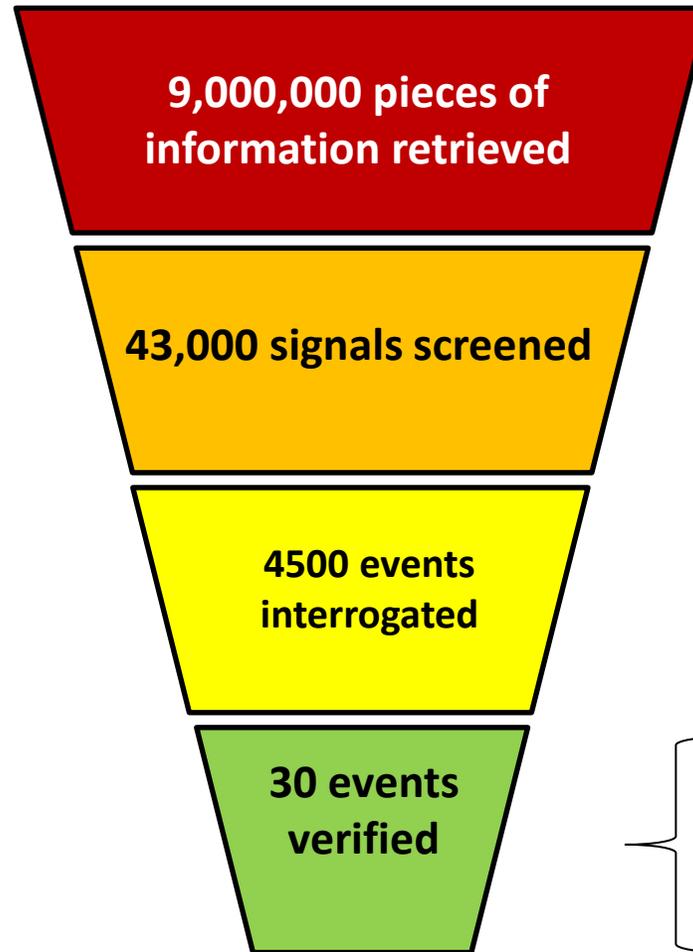


Global Public Health Surveillance for Emergencies and COVID-19

Oliver Morgan

15 April 2021

Signals and Events Detected every Month



Rapid Risk Assessment
Event Information Site (IHR-NFP)
Disease Outbreak News

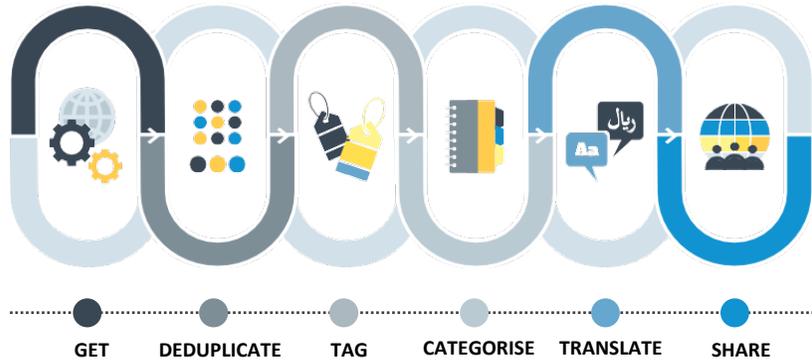
Epidemic and Pandemic Intelligence



EIOS – Epidemic Intelligence from Open Sources

www.who.int/eios

EIOS SYSTEM



35 Current User Entities

Afghanistan	GOARN (IFRC)
Africa CDC	Grenada
Albania	Japan (NIID)
Argentina	MSF
Brazil	Nepal
Dominica	Nigeria
DG ECHO (European Commission)	OIE
Egypt	Oman
FAO	ProMED
France	Republic of Korea (KCDC)
Canada (GHSI)	Republic of Moldova
Germany (GHSI)	Republic of Singapore
Japan (GHSI)	Saint Lucia
Mexico (GHSI)	Turkey
UK (GHSI)	Uganda
US (GHSI)	UNICEF
GLEWS	UNODC
	WHO

Daily Signal List

For internal use only - daily list of signals, DVA/HQ, 09 February - Message (HTML)

File Message

Ignore X Reply Reply All Forward More

2018 To Manager Done Create New

Rules OneNote Actions

Move Assign Policy Mark Unread Categorize Follow Up

Translate to Simplified Chinese Translate to Traditional Chinese Chinese Conversion

Find Related Select Zoom

Delete Respond Quick Steps Move Tags Chinese Conversion Editing Zoom

From: outbreak Sent: Fri 09/02/2018 17:54

To: AF RGO/OUTBREAK AFRO; CORPUZ, Aura; COSBY, Michael Thomas; DAKHLALLAH, Farah; Emergency Info; EURO IHR; HUGONNET, Stéphane Alexandre Louis; ihr@paho.org; IMPOUMA, Benido; MORGAN, Oliver; NABETH, Pierre; PERKINS, Devin; SEAR Outbreak; SODJINOU, Vincent Dossou; VONG, Sirenda; WP RO OUTBREAK

Cc: ABDELMALIK, Philip; ALEXANDROVA EZERSKA, Lidia; ALLAIN IOOS, Sophie; BARBOZA, Philippe; BUCH-JORGENSEN, Marion; ELFENKÄMPER, Eva; FONTAINE, Julie; HASSAN, Shoaib; IDE, Kazuhiko; LANE, Christopher Roderick Lumley; LIM, Steven; MCKNIGHT, Jason; outbreak; PERON, Emilie; SCHNITZLER, Johannes Christof; SELENIC MINET, Dubravka; SMIRNOVA, Anastasia; WENDLAND, Annika

Subject: For internal use only - daily list of signals, DVA/HQ, 09 February

Signal/ Event description	Region	Country Affected	Disease	Status	Source	Action
SUSPECTED AVIAN INFLUENZA A(H5N8): Update of the signal reported on 7 February. The Ministry of Health of Saudi Arabia confirmed there was not confirmed human case of avian influenza A(H5N8).	EMRO	Saudi Arabia	Suspected avian influenza A(H5N8)	Update	EMRO http://www.spa.gov.sa/viewstory.php?lang=en&newsid=1718276	Monitoring,
CHOLERA: As of 9 February, according to a national authority, a total of 10 imported cholera cases from India were reported in Almaty(South east of the country), Kazakhstan. On 6 February, we reported 5 cases (4 confirmed) .	EURO	Kazakhstan	Cholera	Update	Media https://www.kt.kz/rus/society/v_almati_zaregistrovano_10_zavoznih_sluchaev_holeri_1153652613.html	Monitoring, Shared with EURO and TT, EURO is following up

*If blank, then same as Country Affected or unknown
TT – Technical team

With regards,

See more about: outbreak.

Daily Review of Signals for Action

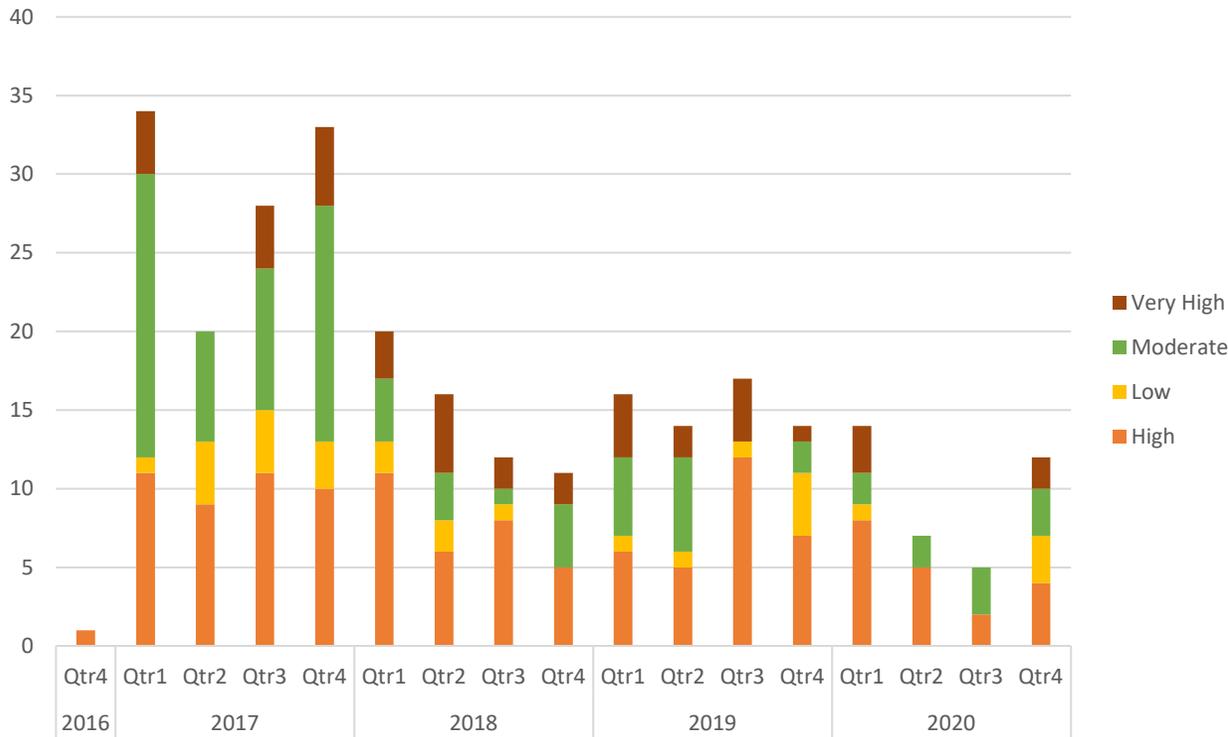


Verifying Signals on the Ground

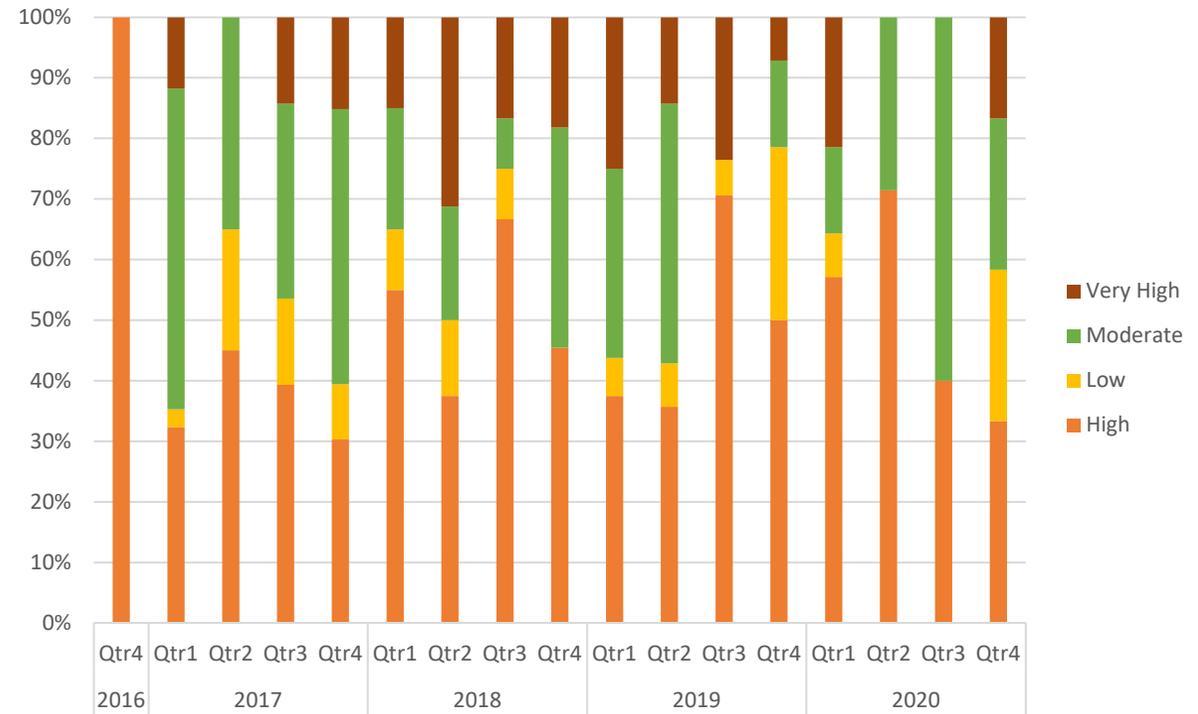


Rapid Risk Assessments [N=274], 2017 to 2020

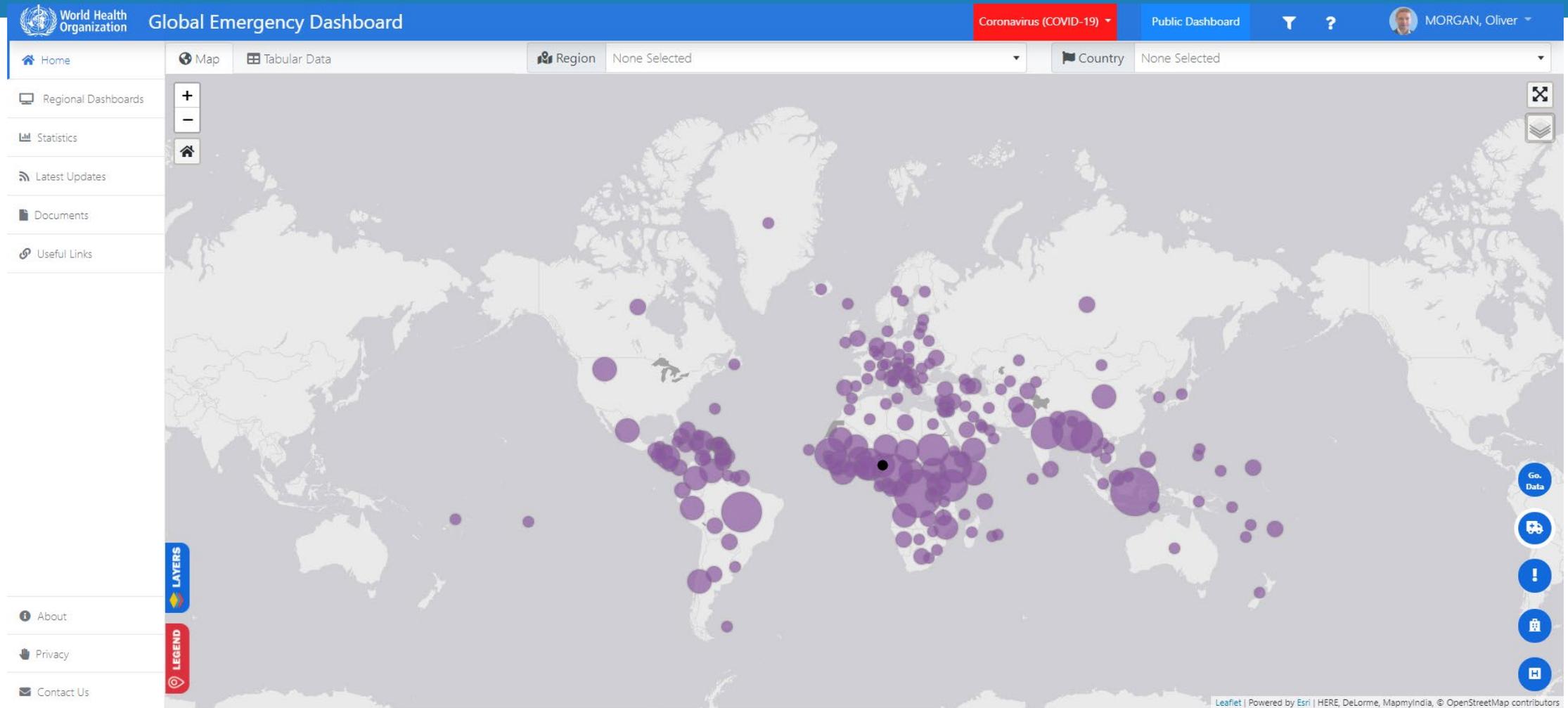
Number of Rapid Risk Assessments by National Risk Level



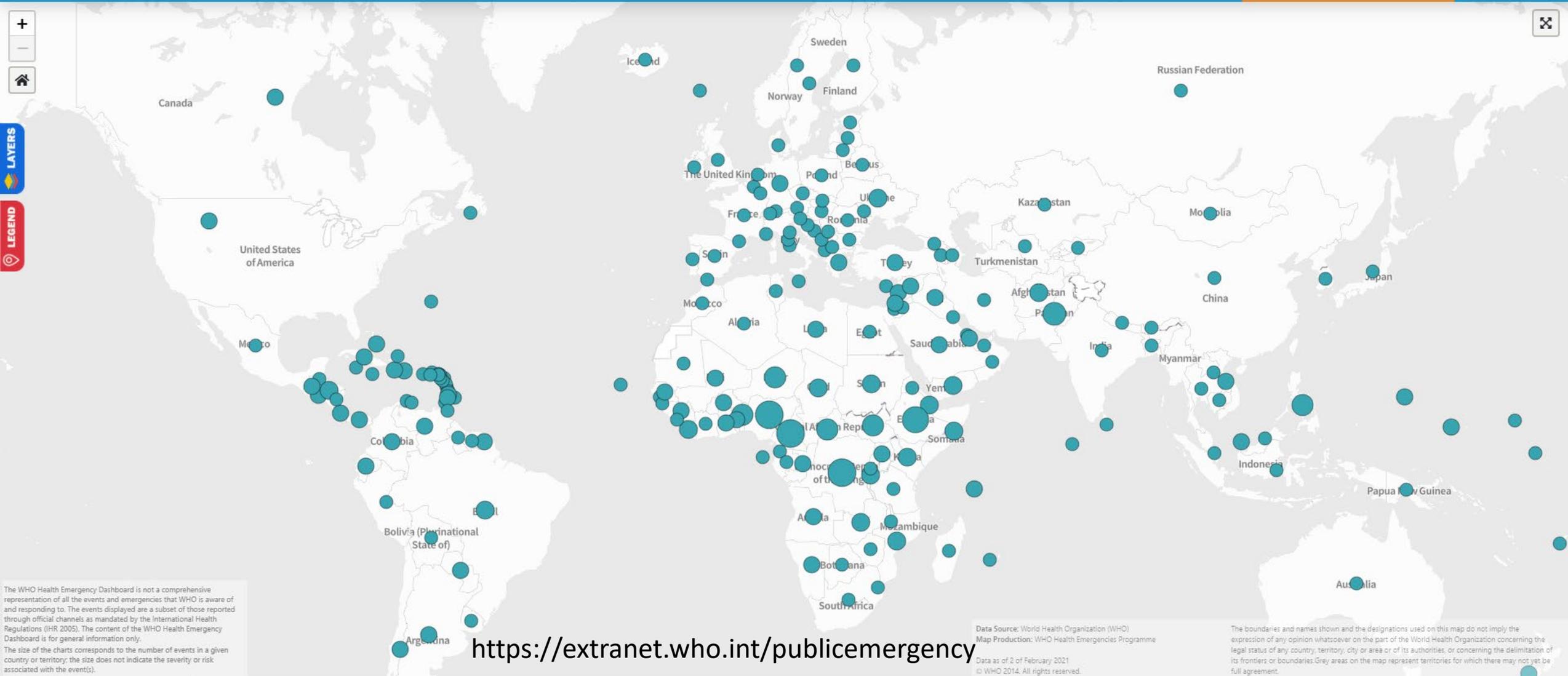
Proportion of Rapid Risk Assessments by National Risk Level



WHO Emergency Management System



Public Emergency Dashboard



COVID-19 SURVEILLANCE

Case Definitions and Surveillance Reporting Guidance

Global Surveillance for human infection with novel coronavirus (2019-nCoV)

Interim guidance
21 January 2020

[WHO/2019-nCoV/SurveillanceGuidance/2020.3](https://www.who.int/2019-nCoV/surveillance-guidance/2020.3)



Publication Dates

11 January 2020
21 January 2020
31 January 2020
27 February 2020
20 March 2020
7 August 2020
16 December 2020

Background

This document summarizes WHO's interim guidance for global surveillance of novel coronavirus infection (2019-nCoV). WHO will continue to update this guidance as new information about 2019-nCoV becomes available.

Updated information about 2019-nCoV can be found here along with other guidance documents.

<https://www.who.int/health-topics/coronavirus>

Purpose of this document

This guidance is for global surveillance of 2019-nCoV for

Case definitions for surveillance

The case definitions are based on the current information available and may be revised as new information accumulates. Countries may need to adapt case definitions depending on their own disease situation.

Suspect case

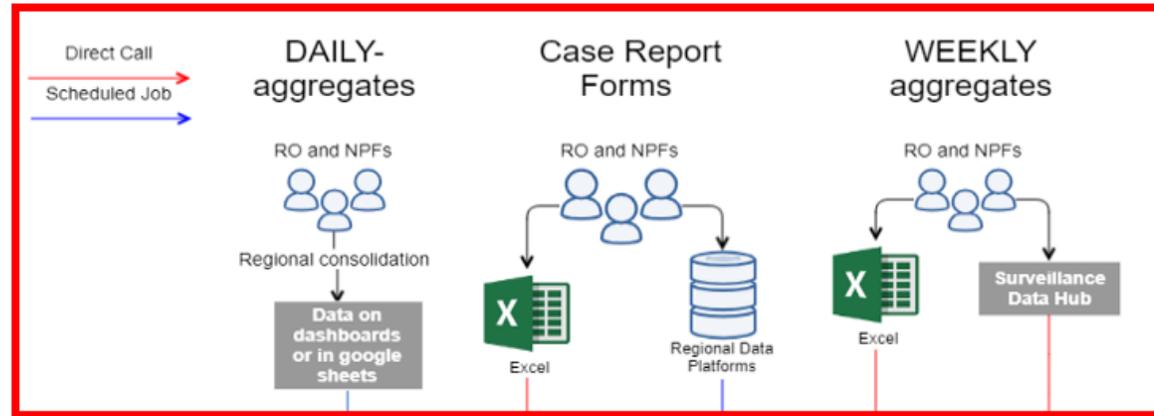
A. Patients with severe acute respiratory infection (fever, cough, and requiring admission to hospital), **AND** with no other etiology that fully explains the clinical presentation¹ **AND** at least one of the following:

- a history of travel to or residence in the city of Wuhan, Hubei Province, China in the 14 days prior to

COVID-19 Data Flow Leveraging the Global Influenza Surveillance Capacities

Input

WHO Country Office
WHO Regional Office

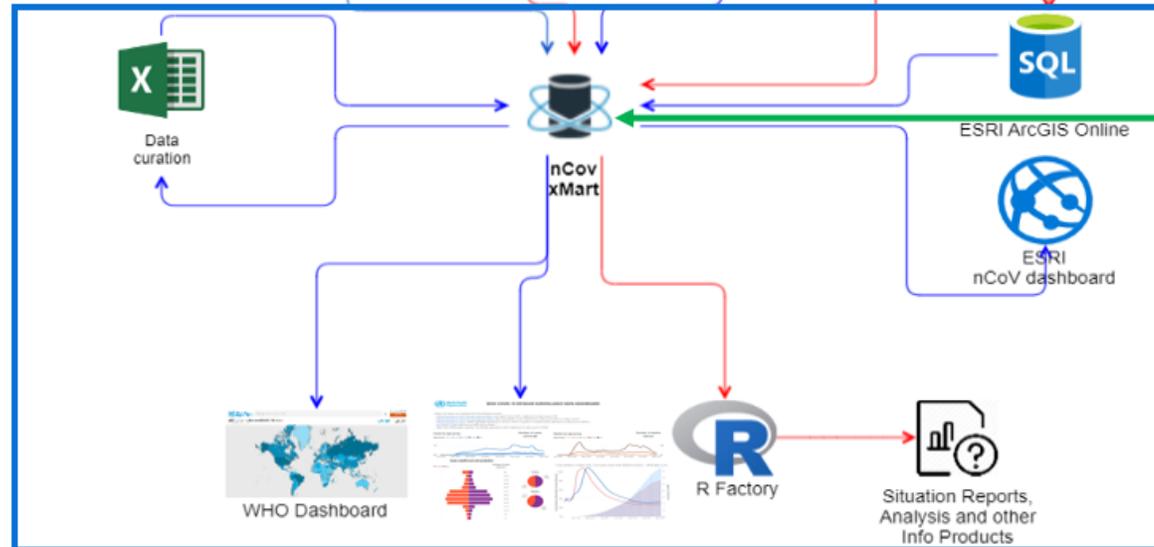


External
Data
Sources

- PHSM
- OWID
- Oxford stringency
- Google/ Apple Mobility

Harmonization

WHO HQ



Outputs

COVID surveillance data in WHO HQ

Daily aggregated data

Cumulative and new cases and deaths
From WHO regional dashboards and ROs:

**136 Million Cases,
2.9 Million deaths**

Used for daily presentation, WHO dashboard,
situation reports, detailed analysis

Detailed surveillance data

Detailed disaggregation of Covid-19 cases and
deaths : age, gender, Health Workers, etc

99 million cases reported

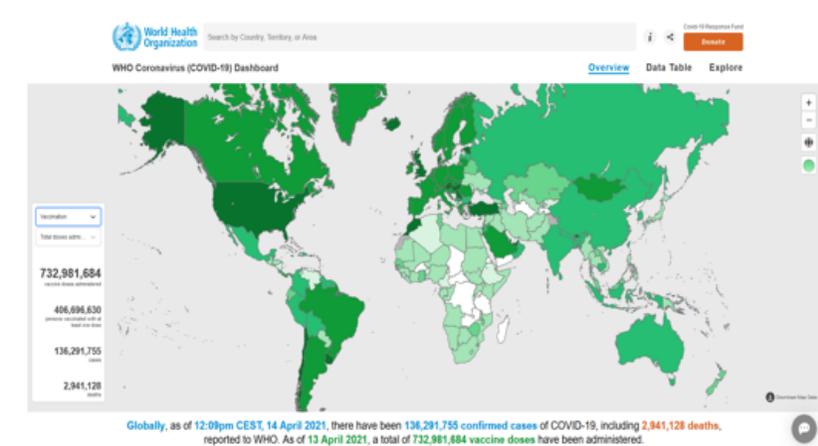
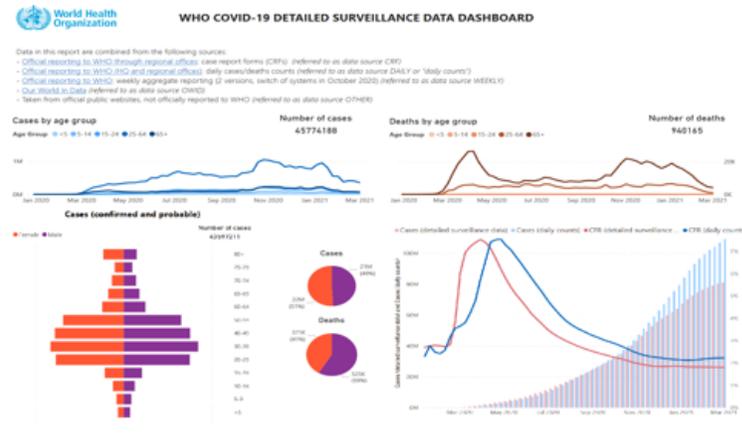
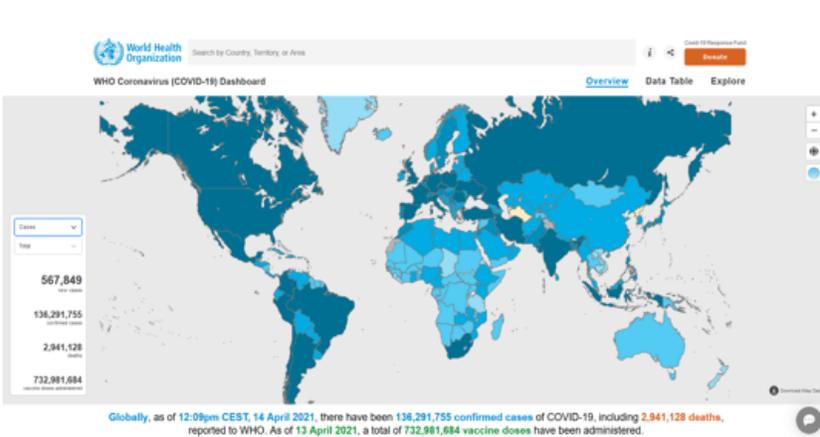
Detailed surveillance dashboard, used for
analysis and situation reports at HQ, RO and
Country Office

Vaccination data

Data from RO and added from publicly available
sources

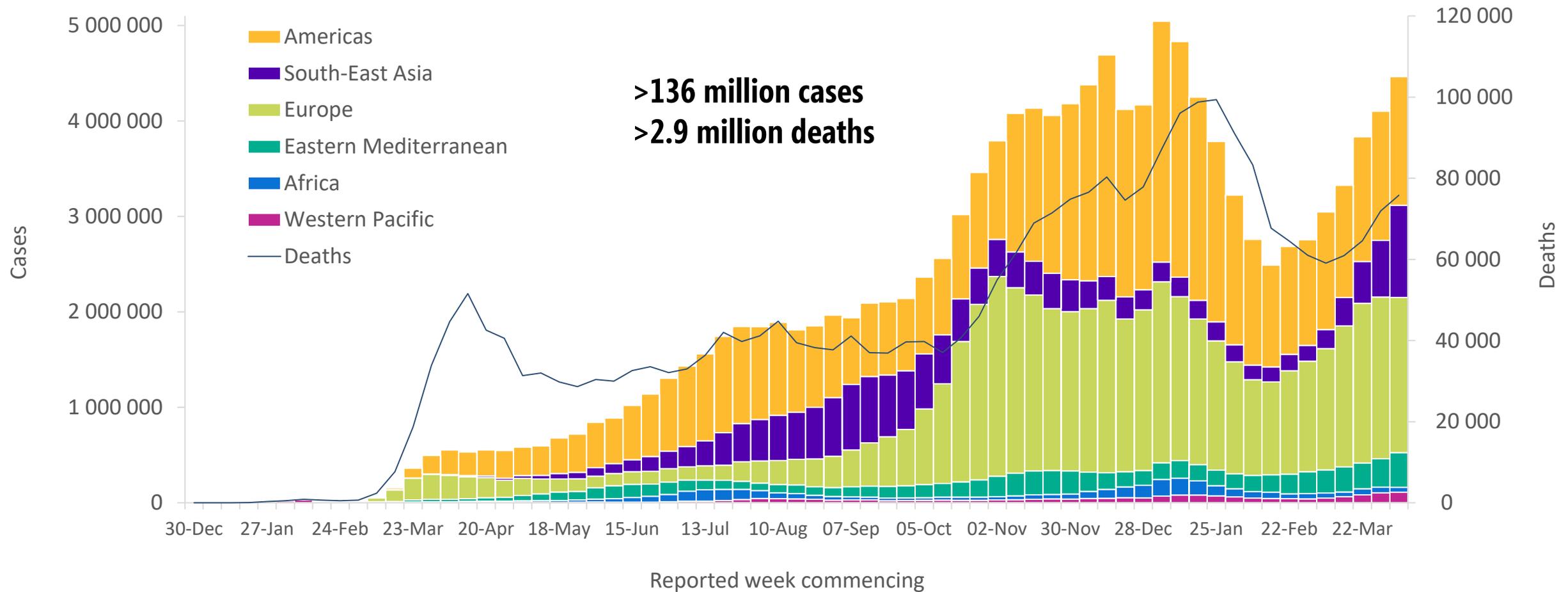
**733 Million
vaccine doses administered**

Showing which country started vaccination and
doses administered



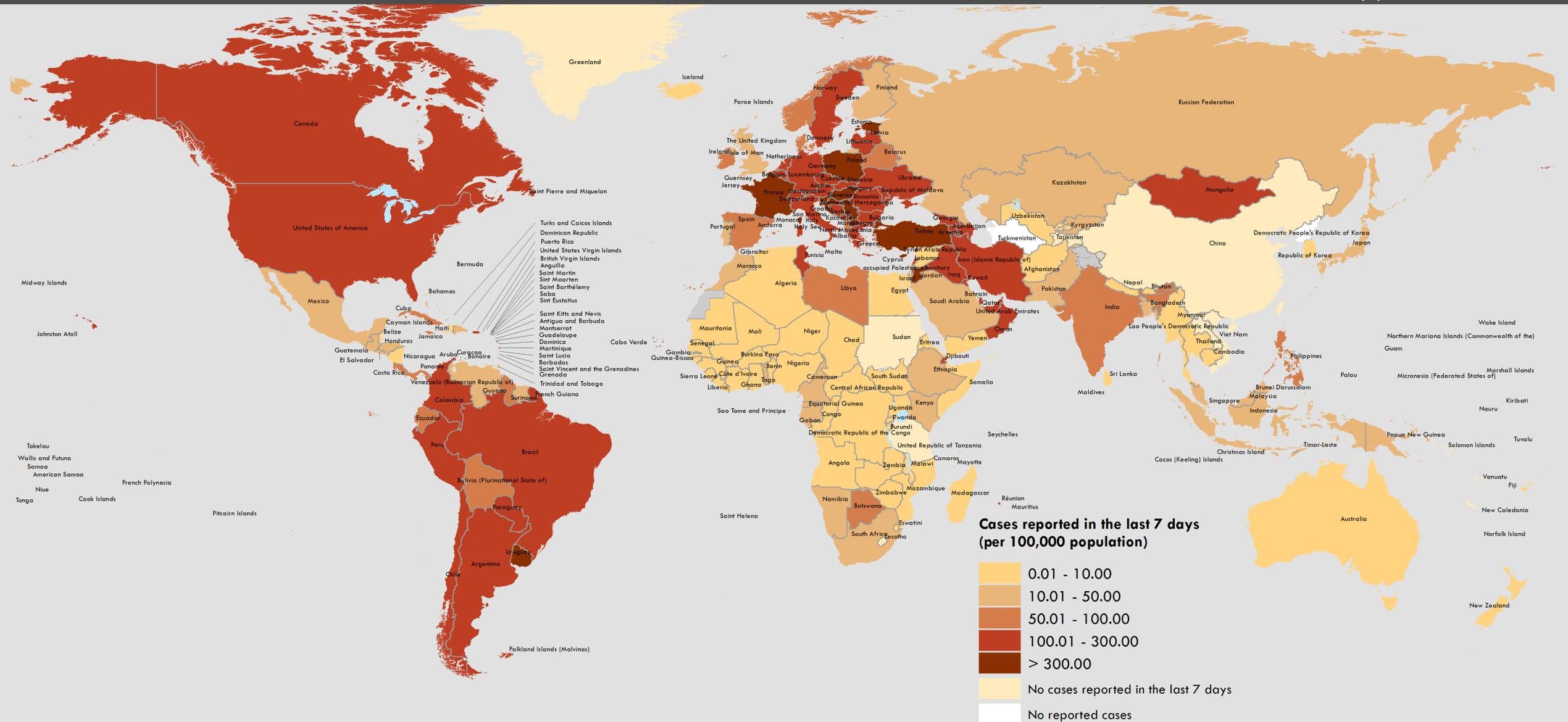
Number of COVID-19 Cases and Deaths Globally Continue to Increase

(data through epi week ending 11 April 2021)



COVID-19 cases reported in the last 7 days per 100,000 population

(from 05 April 2021, 10:00AM to 11 April 2021, 10:00AM (CET))



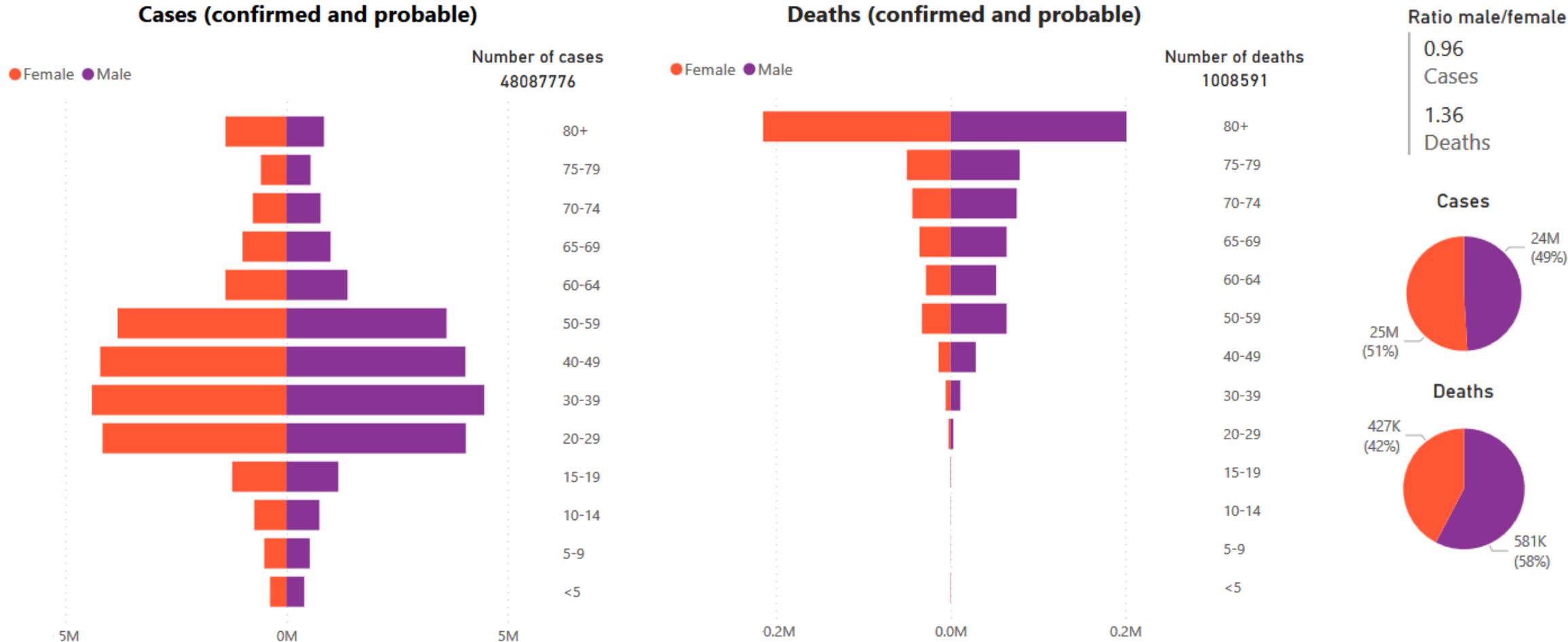
Data Source: World Health Organization,
United Nations Population Division (population prospect 2020)
Map Production: WHO Health Emergencies Programme

Not applicable

0 2,500 5,000 km
© World Health Organization 2021, All rights reserved.

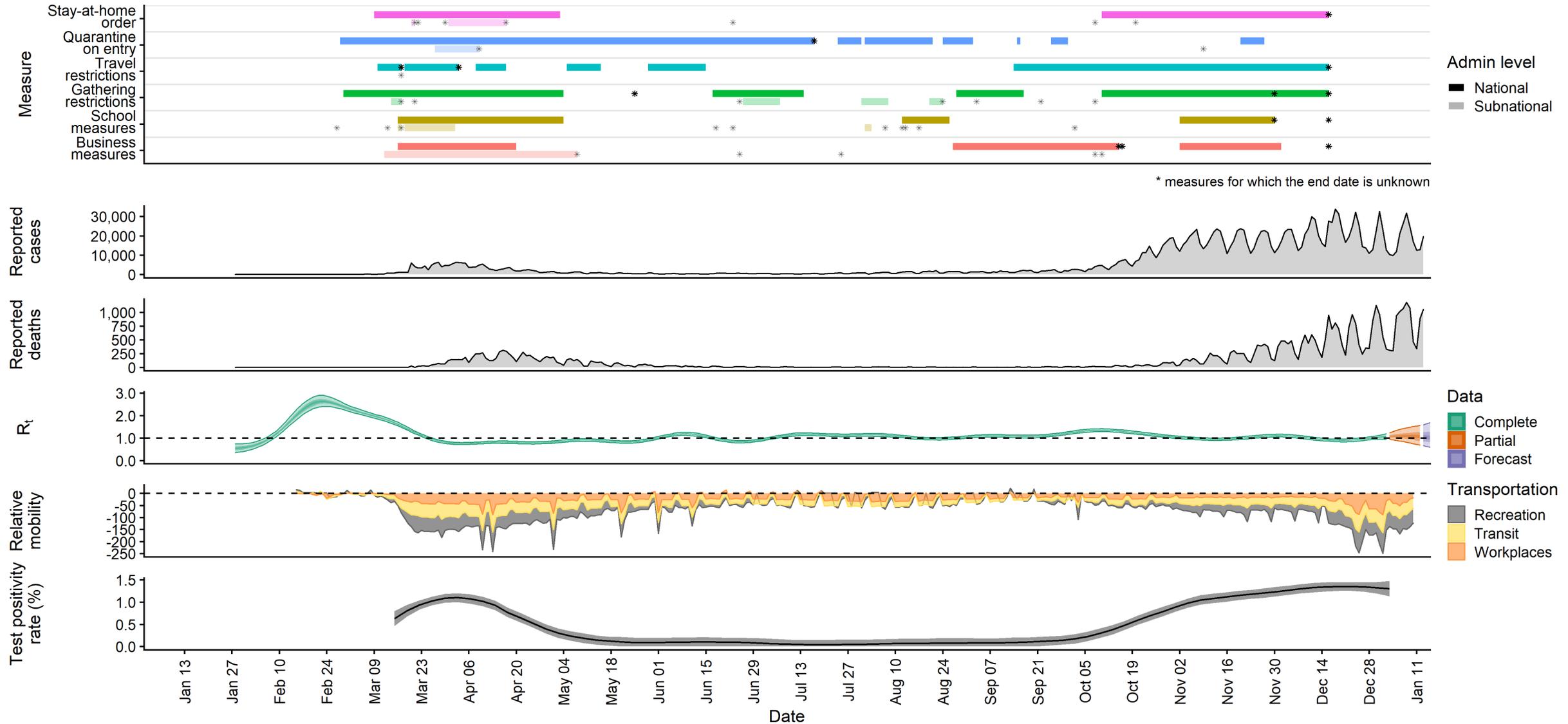
The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement. [1] All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council resolution 1244 (1999). Number of cases of Serbia and Kosovo (UNSCR 1244, 1999) have been aggregated for visualization purposes. Data for Bonaire, Sint Eustatius and Saba have been disaggregated and displayed at the subnational level.

Cases Occur Among Younger Adults, Deaths among Older Adults



Source: World Health Organization detailed Covid-19 surveillance data; data as of 14 Apr 2021

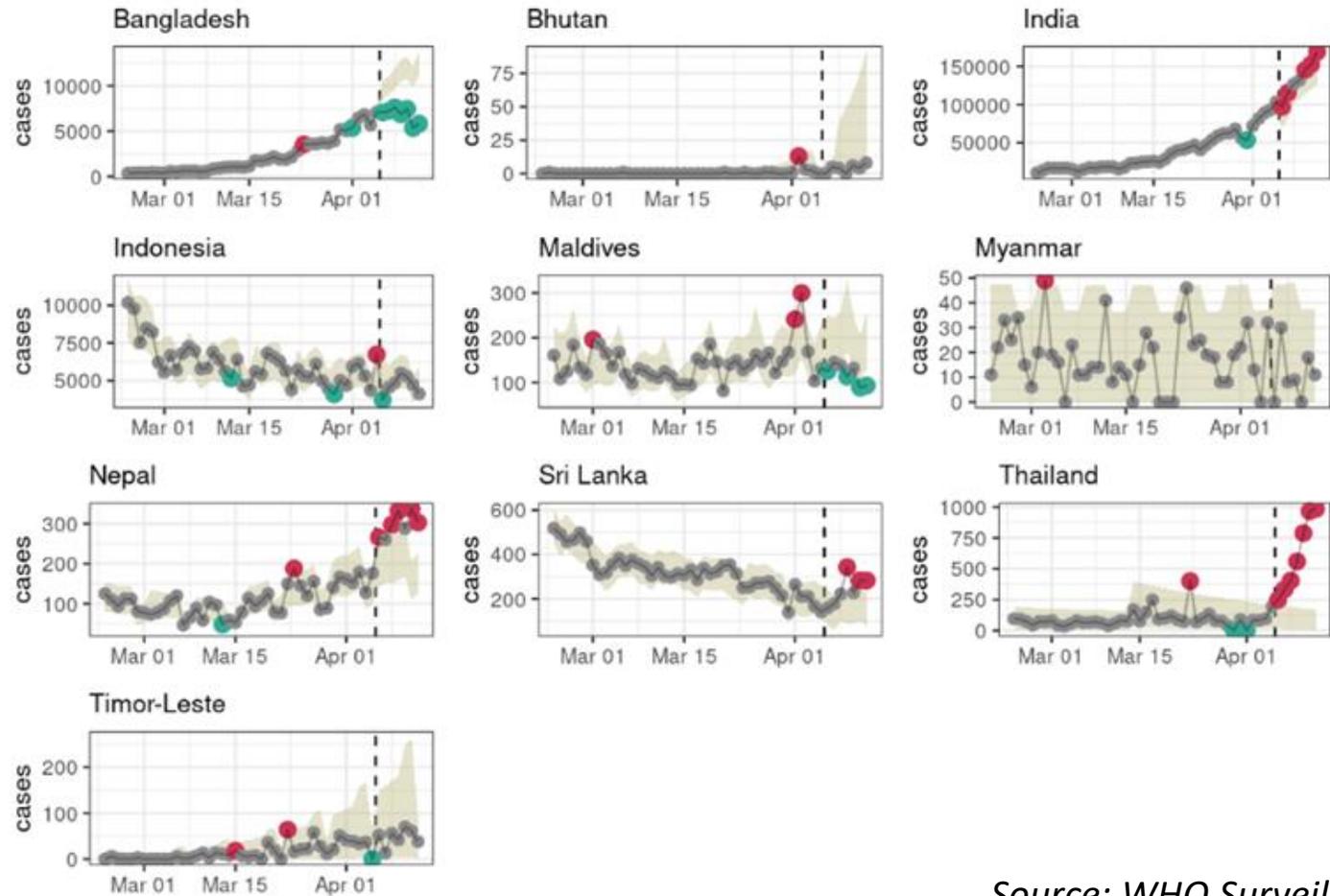
Public Health and Social Measures: Example of Germany



Identifying Epidemiological Signals from Trend Data

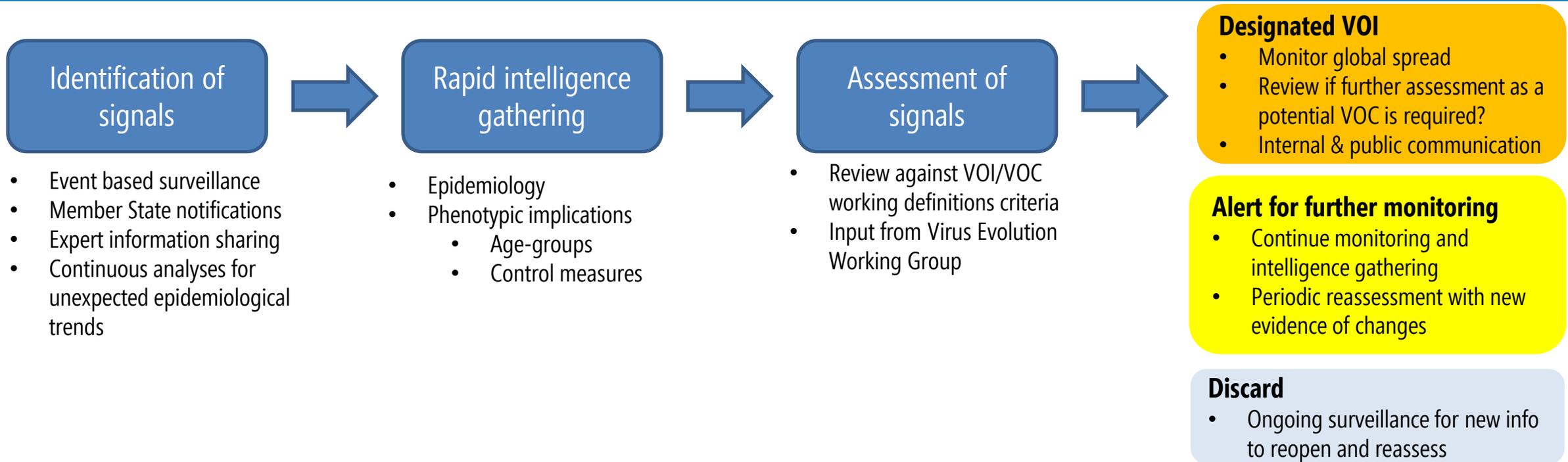
Automated machine learning approach, applying a range of models on a six-week period → prediction intervals and outliers against current trends flagged

ASMODEE model (Automatic Selection of Models for Outlier Detection for Epidemics)



Source: WHO Surveillance Data

Detection and Assessment of SARS-CoV-2 Variants



Definitions of VOI/VOC: <https://www.who.int/publications/m/item/covid-19-weekly-epidemiological-update>

33 signals
as of 13 April

13 signals pending assessment

3 VOCs
6 VOIs
6 alerts for further monitoring
5 discarded

Summary of SARS-CoV-2 Variant Surveillance

	VOC 202012/01 (B.1.1.7)	501Y.V2 (B.1.351)	P.1 (B.1.1.28.1)
First detected by	United Kingdom	South Africa	Brazil / Japan
First appearance	Sep 2020	Aug 2020	Dec 2020
Countries reporting cases	132	82	52
Increased transmissibility	Yes	Yes	Yes
Increased severity	Inconsistent findings	Yes	Limited
Increased reinfection risk	No/limited	Yes	Yes
Impacts on diagnostics	Limited	No	No

Countries/territories/areas reporting lineage B.1.1.7
(situation as of 13 April 2021)



Countries/territories/areas reporting lineage P.1
(situation as of 13 April 2021)

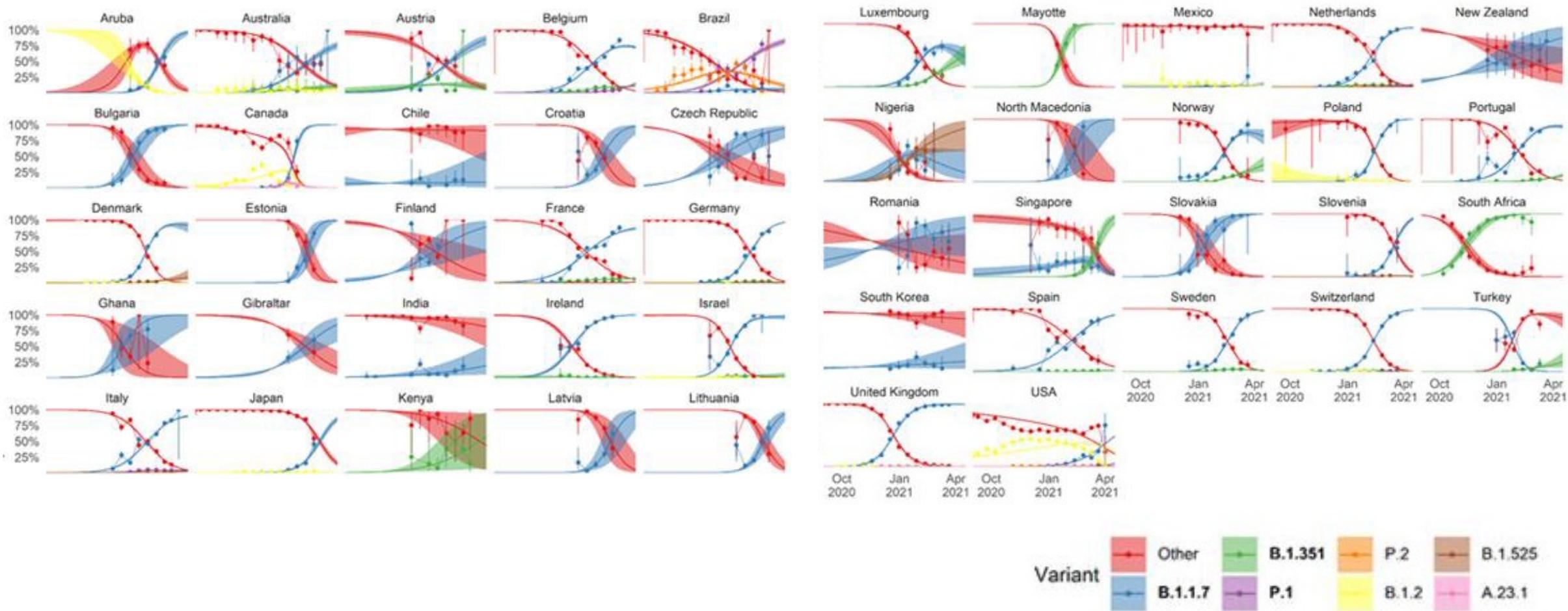


Countries/territories/areas reporting lineage B.1.351
(situation as of 13 April 2021)



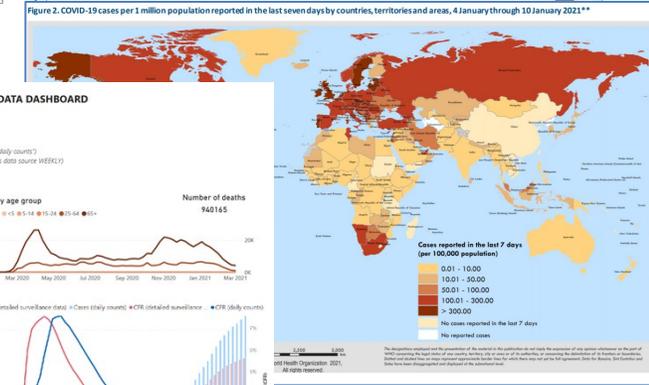
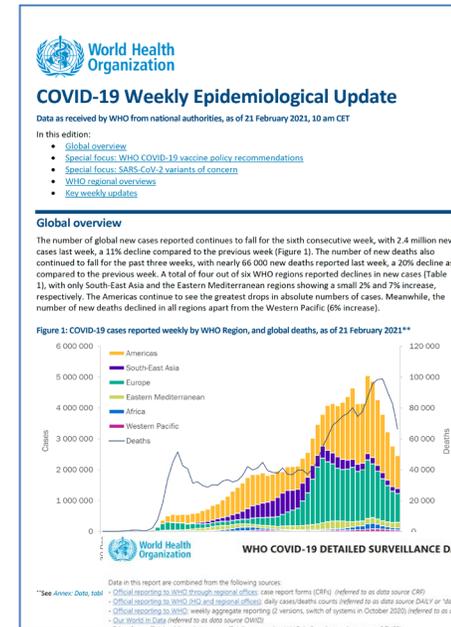
Transmissibility and Replacement of SARS-CoV-2 Variants

Proportion of sequences



Surveillance Outputs

- Daily data packs (internal)
- Weekly epidemiological updates
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>
- WHO COVID-19 Dashboard *<https://covid19.who.int/>*
 - Trends of cases and deaths by country
 - Data explorer (PHSM, testing, mobility, other metrics)
- Detailed surveillance data dashboard *<https://bit.ly/3mQbHcH>*
- Detailed thematic analyses



Future Considerations

- **Strengthen detection and monitoring of epidemic and pandemic risks**
 - Continuous public health intelligence and risk analysis
 - Accelerate MS participation in the Epidemic Intelligence from Open Sources Initiative
 - Extend existing collaborations with One Health Tripartite+ partners
 - Predictive analytics and intra-pandemic modeling
- **Develop global surveillance of emerging infectious diseases using genomic sequencing data**
 - Tracking emerging risks
 - SARS-CoV-2 variants
 - Rapid synthesis of genomic and epidemiologic
- **Surveillance systems for epidemic and pandemic risk management must go beyond disease outcomes only**
 - Implementation of public health and social measures
 - Laboratory & health systems capacities
 - Infodemic monitoring
- **Major investments in local, national, and global surveillance systems are needed**
 - Sustained national investment for surveillance implementation
 - Integration with response capacities such as emergency operations centers
 - Technology investments to improve data linkage across clinical, laboratory, and other data systems
 - Improved data exchange mechanisms with regional public health bodies and WHO