

ABU DHABI PUBLIC
HEALTH CENTRE

مركز أبوظبي
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Scientific Research Monitoring on COVID-19

12 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:** a study of the impact of public health measures in epidemiological characteristic in Wuhan.
- **Treatment:** a preliminary study on Remdivisir as compassionate use showed improvement of 68% and 13% mortality. Suggested better outcome in patient on non-invasive oxygenation.
- **Public Health Response:** article compare the traditional measure of controlling infectious disease and the current approach in controlling COVID19.

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

1. [Ensuring Access to Medications in the US During the COVID-19 Pandemic](#)
2. [A Shift on the Front Line](#)
3. [Virtual health care in the era of COVID-19](#)
4. [Delayed access or provision of care in Italy resulting from fear of COVID-19](#)
5. [Offline: COVID-19—bewilderment and candour](#)



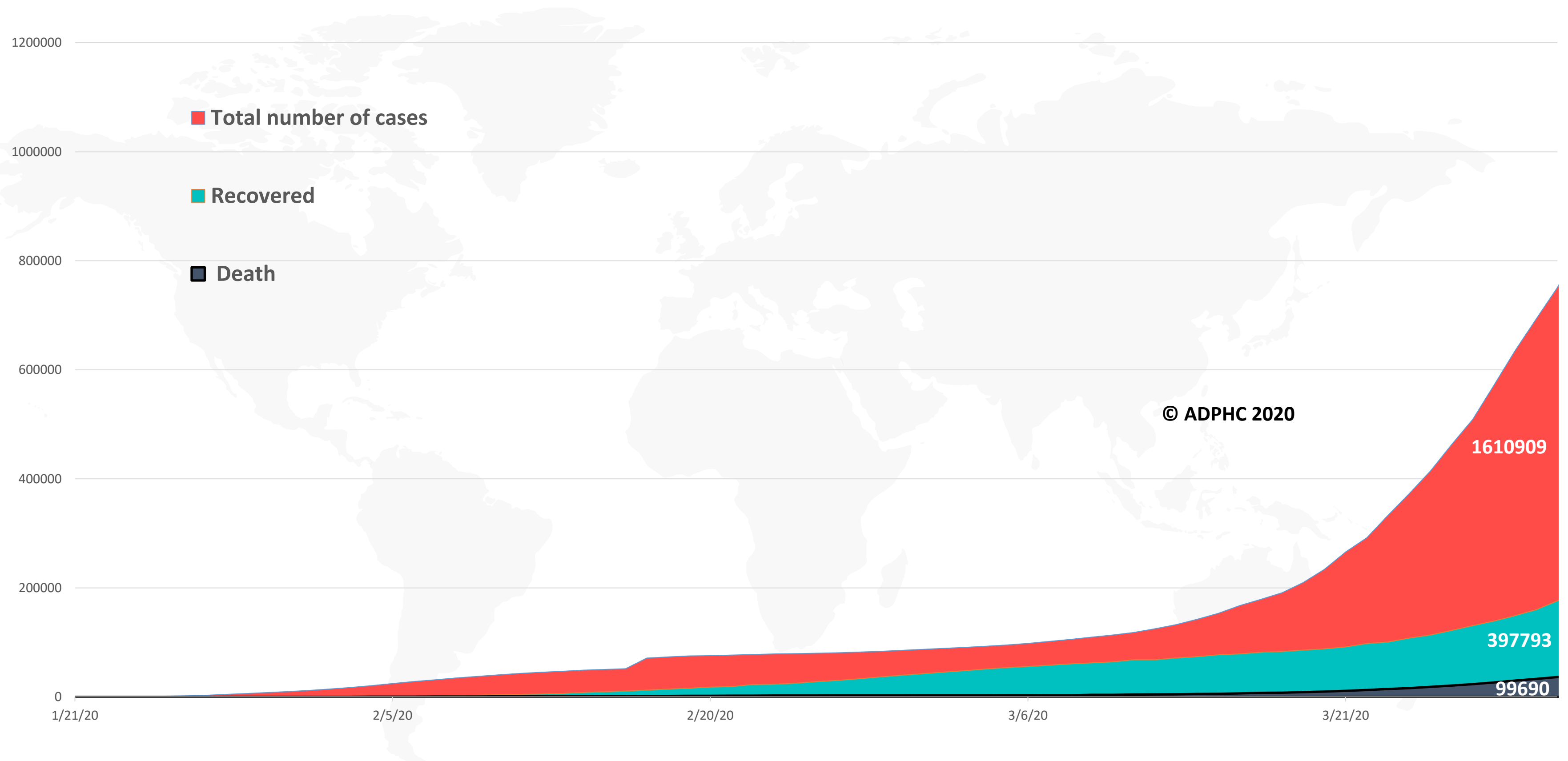
WHO daily report 11.April 2020

- Yemen reported its first case of COVID-19 in the past 24 hours.
- WHO has developed the following definition for reporting COVID deaths: a COVID-19 death is defined for surveillance purposes as a death resulting from a clinically compatible illness in a probable or confirmed COVID-19 case, There should be no period of complete recovery between the illness and death.
- To date, there are a limited number of **publications and national situation reports that provide information on the number of healthcare worker (HCW) infections. Understanding infection in HCWs is critical to informing the specific infection prevention and control measures needed to protect HCWs from infection.**
 - As of 8 April 2020, 22 073 cases of COVID-19 among HCWs from 52 countries had been reported to WHO
 - Healthcare settings, factors associated with HCW infection have included: **late recognition or suspicion of COVID-19 in patients, working in a higher-risk department, longer duty hours, sub-optimal adherence to IPC measures such as hand hygiene practices, and lack of or improper use of personal protective equipment (PPE).** Also insufficient IPC training for respiratory pathogens, including the COVID-19 virus, as well as long exposure in areas in healthcare facilities where large numbers of COVID-19 patients were being cared for.
- WHO recommends the use of contact and droplet precautions by HCWs caring for patients with COVID-19. **Airborne** precautions may be applied in settings in which procedures and support treatments that generate aerosols are performed

Epidemiology



Figure 1: Total number of infected, recovered, and death cases (January 21st to April 10th, 2020)

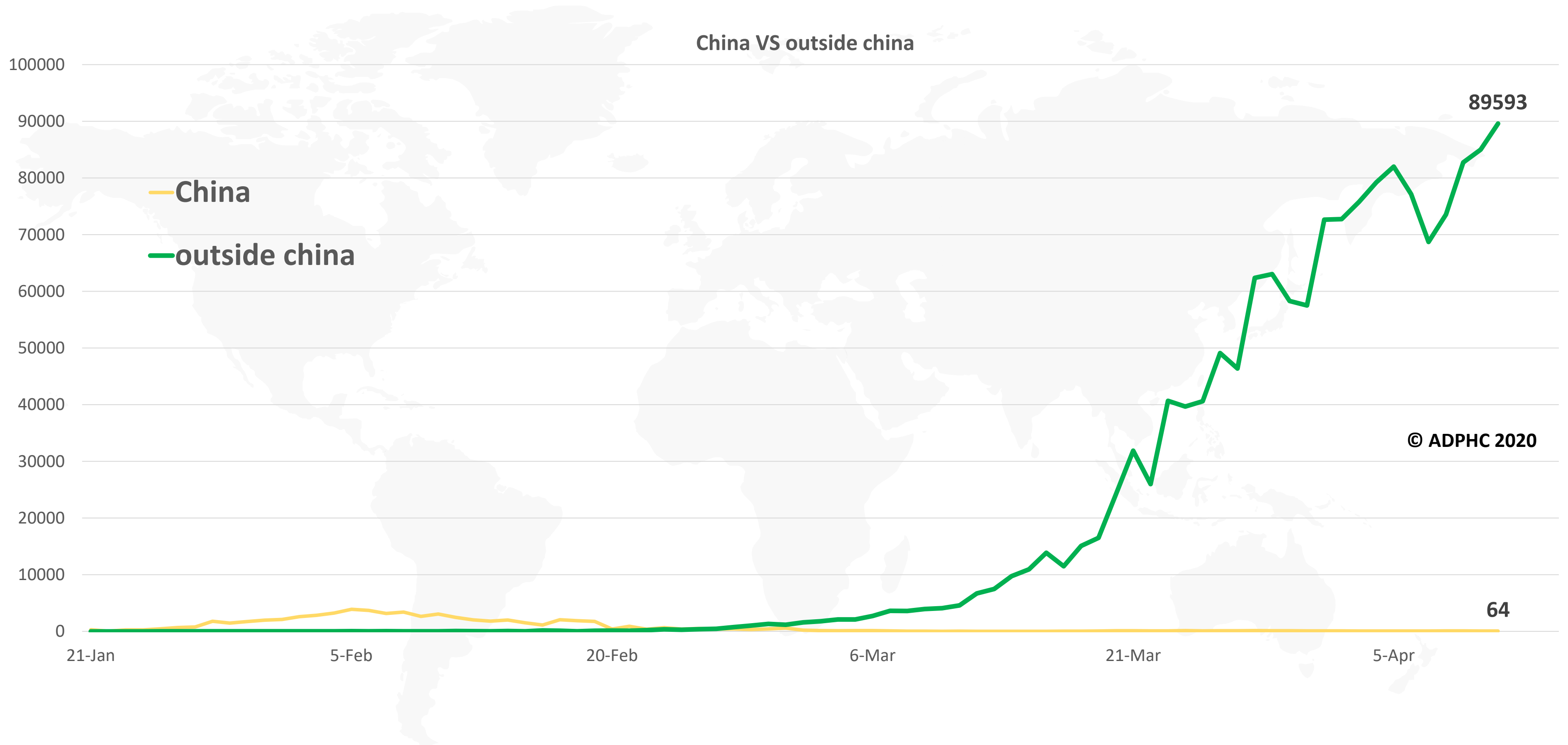


Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 2: Daily new infected COVID-19 cases reported between (January 21 to April 11th, 2020).



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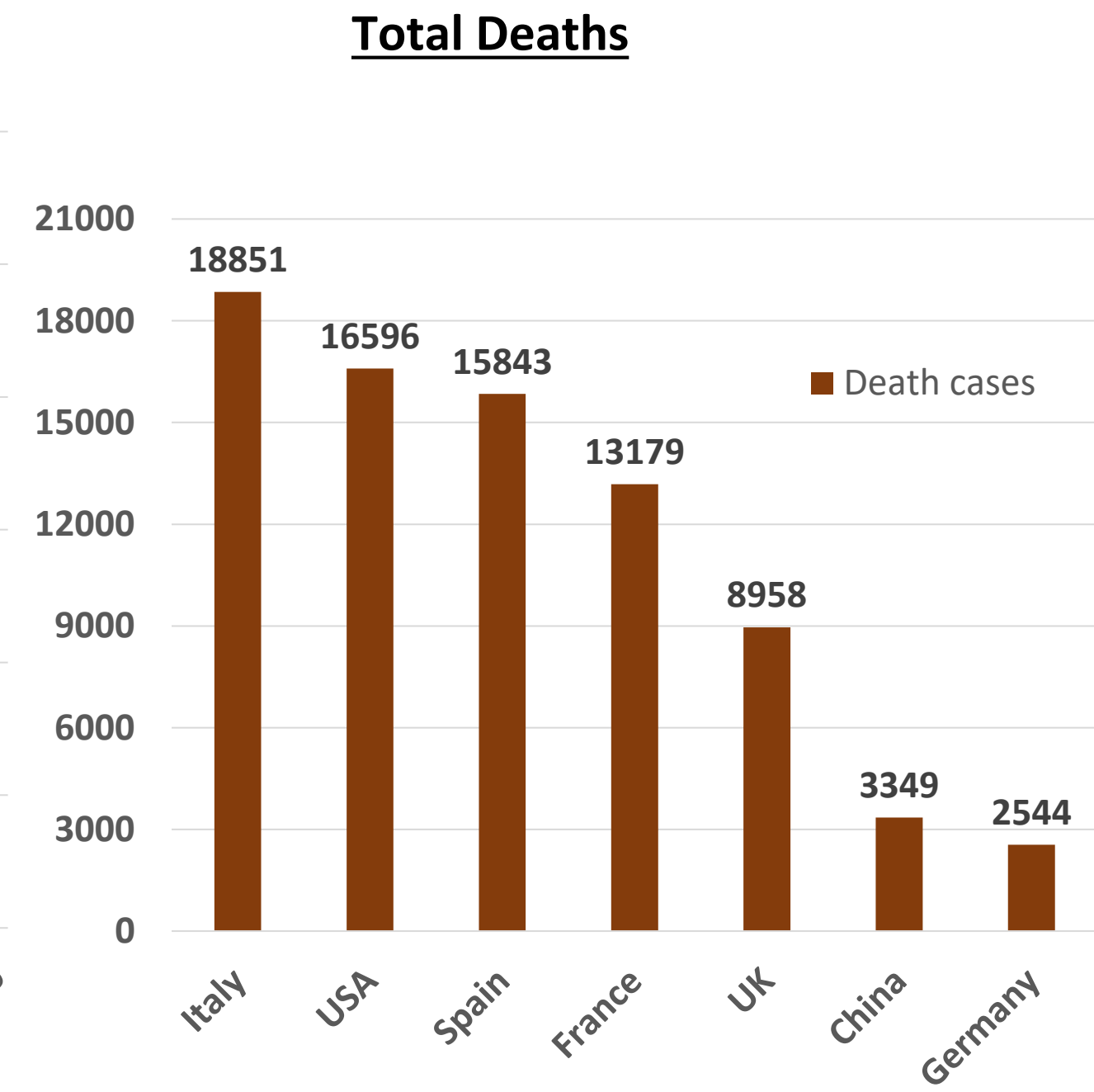
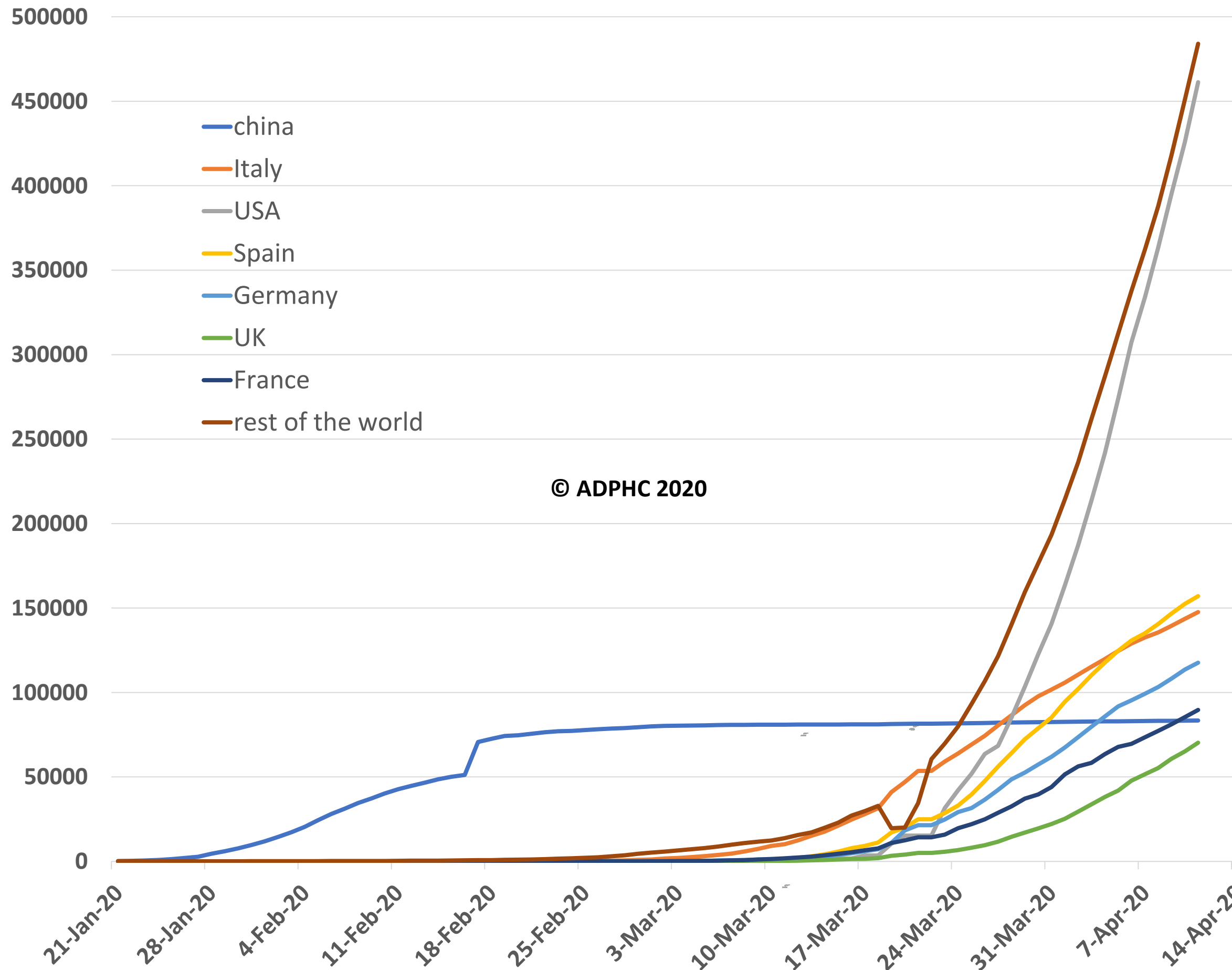
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)

Epidemiology



Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to April 11th, 2020).



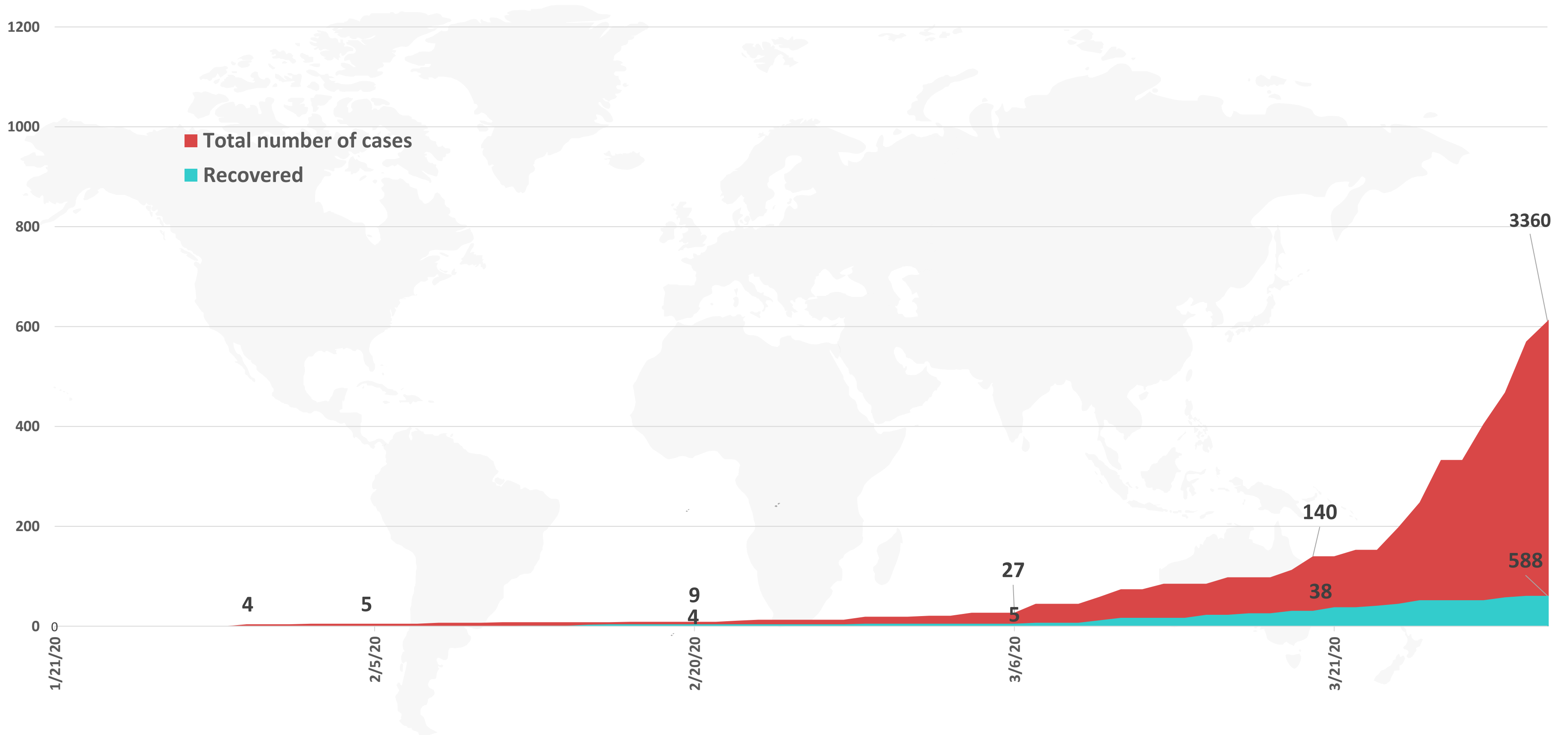
Line graph published by Abu Dhabi Public Health Center 2020.

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

Epidemiology



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



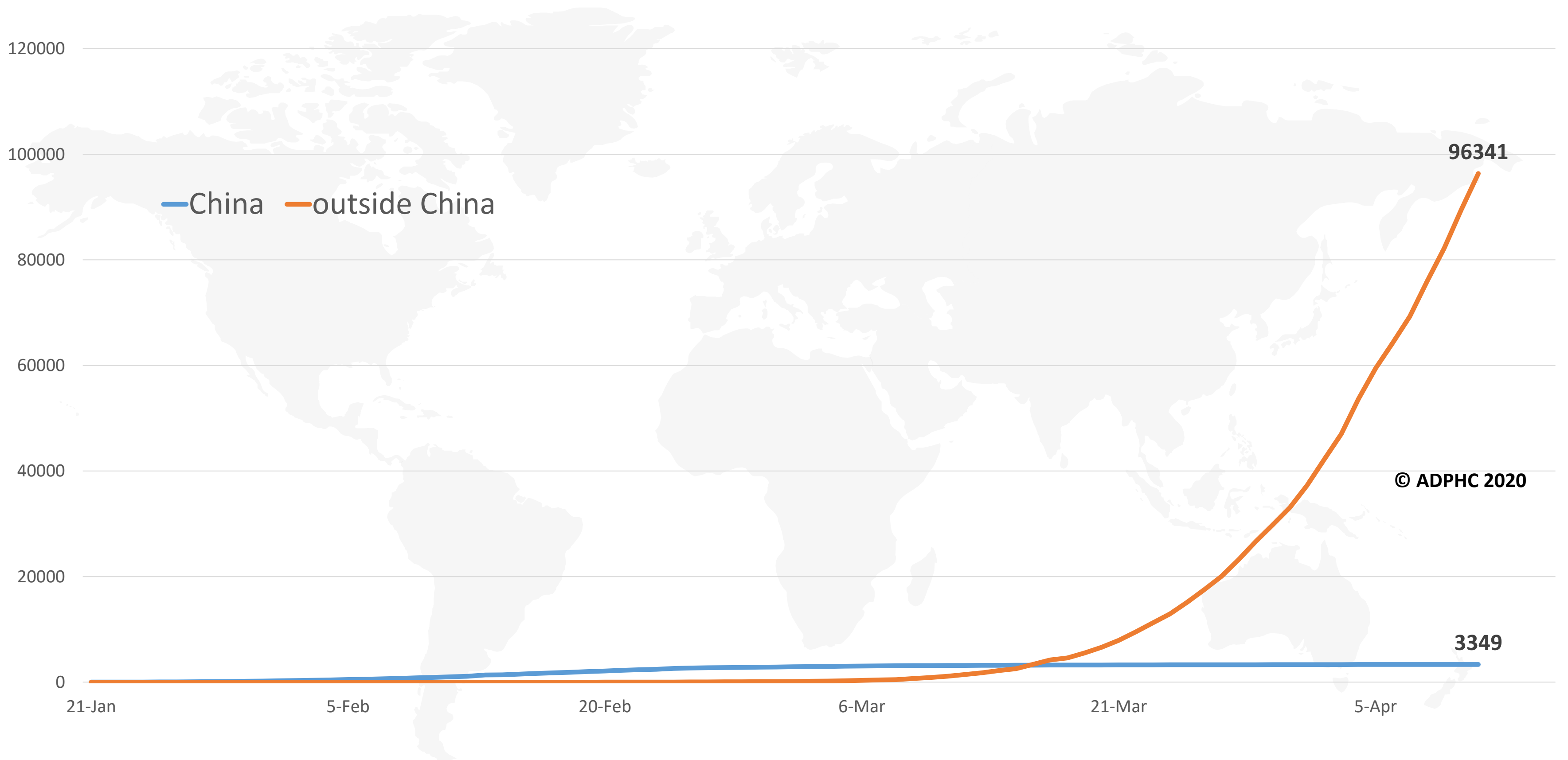
Line graph published by Abu Dhabi Public Health Center 2020.

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

Epidemiology



Figure 5: Total number of death due to COVID-19 reported by China and the rest of the world (January 21 to April 11th, 2020).

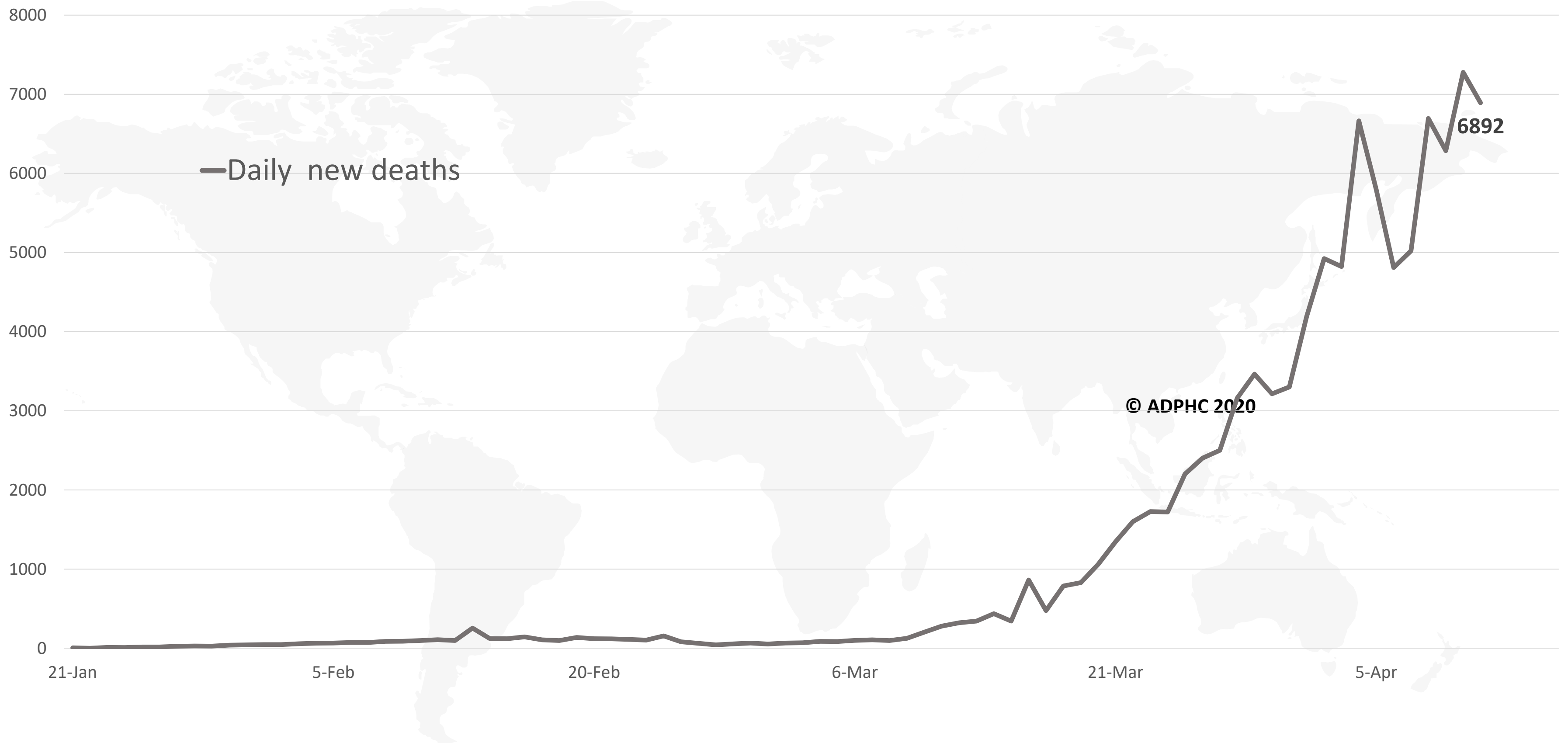


Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 6: Global daily new deaths due to COVID-19 (January 21 to April 11th, 2020).



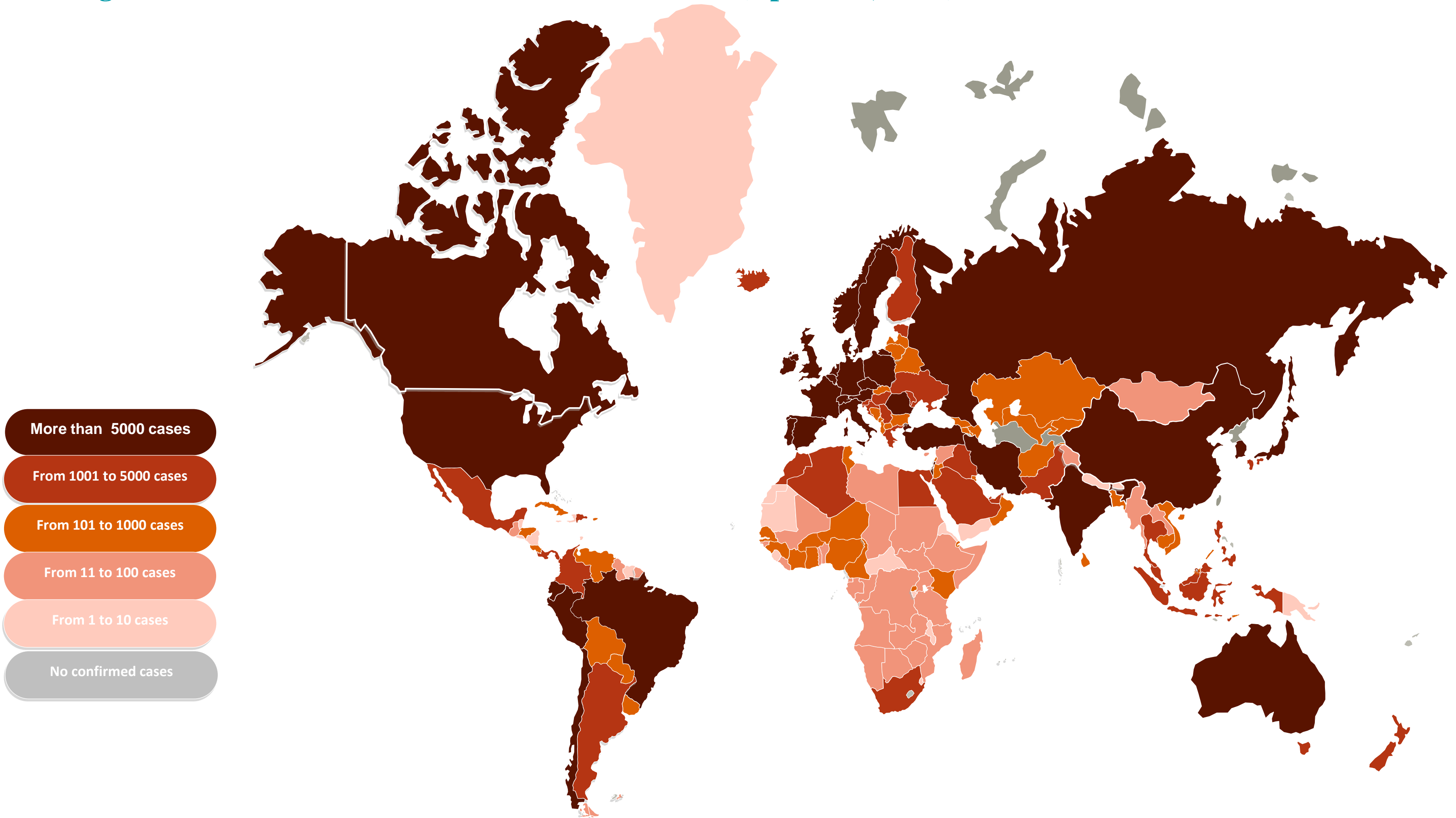
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)

Epidemiology



Figure 7a : Global distribution of COVID-19 cases (April 11th, 2020).

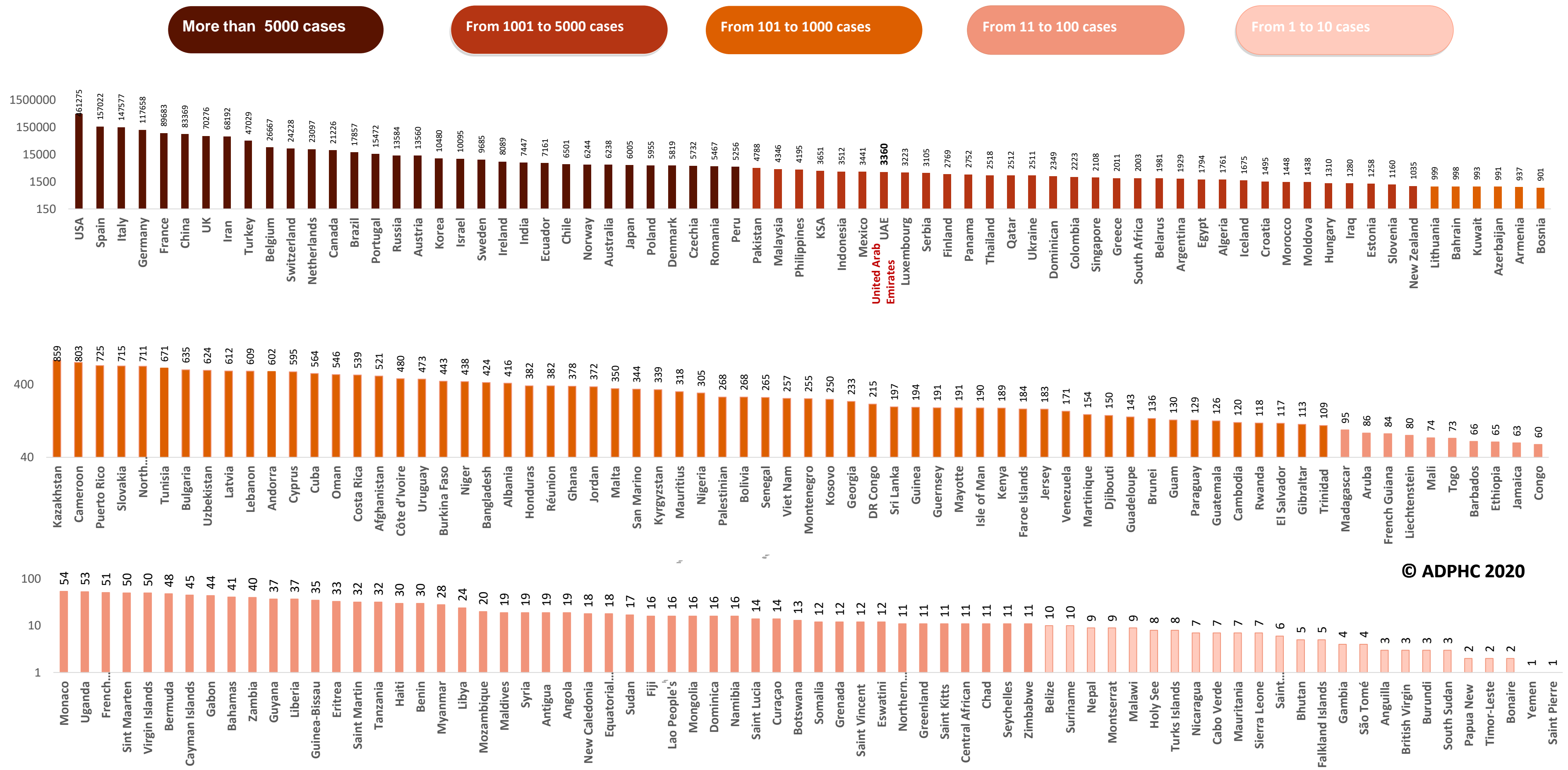


Map chart published by Abu Dhabi Public Health Center 2020.

Epidemiology



Figure 7B: Bar chart illustrate the global distribution of COVID19 cases April 11th, 2020)



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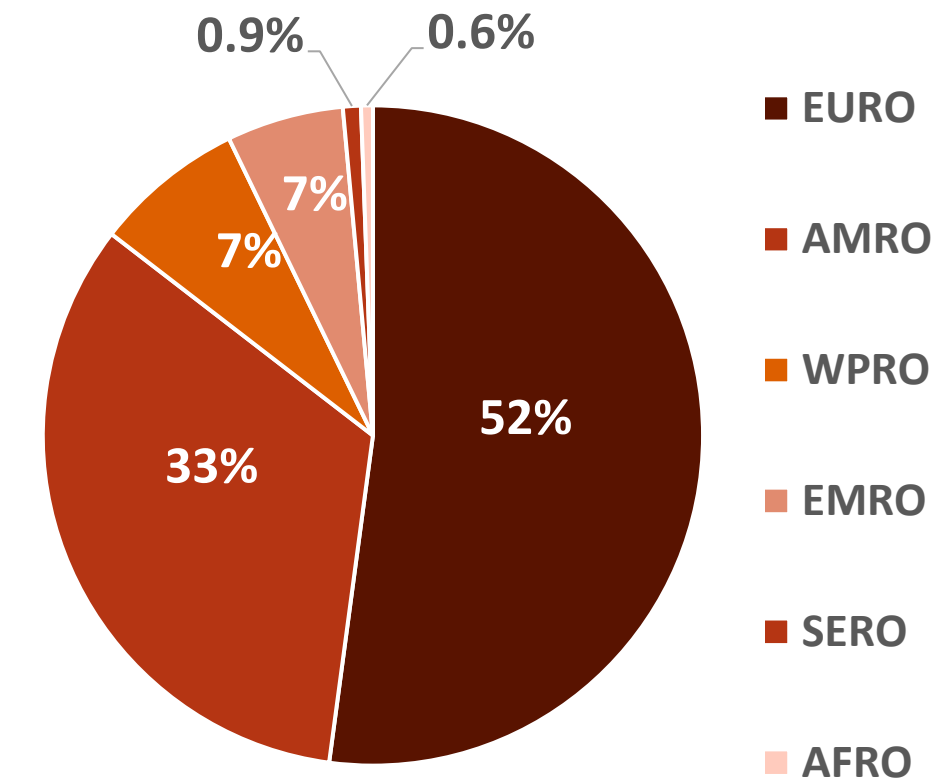
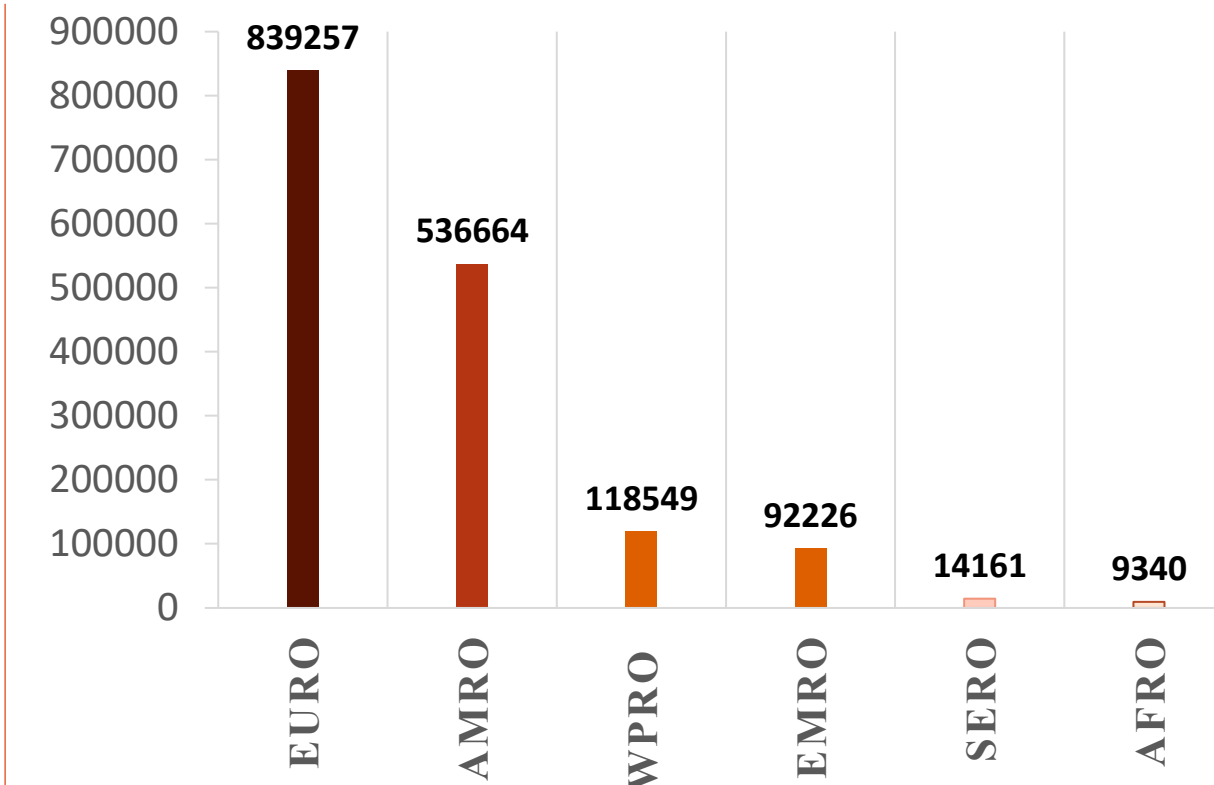
Map chart published by Abu Dhabi Public Health Center 2020.

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

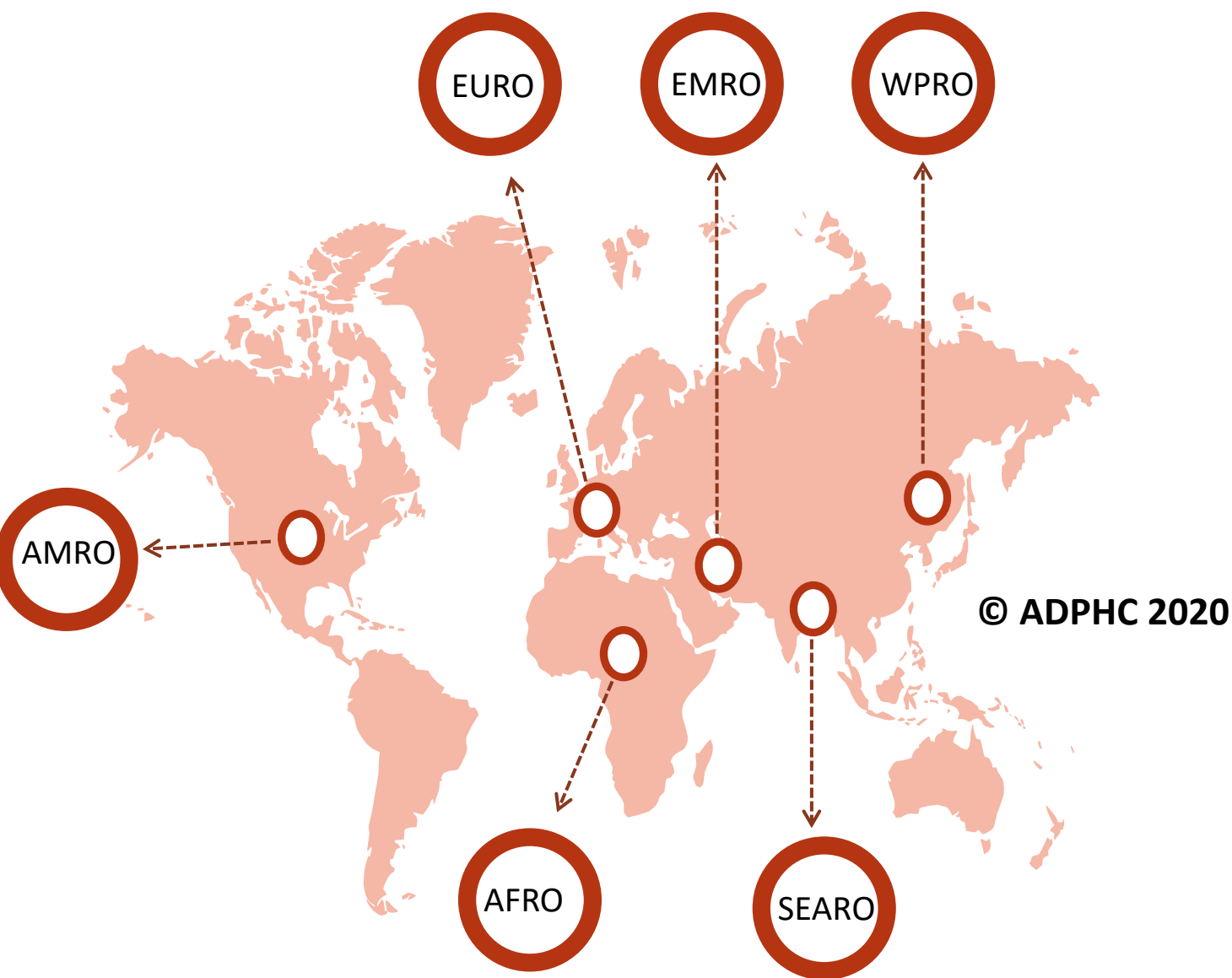
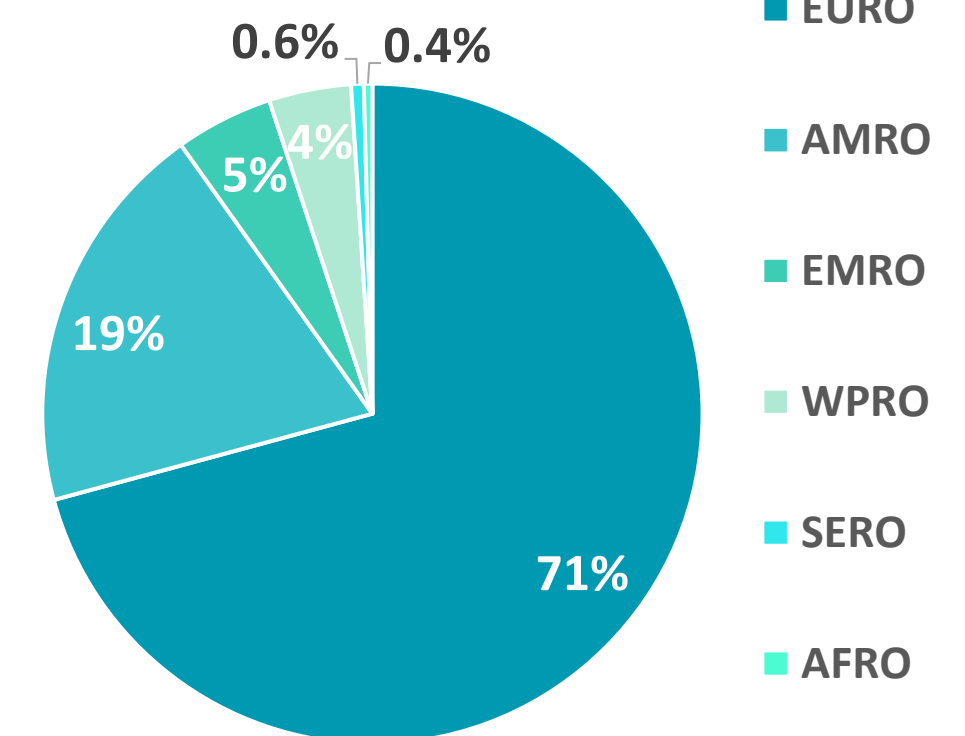
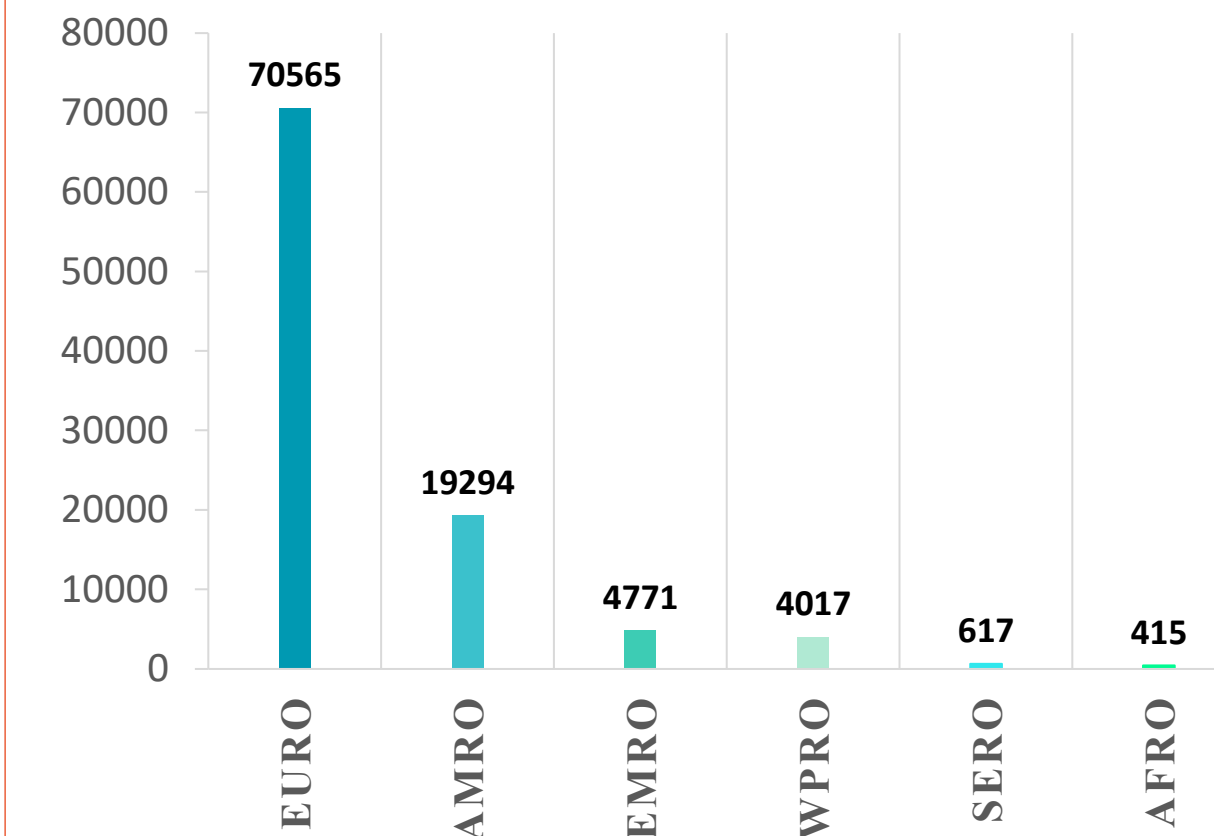


Figure 8: illustrate the Global distribution of COVID19 cases per region (April 11th, 2020)

INFECTED



DEATH



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Map chart published by Abu Dhabi Public Health Center 2020.

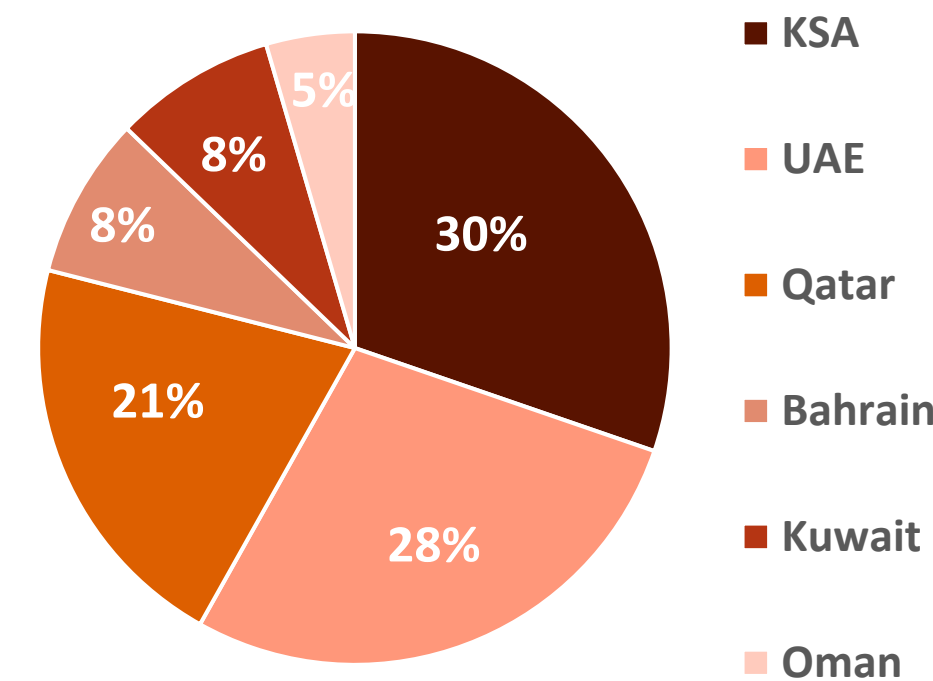
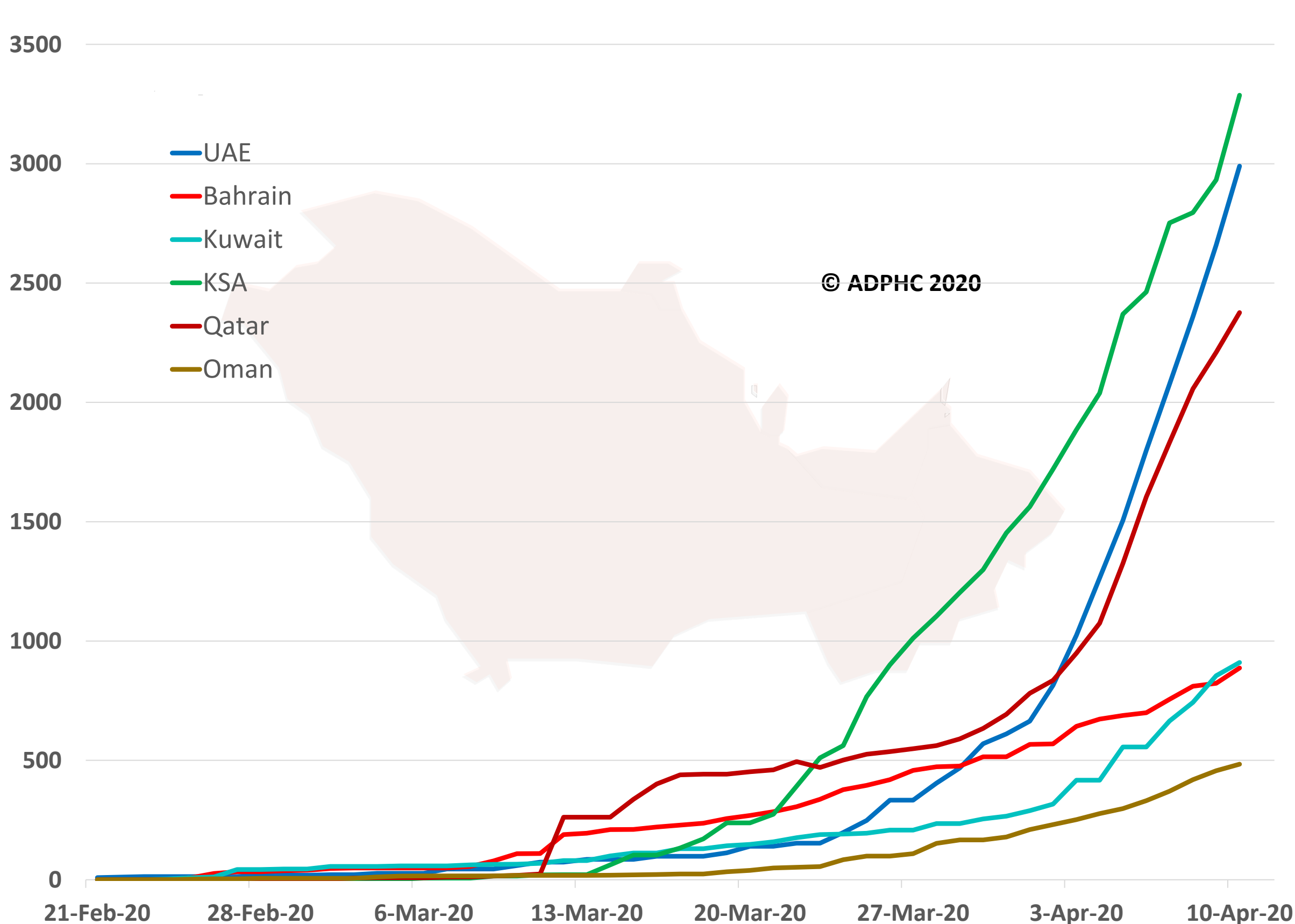
Data resources: [WHO](https://www.who.int)

Epidemiology

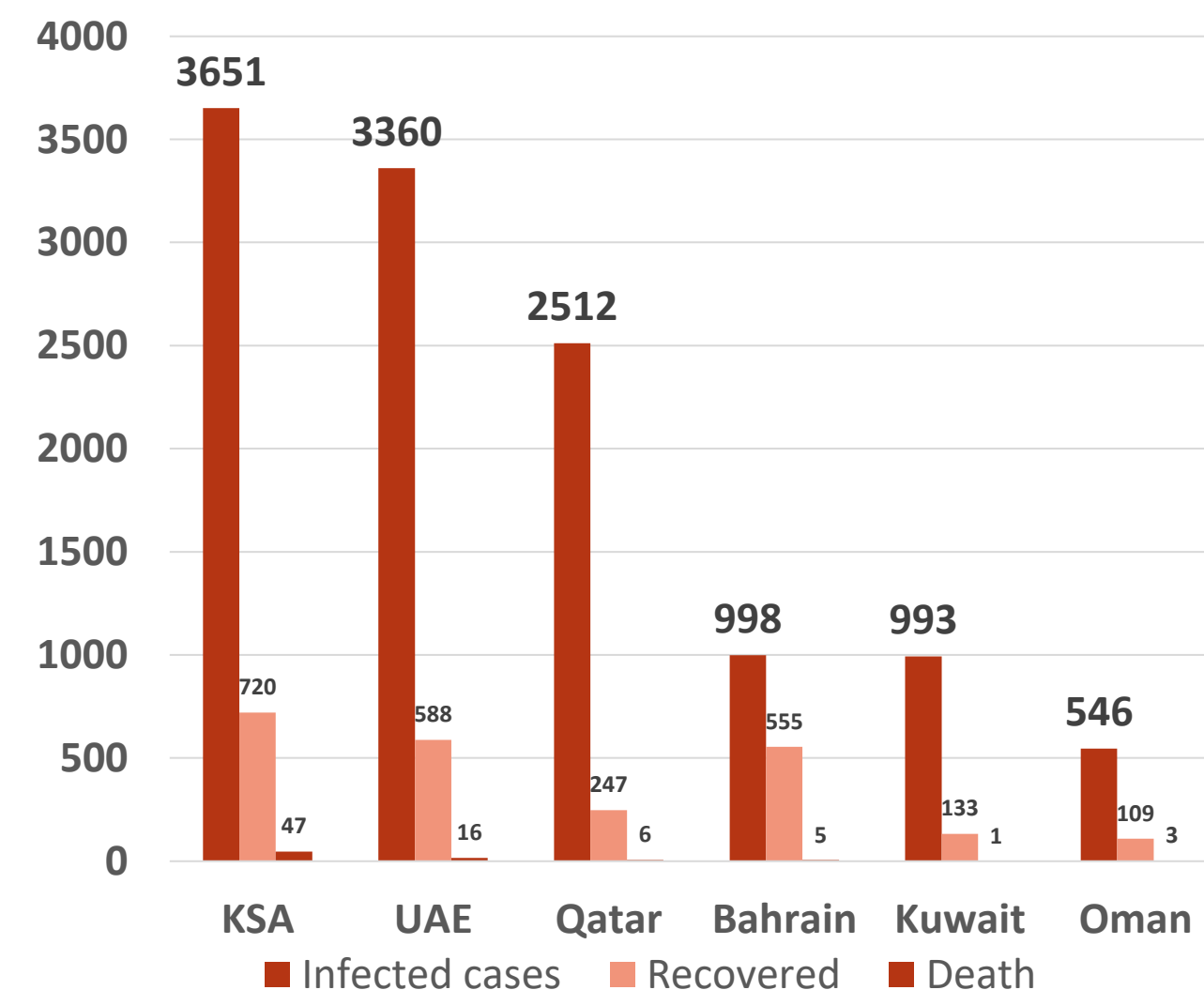


Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (April 11th, 2020)

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](https://www.who.int)

Public health response



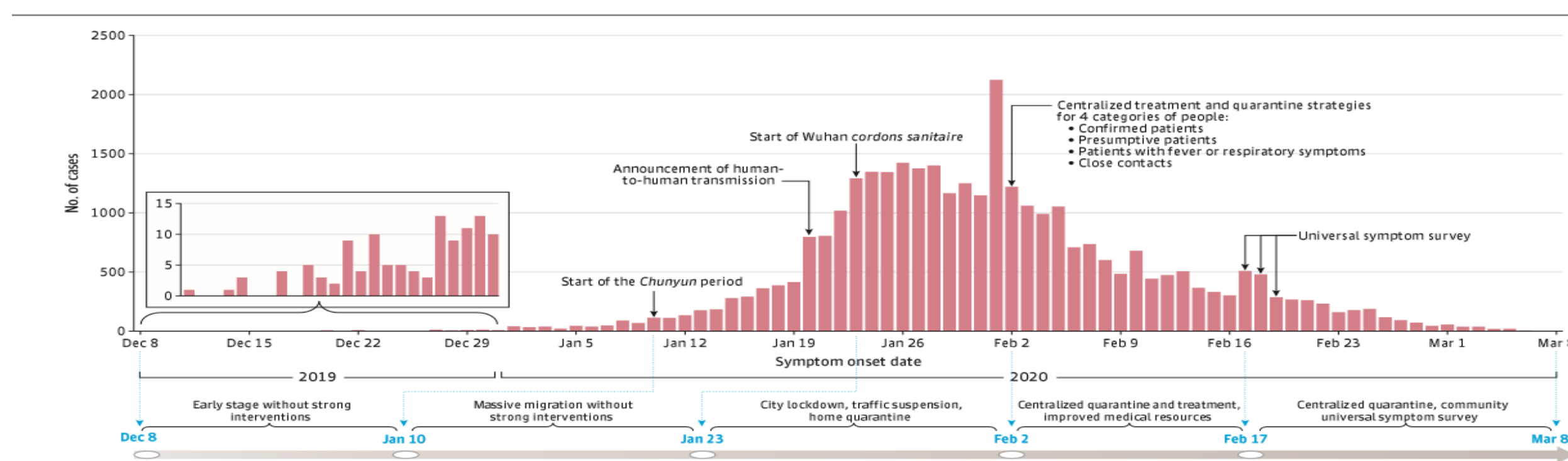
Article 1 : Association of Public Health Interventions With the Epidemiology of the COVID-19 Outbreak in Wuhan, China

Published: Published April 10, 2020 in [JAMA](#)

This article was summarized by subject matter expert

Summary:

- This is a retrospective cohort study of **32,583 laboratory confirmed** cases of COVID-19 in Wuhan from 8 December 2019 to 8 March 2020. During this period there were 5 periods of non-pharmaceutical public health interventions including *cordons sanitaire*, traffic restriction, social distancing, home confinement, centralized quarantine, and universal symptom survey (see Figure) and this study was done to find any association with improved control of COVID-19 outbreak.



Findings :

- The median patient age was 57 years (48% men and 52% were women). The daily confirmed case rate peaked in the third period (23 January to 1 February) and declined afterward across geographic regions and sex and age groups, except for children and adolescents, whose rate of confirmed cases continued to increase. The daily confirmed case rate over the whole period in local health care workers was 130.5 per million people which was higher than that in the general population 41.5 per million people. The proportion of **severe and critical** cases decreased from **53% to 10%** over the 5 periods. The severity risk increased with age; proportion of severe and critical cases was 4% in patients under 20 years; 12% among those aged 20-39 years and 41% in patients over the age 80. The effective reproduction number fluctuated **above 3.0 before January 26**, decreased to below **1.0** after February 6, and decreased further to less than **0.3** after **March 1**.



Public health Response :

This article was summarized by subject matter expert

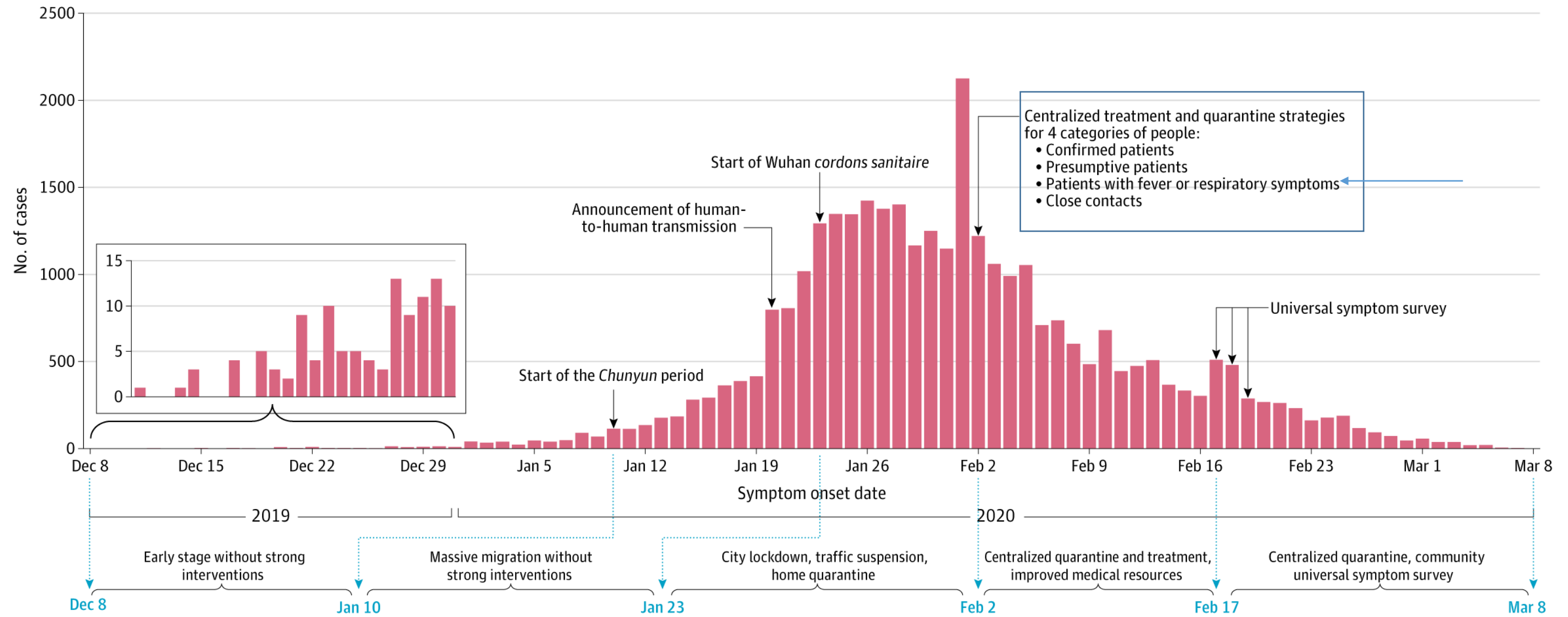
Article 1: Cont., Published Summary:

- The study has many **limitation** as **multiple interventions** were implemented at the **same time** or during the short timeframe, so effectiveness of individual interventions is not possible due to study design. Data was extracted from the infectious disease reporting system and there **was no information** available such as **incubation period, time to hospitalization**, time to discharge, medical treatment strategies and vital status. There was also no information diagnostic testing patterns, ascertainment rate and proportion of asymptomatic cases.
- It is concluded that series of multifaceted public health interventions was temporally associated with improved control of the COVID-19 outbreak in Wuhan, China which may help to inform public health policy in other countries and regions

Treatment :



Article 1: Cont.,



Control the source of infection	Medical resources	Fever clinics established, immediate reporting of pneumonia of unknown cause	Crowded patients, congested hospitals; high rate of nosocomial infection in health care workers	Severe shortage of all medical resources	Increased designated wards; increased supplies of medical devices, equipment, and health care workers; increased nucleic acid testing and reduced delay from onset to diagnosis; increased antibody testing for hospital discharge	
	Patient triage 1. Confirmed cases 2. Presumptive cases and close contacts	Increasing cases with COVID-19, treatment and isolation of patients but no other measures	Increasing cases of COVID-19, increasing community-acquired and nosocomial infections	Crowding of patients, increasing community-acquired and nosocomial infections, and familial clustering	Substantially increased hospitalization until all incident cases isolated and treated	Increased recovery and declining hospitalization
		Normal human movement	Massive human movement	Home quarantine for presumptive cases, those with respiratory symptoms, and close contacts	Centralized isolation in designated hospitals, Fangcang shelter hospitals, public facilities	Centralized isolation in hospitals or facilities, closure of Fangcang shelter hospitals
Block the transmission routes	Intracity transportation	No restriction of intracity transportation, massive human migration during Chunyun period because of approaching Chinese Lunar New Year		Cordons sanitaire of Wuhan City		
	Intercity transportation and social distancing	No restriction of intercity transportation, increasing human movement within the city because of approaching Chinese Lunar New Year		Suspension of public transportation (Jan 23); suspension of online taxi-hailing service (Jan 23); restriction of traffic within urban areas (Jan 25); prohibition of all inner-city travel unless permitted (Jan 26)		
Prevent new infections		Personal hygiene and protection, home confinement, health communication	Recommendation of wearing face masks to prevent seasonal flu	Official declaration of human-to-human transmission on Jan 20	Closure of entertainment venues and public places (except for permitted drugstores or supermarkets), cancellation of all public events, compulsory wearing of face masks in public places	
	None		None	Compulsory wearing of face masks, personal hygiene (eg, handwashing, disinfection, home cleaning, and ventilation)	Universal and compulsory stay-at-home policy for all residents	
		None	None	Self-monitoring of body temperature	Self-monitoring of body temperature and symptoms	Universal symptom survey by community workers and volunteers



Article 2: Compassionate Use of Remdesivir for Patients with Severe COVID-19

Published: April 10, 2020 [The new England Journal of Medicine](#)

This article was summarized by subject matter expert

Summary

- This is a compassionate-use cohort studying the mortality and the clinical improvement on patient receiving Remdesivir in a total of 53 COVID positive patients (USA: 22, Japan: 9, Italy: 12, Austria: 1, France: 4, Germany: 2, Netherlands: 1, Spain: 1, and Canada: 1) who had either an oxygen saturation of 94% or less while the patient was breathing ambient air or a need for oxygen support.
- Patients received a 10-day course of Remdesivir and followed up for 28 days a period until discharge or death.

Outcome:

- **Oxygen requirement** : 68% showed an improvement whereas 15% of patients showed worsening (improvement was mainly among patients who were not on the invasive O2 support.)
- **Clinical improvement:** By 28 days of follow-up, the cumulative incidence of clinical improvement was 84%
- **Discharge:** 47% of patients had been discharged (discharge was more (89%) for patients receiving noninvasive than patients (24%) receiving invasive O2 support).
- **Mortality:** 13% of patients died after the completion of remdesivir treatment. Mortality was higher among those who were receiving invasive O2 (18%) compared to those who were receiving noninvasive O2 support (5%).
- **Adverse event: 60% of patients reported adverse events during follow-up** (elevated hepatic enzymes, diarrhea, rash, renal impairment, and hypotension). **Adverse events were more common in patients receiving invasive ventilation.**

Conclusion:

- Lack of a control arm of patients not receiving **Remdesivir** treatment limit the possibility of the effect of other interventions on the measured outcomes.
- Robust RCTs are needed comparing **Remdesivir** with a placebo group as well as with other potential antivirals. Also, findings **encourage discussing testing initiation of Remdesivir in early stage of the disease.**



Article 2: Cont.,

Figure 1-A,B,C: Clinical improvement during Remdesivir Treatment

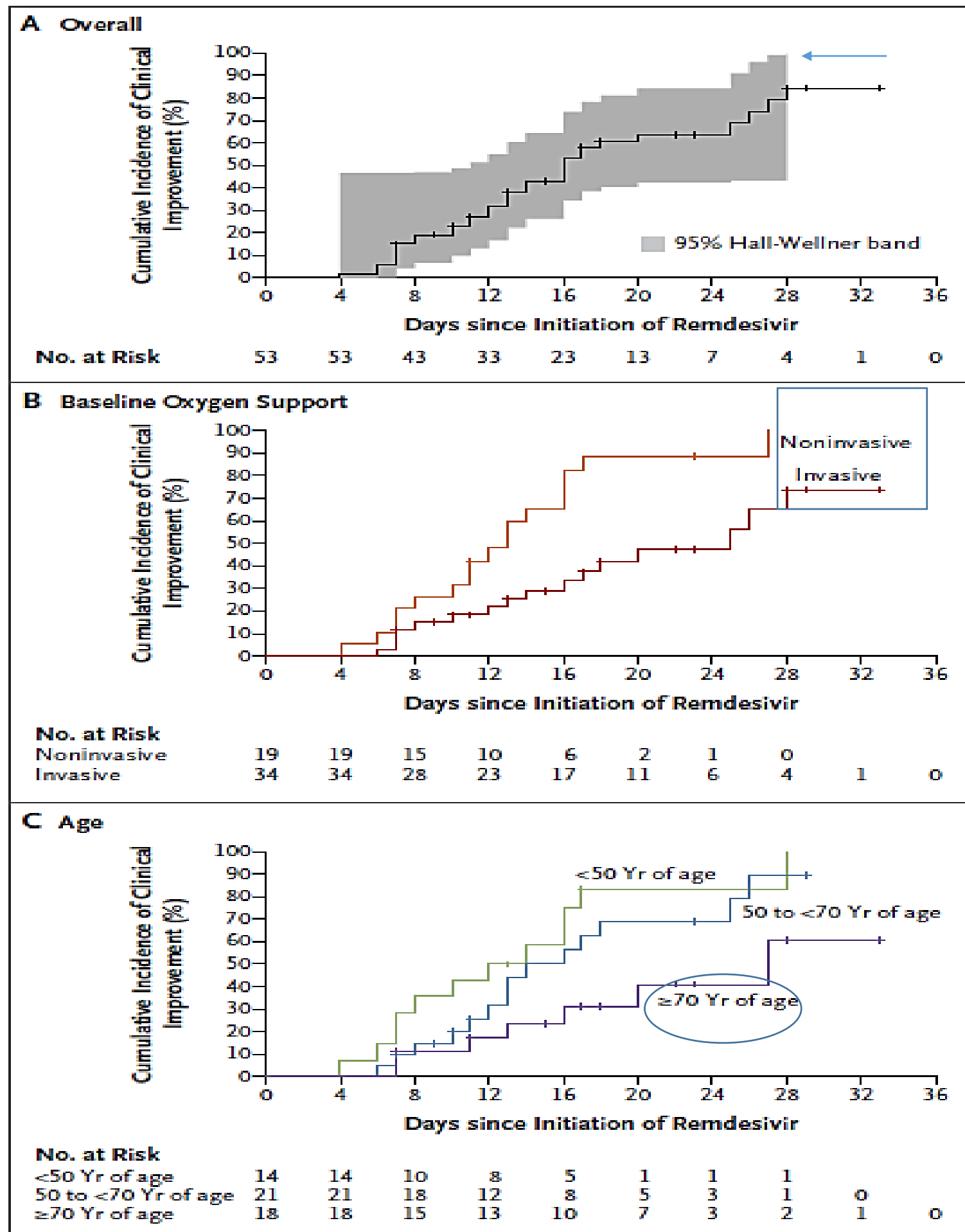
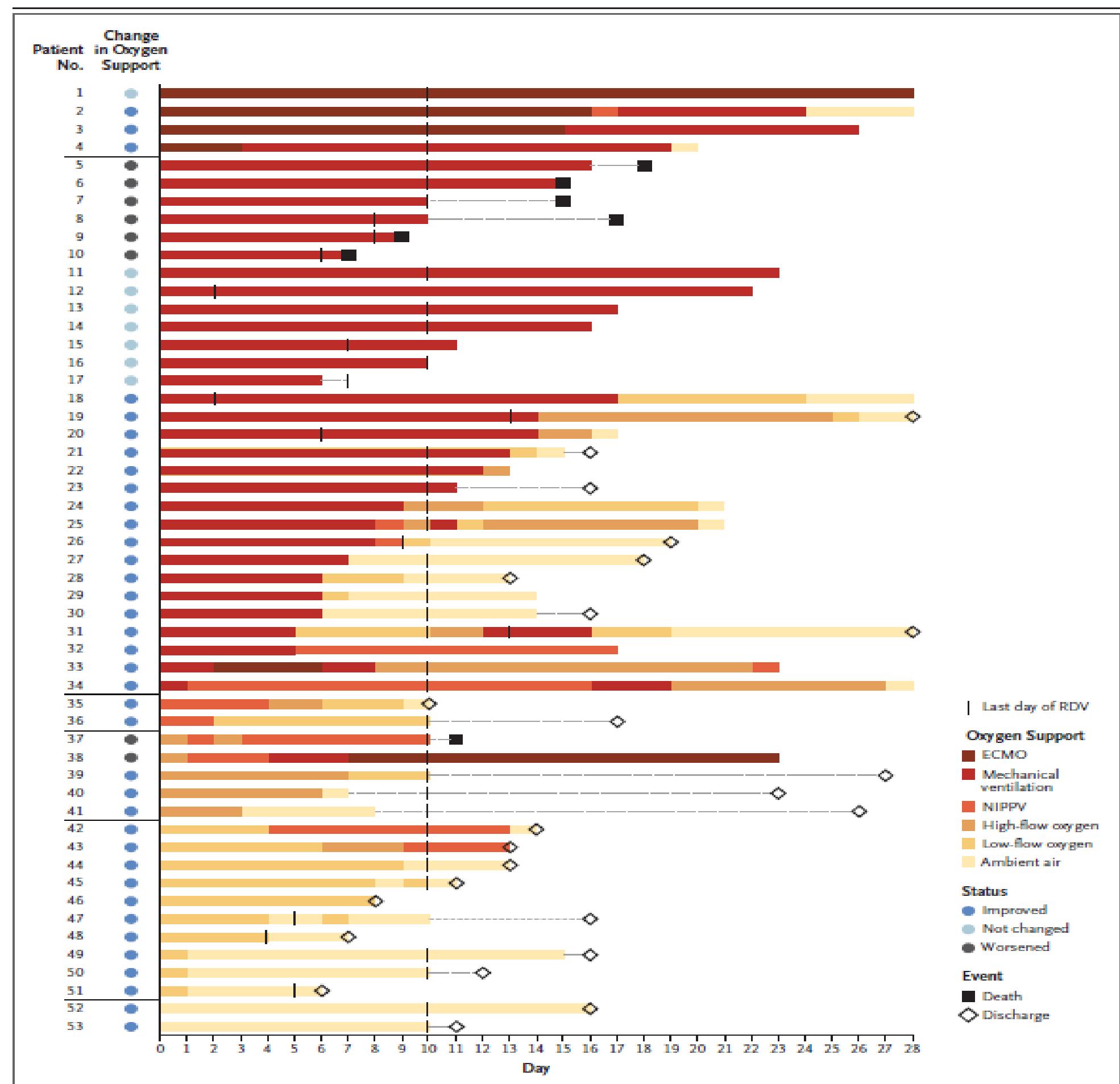


Figure 2: Patient outcomes over time of follow up



Public Health Response



Article 2: Disease Control, Civil Liberties, and Mass Testing — Calibrating Restrictions during the Covid-19 Pandemic

Published: April 9, 2020 in [NEMJ](#)

Summary:

During infectious disease outbreaks, law and public policy have a deference to intrusive action by public health authorities. To respect civil liberties, courts insisted that forceful restrictions must be required and designed as specific as possible to achieve the protective goal. Although these broad principles are useful indicators, historical experience with quarantine provides specific guidelines because of several remarkable features of COVID-19 and the public health response it provokes.

Aggregating test results at community and state levels would support a reliable disease surveillance system. Depending upon community prevalence of COVID-19, fixedness of the testing regimen could then be dialed up or down. China follows a version of this approach by grading community risk on a four-tier, color coded scale.

Structural Features of Traditional and Graduated Approaches to Infectious Disease Control.

Feature	Under Traditional Coercive Measures	Under Covid-19 Graduated Controls (in Order of Increasing Severity)
Target group	Infected or exposed people	Infected or exposed people Population-wide (national, states, regions, or cities)
Primary restrictive measures	Involuntary isolation of infected people and quarantine of exposed people	Physical distancing Stay-at-home orders Self-isolation if infection or exposure is known or suspected
Force of restriction	Mandatory	Voluntary Required but not rigidly enforced
Enforcer	Government	None or voluntary Peer pressure and social compact Civil-society organizations (e.g., school districts, professional groups, and employers) Government
Form of sanction	Coercive state action	None Social stigma Private enforcement (e.g., refusal of service, industry sanctions) Warnings, fines Coercive state action
Lifting of restriction	When risk of infection is gone or very low	When rate of new infections peaks or health care capacity becomes manageable When additional milestones are reached When risk of infection is gone or very low