



Scientific Research Monitoring on COVID-19

19 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

- **Treatment** : another study addressing the feasibility and the efficacy of prone position on 24 patient COVID19 patient showed negative results.
- **Public Health Response:** article discussing school closure stating Instead of total school closure, alternative strategies to contain transmission, such as reducing class size, physical distancing, and hygiene promotion, could be implemented.
- **Treatment:** review article discuss the different tips in managing severe Covid19 patients including , intubation, prone positioning , antiviral candidates, anticoagulant medication and renal failure.



WHO daily report 18 May 2020

- The 73rd World Health Assembly which opened today, will focus on the COVID-19 pandemic. Member States will deliver statements, report their progress in fighting the coronavirus, share knowledge on the evolving situation and consider a draft resolution on COVID-19.
- WHO has signed an agreement with the International Olympic Committee (IOC) to work together to promote health through sport and physical activity. The agreement has a special focus on preventing non-communicable diseases (NCDs). This collaboration is timely because the current COVID-19 pandemic is particularly affecting people with NCDs.
- Flooding in Somalia has raised concerns of an upsurge in cholera cases as the country deals with a growing number of COVID-19 cases. WHO's country office has sent urgently needed essential medical supplies, however funding for humanitarian operations in Somalia remains very low.



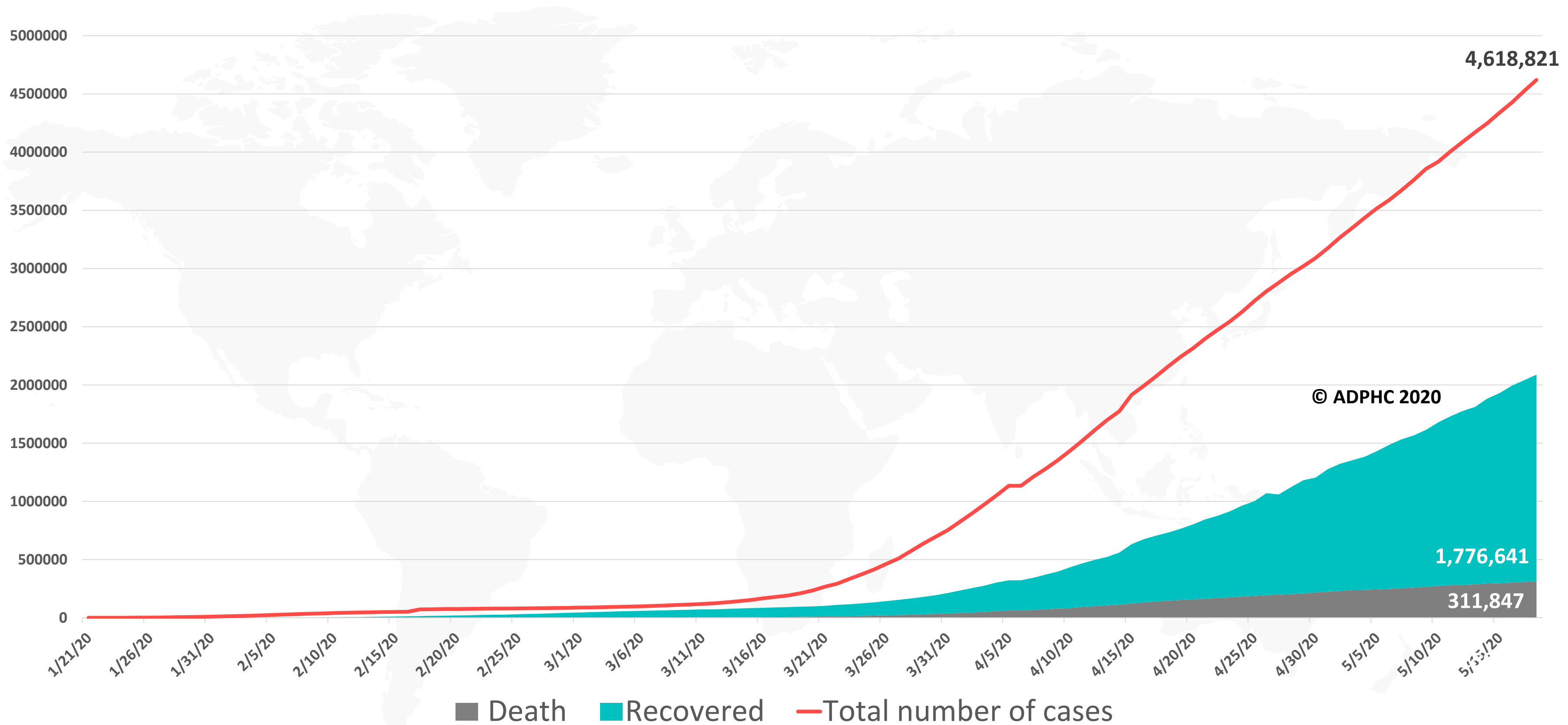
WHO gave updates about the SOLIDARITY TRIAL 18 May 2020

- WHO launched the Solidarity Trial on March 18 – a large international clinical trial to help find an effective treatment for COVID-19.
- Initially, the Solidarity Trial will compare **four treatment** options against the standard of care, These include: **chloroquine or hydroxychloroquine, remdesivir, lopinavir/ritonavir, and lopinavir/ritonavir with interferon beta-1a.**
- **The Solidarity Trial is unlike any other clinical trial and its objective will be achieved through new ways of working that embrace:**
 - **Speed** to act fast now, to simplify procedures with a simple randomized control trial protocol and web-based randomization and data system allowing for rapid centralized analyses..
 - **Scale** by prioritizing counties at highest risk and hospitals that have the most number of adults (age ≥ 18 years) in hospital with definite COVID-19 symptoms and no contra-indication to any of the study drugs; **this approach ensures the greatest level of enrolment.**
 - **Access** by ensuring all countries can join the Solidarity Trial and receive WHO technical and financial **support including access to all trial drugs free-of-charge**, thanks to donations that WHO negotiated **with five manufacturers.**
- Since its launch, **over 100 countries** have expressed an interest .
- WHO is actively **engaged with more than 60.**
- To date, **18 countries from five** out of the six WHO regions and representing **three out of the four World Bank income groups have started the Solidarity Trial.** These 18 countries represent over 245 hospitals with 885 clinicians involved. **Patient enrollment is nearing 3000.**
- **By the end of May, we expect another 10-12 countries to start the Solidarity Trial.**
- trial analysis will be produced and will be monitored by a **global Data and Safety Monitoring Committee (DSMC), an independent group of experts.**

Epidemiology



Figure 1: Total number of infected, recovered, and death cases (January 21st to May 18, 2020)

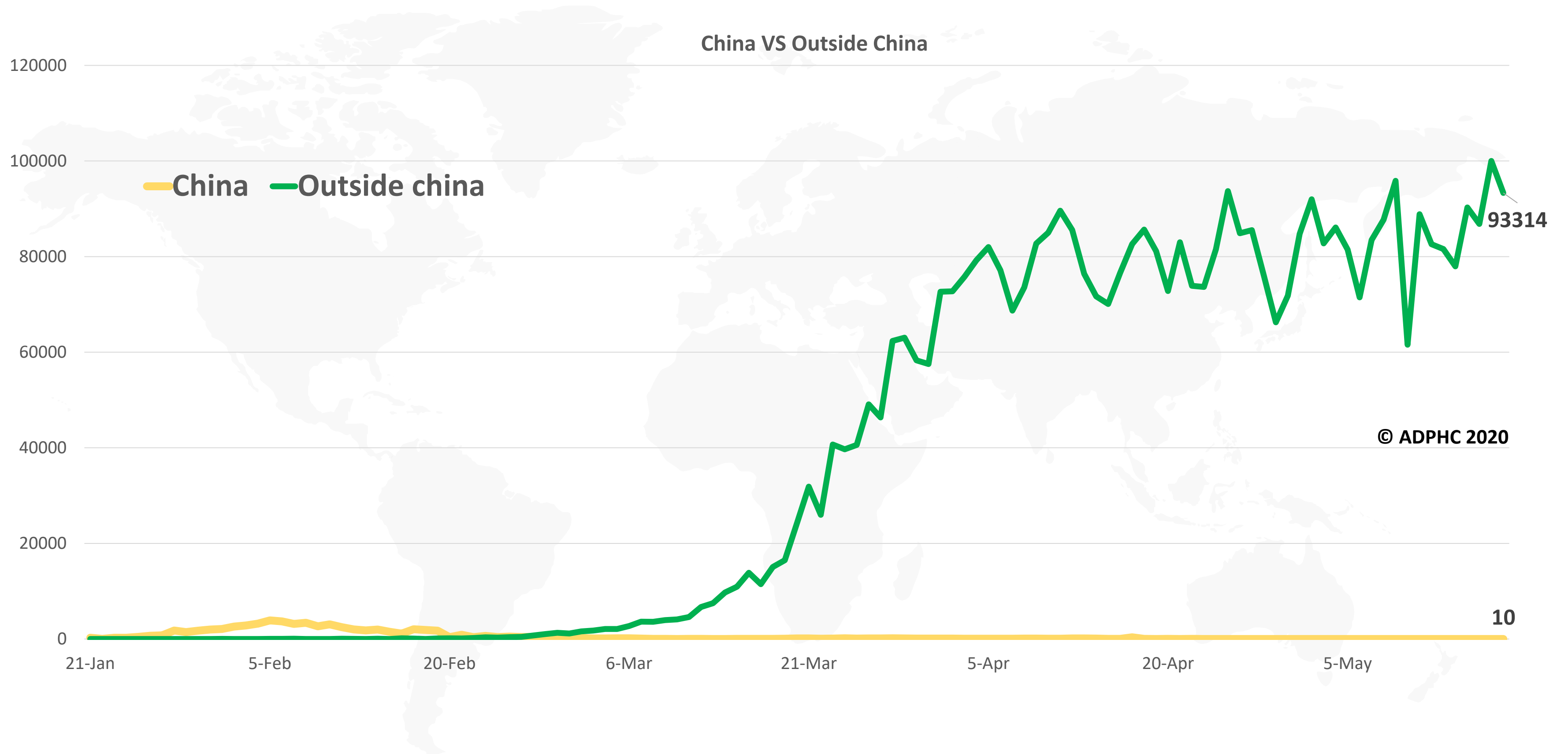


Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 2: Daily new infected COVID-19 cases reported between (January 21 to May 18, 2020).



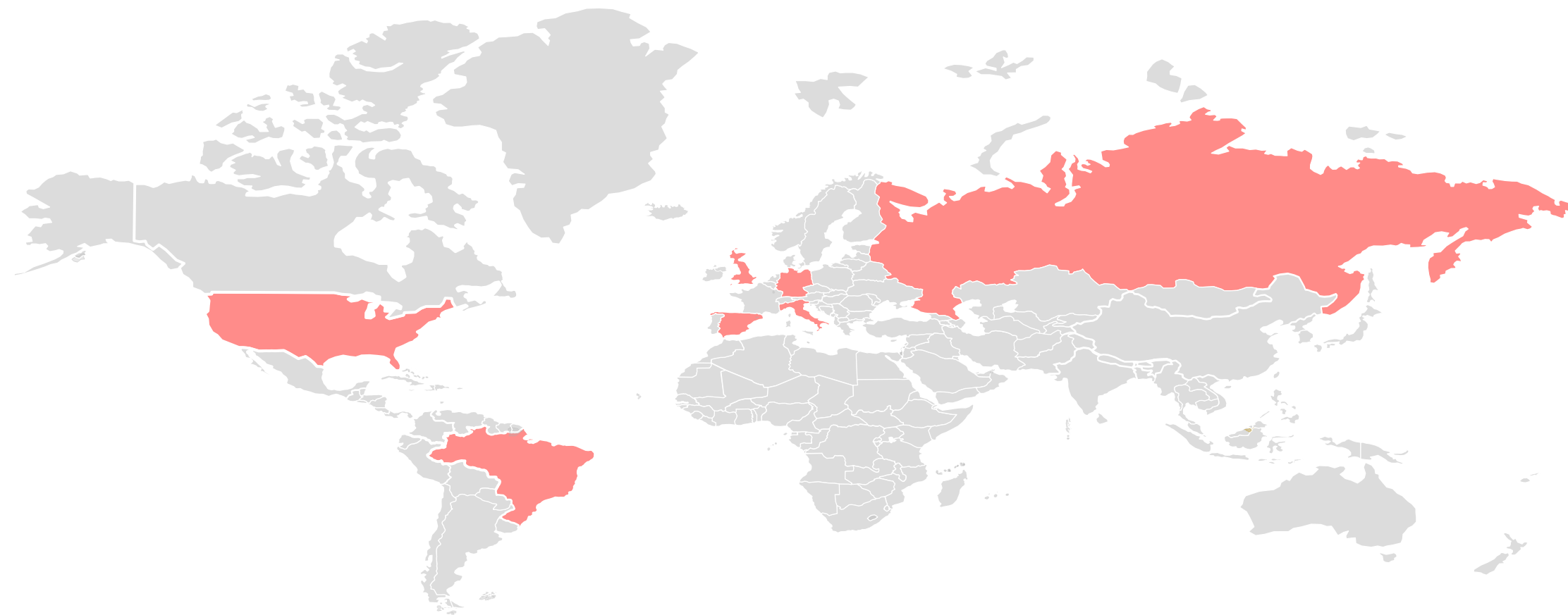
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Data resources: [WHO](https://www.who.int/)

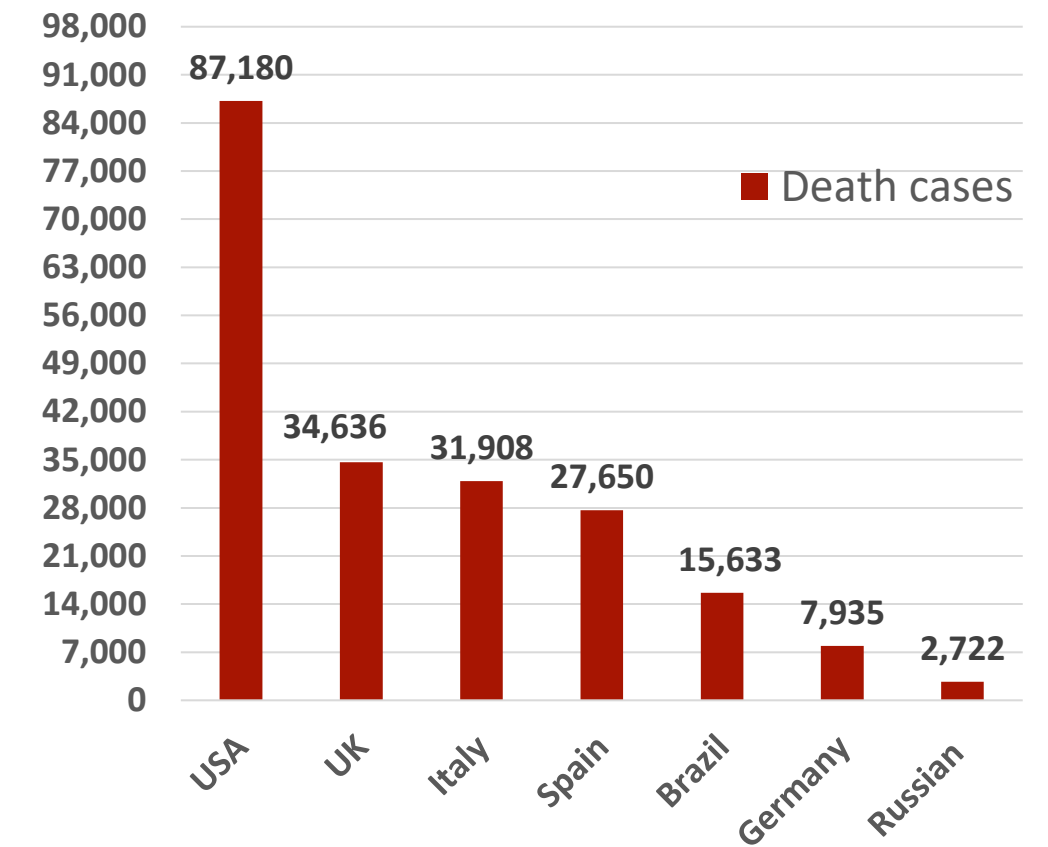
Epidemiology



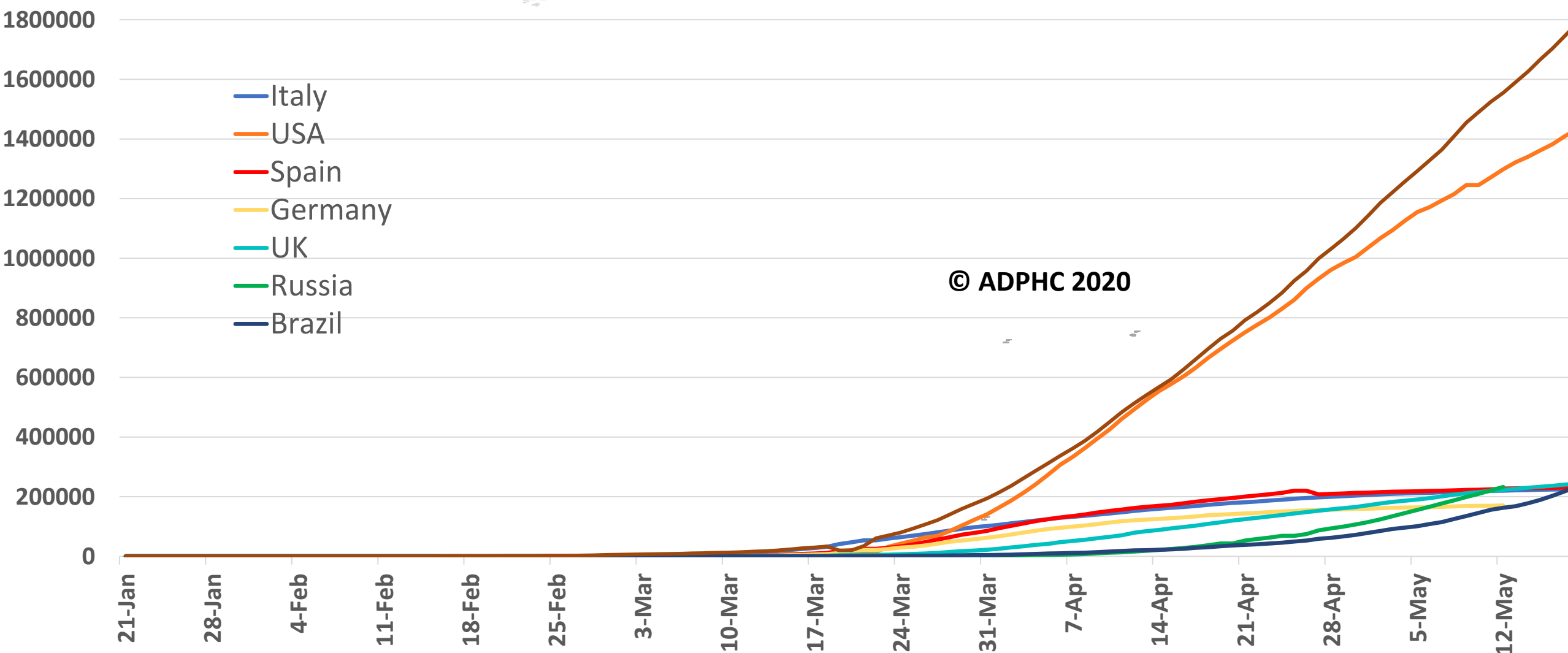
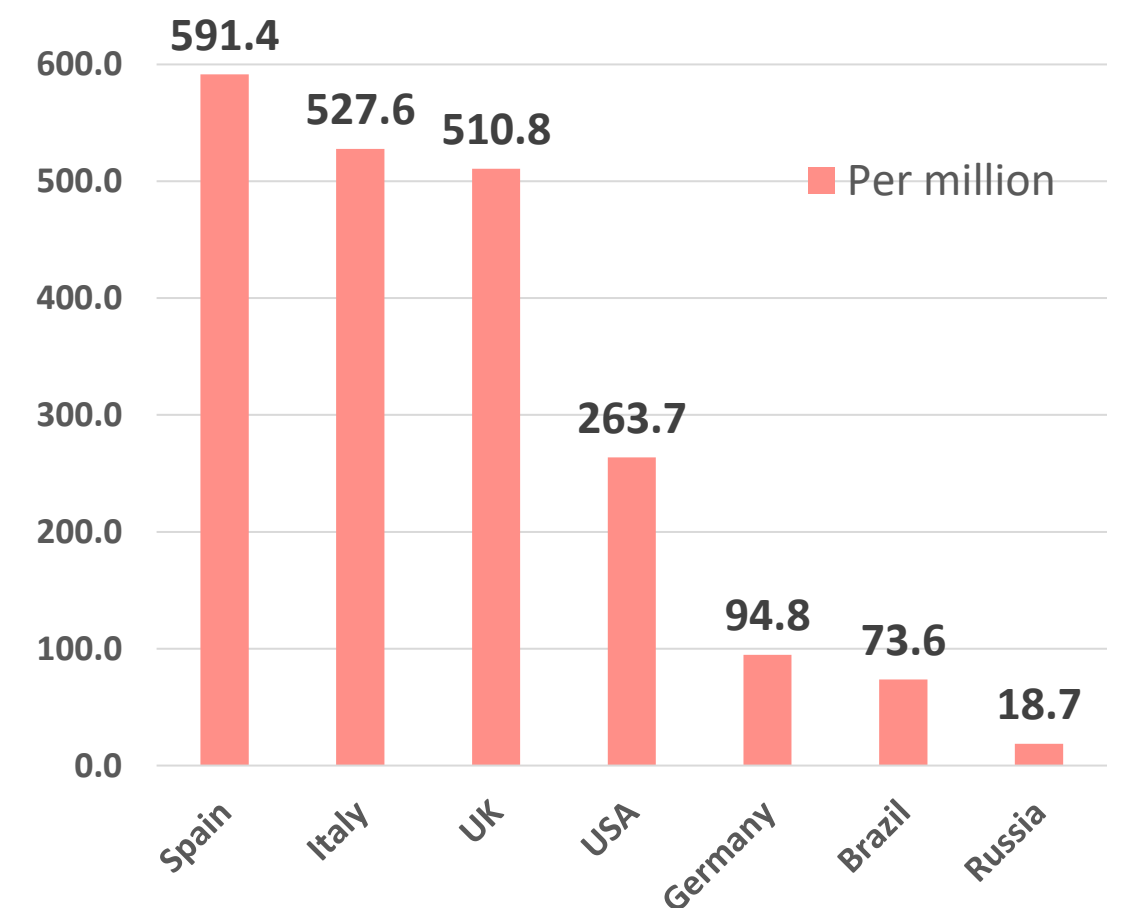
Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to May 18, 2020).



TOTAL DEATHS



DEATHS PER MILLION

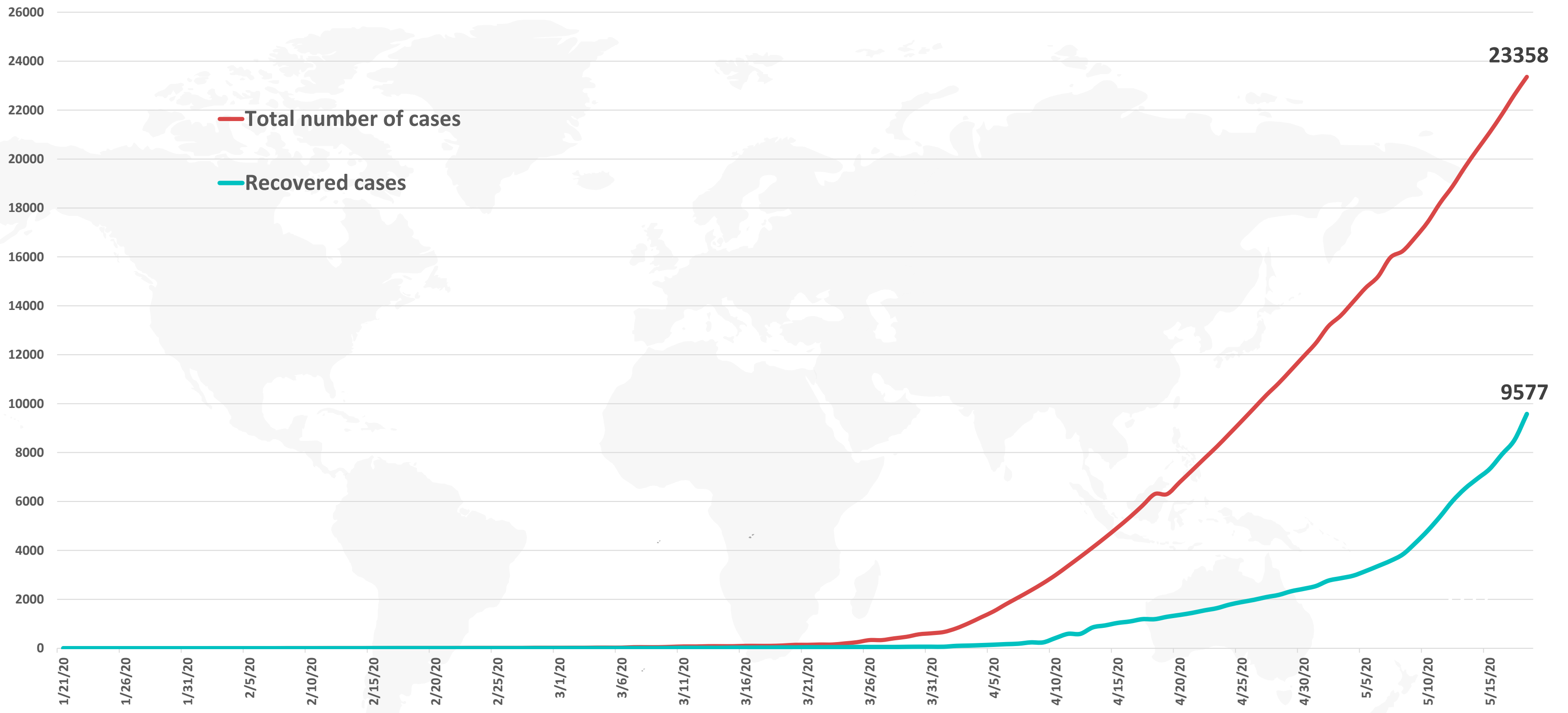


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Data resources: [WHO](https://www.who.int/)



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



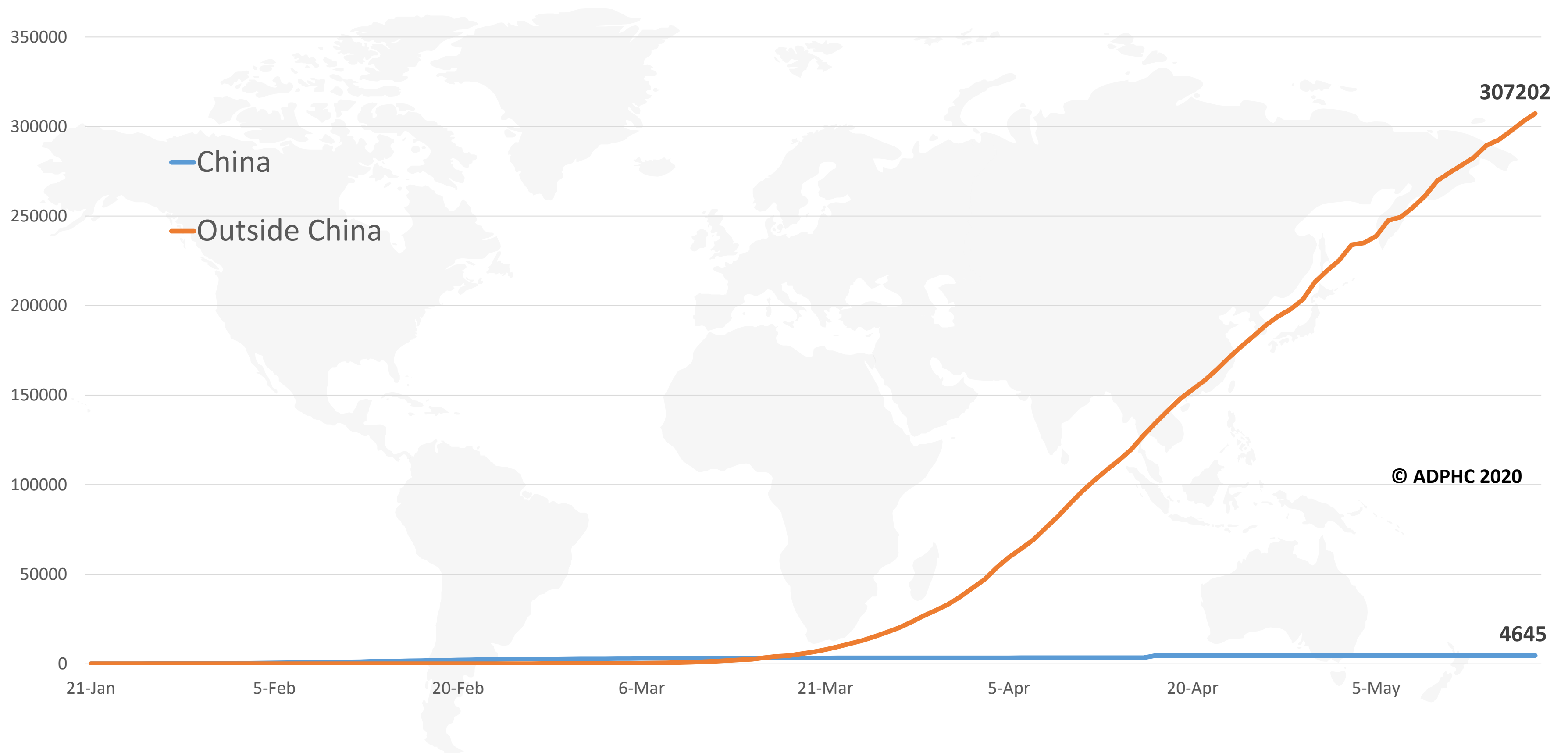
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Epidemiology



Figure 5: Total number of death due to COVID-19 reported by China and the rest of the world (January 22 to May 18, 2020).



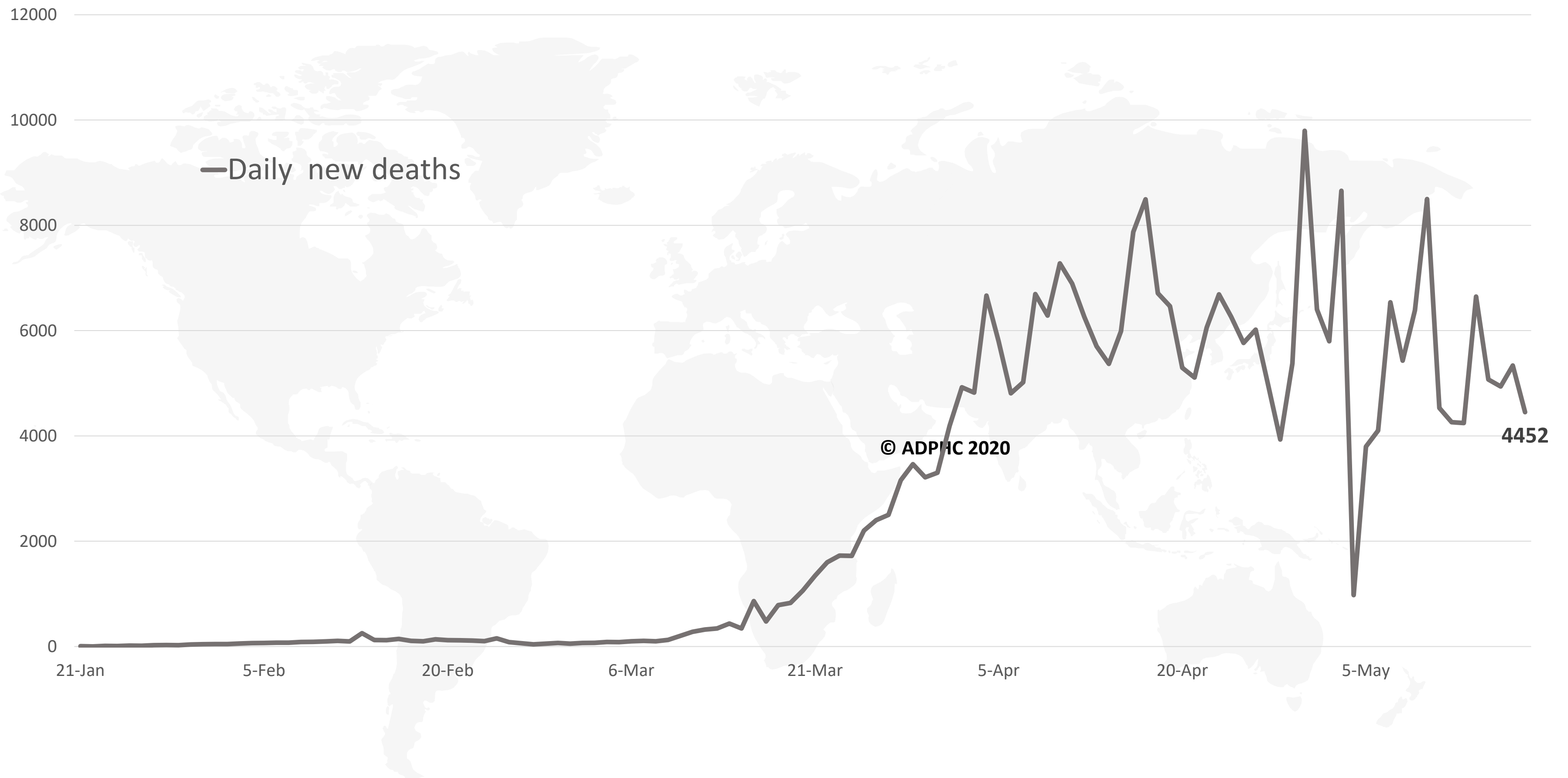
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Data resources: [WHO](https://www.who.int/)



Figure 6: Global daily new deaths due to COVID-19 (January 22 to May 18, 2020).



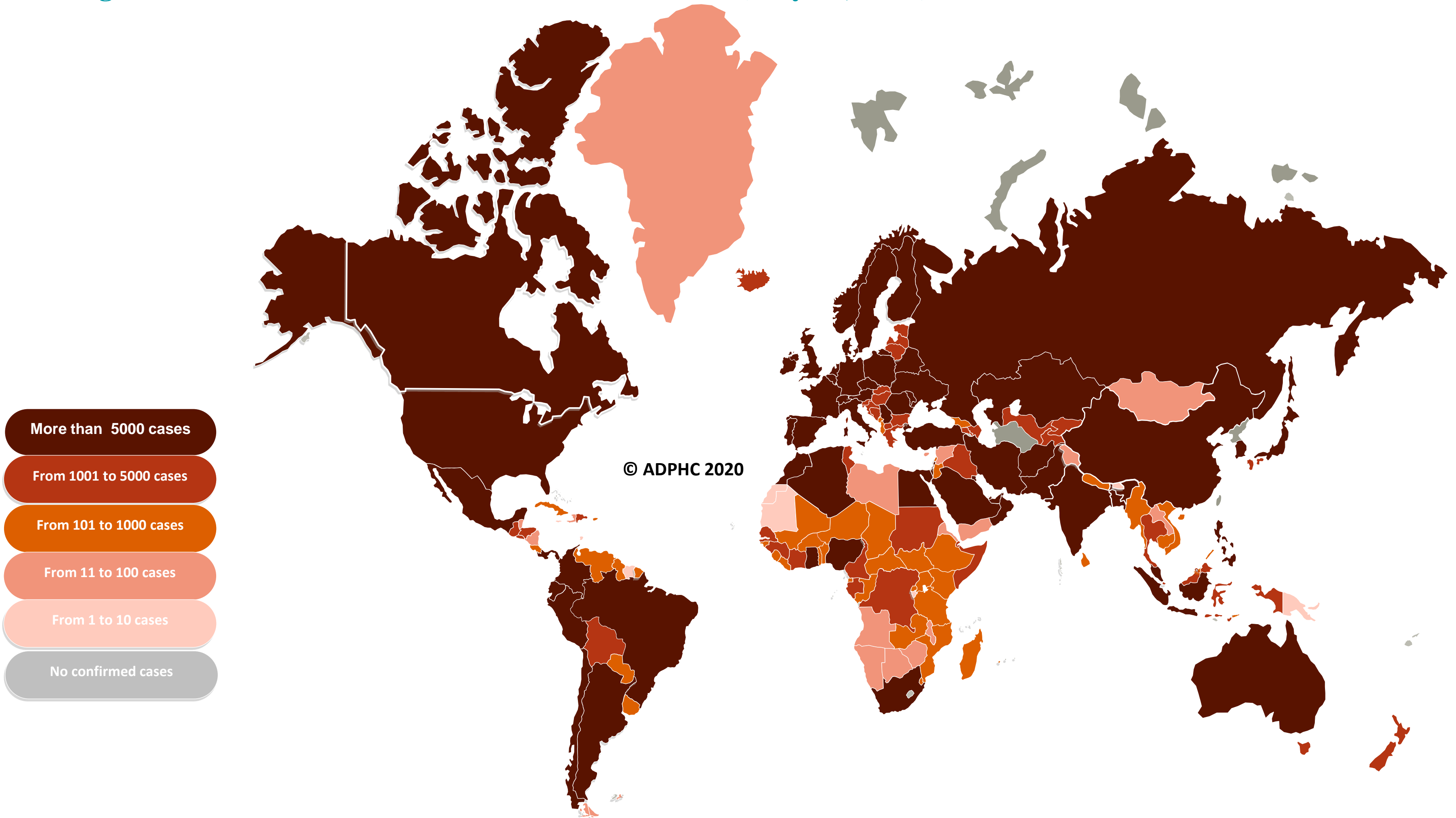
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Data resources: [WHO](https://www.who.int/)

Epidemiology



Figure 7a : Global distribution of COVID-19 cases (May 18, 2020).

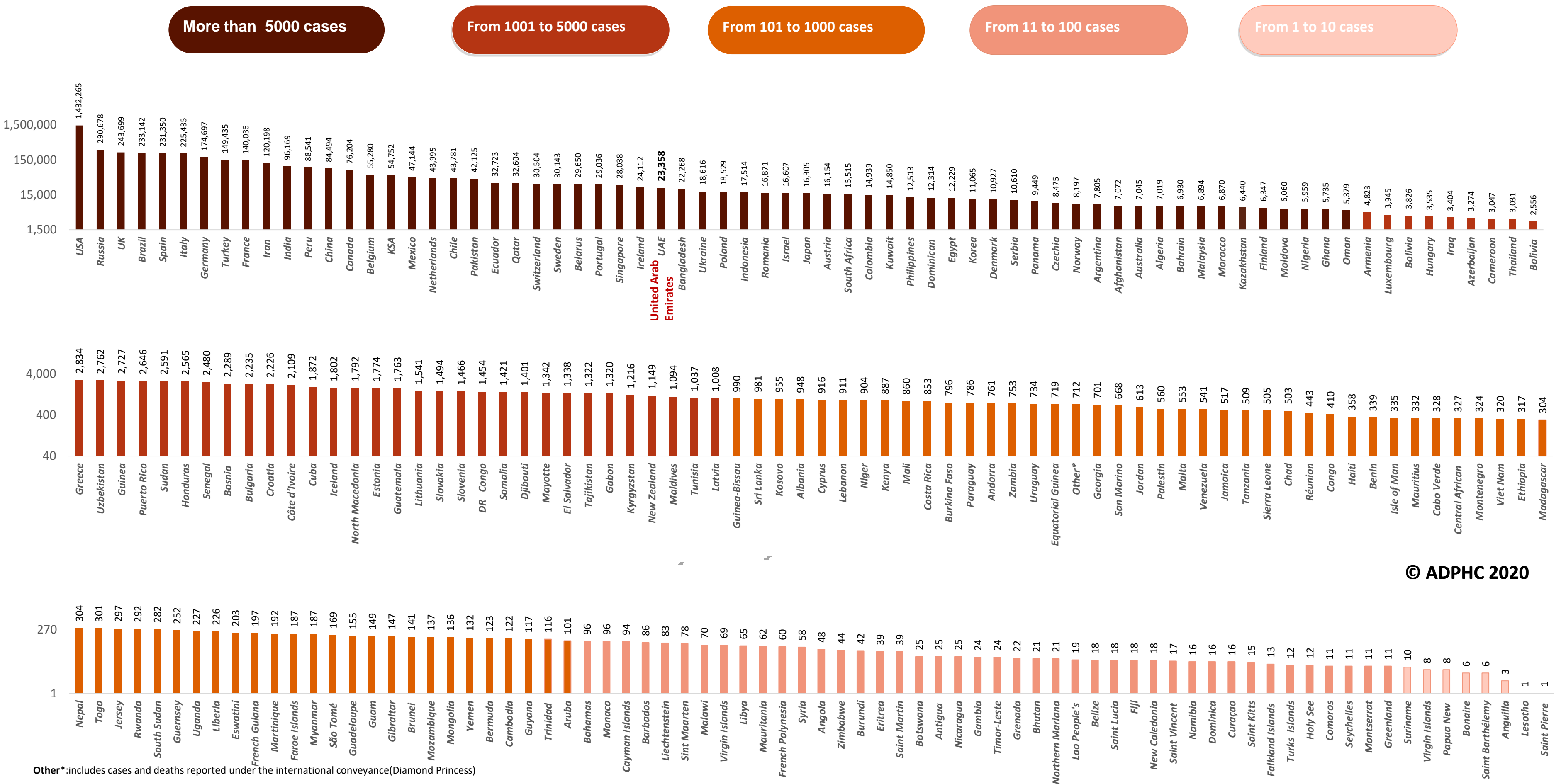


Map chart published by Abu Dhabi Public Health Center 2020.

Epidemiology



Figure 7B: Bar chart illustrate the global distribution of COVID19 cases May 18, 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](https://www.who.int)

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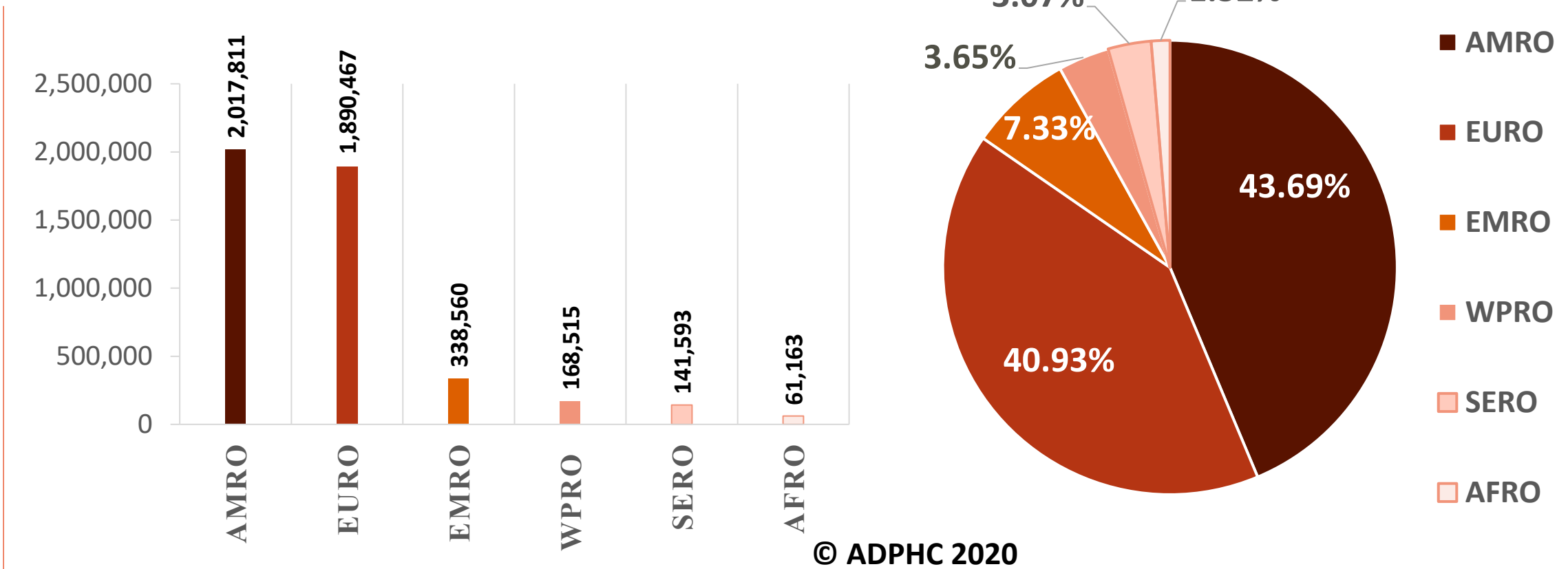
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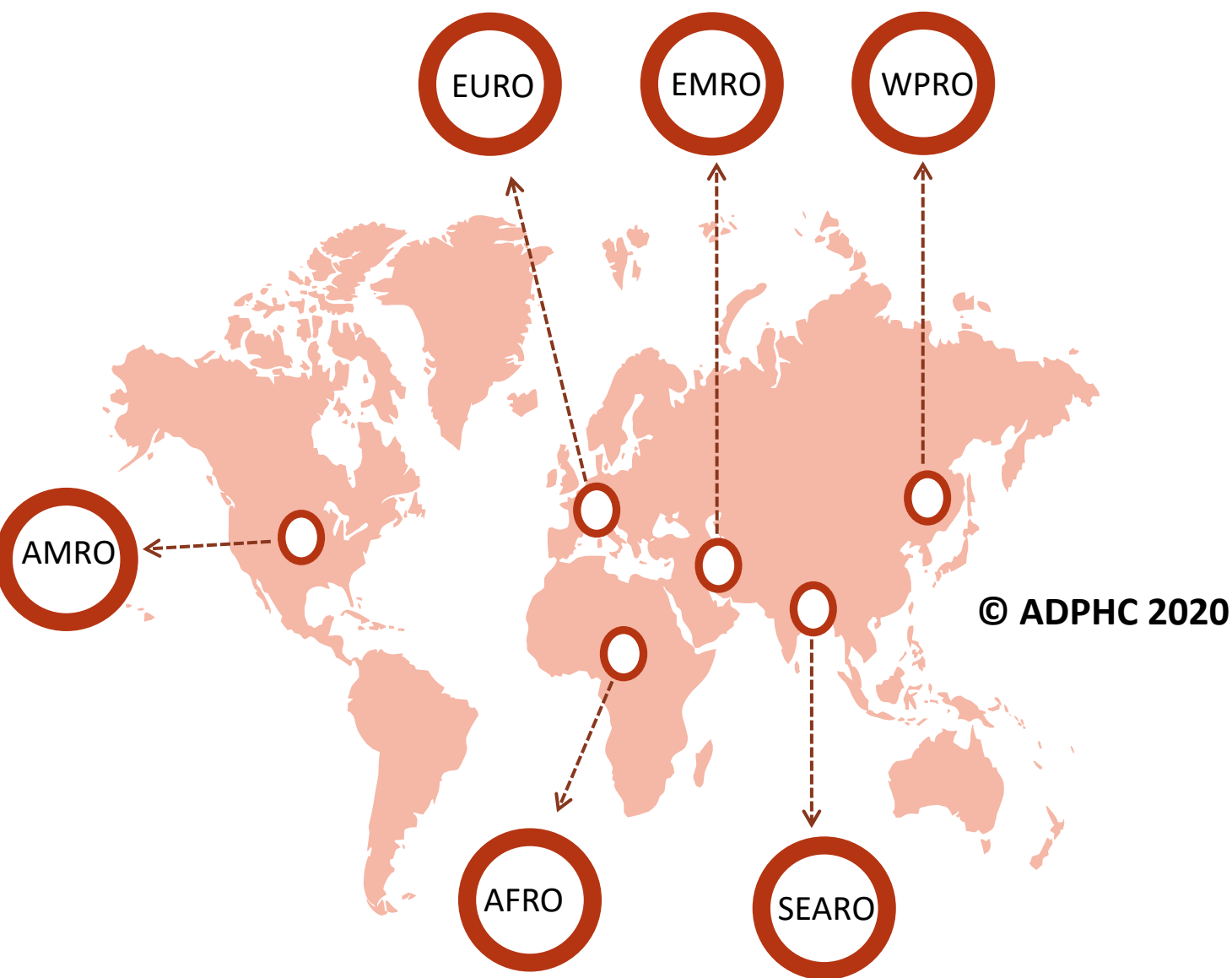
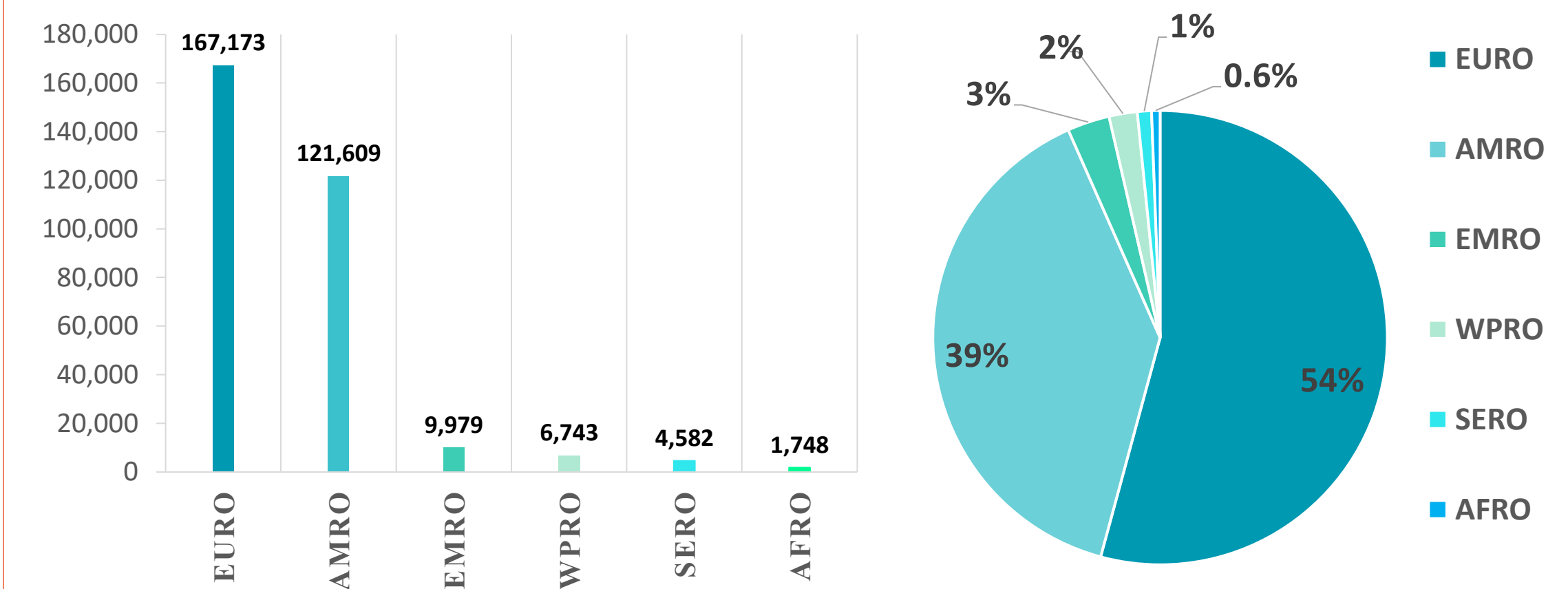


Figure 8: illustrate the Global distribution of COVID19 cases per region (May 18, 2020)

INFECTED



DEATH



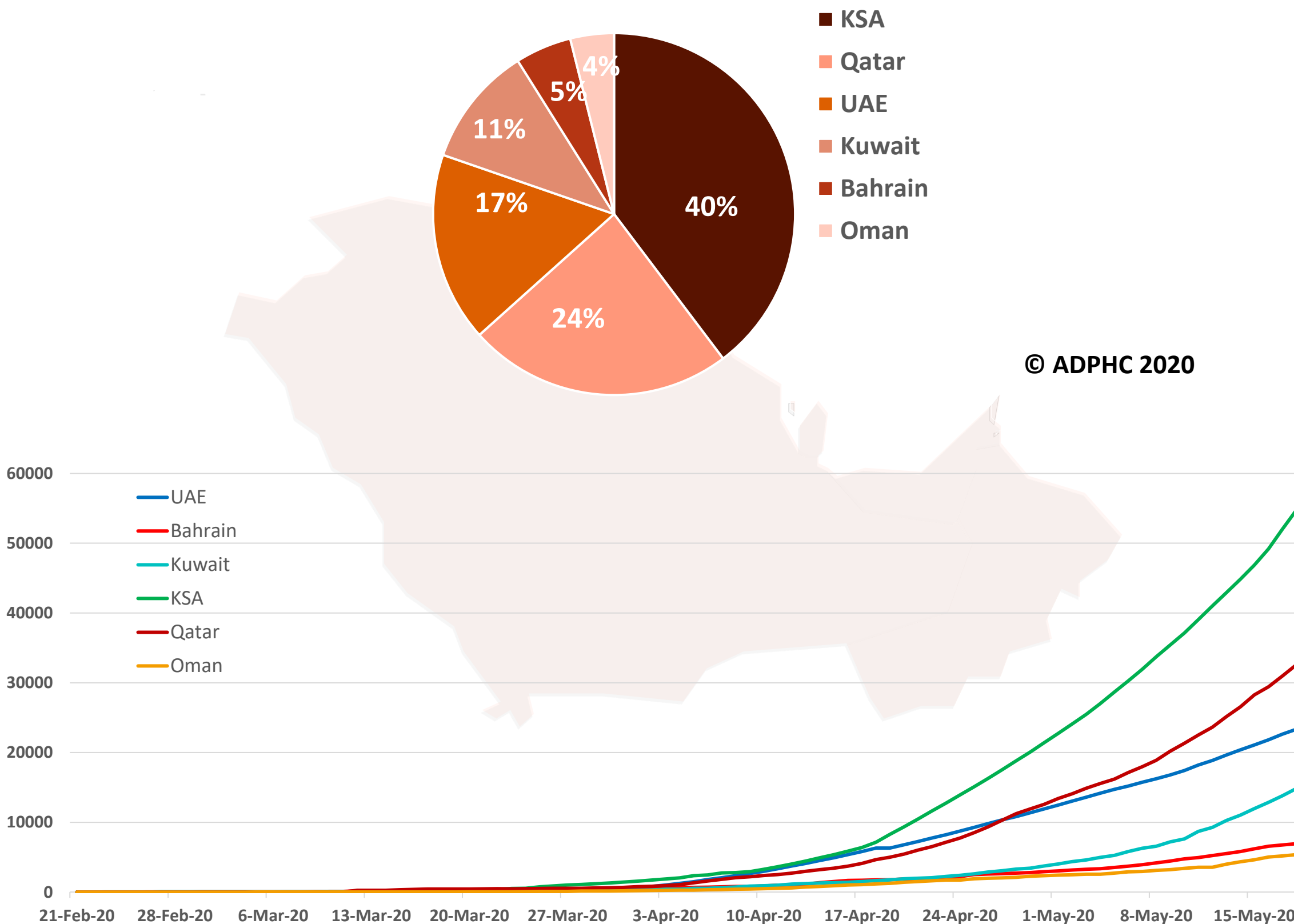
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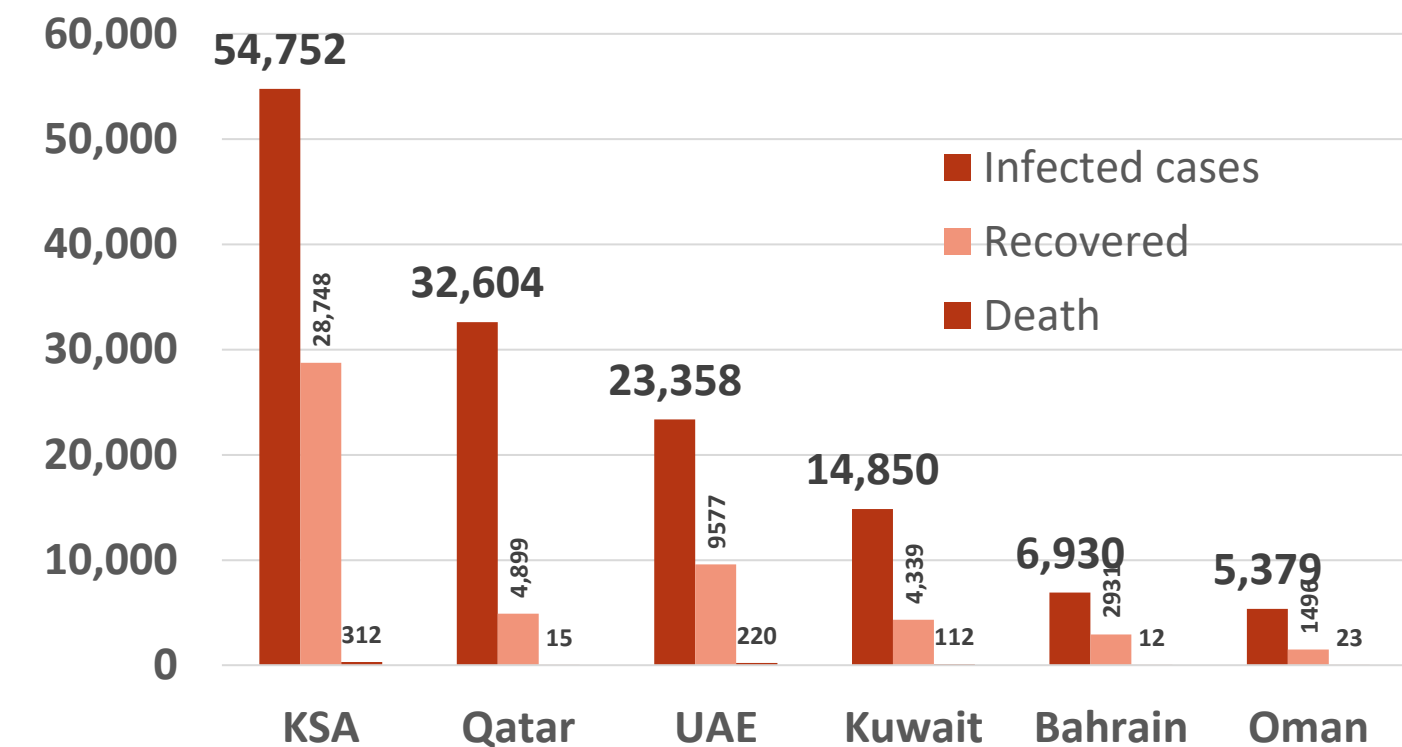
Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (May 18, 2020)

TOTAL NUMBER OF INFECTED CASES

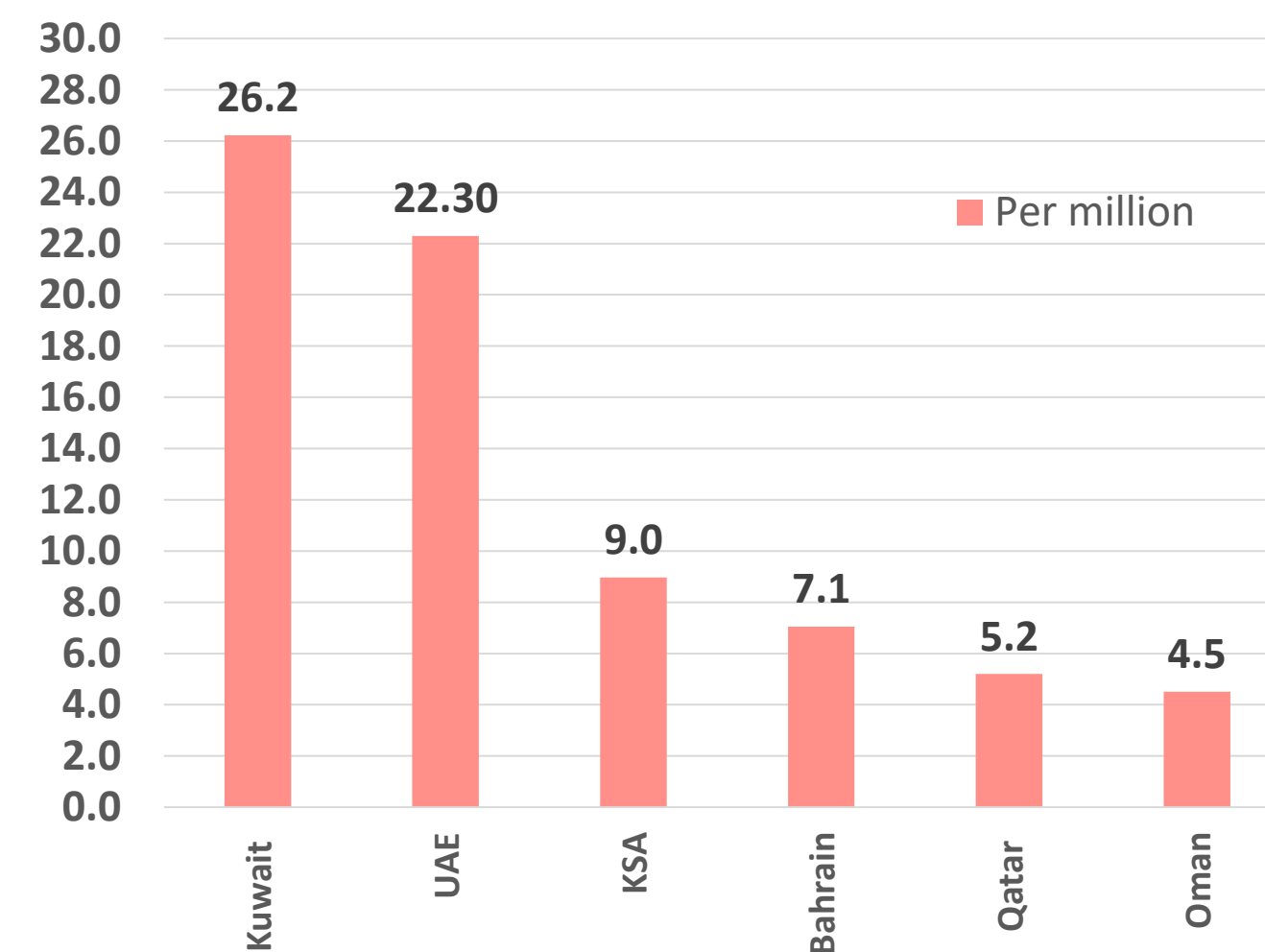


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Total number of infected, recovered and Deaths



Death per million



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

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Treatment



Article 1: Use of Prone Positioning in Non-intubated Patients With COVID-19 and Hypoxemic Acute Respiratory Failure

Published: May 15, 2020, [JAMA](#).

Summary:

The objective of the study was to evaluate the **feasibility, efficacy, and tolerance** of PP in awake patients with COVID-19 hospitalized outside the ICU in France. It was conducted from March 27 to April 8, 2020 among 24 patients with COVID-19 with hypoxemic **acute respiratory failure** requiring oxygen supplementation.

Arterial blood gases measures were performed just before PP, during PP, and 6-12 hrs after resupination to monitor efficacy. PP sustainability (feasibility) of ≥ 1 hr and ≥ 3 hrs was recorded.

Patients were followed up for 10 days until April 18.

Sustainability (feasibility) findings:

4 (17%) did not tolerate PP for more than 1 hour and were excluded from the study (**group one**), 5 (21%) tolerated it for 1-3 hrs (**group two**), and 15 (63%) tolerated it for more than 3 hrs (**group three**)

Efficacy Findings:

oxygenation increased by ≥ 20 % **during PP in only 25% of 24 patients**, however the oxygenation was not sustained in half of those 25 % (3 out of 6 patients) after resupination and only 3 were persistent responders.

Group three showed increase in PaO₂ from a mean (SD) of **73.6 (15.9) mm Hg before PP to 94.9 (28.3) mm Hg during PP** ($P = .006$).

No significant difference was found between PaO₂ before PP and PaO₂ after resupination ($P = .53$).

Tolerance findings:

None of the included patients experienced major complications. Back pain was reported by 10 patients (42%) during PP.

At the end of a 10-day follow-up period, **5 patients required invasive mechanical ventilation**. 4 of them did not sustain PP for 1 hour or more and required intubation within 72 hours.



Public health Response

Article 2: School Closure During the Coronavirus Disease 2019 (COVID-19) Pandemic

Published: May 13, 2020 in [JAMA](#)

Summary: In most countries' restrictive measures, including the avoidance of social interactions, the prohibition of movements within the national territory, and the closure of all nonessential activities, including schools was taken to control COVID-19. although the usefulness of other measures were evident the school closure can be debated.

It is highly likely that the most important reason leading governments to close schools was the evidence that the early introduction of this restrictive measure had been effective in reducing influenza incidence rates during both seasonal and pandemic influenza outbreaks.

school closure may have potential negative effects and lead to greater medical, economic, and social problems.

1- Some consequences regard the family. To take care of the youngest children when daycares and schools are closed, parents must remain at home, with inevitable economic consequences.

2- Health Care workers: when parents are health care workers, this can have relevant medical effects. In the US, it has been calculated that the absence **from work of 15%** of health care workers may be associated with a significant increase in COVID-19 mortality.

3- some children may remain substantially excluded not only from learning but also from any form of socialization with peers and with the surrounding world.

Some experts suggest that the potential advantages of school closure, if any, have to be balanced against the secondary adverse effects.

Instead of total school closure, alternative strategies to contain transmission, such as reducing class size, physical distancing, and hygiene promotion, could be implemented.



Article 3: Severe Covid-19

Published: May 15, 2020 , [NEJM](#)

Summary:

This paper reported on evaluation and management of severe COVID-19.

- Severe disease usually begins approximately one week after the onset of symptoms. Dyspnea that is often accompanied by hypoxemia is the most common symptom of severe illness. Rapid development of respiratory failure occurs soon after the onset of dyspnea and hypoxemia. Patients with severe disease commonly meet the criteria for the acute respiratory distress syndrome.
- The important feature of care is to decide whether or not to provide endotracheal intubation for seriously ill patients. **Clinicians should consider the risks of premature intubation against the risk of sudden respiratory arrest** with a chaotic emergency intubation that exposes staff to a greater risk of infection.
- If **mechanical ventilation** is started, clinicians should adhere to a lung protective ventilation strategy by limiting the **plateau pressure less than or equal 30 cm** of water and tidal volume of 6 ml per kilogram of the predicted body weight. Clinicians **should consider prone positioning during mechanical ventilation in patients with refractory hypoxemia**. (However, prone positioning of patients requires a team of at least three trained clinicians, all of whom require full PPE)
- Few patients with severe illness have received renal replacement therapy; however, pathophysiology of the renal failure is unclear but is probably multifactorial. **Thrombocytopenia and elevation of d-dimer levels are common in patients with severe disease. Anticoagulants should be administered to prevent thrombosis.**
- Preliminary data from a randomized, placebo controlled trial involving patients with severe illness suggest that the investigational remdesivir (antiviral) shortens time to recovery. Given the uncertainties regarding effective treatment, clinicians should discuss available clinical trials with patients. Data are needed from randomized trials to inform the benefits and risks of antiviral or immunomodulatory therapies for severe disease.

Treatment :



Article 3: Cont.,

Table 1. Selected Candidate Therapies for Coronavirus Disease 2019 (Covid-19).*

Class	Availability	Rationale	Clinical Data
Antiviral agents			
Chloroquine	FDA-approved for extraintestinal amoebiasis, malaria; FDA emergency-use authorization from Strategic National Stockpile for certain hospitalized patients with Covid-19	In vitro activity against SARS-CoV-2 ⁴⁴	Limited: small randomized trial showed limited benefit ⁴⁵ ; small trial stopped early because of increased mortality with higher dose ⁴⁶ ; randomized, controlled trials in progress
Hydroxychloroquine	FDA-approved for lupus, malaria, rheumatoid arthritis; FDA emergency-use authorization from Strategic National Stockpile for certain hospitalized patients with Covid-19	In vitro activity against SARS-CoV-2 ⁴⁷	Limited: small randomized trials and retrospective case series with inconsistent results ⁴⁸⁻⁵¹ ; randomized, controlled trials in progress
Lopinavir–ritonavir	FDA-approved for HIV infection	In vitro activity against SARS-CoV-2 ⁵²	Small randomized clinical trial failed to show clinical benefit ⁵³ ; other randomized, controlled trials in progress
Remdesivir	Investigational; FDA emergency-use authorization for hospitalized patients with severe Covid-19; compassionate-use program for pregnant women and children with severe Covid-19; expanded-access program for persons unable to participate in clinical trials (ClinicalTrials.gov number, NCT04323761)	In vitro activity against SARS-CoV-2 ⁴⁴	Small, single-group, uncontrolled study showed clinical benefit in a majority of patients ⁵⁴ ; underenrolled and underpowered randomized, placebo-controlled trial involving hospitalized patients showed no significant differences in clinical or virologic outcomes ⁵⁵ ; randomized, placebo-controlled trial involving hospitalized patients showed faster time to recovery with remdesivir ⁴³ ; additional clinical trials in progress
Immune-based agents			
BTK inhibitors (acalabrutinib, ibrutinib, rilzabrutinib)	FDA-approved for some hematologic cancers	Immunomodulation-targeting cytokines	Clinical trials in progress
Convalescent plasma	Investigational; FDA single-patient emergency IND; expanded-access program for persons ineligible for or unable to participate in clinical trials	Use in other viral illnesses, including H1N1 influenza, SARS, and MERS	Limited: small, uncontrolled cohort studies suggested benefit, but confirmation required ^{56,57} ; randomized, controlled trials in progress
Glucocorticoids	FDA-approved for multiple indications	Broad immunomodulation	Limited: retrospective, nonrandomized cohort study showed association with lower mortality among patients with severe Covid-19 and ARDS, ³⁹ but concern for survivor treatment bias; randomized clinical trials involving patients with influenza, MERS, or SARS did not show benefit and suggested possible harm (increased viral shedding and increased mortality) ⁵⁸⁻⁶⁰
Interleukin-1 inhibitors (anakinra, canakinumab)	FDA-approved for some autoimmune diseases	Immunomodulation; activity in macrophage activation syndrome	Clinical trials in progress
Interleukin-6 inhibitors (sarilumab, siltuximab, tocilizumab)	FDA-approved for some autoimmune diseases and cytokine release syndrome (tocilizumab)	Immunomodulation; activity in cytokine release syndrome	Limited: in a small cohort study, a majority of patients who received siltuximab had an improved or stabilized condition ⁶¹ ; randomized, controlled trials in progress
JAK inhibitors (baricitinib, ruxolitinib)	FDA-approved for rheumatoid arthritis (baricitinib) and myelofibrosis and polycythemia vera (ruxolitinib)	Broad immunomodulation	Clinical trials in progress