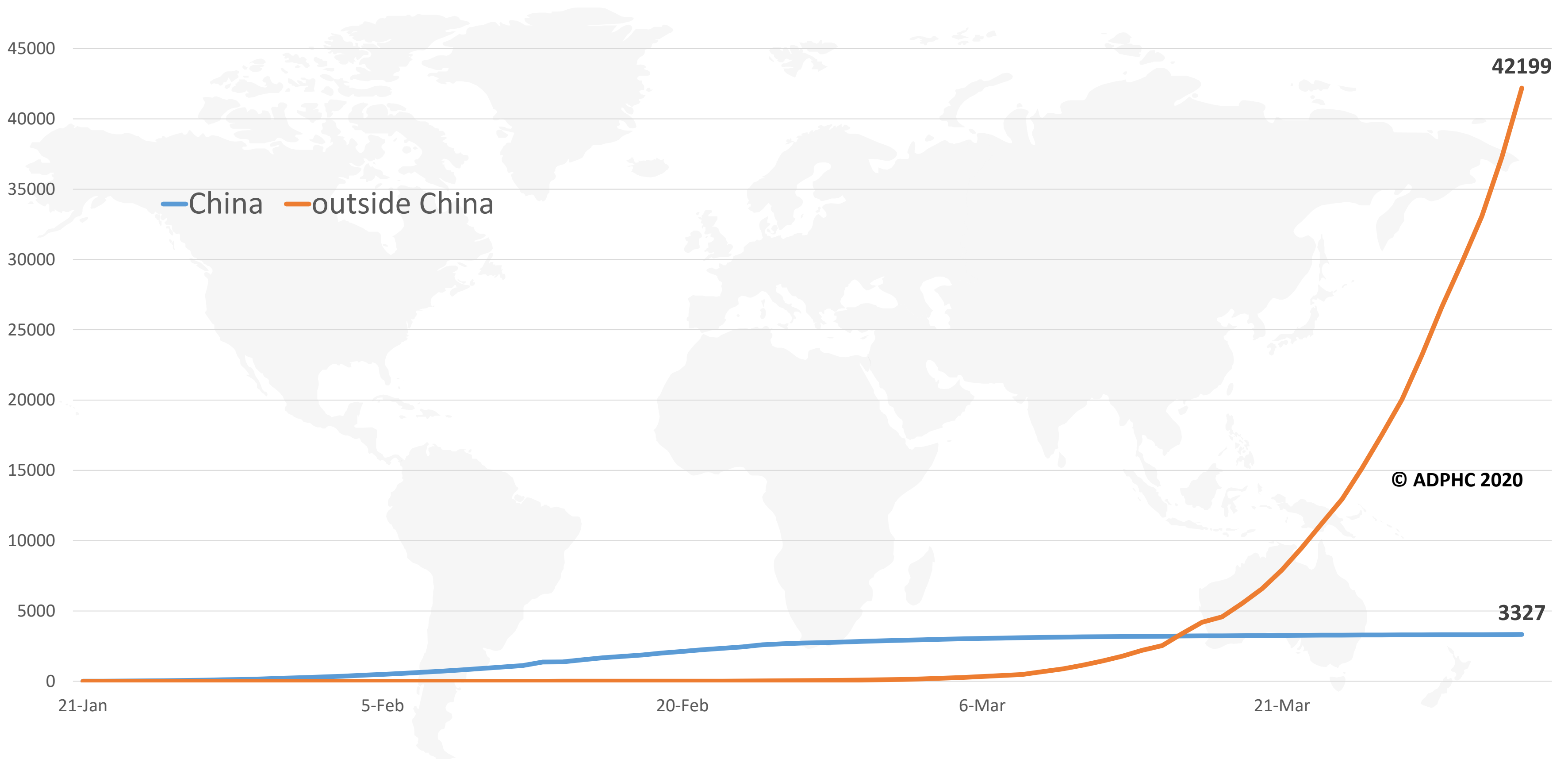


Line graph published by Abu Dhabi Public Health Center 2020.

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



**Figure 5: Total number of death due to COVID-19 reported by China and the rest of the world (January 21 to April 2<sup>ed</sup>, 2020).**

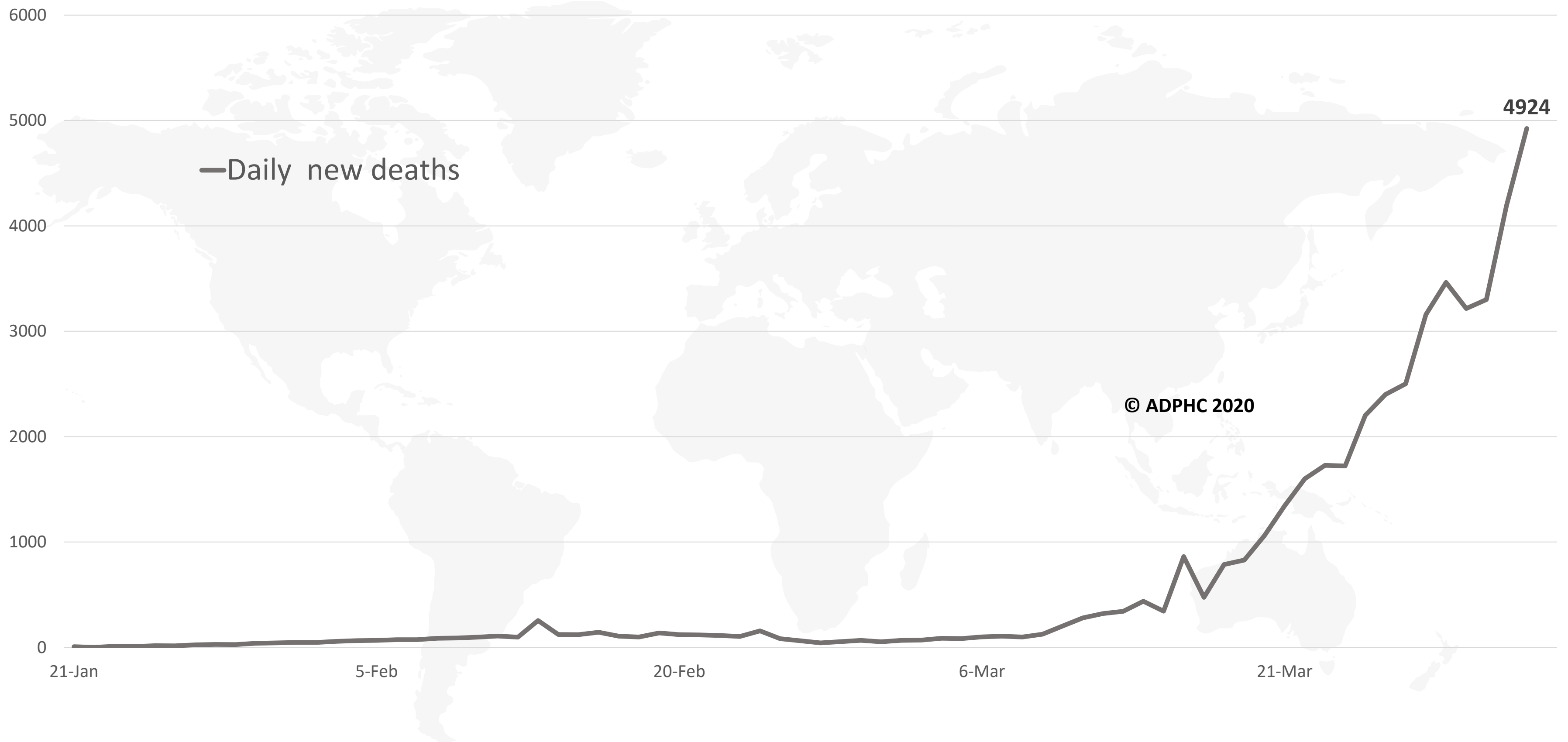


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)



Figure 6: Global daily new deaths due to COVID-19 (January 21 to April 2<sup>ed</sup>, 2020).



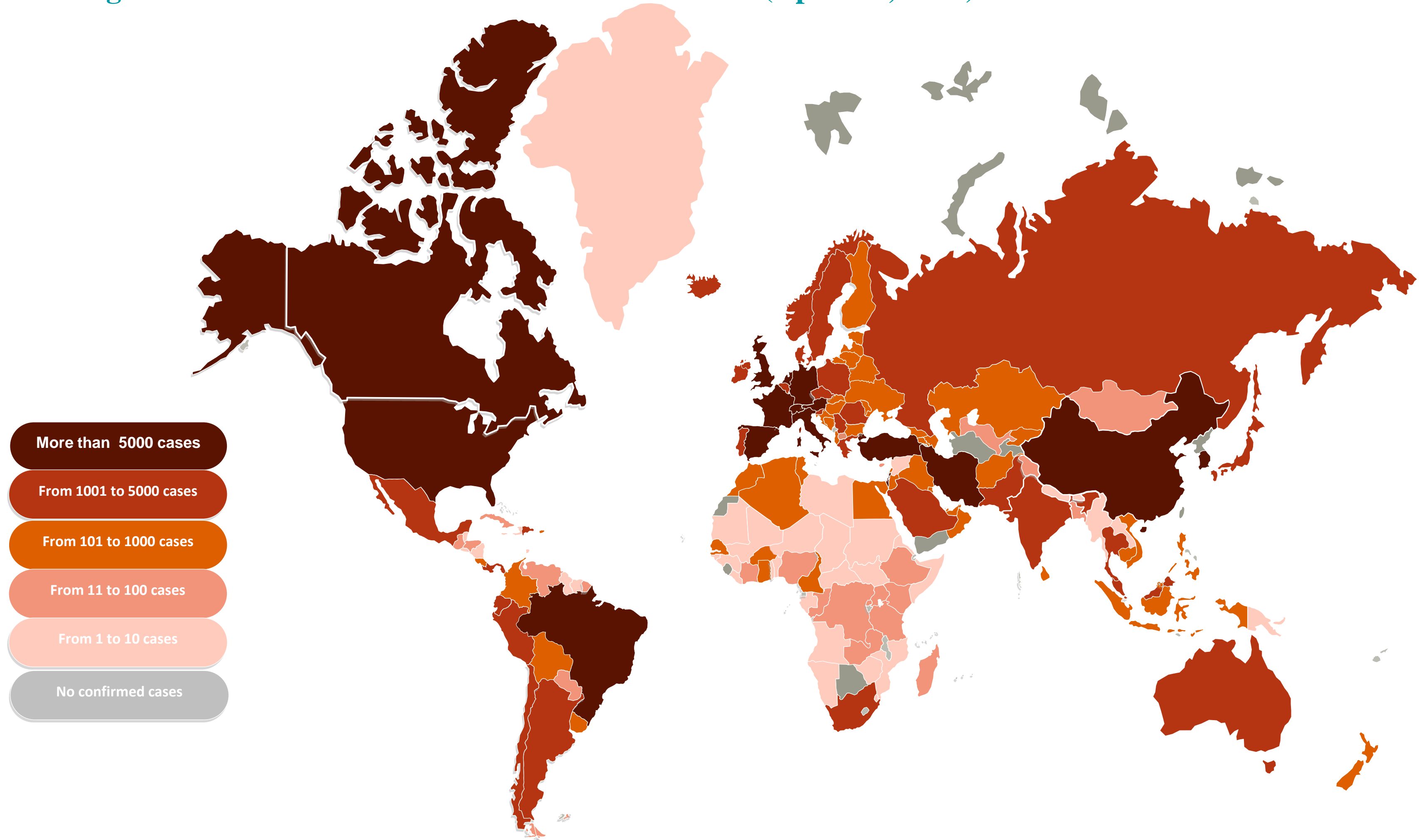
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)

# Epidemiology



Figure 7a : Global distribution of COVID-19 cases (April 2<sup>ed</sup>, 2020).

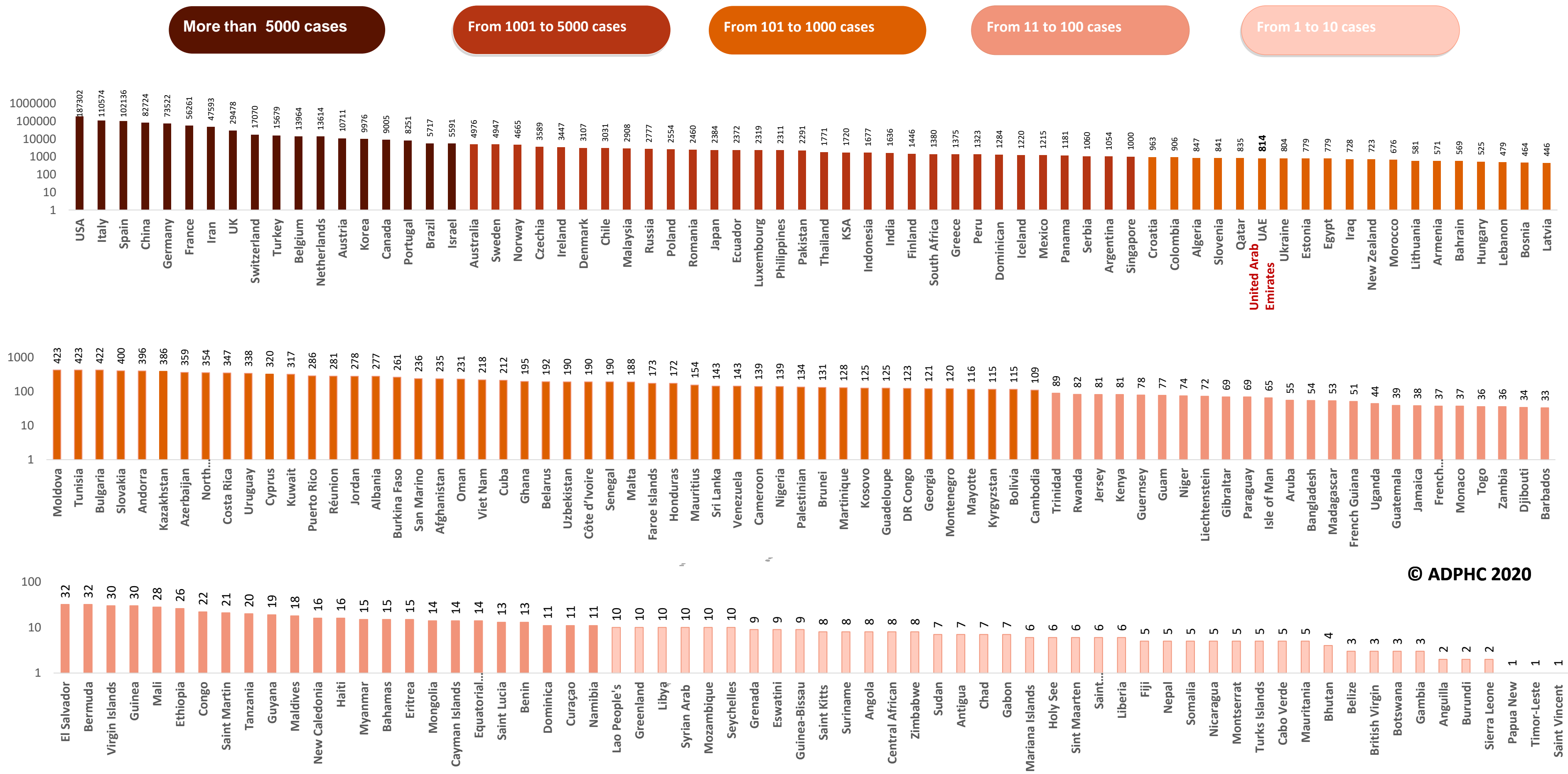


Map chart published by Abu Dhabi Public Health Center 2020.

# Epidemiology



Figure 7B: Bar chart illustrate the global distribution of COVID19 cases April 2<sup>ed</sup>, 2020)



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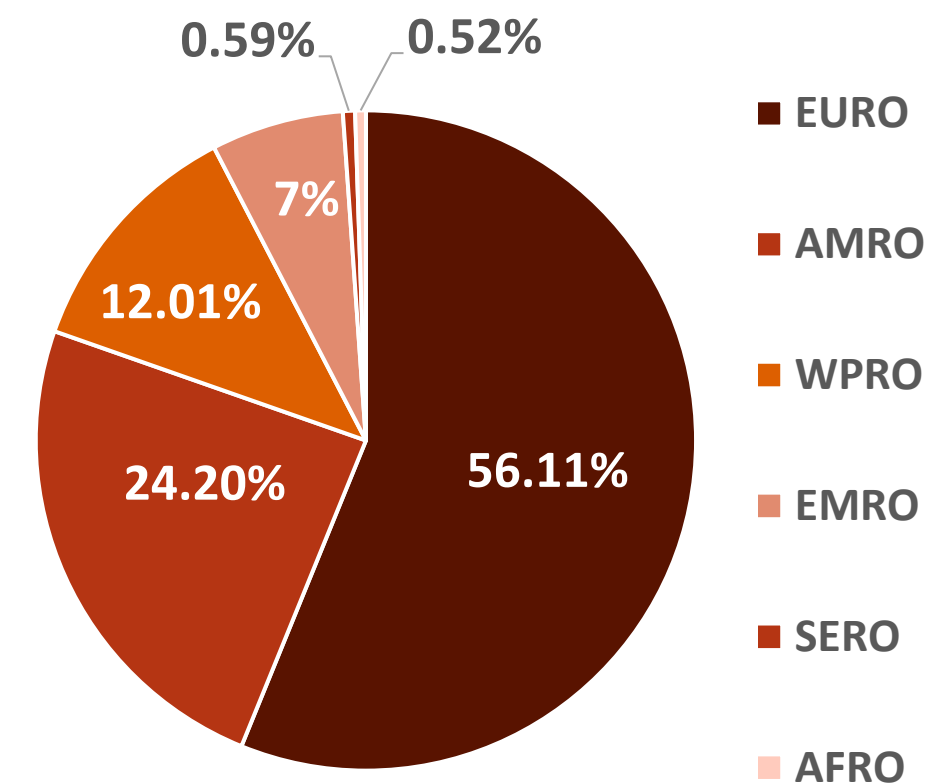
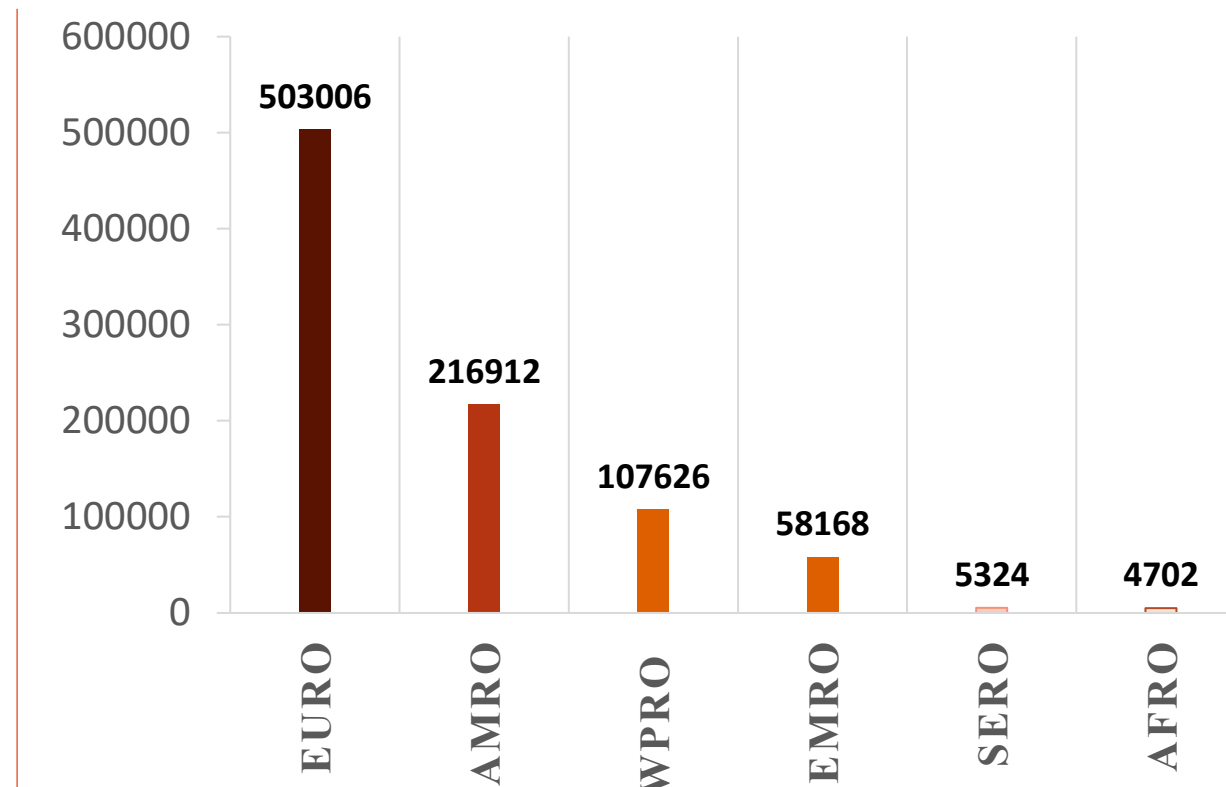
Map chart published by Abu Dhabi Public Health Center 2020.

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

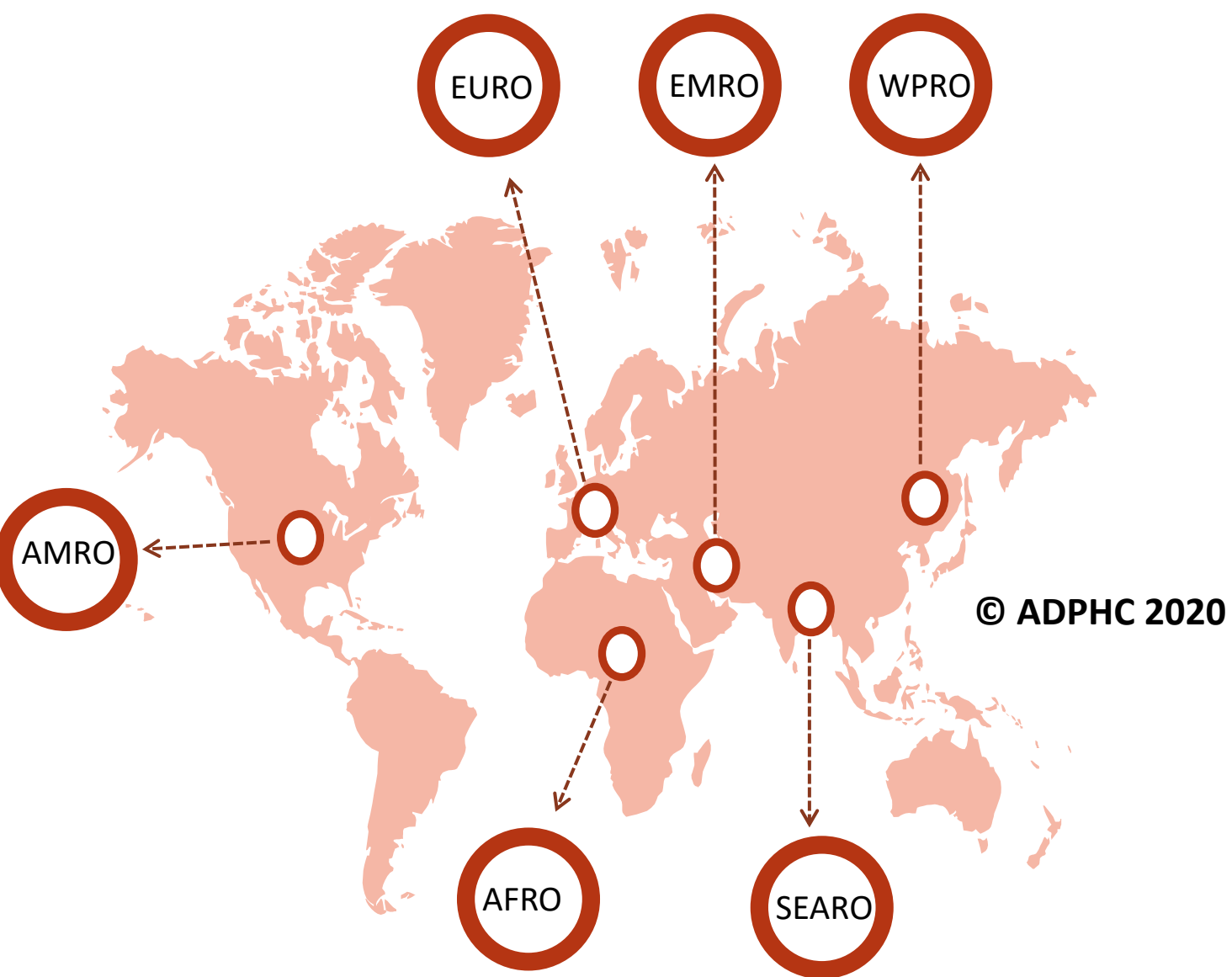
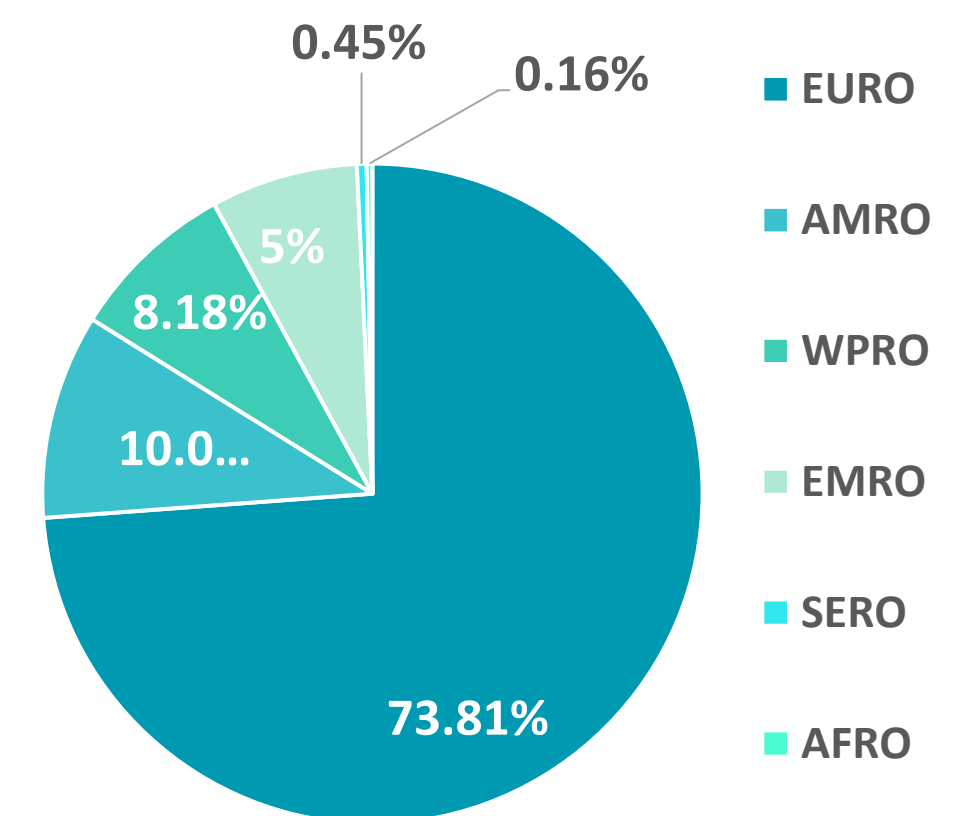
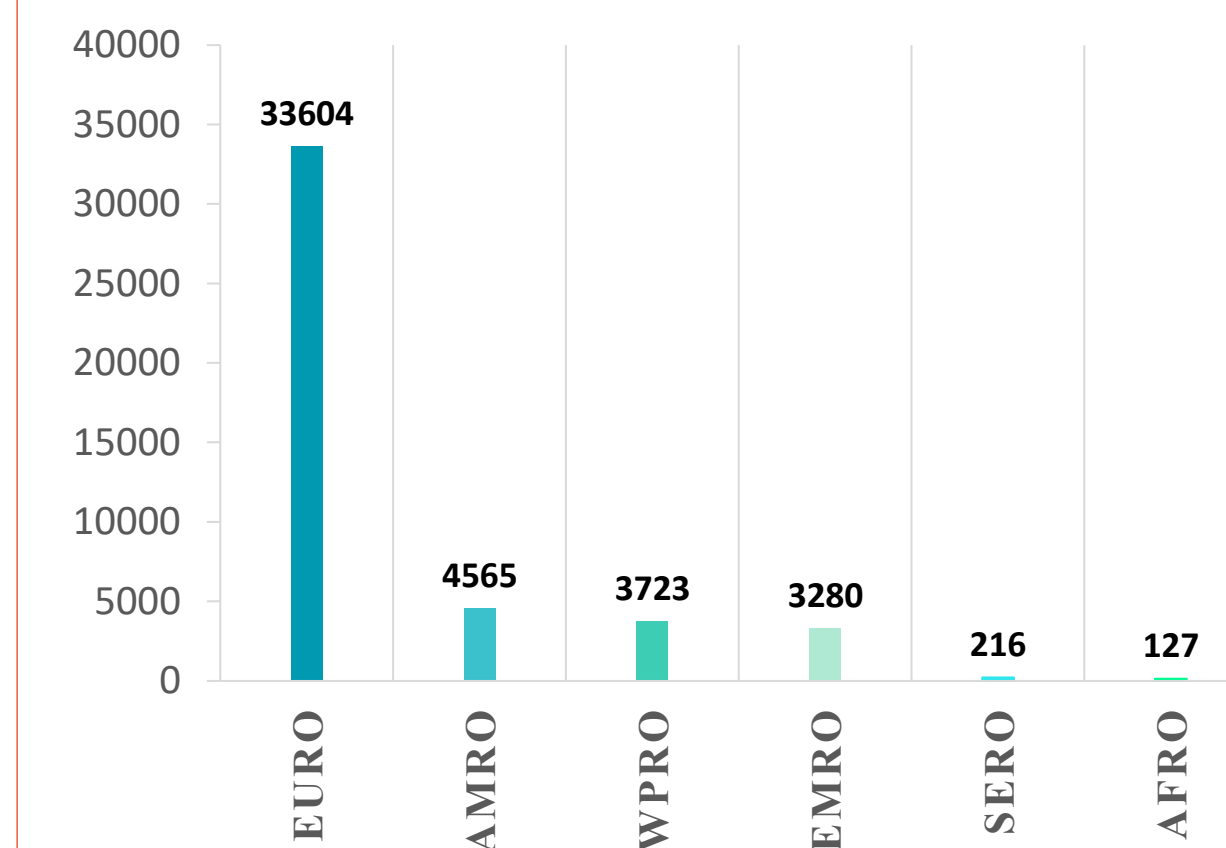


Figure 8: illustrate the Global distribution of COVID19 cases per region (April 2<sup>ed</sup>, 2020)

## INFECTED



## DEATH



Map chart published by Abu Dhabi Public Health Center 2020.

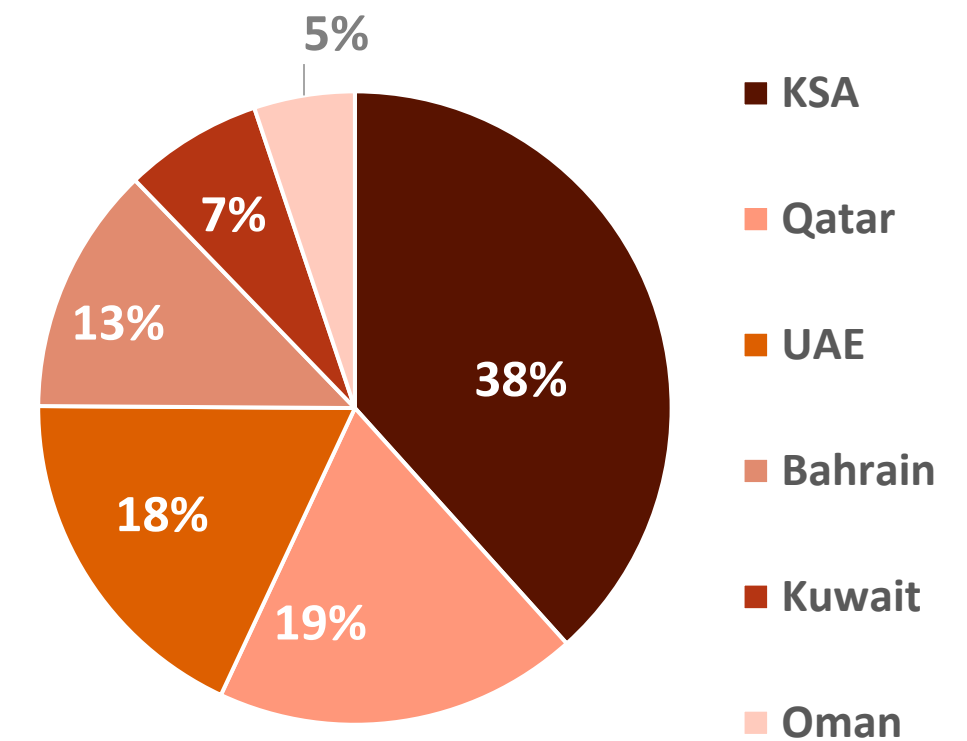
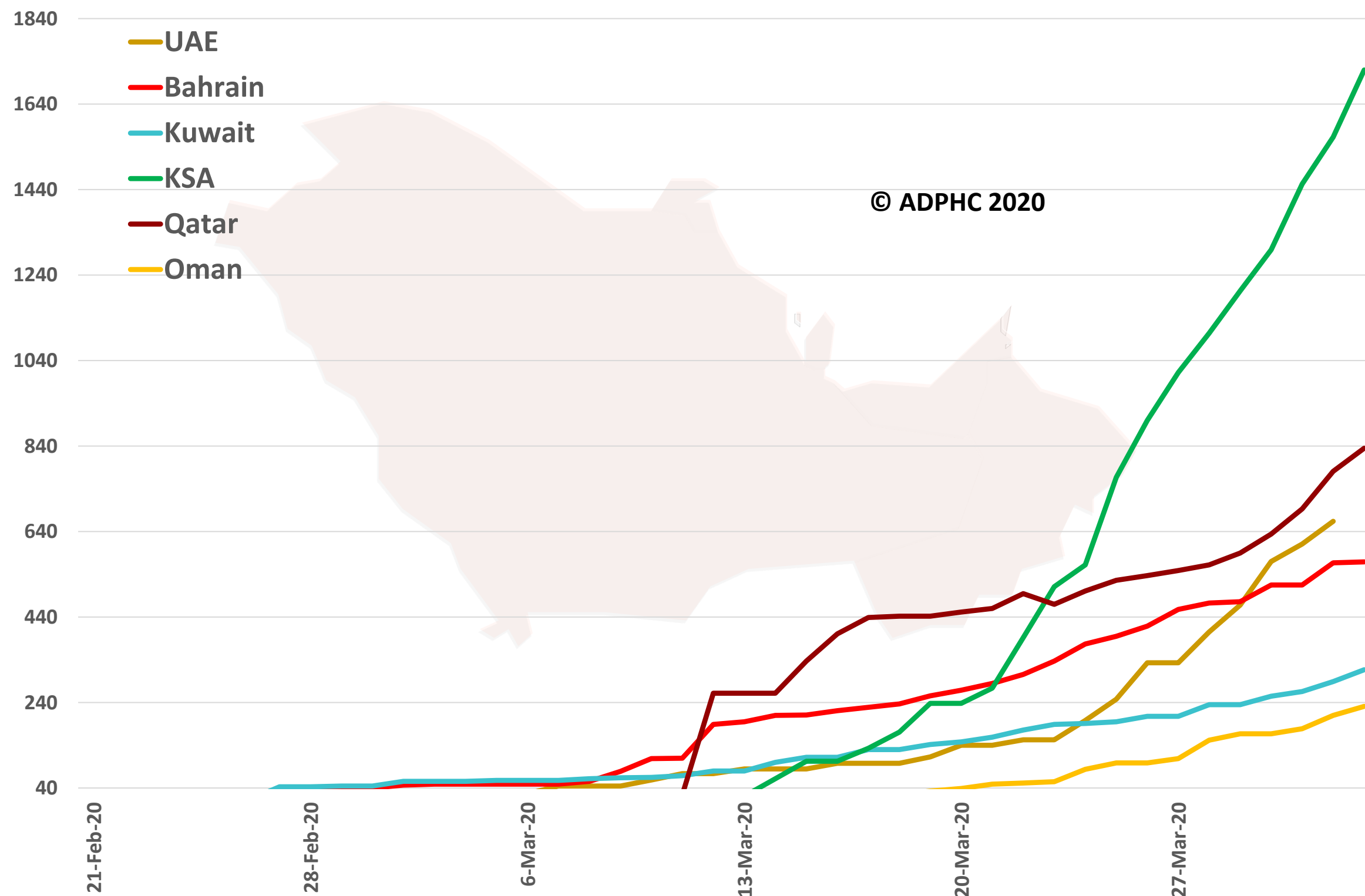
Data resources: [WHO](https://www.who.int)

# Epidemiology

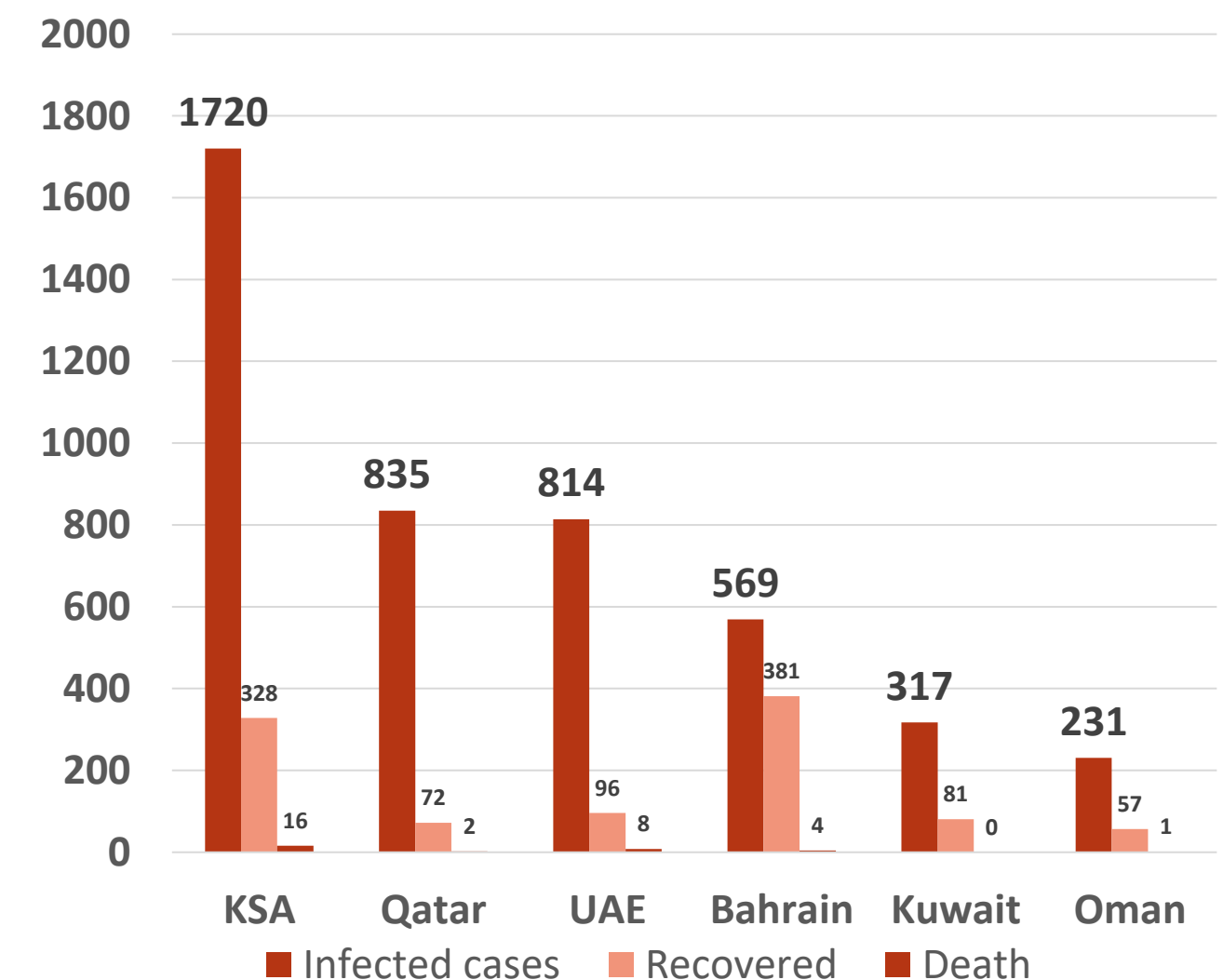


Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (April 2<sup>ed</sup>, 2020)

## TOTAL NUMBER OF INFECTED CASES



## Total number of infected, recovered and Deaths



Map chart published by Abu Dhabi Public Health Center 2020.

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



# Transmission



## Article 1: Transmission Potential of SARS-CoV-2 in Viral Shedding Observed at the University of Nebraska Medical Center

**Published:** March 28, 2020

**Link:** [Click Here](#)

This article is summarized by subject matter Expert

### Summary:

Since the emergence of the COVID-19 pandemic, there have been changing guidelines regarding the nature of SARS-CoV-2 transmission by leading global health authorities, including WHO and CDC, and whether SARS-CoV-2 should be treated as a droplet or airborne infection. To address this question, this study examined the potential of virus shedding by 13 confirmed COVID-19 patients that were kept under strict biocontainment conditions in either a hospital or quarantine setting, including rooms under negative pressure and individual bathrooms for each patient. The environmental samples from the patient rooms were taken from both the air (room & hallway air as well as personal air) and various surfaces (such as table tops, ventilation grates, and window ledges, personal items handled by patients like cell phones and TV remotes, and toilet surfaces). These samples (n = 163) were tested for viral RNA by a sensitive & quantitative RT-PCR assay, while the infection potential of the virus in the air samples was tested using a virus culture assay. Viral RNA was detectable in a high percentage (50-100%) of all common and personal surfaces as well as toilets at variable levels. The air samples (collected under non-coughing conditions) both from the patient room and the connecting hallways were observed to be virus positive by RT-PCR with more viral copies in air samples closer to the patient than at a distance; **however, none of the air samples tested positive in viral culture assays**, suggesting that either the virus was non-infectious or the level of infectious virus was below the level of assay detection. No correlation was observed between patient temperature levels or degree of disease symptoms and virus shedding in the environment.

*This paper is preliminary and has not been peer-reviewed, therefore, it should not be used for clinical decision making or reporting of research to a lay audience*

# Transmission



## Article 1: Cont.,

This article is summarized by subject matter Expert

### Conclusions:

This study shows that SARS-CoV-2 can be shed during normal breathing, potentially allowing person-to-person transmission. It can also be shed during toilet use and is found on fomites, facilitating contact transmission. Its RNA can be detected in aerosols, but the relevance of this to airborne transmission is not clear since virus particles collected from air could not establish infection in cell culture assays.

### Reflection from the reviewer:

#### Implications:

SARS-CoV-2 RNA can be detected in air and on common surfaces in patient rooms, but whether the detected virus is infectious in the air or not remains to be established. To be on the safer side, this may warrant use of isolation precautions required of airborne transmission under special settings such as hospitals that present with a large number of infected individuals to prevent hospital-based infections and those of health care workers that can come in close contact with multiple infected individuals at the same time for long stretches of time.

# Clinical Features and transmission :

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## Review Summary : Loss of smell in COVID19 patient.

### Summary:

#### Positional statement form ENT association:

#### Article 2: American academy of otolaryngologist:

[March 22, 2020] Anosmia (loss of smell), Hyposmia, and Dysgeusia Symptoms of Coronavirus Disease Anecdotal evidence is rapidly accumulating from sites around the world that anosmia and dysgeusia are significant symptoms associated with the COVID-19 pandemic. Anosmia, in particular, has been seen in patients ultimately testing positive for the coronavirus with no other symptoms. We propose that these symptoms be added to the list of screening tools for possible COVID-19 infection. Anosmia, hyposmia, and dysgeusia in the absence of other respiratory disease such as allergic rhinitis, acute rhinosinusitis, or chronic rhinosinusitis should alert physicians to the possibility of COVID-19 infection and warrant serious consideration for self-isolation and testing of these individuals.

#### Article 3: ENT UK at The Royal College of Surgeons of England

It could potentially be used as a screening tool to help identify otherwise asymptomatic patients, who could then be better instructed on self-isolation.

There is potential that if any adult with anosmia but no other symptoms was asked to self-isolate for seven days, in addition to the current symptom criteria used to trigger quarantine, we might be able to reduce the number of otherwise asymptomatic individuals who continue to act as vectors, not realising the need to self-isolate.

# Clinical Features and transmission :



## Review Summary : Loss of smell in COVID19 patient.

Published: March 23, 2020

### Summary:

#### Article 4: What is the evidence for anosmia (loss of smell) as a clinical feature of COVID-19?

- The authors collected evidence from literature and 5 major databases published between 31<sup>st</sup> of December 2019 to 23<sup>rd</sup> of March 2020 looked at possible developing anosmia or hyposmia in the absence of nasal obstruction or underlying respiratory disease secondary to covid-19 infection.

### Finding:

- A non-peer reviewed study from China where 11 of 214 (5.1%) patients with confirmed SARS-CoV-2 complained of hyposmia; however this finding was not deemed significant ( $p=0.338$ ).
- Three expert statements from the American, British and French associations of otorhinolaryngology were recommending to recognize loss of smell as symptoms of COVID19 based on anecdotal non-peer reviewed emerging clinical observations.
- **ENT UK** representative stated that they had “good evidence” from multiple countries that patients with confirmed COVID-19 had also developed olfactory symptoms. (no access to it, its private online forum)
  - Doctors at hospitals in Daegu stated that “in **South Korea**, 30% of patients testing positive have had anosmia as their major presenting symptom in otherwise mild cases”
- **The authors of the article concluded:** Overall the evidence was graded as “**inconclusive**” because of the following:
  - It is **highly preliminary** and largely based around non peer-reviewed clinical information.
  - The symptoms has not been mentioned in any of the existing 56 peer-reviewed studies possibly due to lack of reporting of this symptom and/or lack of awareness among patients. Moreover olfactory loss might be a symptom in milder cases, rather than critically ill patients who required hospitalization.

# Treatment



## Article 5: Hydroxychloroquine sulfate for common coronavirus disease (COVID-19) patients in 2019 initial research

Published: March 2020

Link: [Click Here](#)

### Summary:

- The study prospectively enrolled 30 treatment patients with confirmed COVID-19 ( mild-moderate cases) at Shanghai Public Health Clinical Center.
- The patients were randomized 1:1 to HCQ group and the control group.
- Patients in HCQ group were given HCQ 400 mg per day for 5 days plus conventional treatments, while those in the control group were given conventional treatment only.
- The primary endpoint was negative conversion rate of COVID-19 nucleic acid in respiratory pharyngeal swab on days 7 after randomization.

### Findings:

That patients who got the medicine didn't fight off the new coronavirus more often than those who did not get the medicine.

Study limitation: small sample size

Table 1: treatment versus control

Result	HCQ	Control Group
Developed to severe during the treatment	One patient	No
Nucleic acid of throat swabs - On Day 7	Negative in 13 (86.7%) cases	Negative in 14 (93.3%) cases
Median duration from hospitalization to virus nucleic acid negative	4 (1-9) day	2 (1-4) days
Median time for body temperature normalization	1 (0-2) after hospitalization	1 (0-3) after hospitalization
Radiological progression	CT images in 5 cases (33.3%)	7 cases (46.7%)
All Patients Showed Improvement In Follow-Up Examination		
Transient diarrhea and abnormal liver function	4 cases (26%)	3 cases (20%)

*Note that this paper was translated from Chinese*