

ABU DHABI PUBLIC
HEALTH CENTRE

مركز أبوظبي
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Scientific Research Monitoring on COVID-19

25 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

Public health response:

- UK is asking 1.5 million who are considered a high risk to stay home for at least 12 weeks.
- Singaporean model assess the effectiveness of different control measure showed that a combination of school closure , quarantine and working distancing reduce 99.3% of COVID19 infection number.
- A figure showing the estimated time lag between different European countries and the Italian situation

*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. [Social Media and Emergency Preparedness in Response to Novel Coronavirus](#)
2. [Editorial Concern—Possible Reporting of the Same Patients With COVID-19 in Different Reports](#)
3. [Systematic review of COVID-19 in children show milder cases and a better prognosis than adults](#)
4. [Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019](#)
5. [Risk of COVID-19 importation to the Pacific islands through global air travel](#)



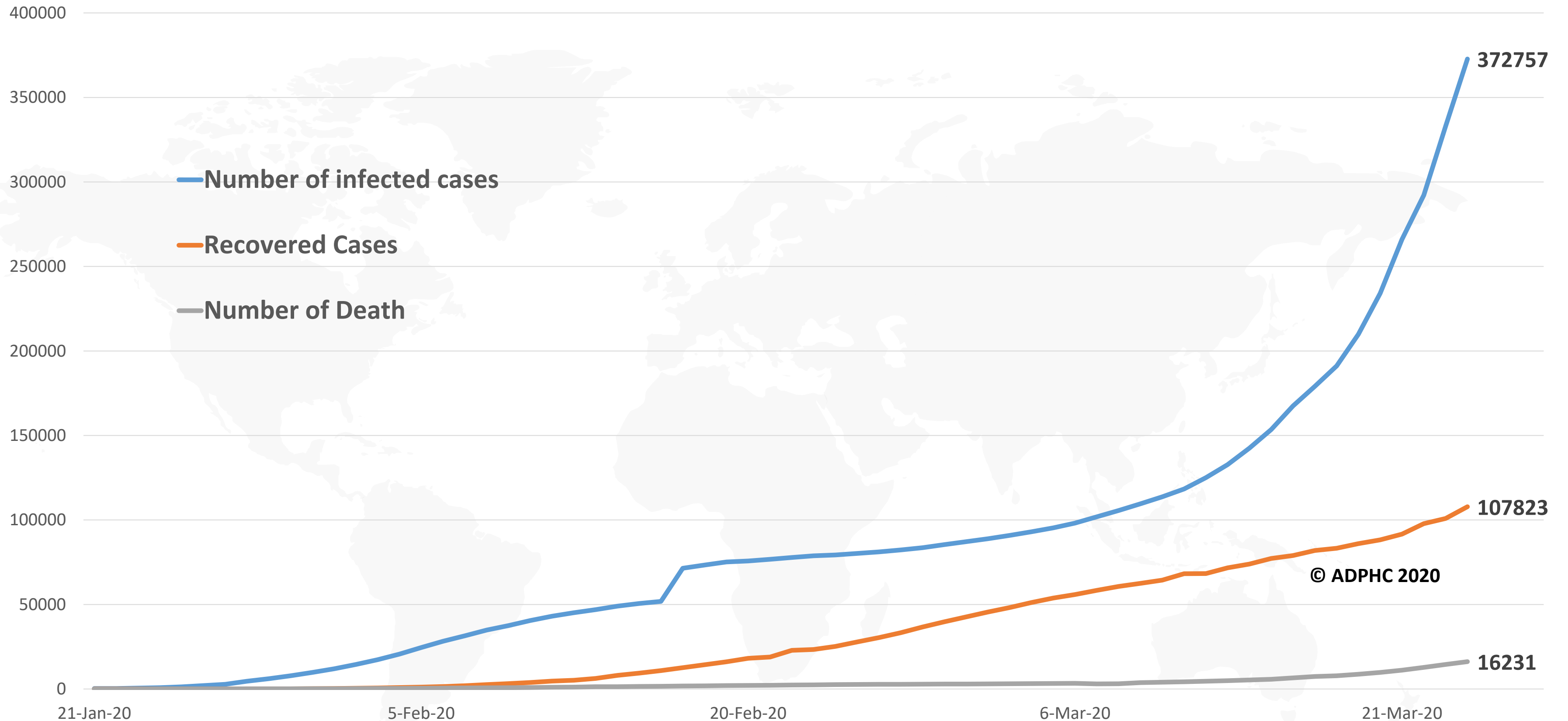
DG brief 24 March 2020

- Four new countries/territories/areas from the South-East Asia Region [1], and Region of the Americas [3] have reported cases of COVID-19.
- WHO has delivered a new supply shipment of emergency medical supplies to the Islamic Republic of Iran.
- The WHO WhatsApp Health Alert has now attracted 10 million users since launching Friday, and the COVID-19 Solidarity Response Fund has raised more than US\$70 million, in just 10 days.
- WHO and FIFA launched a joint campaign to equip the football community to tackle COVID-19. This awareness campaign calls on all people around the world to follow the five key steps to stop the spread of the disease.
- WHO and its partners are constantly working to strengthen the chains of essential COVID-19 supplies. As global demand rises, WHO and its partners aim to ensure assistance to areas most in need. The WHO announce the establishment of the Supply Chain Coordination Cell (SCCC). The objectives of the SCCC are to:
 - Establish a COVID-19 supply chain working group aim to minimize disruptions to current humanitarian operations, while increasing efficiency and coherence of the COVID-19 response.
 - Provide a centralized voice through the collection and dissemination of information to the UN and other wider humanitarian community,
 - Foster the creation of regional and country level coordination mechanisms
 - Create a smaller joint procurement group of medical equipment buying agencies.

Epidemiology



Figure 1: Total number of infected, recovered, and death cases (January 21st to March 24, 2020)



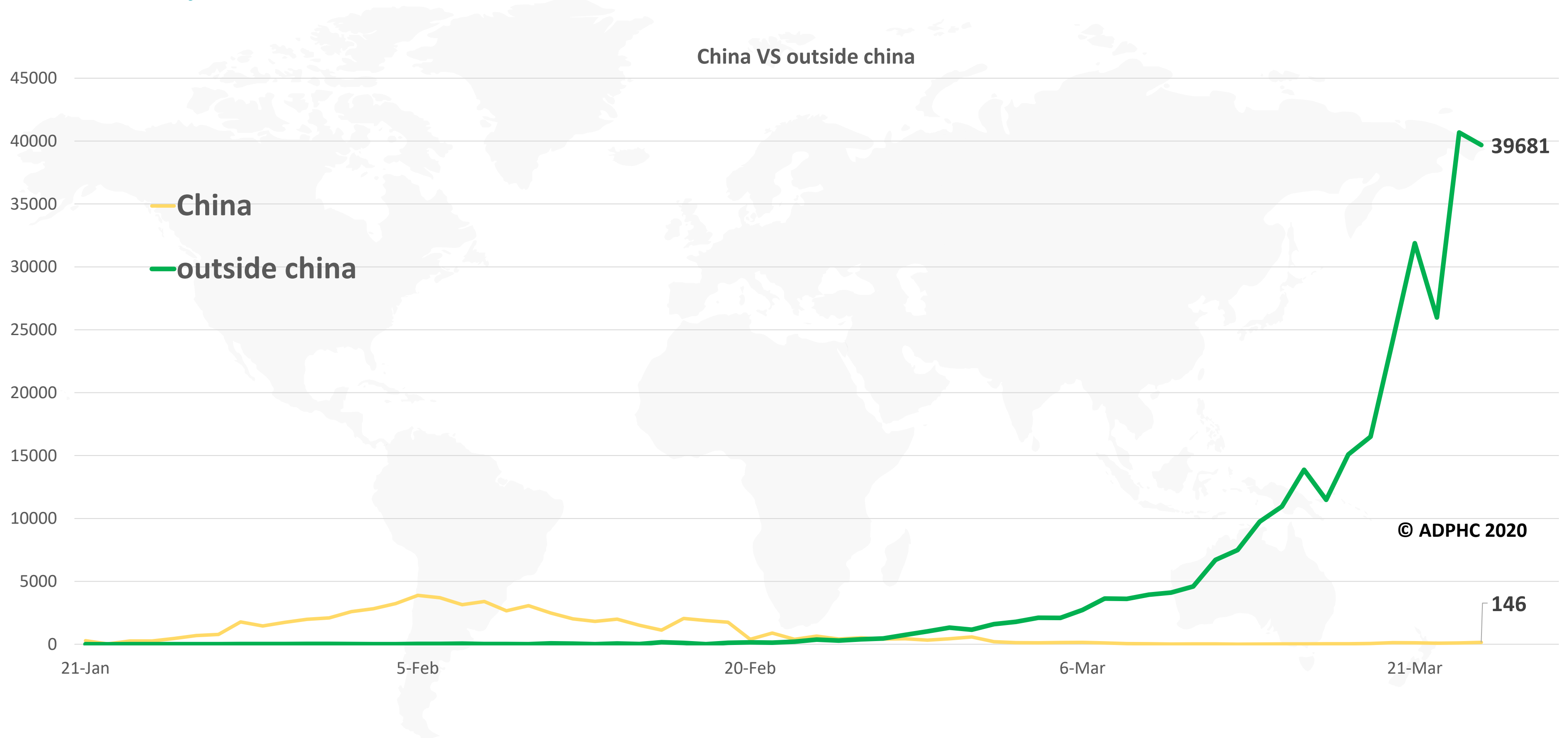
Line graph published by Abu Dhabi Public Health Center 2020.

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

Epidemiology



Figure 2: Daily new infected COVID-19 cases reported by China and the rest of the world (January 21 to March 24 , 2020).



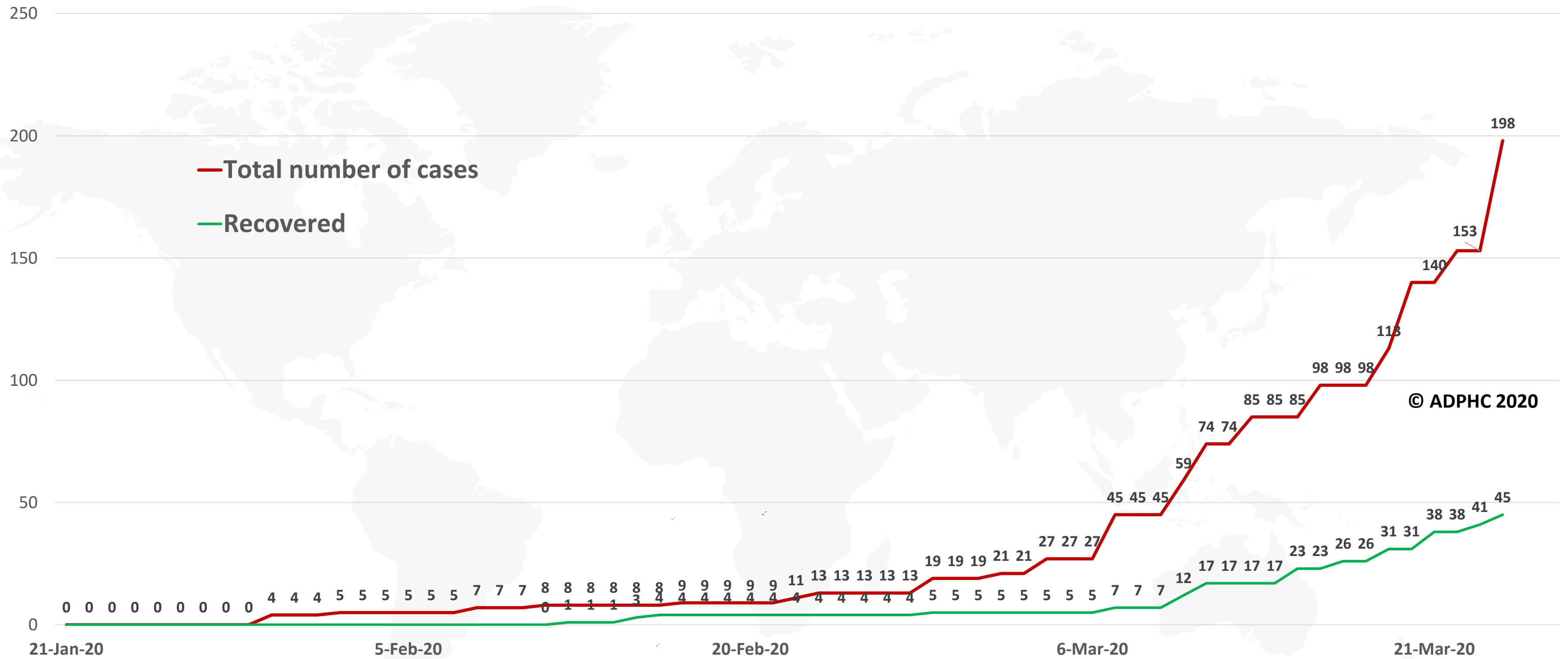
Line graph published by Abu Dhabi Public Health Center 2020.

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

Epidemiology



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

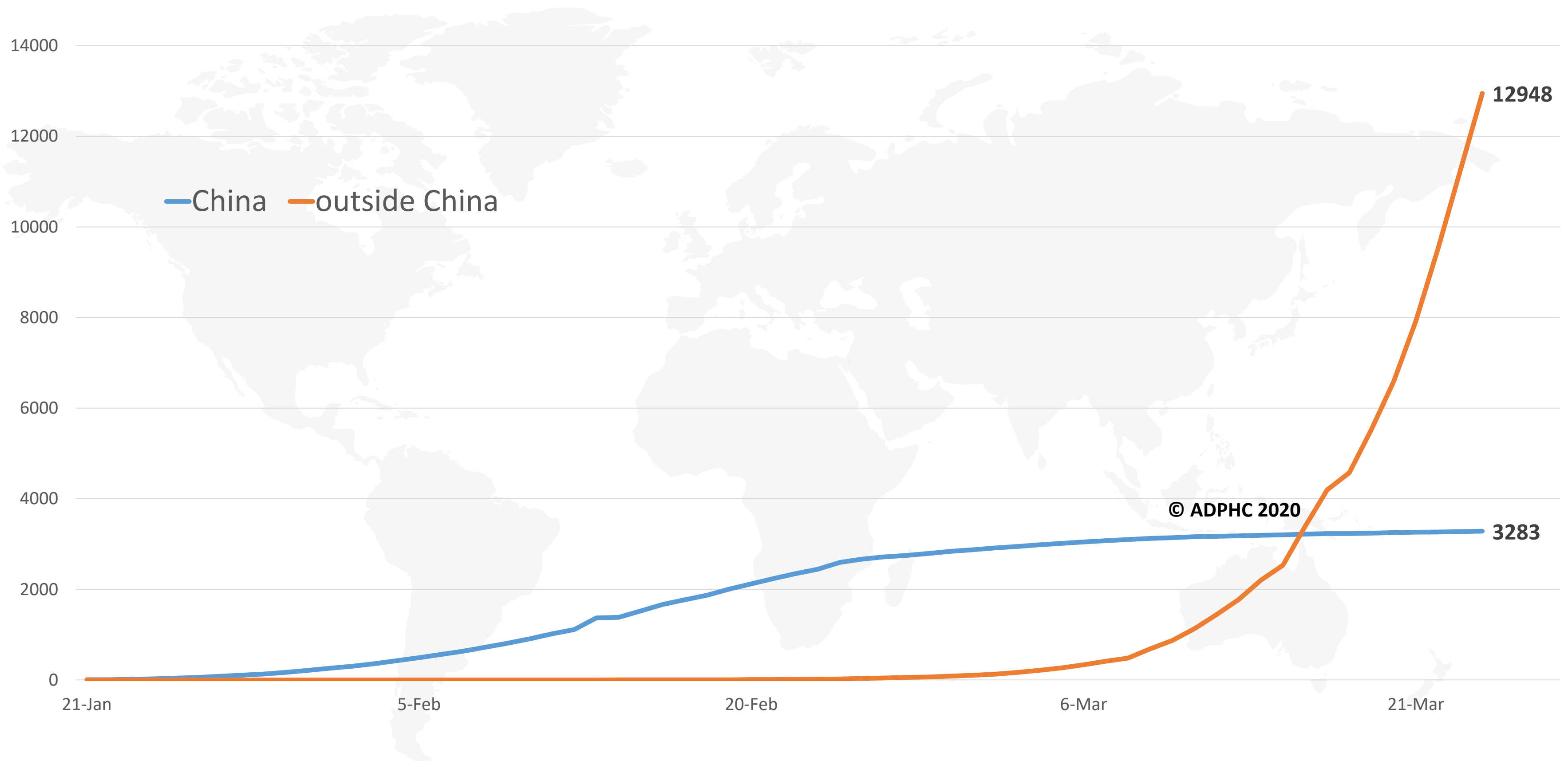


Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 4: Total number of death due to COVID-19 reported by China and the rest of the world (January 21 to March 24 , 2020).

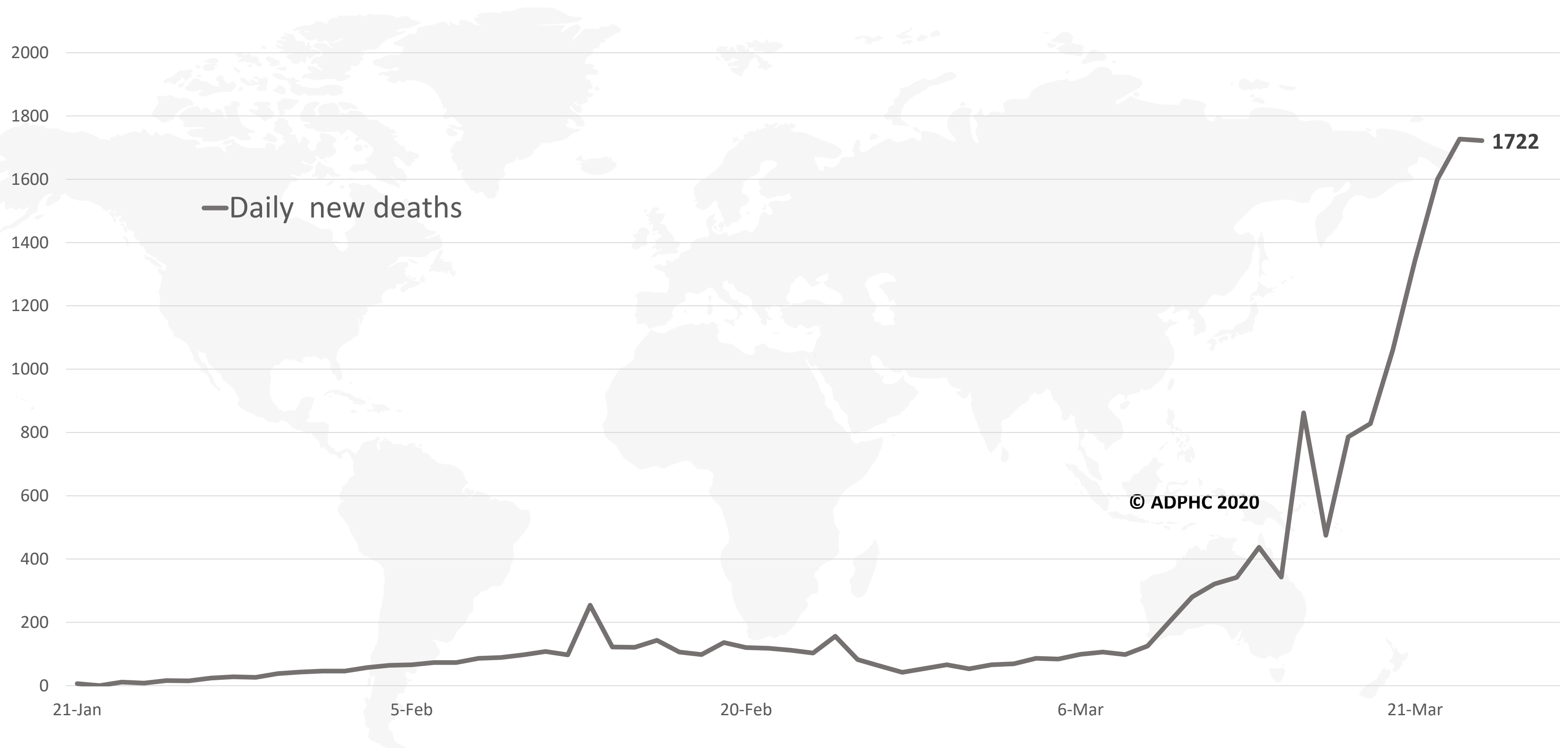


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)



Figure 5: Global daily new deaths due to COVID-19 (January 21 to March 24 , 2020).



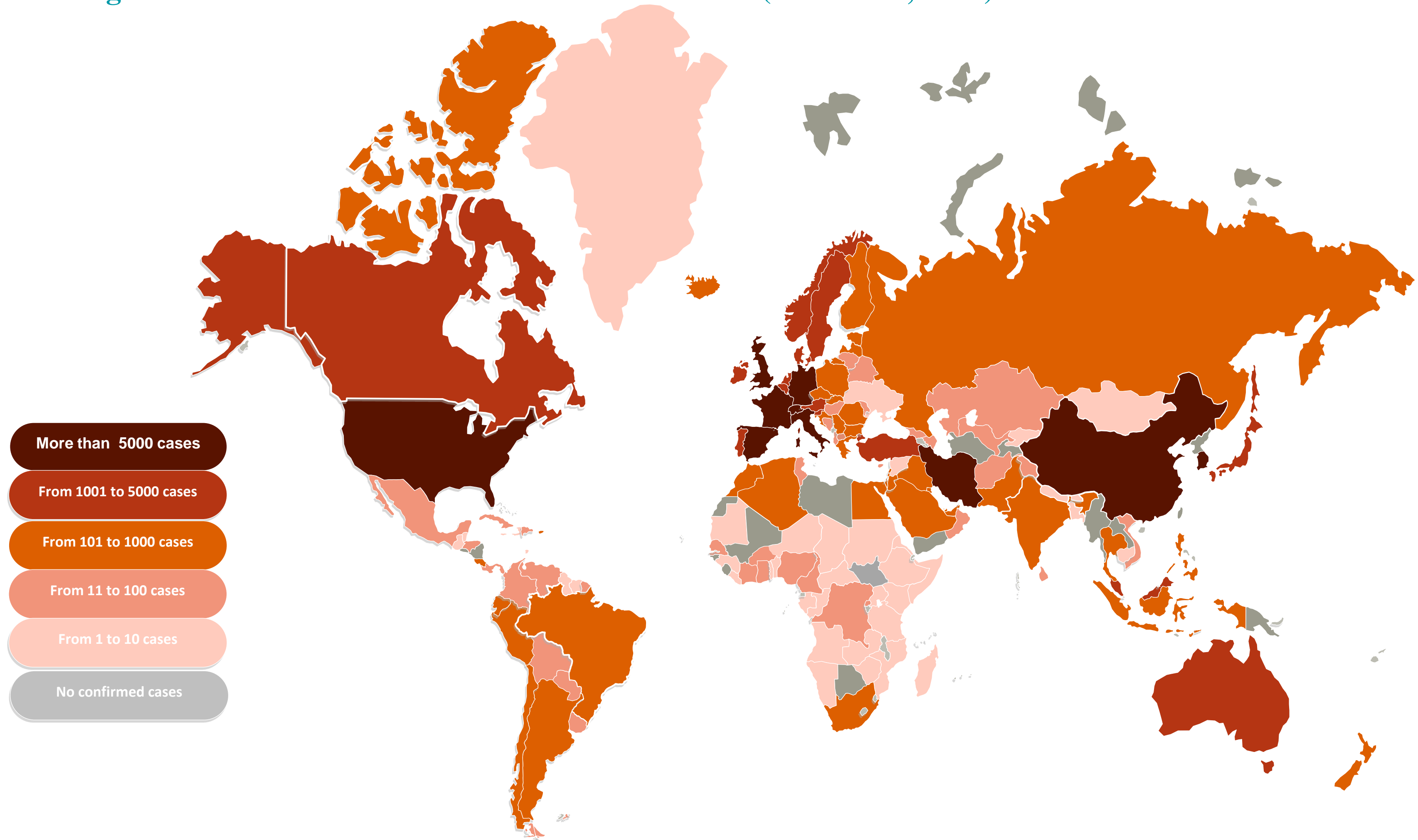
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)

Epidemiology



Figure 6A: Global distribution of COVID-19 cases (March 24, 2020).

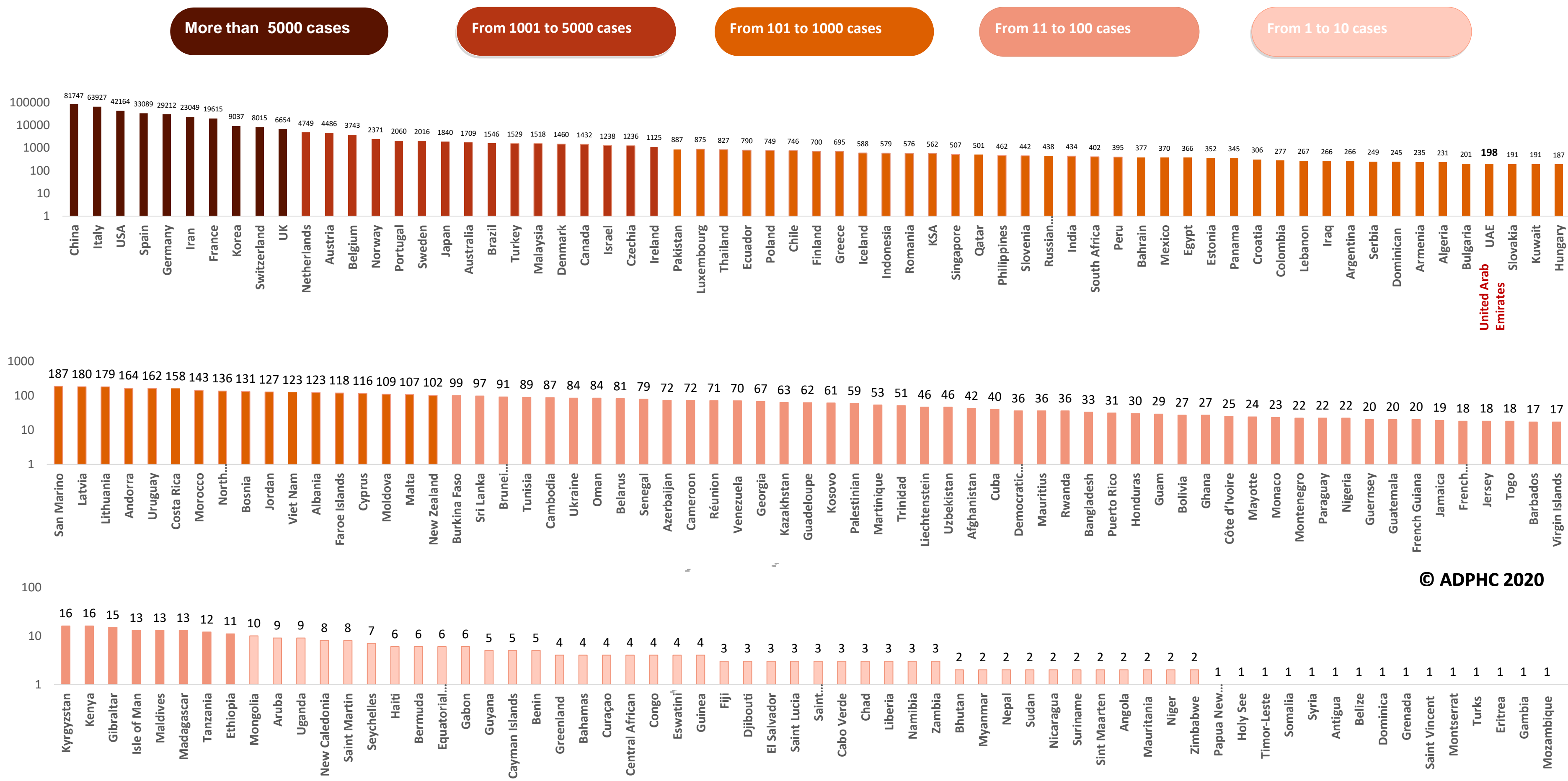


Map chart published by Abu Dhabi Public Health Center 2020.

Epidemiology



Figure 5B: Bar chart illustrate the global distribution of COVID19 cases (March 23, 2020)



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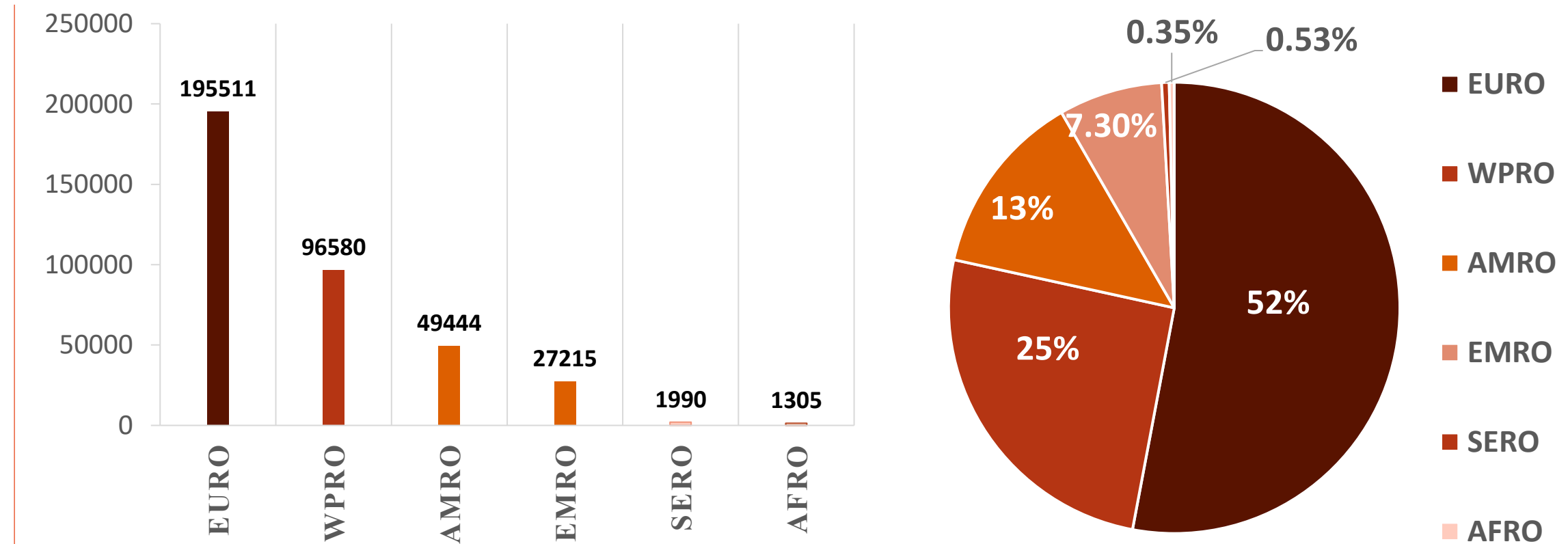
Map chart published by Abu Dhabi Public Health Center 2020.

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

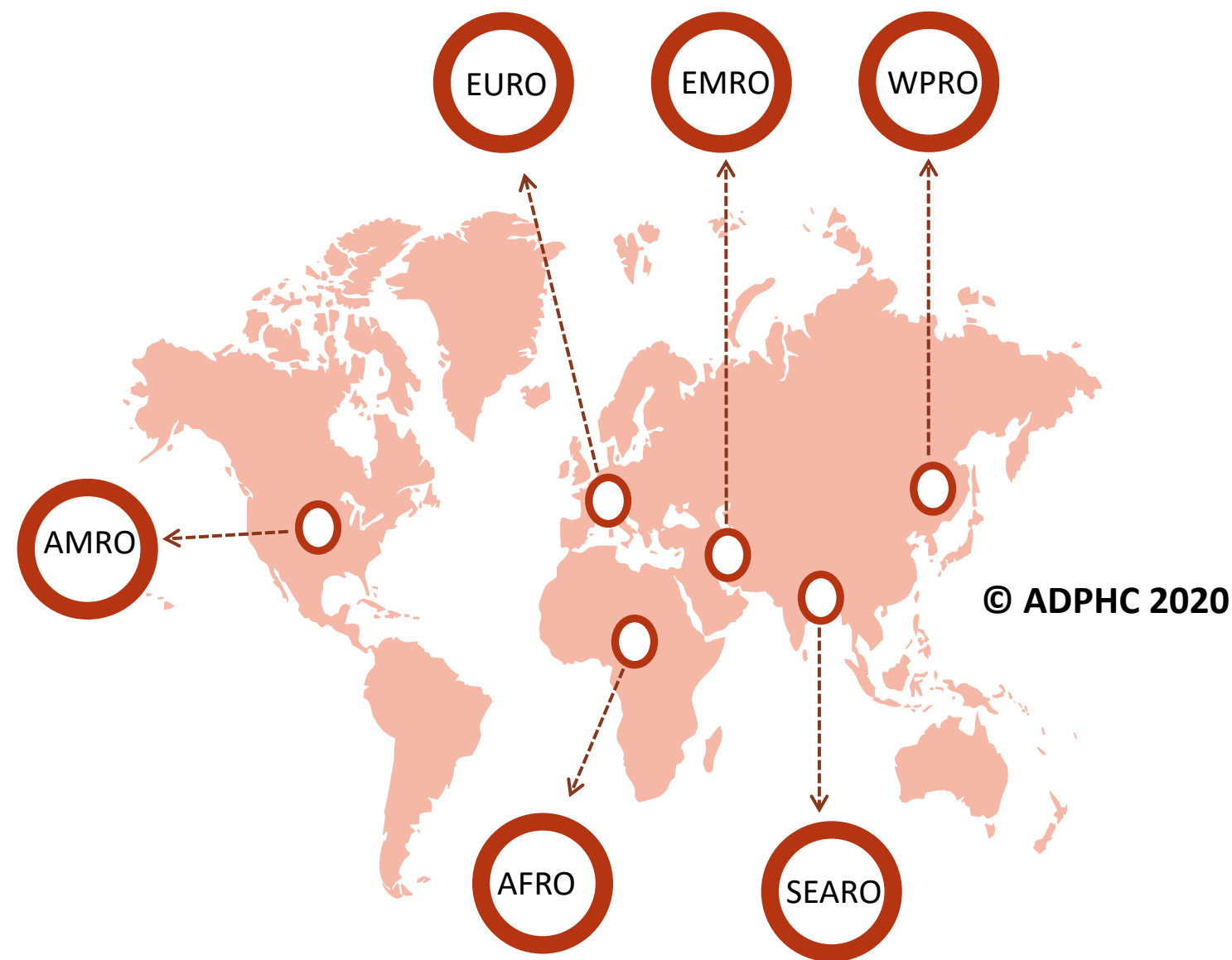
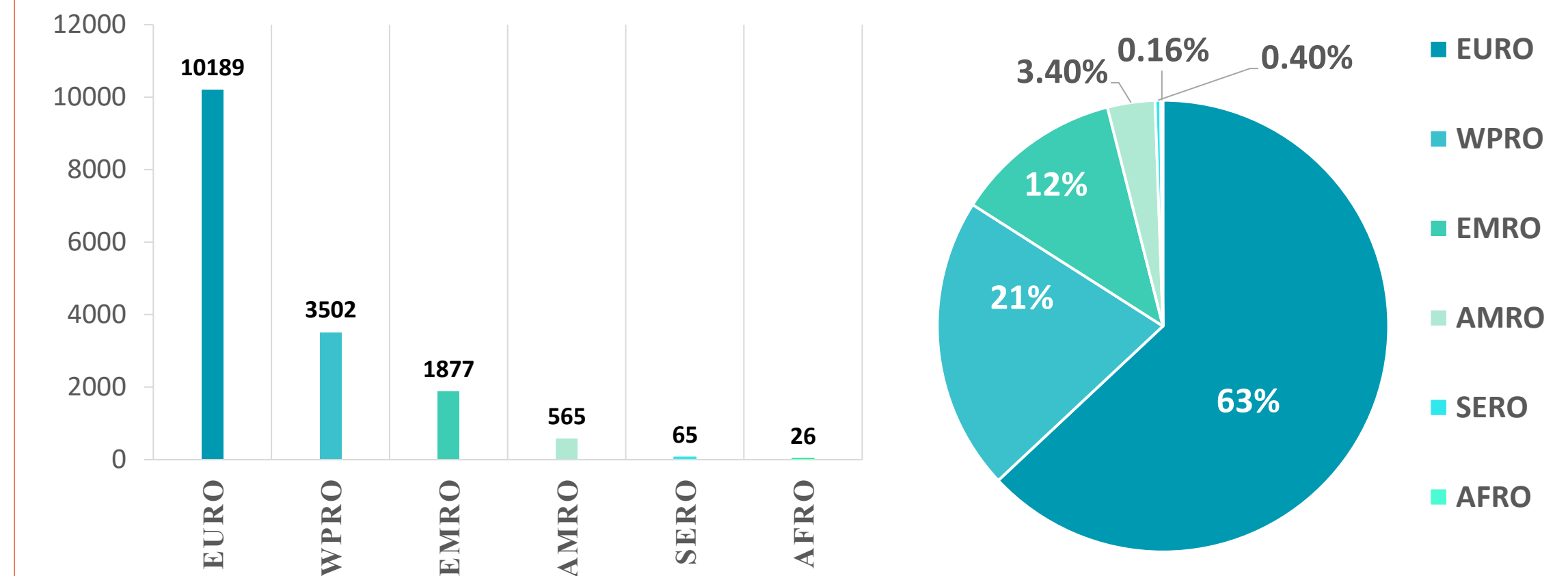


Figure 6: illustrate the Global distribution of COVID19 cases per region (March 24, 2020)

COMPERATIVE ANALYSIS OF INFECTED CASES PER REGION



COMPERATIVE ANYALSIS OF DEATH CASES PER REGION



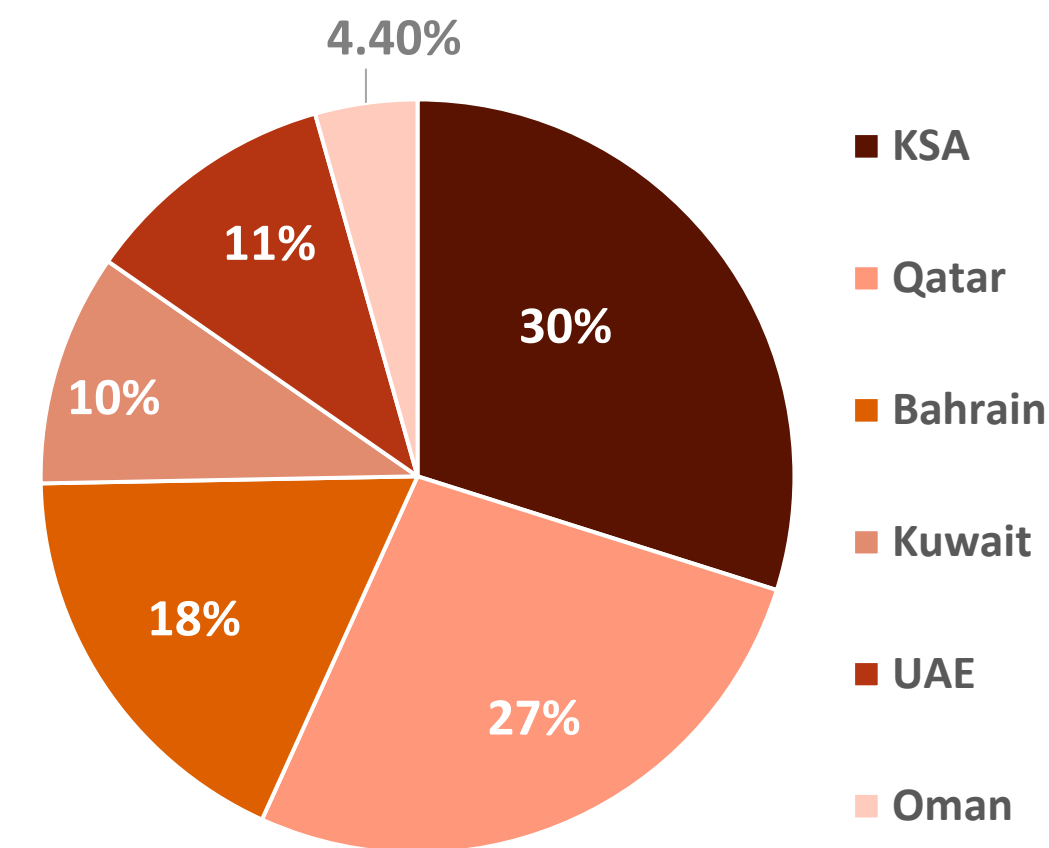
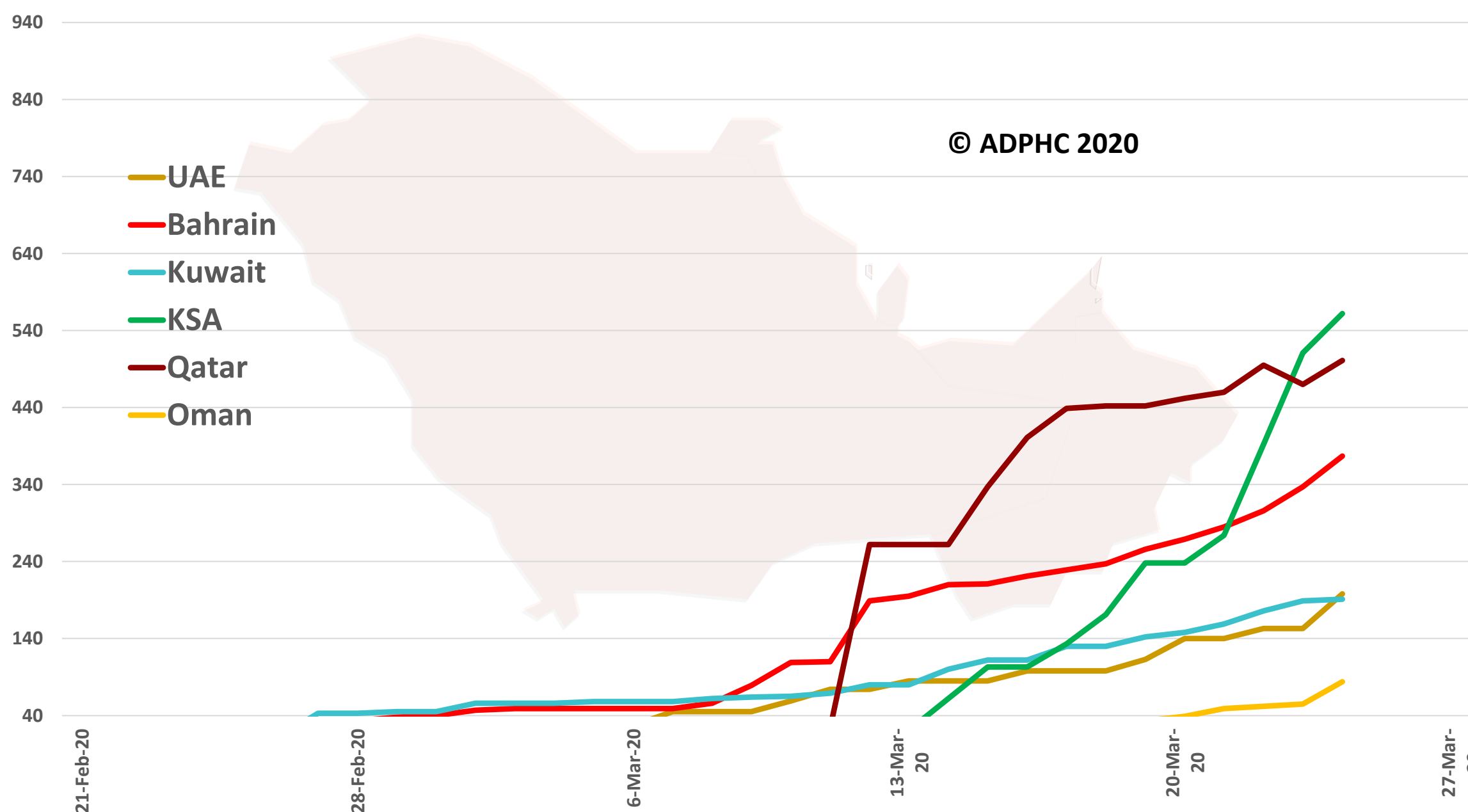
Map chart published by Abu Dhabi Public Health Center 2020.

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

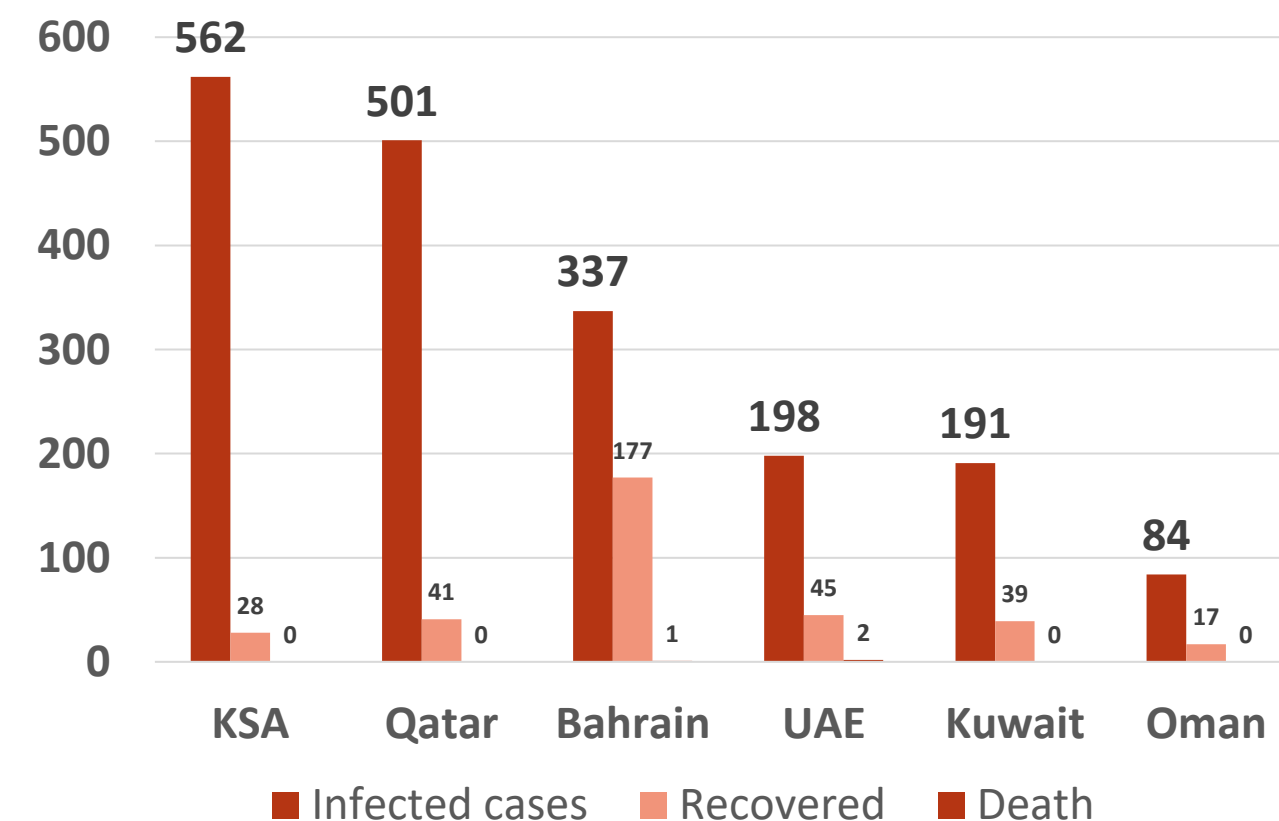


Figure 7: Comparative analysis of the distribution of COVID19 cases in GCC countries (March 24, 2020)

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: Covid-19: Highest risk patients are asked to stay at home for 12 weeks

Published: March 23, 2020

Link: [Click Here](#)

Summary:

- The article discusses the recent action of **the UK in response** to COVID19.
- The UK is asking 1.5 million high risk individuals to stay at home for 12 weeks. *See Box1*.
 - Letter will be sent to them within 1 week from the 23 of March.
- For patients who did not have family, friends, or neighbors to ensure they had everything they needed, will have parcels left on their doorsteps with food and medical supplies.
- Patients with serious underlying conditions would receive care at home or in their usual clinics
- **Medical Supply shortage issue :**
 - UK have managed new supply of PEEs after period of shortage.
 - Provided helpline for healthcare workers to access the equipment. The **Army** is currently distributing the PPEs.
 - Managed to get over 12 000 ventilators after starting with 5000

Box 1: Who should stay at home

Among the groups of vulnerable people the government is saying should stay at home for 12 weeks are:

- Recipients of solid organ transplants
- People with specific cancers:
 - People undergoing active chemotherapy or radical radiotherapy for lung cancer
 - Those with cancers of the blood or bone marrow such as leukaemia, lymphoma, or myeloma who are at any stage of treatment
 - People having immunotherapy or other continuing antibody treatments for cancer
 - People having other targeted cancer treatments that can affect the immune system, such as protein kinase inhibitors or PARP inhibitors
- People who have had bone marrow or stem cell transplantations in the past six months or who are still taking immunosuppression drugs
- People with severe respiratory conditions, including all those with cystic fibrosis, severe asthma, or severe chronic obstructive pulmonary disease
- People with rare diseases and inborn errors of metabolism that significantly increase the risk of infections (such as severe combined immunodeficiency or homozygous sickle cell)
- People on immunosuppression therapies sufficient to significantly increase the risk of infection, and
- Pregnant women who have significant heart disease, whether congenital or acquired.



Public Health response

Article 2: Interventions to mitigate early spread of SARS-CoV-2 in Singapore: a modelling study

Published : March 23, 2020

link: [Click Here](#)

Summary: the study aims to assess the impact of different control measures on limiting the spread of COVID19 infection during a period of 80 days using simulation model for the Singaporean population. Four intervention were studied :

1)Quarantine: isolation of infected individuals and quarantine of their family members 2)quarantine plus immediate school closure for 2 weeks . 3) quarantine plus immediate workplace distancing(in which 50% of the workforce is encouraged to work from home for 2 weeks); 4)combined intervention: combination of quarantine, immediate school closure, and workplace distancing.

	Baseline	Quarantine	School closure	Workplace distancing	Combined intervention
$R_0=1.5$					
Total number of infections	279 000 (245 000–320 000)	15 000 (800–30 000)	10 000 (200–28 000)	4 000 (200–23 000)	1 800 (200–23 000)
Home community	138 000 (116 000–152 000)	2 200 (300–7 800)	2 000 (117–7 200)	700 (98–5 500)	300 (13–5 700)
School	1 400 (1 100–1 500)	14 (5–80)	16 (2–70)	7 (4–51)	1 (0–54)
Workplace	139 000 (128 000–164 000)	12 000 (500–21 900)	8 000 (124–21 000)	3 500 (102–17 800)	1 500 (42–18 000)
$R_0=2.0$					
Total number of infections	727 000 (670 000–776 000)	130 000 (38 000–244 000)	97 000 (14 000–219 000)	67 000 (11 000–145 000)	50 000 (2 000–143 000)
Home community	372 000 (339 000–411 000)	66 000 (23 000–129 000)	46 000 (11 000–113 000)	28 000 (8 000–79 000)	21 000 (1 200–68 000)
School	4 300 (3 700–4 300)	600 (100–1 200)	500 (27–1 000)	300 (33–800)	200 (11–800)
Workplace	351 000 (327 000–361 000)	63 000 (15 000–127 000)	51 000 (3 000–105 000)	38 000 (2 800–65 000)	28 000 (800–67 000)
$R_0=2.5$					
Total number of infections	1 207 000 (1 164 000–1 249 000)	520 000 (268 000–754 000)	466 000 (175 000–728 000)	320 000 (116 000–558 000)	258 000 (65 000–508 000)
Home community	640 000 (623 000–675 000)	264 000 (144 000–410 000)	235 000 (92 000–366 000)	163 000 (66 000–281 000)	132 000 (34 000–265 000)
School	7 100 (7 200–7 900)	3 000 (1 400–4 000)	2 400 (1 300–3 600)	1 500 (800–3 400)	1 300 (300–2 800)
Workplace	560 000 (550 000–584 000)	253 000 (140 000–390 000)	228 000 (82 000–358 000)	156 000 (49 000–274 000)	124 000 (31 000–241 000)

Data are median (IQR). All numbers up to 10 000 have been rounded to the nearest hundred, and numbers higher than 10 000 have been rounded to the nearest thousand, therefore, some discrepancies will exist in the summations. Due to the stochasticity within each simulation, numbers less than 20 indicate nearly complete suppression and should not be compared to assess effectiveness. SARS-CoV-2=severe acute respiratory syndrome coronavirus 2. R_0 =basic reproduction number.

Table: Estimated median or cumulative number of SARS-CoV-2 infections on day 80 by location, intervention, and level of infectivity

* Basline : means no intervention



Public Health response

Article 2: Continued,,

Summary:

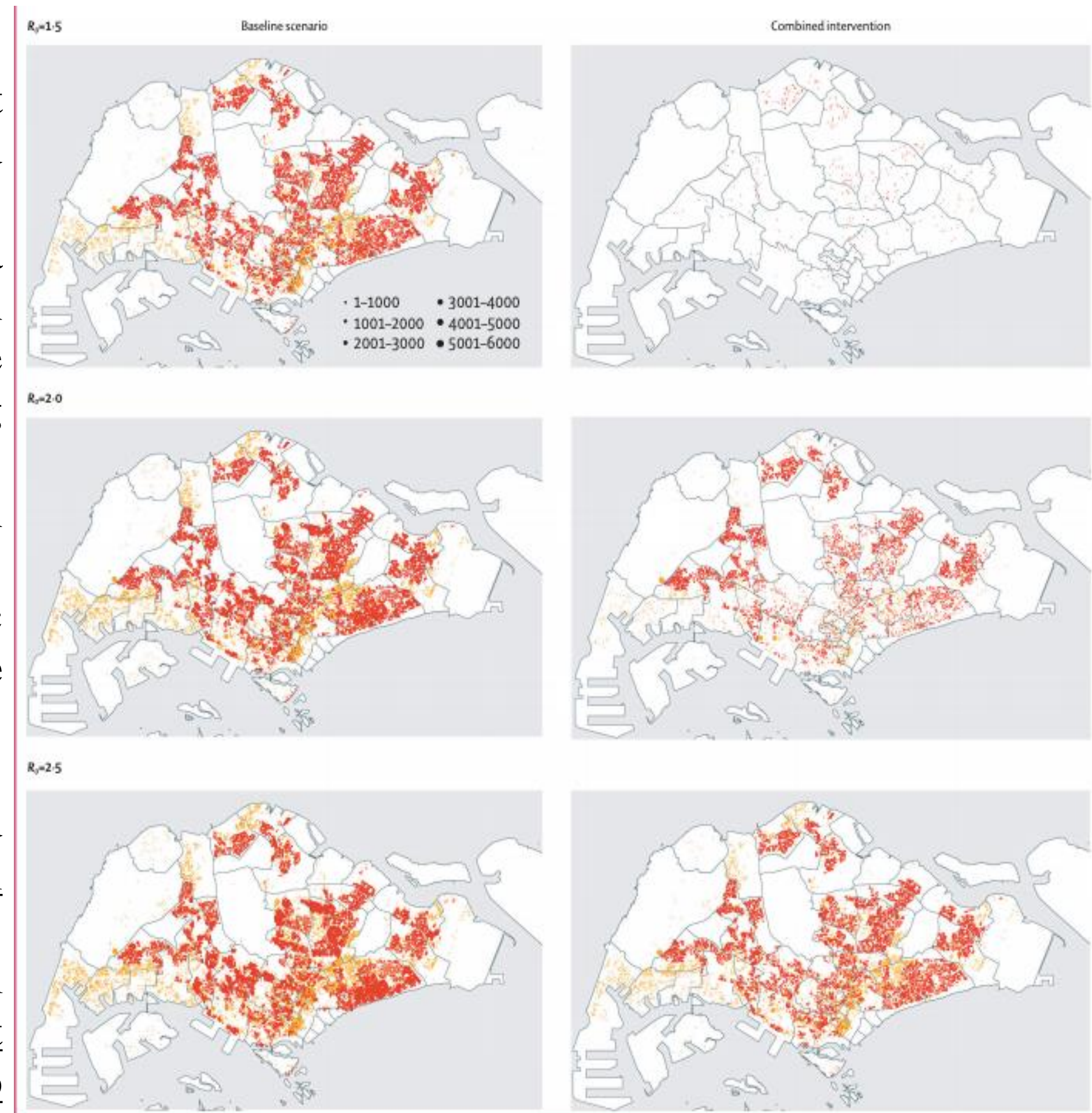
Findings :

- Combined approach is effective and could prevent 99.3% of infections (IQR 92.6–99.9) when compared with the baseline scenario (*look previous table*)
- The finding is also suggesting that the workplace is a key **infection site in Singapore**, whereby reductions in workplace transmission is essential. (this could be due to the high employment rates (around 98%) among individuals of working age in Singapore)
- Note that the study also gave multiple scenarios when asymptomatic proportion differ in the community(7.5% to 50%), the finding shows that as the asymptomatic proportion increases it **become difficult to control the spread using the studied interventions.**

Recommendation:

- Combined interventions should be implemented rapidly upon confirmation of second-generation local transmission.
- At higher asymptomatic rates, shifting from containment to public education and case management become increasingly important, with a need to develop vaccines and existing drug therapies

Geospaital distribution of COVID19 giving multiple scenario and using different basic reproduction number R0





Public health response

Article 3: COVID-19 in Europe: the Italian lesson

Published : March 23, 2020

link: [Click Here](#)

Summary:

- According to the data trends before March 8, 2020, projections in exponential model predicted more than 30,000 cases in Italy by March 15, 2020. Real data from Johns Hopkins University reported a slight deviation from those predictions with 24,747 cases by March 15, 2020 which suggested that measures introduced by March 11, 2020, started reducing the number of new cases within 3-4 days.
- Rest of the European countries appear to be in a similar situation with a short time-lag of a couple of weeks. All the countries should immediately adopt very restrictive measures to limit transmission of the disease, ensure appropriate health-system response, and reduce mortality that appears to be higher than previous estimation with a crude case-fatality rate of approximately 4%.

figure: Epidemic curves for European countries, with estimated lag time from Italy's situation, as of March 15, 2020

