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HEALTH CENTRE

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Scientific Research Monitoring on COVID-19

28 March 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

- **Epidemiology:** Modelling study predict if restrictions in Wuhan are lifted in March 2020, a second peak of cases might occur in late August 2020. Such a peak could be delayed by 2 months if the restrictions were relaxed a month later, in April 2020.
- **Treatment:** JAMA published Clinical Guidelines in managing critically ill patient of COVID19.
- **Public health response:** conducting epidemiological studies will help us in controlling the epidemic **by avoiding interventions that may be unnecessarily costly or unduly restrictive of normal activity.**

*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. [Novel coronavirus and central nervous system](#)
2. [Senior Medical Students in the COVID-19 Response: An opportunity to be proactive](#)
3. [COVID-19: learning from experience](#)
4. [Possible Vertical Transmission of SARS-CoV-2 From an Infected Mother to Her Newborn](#)
5. [Venezuelan migrants "struggling to survive" amid COVID-19](#)
6. [Tracking COVID-19 responsibly](#)



WHO daily report

- Two new countries/territories/areas from the Region of the Americas [2] have reported cases of COVID-19.
 - The total global number of COVID-19 cases has surpassed 500 000.
 - Addressing the Extraordinary Summit on COVID-19, the WHO Director-General called on G20 leaders to fight, unite, and ignite against COVID-19. see next slide
 - WHO concluded the technical support mission to Egypt on 25 March 2020.
 - OpenWHO celebrates 1 million enrollments today. Seventy percent of the total enrollments are on COVID-19 resources, reflecting the critical role the platform is playing in supporting the response to the pandemic.
- On 25 March, a new course was launched **describing how to design and operate treatment centres** for the COVID-19 pandemic. COVID-19 resources are hosted on two learning channels.



WHO Director General's remarks at the G20 Extraordinary Leaders' Summit on COVID-19 - 26 March 2020

The first 100 thousand cases took 67 days. The second 100 thousand took 11 days, the third 100 thousand took just 4 days and the fourth 100 thousand just 2 days.

- DG asked three requests from the leaders:

First, fight. like hell.

- Asked immediately to build, expand, train and deploy health workers to find, test, isolate and treat every case and trace every contact.

Second, unite.

- No country can solve this crisis alone.
- shift in global solidarity – in **sharing experiences, expertise and resources**, and in working together to keep supply lines open, and supporting nations who need our support.
- The global shortage of personal protective equipment is putting front-line responders in danger – and that puts all of us in danger.
- call to all nations to increase production, remove **export bans** and **ensure equity of distribution**.

Third, ignite.

- Ignite global production for the **tools needed to save lives now**.
- Ignite innovation for vaccines and therapeutics.
- And ignite a global movement to ensure this never happens again.



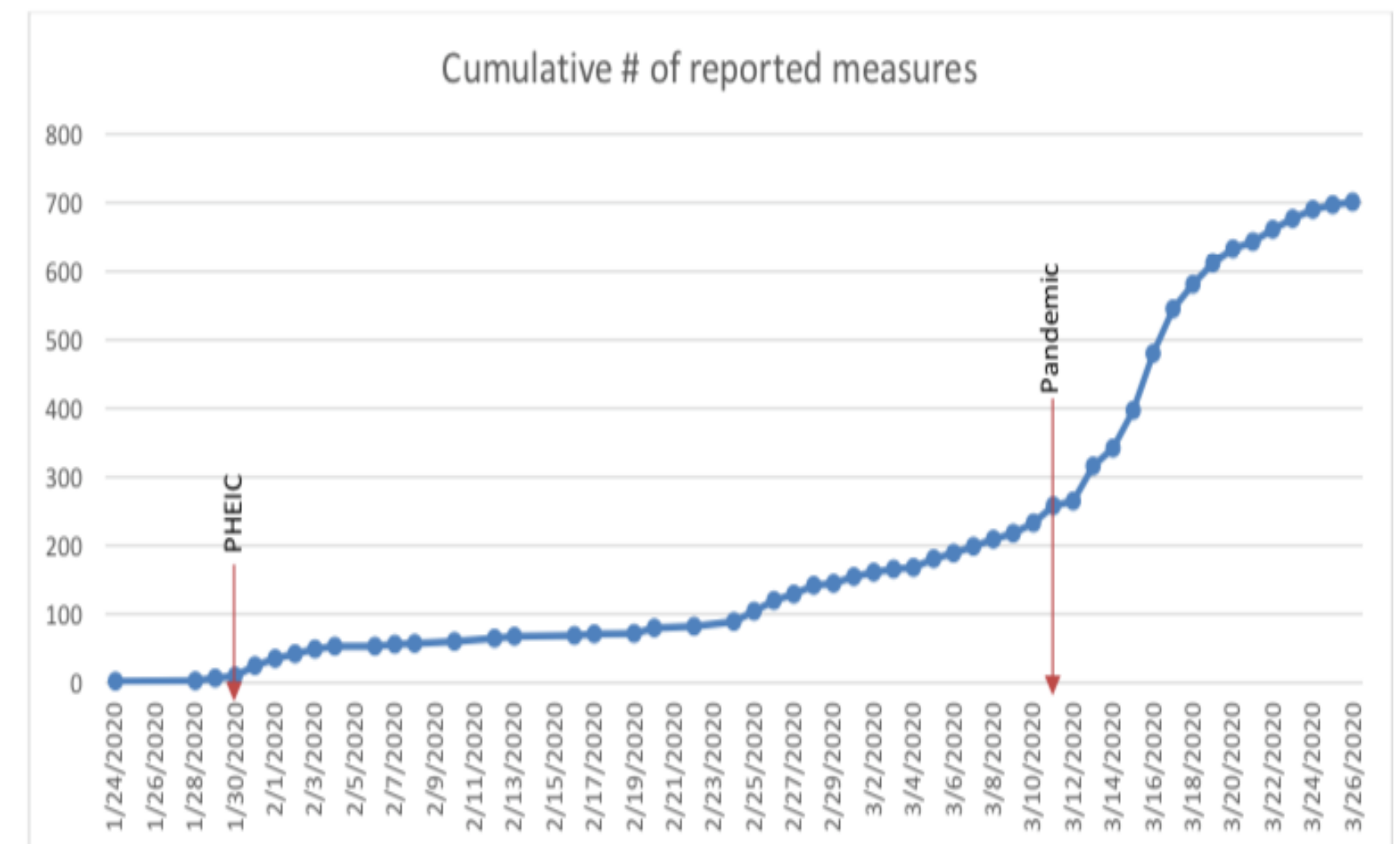
WHO daily report

- The number of **countries implementing additional health measures that significantly** interfere with international traffic has increased since the declaration of COVID-19 as a public health emergency of international concern. The United Nations World Tourism Organization launched a **Crisis Committee to review the impact of the outbreak on the aviation, shipping and tourism sectors and propose innovative solutions for recovery.**

Table 1. Number of States Parties officially reporting additional health measures that significantly interfere with international traffic (i.e. more than 24h delay), under Article 43 of the IHR (2005) (by WHO region)

WHO Region	Announcement posted on the WHO Event Information Site (EIS)								TOTAL new reports
	6 Feb	12 Feb	21 Feb	28 Feb	5 Mar	12 Mar	19 Mar	26 Mar	
AFR	-	1	-	-	-	-	-	22 (#) 1 update	23
AMR	10	2	-	-	1* 5* updates	1	11 12 updates	6 17 updates	31
EMR	-	1	-	1* 1* update	1*	-	1 1 update	1	5
EUR	2	1	2	5 (3*) 1* update	2*	5 3 updates	18 19 updates	6 20 updates	41
SEAR	1	-	-	-	-	-	6	4 8 updates	11
WPR	9	3	2	1* 6* updates	- 8* updates	3 updates	2 4 updates	8 12 updates	25
TOTAL	22	8	4	7	4	6	38	47	136

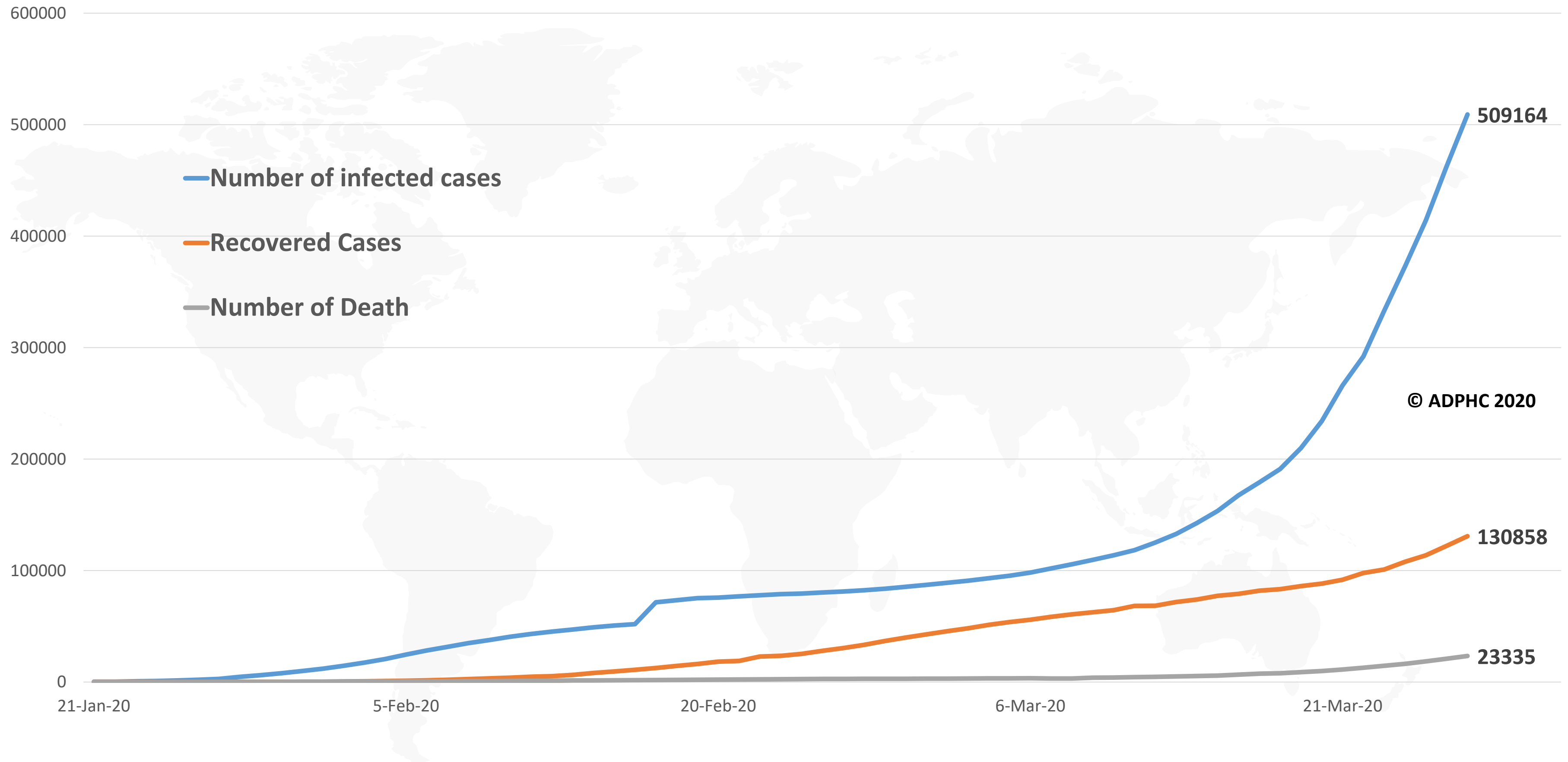
Figure 1. Cumulative number of reported additional health measures



Epidemiology



Figure 1: Total number of infected, recovered, and death cases (January 21st to March 27, 2020)



Line graph published by Abu Dhabi Public Health Center 2020.

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

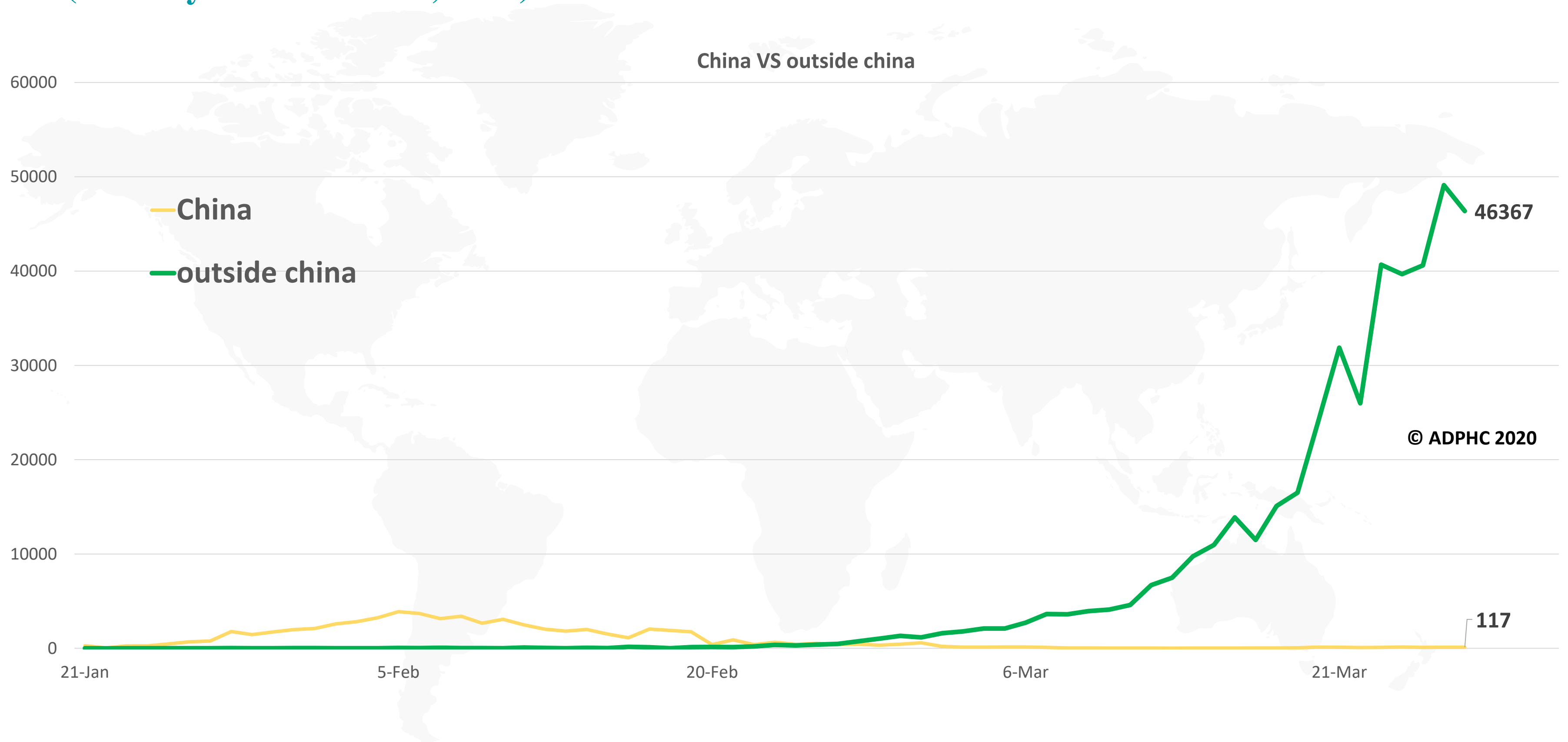
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هذه الوثيقة مملوكة لمركز أبوظبي للصحة العامة، ولا يجوز استخدامها لغير الأغراض المخصصة لها. ويحظر استخدام أو إعادة إنتاج هذه الوثيقة بدون إذن



Figure 2: Daily new infected COVID-19 cases reported by China and the rest of the world (January 21 to March 27, 2020).

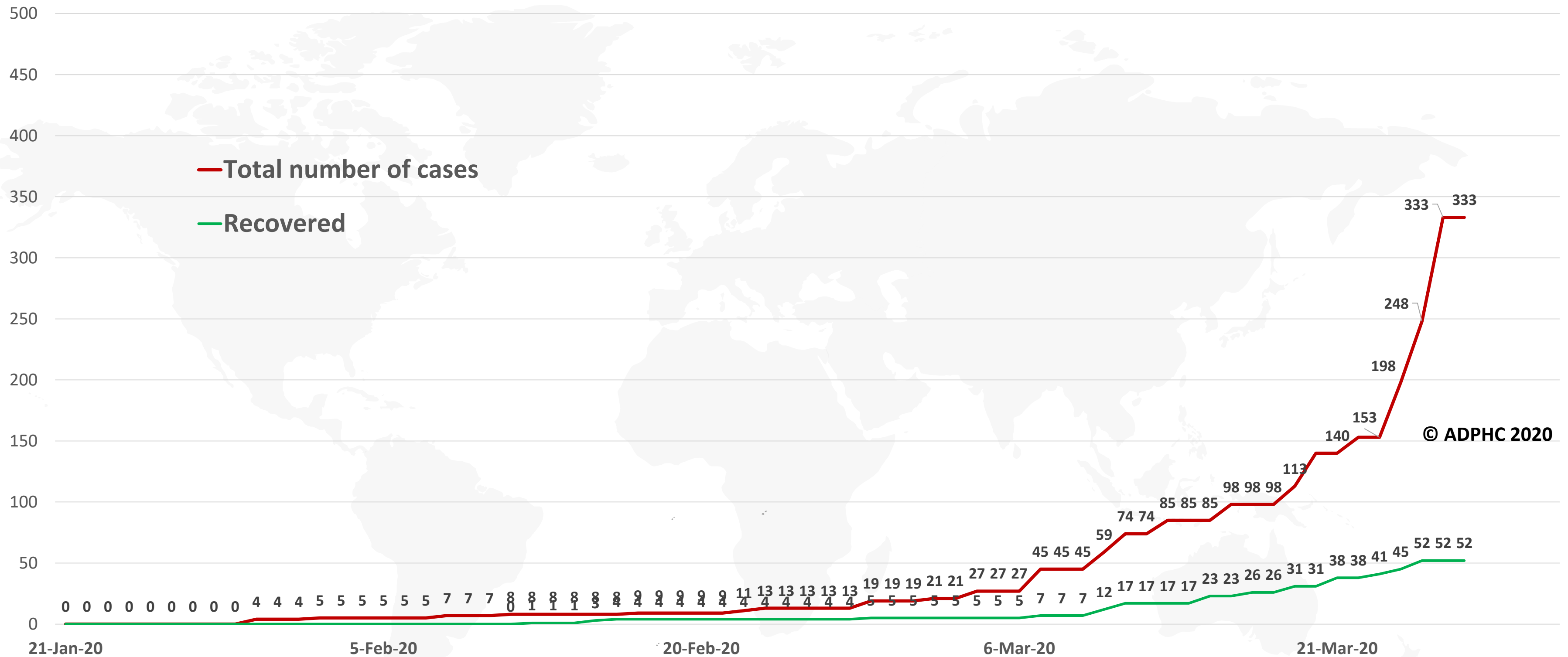


Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 3: Total number of COVID-19 infected and recovered cases in UAE over time



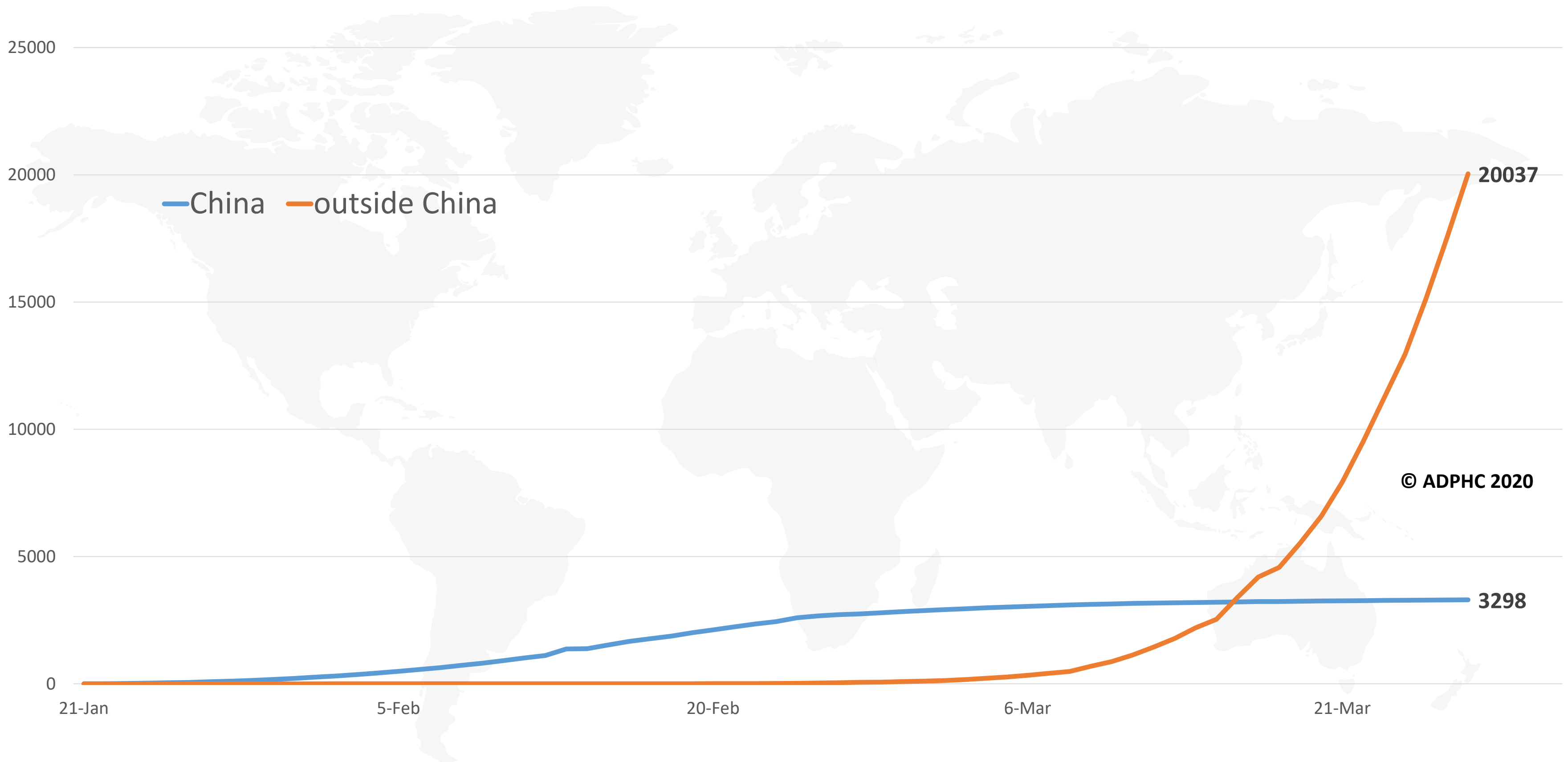
Line graph published by Abu Dhabi Public Health Center 2020.

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

Epidemiology



Figure 4: Total number of death due to COVID-19 reported by China and the rest of the world (January 21 to March 27, 2020).



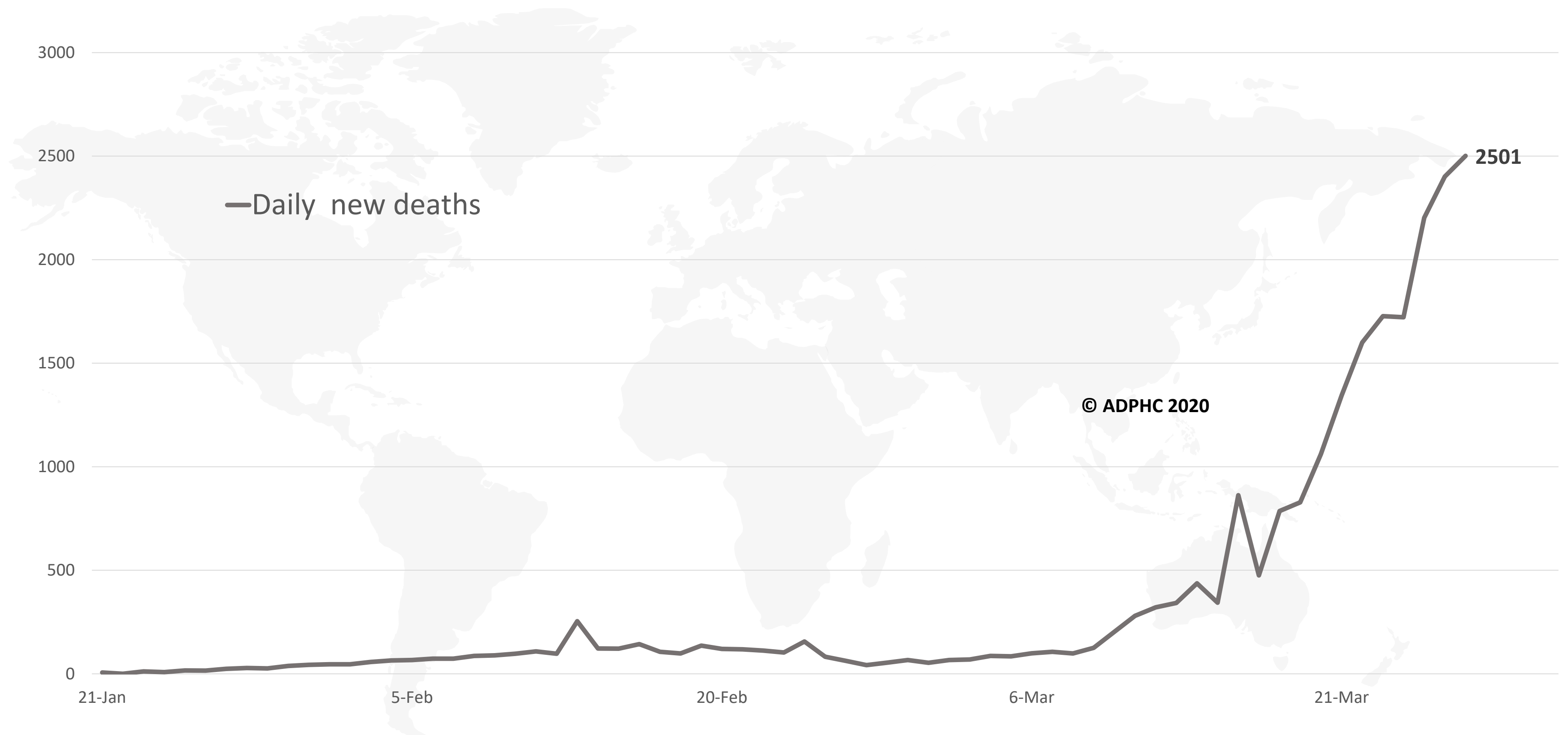
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Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)



Figure 5: Global daily new deaths due to COVID-19 (January 21 to March 27, 2020).



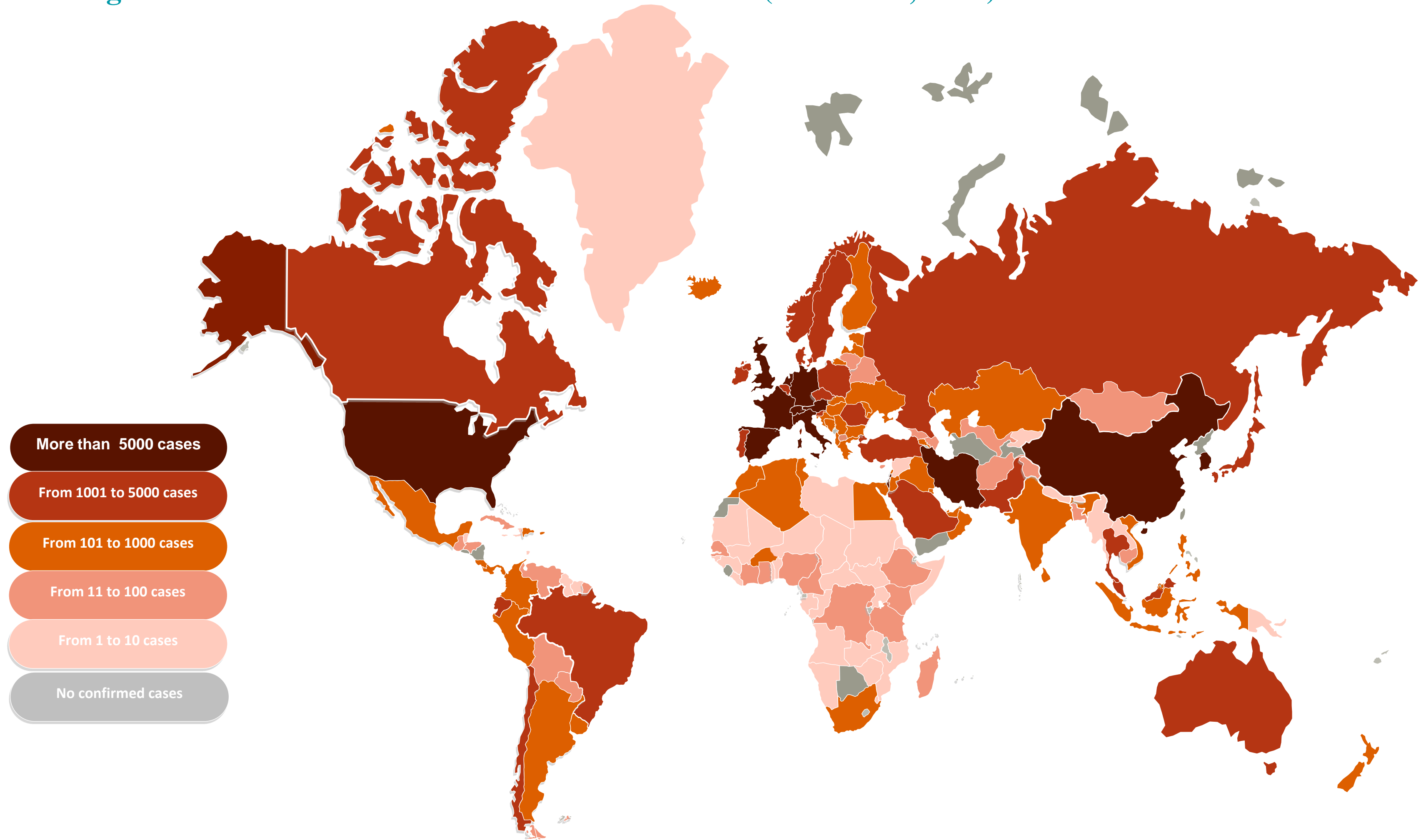
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)

Epidemiology



Figure 6A: Global distribution of COVID-19 cases (March 27, 2020).

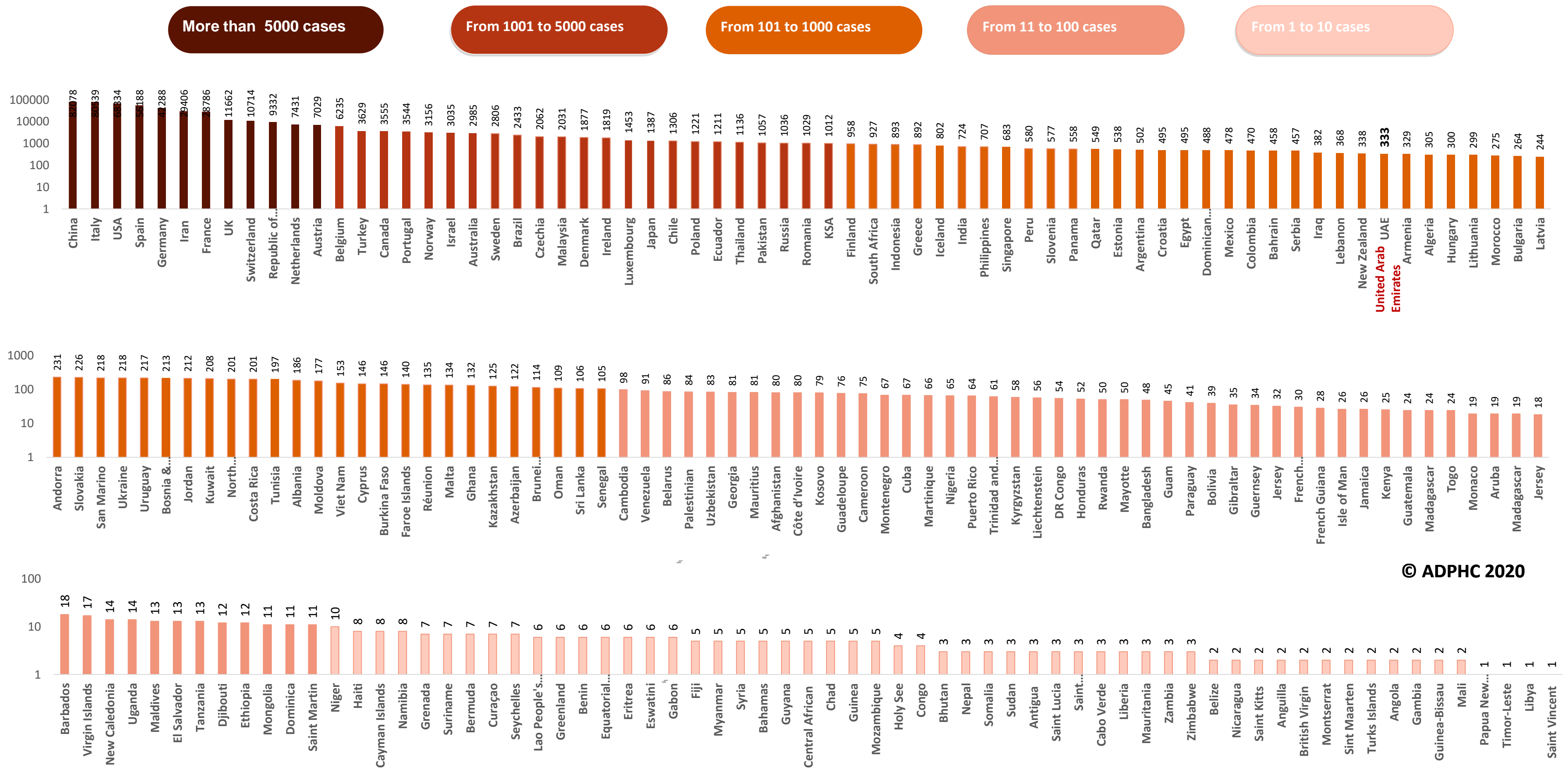


Map chart published by Abu Dhabi Public Health Center 2020.

Epidemiology



Figure 6B: Bar chart illustrate the global distribution of COVID19 cases (March 27, 2020)



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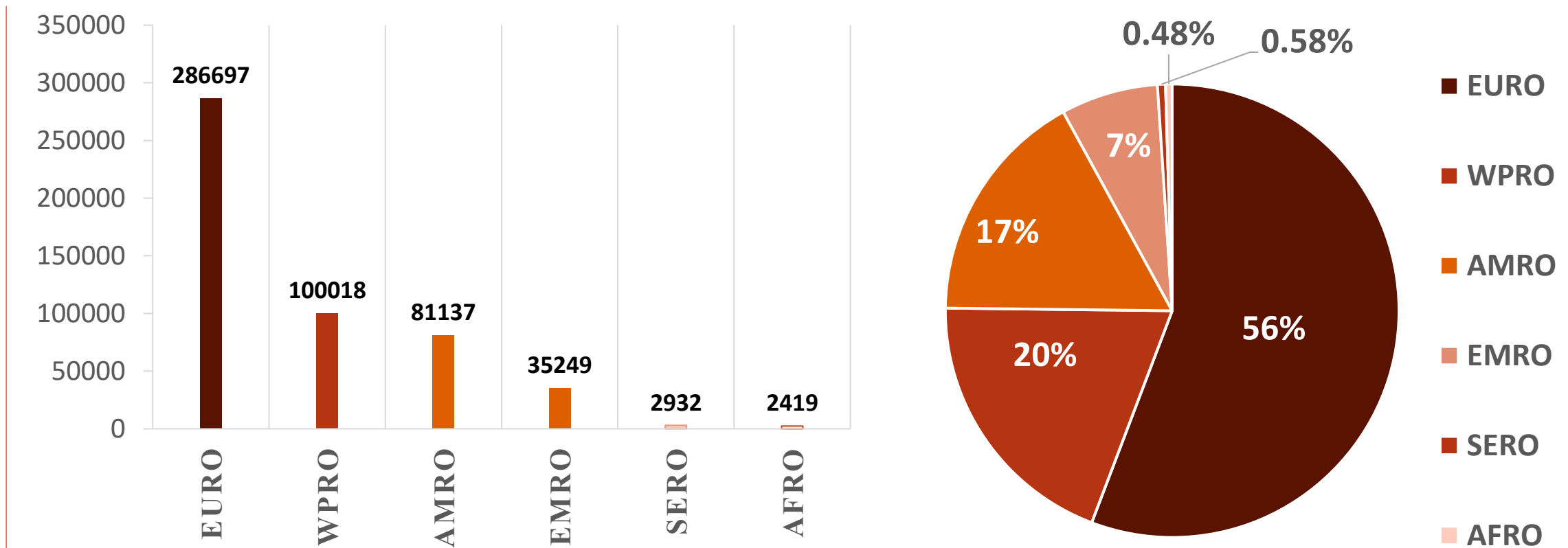
Map chart published by Abu Dhabi Public Health Center 2020.

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

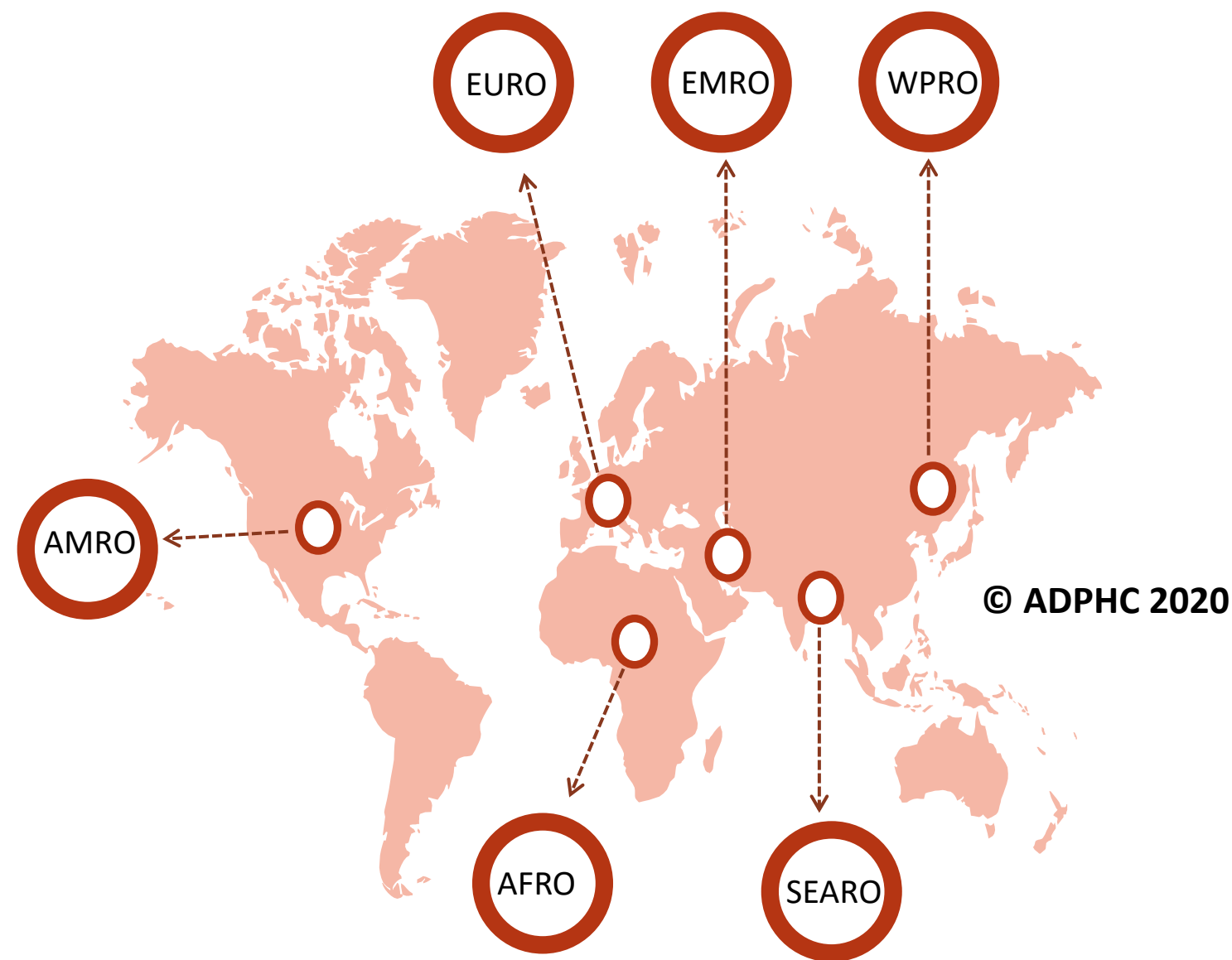
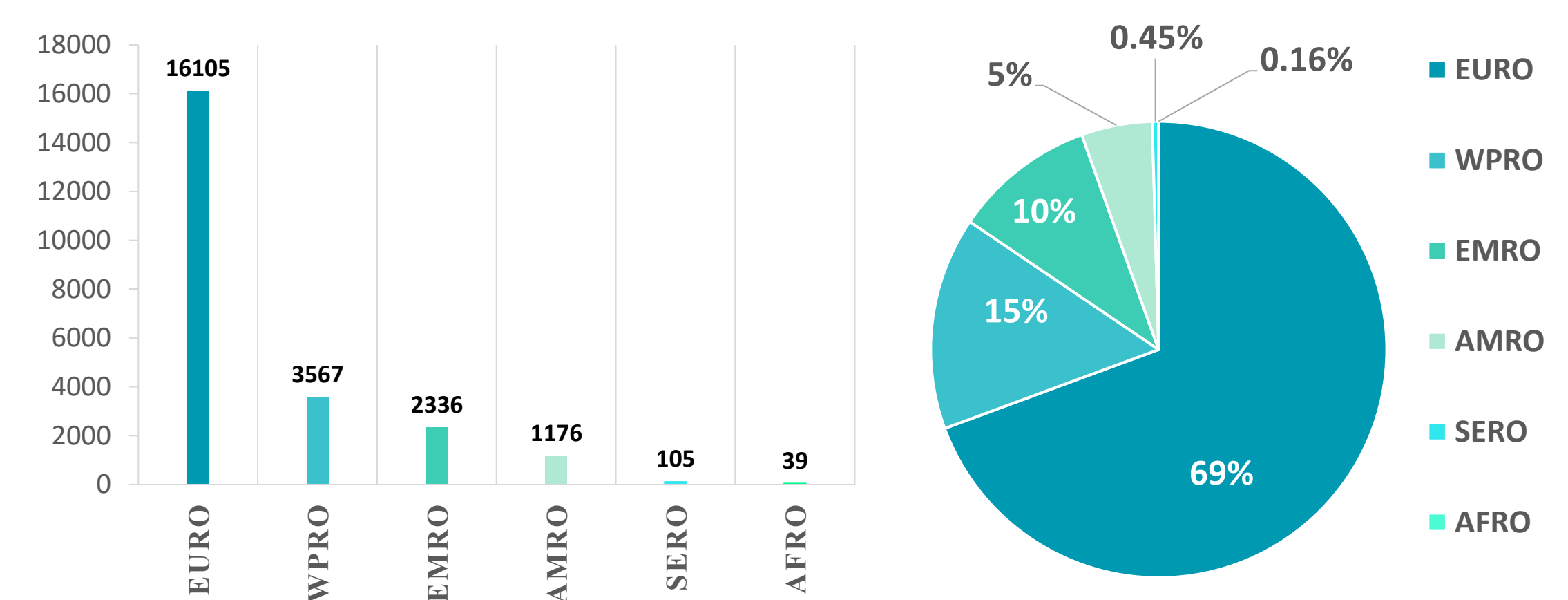


Figure 7: illustrate the Global distribution of COVID19 cases per region (March 27, 2020)

COMPERATIVE ANALYSIS OF INFECTED CASES PER REGION



COMPERATIVE ANYALSIS OF DEATH CASES PER REGION



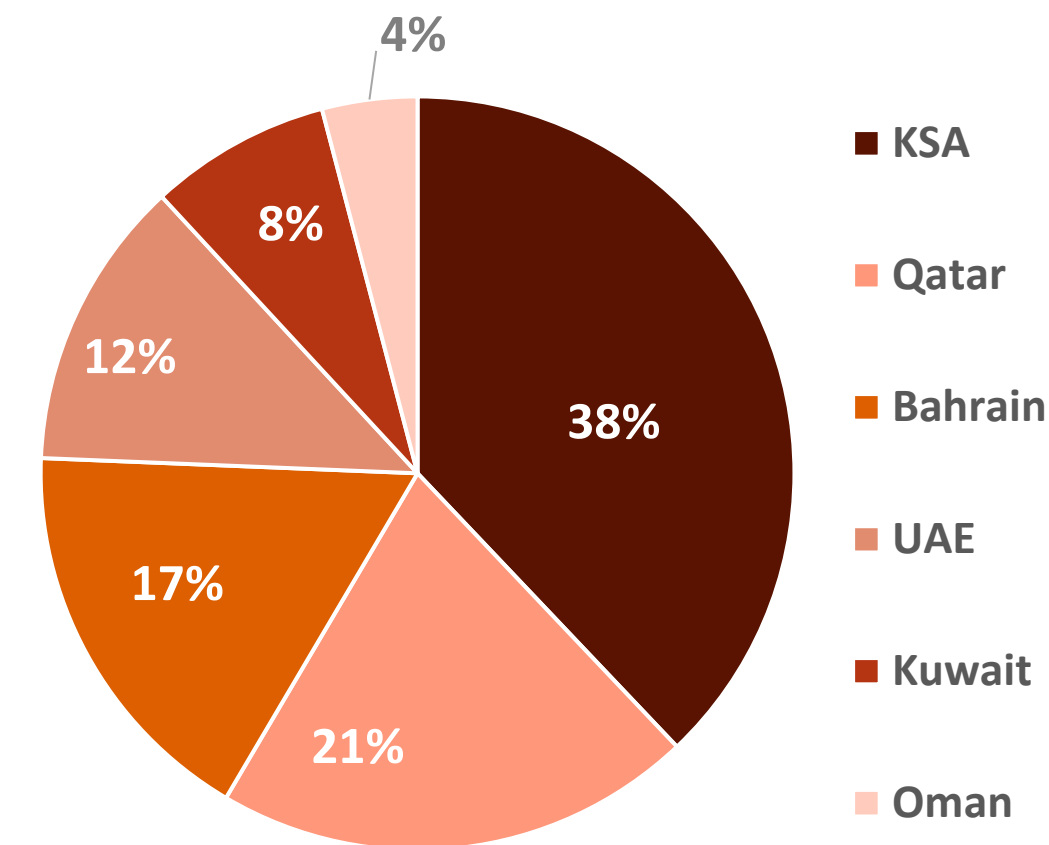
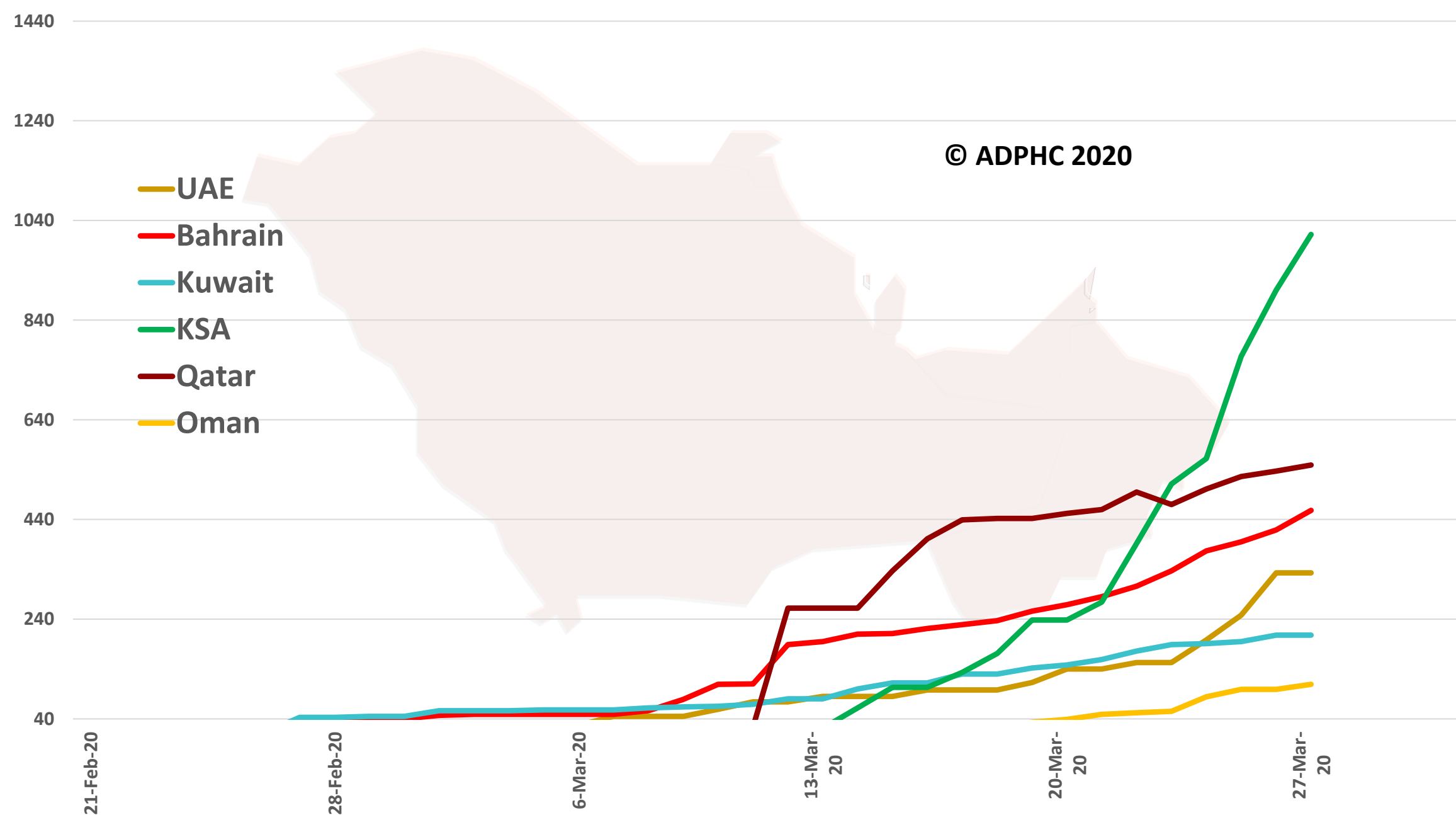
Map chart published by Abu Dhabi Public Health Center 2020.

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

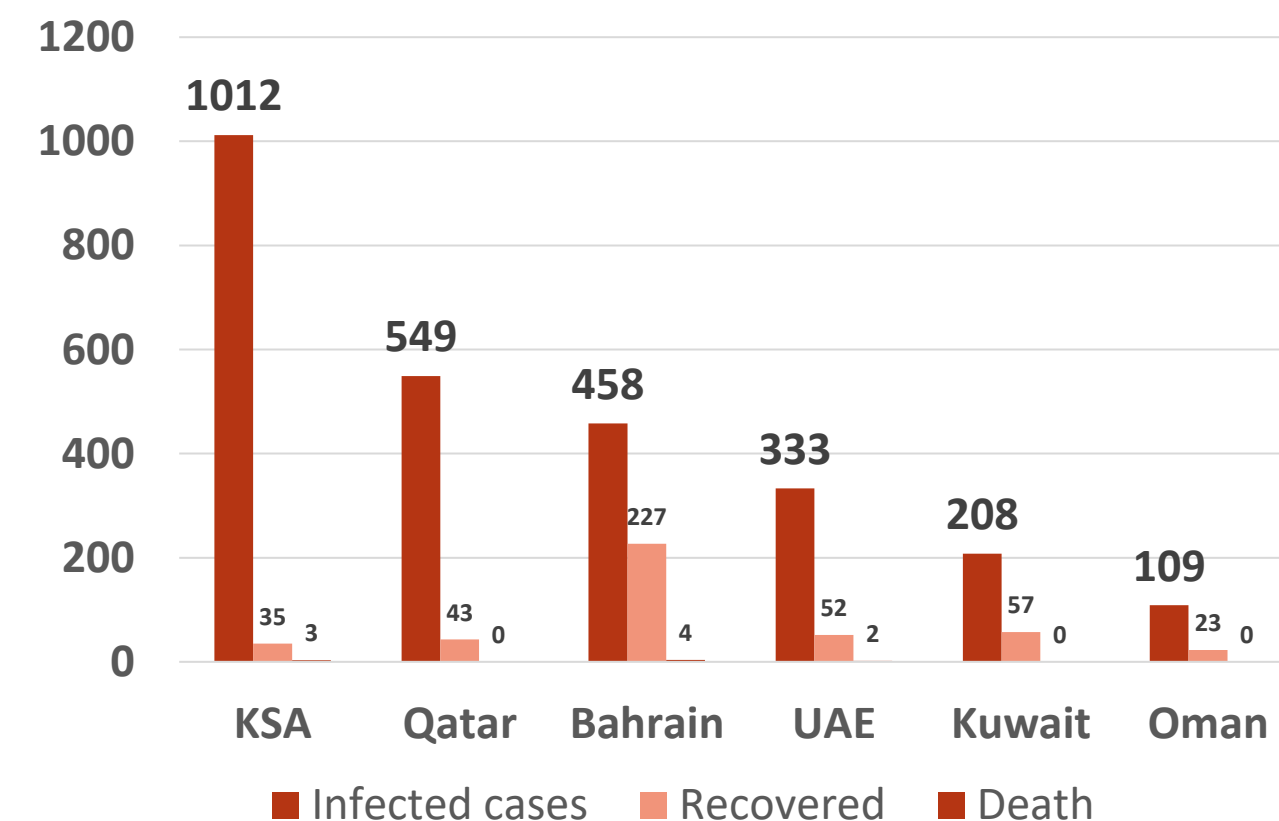


Figure 8: Comparative analysis of the distribution of COVID19 cases in GCC countries (March 27, 2020)

TOTAL NUMBER OF INFECTED CASES



Total number of infected, recovered and death



Map chart published by Abu Dhabi Public Health Center 2020.

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

Public health response



Article 1 : The effect of control strategies to reduce social mixing on outcomes of the COVID-19 epidemic in Wuhan, China: a modelling study

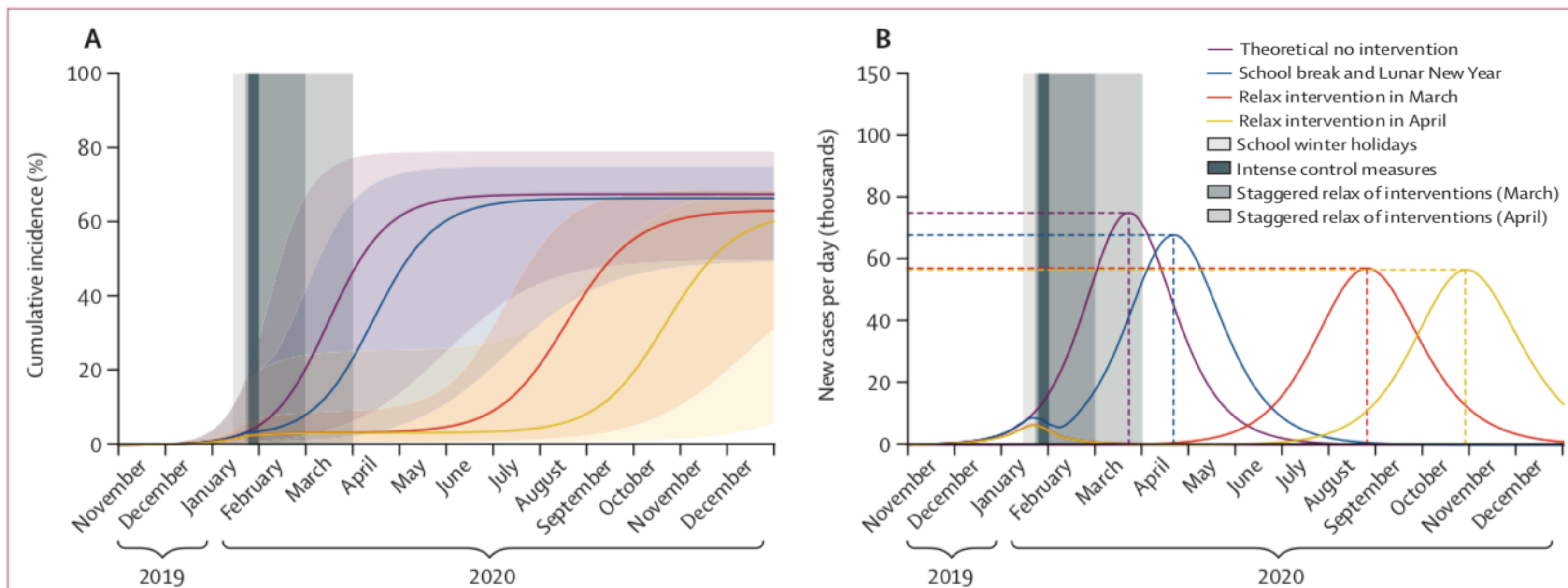
Published: March 25, 2020

link: [Click Here](#)

Summary:

study describes a mathematical model that quantifies the potential impacts of physical distancing policies, relying on Wuhan as a case study.

The study found that changes to contact patterns are likely to have substantially delayed the epidemic peak and reduced the number of coronavirus disease 2019 (COVID-19) cases in Wuhan. If these restrictions are lifted in March, 2020, a second peak of cases might occur in late August, 2020. **Such a peak could be delayed by 2 months if the restrictions were relaxed a month later, in April, 2020.**



Public health response



Article 1 : Cont.,

link: [Click Here](#)

Summary:

- Physical distancing measures were most effective if the staggered return to work was at the beginning of April; **this reduced the median number of infections by more than 92% (IQR 66–97) and 24% (13–90) in mid-2020 and end-2020, respectively**
- Mathematical models can help us understand how SARS-CoV-2 could spread across the population and inform control measures that might mitigate future transmission.
- The measures put in place to reduce contacts at schools and workplaces are helping control the outbreak by providing the **healthcare system with the time and opportunity to expand and respond.**
- Consequently, if these restrictions are lifted prematurely, while there are still enough susceptible people to keep the $Re > 1$ once contacts increase, the number of infections would increase.
- Model limitation: **large uncertainties around estimates of R_0 and the duration of infectiousness.**

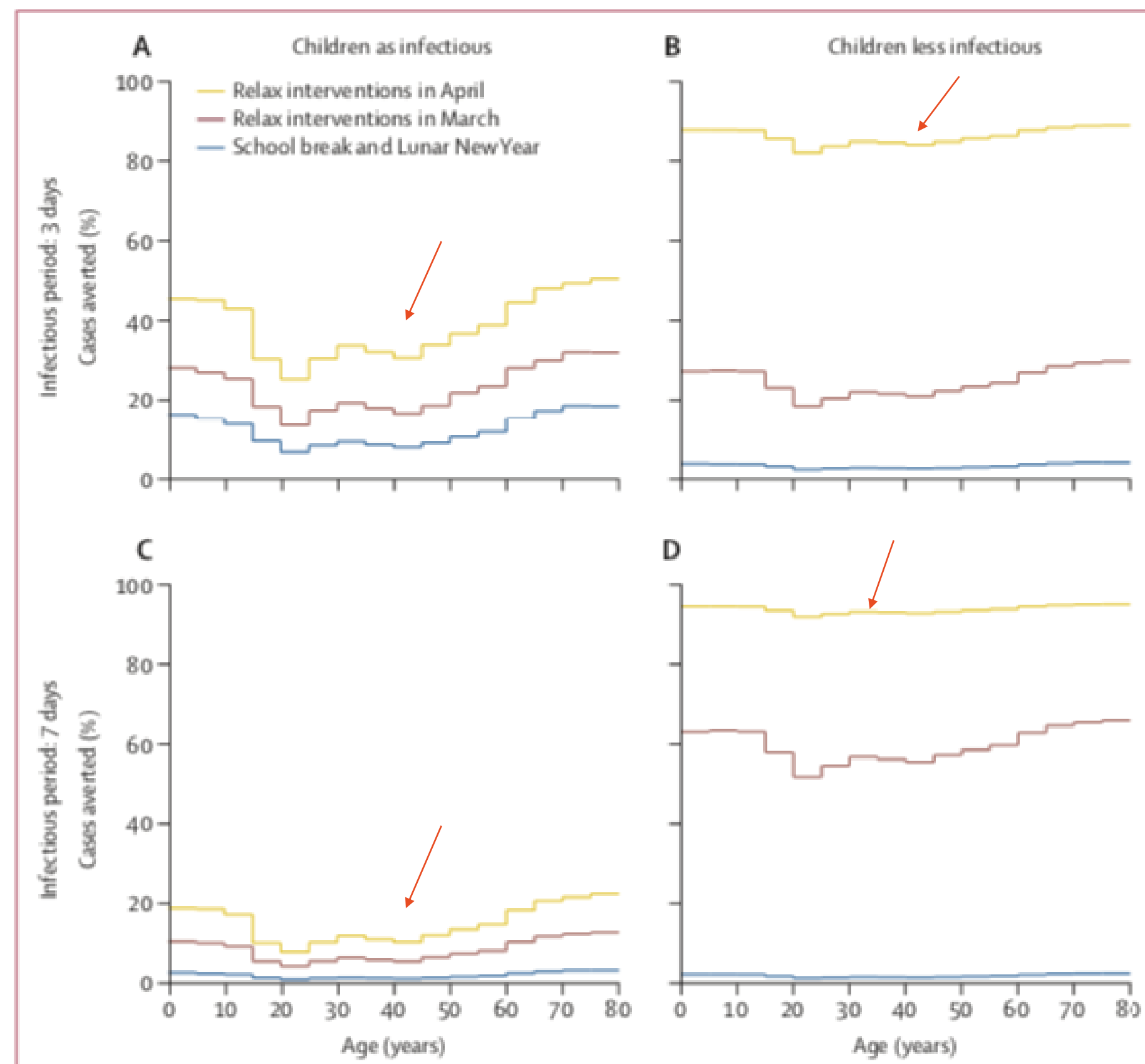


Figure 2: Modelled proportion of number of infections averted by end-2020 by age for different physical distancing measures, assuming the duration of infectiousness to be 3 days (A, B) or 7 days (C, D)

The additional proportions of cases averted (compared with no intervention) are presented across age and by the different physical distancing measures.



Treatment :

Article 2: Management of Critically Ill Adults With COVID-19

Published : March 26. 2020

Link: [Click Here](#)

Summary:

- **Infection Control and Testing;**
- For health care workers performing aerosol-generating procedures, use (N95 respirators, FFP2), in addition to other (PPE).
- For usual care of nonventilated patients, or for performing non–aerosol-generating procedures on patients receiving mechanical ventilation, use **OF MEDICAL MASKS IS RECOMMENDED**, in addition to other PPE (*weak recommendation*, low-quality evidence [LQE]).
- Diagnostic lower respiratory tract samples are preferred over bronchial washings, bronchoalveolar lavage, and upper respiratory tract samples (*weak recommendation*, LQE).
- **Ventilatory Support**
- Close monitoring for worsening of respiratory status and early intubation if worsening occurs is recommended (**BEST PRACTICE STATEMENT**).

- **Therapy**
- In those with ARDS, use of corticosteroids is suggested (*weak recommendation*).
- In COVID-19 patients receiving mechanical ventilation who have respiratory failure, use of empiric antimicrobial/antibacterial agents is suggested (*no evidence rating*); assess for de-escalation.
- Routine use of standard IV immunoglobulins is *not suggested*.
- Convalescent plasma is *not suggested*. There **is insufficient evidence to issue** a recommendation on use of any of the following: antiviral agents, recombinant interferons, chloroquine/hydroxychloroquine, or tocilizumab.

Conclusion:

- The COVID-19 pandemic has brought unprecedented **challenges regarding the ability to generate timely evidence**, even as the disease overwhelms health care systems and stresses the clinical workforce. This guideline. **will be frequently updated online as global evidence accrues.**

Treatment



Article 3: Defining the Epidemiology of Covid-19 - Studies Needed

Published : March 26, 2020

Summary:

- Previous outbreaks have shown that as an epidemic develops, there is an urgent need to expand public health activities in order to explain the epidemiology of the disease and characterize its potential impact.
- The impact of an epidemic depends on the number of persons infected, transmissibility of the disease, and the range of clinical severity.
- There are several critical questions that may arise such as - a) **What is the full spectrum of disease severity?** b) **How transmissible is the virus?** c) **Who are the infectors and how do the infected person's age, severity of illness, and other characteristics affect the risk of transmitting the infection to others?** d) What are the risk factors for severe illness or death so that we can focus prevention and treatment efforts? What is the role the asymptomatic or presymptomatic infected persons play in transmission.

link: [Click Here](#)

Types of Evidence Needed for Controlling an Epidemic.	
Evidence Needed	Study Type
No. of cases, including milder ones	Syndromic surveillance plus targeted viral testing
Risk factors and timing of transmission	Household studies
Severity and attack rate	Community studies
Severity "pyramid"	Integration of multiple sources and data types
Risk factors for infection and severe outcomes, including death	Case-control studies
Infectiousness timing and intensity	Viral shedding studies

The table lists approaches to respond to these questions, each of which has shown success in prior disease outbreaks.

Treatment



Article 3: Cont.,

link: [Click Here](#)

Summary : Important points:

- Viral testing **should not be used only for clinical care**. A proportion of **testing capacity must be reserved to support public health efforts to characterize the trajectory and severity** of the disease.

Community studies:

- Conducted in specific population such as schools, workplaces, or neighborhoods (cohort studies) can help in describing the **overall burden and the household and community attack rate**; can permit rapid assessment of the severity of the epidemic **by counting the number of illnesses, hospitalizations, and deaths** in a well- defined population and **extrapolating** that rate to the larger population.

Household studies can also help:

- Prioritize control measure (if we found asymptomatic patient can transmit the disease , focus will be in **placed on measures for social distancing**, such as closing schools and avoiding mass gatherings. If transmission involve symptomatic only then identification and isolation of symptomatic measure is more effective.
- conduct viral shedding studies that can help determine when patients are most infectious and for how long they should be isolated.

Conclusion:

- Starting these epidemiologic and surveillance activities promptly will enable us to choose the most efficient ways of controlling the epidemic and help **us avoid interventions that may be unnecessarily costly or unduly restrictive of normal activity**.