دانشگاه علوم پزشکی وخدمات بهداشتی درمانی
استان چهار محال و بختیاری

وبینار علمی آموزشی: ۲۶ بهمن ماه ۱۳۹۹ ساعت ۱۰ تا ۱۲

عناوین

بازخوانی و مروری بر روشهای کنترل اپیدمی، تفسیر و مقایسه منحنی های اپیدمی کووید ۱۹ در ایران؛ کشورهای منطقه و دنیا

مدت: ۳۰ دقیقه

سخنران: دکتر علی احمدی، دانشیار اپیدمیولوژی گروه آموزشی اپیدمیولوژی و آمار زیستی و مرکز تحقیقات مدل سازی در سلامت دانشگاه علوم پزشکی شهرکرد

مدیریت اینفودمیک، چرا و چگونه؟

مدت: ٤٥ دقیقه

سخنران: دکتر داوود پورمرزی، اپیدمیولوژیست، پژوهشگر و مدرس دانشکده بهداشت، دانشگاه ملی استرالیا

National Centre for Epidemiology & Population Health

مدل سازی و ارایه یک مدل برای براورد و پیش بینی اپیدمی کووید۱۹

مدت: ٤٥ دقیقه

سخنران: دکتر هادی رییسی، استادیار آمار زیستی، گروه آموزشی اپیدمیولوژی و آمار زیستی و مرکز تحقیقات مدل سازی در سلامت دانشگاه علوم پزشکی شهرکرد

مخاطبین: پژوهشگران؛ مدیران و کارکنان نظام سلامت، دانشجویان و دانش آموختگان اپیدمیولوژی؛ آمار زیستی و بهداشت عمومی

لینک دسترسی آنلاین: Webinar.skums.ac.ir/b/hea-c2k-r42

برگزار کننده: مرکز تحقیقات مدل سازی در سلامت دانشگاه علوم پزشکی شهرکرد

با همکاری: معاونت تحقیقات و فناوری دانشگاه، دانشکده بهداشت شهرکرد و کمیته اپیدمیولوژی کلان منطقه۷ (دانشگاه های علوم پزشکی اصفهان، یزد، کاشان و شهرکرد)

Epidemic investigation and control
Epidemic Curve for COVID-19

بازخوانی و مروری بر روش های کنترل اپیدمی، تفسیر و مقایسه منحنی های اپیدمی کووید۱۹

دکتر علی احمدی – اپیدمیولوژیست

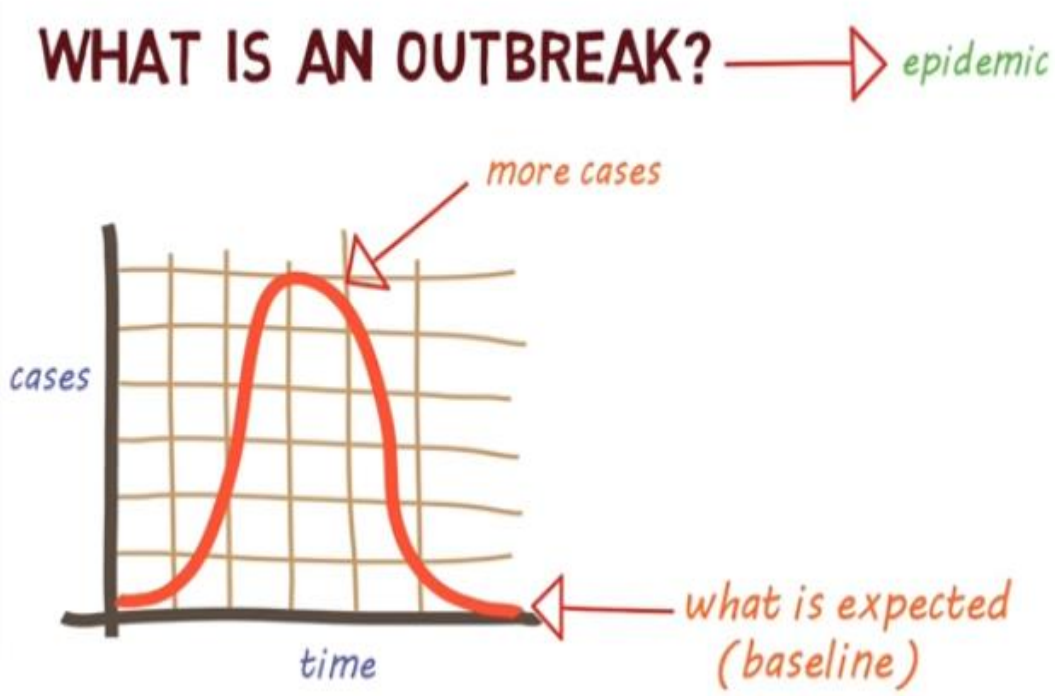
دانشیار اپیدمیولوژی گروه اپیدمیولوژی و آمار زیستی دانشکده بهداشت،

و مرکز تحقیقات مدل سازی در سلامت دانشگاه علوم پزشکی شهرکرد

Epidemic investigation and control

epi • demi • ology

on or upon | people | study of



Digital epidemiology

OUTBREAK INVESTIGATION

systematic steps number, order, content can vary

CONFIRM → DESCRIBE → DETERMINE CAUSE → CONTROL

CONFIRM

Is there an outbreak?

Baseline level of disease

compare

Other cause?
increased testing?
lab error?
increase in population?

verify diagnosis → clinical
verify diagnosis → lab

CONTROL

investigation team

DESCRIBE

who is a case? → case definition

time
place
person

clinical
lab

all cases found? → systematically

describe cases

time
person
place

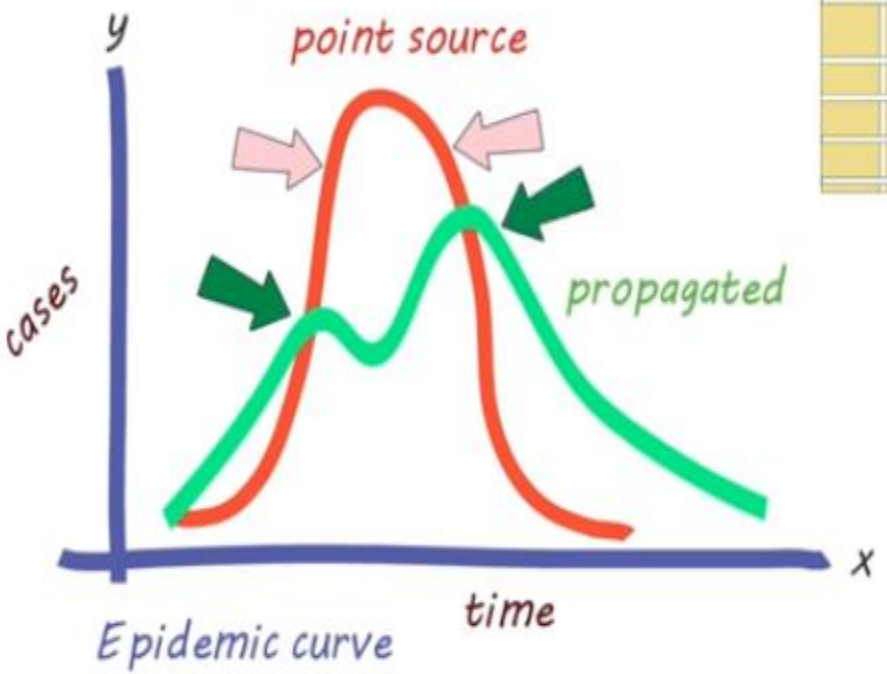
Pause (k)

https://www.aphis.usda.gov/animal_health/surveillance_toolbox/calculators/prevalence_estimate_calculator.html

describe cases

time
person
place

time
development of outbreak



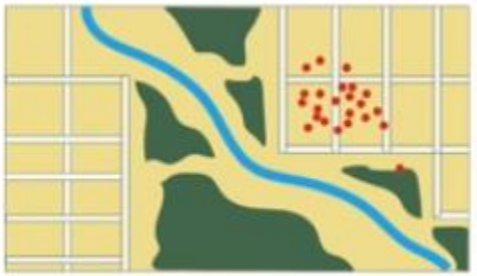
place

geographical spread

clusters?

mapping tools

Geographic Information Systems
(GIS)

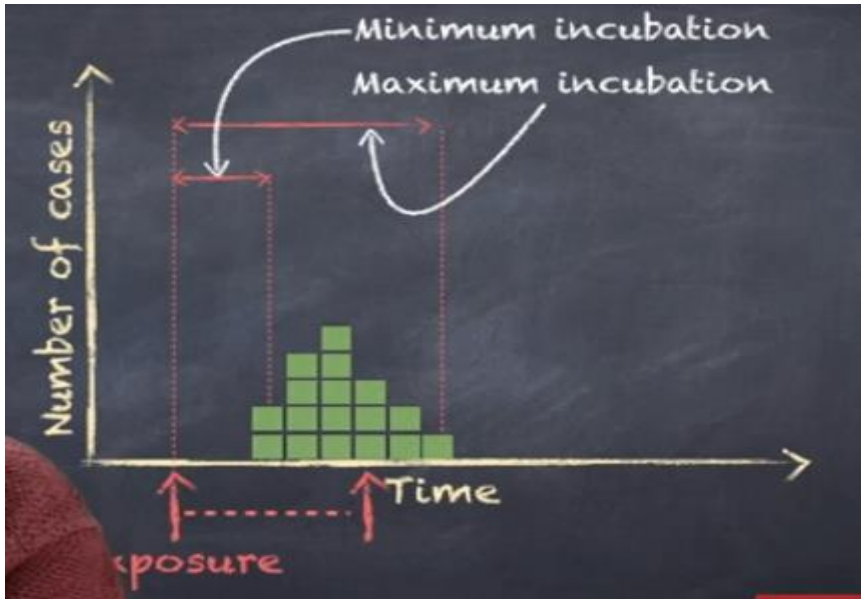


person

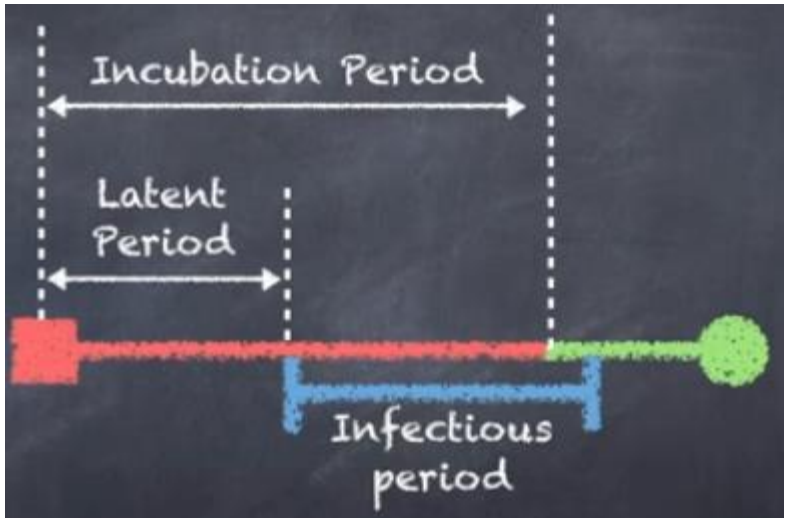
who is affected?

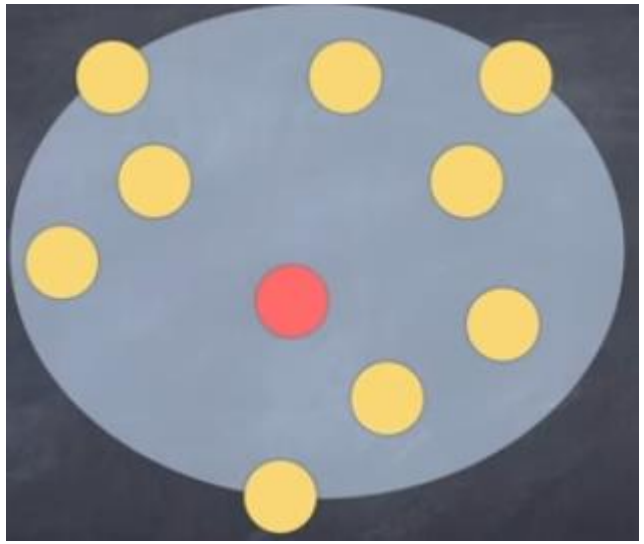
age
sex
occupation
ethnicity

who is at risk?



https://shiny.vet.unimelb.edu.au/epi/epicurve/

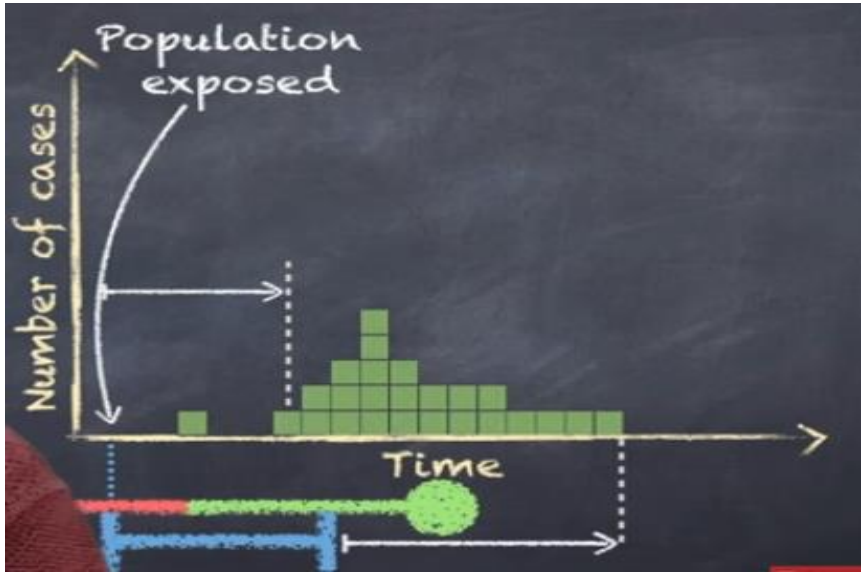


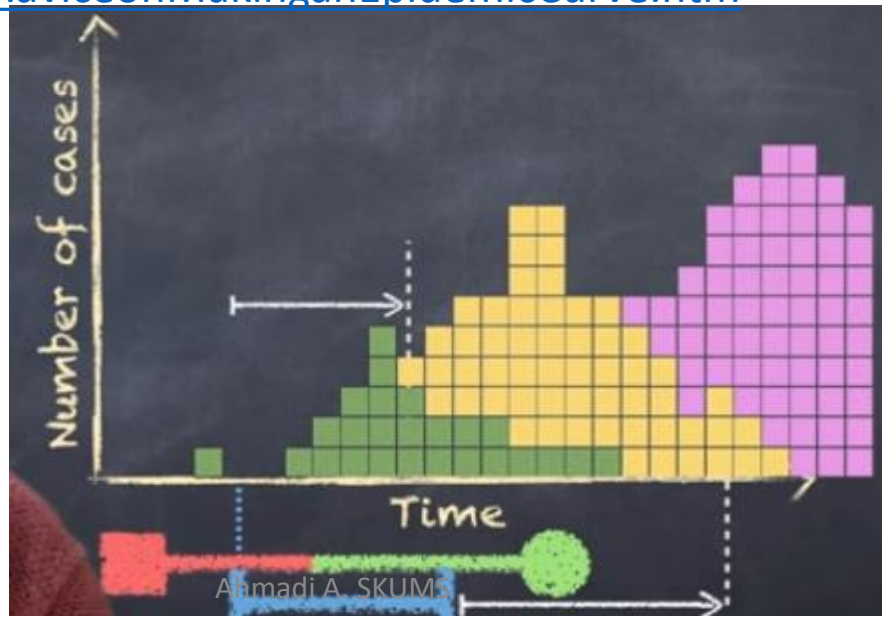


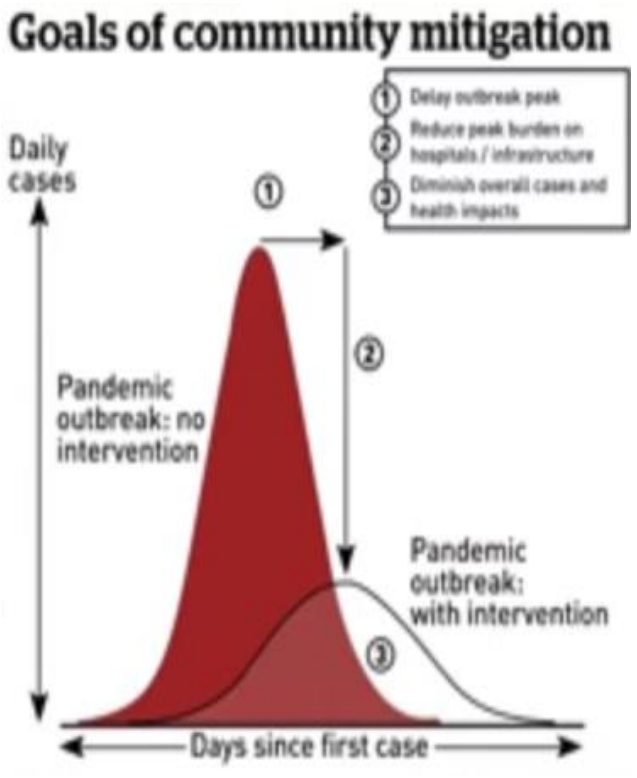
The **generation time** is the time lag between infection in a **primary case** and a **secondary case**.

https://outbreaktools.ca/

https://sphweb.bumc.bu.edu/otlt/sparta/docs/AdviceonMakinganEpidemicCurve.htm







DETERMINE CAUSE

What is the likely cause? → hypothesis → test

pathogen

V. Cholera
- contaminated water

Salmonella
- eggs or meat

COVID19

test →
- analytical
- epi. study
- cohort
- case-control

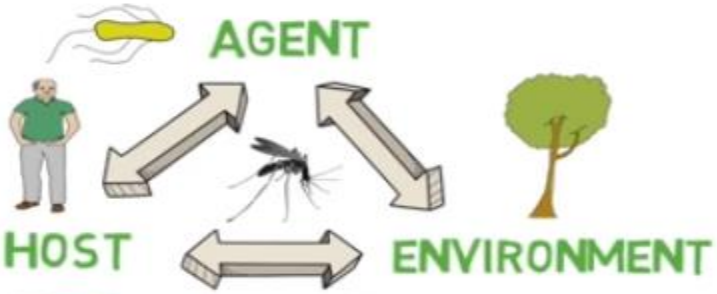
laboratories → very useful microbiological information

environmental investigation → environmental factors

factor → outbreak

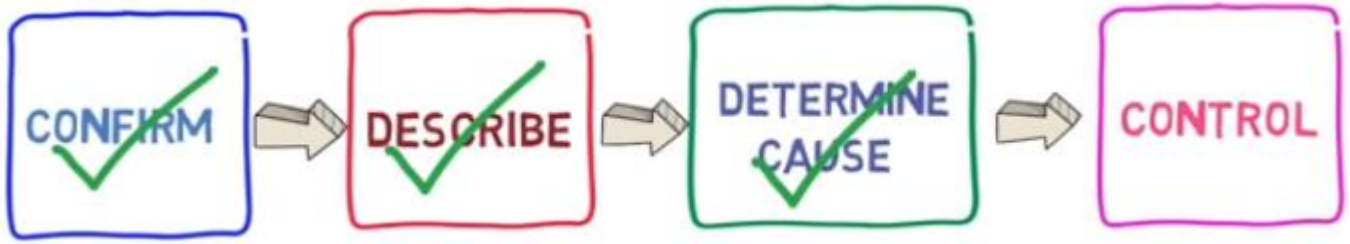
- ?contaminated eggs
- ? appropriate food storage
- ? Hygiene

3 components → Epidemiological triad



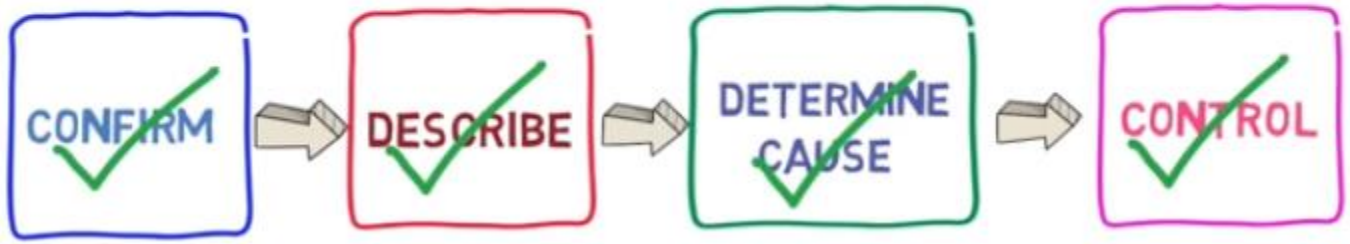
Direct
- touching
- intercourse
- coughing

Indirect
- intermediate
- contaminated objects
- vectors



OUTBREAK INVESTIGATION

systematic steps *number, order, content can vary*



CONTROL

can be at any stage of investigation

transmission pathways

- *agent*
- *host*
- *environment*

Behavioural

mosquito repellent

Vaccination

measles vaccine

Medication

ivermectin

Environmental measures

spraying insecticides

Infection Control

Health Education

SURVEILLANCE

COMMUNICATION

important in any outbreak

accurate
timely

Internal

External

media

sharing information
online
journals

other
organizations

public

protective
behaviours

surveillance

reduces:
anxiety
confusion
misinformation

eyes and ears

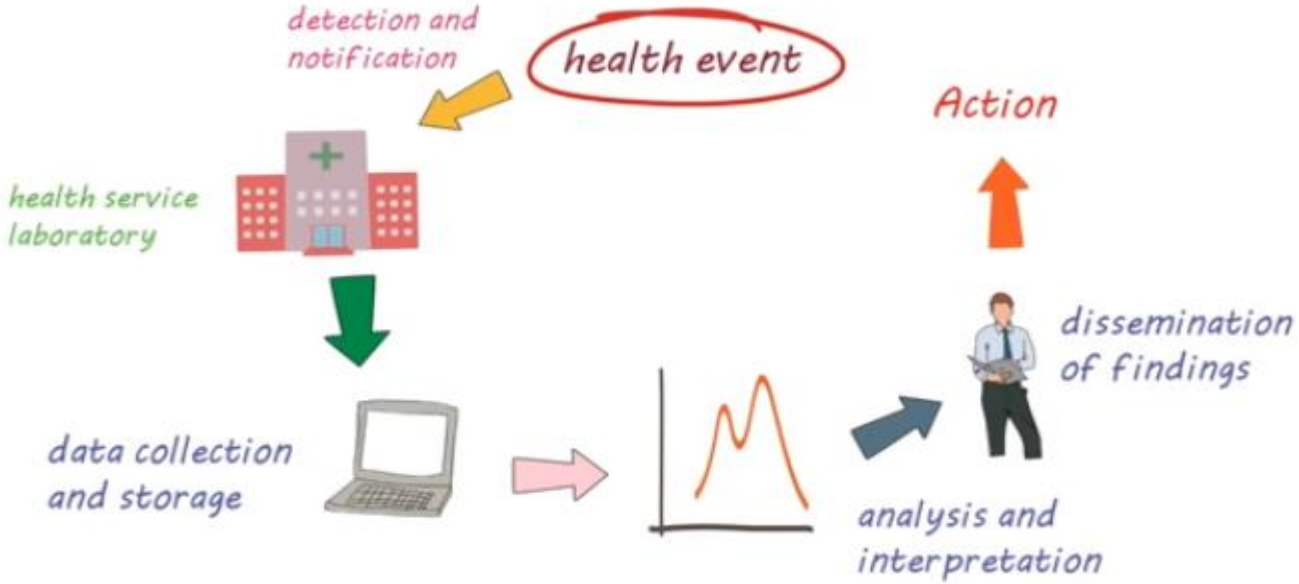
Who
What
Where
When
Why/how

Why

Duties of an Epidemiologist

- Routine disease surveillance
- Case interviews
- Data collection
- Specimen and sample collection
- Data analysis
- Disease education
- Risk communication

ELEMENTS



Active surveillance

actively sought out

complete and better quality

resource intensive

outbreaks

active case finding

serosurveillance

testing blood markers

health surveys

communities

health centres

countries

regularly

as needed

Rumour surveillance

unofficial sources of information

blogs/discussion sites

media

hearsay

social media

alert authorities

early detection of outbreaks

TYPES OF SURVEILLANCE

Passive Surveillance

Active Surveillance

Sentinel Surveillance

Rumour Surveillance

Syndromic Surveillance

Other Types

integrative approach

best overall picture of health

Characteristics of a good surveillance system

(From US CDC)

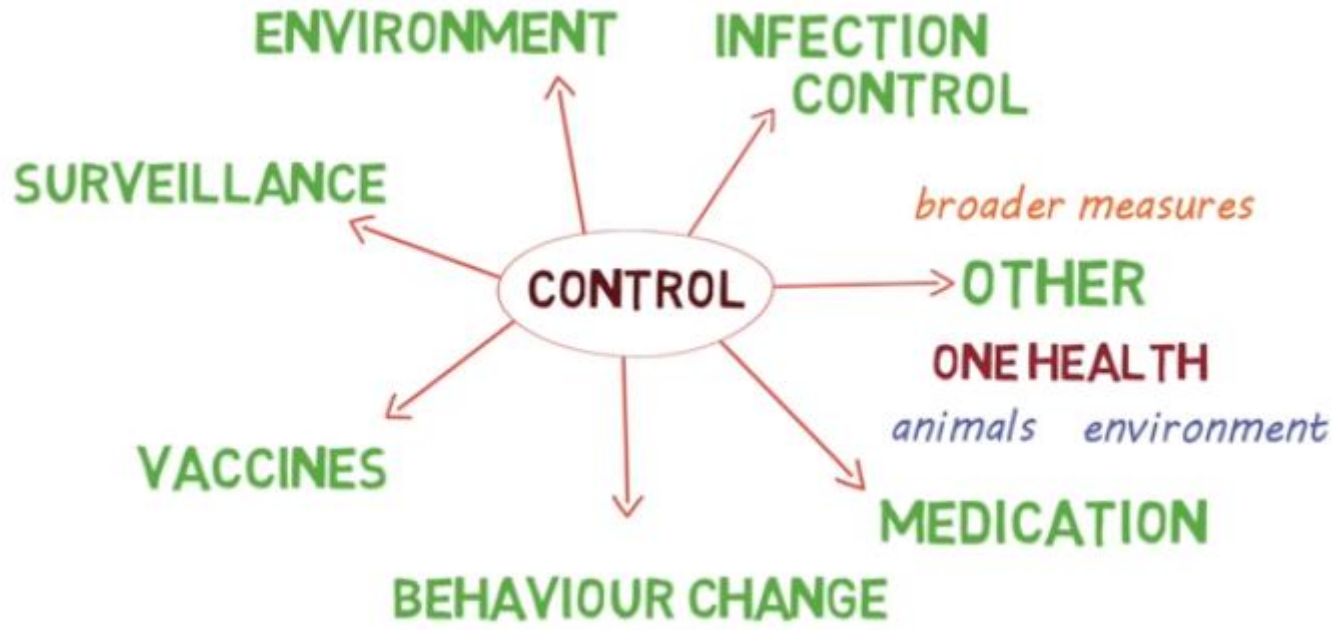
clearly defined objectives

simplicity
flexibility
quality
acceptability
sensitivity and PPV

validity
representativeness
timeliness
stability

evaluation !!
meet objectives
public health function

information for action!!



INFECTION CONTROL

infections can spread rapidly

sterilisation

PPE

isolation

handwashing

cleaning

hospital surveillance

VACCINES

biggest successes of public health

reduction or eradication of diseases

childhood immunisation ……*saved countless lives*

protects individual

……*and others!!*

(herd immunity)

BEHAVIOUR CHANGE

condoms

hand washing

target of health pro

healthy diet

repellants

Detecting | Reporting | Isolating | Treating

public health aims to reduce transmission of infections in the population

Contact tracing

- Identifying persons who may have close contact with a person with COVID-19
- Subsequent collection of further information about these close contacts

GOALS OF CONTACT TRACING

1. Interrupt ongoing transmission and reduce spread of an infection
2. Establish epidemiological link or track the sources of infection and contain further spread
3. Alert contacts to the possibility of infection and ensure timely referral for management and care
4. Provide diagnosis, health education and psychosocial support, and treatment to those who have COVID-19
5. Help prevent re-infection in a person previously treated of COVID-19
6. Learn about the epidemiology of COVID-19

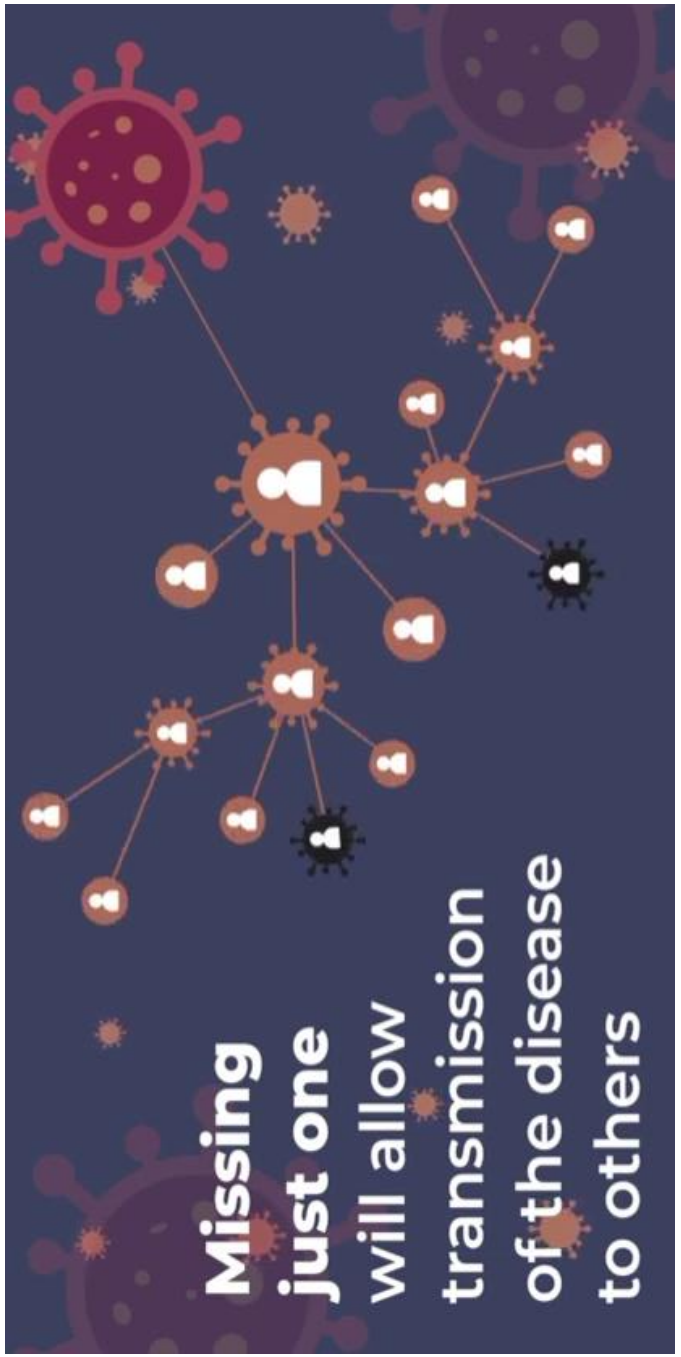
DETECT
REPORT
ISOLATE
TREAT

DETECT REPORT ISOLATE TREAT


COVID19
Health education on nature of disease, prevention of infection transmission


70°+


1
meter


Missing
just one
will allow
transmission
of the disease
to others


COVID19
ENSURE CONFIDENTIALITY AND PRIVACY

World Health Organization

Search by Country, Territory, or Area

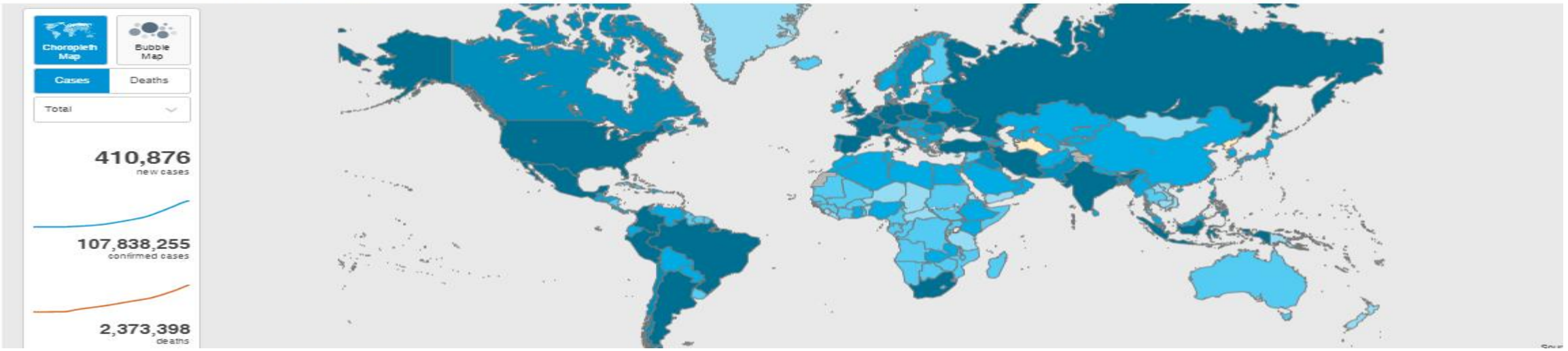
Covid-19 Response Fund

Donate

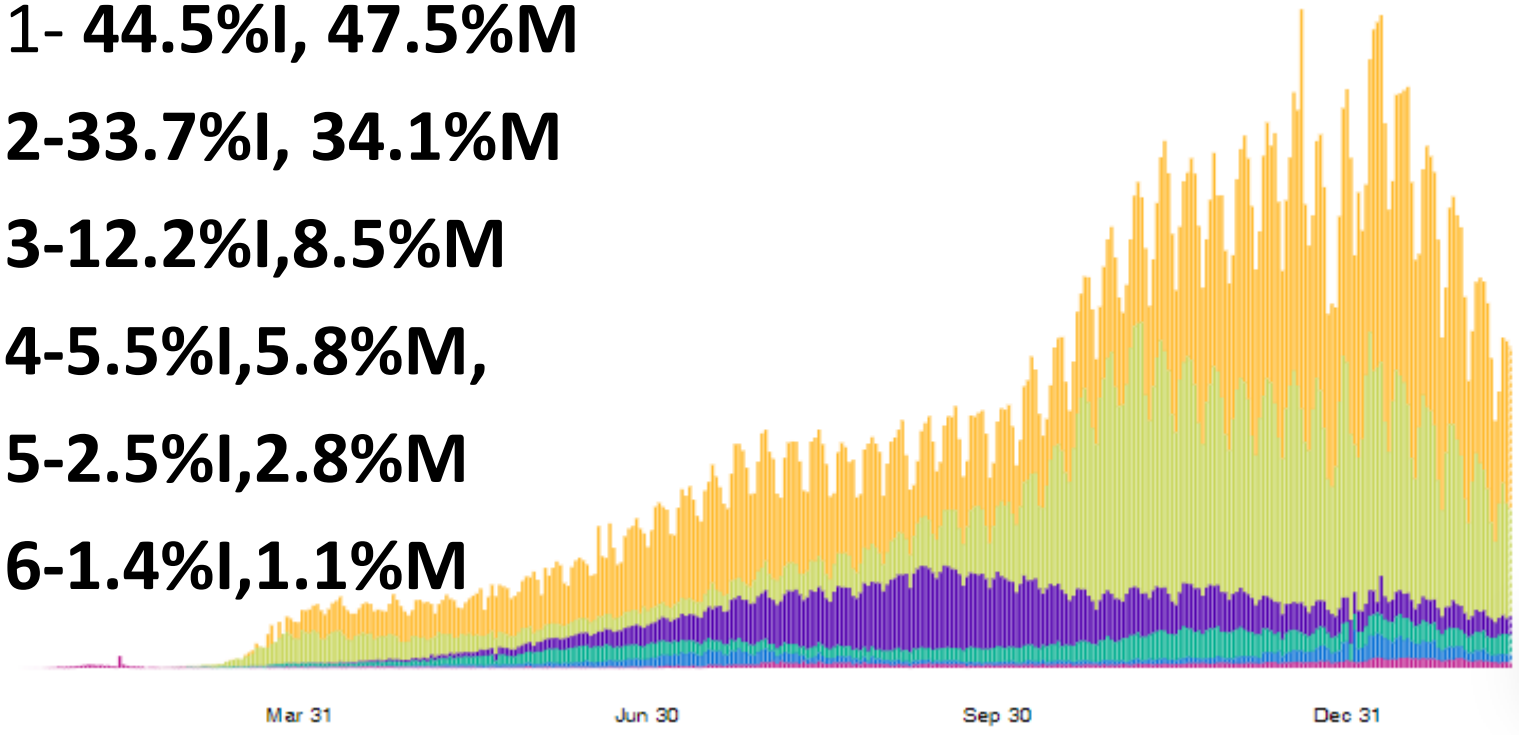
WHO Coronavirus Disease (COVID-19) Dashboard

Data last updated: 2021/2/13, 3:35pm CET

Overview | Data Table | Explore



Americas	48,021,725 confirmed	1- **44.5%I, 47.5%M**
Europe	36,436,128 confirmed	**2-33.7%I, 34.1%M**
South-East Asia	13,165,612 confirmed	**3-12.2%I,8.5%M**
Eastern Mediterranean	5,976,060 confirmed	**4-5.5%I,5.8%M,**
Africa	2,713,855 confirmed	**5-2.5%I,2.8%M**
Western Pacific	1,524,130 confirmed	**6-1.4%I,1.1%M**



Source: World Health Organization

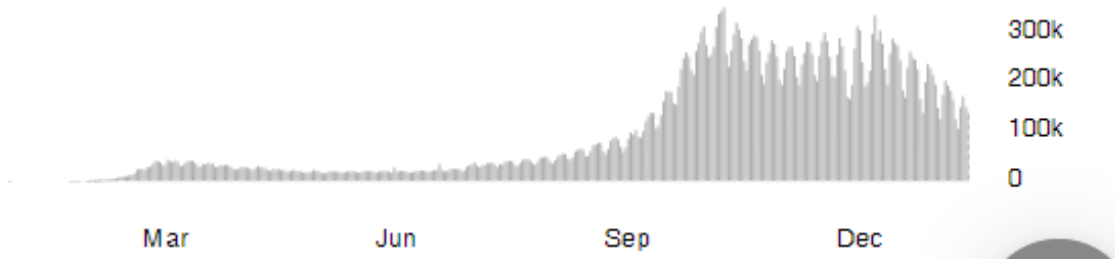
Data may be incomplete for the current day or week.

Americas

48,021,725
confirmed cases

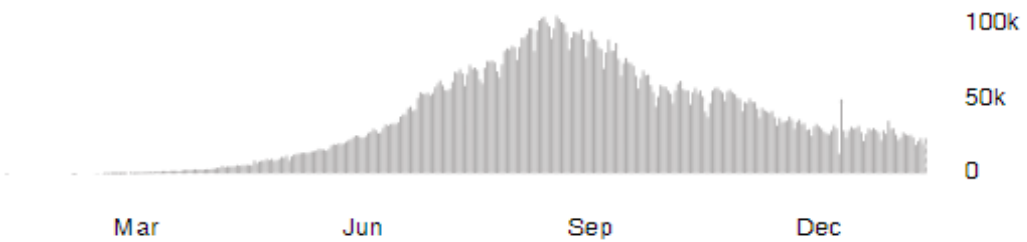
Europe

36,436,128
confirmed cases



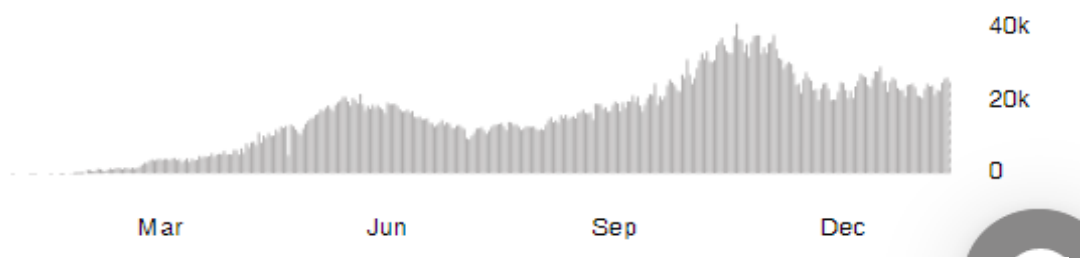
South-East Asia

13,165,612
confirmed cases



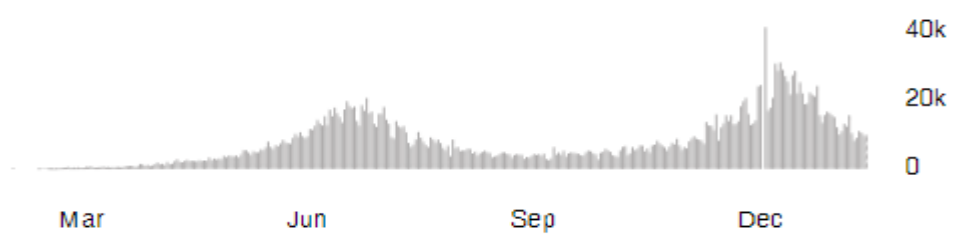
Eastern Mediterranean

5,976,060
confirmed cases



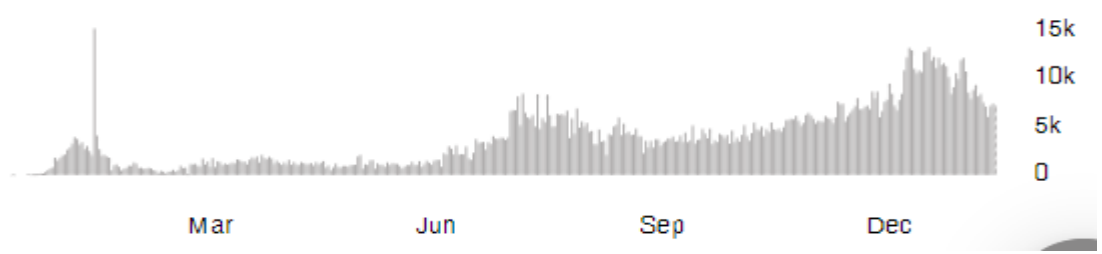
Africa

2,713,855
confirmed cases



Western Pacific

1,524,130
confirmed cases



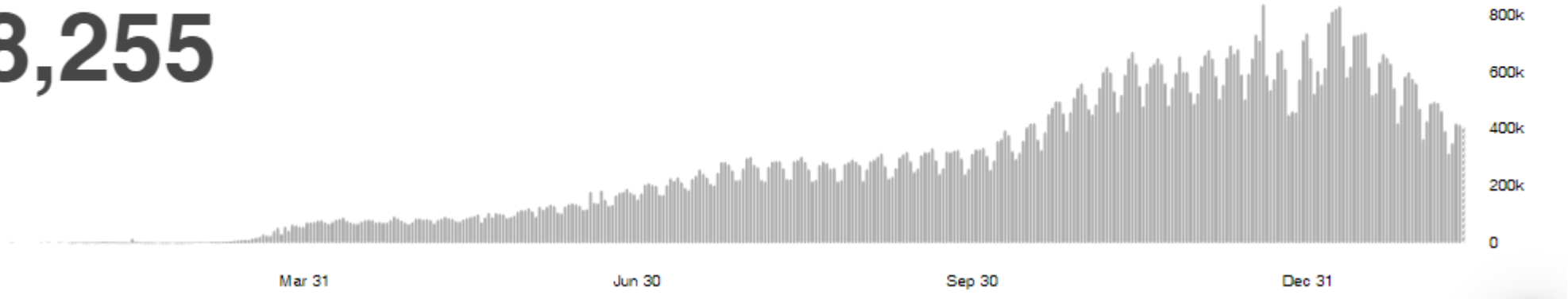
Global Situation

Daily Weekly

Daily

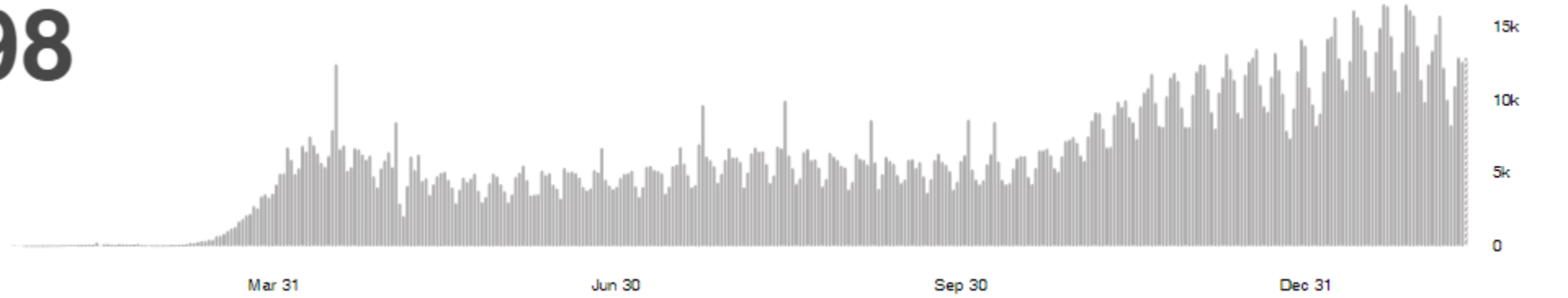
107,838,255

confirmed cases



2,373,398

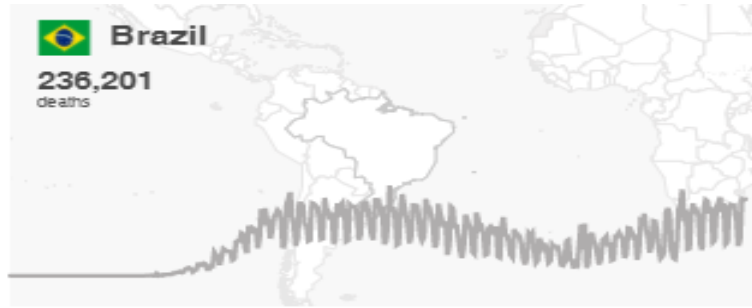
deaths



Source: World Health Organization

Data may be incomplete for the current day or week.


United States of America
471,635
deaths


Brazil
236,201
deaths


Mexico
171,234
deaths


India
155,550
deaths


The United Kingdom
116,287
deaths

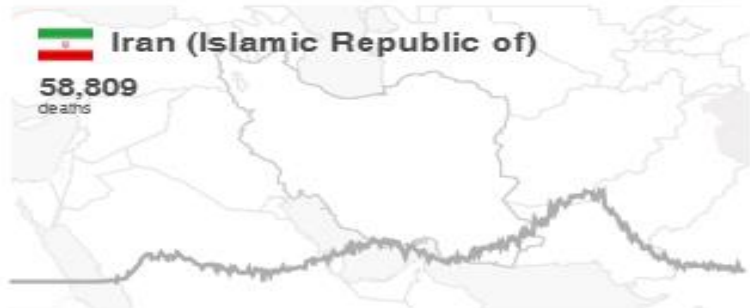

Italy
93,045
deaths


France
81,033
deaths


Russian Federation
79,696
deaths


Germany
64,742
deaths


Spain
64,217
deaths


Iran (Islamic Republic of)
58,809
deaths


Colombia
56,983
deaths

Name	Cases - cumulative total	Cases - cumulative total per 1 million population	Cases - newly reported in last 7 days	Cases - newly reported in last 24 hours	Deaths - cumulative total	Deaths - cumulative total per 1 million population	Deaths - newly reported in last 24 hours	Transmission Classification
Global	**106,125,682**	**13,594.858**	**3,008,820**	**304,166**	**2,320,497**	**297.259**	**8,021**	
Unit...	26,746,377	80,804.12	816,309	91,412	459,993	1,389.7	1,449	Community transmission
India	10,847,304	7,860.34	81,059	9,110	155,158	112.43	78	Clusters of cases
Brazil	9,524,640	44,809.31	319,909	26,845	231,534	1,089.27	522	Community transmission
Russ...	3,998,216	27,397.34	113,486	15,019	77,598	531.73	530	Clusters of cases
The ...	3,959,788	58,329.96	124,001	14,104	112,798	1,661.58	333	Community transmission
Iran ...	1,473,756	17,546.19	49,160	7,321	58,536	696.92	67	Community transmission

Iran (Islamic Republic of) Situation

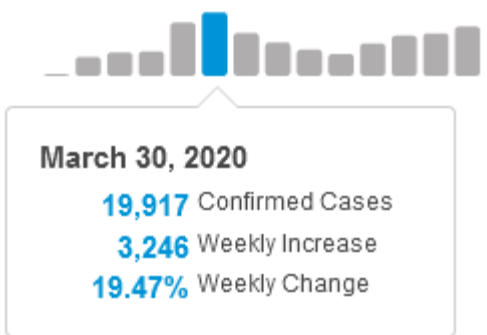
Daily | Weekly

1,503,753
confirmed cases

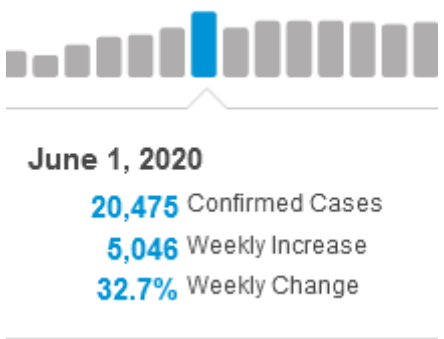
58,809
deaths

Source: World Health Organization

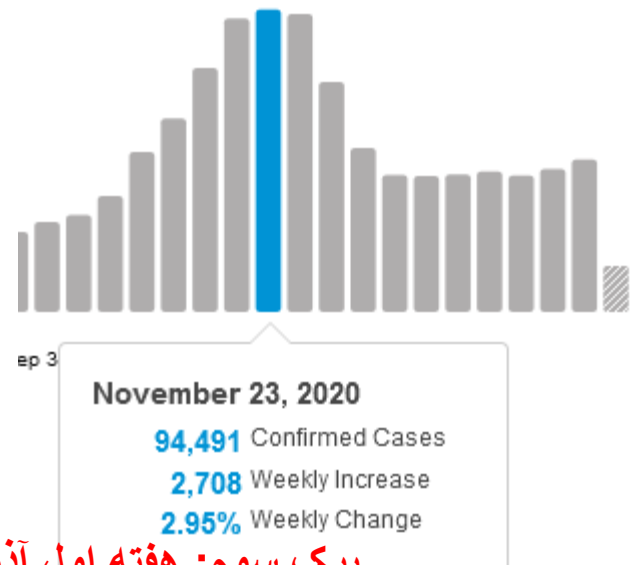
58883 Death, 9993224 test, 1510873 cases, 1291726 recovery:1.4%I, 2.4%M



پیک اول:فروردین ۹۹



پیک دوم: هفته اول خردادماه ۹۹

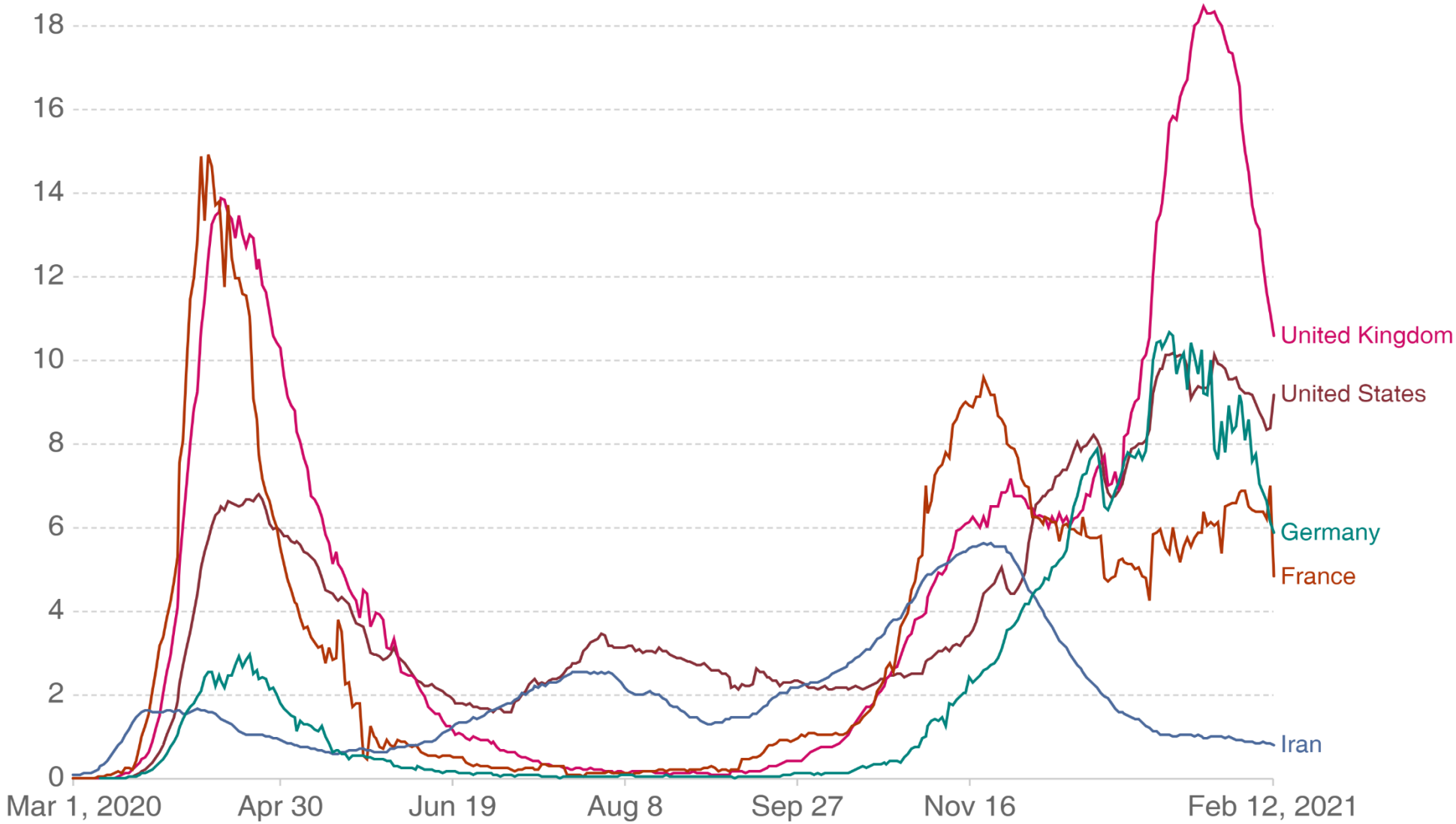


پیک سوم: هفته اول آذرماه ۹۹

Daily new confirmed COVID-19 deaths per million people

Shown is the rolling 7-day average. Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.

Our World in Data



Source: Johns Hopkins University CSSE COVID-19 Data – Last updated 13 February, 09:02 (London time)

Daily new confirmed COVID-19 deaths per million people

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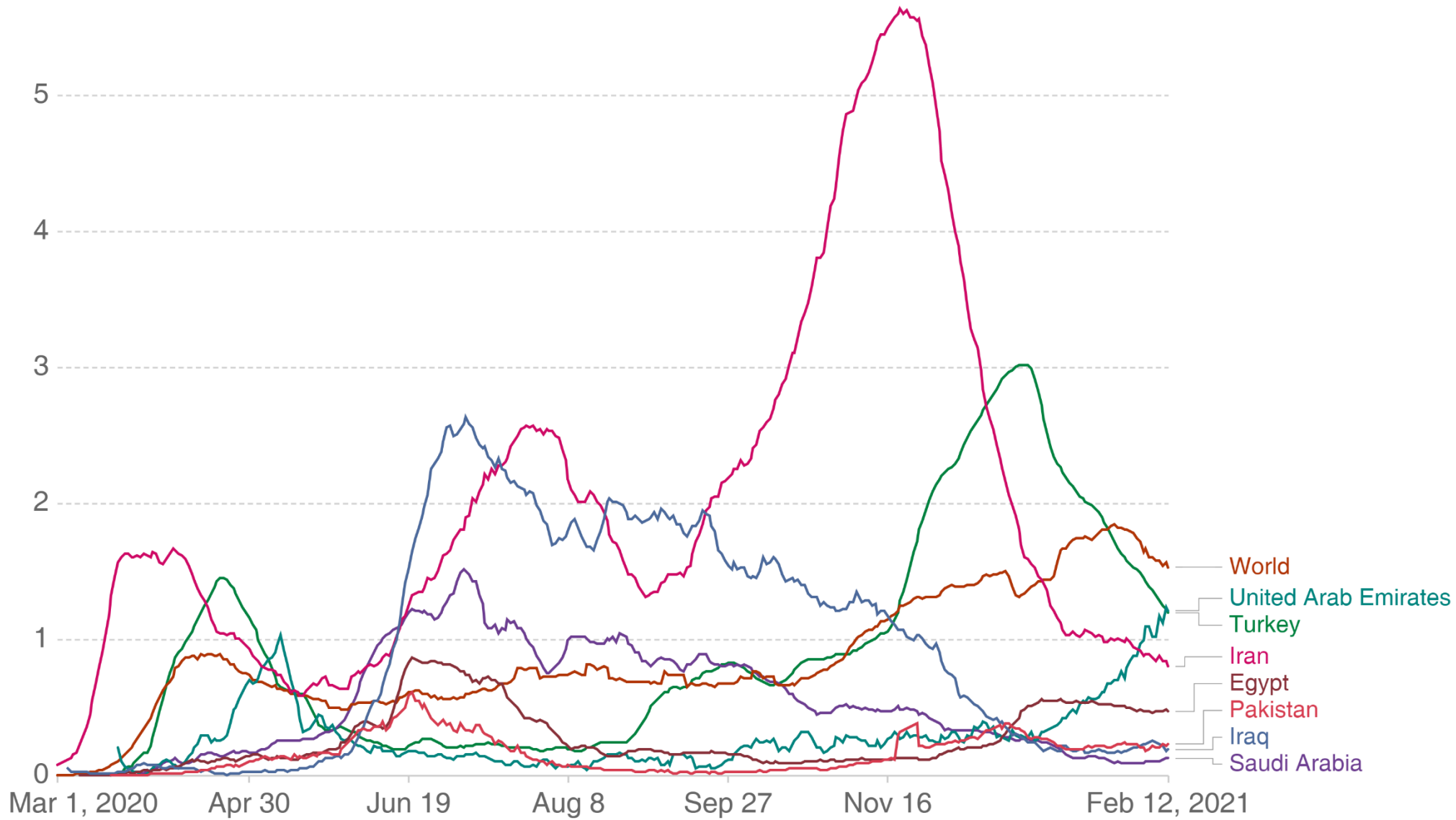
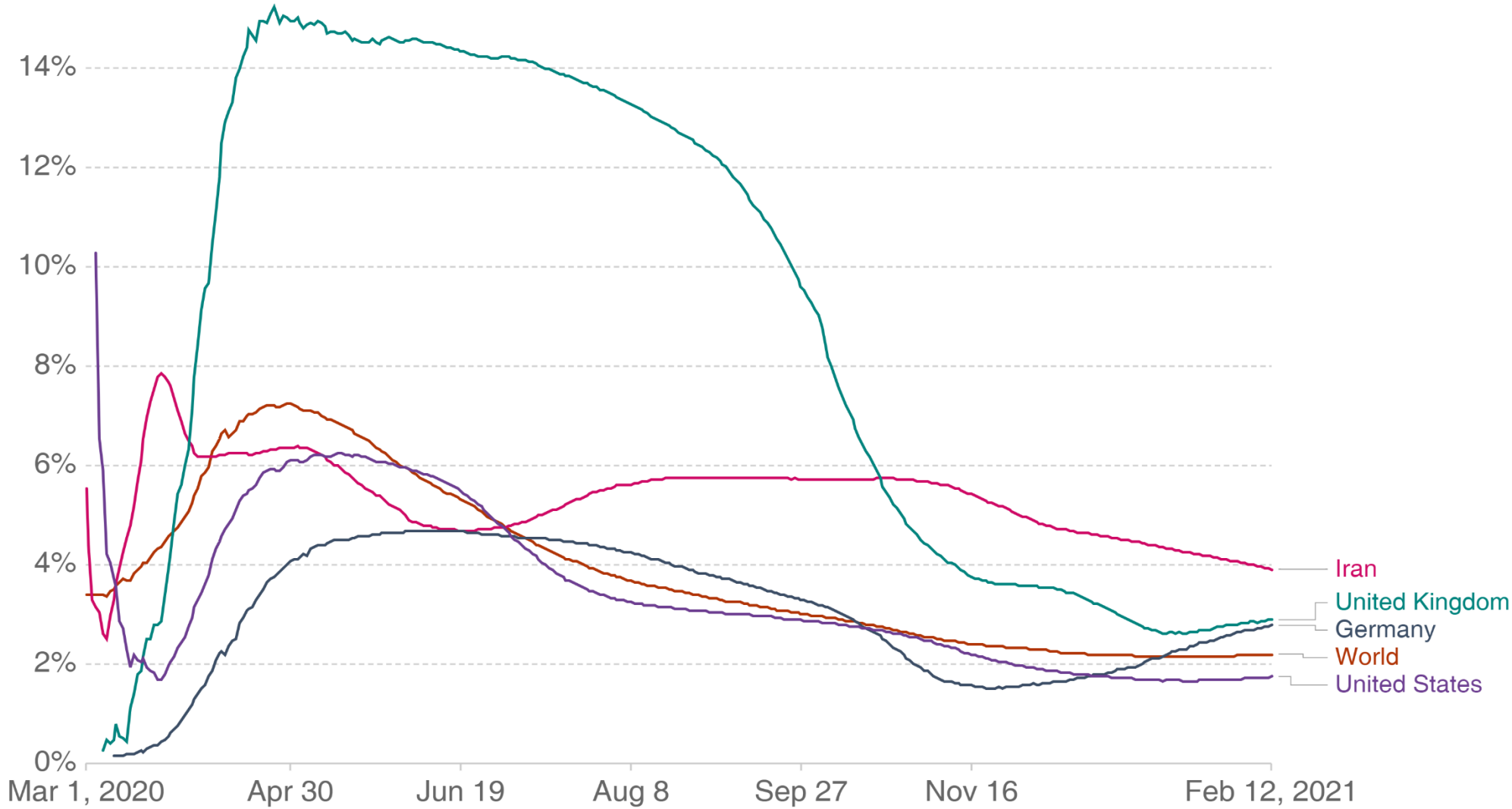


Source: Johns Hopkins University CSSE COVID-19 Data – Last updated 13 February, 09:02 (London time)

Case fatality rate of the ongoing COVID-19 pandemic

The Case Fatality Rate (CFR) is the ratio between confirmed deaths and confirmed cases. During an outbreak of a pandemic the CFR is a poor measure of the mortality risk of the disease. We explain this in detail at OurWorldInData.org/Coronavirus

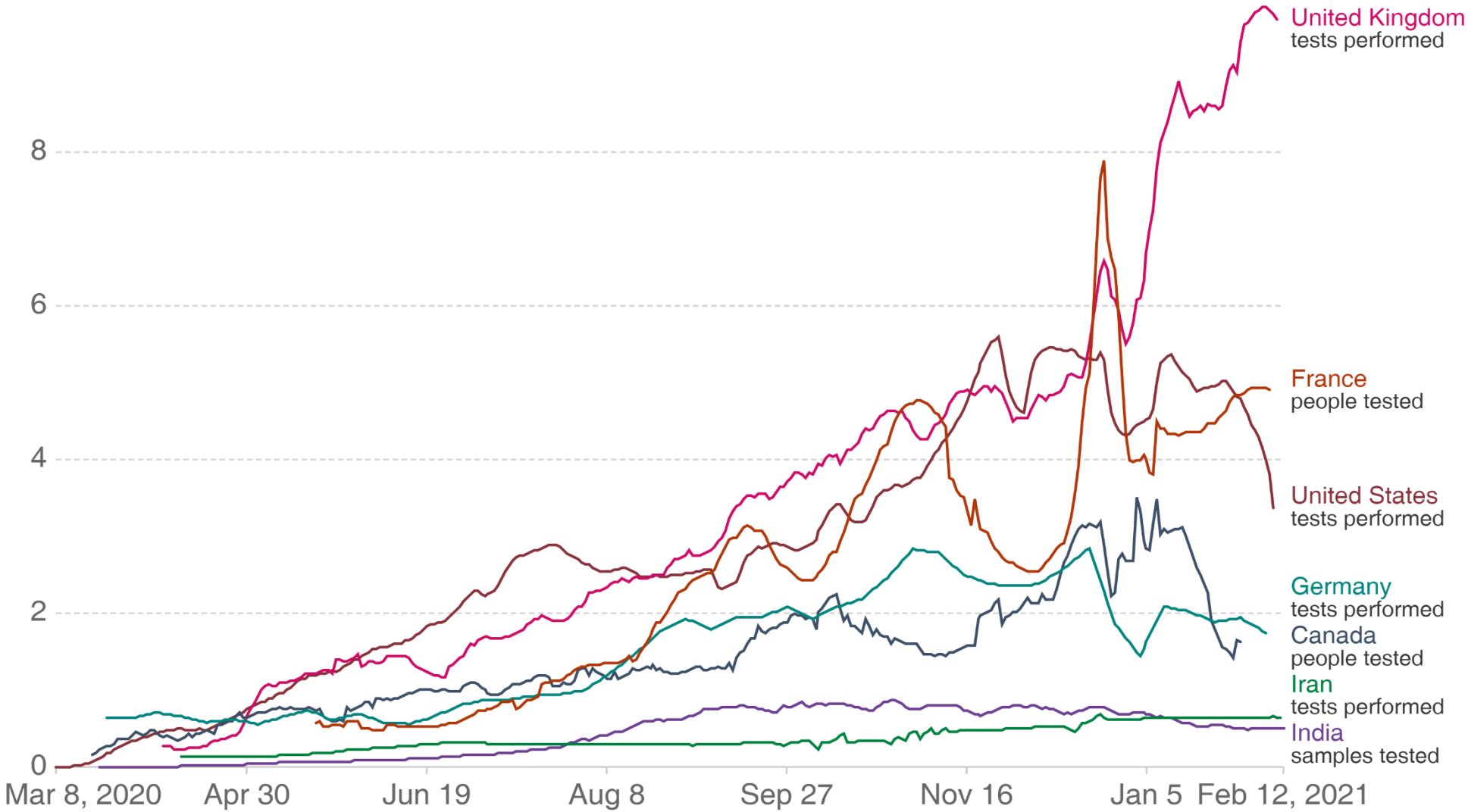


Source: Johns Hopkins University CSSE COVID-19 Data – Last updated 13 February, 09:02 (London time)

Daily new COVID-19 tests per 1,000 people

Shown is the rolling 7-day average.

Our World in Data



Source: Official data collated by Our World in Data – Last updated 13 February, 11:29 (London time)

Note: For testing figures, there are substantial differences across countries in terms of the units, whether or not all labs are included, the extent to which negative and pending tests are included and other aspects. Details for each country can be found on ourworldindata.org/covid-testing.

References

1- **WHO Coronavirus Disease (COVID-19) Dashboard.** Data last updated: 2021/2/13, 3:35pm CET

2- Hannah Ritchie, Esteban Ortiz-Ospina, Diana Beltekian, Edouard Mathieu, Joe Hasell, Bobbie Macdonald, Charlie Giattino, and Max Roser. https://ourworldindata.org/coronavirus. Data last updated: 2021/2/13, 3:35pm CET

3- Greg Martin. Outbreak investigation and control,2017 global health on YouTube; access date:2021

4- Ranil Appuhamy. Outbreak Investigation - a step by step approach.2017

5-lets learn public health, access data:2021

6- گزاره برگ شماره ۴ معاونت تحقیقات و فناوری وزارت بهداشت،