World Health Organization

COVID-19 Omicron Global Update

SAGE Extraordinary Meeting
19 January 2022

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IVB Director

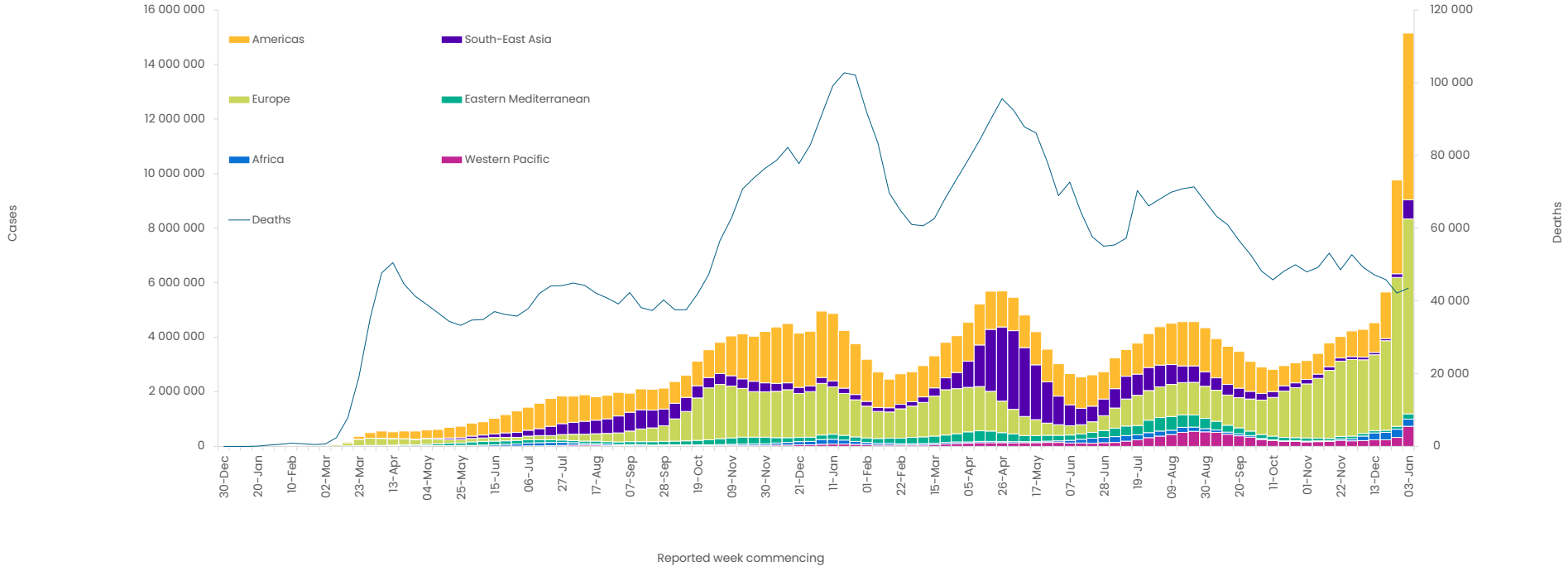
Current global situation

As of 14 Jan 2022

In the past week:
> 15 million new confirmed cases
> 43,000 new deaths

Daily:
>3 million new confirmed cases
Almost 8,000 new deaths

Cumulative as of 14 January 2022:
>318 million confirmed cases
>5.5 million deaths



Globally, the number of cases of COVID-19 has been increasing largely driven by Omicron

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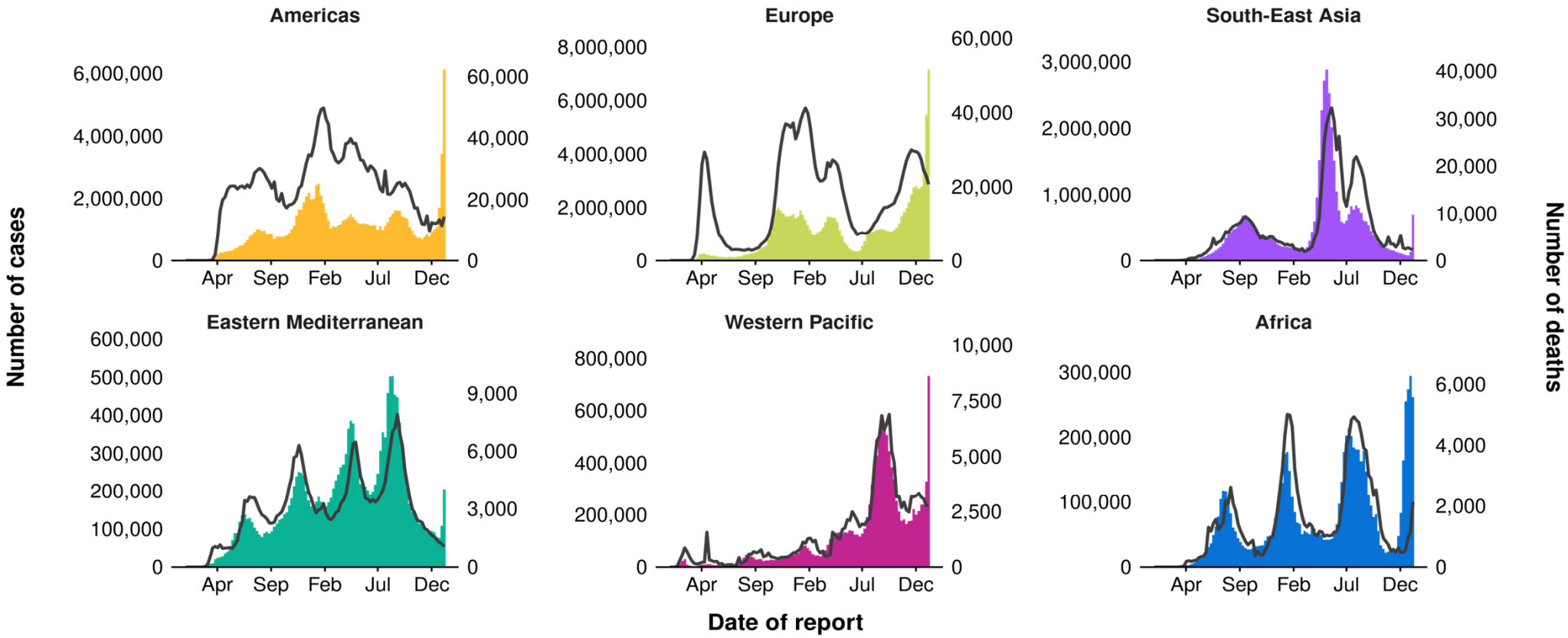
Weekly situation by WHO region

As of 12 Jan 2022



** Data are incomplete for the current week. Cases depicted by bars; deaths depicted by line. Note different scales for y-axes.*

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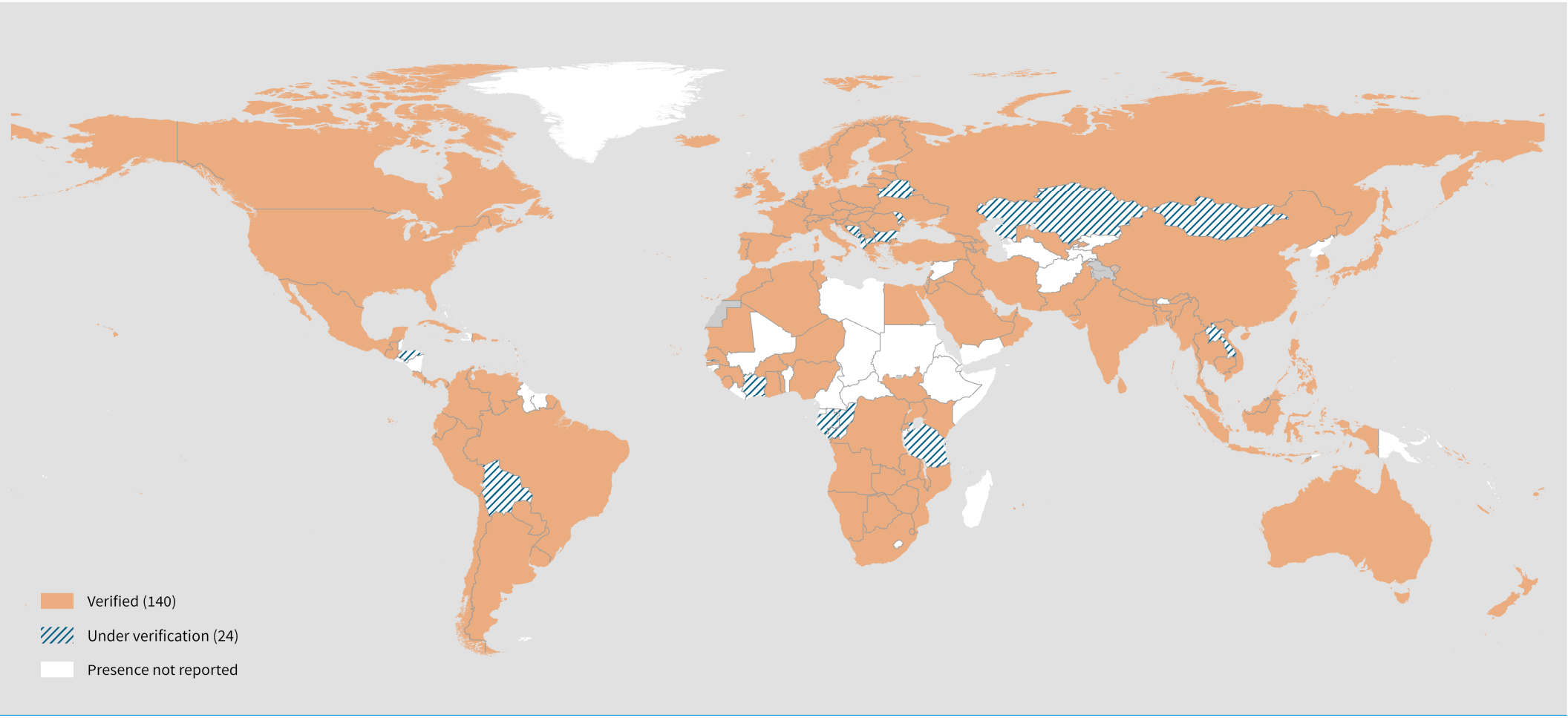
Countries, territories and areas reporting Omicron COVID-19 variant of concern

(situation as of January 11, 2022, 4:00PM (CET))



Data Source: World Health Organization
Map Production: WHO Health Emergencies Programme

Not applicable

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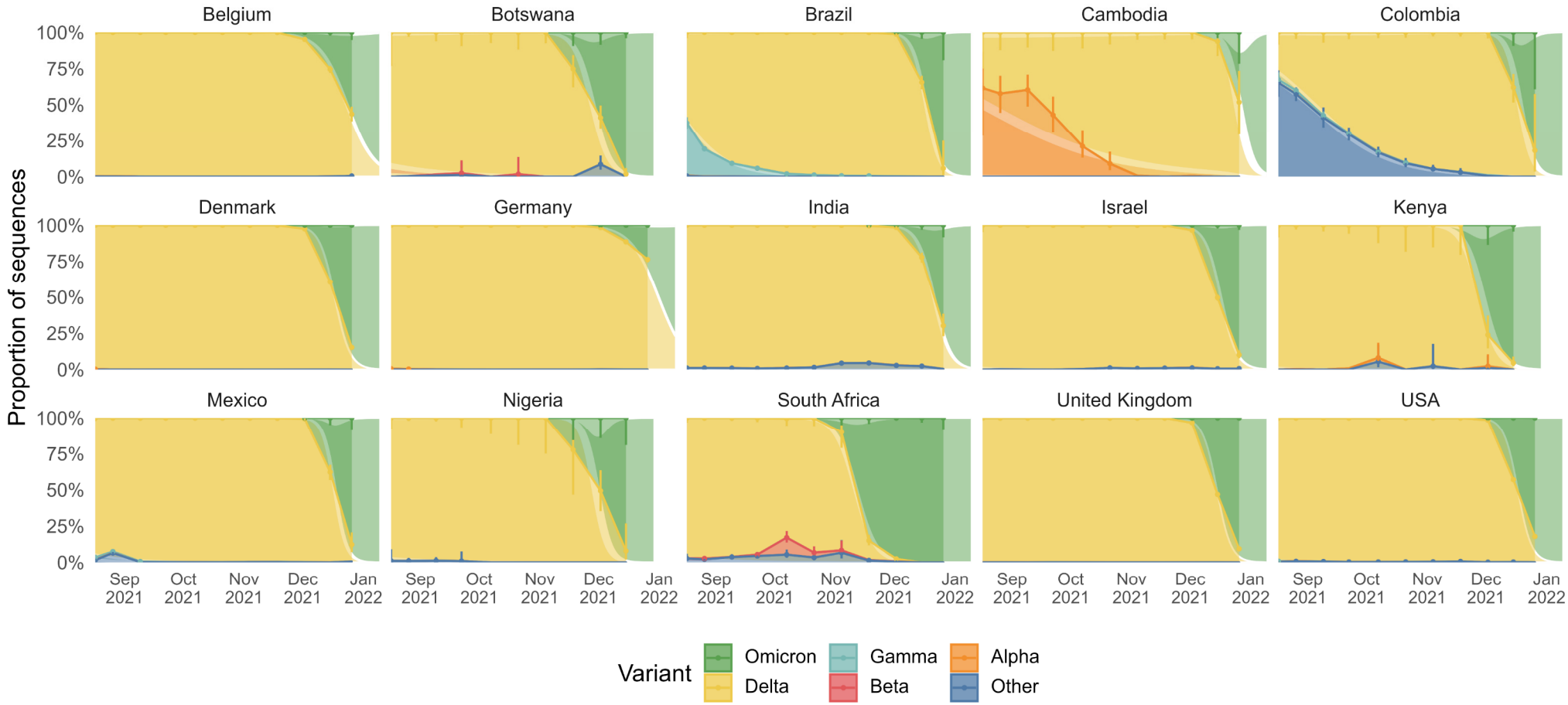
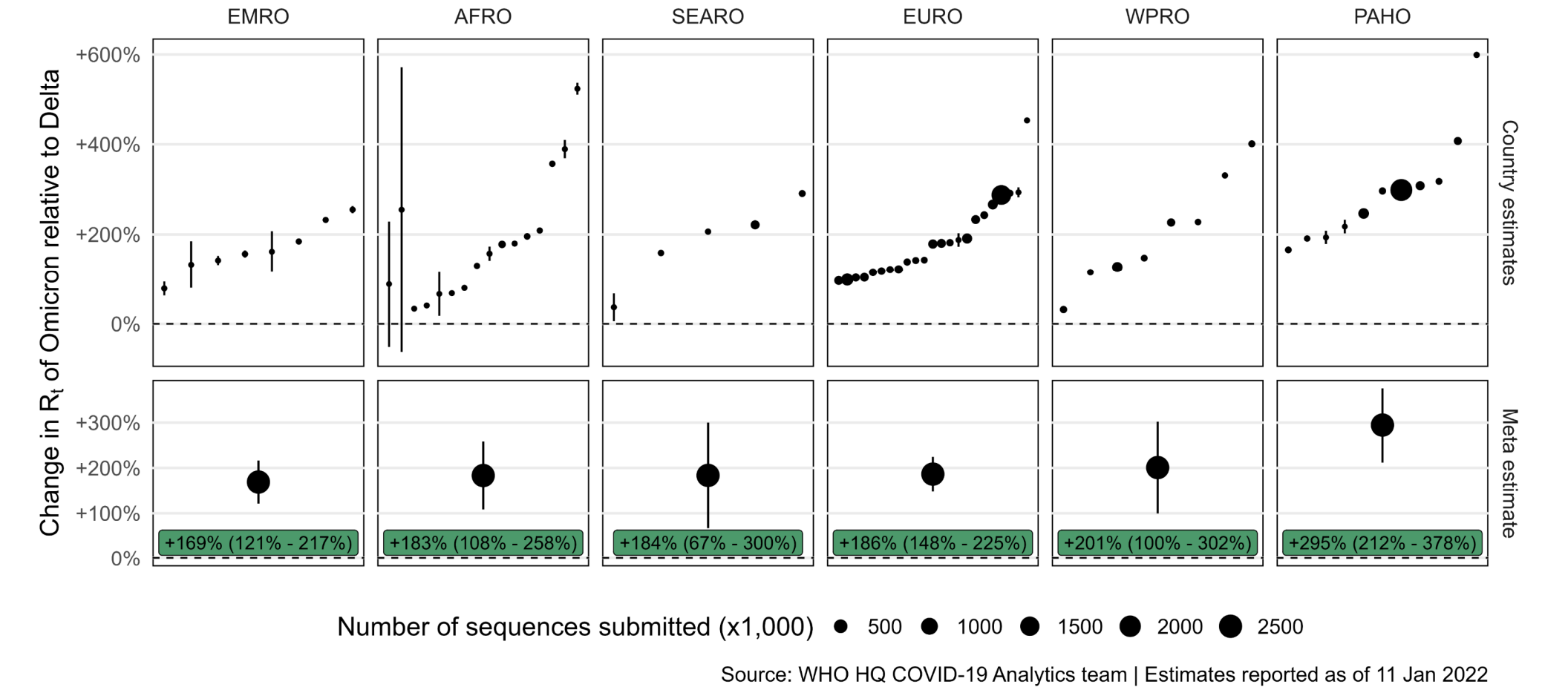
Variant proportions globally : GISAID and other sources

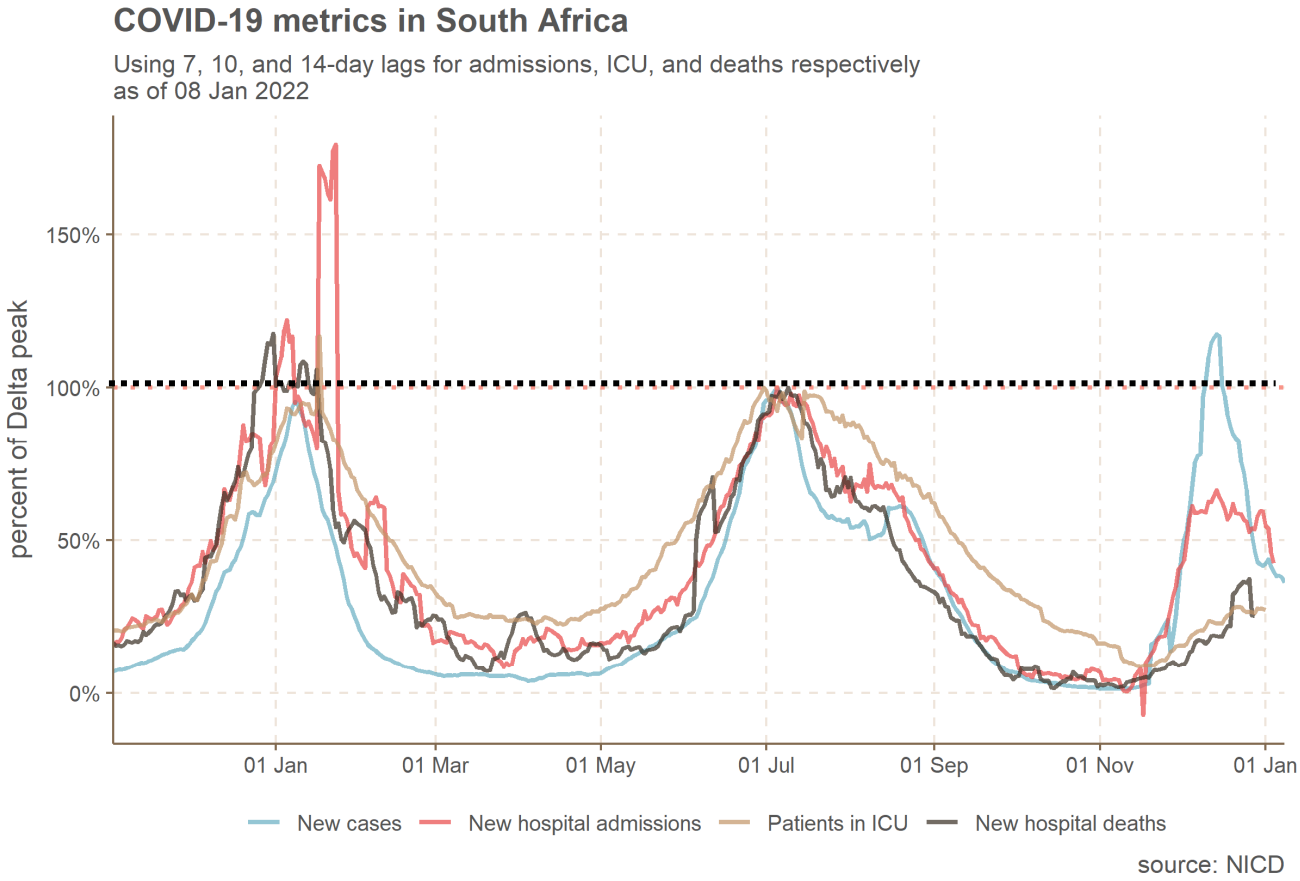


Transmission: Relative Rt (based on GISAID)



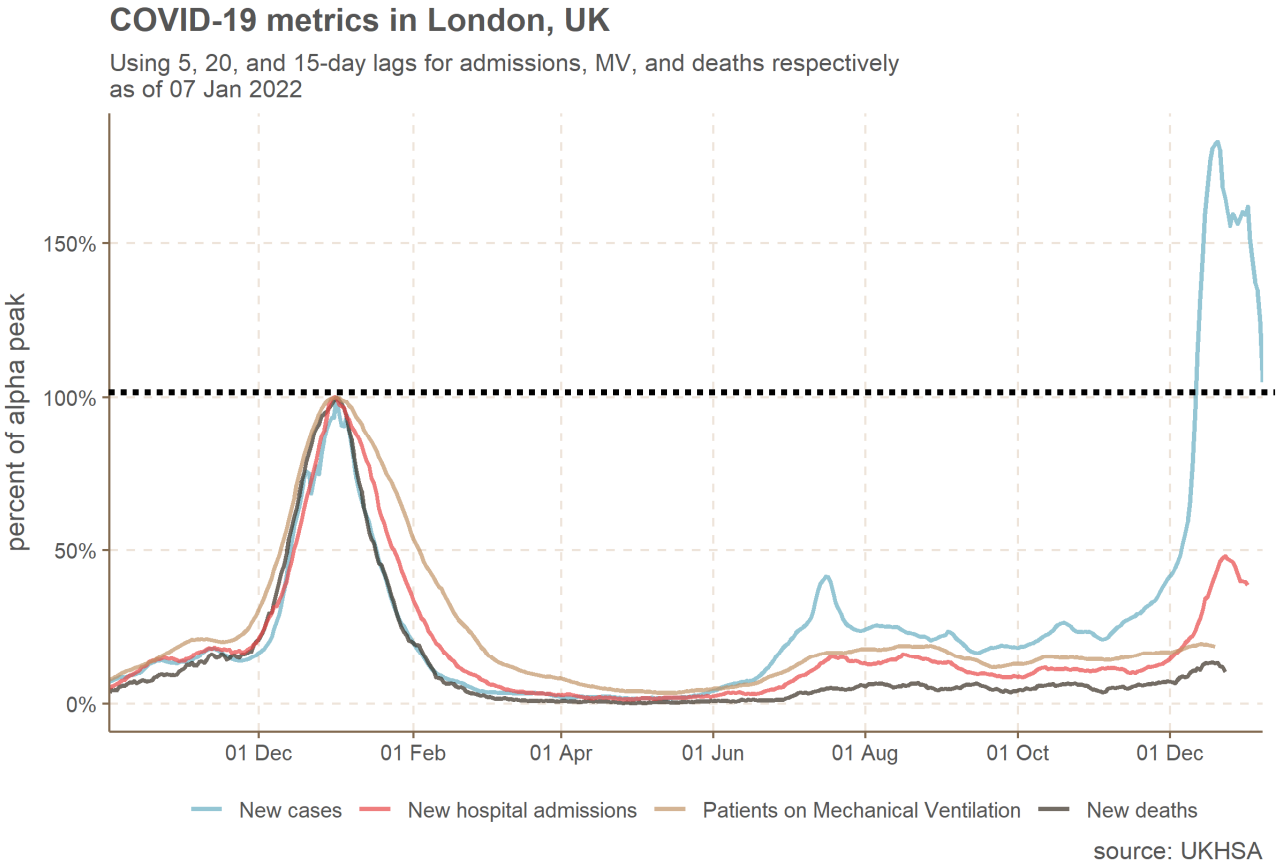
Source: WHO HQ COVID-19 Analytics team | Estimates reported as of 11 Jan 2022

Impact on hospitalization and severe disease



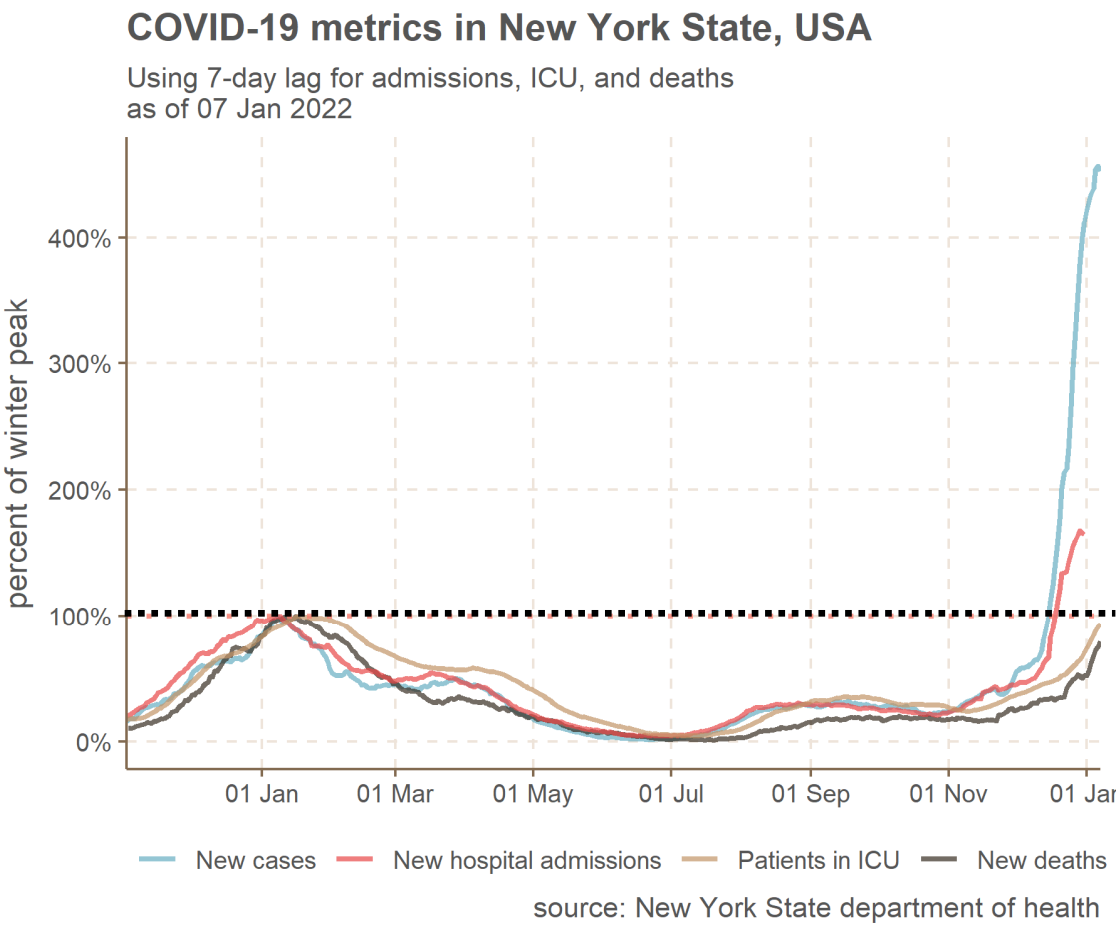
Source: https://www.nicd.ac.za/diseases-a-z-index/disease-index-covid-19/surveillance-reports/national-covid-19-daily-report/ | Data as of 9 January 2022

London, United Kingdom - cases and hospitalization trends



- Cases rose steeply in London after early December, coinciding with introduction of Omicron
- Hospital admissions have increased with some lag, although significant decoupling compared to the Alpha wave is observed
- The number of patients on mechanical ventilation has stayed largely consistent as of now, and is well below its peak in early 2021
- It is unclear to what extent this decoupling is the result of an intrinsic reduction in severity related to Omicron, or differential impact of immunity /vaccination on transmission and severe disease

New York State, USA – cases and hospitalization trends



Lower Severity – Cohort study in England UKHSA/MRC Biostatistics Unit, University of Cambridge
(UKHSA Technical brief 31 December 2022)

- Risk of presentation to **emergency care or hospital admission** with Omicron was approximately half of that for Delta (**Hazard Ratio 0.53,** 95% Confidence Interval (CI): 0.50 to 0.57).
- The risk of **hospital admission** alone with Omicron was approximately one-third of that for Delta (**Hazard Ratio 0.33**, 95% CI: 0.30 to 0.37)

- Methods:
  - Study based on 528,176 Omicron cases and 573,012 Delta cases occurring between 22 November and 26 December 2021 (matched cohort study)
  - Analyses stratified on date of specimen and area of residence and adjusted for age, sex, ethnicity, local area deprivation, international travel, vaccination status and re-infection

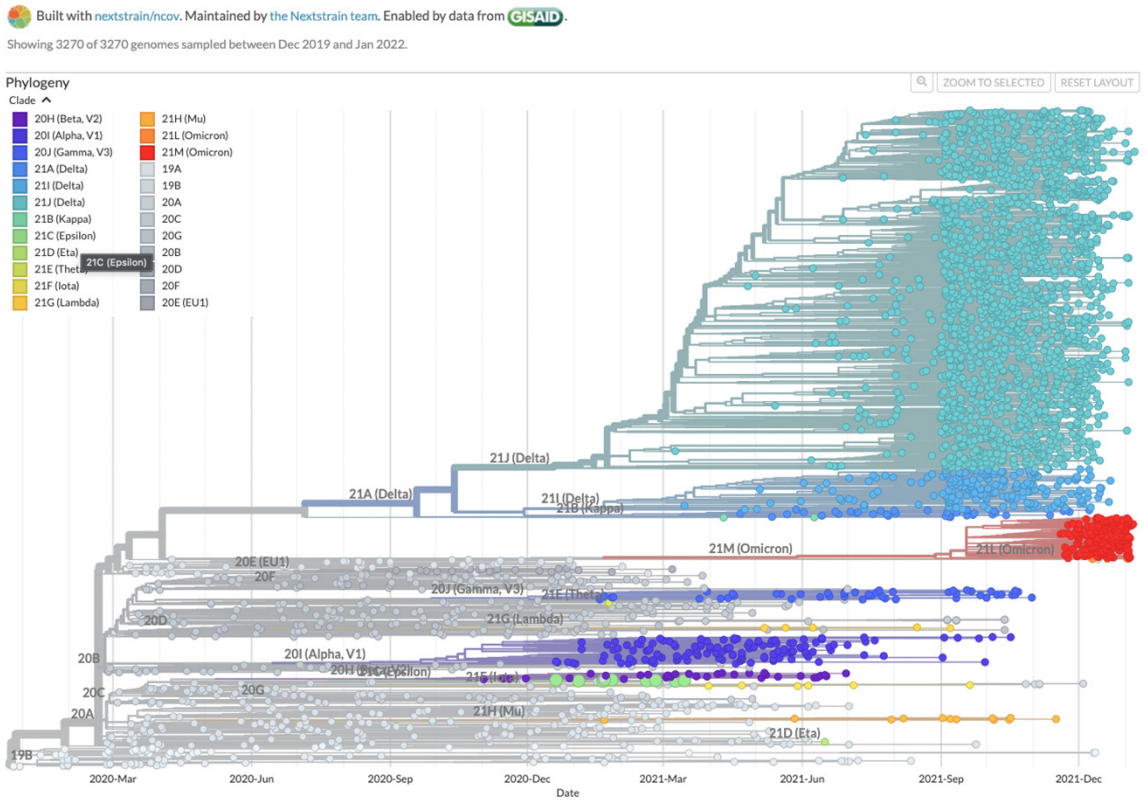
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1044481/Technical-Briefing-31-Dec-2021-Omicron_severity_update.pdf

Omicron Global Epidemiology Summary

1. Number of cases of COVID-19 has been increasing, largely driven by Omicron
2. Omicron is now present in almost every country
3. Omicron has a significant growth advantage over Delta
4. Relative risk of severe disease due to Omicron likely lower than for Delta
5. Large Omicron outbreaks are showing the potential to overwhelm health services in spite of reduced severity risk

SARS-CoV-2 will continue to evolve

Into 2022, SARS-CoV-2 will continue to evolve and more variants will emerge. Impact on the pandemic and countermeasures will be determined by their fitness, severity, immune susceptibility/escape



Immune pressure in the face of high transmission selects for variants with greater immune escape

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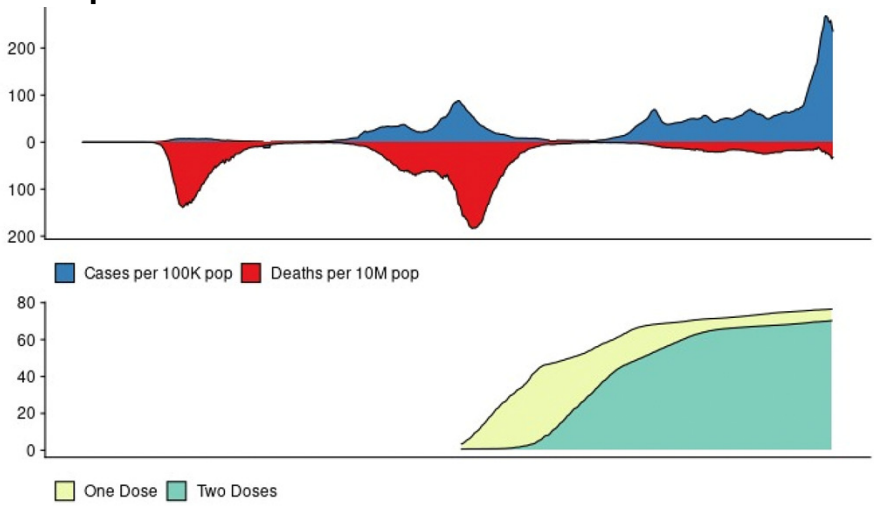
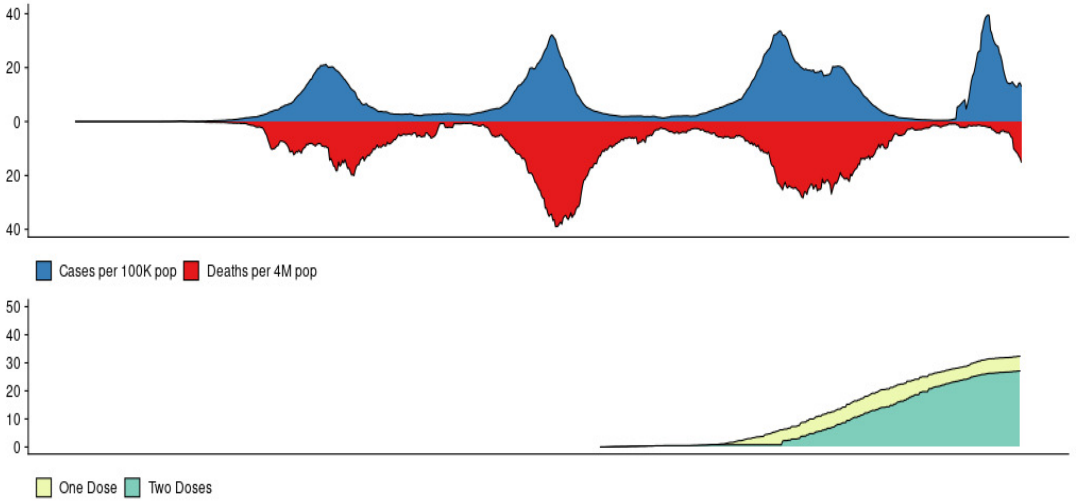
Positive impact of vaccination on severe disease & death is clear

Into 2022, decoupling of COVID-19 cases and deaths/severe disease as population immunity increases around the world; risk of additional variants continues, as long as high transmission

Example of higher vaccination coverage, high seroprevalence



Example of lower vaccination coverage; high seroprelence from previous infection



- Vaccination significantly reducing morbidity and mortality
- Vaccination reduces onwards transmission but is currently insufficient to bring R_t <1 in most countries

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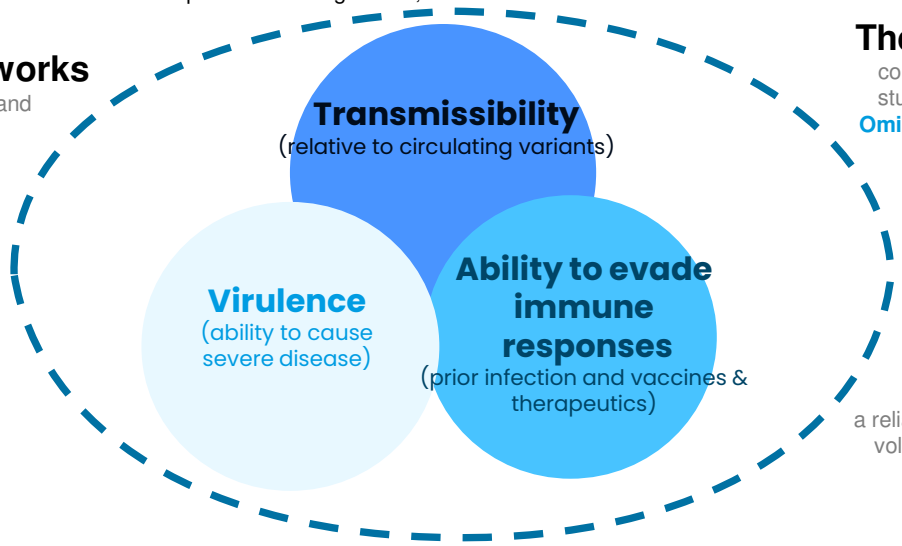
Assessment, monitoring, and adjustments to variants is critical

TAG for SARS-CoV-2 Virus Evolution
is assessing its effect on transmission, disease severity, vaccines, therapeutics and diagnostics, and the effectiveness of PHSMs

WG for Clinical Management Networks
is assessing impacts of VOCs on current vaccines and
WHO Global Clinical Platform for COVID

The Joint Advisory Group on Therapeutics Prioritization
is analyzing the possible effects on treatment of hospitalized patients.

WG on outpatient platform trials
is reviewing trial designs and challenges



The R&D Blueprint for Epidemics is
convening researchers to identify knowledge gaps, and studies needed to answer the most pressing questions.
Omicron variant assays & animal models study tracker

The WG on vaccines TPPs
is reviewing current desirable and minimum criteria for vaccines.

WHO BioHub system
a reliable, safe, and transparent mechanism to voluntarily share novel biological materials

TAG for COVID-19 Vaccine Composition*
Is assessing impacts of VOCs on current vaccines and determining whether changes to the composition of vaccines are needed.

SAGE on Vaccines & Immunization
is reviewing data to develop evidence based recommendations on the vaccination policies and target populations.

Thousands of researchers around the world are contributing data and expertise to the deliberations

*Interim Statement on COVID-19 vaccines in the context of the circulation of the Omicron SARS-CoV-2 Variant from the WHO Technical Advisory Group on COVID-19 Vaccine Composition (TAG-CO-VAC) https://www.who.int/news/item/11-01-2022-interim-statement-on-covid-19-vaccines-in-the-context-of-the-circulation-of-the-omicron-sars-cov-2-variant-from-the-who-technical-advisory-group-on-covid-19-vaccine-composition

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Data as of January 18, 2022

Overview of COVID-19 EUL'd vaccines as of 18 Jan 2022

Viral vectors

1. **VAXZEVRIA**
   Oxford - AstraZeneca
2. **COVISHIELD™**
   Serum Institute of India
3. **Janssen COVID-19 vaccine**
   Janssen

mRNA

1. **COMIRNATY®**
   Pfizer-BioNTech
2. **SPIKEVAX**
   Moderna

Protein sub-unit

1. **COVOVAX™**
   Serum Institute of India
2. **NUVAXOVID™**
   Novavax

Inactivated

1. **Sinopharm**
   Beijing Institute of Biological Products (BIBP)
2. **CoronaVac**
   Sinovac
3. **COVAXIN®**
   Bharat Biotech International

Source: WHO

Data as of January 18, 2022

Overview of COVID-19 EUL'd vaccines as of January 18, 2022

Platform	Vaccine	WHO EUL Holder	First NRA of record	WHO EUL issued
Viral vectors	1. VAXZEVRIA	AstraZeneca / University of Oxford	European Medicines Agency	15 April 2021
	2. COVISHIELD™	Serum Institute of India Pvt. Ltd.	Central Drugs Standard Control Organization	15 February 2021
	3. Janssen COVID-19 Vaccine	Janssen Infectious Diseases & Vaccines	European Medicines Agency	12 March 2021
mRNA	1. COMIRNATY®	Pfizer BioNTech	European Medicines Agency	31 December 2020
	2. SPIKEVAX	moderna	European Medicines Agency	30 April 2021
Protein sub-unit	1. COVOVAX™	Serum Institute of India Pvt. Ltd.	Central Drugs Standard Control Organization	17 December 2021
	2. NUVAXOVID™	novavax	European Medicines Agency	20 December 2021
Inactivated	1. VAXZEVRIA	Sinopharm	National Medicinal Products Association	07 May 2021
	2. CoronaVac	SINOVAC	National Medicinal Products Association	01 June 2021
	3. COVAXIN®	Bharat Biotech	Central Drugs Standard Control Organization	03 November 2021

Link to SAGE product-specific recommendation : ***https://www.who.int/groups/strategic-advisory-group-of-experts-on-immunization/covid-19-materials***

Source: WHO: https://extranet.who.int/pqweb/sites/default/files/documents/Status_COVID_VAX_23Dec2021.pdf

Availability of Evidence: Number of VEff Studies on Omicron

Total VEff Studies = 14

	Infection (n=13)	Symptomatic Disease (n=13)	Severe Disease/ Hospitalization (n=4)
Primary series			
AstraZeneca	1	2 (1 compares to Delta)	
Moderna	3	1	
Pfizer	5 (1 with crude VE)	2 (1 compares to Delta)	2 (1 with crude VE)
Booster series			
AstraZeneca (3 doses)		1 (compares to Delta)	
AstraZeneca + Pfizer booster		1	
AstraZeneca + Moderna booster		1	
Janssen (2 doses)			1
Moderna (3 doses)	1		
Pfizer (3 doses)	1	3 (1 compares to Delta)	
Pfizer + Moderna booster		1	
Any mRNA + Moderna booster	1		
AstraZeneca/Moderna/Pfizer + mRNA Booster	1	1	1

No data available for:

- Beijing CNBG-BBIBP-CorV
- Bharat-Covaxin
- Sinovac-CoronaVac
- Anhui ZL – Recombinant
- Gamaleya – Sputnik V
- Novavax - Covavax

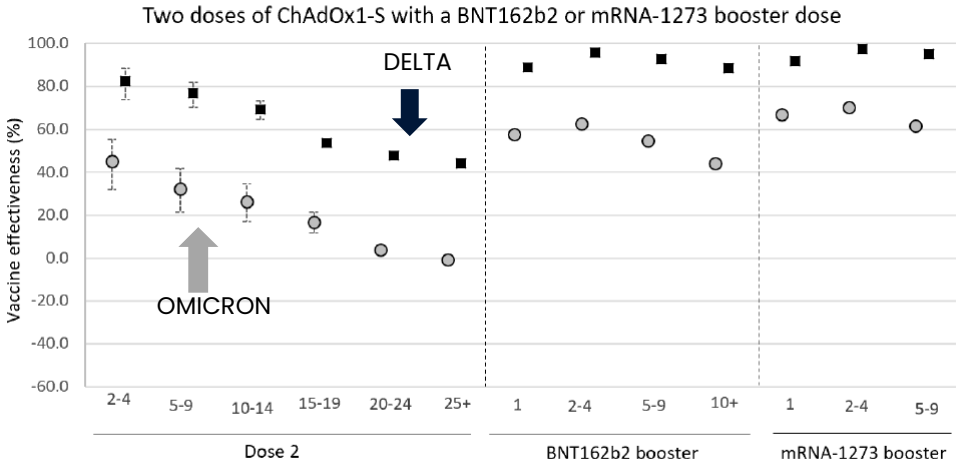
Only booster data available for:

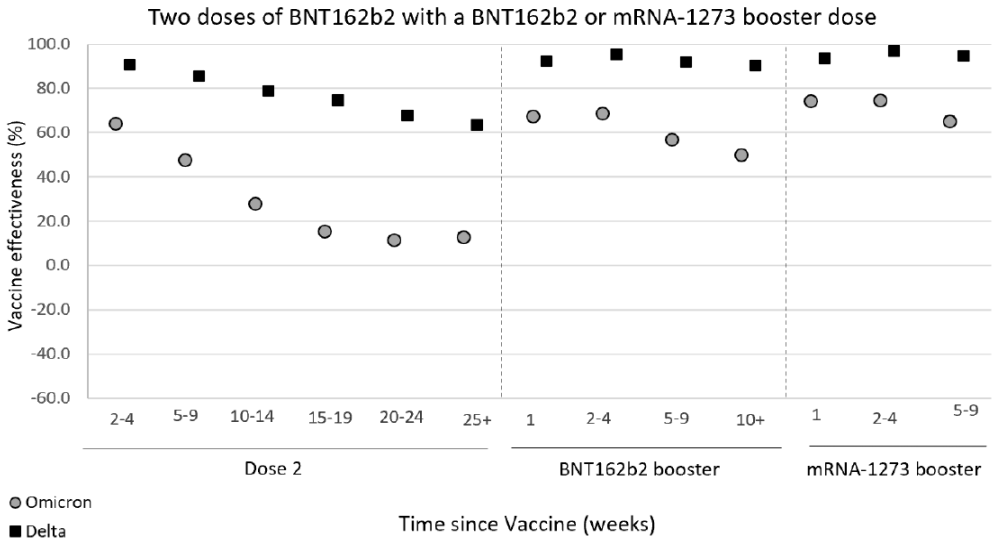
- Janssen – Ad26.COV2.S

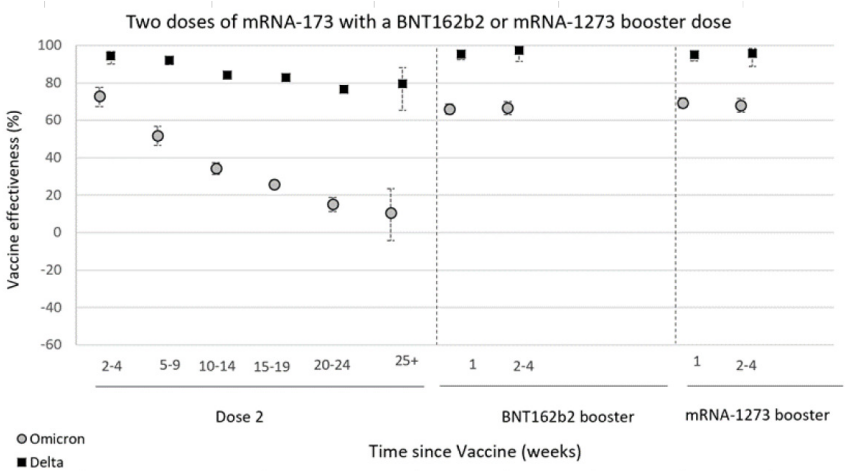
Countries

- UK-England-Scotland
- Denmark
- South Africa
- US
- Canada

England: VEff against symptomatic disease for AZ, Moderna & Pfizer







- AZ
  - 2 dose VE <20% by week 15+ (compared to 40-60% for Delta)
  - Booster dose with mRNA increases VE to 40-70%
- Pfizer-BNT
  - 2 dose VE <20% by week 15+ (compared to 60-80% for Delta)
  - Booster dose with mRNA increases VE to 40-80%, but with waning over time for Pfizer booster, minimal for Moderna
- Moderna
  - 2 dose VE <~20% by week 20+ (compared to ~80% for Delta)
  - mRNA booster dose increases to 60-70% (compared to >90% for Delta)

UKHSA. (2022). *COVID-19 vaccine surveillance report - week 2*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1046431/Vaccine-surveillance-report-week-2-2022.pdf

Vaccine effectiveness against hospitalization (Omicron) (England, 31 Dec 2021)

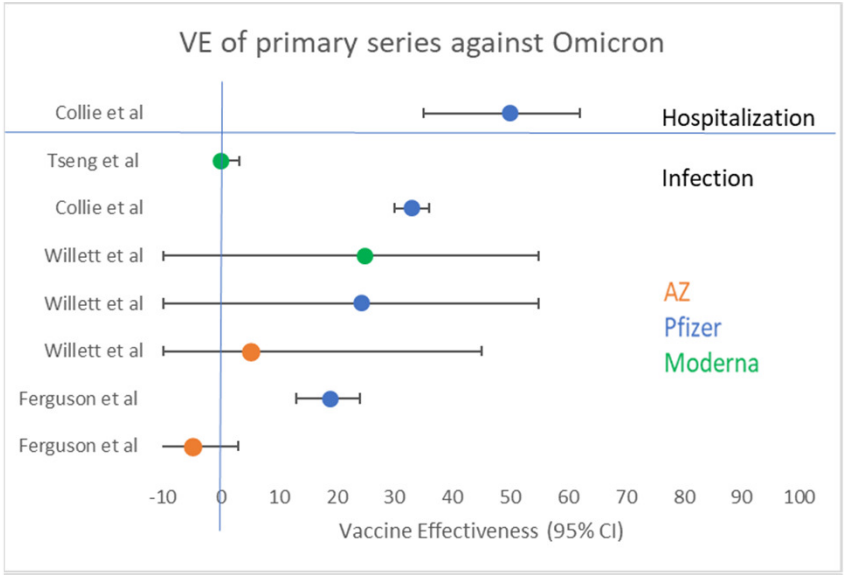
Table 6: Vaccine effectiveness against hospitalisation for Omicron (all vaccine brands combined). OR = odds ratio, HR = hazard ratio, VE = vaccine effectiveness (CI=Confidence interval)

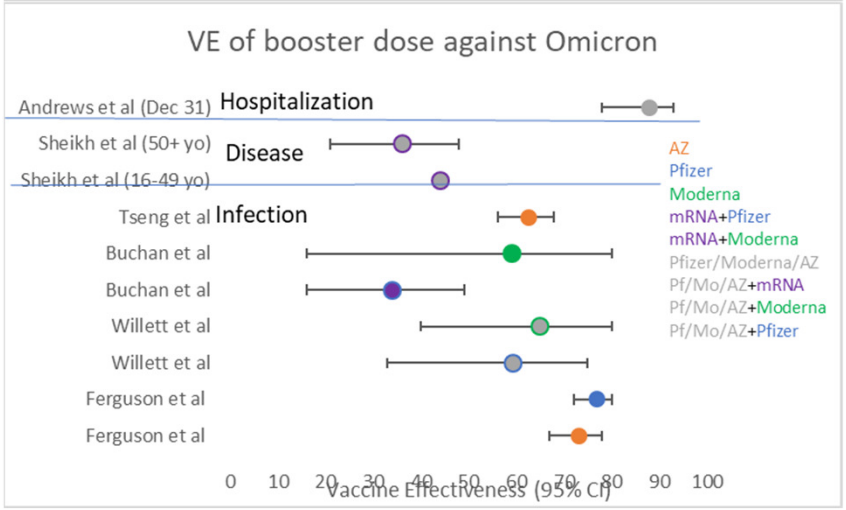
Dose	Interval after dose	OR against symptomatic disease (95% CI)	HR against hospitalisation (95% CI)	VE against hospitalisation (95% CI)
1	4+ weeks	0.74 (0.70-0.77)	0.65 (0.30-1.42)	52% (-5-78)
2	2-24 weeks	0.82 (0.80-0.84)	0.33 (0.21-0.55)	72% (55-83)
2	25+ weeks	0.98 (0.95-1.00)	0.49 (0.30-0.81)	52% (21-71)
3	2+ weeks	0.37 (0.36-0.38)	0.32 (0.18-0.58)	88% (78-93)

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1044481/Technical-Briefing-31-Dec-2021-Omicron_severity_update.pdf

Primary Series and Booster VE

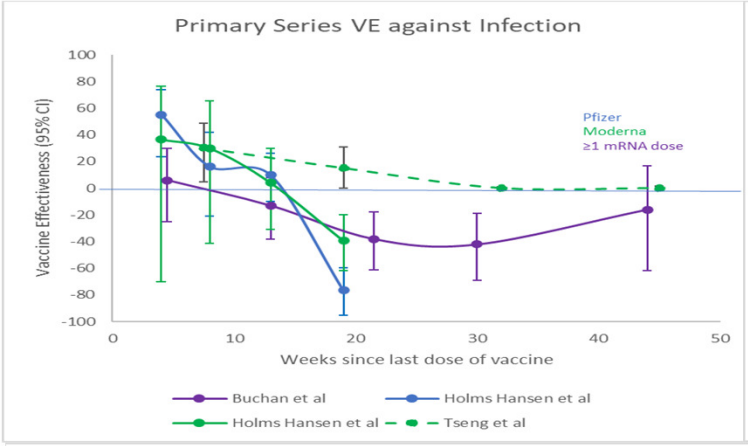
- Primary Series
  - 4 studies with VE estimates after primary series (2+ w)
  - Only 1 looking at hospitalization
- Booster Dose
  - 7 studies with VE estimates 1-2 weeks post booster dose
    - 1 not graphed because provides relative VE comparing 3 to 2 dose recipients not unvaccinated
  - Only 1 looking at hospitalization
  - 1 study evaluated VE in immunocompromised
    - 3 doses of Moderna VE=11.5 (0-66.5%)
- Almost all studies compare Delta to Omicron→Omicron
  - VE always lower than Delta
  - VE higher against severe than milder disease/infection

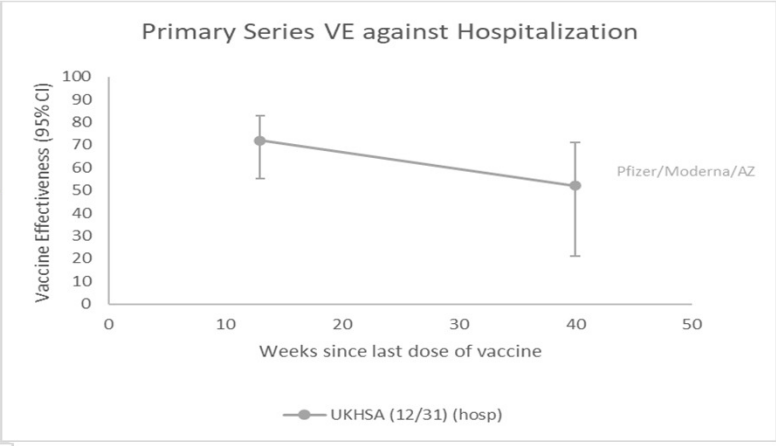


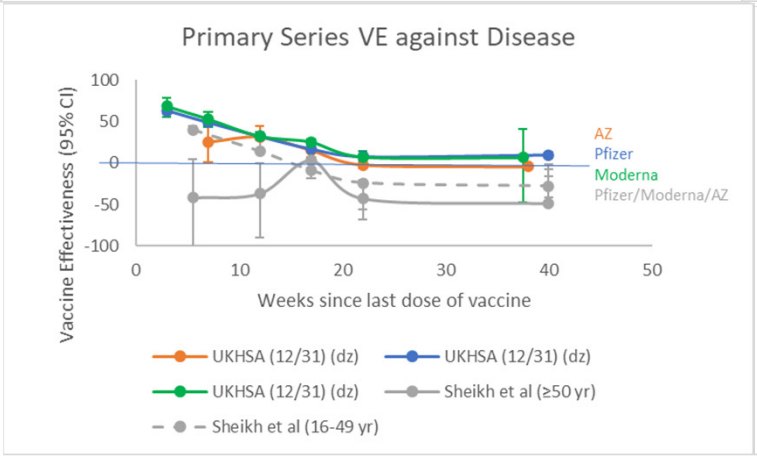


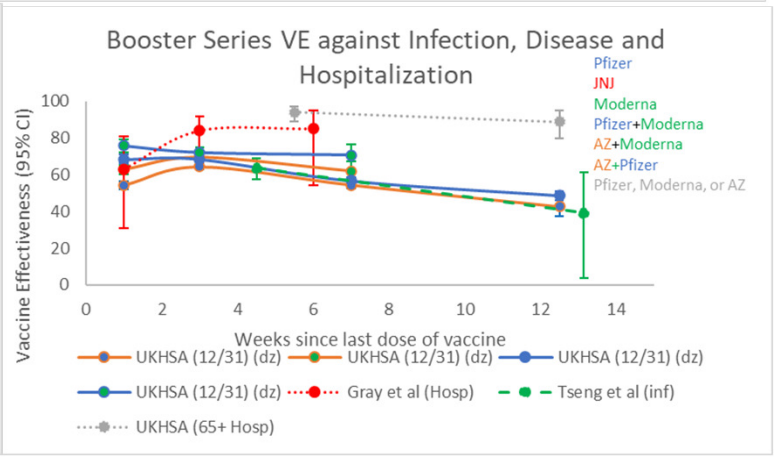
Duration of Protection of Primary Series and Booster Dose

- 6 studies of primary series
- 4 studies of booster dose
- 2 studies hospitalization
- Trend to date
  - Primary series initial protection against infection becomes near 0 over time (15+ weeks)
  - VEff against hospitalization better BUT falls over time
  - Booster VEff better against disease and hospitalization but potential waning









Denmark: Secondary infection in the household (Dec 2021)

Higher relative risk of infection among HH members for Omicron index cases vs Delta index cases, particularly for vaccinated HH individuals

Odds Ratio	Unvaccinated	Completed primary series	Booster vaccinated
Omicron households	1.17 (0.99 -1.38)	2.61 (2.34 – 2.90)	3.66 (2.65 – 5.05)
Delta households	Ref	Ref	Ref

Number of observations: N=27,874

Source: https://www.medrxiv.org/content/10.1101/2021.12.27.21268278v1.full.pdf

Neutralization Summary, Omicron Studies

Total Studies = 47

Primary platform	Primary Series Vaccine	# of studies Primary Series	# of studies homologous boost	# of studies heterologous boost
mRNA	Any mRNA	5	5	
	Moderna/mRNA 1273	14	6	1 (Pfizer boost)
	Pfizer/BioNtech Comirnaty	27	16	1 (Janssen boost)
Viral vector	AstraZeneca/AZD1222, SII/Covishield, SK Bio, etc	7		
	Janssen/Ad26.COV 2.S	6		1 (Moderna boost)
	CanSino/Convidicea			
	Gamelaya/Sputnik V	2	1 (Sputnik Light boost)	
Inactivated	Any inactivated		1	
	Sinopharm/BBIBP	3	3	2 (Anhui boost)
	Sinovac-CoronaVac	5	2	2 (Pfizer boost)
	Bharat Biotech/Covaxin			
	Chumakov/CoviVac			
Protein subunit	Anhui Zhifei/ZF2001		2	
	Novavax/NVN-CoV2372	1	1	
	Russia State Research Center/EpiVacCorona			

Fold Reductions in Neutralizing Antibodies, Primary Series

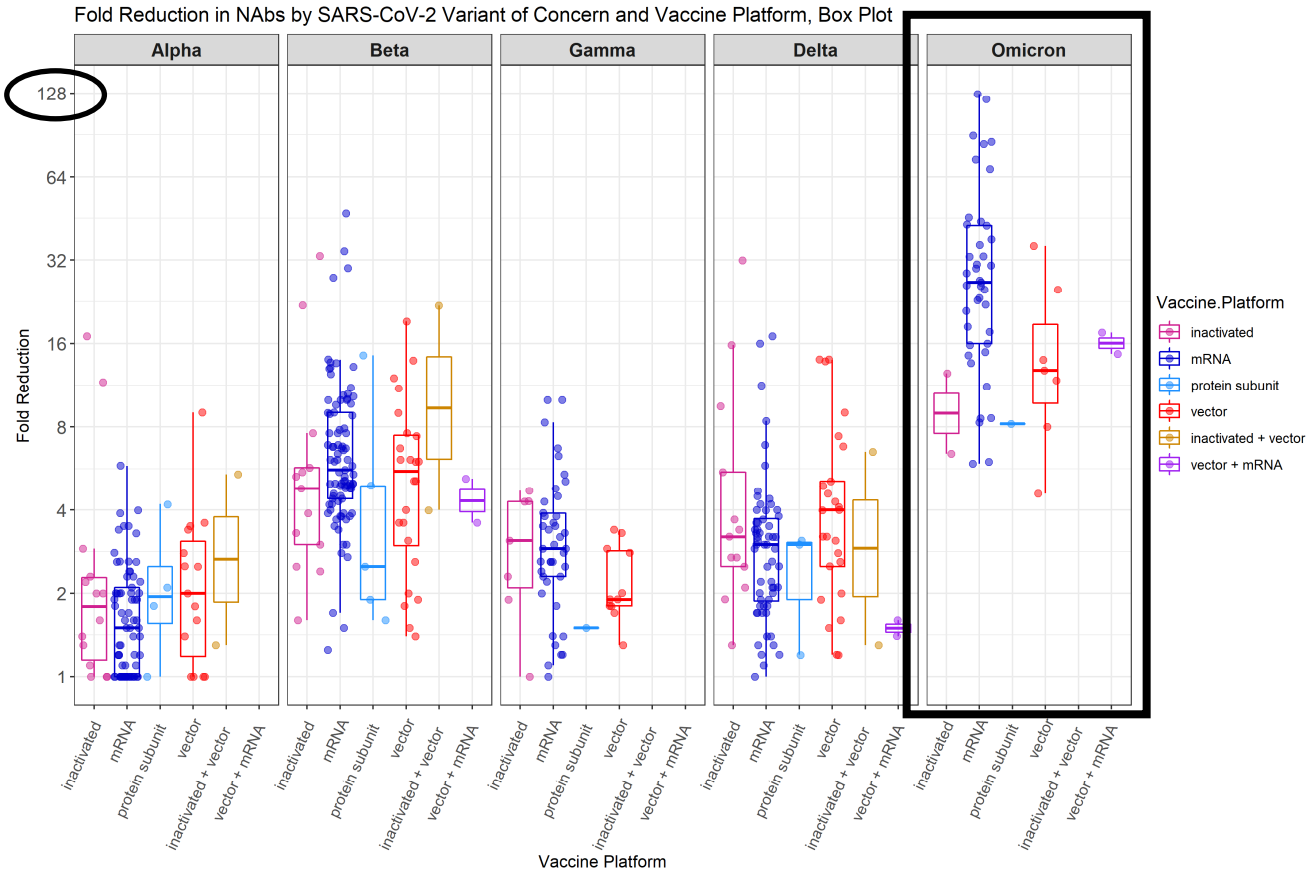
By vaccine platform and variant

Inclusion criteria:

- Reference strain is ancestral strain (non-VOC)
- Samples collected within 6 months of complete vaccination
- Fold-reductions reported, or raw data provided for calculations

Omicron Results:

Vaccine	Fold-Reduction (IQR across all studies)	# Studies
Pfizer BioNTech - Comirnaty	18-44	23
Moderna-mRNA-1273	16-43	14
AstraZeneca-Vaxzevria	13-31	4
Gamaleya – Sputnik V	12	1
Janssen-Ad26.COV2.S	4.6-8	2
Novavax - Covavax	8	1
Not plotted (all or most samples below LOD)		
Janssen-Ad26.COV2.S		4
AstraZeneca-Vaxzevria		3
Pfizer BioNTech - Comirnaty		4
Sinopharm		3
Gamaleya-Sputnik V		1
Sinovac-CoronaVac		3



Fold Reductions in Neutralizing Antibodies, Boosters

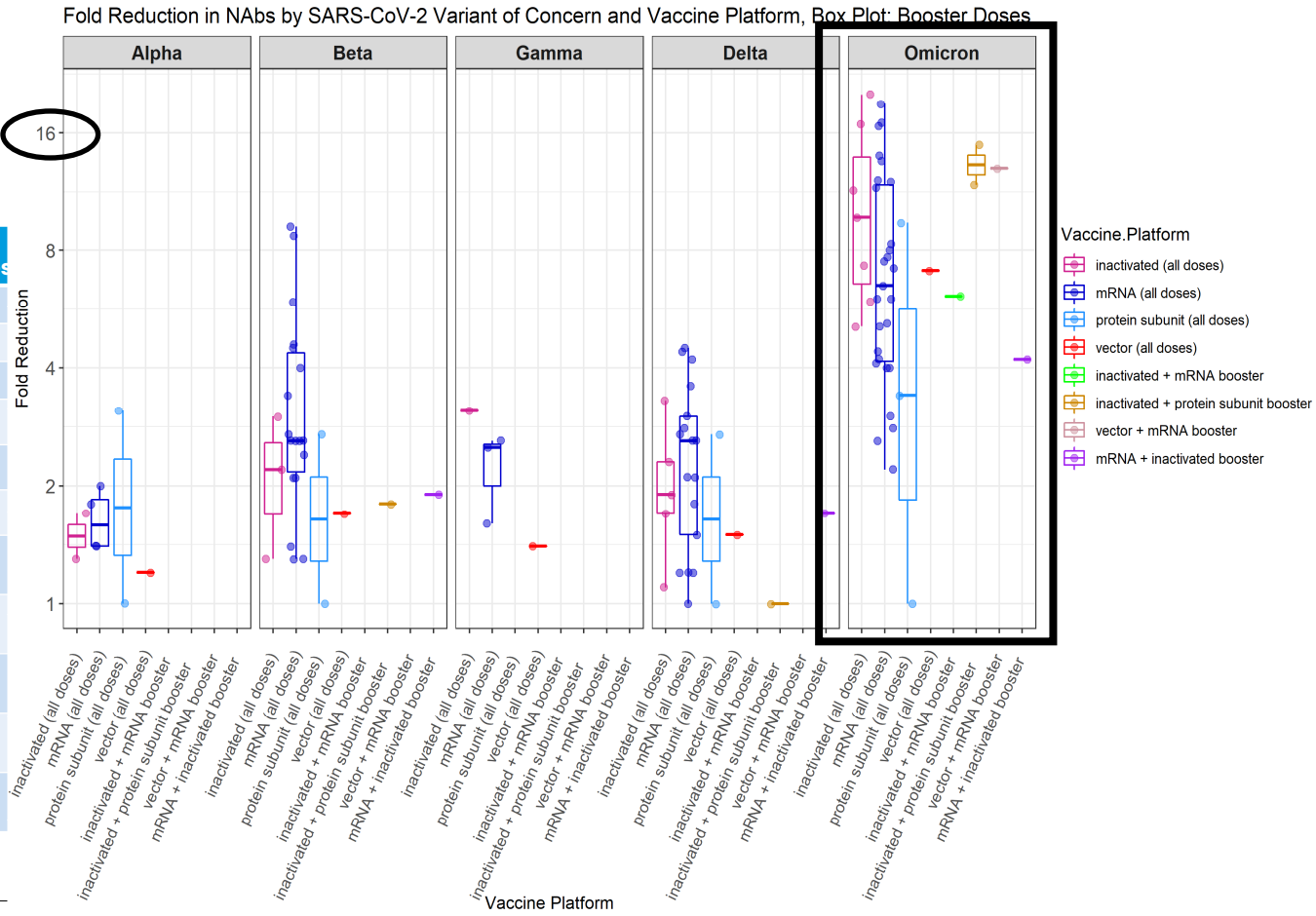
By vaccine platform and variant

Inclusion criteria:

- Reference strain is ancestral strain (non-VOC)
- samples collected within 6 months of complete vaccination
- Fold-reductions reported, or raw data provided for calculations

Omicron Results:

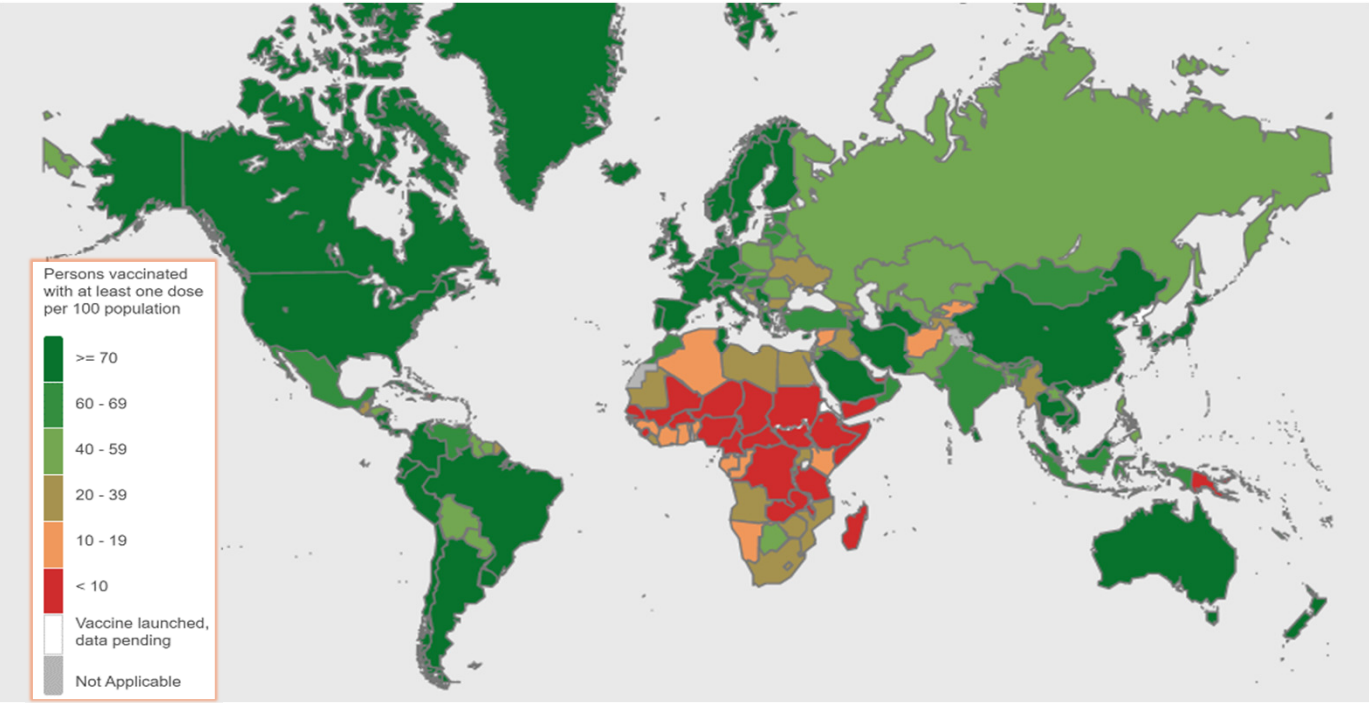
Vaccine	Fold-Reduction (IQR all studies)	# Studies
Pfizer BioNTech-Comirnaty (3 doses)	4-10	16
Moderna-mRNA-1273 (3 doses)	4-14	6
Beijing CNBG-BBIBP-CorV (3 doses)	6-20	3
Anhui ZL–Recombinant (3 doses)	0.3-9	2
Novavax-Covavax (3 doses)	3	1
Sinovac-Coronavac (3 doses)	7-17	3
Janssen-Ad26.COV2.S + Moderna-mRNA-1273 booster	13	1
Beijing CNBG-BBIBP-CorV + Anhui ZL – Recombinant booster	12-15	2
Gamaleya-Sputnik V + Gamaleya-Sputnik Light booster	7	1
Pfizer BioNTech-Comirnaty + Janssen-Ad26.COV2.S booster	4	1
Sinovac-Coronavac + Pfizer BioNTech-Comirnaty	6	1



9.7 billion doses of COVID-19 vaccine have been administered globally as of Jan. 17, 2022

DATA AS OF JAN 17, 11:00 AM CET

Persons vaccinated with at least one COVID-19 dose per 100 population



Note: The designations employed, and the presentation of these materials do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory 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.

- **9.7M vaccine doses** have been administered
- **34M doses** are administered every day as of Jan. 10, 2022
- Immunization programmes **have not yet started in 2** countries, economies & territories

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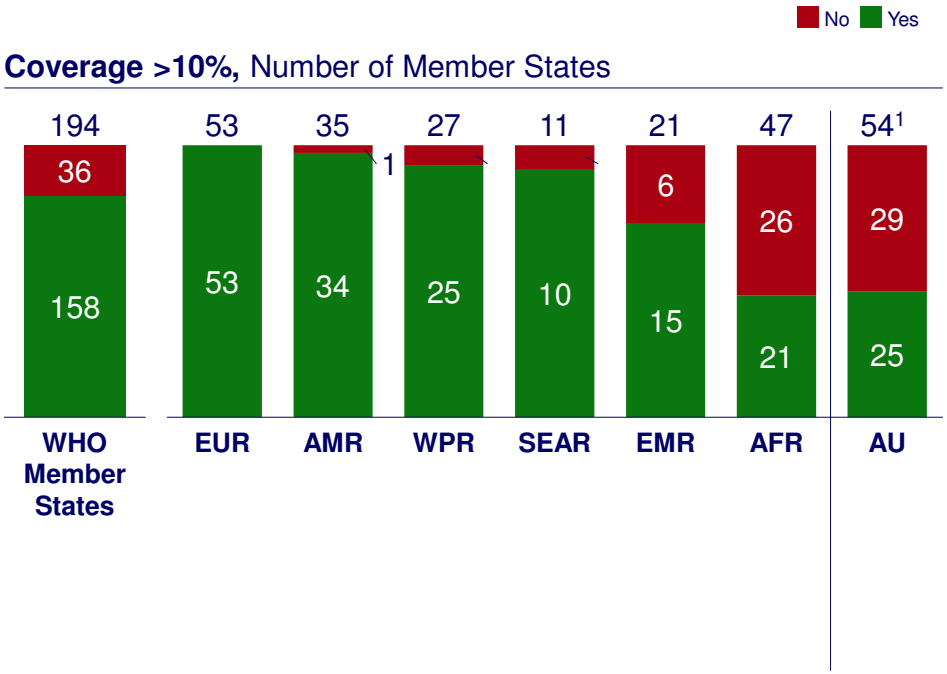
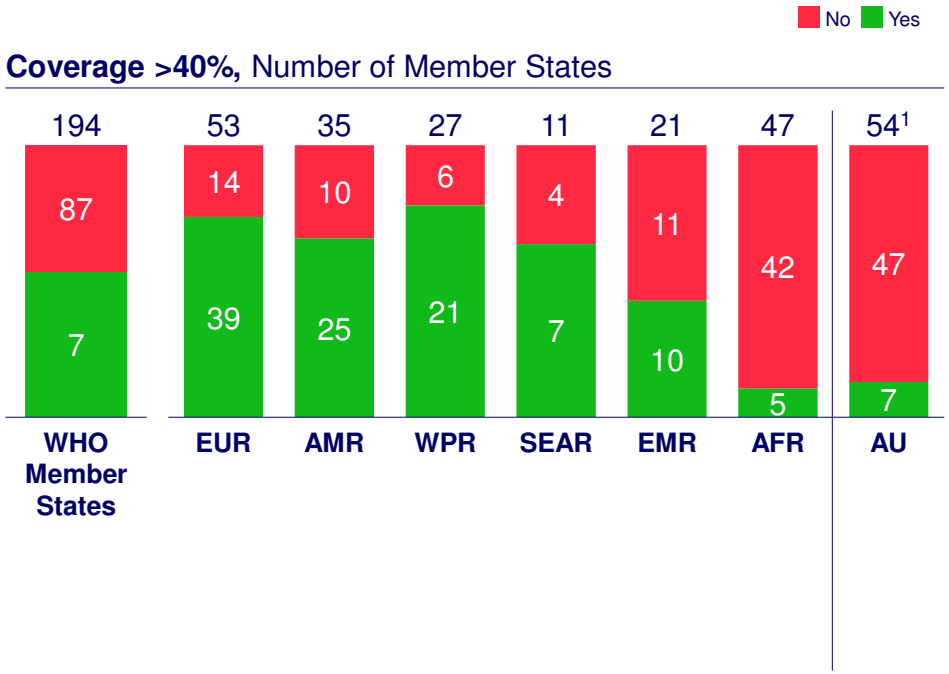
36 WHO Member States have vaccinated less than 10% of their population, and 87 less than 40% as of Jan. 17, 2022

DATA AS OF JAN 17, 11:00 AM CET

Detailed in next page

Share of WHO Member States with coverage of at least 10/40%





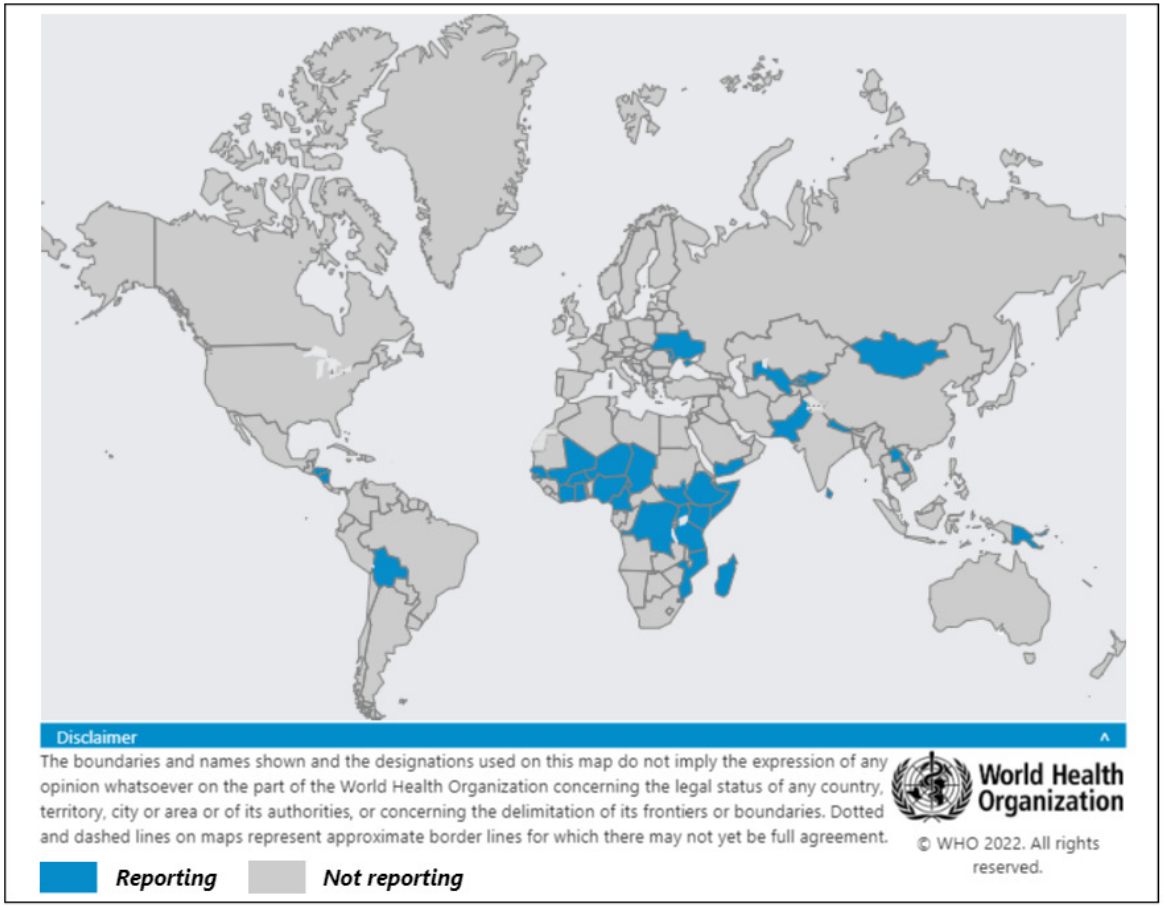
1. No data available for Sahrawi Arab Democratic Republic

Source: WHO COVID-19 Dashboard

World Health Organization

DATA AS OF 2021-12-22 19:52:36 UTC

Overview of AMC participants reporting on 60+ age group vaccination coverage



Aggregate view across reporting AMC participants

41	Number of AMC participants reporting on 60+ age group vaccination coverage
82.1M	Number of individuals aged 60+ in reporting AMC participants
24%	Percent of individuals aged 60+ in reporting AMC participants of total aged 60 or over in all AMC
18.6M	Number of individuals aged 60+ in reporting AMC participants are fully vaccinated

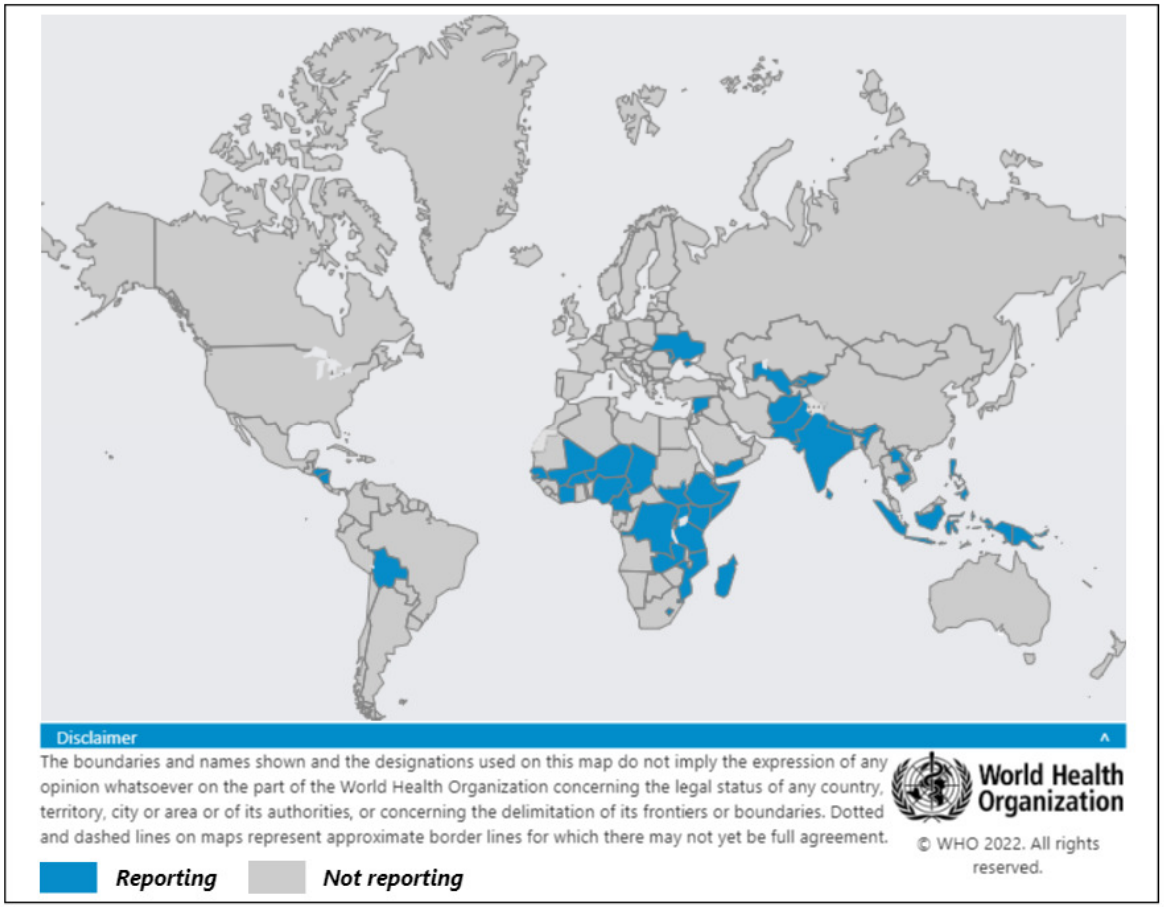
Breakdown view by WHO region

Region	rAMC	% of reg. 60+ pop. in reporting AMC	% of 60+ pop. in rAMC fully vaccinated
AFR	21	75%	12%
AMR	5	76%	59%
EMR	3	46%	25%
EUR	5	96%	23%
SEAR	3	3%	58%
WPR	4	5%	32%
Total	**41**	**24%**	**23%**

Sources: *eJRF and other monthly regional reporting systems* | ***Notes:*** *AFR collects target group data in a different format (only total doses administered) and is not included in this analysis, unless reported via eJRF.*

DATA AS OF 2021-12-22 19:52:36 UTC

Overview of AMC participants reporting on healthcare worker vaccination coverage



Aggregate view across reporting AMC participants

48	Number of AMC participants reporting on healthcare worker vaccination coverage
17.1M	Number of healthcare workers in reporting AMC participants
79%	Percent of healthcare workers in reporting AMC participants of total healthcare workers in all AMC
101.0M	Number of healthcare workers in reporting AMC participants fully vaccinated

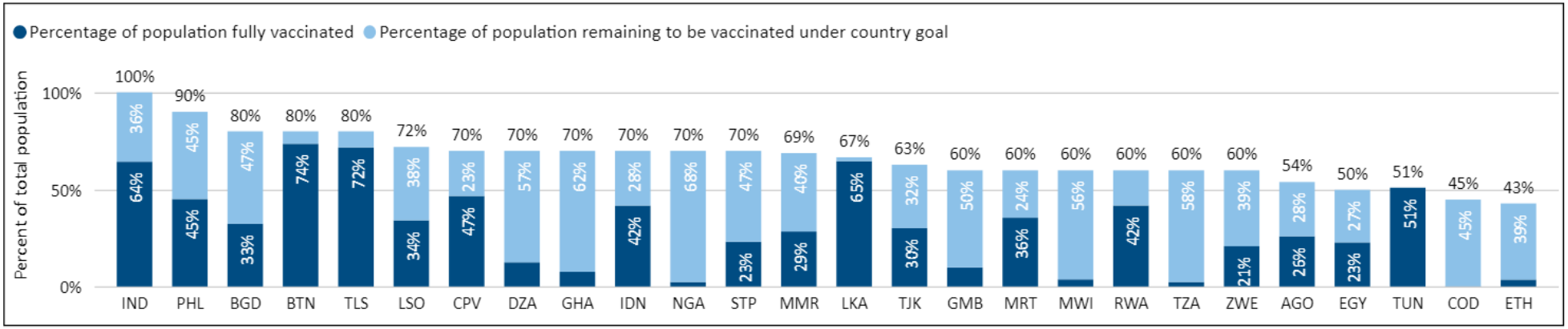
Breakdown view by WHO region

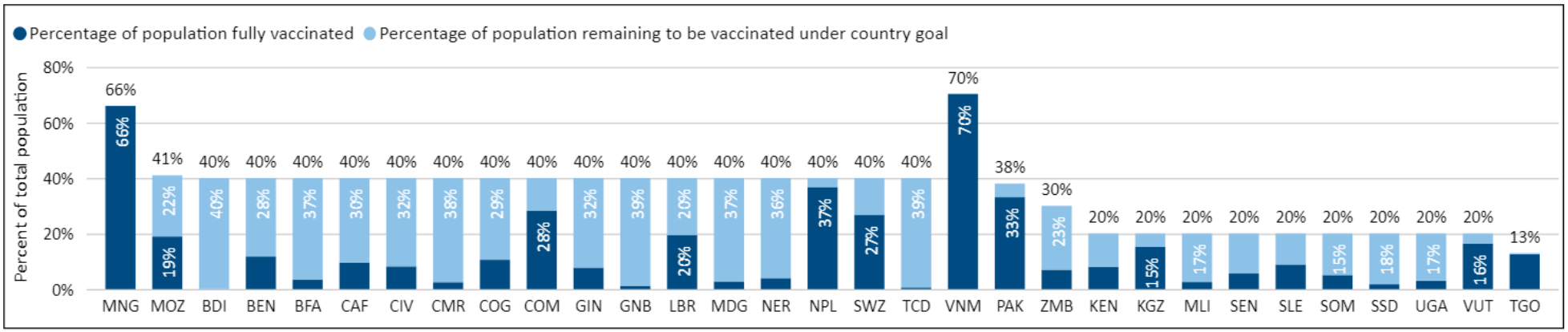
Region	rAMC	% of reg. HCW pop. in reporting AMC	# of HCWs fully vaccinated
AFR	24	73%	1,488,670
AMR	6	84%	369,991
EMR	5	66%	1,840,752
EUR	4	96%	1,019,449
SEAR	5	88%	94,512,463
WPR	4	50%	1,764,032
Total	**48**	**79%**	**100,995,357**

Sources: *eJRF and other monthly regional reporting systems; ILO health workforce data* | ***Notes:*** *AFR collects target group data in a different format (only total doses administered) and is not included in this analysis, unless reported via eJRF.*

DATA AS OF 2022-01-13 17:47:51 UTC

Progress against individual country population coverage targets across AMC participants for which targets have been captured





Source: *National Deployment and Vaccination Plans (NDVPs) & media reports; WHO COVID-19 Dashboard*

Thank you