

# COVID-19 Weekly Epidemiological Update

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## Global overview

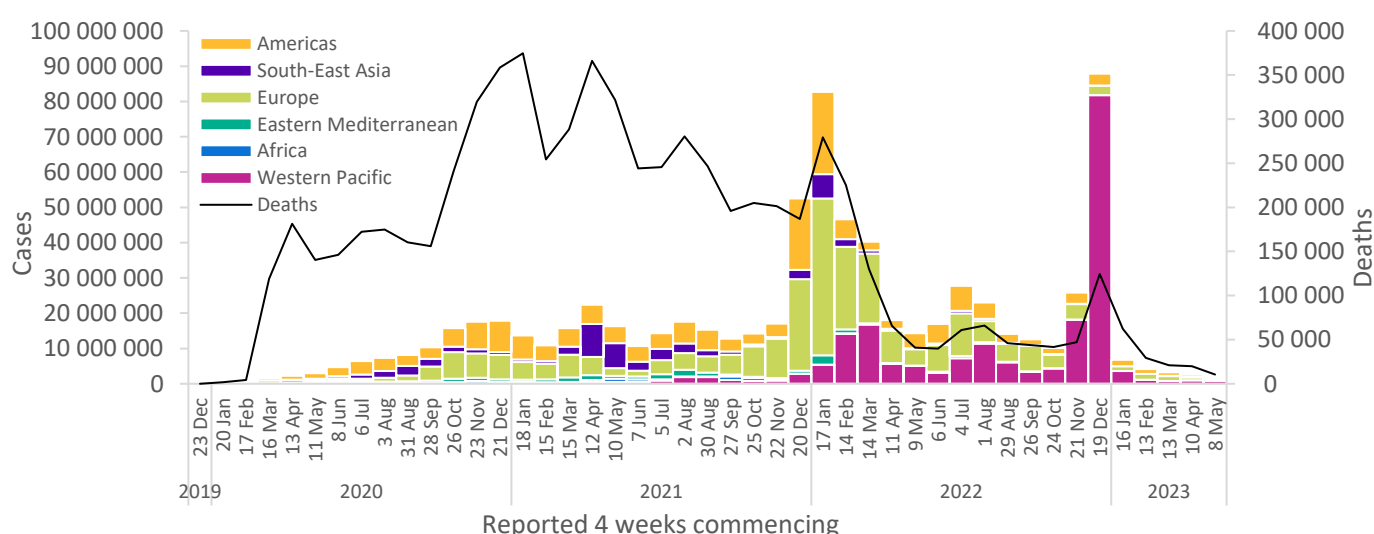
Data as of 4 June 2023

Globally, over 1.7 million new cases and over 10 000 deaths were reported in the last 28 days (8 May to 4 June 2023), a decrease of 38% and 47%, respectively, compared to the previous 28 days (10 April to 7 May 2023) (Figure 1, Table 1). During this 28-day reporting period, 144 of 243 (59%) countries and territories reported at least one case. The situation at the regional level shows decreases in cases and deaths in all six WHO regions. As of 4 June 2023, over 767 million confirmed cases and over 6.9 million deaths have been reported globally.

Reported COVID-19 cases are underestimates of infection rates, largely due to the reductions in testing globally, and potential delays in reporting. Additionally, data from previous weeks are continuously being updated to incorporate retrospective changes in reported COVID-19 cases and deaths made by countries. Data presented in this report are therefore incomplete and should be interpreted in light of these limitations.

We present changes in epidemiological trends using a 28-day interval. Disaggregated data are still accessible on the [WHO COVID-19 dashboard](#), where the full dataset is available for download.

**Figure 1. COVID-19 cases reported by WHO Region, and global deaths by 28-day intervals, as of 4 June 2023\*\***



\*\*See [Annex 1: Data, table, and figure note](#)

At the regional level, the number of newly reported 28-day cases decreased across all WHO regions: the South-East Asia Region (-77%), the Eastern Mediterranean Region (-60%), the Region of the Americas (-55%), the European Region (-49%), the African Region (-22%), and the Western Pacific Region (-5%). The number of newly reported 28-day deaths also decreased across all six WHO regions: the Eastern Mediterranean Region (-78%), the European Region (-54%), the Region of the Americas (-44%), the South-East Asia Region (-35%), the Western Pacific Region (-19%), and the African Region (-17%).

At the country level, the highest numbers of new 28-day cases were reported from the Republic of Korea (470 093 new cases; +29%), Australia (147 684 new cases; +27%), Brazil (113 286 new cases; -33%), France (93 850 new cases; -46%), and the United States of America (93 260 new cases; -75%). The highest numbers of new 28-day deaths were reported from the United States of America (1943 new deaths; -58%), Brazil (1074 new deaths; -16%), France (555 new deaths; -41%), Italy (549 new deaths; -17%), and the Russian Federation (532 new deaths; -44%).

**Table 1. Newly reported and cumulative COVID-19 confirmed cases and deaths, by WHO Region, as of 4 June 2023\*\***

WHO Region	New cases in last 28 days (%)	Change in new cases in last 28 days *	Cumulative cases (%)	New deaths in last 28 days (%)	Change in new deaths in last 28 days *	Cumulative deaths (%)
Western Pacific	924 460 (54%)	-5%	204 049 665 (27%)	1 305 (12%)	-19%	412 605 (6%)
Europe	420 961 (24%)	-49%	276 567 903 (36%)	4 008 (38%)	-54%	2 240 284 (32%)
Americas	293 984 (17%)	-55%	192 989 462 (25%)	4 222 (40%)	-44%	2 955 160 (43%)
South-East Asia	59 315 (3%)	-77%	61 172 598 (8%)	760 (7%)	-35%	806 155 (12%)
Eastern Mediterranean	15 503 (1%)	-60%	23 379 138 (3%)	153 (1%)	-78%	351 281 (5%)
Africa	6 133 (<1%)	-22%	9 534 108 (1%)	15 (<1%)	-17%	175 373 (3%)
<b>Global</b>	<b>1 720 356 (100%)</b>	<b>-38%</b>	<b>767 693 638 (100%)</b>	<b>10 463 (100%)</b>	<b>-47%</b>	<b>6 940 871 (100%)</b>

\*Percent change in the number of newly confirmed cases/deaths in the past 28 days, compared to 28 days prior. Data from previous weeks are updated continuously with adjustments received from countries.

\*\*See [Annex 1: Data, table, and figure notes](#)

The latest data and other updates on COVID-19, please see:

- [WHO COVID-19 Dashboard](#)
- [WHO Monthly Operational Update and past editions of the Weekly Epidemiological Update on COVID-19](#)
- [WHO COVID-19 detailed surveillance data dashboard](#)
- [WHO COVID-19 policy briefs](#)

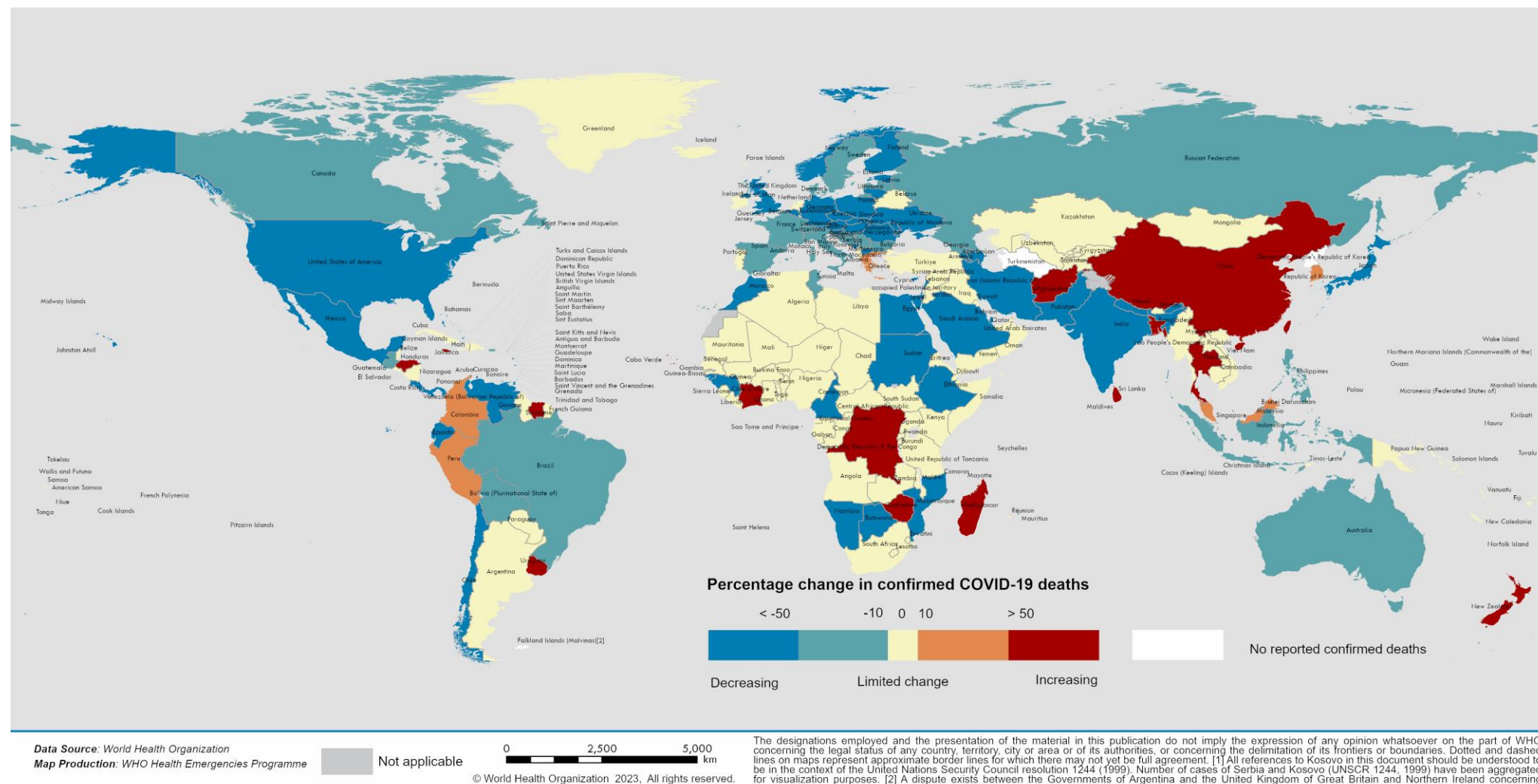
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**Map Production:** WHO Health Emergencies Programme

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. [2] A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas). Data for Bonaire, Sint Eustatius and Saba have been disaggregated and displayed at the subnational level.

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**Figure 3. Percentage change in confirmed COVID-19 deaths over the last 28 days relative to the previous 28 days, as of 4 June 2023\*\***



\*\*See [Annex 1: Data, table, and figure notes](#)



## Hospitalizations and ICU admissions

At the global level, during the past 28 days (1 May 2023 to 28 May 2023), a total of 79 266 new hospitalizations and 1937 new intensive care unit (ICU) admissions were reported (Figure 4). This represents a 35% and 42% decrease in hospitalizations and ICU admissions, respectively, compared to the previous 28 days (3 April 2023 to 30 April 2023). The presented hospitalization data are preliminary and might change as new data become available. Furthermore, hospitalization data are subject to reporting delays. These data also likely include both hospitalizations with incidental cases of SARS-CoV-2 infection and those due to COVID-19 disease.

Globally, during the past 28 days, 36 (15%) countries reported data to WHO on new hospitalizations at least once (Figure 5). The European Region had the highest proportion of countries reporting data on new hospitalizations (19 countries; 31%), followed by the South-East Asia Region (two countries; 18%), the Eastern Mediterranean Region (three countries; 14%), the African Region (five countries; 10%), the Western Pacific Region (three countries; 9%), and the Region of the Americas (four countries; 7%). The proportion of countries that consistently<sup>i</sup> reported new hospitalizations for the period was 7% (17 countries).

Among the 17 countries consistently reporting new hospitalizations, five (29%) countries registered an increase of 20% or greater in hospitalizations during the past 28 days compared to the previous 28-day period: Mongolia (1968 vs 117; +1582%), Zimbabwe (42 vs 18; +133%), Afghanistan (133 vs 67; +99%), Bangladesh (138 vs 82; +68%), and Indonesia (7556 vs 6091; +24%). The highest number of new hospitalizations was reported from the United States of America (35 037 vs 49 454; -29%), Ukraine (7829 vs 13 380; -41%), and Indonesia (7556 vs 6091; +24%).

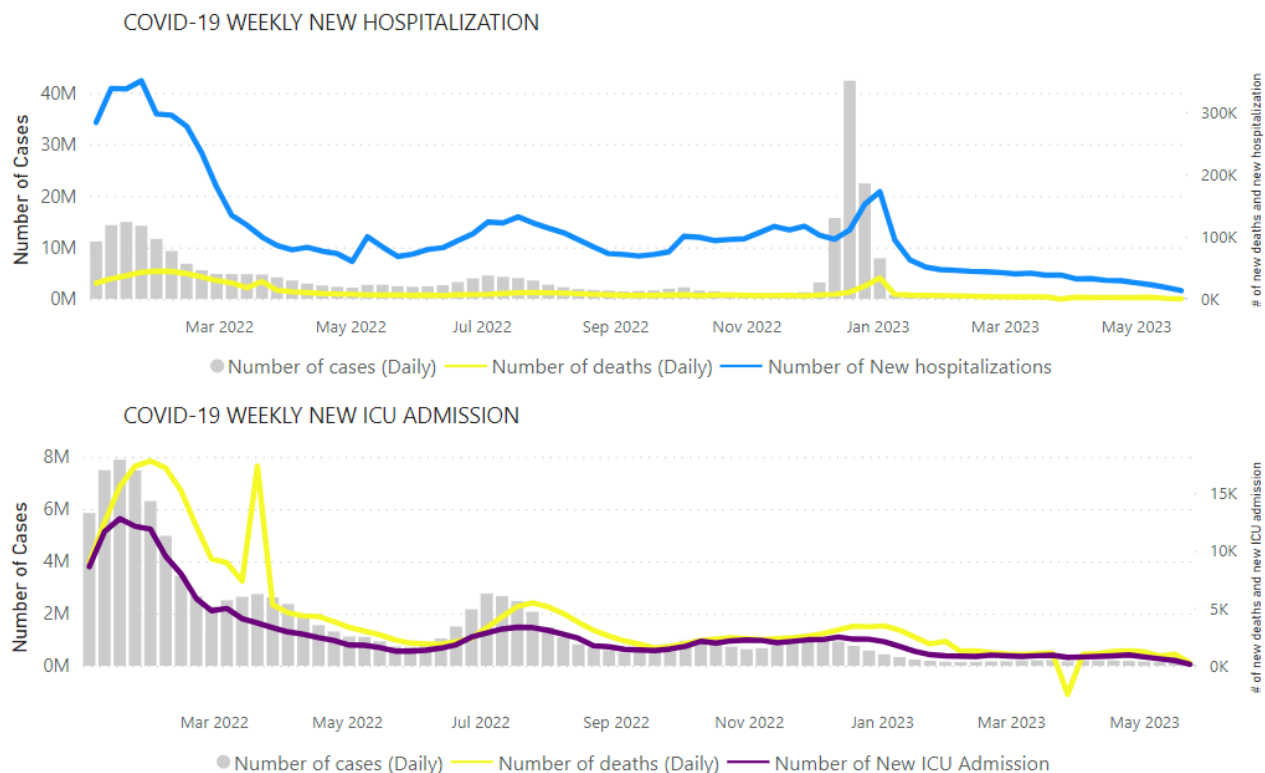
Across the six WHO regions, in the past 28 days, 31 (13%) countries reported data to WHO on new ICU admissions at least once (Figure 5). The European Region had the highest proportion of countries reporting data on new ICU admissions (18 countries; 30%), followed by the Eastern Mediterranean Region (three countries; 14%), the Western Pacific Region (five countries; 14%), the South-East Asia Region (one country; 9%), the African Region (two countries; 4%), and the Region of the Americas (two countries; 4%). The proportion of countries that consistently reported new ICU admissions for the period was 4% (9 countries).

Among the nine countries consistently reporting new ICU admissions, only one (11%) country showed an increase of 20% or greater in new ICU admissions during the past 28 days compared to the previous 28-day period: Indonesia (329 vs 262; +26%). The highest numbers of new ICU admissions were reported from Indonesia (329 vs 262; +26%), Ukraine (245 vs 391; -37%), and Italy (156 vs 425; -63%).

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<sup>i</sup> “Consistently” as used here refers to countries that submitted data for new hospitalizations and intensive care unit admissions for the four consecutive weeks that make up the 28-day period.

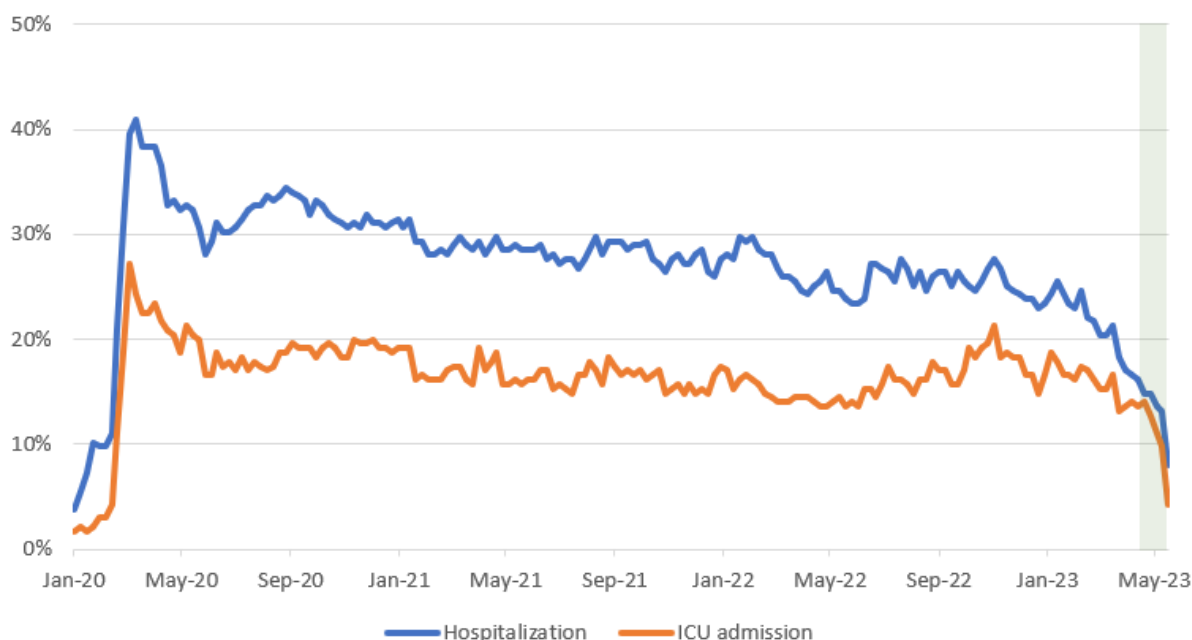
**Figure 4. COVID-19 cases, deaths, hospitalizations, and ICU admissions reported weekly to WHO, as of 28 May 2023**



Note: Recent weeks are subject to reporting delays and should not be interpreted as a declining trend. Cases included in grey bars in the graph are only from countries reporting hospitalizations or ICU admissions, respectively.

Source: WHO Detailed Surveillance Dashboard

**Figure 5. Weekly proportion of countries reporting new hospitalizations and ICU admissions: epidemiological week 1, 2020 to week 21, 2023**



Note: Recent weeks are subject to reporting delays and should not be interpreted as a declining trend.

## SARS-CoV-2 variants of interest and variants under monitoring

### Geographic spread and prevalence

Globally, from 8 May to 4 June 2023 (28 days), 17 523 SARS-CoV-2 sequences were shared through GISAID. WHO is currently tracking two variants of interest (VOIs), XBB.1.5 and XBB.1.16, along with seven variants under monitoring (VUMs) and their descendent lineages. The VUMs are BA.2.75, CH.1.1, BQ.1, XBB, XBB.1.9.1, XBB.1.9.2 and XBB.2.3.

There has been an increase in the number of countries reporting the two VOIs. Between 10 April and 7 May 2023 (28 days), 61 countries reported XBB.1.5 sequences, a cumulative total of 116 countries as of 21 May 2023 (Figure 6A, Table 2). During the same 28-day period, 51 countries reported XBB.1.16 sequences, bringing the cumulative total to 65 countries (Figure 6B, Table 2). While XBB.1.5 remains dominant globally, its prevalence has been declining steadily. In epidemiological week 20 (15 to 21 May 2023), XBB.1.5 accounted for 30.3% of sequences, a decline from 46.2% in week 16 (17 to 23 April 2023). Globally, XBB.1.16 continues to rise in prevalence, accounting for 16.8% of sequences in week 20 compared to 10.2% in week 16.

Table 2 shows the number of countries reporting VOIs and VUMs since their emergence, and their prevalence from week 16 to week 20. Among the VUMs, XBB, XBB.1.9.1, XBB.1.9.2, and XBB.2.3 have shown increasing trends. Conversely, other VUMs show declining trends during the same reporting period. The VOI and VUMs exhibiting increasing trends are highlighted in orange, while those with decreasing trends are highlighted in green.

Current SARS-CoV-2 variant trends continue to differ across and within WHO regions and countries. Several countries are seeing a rise in cases, driven by the VOIs and some VUMs. The rise in cases may be accompanied by a rise in hospitalizations and deaths, although these are lower compared to previous SARS-CoV-2 waves. Population immunity from vaccination and previous SARS-CoV-2 infection are among the factors contributing to the observed heterogeneity in the variant circulation dynamics, and decreased hospitalizations and deaths. During weeks 16 to 20, the VOIs XBB.1.5 and XBB.1.16 were dominant in three regions and one region, respectively: XBB.1.5 was dominant in the African Region, the Region of the Americas and the European Region (44.0%, 57.2% and 43.2% respectively); XBB.1.16 was dominant in the South-East Asia Region (37.4%). The VUM XBB.1.9.1 was dominant in the Eastern Mediterranean Region, while there is a dominance of XBB.1.9.1 (22.7%) followed by XBB.1.5 (16.2%) in the Western Pacific Region (Figure 7).

The global trends in the number and percentage of SARS-CoV-2 sequences are shown in Figure 8. With the declining trends of testing and sequencing globally, low and unrepresentative levels of SARS-CoV-2 genomic surveillance continue to pose challenges in adequately assessing the SARS-CoV-2 variant landscape. The [updated risk assessment for XBB.1.16](#) highlights additional laboratory and epidemiological evidence. Available reports from two countries indicate no increase in disease severity associated with XBB.1.16 compared to other co-circulating SARS-CoV-2 variants.

**Table 2. Weekly prevalence of SARS-CoV-2 VOIs and VUMs, epidemiological week 16 to week 20 of 2023**

Lineage	Countries <sup>§</sup>	Sequences <sup>§</sup>	2023-16	2023-17	2023-18	2023-19	2023-20
XBB.1.5* (VOI)	116	240 457	46.19	43.72	40.19	33.06	30.28
XBB.1.16* (VOI)	65	16 368	10.15	10.75	12.81	15.56	16.81
BA.2.75*	123	111 956	2.29	1.70	1.97	1.48	1.19
CH.1.1*	92	46 871	3.03	2.93	2.68	2.76	1.96
BQ.1*	150	411 412	1.97	1.35	0.88	0.55	0.34
XBB*	127	64 360	4.30	4.76	4.78	5.20	5.27
XBB.1.9.1*	90	31 583	13.31	15.48	16.96	17.70	18.19
XBB.1.9.2*	64	8 426	4.12	4.66	4.78	5.58	6.63
XBB.2.3	55	6 359	3.29	3.72	4.27	5.33	7.09
Unassigned	103	149 639	0.93	0.92	0.66	1.74	1.45
Other <sup>†</sup>	208	6 724 206	7.54	8.15	8.43	9.62	10.42

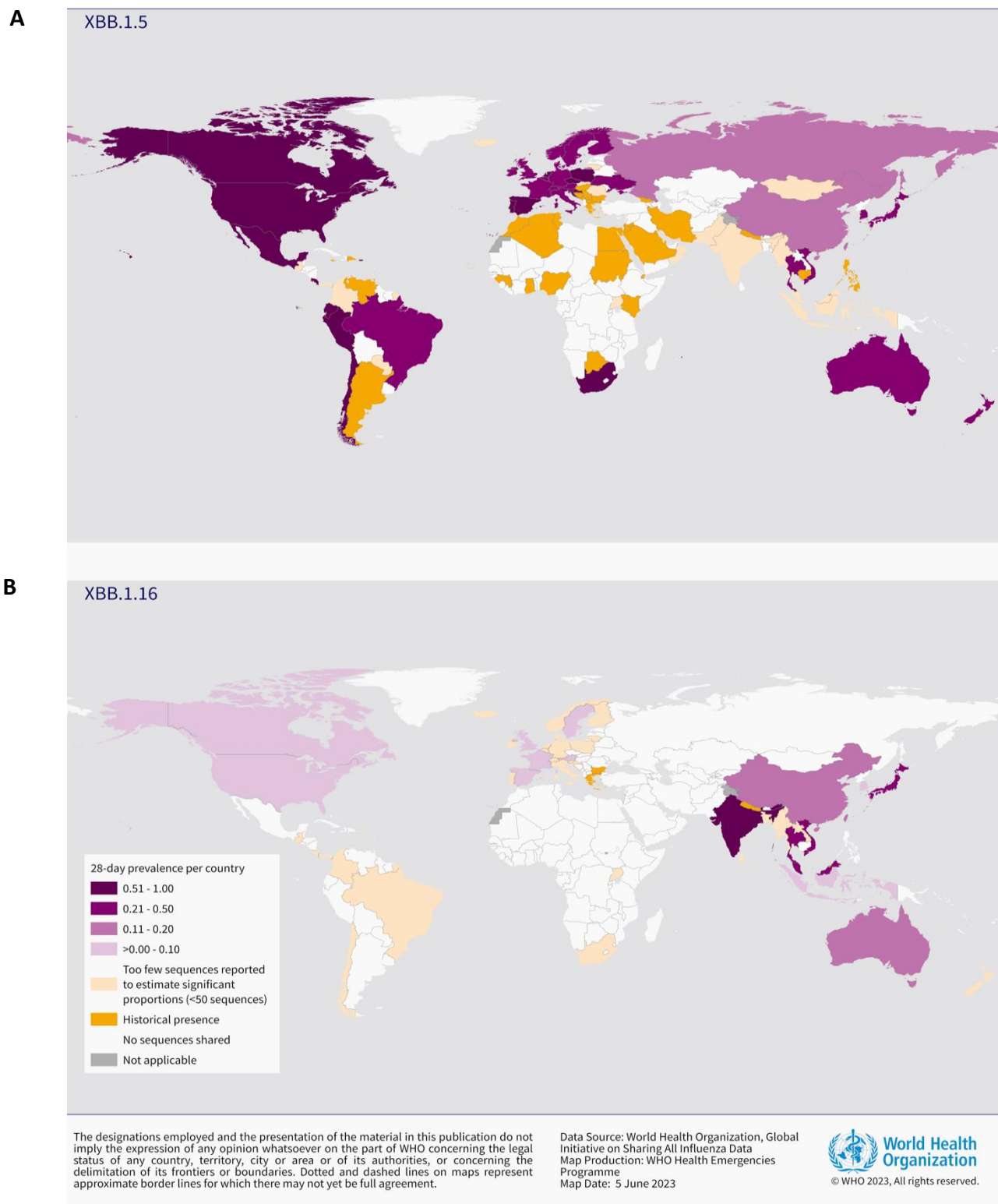
\* Includes descendant lineages, except those individually specified elsewhere in the table. For example, XBB\* does not include XBB.1.5, XBB.1.9.1, XBB.1.9.2, XBB.1.16, and XBB.2.3.

<sup>†</sup> Others are other circulating lineages excluding the VOI, VUMs, BA.1\*, BA.2\*, BA.3\*, BA.4\*, BA.5\*.

<sup>§</sup> Countries and sequences are since the emergence of the variants.

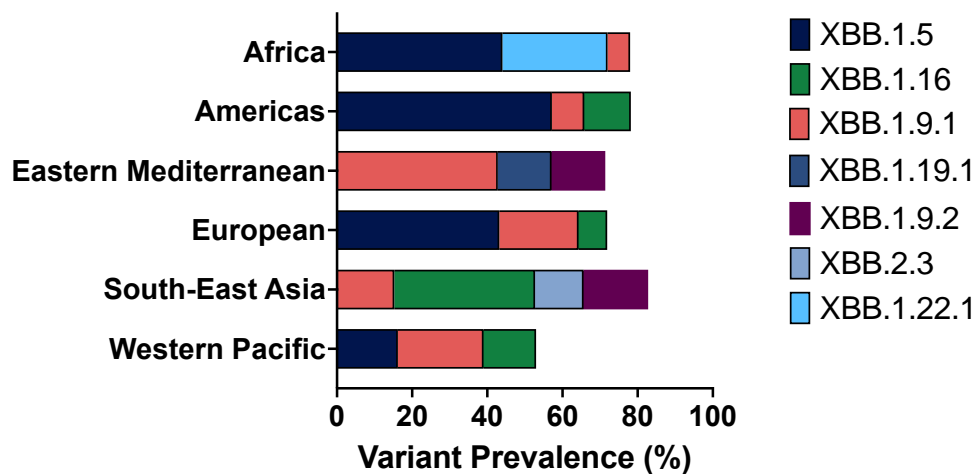


Figure 6. Global 28-day prevalence of variants of interest XBB.1.5 (A) and XBB.1.16 (B), between 10 April to 7 May 2023\*+

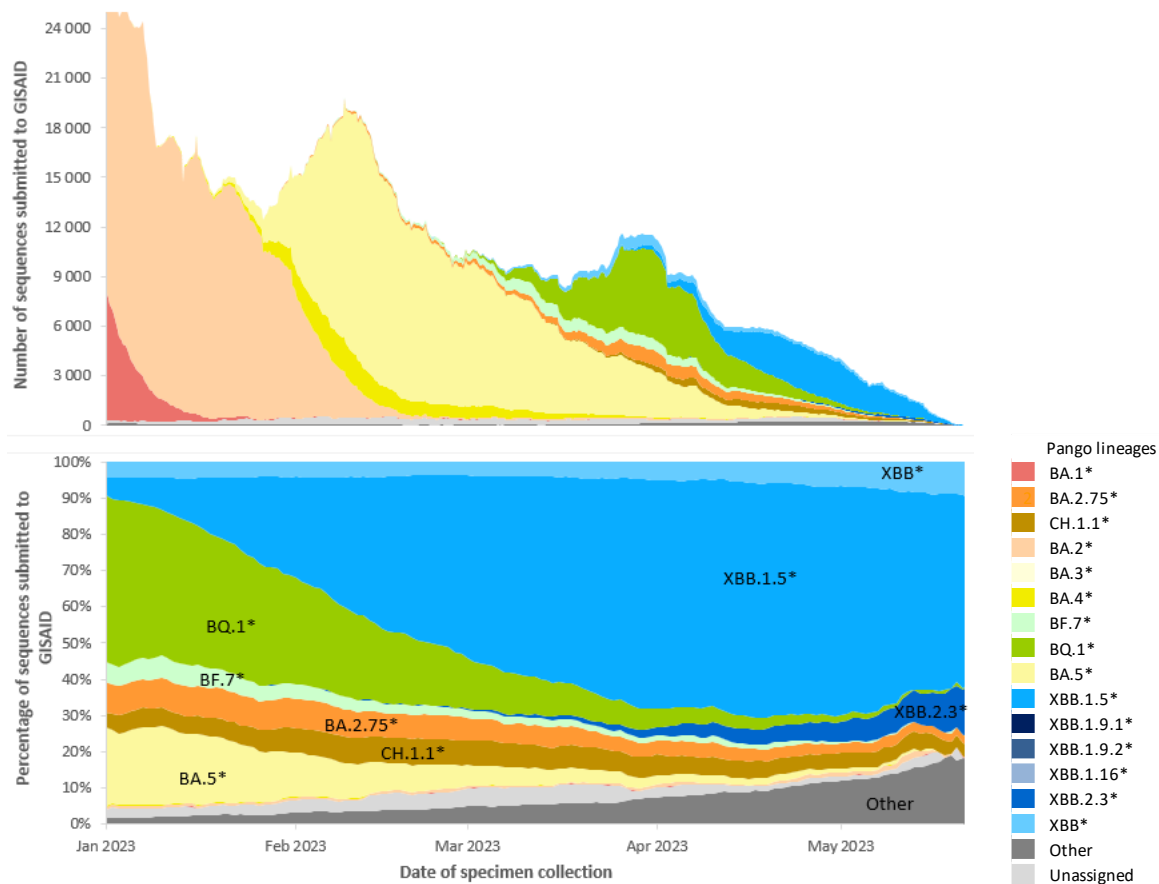


\*Reporting period to account for delay in sequence submission to GISAID.  
+Historical presence indicates countries previously reporting XBB.1.5 sequences but that have not reported them within the period from 10 April to 7 May 2023.

**Figure 7. Top three SARS-CoV-2 variants (including non-VOIs/VUMs) by WHO region, epidemiological week 16 to week 20 of 2023**



**Figure 8. The number and percentage of SARS-CoV-2 sequences, from 1 January to 21 May 2023**



**Figure 8. Panel A** shows the number, and **Panel B** the percentage, of all circulating variants since January 2023. Omicron sister-lineages and additional Omicron VOC descendent lineages under further monitoring are shown. *BA.1\**, *BA.2\**, *BA.3\**, *BA.4\** and *BA.5\** (\* indicates inclusion of descendent lineages) include all BA.1, BA.2, BA.3, BA.4 and BA.5 pooled descendent lineages, except currently circulating variants shown individually. The *Unassigned* category includes lineages pending for a PANGO lineage name, whereas the *Other* category includes lineages that are assigned but not listed in the legend. Source: SARS- CoV-2 sequence data and metadata from GISAID, from 1 January 2023 to 21 May 2023.

**Additional resources**

- [Tracking SARS-CoV-2 Variants](#)
- [WHO statement on updated tracking system on SARS-CoV-2 variants of concern and variants of interest](#)
- [WHO XBB.1.16 Updated Risk Assessment, 5 June 2023](#)
- [WHO XBB.1.5 rapid risk assessment, 24 February 2023](#)

## Vaccine effectiveness of primary series and booster vaccination against the Omicron variant of concern

### Vaccine Effectiveness

The [Forest plots](#) displaying the effectiveness of COVID-19 vaccines against the Omicron variants are available on [View-hub.org](#) and updated regularly (last updated 5 June 2023). All data are collected as part of an ongoing systematic review of COVID-19 vaccine effectiveness (VE) studies (methods described [here](#)). COVID-19 VE results are summarized in the following plots, where data are available:

- VE of primary series and first booster dose by vaccine for all vaccines
- VE for various sub-populations of interest
- Absolute and relative VE of a second booster dose (for more information on interpreting relative VE, see the special focus on relative vaccine effectiveness from the [29 June 2022 Weekly Epidemiological Update](#))
- Duration of VE over time for vaccines
- Absolute VE of bivalent vaccines given as a first, second, or third booster dose

A [recent report](#) suggests that VE against Omicron descendant lineage BA.4/BA.5 is likely lower than against BA.1, although the reasons for this finding might be both due to the lower vaccine efficacy against BA.4/BA.5 as well as methodological factors in how the VE studies were done. Two studies (including one randomized controlled trial conducting an exploratory analysis) evaluating protection of bivalent and monovalent boosters during the same time period showed marginal (approximately 10%) higher VE for bivalent vaccines against Omicron symptomatic infection. No studies have evaluated VE against severe disease for monovalent and bivalent vaccines during the same time period.

### Neutralization

Neutralizing antibody studies can provide early insights into vaccine performance against new and emerging VOCs and their subvariants. For more information about the capacity of COVID-19 vaccines to neutralize various Omicron sub-variants, please see a [systematic review](#) of post-monovalent vaccination neutralization responses to Omicron BA.1, BA.2, BA.3, and BA.4/BA.5. In addition, [neutralization plots](#) displaying the results of a living systematic review of neutralization studies are updated regularly on [VIEW-hub.org](#) (last updated 5 June 2023) and contain information on more recent Omicron descendant lineages, such as BQ.1 and XBB.

Finally, a [summary](#) of neutralization responses comparing monovalent to bivalent mRNA vaccines is also available on [VIEW-hub.org](#), providing preliminary evidence of improved performance of bivalent vaccines against more recent Omicron descendant lineages.

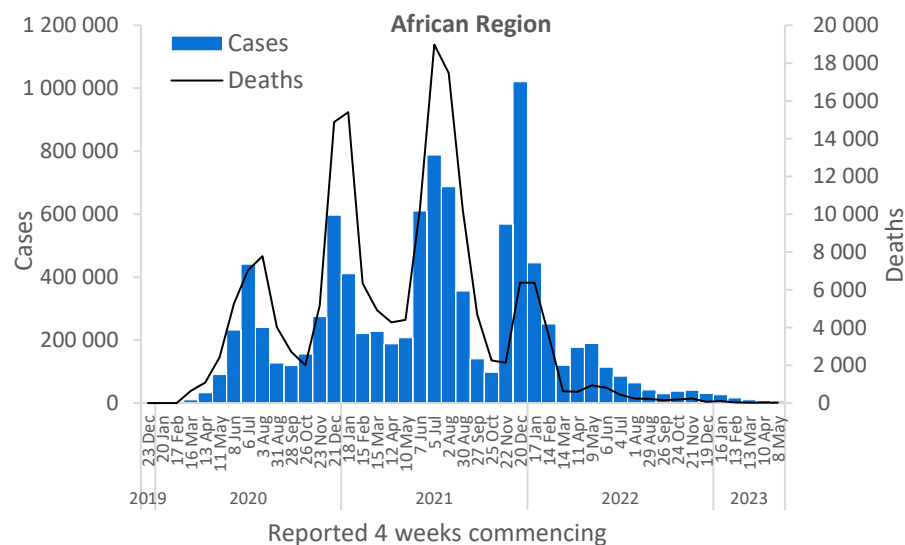
## WHO regional overviews

Data for 8 May to 4 June 2023

### African Region

The African Region reported over 6000 new cases, a 22% decrease as compared to the previous 28-day period. Three (6%) of the 50 countries for which data are available reported increases in new cases of 20% or greater, with the highest proportional increases observed in Botswana (76 vs 21 new cases; +262%), Kenya (238 vs 82 new cases; +190%), and Zimbabwe (373 vs 184 new cases; +103%). The highest numbers of new cases were reported from Mauritius (4274 new cases; 336.1 new cases per 100 000; -7%), the Democratic Republic of the Congo (487 new cases; <1 new case per 100 000; +6%), and Zimbabwe (373 new cases; 2.5 new cases per 100 000; +103%).

The number of new 28-day deaths in the Region decreased by 17% as compared to the previous 28-day period, with 15 new deaths reported. The highest numbers of new deaths were reported from Zimbabwe (seven new deaths; <1 new death per 100 000; +75%), Mauritius (three new deaths; <1 new death per 100 000; -25%), and the Democratic Republic of the Congo (two new deaths; <1 new death per 100 000; +100%).

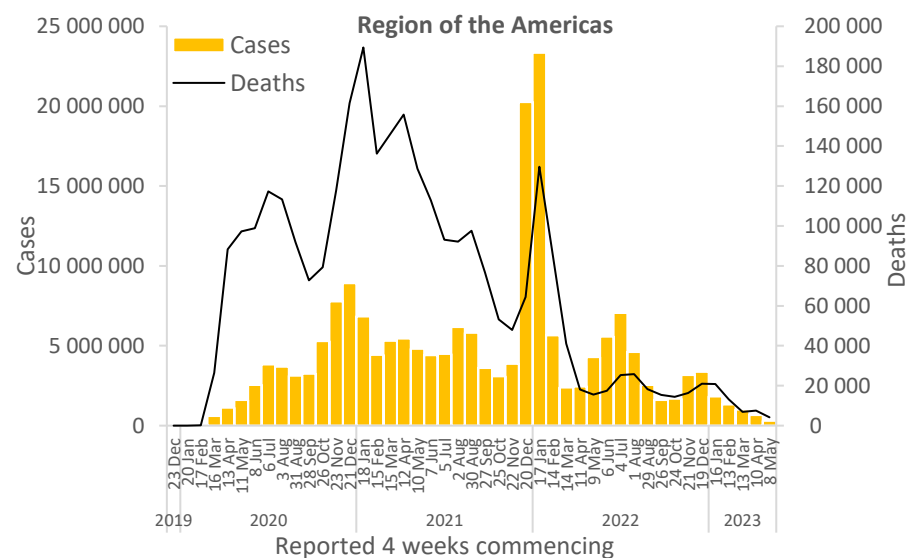


Updates from the [African Region](#)

### Region of the Americas

The Region of the Americas reported nearly 294 000 new cases, a 55% decrease as compared to the previous 28-day period. Nine (16%) of the 56 countries for which data are available reported increases in new cases of 20% or greater, with the highest proportional increases observed in the United States Virgin Islands (186 vs 50 new cases; +272%), Saint Kitts and Nevis (three vs one new cases; +200%), and Guyana (89 vs 49 new cases; +82%). The highest numbers of new cases were reported from Brazil (113 286 new cases; 53.3 new cases per 100 000; -33%), the United States of America (93 260 new cases; 28.2 new cases per 100 000; -75%), and Puerto Rico (23 303 new cases; 814.5 new cases per 100 000; +48%).

The number of new 28-day deaths in the Region decreased by 44% as compared to the previous 28-day period, with 4222 new deaths reported. The highest numbers of new deaths were reported from the United States of America (1943 new deaths; <1 new death per 100 000; -58%), Brazil (1074 new deaths; <1 new death per 100 000; -16%), and Peru (477 new deaths; 1.4 new deaths per 100 000; +45%).



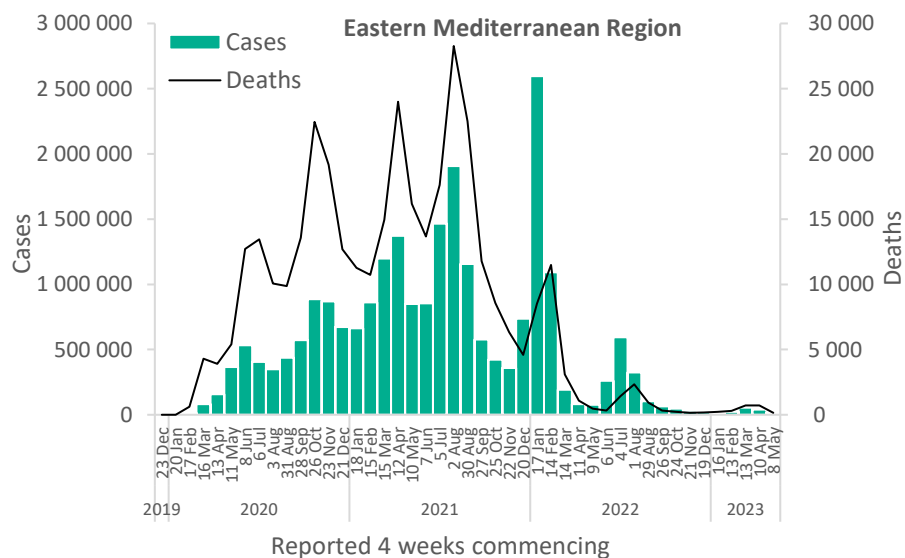
Updates from the [Region of the Americas](#)



## Eastern Mediterranean Region

The Eastern Mediterranean Region reported over 15 000 new cases, a 60% decrease as compared to the previous 28-day period. No country has reported increases in new cases of 20% or greater compared to the previous 28-day period. The highest numbers of new cases were reported from Afghanistan (5236 new cases; 13.5 new cases per 100 000; similar to the previous 28-day period), Qatar (4140 new cases; 143.7 new cases per 100 000; -44%), and the United Arab Emirates (2793 new cases; 28.2 new cases per 100 000; -41%).

The number of new 28-day deaths in the Region decreased by 78% as compared to the previous 28-day period, with 153 new deaths reported. The highest numbers of new deaths were reported from the Islamic Republic of Iran (102 new deaths; <1 new death per 100 000; -83%), Tunisia (22 new deaths; <1 new death per 100 000; -37%), and Afghanistan (21 new deaths; <1 new death per 100 000; +62%).

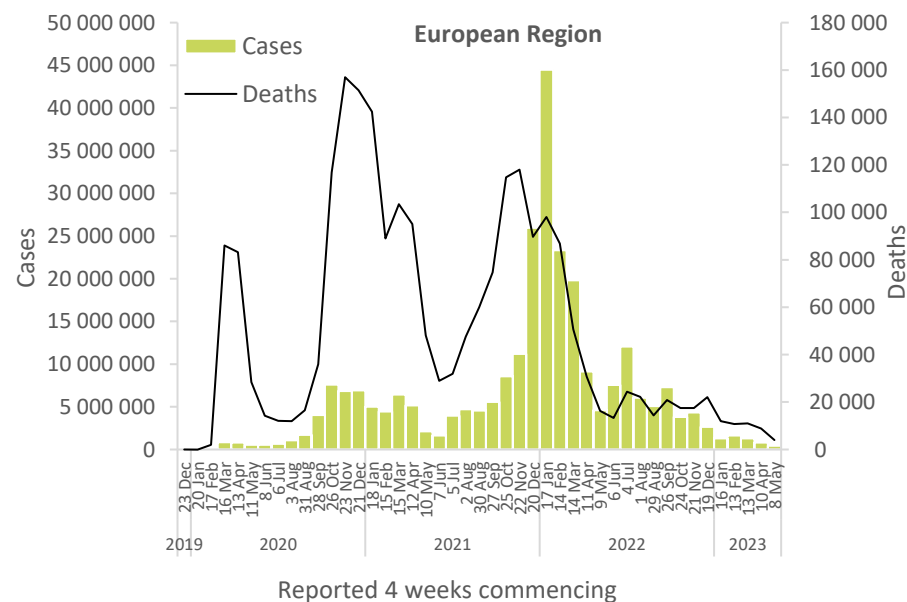


Updates from the [Eastern Mediterranean Region](#)

## European Region

The European Region reported nearly 421 000 new cases, a 49% decrease as compared to the previous 28-day period. No country has reported increases in new cases of 20% or greater compared to the previous 28-day period. The highest numbers of new cases were reported from France (93 850 new cases; 144.3 new cases per 100 000; -46%), Italy (55 430 new cases; 92.9 new cases per 100 000; -41%), and Greece (54 712 new cases; 510.4 new cases per 100 000; +4%).

The number of new 28-day deaths in the Region decreased by 54% as compared to the previous 28-day period, with 4008 new deaths reported. The highest numbers of new deaths were reported from France (555 new deaths; <1 new death per 100 000; -41%), Italy (549 new deaths; <1 new death per 100 000; -17%), and the Russian Federation (532 new deaths; <1 new death per 100 000; -44%).

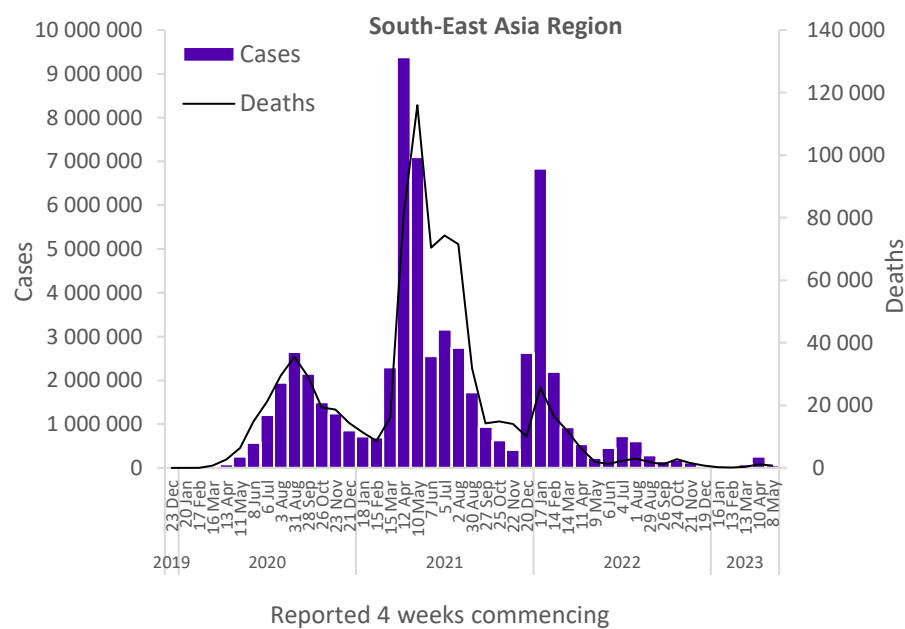


Updates from the [European Region](#)

## South-East Asia Region

The South-East Asia Region reported over 59 000 new cases, a 77% decrease as compared to the previous 28-day period. Five (45%) of the 10 countries for which data are available reported increases in new cases of 20% or greater, with the highest proportional increases observed in Bangladesh (1301 vs 260 new cases; +400%), Timor-Leste (19 vs eight new cases; +138%), and Thailand (11 043 vs 5033 new cases; +119%). The highest numbers of new cases were reported from India (21 952 new cases; 1.6 new cases per 100 000; -90%), Indonesia (21 183 new cases; 7.7 new cases per 100 000; -41%), and Thailand (11 043 new cases; 15.8 new cases per 100 000; +119%).

The number of new 28-day deaths in the Region decreased by 35% as compared to the previous 28-day period, with 760 new deaths reported. The highest numbers of new deaths were reported from Indonesia (330 new deaths; <1 new death per 100 000; -19%), India (200 new deaths; <1 new death per 100 000; -72%), and Thailand (196 new deaths; <1 new death per 100 000; +626%).

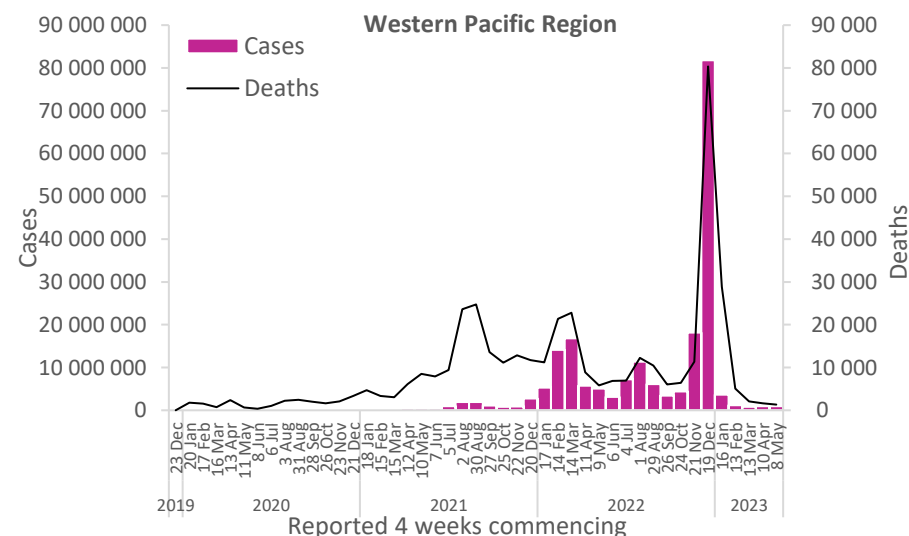


Updates from the [South-East Asia Region](#)

## Western Pacific Region

The Western Pacific Region reported over 924 000 new cases, a 5% decrease as compared to the previous 28-day period. Thirteen (37%) of the 35 countries for which data are available reported increases in new cases of 20% or greater, with the highest proportional increases observed in Mongolia (1996 vs 118 new cases; +1592%), Cambodia (67 vs nine new cases; +644%), and the Lao People's Democratic Republic (177 vs 48 new cases; +269%). The highest numbers of new cases were reported from the Republic of Korea (470 093 new cases; 916.9 new cases per 100 000; +29%), Australia (147 684 new cases; 579.2 new cases per 100 000; +27%), and Singapore (82 538 new cases; 1410.8 new cases per 100 000; -12%).

The number of new 28-day deaths in the Region decreased by 19% as compared to the previous 28-day period, with 1305 new deaths reported. The highest numbers of new deaths were reported from Australia (450 new deaths; 1.8 new deaths per 100 000; -15%), the Republic of Korea (288 new deaths; <1 new death per 100 000; +37%), and China (232 new deaths; <1 new death per 100 000; +130%).



Updates from the [Western Pacific Region](#)

## Annex 1. Data, table, and figure notes

Data presented are based on official laboratory-confirmed COVID-19 cases and deaths reported to WHO by country/territories/areas, largely based upon WHO [case definitions](#) and [surveillance guidance](#). While steps are taken to ensure accuracy and reliability, all data are subject to continuous verification and change, and caution must be taken when interpreting these data as several factors influence the counts presented, with variable underestimation of true case and death incidences, and variable delays to reflecting these data at the global level. Case detection, inclusion criteria, testing strategies, reporting practices, and data cut-off and lag times differ between countries/territories/areas. A small number of countries/ territories/areas report combined probable and laboratory-confirmed cases. Differences are to be expected between information products published by WHO, national public health authorities, and other sources.

A record of historic data adjustment made is available upon request by emailing [epi-data-support@who.int](mailto:epi-data-support@who.int). Please specify the countries of interest, time period, and purpose of the request/intended usage. Prior situation reports will not be edited; see [covid19.who.int](https://covid19.who.int) for the most up-to-date data. COVID-19 confirmed cases and deaths reported in the last seven days by countries, territories, and areas, and WHO Region (reported in previous issues) are now available at: <https://covid19.who.int/table>.

‘Countries’ may refer to countries, territories, areas or other jurisdictions of similar status. 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. Countries, territories, and areas are arranged under the administering WHO region. The mention of specific companies or of certain manufacturers’ products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

Updates on the COVID-19 outbreak in the Democratic People’s Republic of Korea are not included in this report as the number of laboratory-confirmed COVID-19 cases is not reported.

## Annex 2. SARS-CoV-2 variants assessment and classification

WHO, in collaboration with national authorities, institutions and researchers, routinely assesses if variants of SARS-CoV-2 alter transmission or disease characteristics, or impact the effectiveness of vaccines, therapeutics, diagnostics or public health and social measures (PHSM) applied to control disease spread. Potential variants of concern (VOCs), variants of interest (VOIs) or variants under monitoring (VUMs) are regularly assessed based on the risk posed to global public health.

The classifications of variants will be revised as needed to reflect the continuous evolution of circulating variants and their changing epidemiology. Criteria for variant classification, and the lists of currently circulating and previously circulating VOCs, VOIs and VUMs, are available on the [WHO Tracking SARS-CoV-2 variants website](#). National authorities may choose to designate other variants and are strongly encouraged to investigate and report newly emerging variants and their impact.

WHO continues to monitor all SARS-CoV-2 variants and to track changes in prevalence and viral characteristics. The current trends describing the circulation of variants should be interpreted with due consideration of the limitations of the COVID-19 surveillance systems. These include differences in sequencing capacity and sampling strategies between countries, changes in sampling strategies over time, reductions in tests conducted and sequences shared by countries, and delays in uploading sequence data to GISAID.<sup>1</sup>

## References

1. Chen Z, Azman AS, Chen X, et al. Global landscape of SARS-CoV-2 genomic surveillance and data sharing. *Nature genetics*. 2022;54(4). doi:10.1038/s41588-022-01033-y