Omicron and COVID-19 vaccines: Efficacy and safety

Omicron variant: Public Health, Clinical, and Vaccine implications

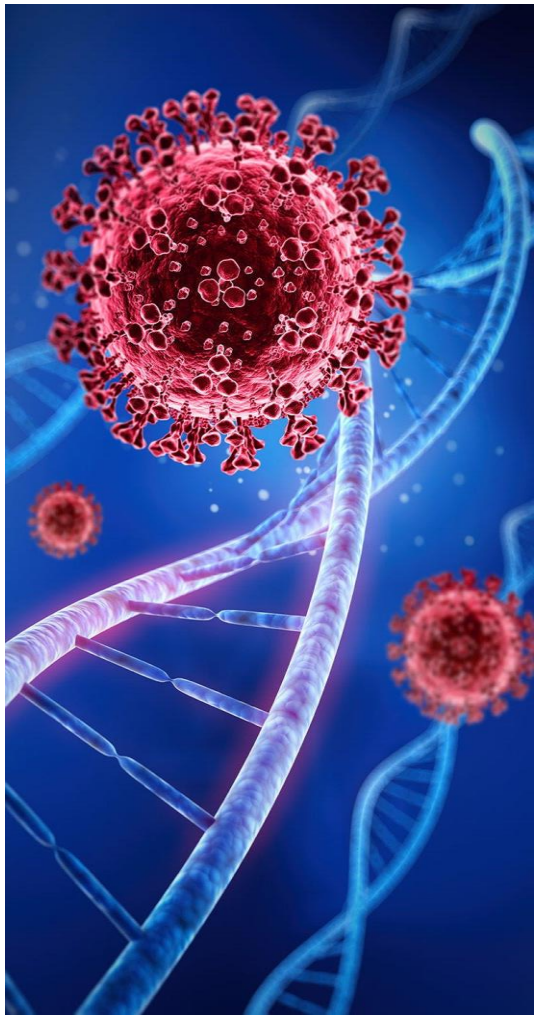
PAHO | 10 February 2022

PAHO Pan American Health Organization

World Health Organization Americas
REGIONAL OFFICE FOR THE Americas

Overview

1. Current epidemiological situation
2. COVID-19 vaccination rates worldwide and in the Americas
3. COVID-19 vaccines against Omicron
4. How we can stop the emergence of new variants of concern



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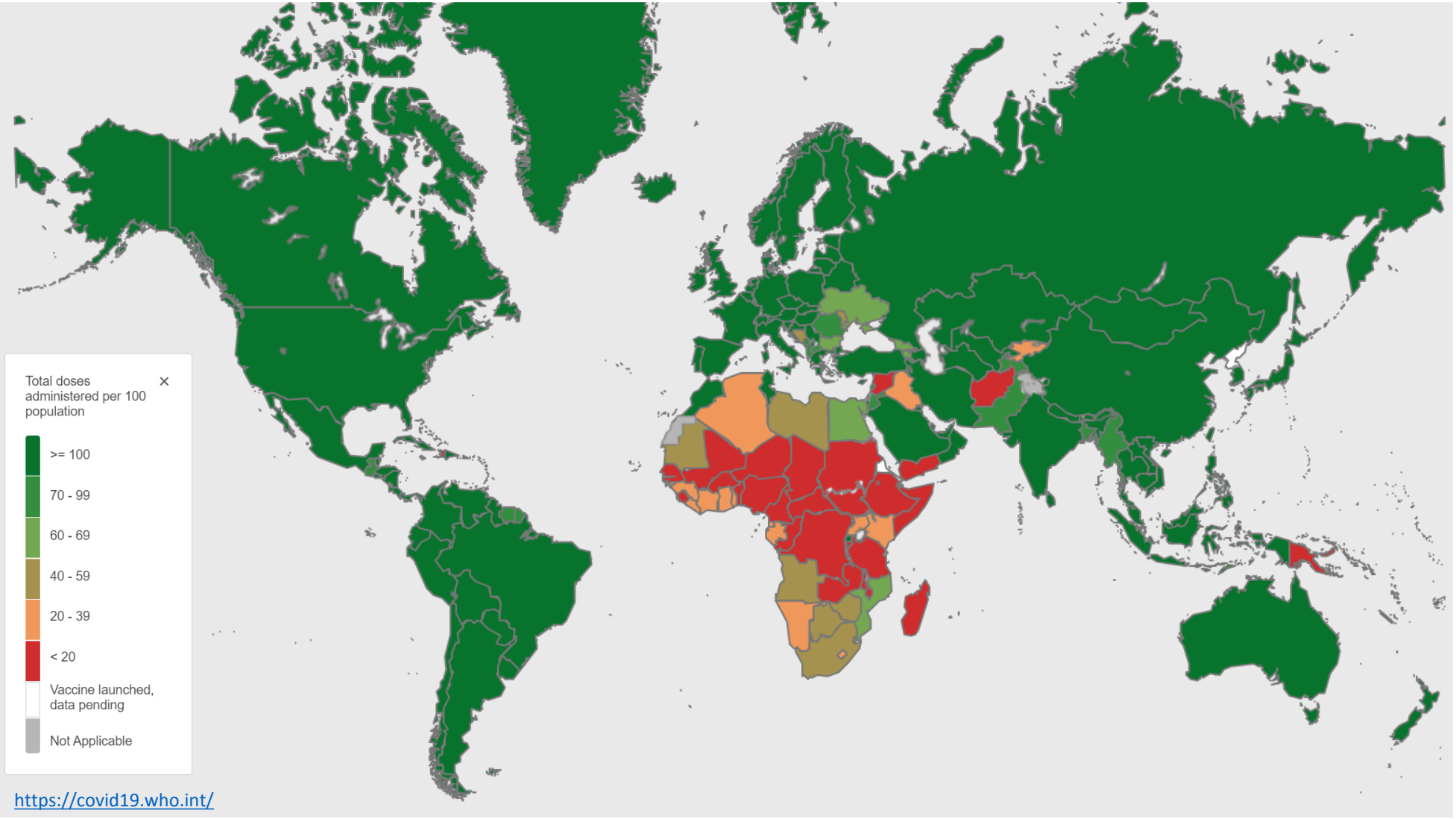
COVID-19 vaccination at the global level



10,095,615,243
vaccine doses administered

4,807,478,149
persons vaccinated with at least one dose

4,159,125,676
persons fully vaccinated

https://covid19.who.int/

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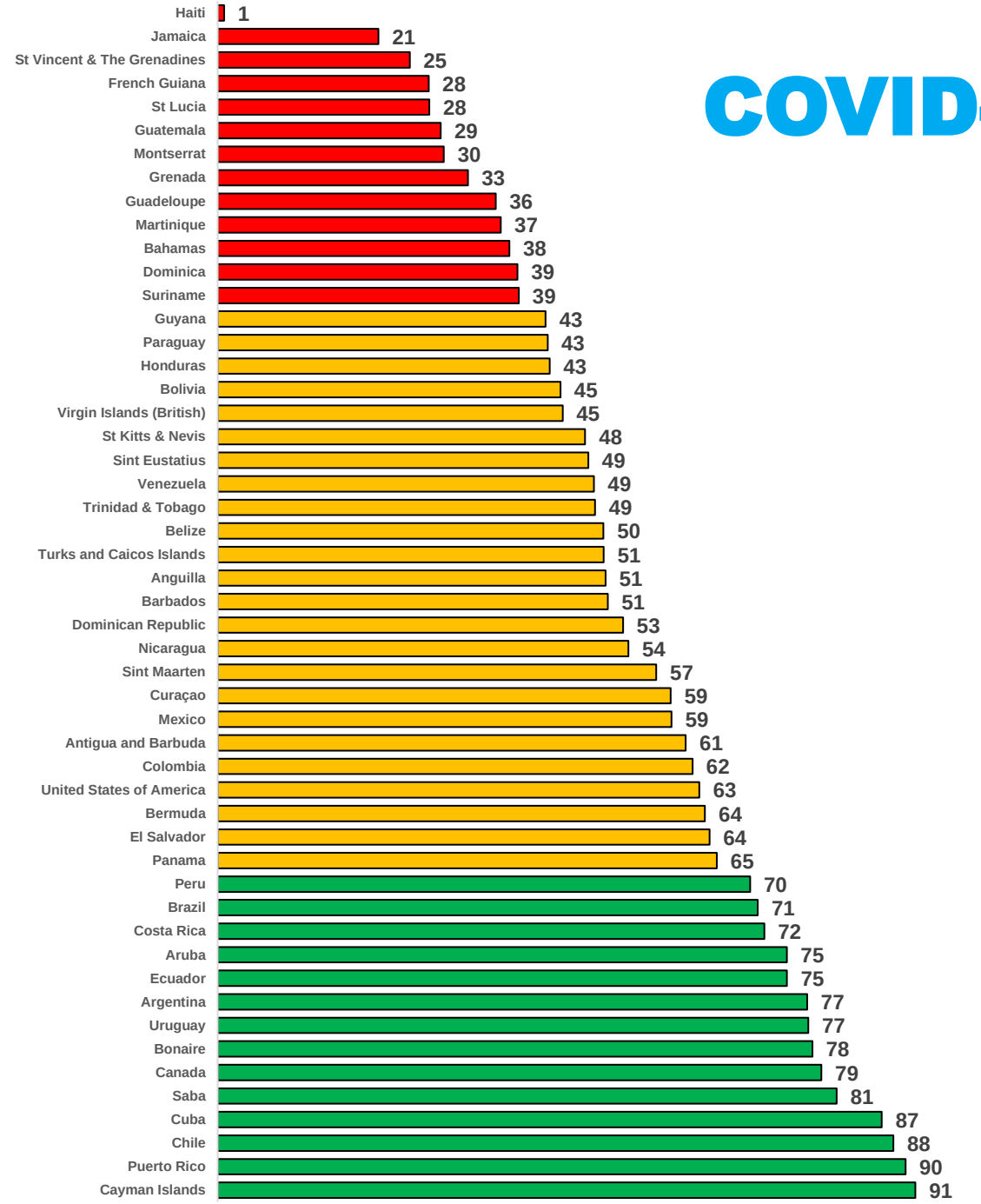
COVID-19 vaccination in the Americas



- **51/51** countries and territories introduced COVID-19 vaccines.
- **>1.58 billion** doses were administrated to date.
- In LAC countries, **62.9%** of the population received a complete vaccination series against COVID-19.

- **Nonetheless**:
  - 14 countries and territories (mostly in the Caribbean) report coverage rate <40%.
  - Haiti reports a coverage rate <10%
  - In low/middle income countries, >50% of the population received 0 doses of COVID-19 vaccine.

https://ais.paho.org/imm/IM_DosisAdmin-Vacunacion.asp | https://www.paho.org/en/news/22-9-2021-health-inequity-continues-fuel-covid-19-pandemic-and-prolongs-efforts-end-it

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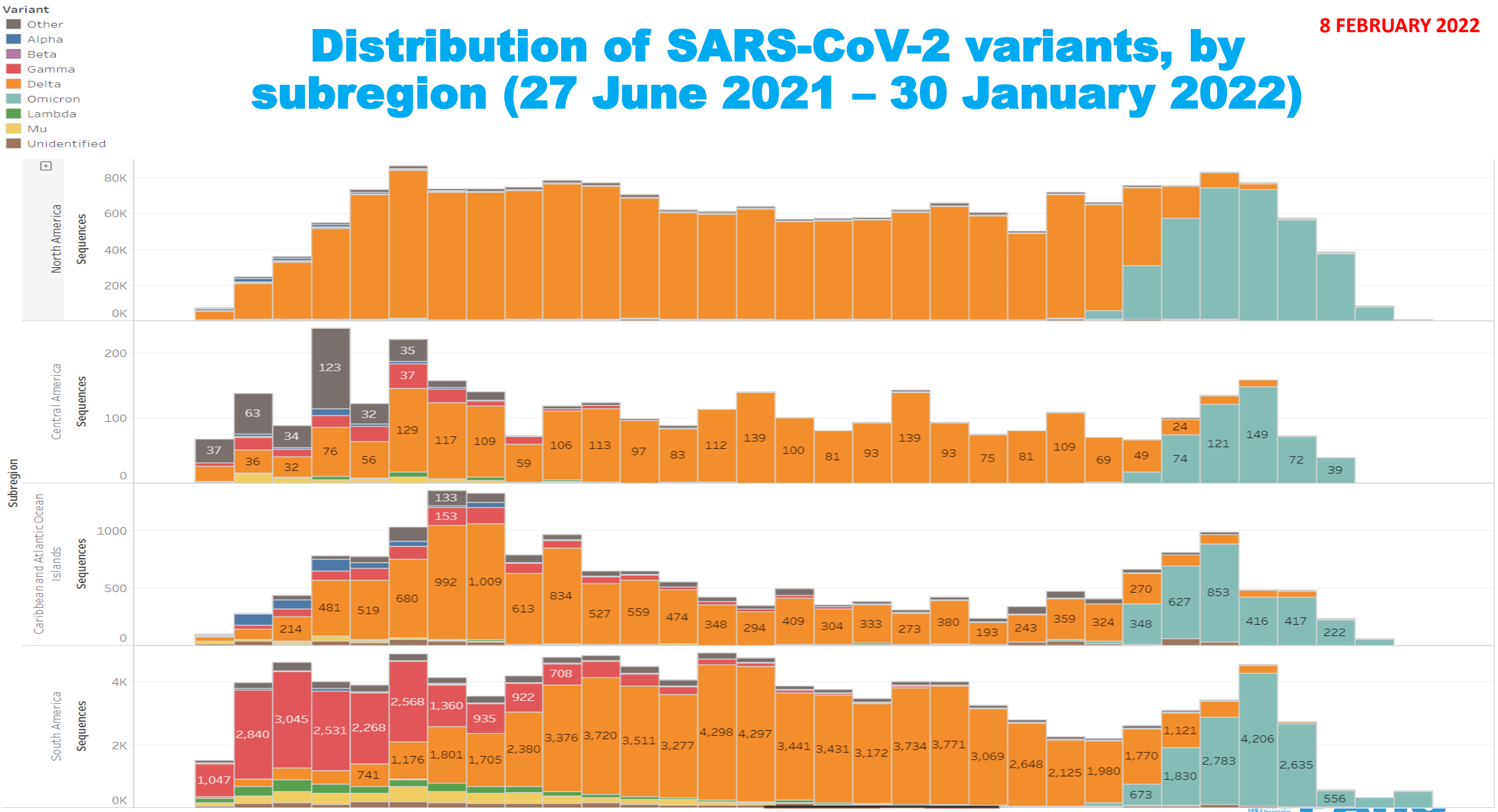
Distribution of SARS-CoV-2 variants, by subregion (27 June 2021 – 30 January 2022)



https://www.paho.org/en/topics/influenza-and-other-respiratory-viruses/covid-19-genomic-surveillance-regional-network

COVID-19 vaccine effectiveness against VOC

	WHO Emergency Use Listing (EUL) Qualified Vaccines[+]								Vaccines without WHO EUL[+]	
	AstraZeneca-Vaxzevria/SII - Covishield	Beijing CNBG-BBIBP-CorV	Bharat-Covaxin	Janssen-Ad26.COV 2.S	Moderna-mRNA-1273	Novavax-Covavax	Pfizer BioNTech-Comirnaty	Sinovac-CoronaVac	Anhui ZL-Recombinant	Gamaleya-Sputnik V
Alpha, Beta, Gamma										
Summary of VE*	*(see update from 11 January 2022 for details of vaccine performance against Alpha, Beta, and Gamma variants of concern*									
Delta[9]										
Summary of VE*	Protection retained against severe disease; possible reduced protection against symptomatic disease and infection									
- Severe disease[+]	↔3	-	-	↓1	↔ 4	-	↔ 7	-	-	-
- Symptomatic disease	↔to↓↓6	-	↓1	-	↔2	-	↔ to ↓5	-	-	-
- Infection	↔to ↓4	-	-	↓↓↓1	↔ 5	-	↔ to ↓5	-	-	-
Neutralization	↓13	↓2	↔ to ↓3	↔ to ↓↓9	↓14	↓1	↔ to ↓39	↓to↓↓8	↔ to ↓2	↓to↓↓3
Omicron										
Summary of VE*	Reduced protection against infection and symptomatic disease; possible reduced protection against severe disease									
- Severe disease[+]	-	-	-	-	-	-	↓↓/↓↓↓2	-	-	-
- Symptomatic disease	↓↓↓1	-	-	-	↓↓1	-	↓↓↓1	-	-	-
- Infection	-	-	-	-	↓↓↓2	-	↓↓↓2	-	-	-
Neutralization	↓↓↓5	-	-	↓↓2	↓↓↓14	↓↓1	↓↓↓23	↓↓-↓↓↓2	-	↓↓↓1

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https://www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19---25-january-2022

Available evidence – primary series

- To date, there are **14 vaccine effectiveness studies** against the Omicron variant.

- Early data suggest :
  - A **reduction in neutralizing titers** against Omicron in individuals who received a primary vaccination series or in those who have had prior SARS-CoV-2 infection.
  - The protection of the primary series against **infection** trends towards 0 within 15 weeks.
  - The protection of the primary series against **severe disease** is higher compared to mild/asymptomatic disease.
  - **No data** on the long-term duration of protection against hospitalization, severe disease, death
  - Vaccine effectiveness against Omicron is **always lower** than vaccine effectiveness against Delta at all time points.

https://www.who.int/publications/m/item/enhancing-readiness-for-omicron-(b.1.1.529)-technical-brief-and-priority-actions-for-member-states

Available evidence - booster doses

- The booster dose improves vaccine effectiveness against both Delta and Omicron variants.
- Booster doses (homologous or heterologous) improve vaccine effectiveness **beyond 80%** against disease and hospitalization (compared to the primary series).
- However, there is evidence of **waning** in the months following the booster dose (1 study)
- Duration of increased protection is **unknown**, since studies only consider a short follow-up time.

Public health measures

Regardless of which variant is circulating, all public health and social measures (PHSM) are effective and must be maintained.

- The use of established response measures (ex., contact tracing, quarantine and isolation) must continue to be adapted to the existing epidemiological and social context.

- These measures may need to be enhanced to further limit interpersonal contact to control transmission with a more transmissible variant.
- Countries should be ready to escalate PHSMs in a timely manner to avoid overwhelming demands on health care services.

https://www.who.int/publications/m/item/enhancing-readiness-for-omicron-(b.1.1.529)-technical-brief-and-priority-actions-for-member-states

How can we stop new variants from emerging?

- The more a virus **circulates**, the more opportunities it has to mutate and generate variants of concern.
- Therefore, to minimize the chances that new variants will emerge, we must **limit transmission** of the SARS-CoV-2 virus.

- Effective strategies are:
  - Maintain and expand mitigation measures (ex., hand washing, mask wearing, social distancing, indoor ventilation, avoiding crowds, etc.)
  - Limit travel where possible
  - Test whenever there is the risk of contact with a case
  - Quarantine known contacts and isolate cases (even if asymptomatic)
  - Vaccinate, vaccinate, vaccinate – and encourage others to receive their vaccine doses.

Thank You

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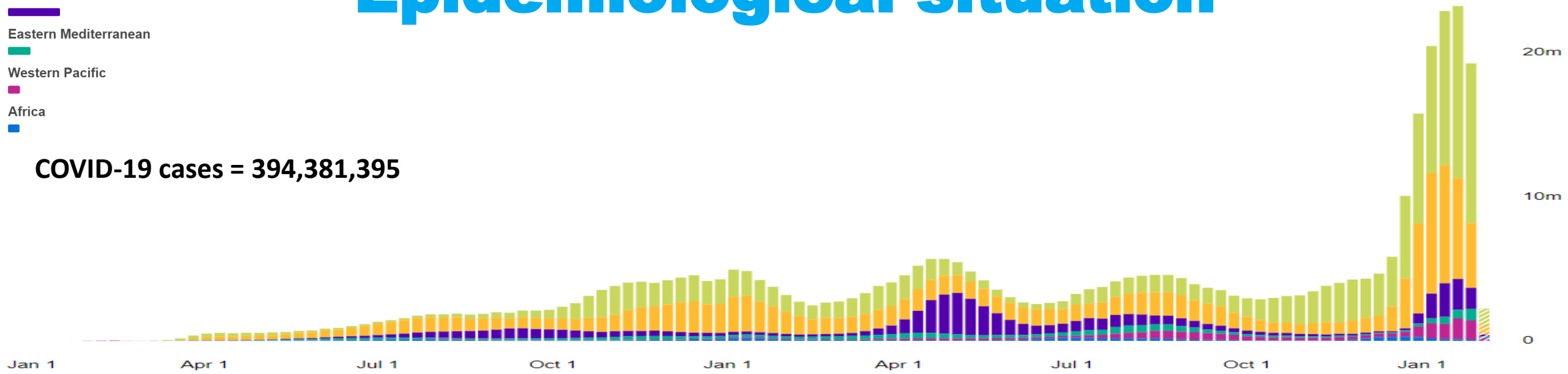
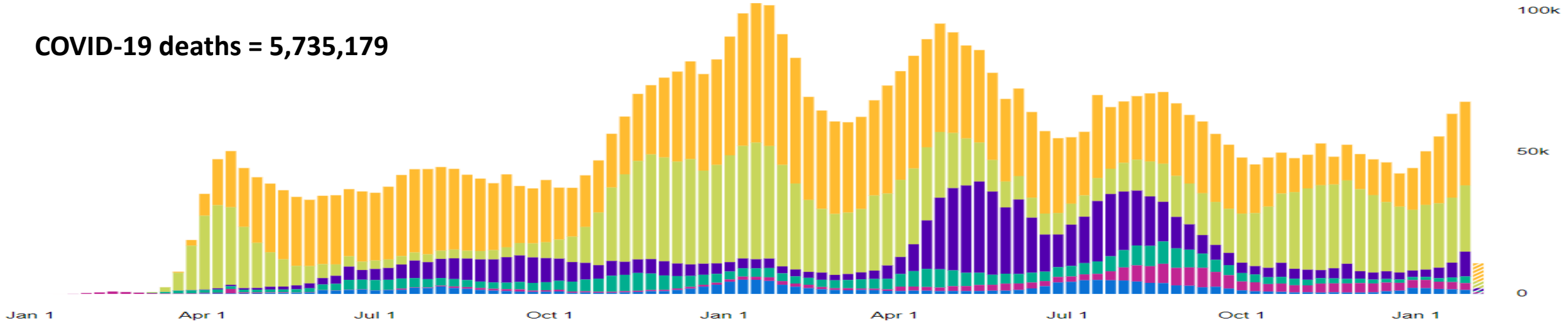
Epidemiological situation

Americas
Europe
South-East Asia
Eastern Mediterranean
Western Pacific
Africa

COVID-19 cases = 394,381,395



COVID-19 deaths = 5,735,179



https://covid19.who.int/

SARS-CoV-2 variants

- A variant is considered a **variant of interest** (VOI) if there is initial scientific evidence of mutations that are suspected to cause significant changes and is circulating widely.
  - There are 2 variants of interest (**Mu** and **Lambda**) that PAHO/WHO continues to monitor in case they become variants of concern.

- A variant of interest becomes a **variant of concern** if it is known to spread more easily, cause more severe disease, escape the body's immune response, change virus symptoms, or decrease effectiveness of known tools. There are 5 variants of concern (VOC) :
  - **Alpha** (first identified in the UK)
  - **Beta** (first identified in South Africa)
  - **Gamma** (first identified in Brazil)
  - **Delta** (first identified in India)
  - **Omicron** (first identified in South Africa).

https://www.paho.org/en/coronavirus-disease-covid-19-variants-sars-cov-2-qa

Transmissibility

- Omicron has a **substantial growth advantage** over Delta, and it is rapidly replacing Delta globally.
- There is now significant evidence that **immune evasion** contributes to the rapid spread of Omicron.

- Non-peer reviewed analyses report that:
  - Omicron is **36.5%** more transmissible than Delta.
  - Omicron erodes **63.7%** of the population immunity accumulated from prior infection and vaccination.
  - The serial interval of Omicron was **2.2 days** compared to Delta's 3.3 days.
  - Higher proportions of asymptomatic infection may further contribute to transmission.

https://www.who.int/publications/m/item/enhancing-readiness-for-omicron-(b.1.1.529)-technical-brief-and-priority-actions-for-member-states

Severity

- Epidemiological trends continue to show a decoupling between incident cases, hospital admissions and deaths, compared to epidemic waves due to previous variants.
- This is likely due to:
    - Lower intrinsic severity of Omicron
    - Vaccine effectiveness is more preserved against severe disease than against infection.

- However, high levels of hospital and ICU admission are being reported in most countries, given that **levels of transmission are higher than ever seen** before during the pandemic.

https://www.who.int/publications/m/item/enhancing-readiness-for-omicron-(b.1.1.529)-technical-brief-and-priority-actions-for-member-states

Diagnostics

- The diagnostic accuracy of routinely used PCR and antigen-detection rapid diagnostic tests (Ag-RDT) assays **does not appear to be impacted by Omicron**.
  - RT-PCR: No impact on the recommended RT-PCR protocol (Charité, Berlin) nor on WHO EUL assays.
  - Ag-RDT: Preliminary data from WHO CC at Erasmus MC testing show no impact on the two recommended tests (Abbott Panbio and SD Biosensor). All WHO EUL assays are under review.

https://www.who.int/publications/m/item/enhancing-readiness-for-omicron-(b.1.1.529)-technical-brief-and-priority-actions-for-member-states

Therapeutics

- Therapeutic interventions for the management of patients with severe or critical Omicron-associated COVID-19 that target host responses (such as corticosteroids, and interleukin-6 receptor blockers) are **expected to remain effective**.

- However, preliminary data from non-peer reviewed publications suggest that some of the monoclonal antibodies developed against SARS-CoV-2 **may** have impaired neutralization against Omicron.

https://www.who.int/publications/m/item/enhancing-readiness-for-omicron-(b.1.1.529)-technical-brief-and-priority-actions-for-member-states