ABU DHABI PUBLIC HEALTH CENTRE | مركز أبوظبي للصحة العامة

Scientific Research Monitoring on COVID-19

18 May 2020

Summary on COVID19

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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

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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 discussed the importance of sero-epidmiological studies in determining reopening society.
- **Public Health Response:** UK calculator developed to estimate the excess of death in vulnerable population in different scenarios of public interventions.
- **Treatment:** Prone position in Covid19 cases with mild to moderate Acute respiratory syndrome shows positive results.

WHO daily report

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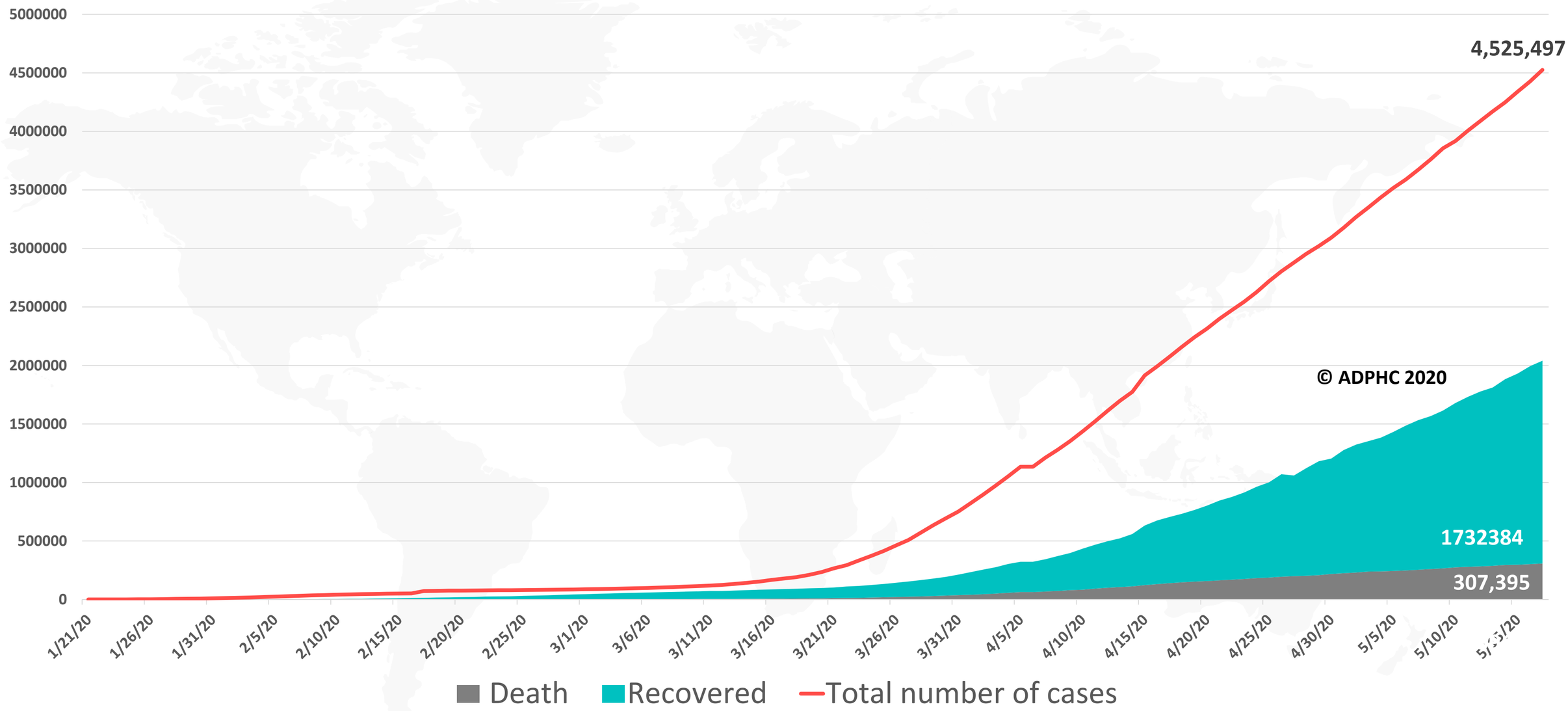
WHO daily report 17 May 2020

- Presidents Carlos Alvarado Quesada of Costa Rica and Sebastián Piñera of Chile joined the WHO Director-General Dr Tedros on 15 May to announce progress on **a technology platform that aims to lift access barriers to effective vaccines,** medicines and other health products against COVID-19. The platform, which will officially **launch on 29 May**, will pool data, knowledge and intellectual property for existing or new COVID-19 health products to deliver 'global public goods' for all people and all countries.
- Japan has agreed to contribute over **US$2.7 million** to help **nine countries in the Americas** strengthen their capacities to detect cases, monitor, and control outbreaks of COVID-19, as well as ensure that reliable public health information on the COVID-19 pandemic is available to people involved in the response and the general public.
- A community of **youth influencers** named **the Global Shapers Community** is working with the WHO Regional Office for Europe to ensure that tailored health advice reaches communities, families and individuals in countries across the European Region. This collaboration allows young community members to flag rumors, report on the tone of discussions on their channels and ask questions, as well as share information and project ideas to WHO. The information is then used by WHO to better tailor risk communication and address misinformation.

Epidemiology

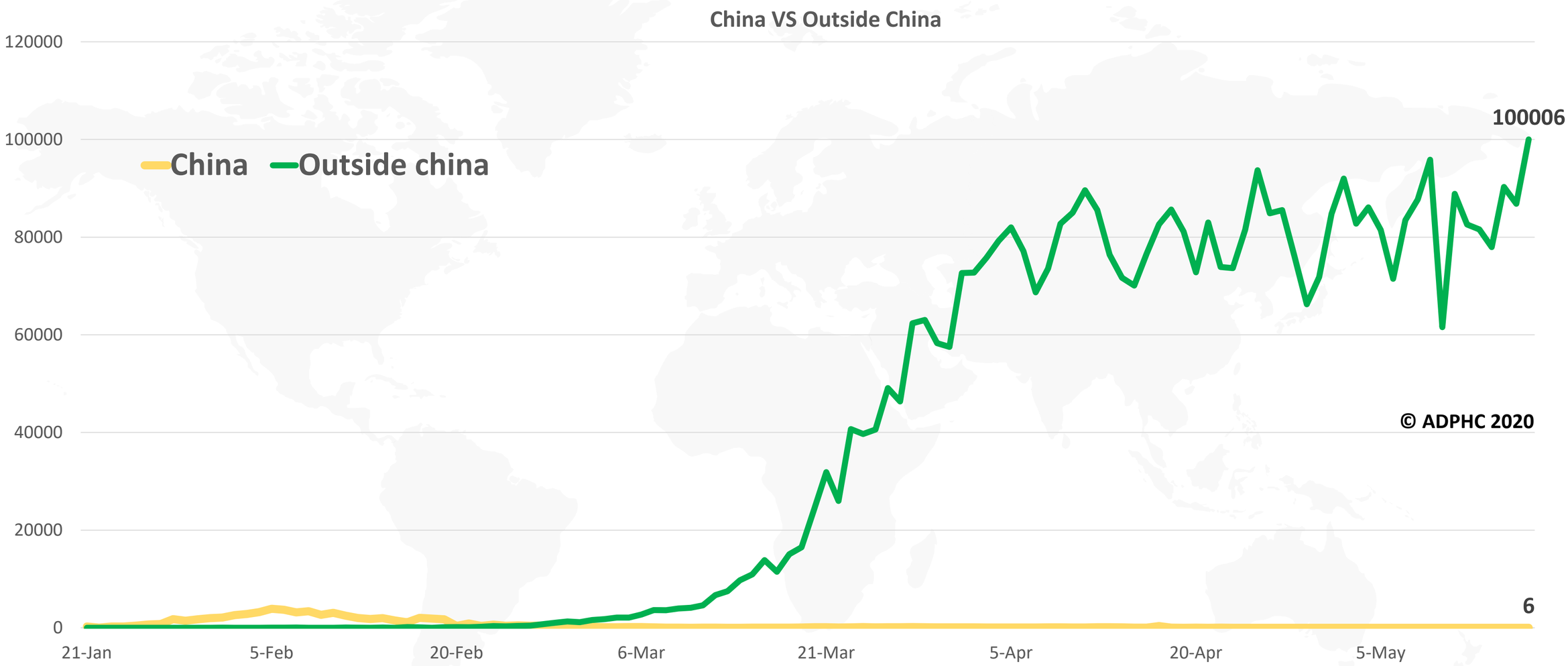
Figure 1: Total number of infected, recovered , and death cases (January 21st to May 17, 2020)



Line graph published by Abu Dhabi Public Health Center 2020.
Data resources: WHO, : John Hopkins University

Epidemiology

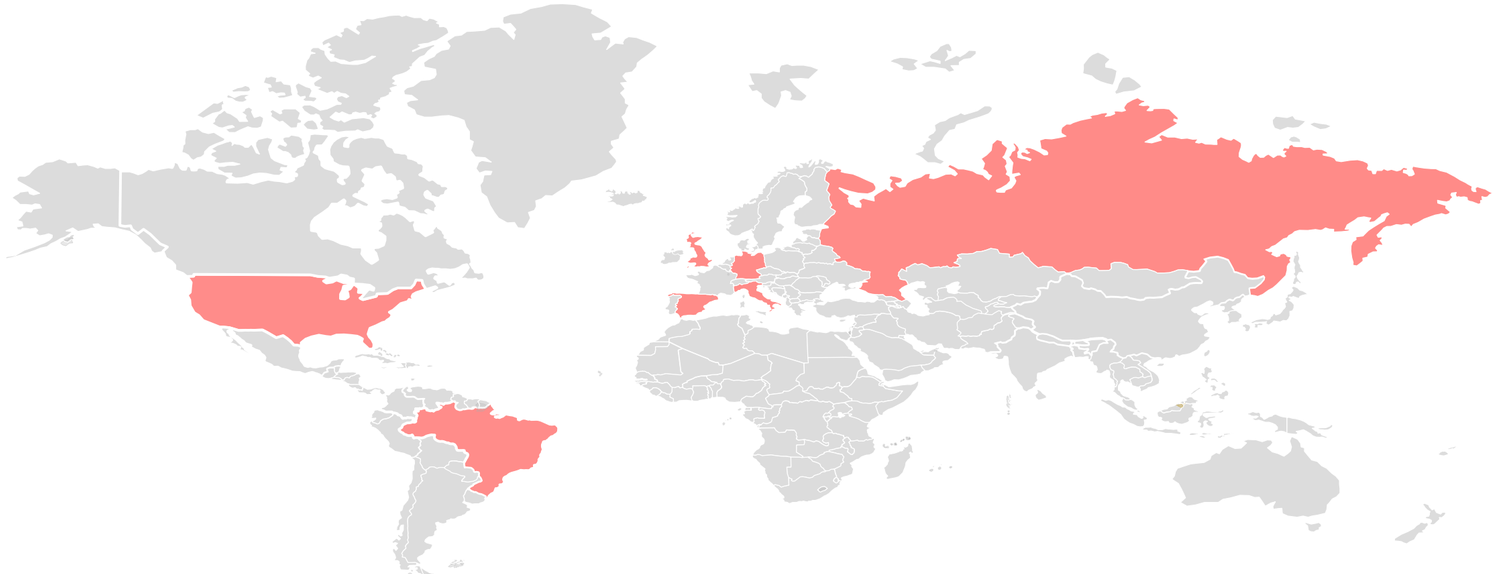
Figure 2: Daily new infected COVID-19 cases reported between (January 21 to May 17, 2020).

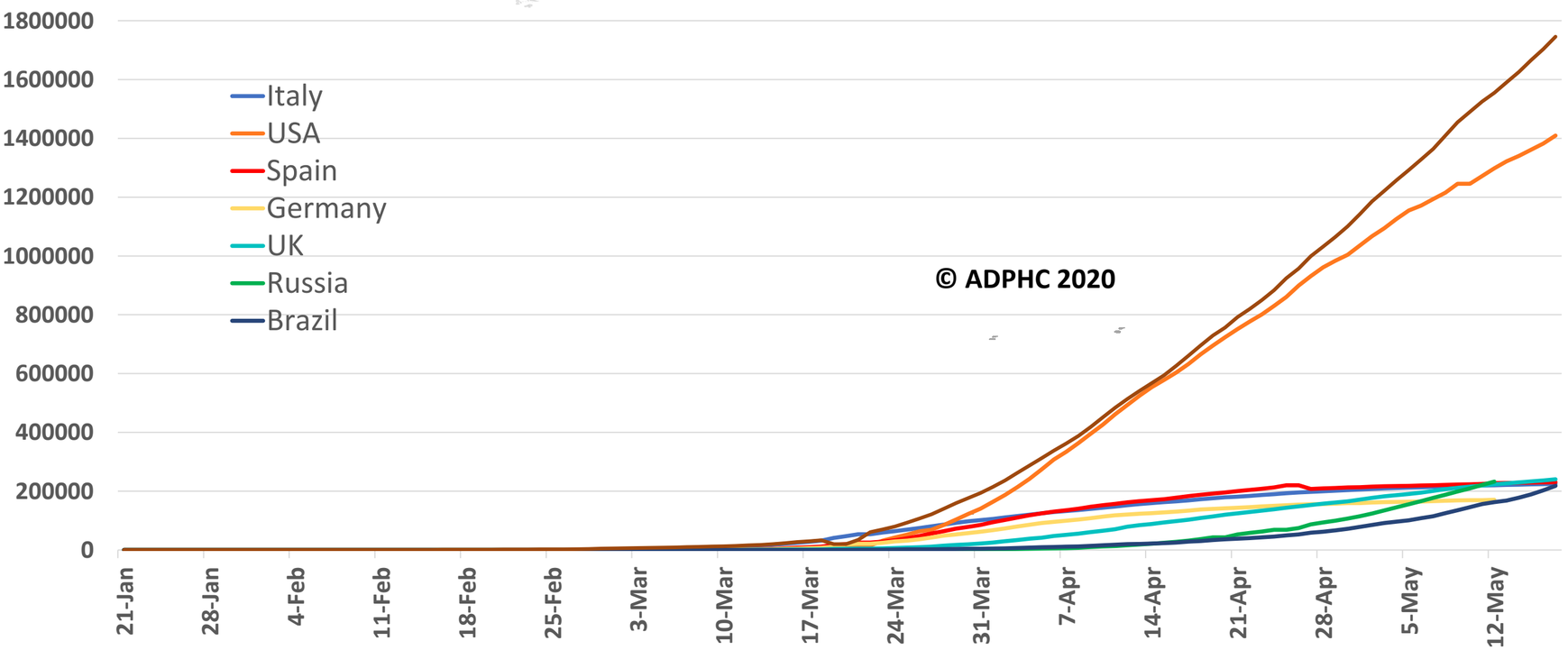


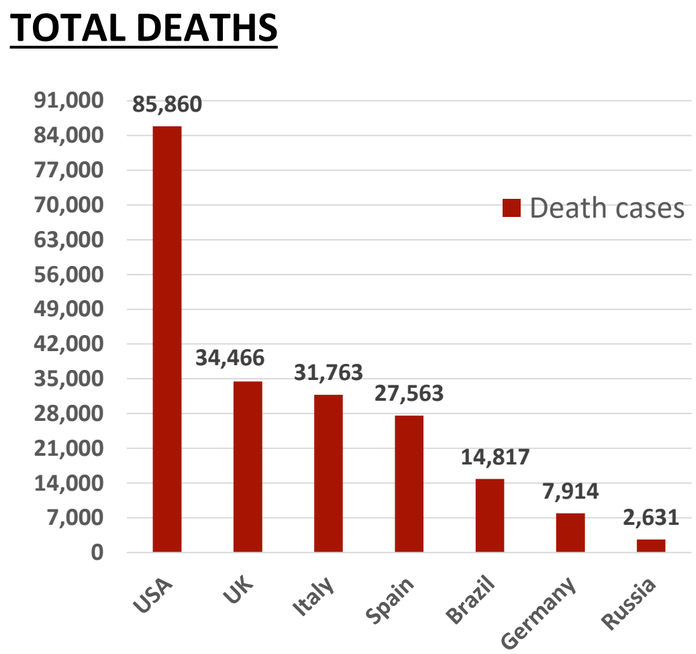
Line graph published by Abu Dhabi Public Health Center 2020.
Data resources: WHO

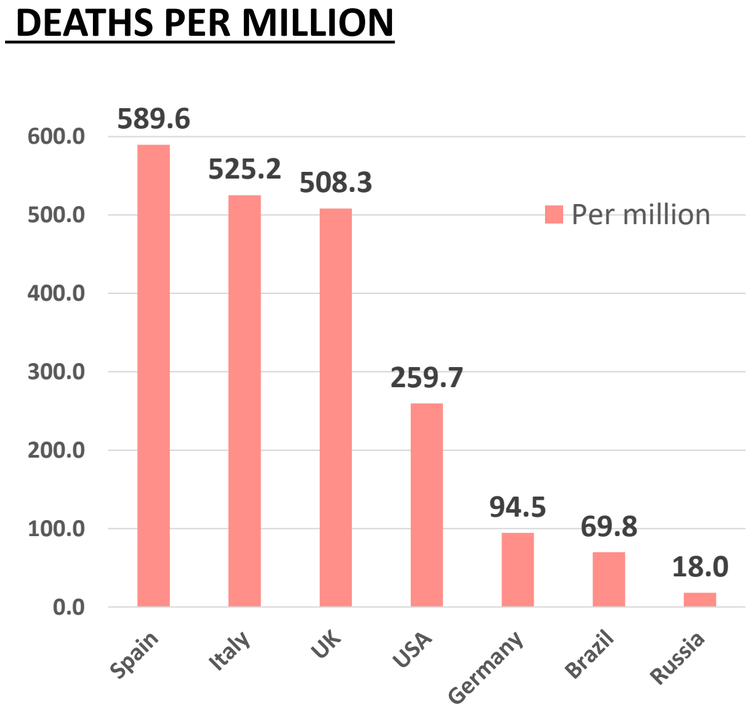
Epidemiology

Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to May 17, 2020).







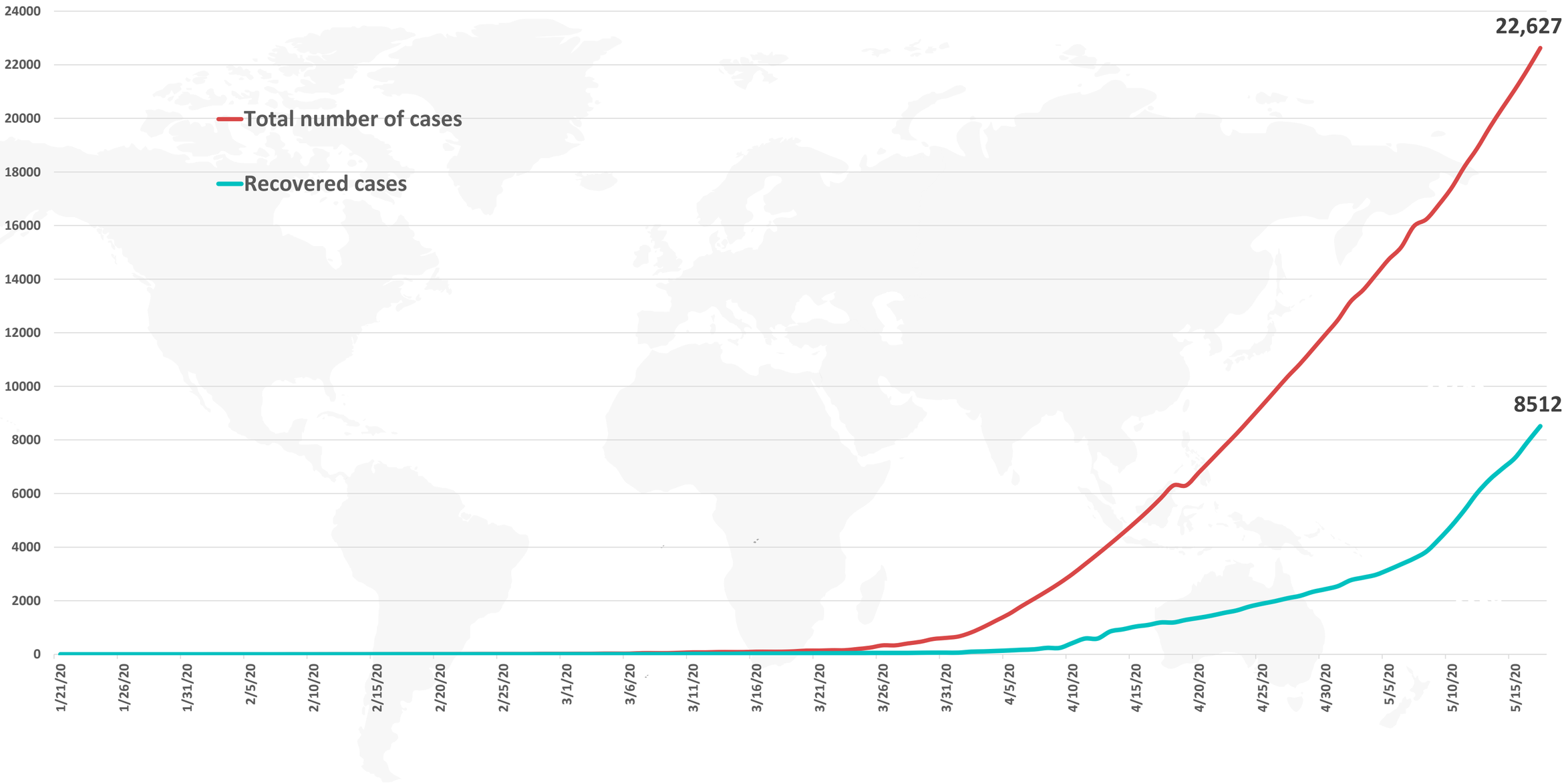


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

Epidemiology

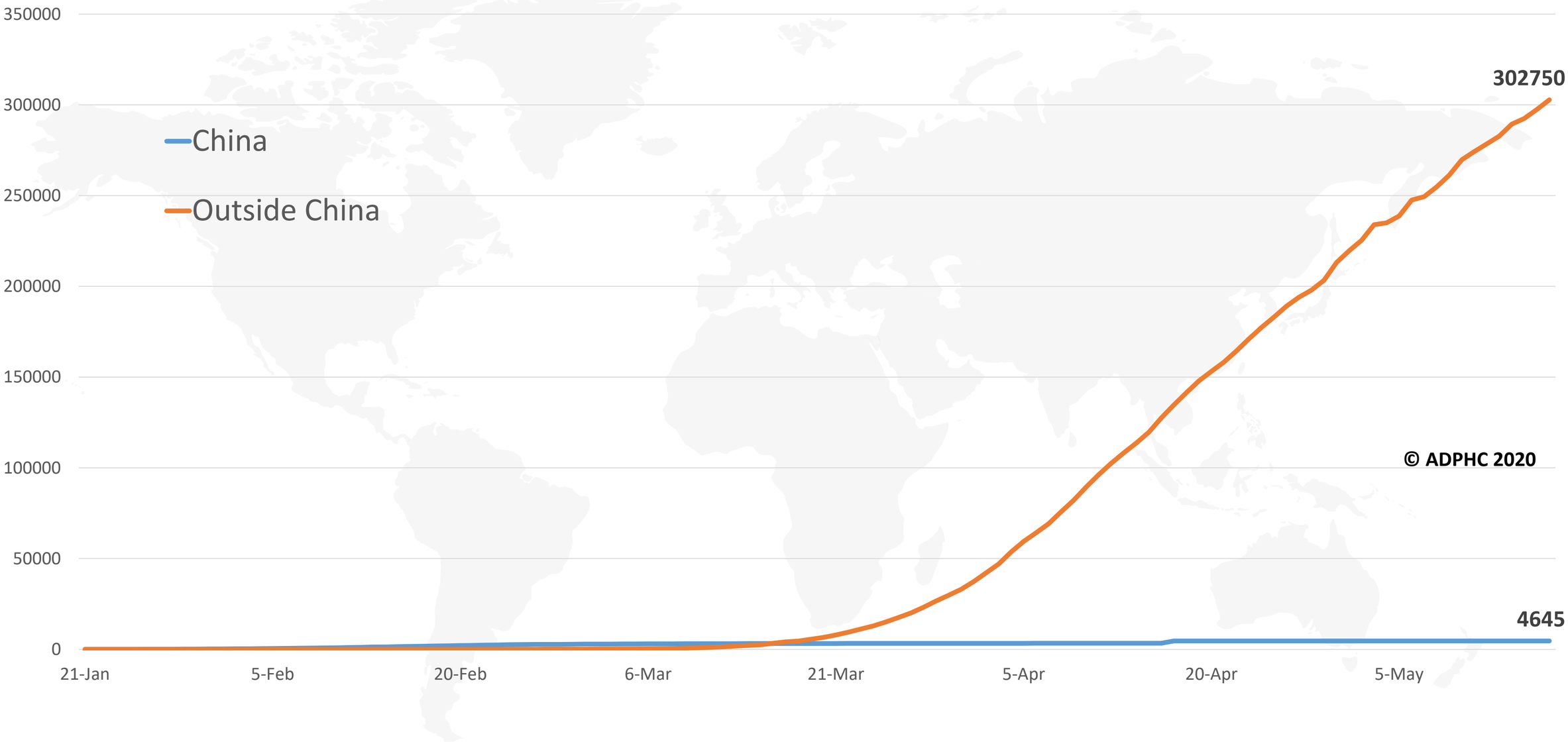
Figure 4: Total number of COVID-19 infected and recovered cases in UAE over time



Line graph published by Abu Dhabi Public Health Center 2020.
Data resources: WHO, : John Hopkins University

Epidemiology

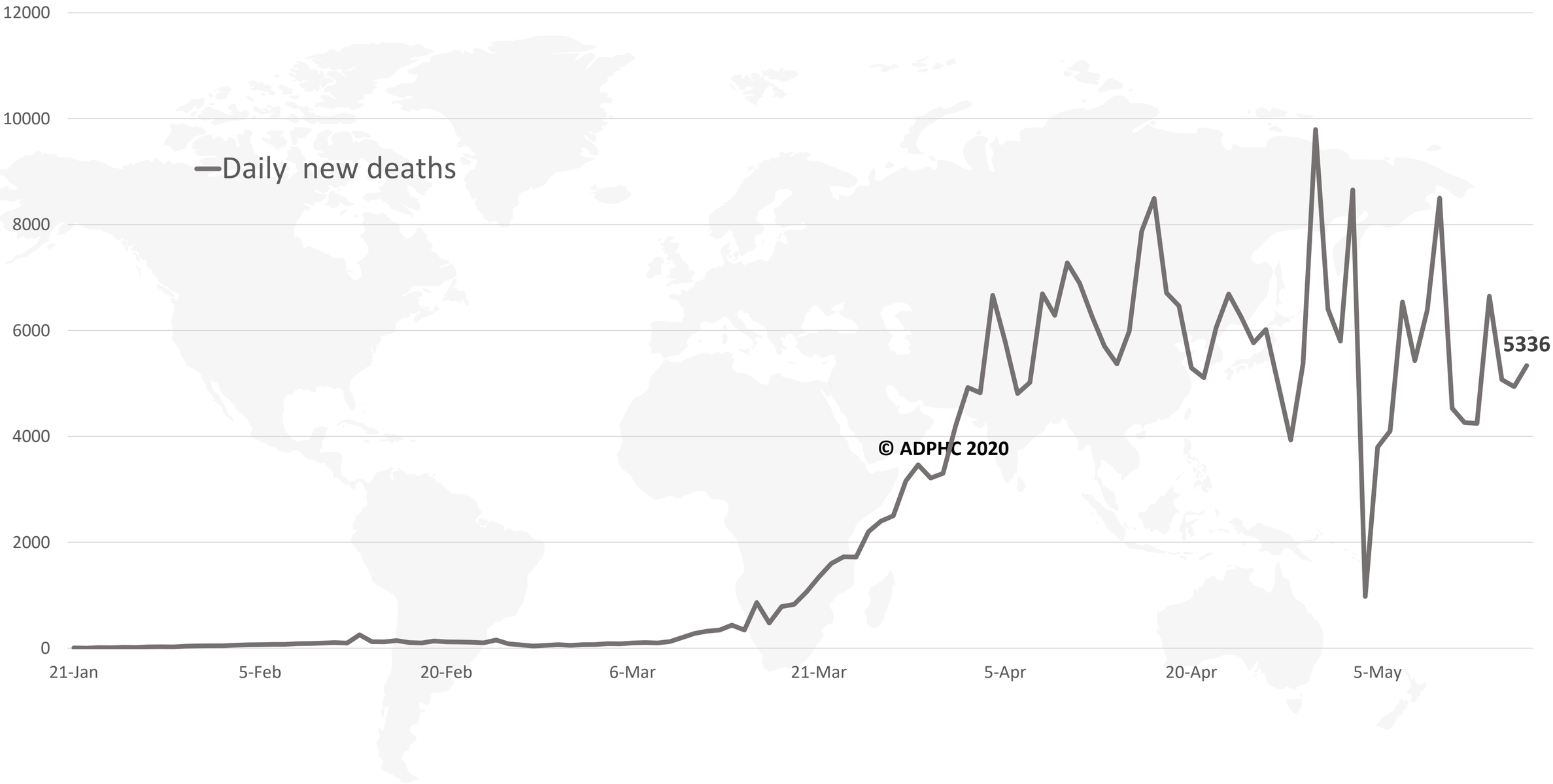
Figure 5: Total number of death due to COVID-19 reported by China and the rest of the world (January 22 to May 17, 2020).



Line graph published by Abu Dhabi Public Health Center 2020.
Data resources: WHO

Epidemiology

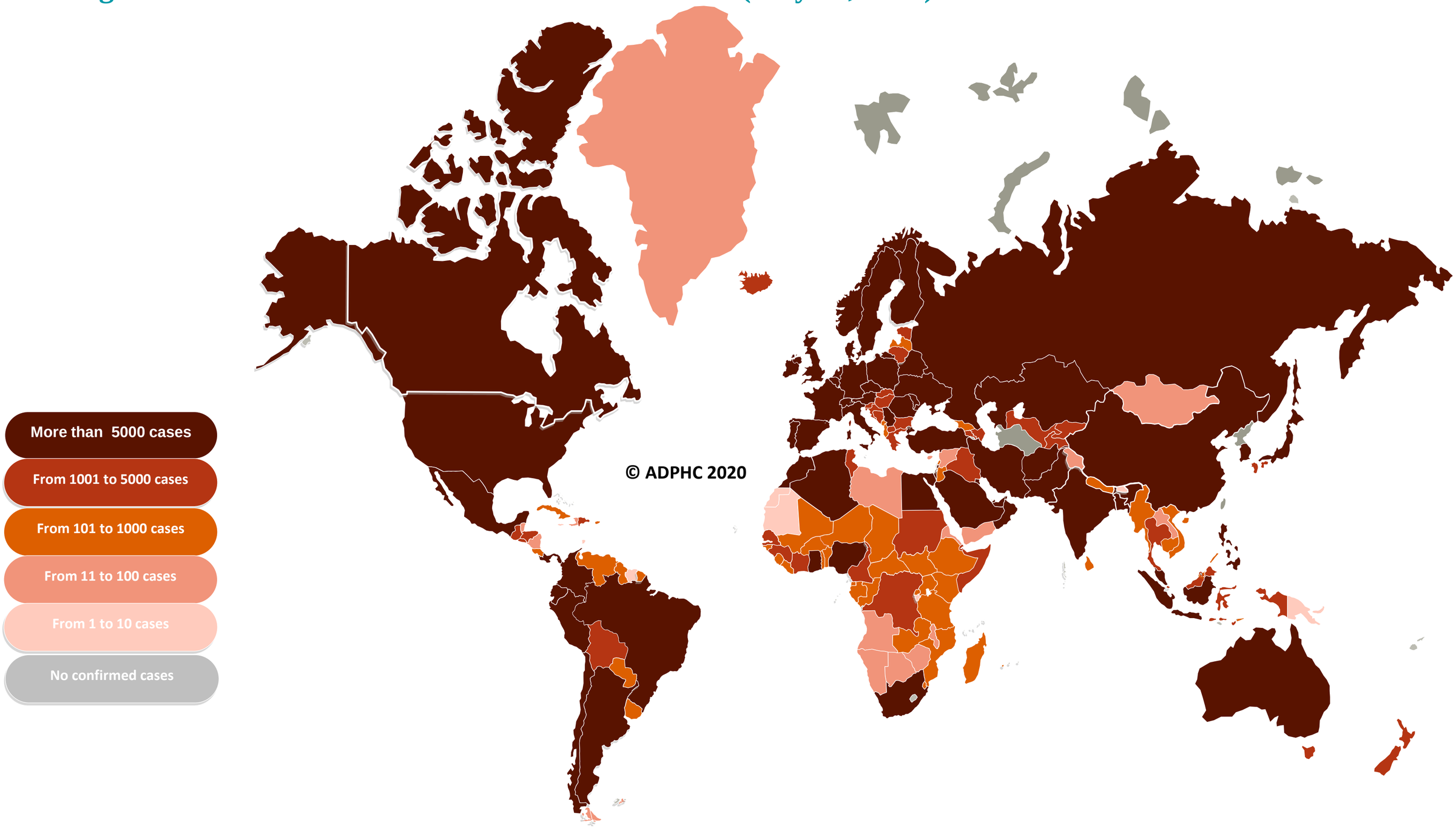
Figure 6: Global daily new deaths due to COVID-19 (January 22 to May 17, 2020).



Line graph published by Abu Dhabi Public Health Center 2020.
Data resources: WHO

Epidemiology

Figure 7a : Global distribution of COVID-19 cases (May 17, 2020).



Map chart published by Abu Dhabi Public Health Center 2020.

Epidemiology

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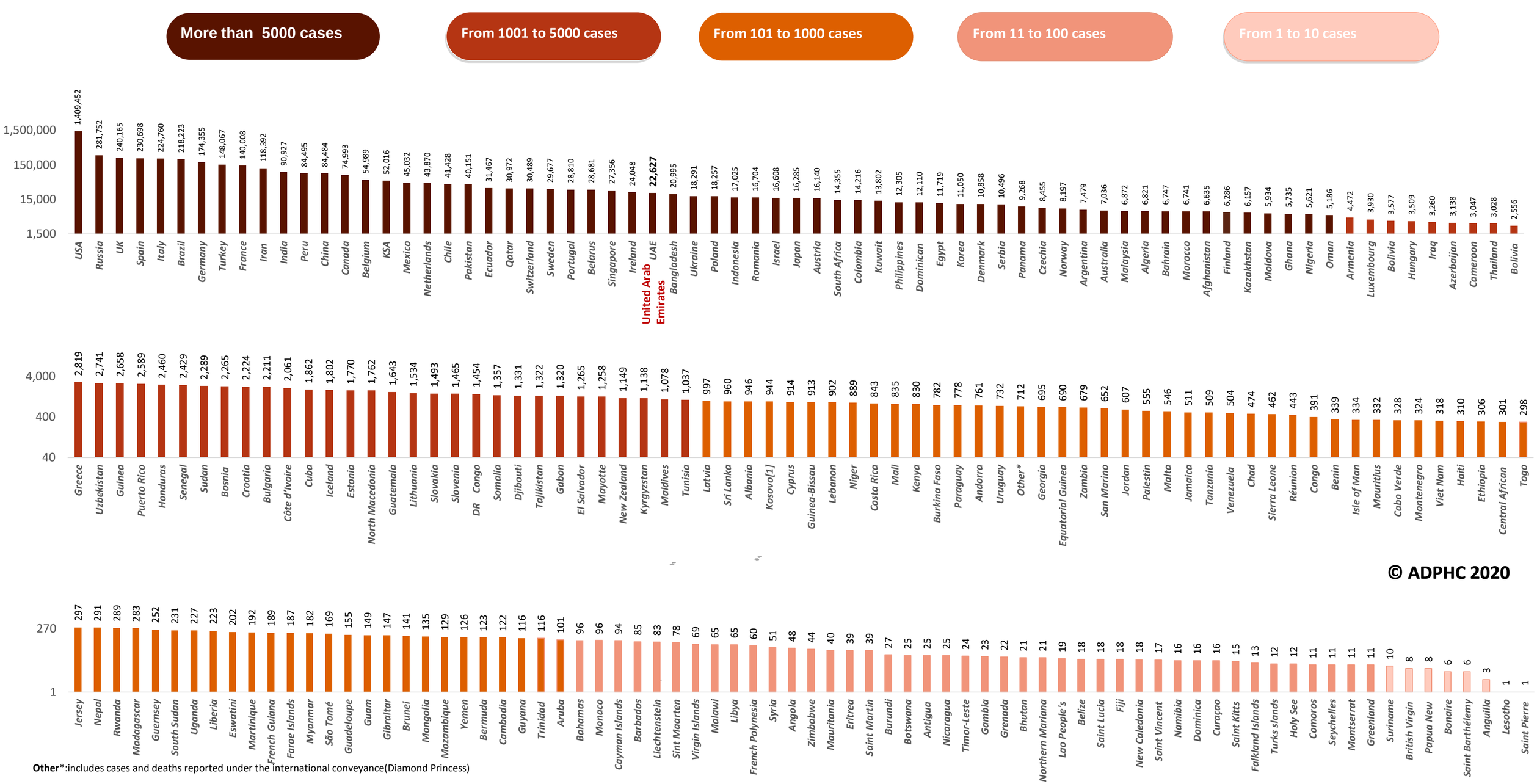
Figure 7B: Bar chart illustrate the global distribution of COVID19 cases May 17, 2020)



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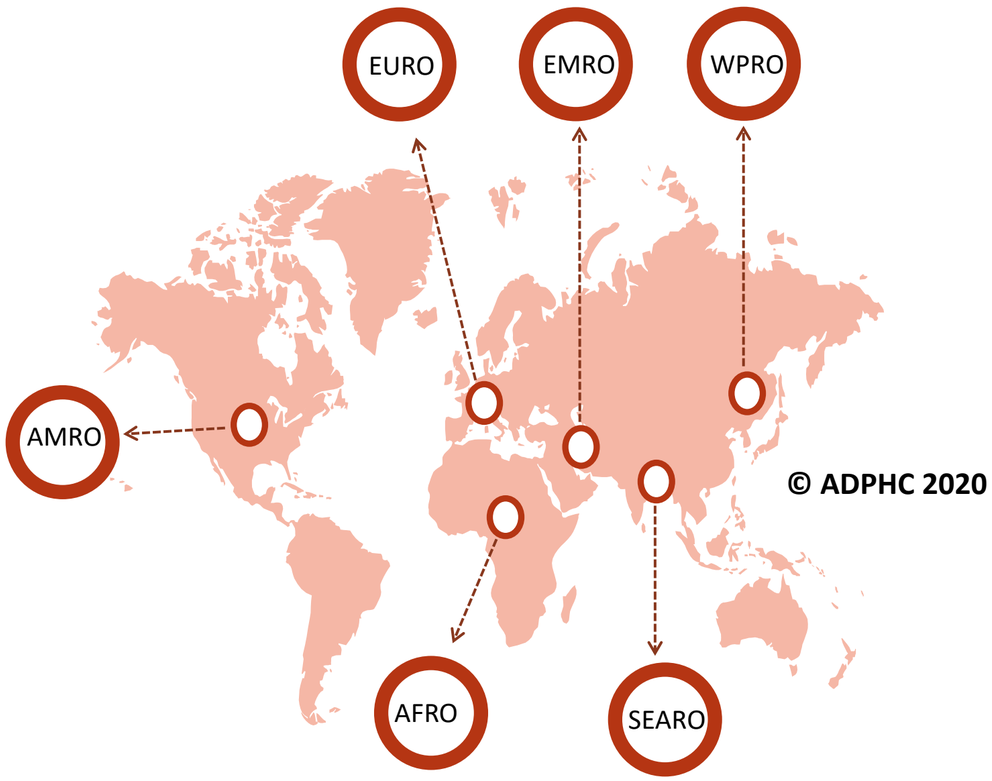
Other*:includes cases and deaths reported under the international conveyance(Diamond Princess)

Map chart published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

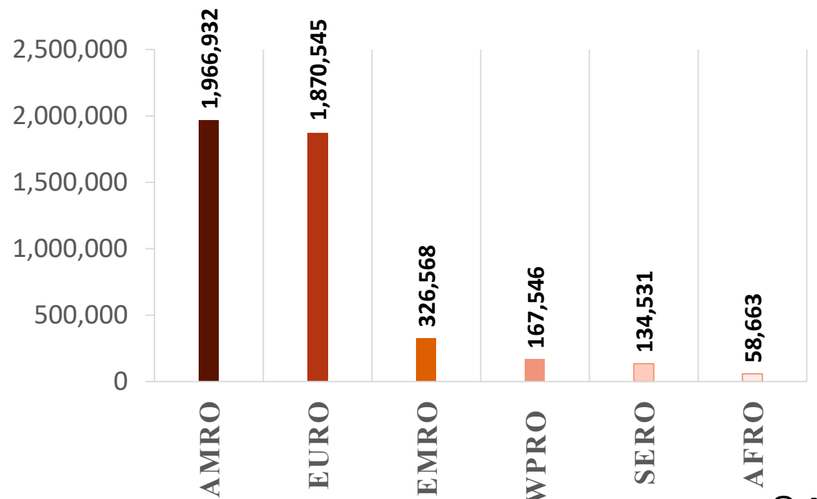
Epidemiology

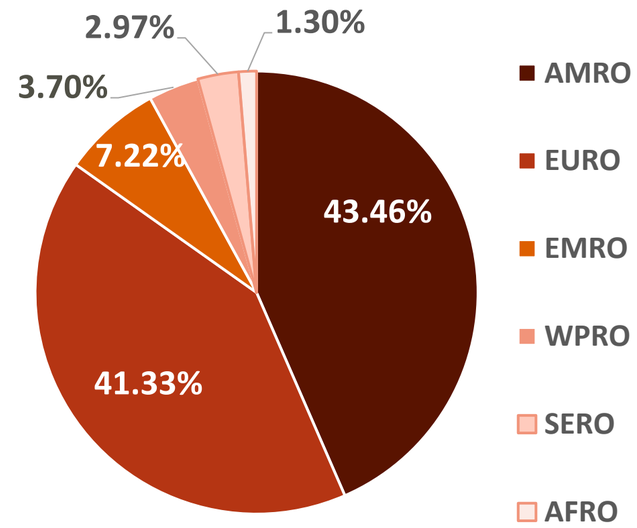
Figure 8: illustrate the Global distribution of COVID19 cases per region (May 17, 2020)



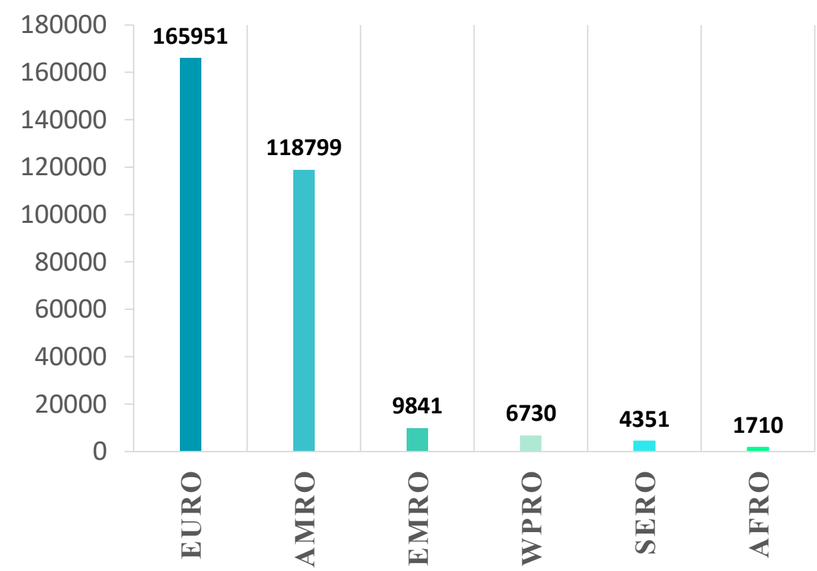
Map chart published by Abu Dhabi Public Health Center 2020.
Data resources: WHO

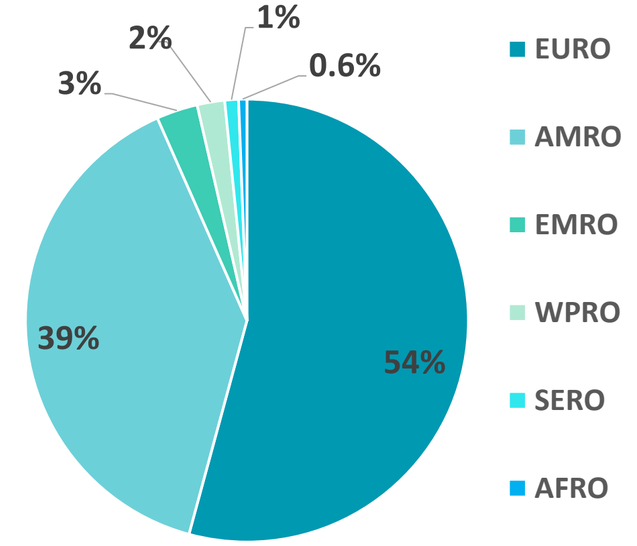
INFECTED





DEATH

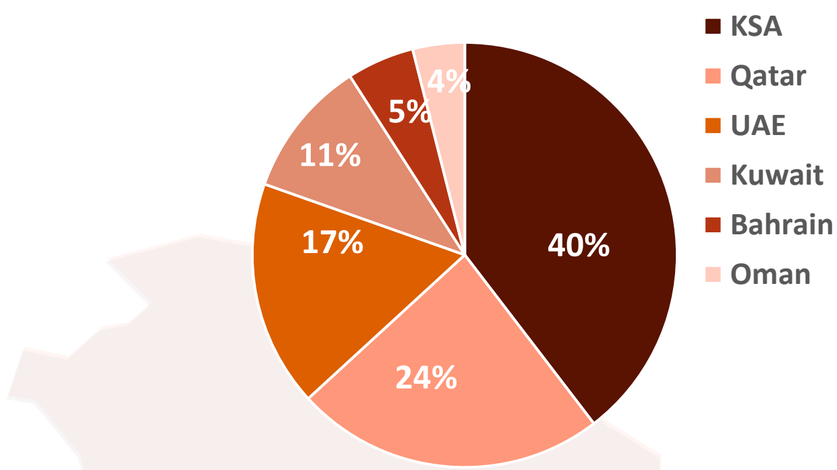


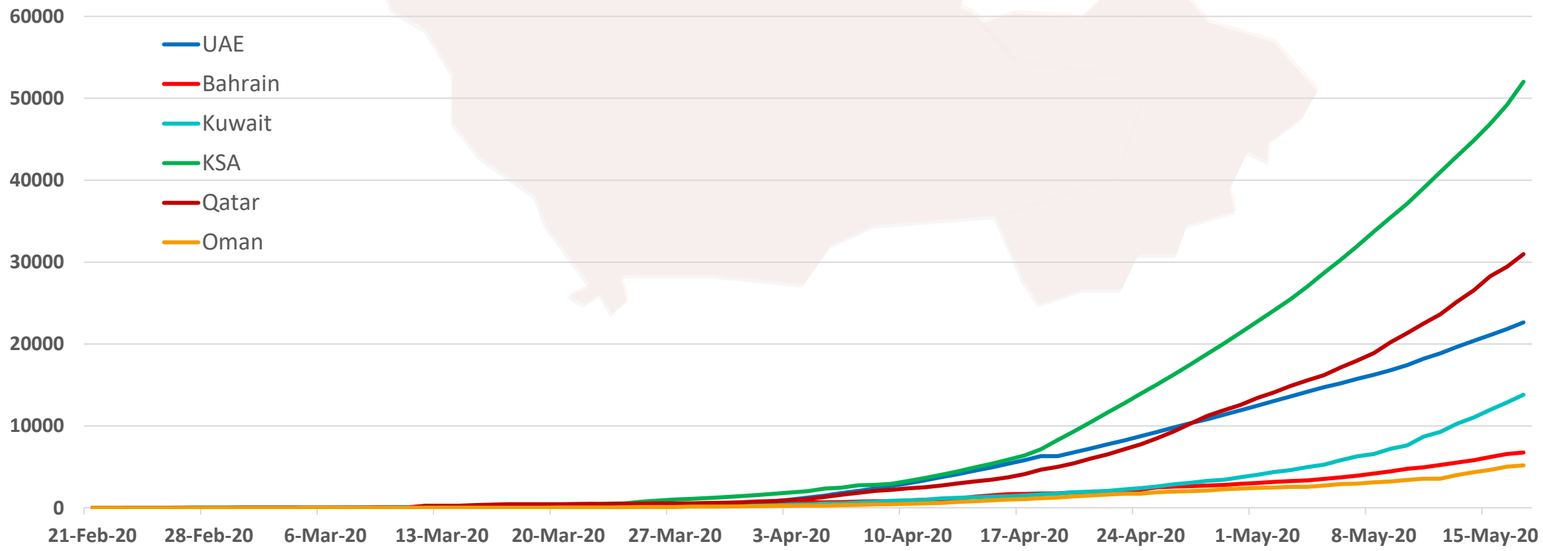


Epidemiology

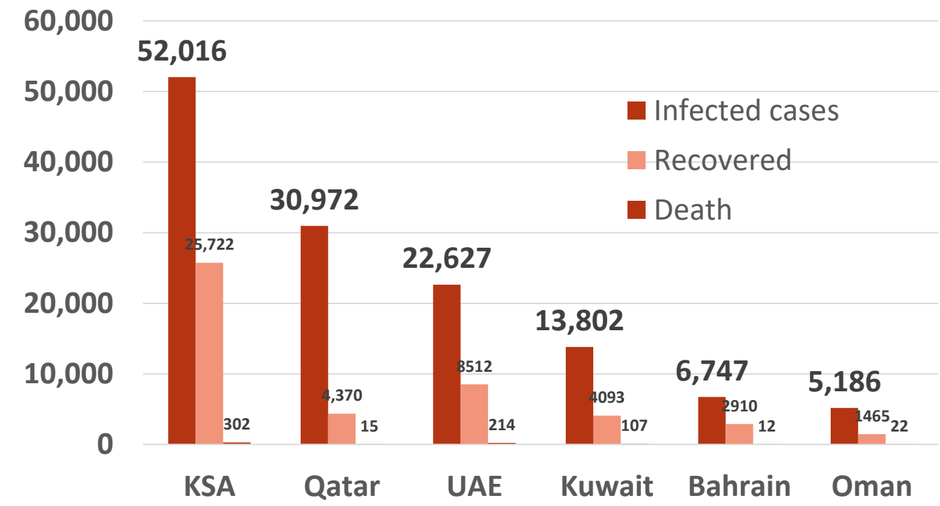
Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (May 17, 2020)

TOTAL NUMBER OF INFECTED CASES

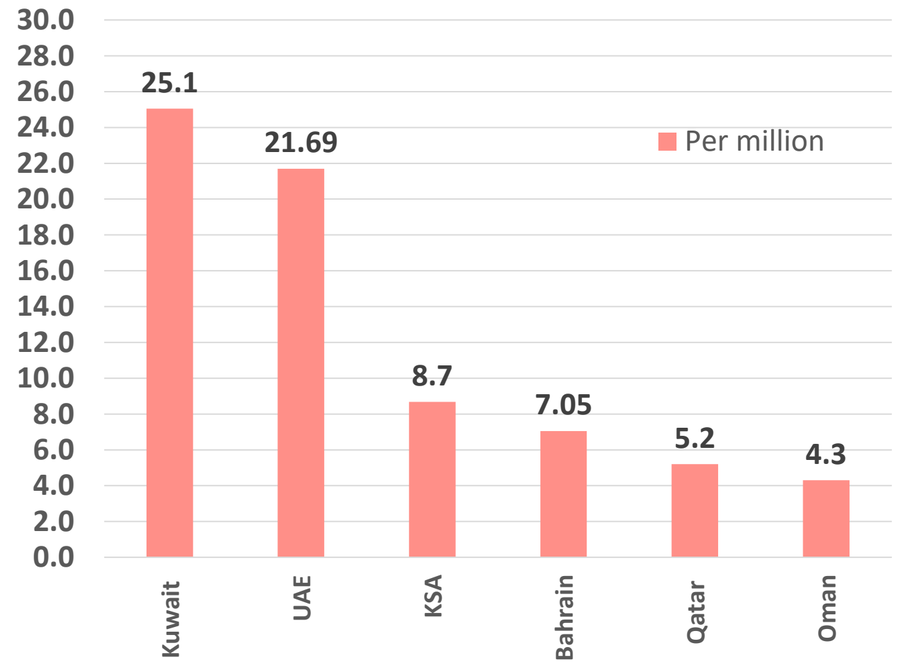




Total number of infected, recovered and Deaths



Death per million



charts published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

Article 1: Reopening Society and the Need for Real-Time Assessment of COVID-19 at the Community Level

Published: May 15, 2020 in the JAMA

Summary:

- Real-time incidence and sero-epidemiological data are essential to understand where communities are on the continuum of COVID-19 cumulative incidence and prevalence and how non-pharmaceutical interventions can be titrated to reopen business and society. These data are also vital to plan scenarios for the development of COVID-19 vaccines and therapeutics.
- In the cross-sectional community survey, selected individuals would be asked if they/household members have/had symptoms; have sought care, been tested, been hospitalized, or undergone ventilation; and if household members have died. At the same time, if blood and specimen from upper respiratory tract are collected, the proportion of the community with antibodies to SARS-CoV-2 and the proportion with symptomatic past and present infections can be estimated that are essential to determine effectiveness of previous community mitigation strategies and future direction.
- Future COVID-19 scenario projections for the communities are required for policy making, public health planning, and intervention development. Communities will require to project future scenarios to adjust intensity of non-pharmaceutical interventions and to decide when to reopen businesses and schools. Furthermore, information regarding baseline levels of immunity are essential for planning clinical trials for vaccines and therapeutic agents.
- COVID-19 scenario projection models have been developed by the number of laboratory confirmed cases and deaths; underlying assumptions may include the sensitivity of case and death reporting, the number of symptomatic persons tested for COVID-19, and the sensitivity of diagnostic tests. Repeated sero-epidemiologic surveys can provide cross-sectional estimates of the degree of success of non-pharmaceutical interventions and progress towards herd immunity.

Public Health Response:

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Article 2: Estimating excess 1-year mortality associated with the COVID-19 pandemic according to underlying conditions and age: a population-based cohort study.

Published: 12 May 2020, the lancet

Summarize by subject matter expert

Summary:

This article estimated the excess number of deaths over 1 year under different COVID-19 incidence scenarios based on varying levels of transmission suppression and differing mortality impacts based on different relative risks for the disease.

How the Study Was Done:

- Data of 4 million patients, 30 years or older from NHS, UK
- Patients were divided into groups. For example,
  - Group 1 = 71 years or older
  - Group 2= 70 years or younger and having heart disease
  - Group 3 = 70 years or younger and having diabetes and so on.
- First step was to calculate 1-year mortality risk in these groups.
- Second step was to calculate 1-years excess mortality in these groups because of Covid-19.
- Authors used different Covid-19 scenarios, e.g., 1.5, 2.0, or 3.0. where 2.0 scenario for Covid-19 means doubling of the risk of mortality in individuals infected with or affected by Covid-19 versus their background risk of death.
- Finally, they calculated excess mortality under different strategies, e.g., full suppression, partial suppression, mitigation, or do nothing.

What this Study Found:

- 20% of study population were in high risk category, meaning that they were either older than 70 years or having at least one underlying medical condition (heart disease, diabetes).
- In this high risk population, 1-year mortality risk was 4.5%.
- The figure on next page show number of excess deaths in relation to different Covid-19 scenarios, under different strategies.

➢ For example, if risk of dying is double in those people with Covid-19,

- Under Full Suppression = 4 excess deaths
- Under Partial Suppression = 3675 excess deaths
- Under Mitigation = 36,749 excess deaths
- Do Nothing = 293,991 excess deaths

Public Health Response:

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Article 2 : Cont.,

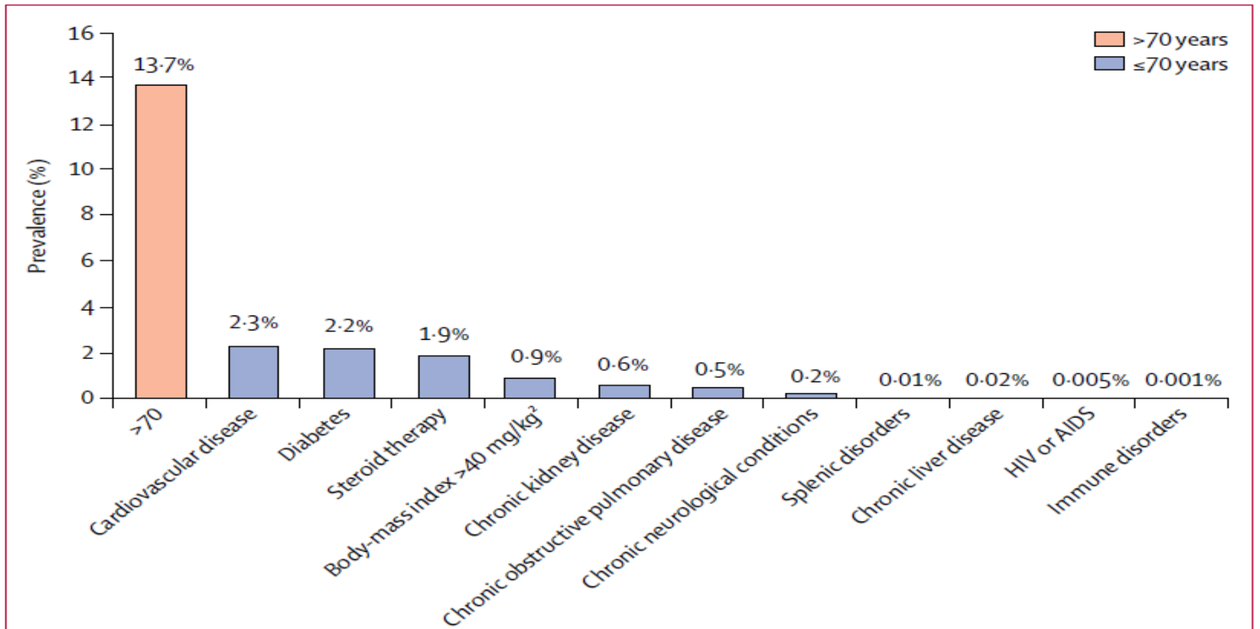

Figure 1: Prevalence of underlying conditions associated with high mortality in COVID-19 infection (n=3 862 012)

	n (%)	Deaths	1 year all-cause mortality % (95% CI)
Risk factors			
Any risk factor	774 639 (20·1%)	33549	4·46% (4·41–4·51)
Chronic obstructive pulmonary disease	35006 (0·9%)	2900	8·62% (8·32–8·92)
Chronic kidney disease	59397 (1·5%)	4501	7·84% (7·62–8·06)
Cardiovascular disease	159069 (4·1%)	9820	6·37% (6·25–6·49)
Age >70	530732 (13·7%)	30529	5·88% (5·82–5·95)
Corticosteroid	105978 (2·7%)	4599	4·49% (4·37–4·62)
Diabetes	111668 (2·9%)	4399	4·12% (4·00–4·24)
Body-mass index >40 mg/kg²	31173 (2·7%)	194	0·66% (0·57–0·75)
Number of risk factors			
≥3	15030 (0·4%)	1890	13·10% (12·55–13·65)
2	63578 (1·6%)	4612	7·53% (7·32–7·74)
1	327544 (8·5%)	11073	3·51% (3·44–3·57)
0	3455860 (89·5%)	21272	0·64% (0·64–0·65)
Overall population	**3862012 (100%)**	**38847**	**1·05% (1·04–1·06)**

Figure 2: Baseline 1-year mortality in England according to underlying conditions (n=3 862 012)

On-line Risk Calculator

Authors also provided an on-line risk calculator, which is free to use and researchers can estimate and visualize age-specific, sex-specific, and underlying condition-specific excess mortality under different scenarios of Covid-19 and different strategies.

http://covid19-phenomics.org/PrototypeOurRiskCoV.html

Article 3: Respiratory Parameters in Patients With COVID-19 After Using Noninvasive Ventilation in the Prone Position Outside the Intensive Care Unit

Published: : May 15, 2020 in *JAMA*.

Summary:

Studies showed that NIV in prone position can recruit dorsal lung regions and drain airway secretions, improving gas exchange and survival in acute respiratory distress syndrome. In these cases series In Italy; **15** patients receiving NIV in prone position outside the ICU on April 2 were identified. Pronation NIV started a median of 5 days before April 2 with 1-3 cycles and no patient started NIV in prone position on April 2. The total median duration of NIV cycles was 3 hours (IQR, 1-6 hours).

Inclusion criteria was: covid-19 patients with mild to moderate ARDS on face mask with high-oxygen concentration.

Respiratory parameters (SpO2, PaO_2:FIO_2 and respiratory rate) were measured at 3 time points: before NIV, during NIV in pronation (60 minutes after start), and 60 minutes after NIV end.

Patient's comfort was measured using a numerical rating scale (0, totally uncomfortable, to 10, fully comfortable). Follow-up was conducted at 14 days,

Treatment :

Article 3: **Cont.,**

Findings:

- Compared with baseline, all patients had a reduction in respiratory rate during and after pronation ($P < .001$ for both)
- All patients had an improvement in SpO_2 and PaO_2:FIO_2 during pronation ($P < .001$ for both)
- 2 (13.3%) had the same value during and after pronation
- 1 (6.7%) had worsened after pronation.
- Compared with baseline, 11 patients (73.3%) had an improvement in comfort during pronation and 4 (26.7%) had the same value.
- 13 patients (86.7%) had an improvement in comfort after pronation and 2 (13.3%) had the same value.
- At the 14-day follow-up, 9 patients were discharged home, 1 improved and stopped pronation, 3 continued pronation, 1 patient was intubated and admitted to ICU, and 1 patient died.

Table. Baseline Characteristics of 15 Patients With COVID-19 Who Received Noninvasive Ventilation in the Prone Position Outside the ICU

Characteristics	Value
Age, mean (SD), y	59 (6.5)
BMI, mean (SD)	24 (3.4)
Sex, No. (%)	
Women	2 (13.3)
Men	13 (86.6)
Time, median (IQR), d	
From first symptom appearance	15 (12-21)
From hospitalization	9 (7.5-14)
From NIV start	7 (4-10)
From NIV in the prone position start	5 (3-10)
Pao_2:Fio_2 on first MET call[a]	157 (43.0)

Conclusion:

Providing NIV in the prone position to patients with COVID-19 and ARDS helped to lower the respiratory rate and increased oxygenation during and after pronation than they were at baseline.

Limitations are first a small number of patients included second patients were not included if NIV failed while in the prone position or were died or recovered before April 2. Therefore, patients in the study may not be representative of all patients treated with NIV in the prone position.