COVID-19 Weekly Epidemiological Update

Edition 59, published 28 September 2021

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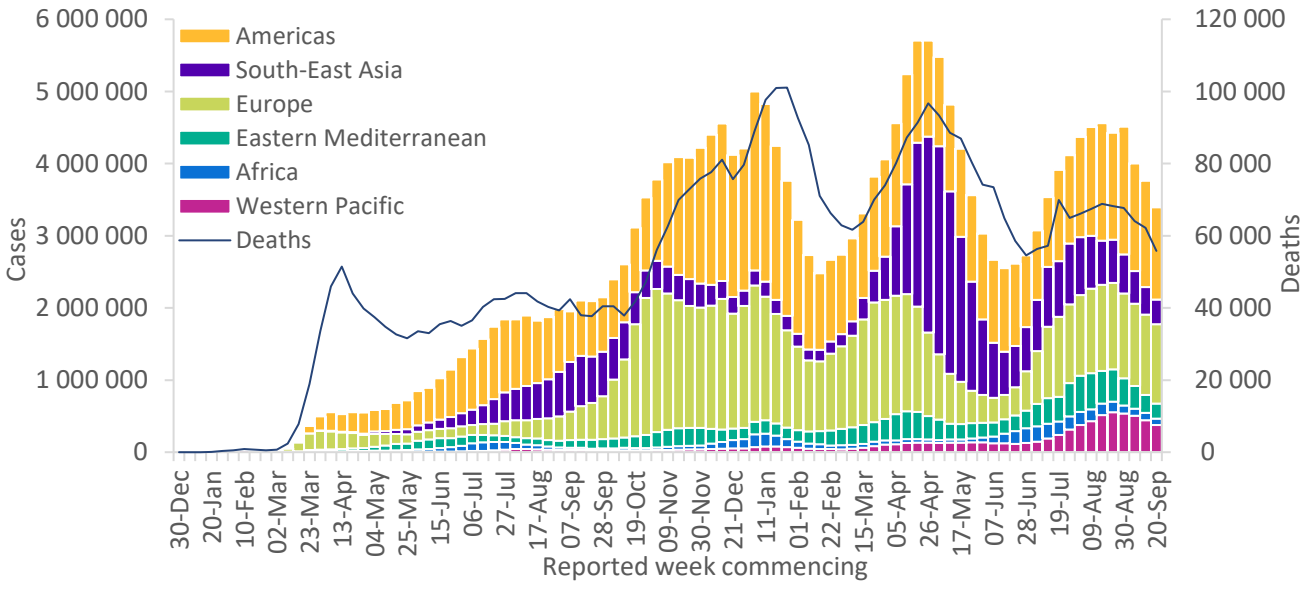
Global overview

Data as of 26 September 2021

Globally, the numbers of weekly COVID-19 cases and deaths continued to decline (Figure 1). Over 3.3 million new cases and over 55 000 new deaths were reported during the week of 20 – 26 September 2021, decreases of 10% as compared to the previous week for both cases and deaths (Table 1). The largest decrease in new weekly cases was reported from the Eastern Mediterranean Region (17%), followed by the Western Pacific Region (15%), the Region of the Americas (14%), the African Region (12%) and the South-East Asia Region (10%); while weekly cases in the European Region were similar to the previous week. The cumulative number of confirmed cases reported globally is now over 231 million and the cumulative number of deaths is more than 4.7 million.

The number of new weekly deaths reported showed a large (>15%) decline for all regions except for the European Region, which reported a similar number of weekly deaths compared to previous week, and the African Region which reported a slight increase (5%). The largest decline in weekly deaths was reported from the Western Pacific Region, with a 24% decline as compared to the previous week.

Figure 1. COVID-19 cases reported weekly by WHO Region, and global deaths, as of 26 September 2021**



**See *Annex 2: Data, table and figure notes*

The regions reporting the highest weekly case and death incidence rates per 100 000 population remain the same as in the previous weeks: the Region of the Americas (124.6 new cases per 100 000 population; 2.3 deaths per 100 000 population) and the European Region (117.6 new cases per 100 000 population; 1.6 deaths per 100 000 population).

The highest numbers of new cases were reported from the United States of America (765 827 new cases; 31% decrease), Brazil (247 397 new cases; 135% increase due to changes in reporting), the United Kingdom (230 494 new cases; 14% increase), India (204 582 new cases; similar to previous week), and Turkey (192 778 new cases; similar to previous week), while the highest numbers of new deaths were from the United States of America (14 842 new deaths, a 17% decrease), the Russian Federation (5469 new deaths, similar to the previous week), Mexico (3689 new deaths, a 13% increase), Brazil (3727 new deaths, a 10% increase), and the Islamic Republic of Iran (2967 new deaths, a 23% decrease) respectively.

Globally, cases of the Alpha variant have been reported in 193 countries, territories or areas (hereafter countries; no new country added since last two weeks), while 142 countries (no new country since last week) have reported cases of the Beta variant; and 96 countries (no new countries since last week) have reported cases of the Gamma variant. The Delta variant has been reported in 187 countries (two new countries since last week), across all six WHO regions as of 28 September.

Table 1. Newly reported and cumulative COVID-19 cases and deaths, by WHO Region, as of 26 September 2021**

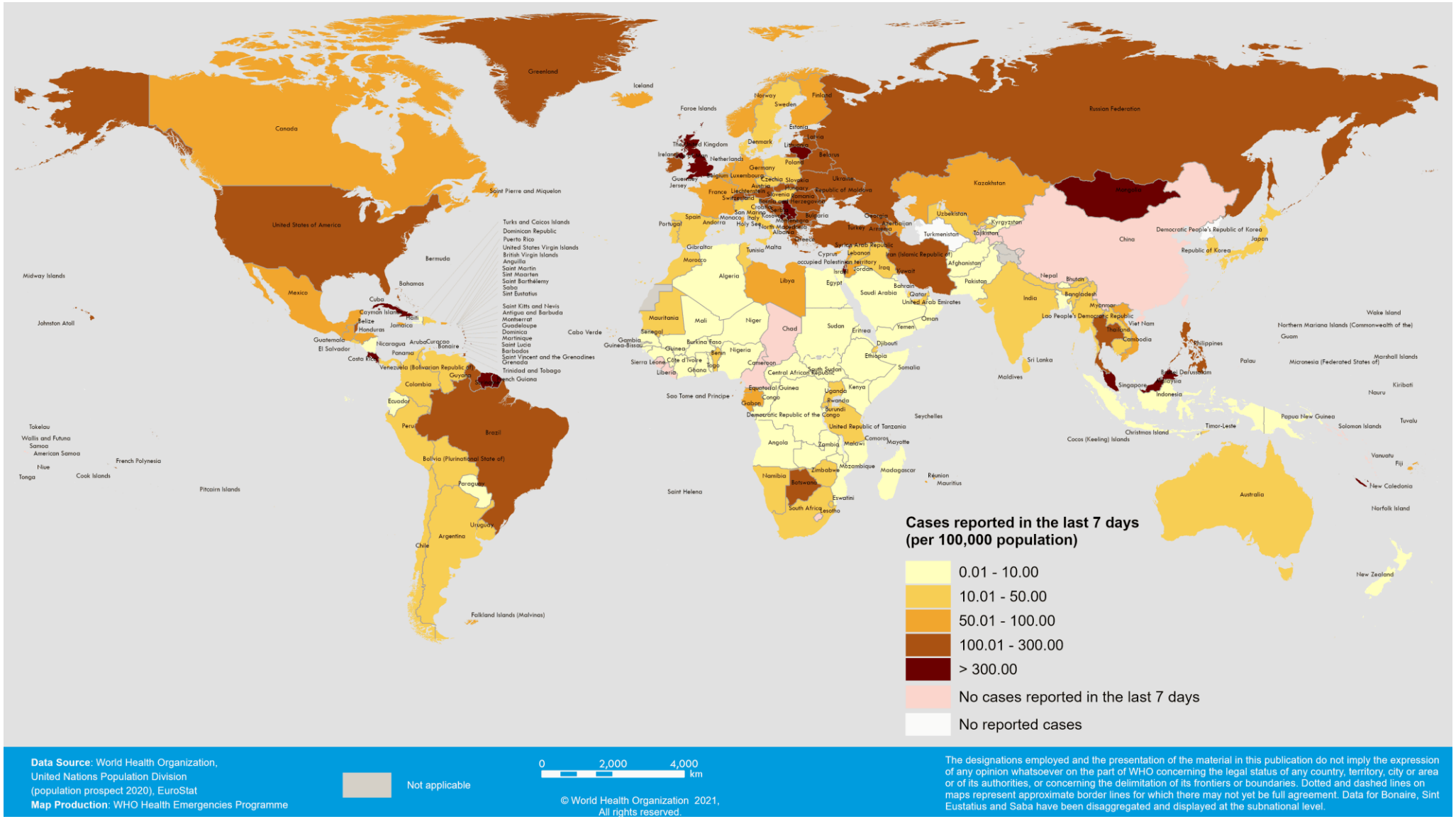
WHO Region	New cases in last 7 days (%)	Change in new cases in last 7 days *	Cumulative cases (%)	New deaths in last 7 days (%)	Change in new deaths in last 7 days *	Cumulative deaths (%)
Americas	1 273 971 (38%)	-14%	89 236 517 (39%)	23 890 (43%)	-10%	2 196 144 (46%)
Europe	1 097 735 (32%)	-1%	69 411 718 (30%)	14 638 (26%)	-1%	1 326 559 (28%)
South-East Asia	344 305 (10%)	-10%	42 843 227 (19%)	5 249 (9%)	-20%	673 717 (14%)
Eastern Mediterranean	209 329 (6%)	-17%	15 659 306 (7%)	4 284 (8%)	-16%	286 995 (6%)
Western Pacific	378 919 (11%)	-15%	8 266 265 (4%)	5 233 (9%)	-24%	112 945 (2%)
Africa	87 135 (3%)	-12%	5 998 863 (3%)	2 536 (5%)	5%	144 957 (3%)
Global	**3 391 394 (100%)**	**-10%**	**231 416 660 (100%)**	**55 830 (100%)**	**-10%**	**4 741 330 (100%)**

**Percent change in the number of newly confirmed cases/deaths in past seven days, compared to seven days prior*
***See Annex 2: Data, table and figure notes*

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

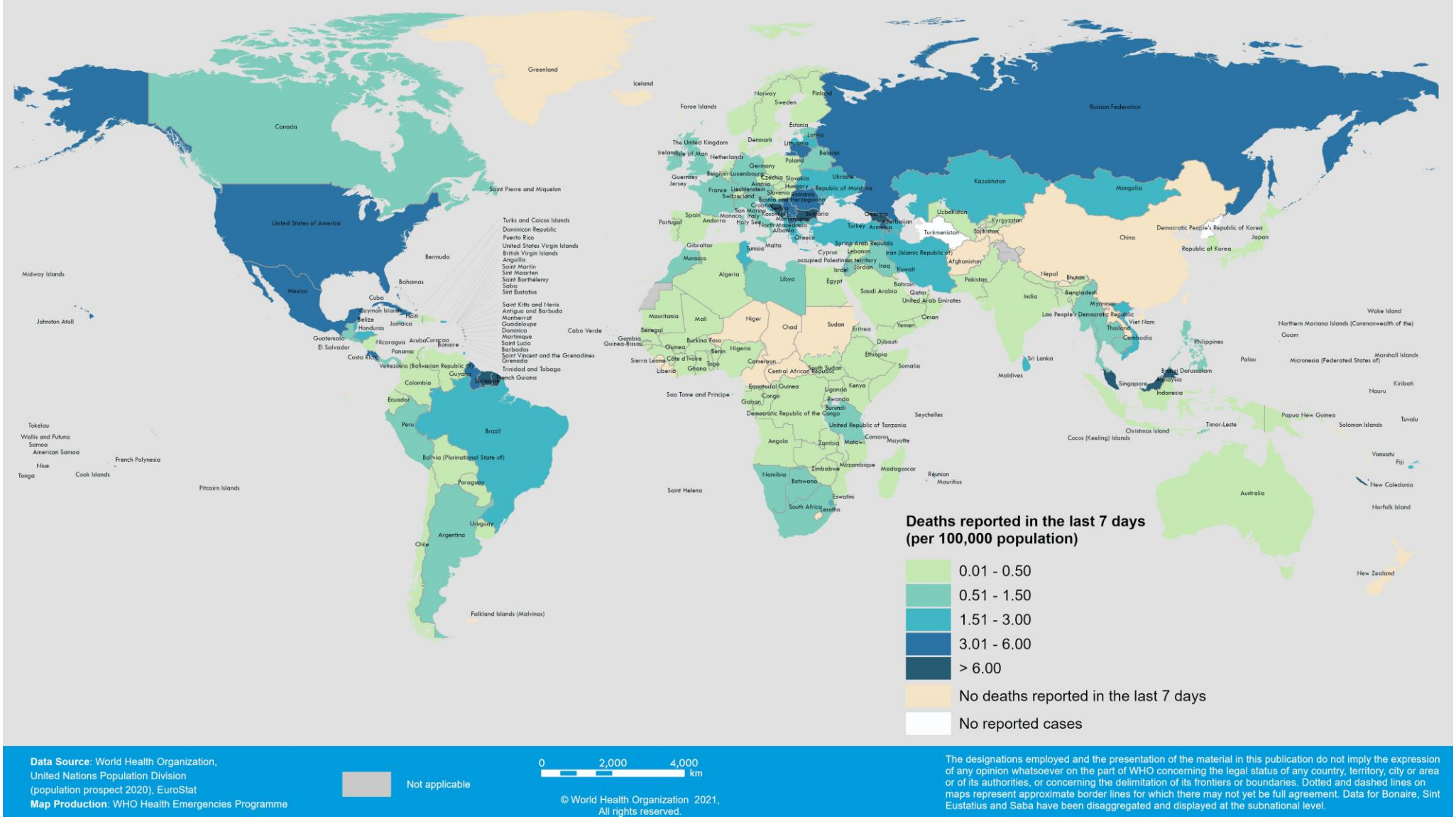
- WHO COVID-19 Dashboard
- WHO COVID-19 Weekly Operational Update and previous editions of the Weekly Epidemiological Update

Figure 2. COVID-19 cases per 100 000 population reported by countries, territories and areas, 20 – 26 September 2021**



**See *Annex 2: Data, table and figure notes*

Figure 3. COVID-19 deaths per 100 000 population reported by countries, territories and areas, 20 -26 September 2021**



**See *Annex 2: Data, table and figure notes*

Special Focus: Approaches to determining waning COVID-19 vaccine effectiveness

Why should we be concerned about waning immunity?

More than 21 months into the pandemic, there remains critical information that remains unknown about SARS-CoV-2 and the disease it causes: COVID-19. One of these topics is whether immunity conferred after vaccination or infection wanes over time. Knowing whether and to what extent immunity may wane in the mid- to long-term is critical to inform the public health response and policy decisions. Here, we focus on waning immunity following vaccination – we describe the different ways in which scientists have studied changes in vaccine effectiveness in people who have been vaccinated over time and provide a summary of the findings thus far.

Does immunity wane after vaccination?

Multiple COVID-19 vaccines have received Emergency Use Listing (EUL) from WHO based on vaccine efficacy results from randomized controlled clinical trials[1]. However, the follow-up time of the clinical trials used to assess vaccine efficacy for EUL was shorter than the usual follow-up time for trials of other new vaccines, with most efficacy results having a median follow-up time of two months. Outside clinical trial settings, vaccine effectiveness (VE) results among persons immunized as part of national vaccine roll-outs were similar to the findings of the clinical trials in the first few months after vaccines began to be administered[2]. However, despite the encouraging results of early VE studies, the duration of reported protection for COVID-19 vaccines require continued monitoring because in vitro studies of neutralization by vaccine-induced antibodies showed that, levels of most vaccine-derived antibodies declined over time (for more details, please see Special Focus published in Weekly Epidemiological Update on 27 July)[3]. However, it is important to consider that the antibody response is only one part of the immune response. It is not known what level of antibodies in the body is needed to provide protection against SARS-CoV-2 infection or severe disease, nor whether vaccine-derived memory cells will be activated in response to subsequent exposure to SARS-CoV-2, nor whether any observed decline in antibodies correspond to decreases in VE and if so, over what timeframe[4].

Approaches to assess waning vaccine effectiveness against infection and all symptomatic disease

Interval-based estimates

Most VE studies provide estimates of cumulative VE to represent VE from 7-14 days after full vaccination through a defined follow-up period, the duration of which varies by study[5]. However, cumulative VE estimates can obscure any waning VE during the latter part of the follow-up period, particularly in situations when most cases occur in the months soon after vaccination. Several approaches have been taken to address this limitation, the most common being to measure the VE at fixed intervals after vaccination. As of 21 September 2021, an interval-based assessment of efficacy from one randomized controlled trial[6] and VE from eight real-world studies have identified waning VE for infection and symptomatic disease in several settings, for four COVID-19 vaccines[7-14] (Figure 4). Vaccine effectiveness appears to peak 1-2 months after vaccination and then starts to decline from the third month after vaccination for Pfizer BioNTech-Comirnaty and AstraZeneca-Vaxzevria vaccines in some studies[6-8,12-13]. Only one study has assessed VE at different time intervals up to 3.5 months post-vaccination for the Moderna-mRNA-1273 vaccine and, unlike the studies mentioned above, did not show any apparent waning against symptomatic infection[7].

A potential problem with the interval-based approach to VE estimates is that circulation of a new variant with more pronounced immune escape characteristics, such as the Beta or Delta variants, during the follow-up period can confound the later VE estimates. Limiting the analysis to only cases caused by a single variant over time can disaggregate waning VE from reduced VE due to a specific variant. To address this potential confounding factor, a study from the United Kingdom, using a test-negative design, demonstrated waning VE against symptomatic disease caused by the Delta variant for both the Pfizer BioNTech-Comirnaty and AstraZeneca-Vaxzevria vaccines from 10 weeks after full vaccination[7]. A study conducted in Qatar, found

waning VE against infection with Alpha, Beta and Delta variants three to four months after complete vaccination with Pfizer BioNTech-Comirnaty; however, confidence intervals for some time periods were wide and overlapping[8]. Most VE studies do not conduct genomic characterization for all cases as the studies in the United Kingdom and Qatar did, which limits the ability to differentiate waning VE from reduced VE due to variants.

Case-only analysis of vaccinated cases

Another approach to the interval-based approach is to undertake a case-only analysis of vaccinated cases, comparing rates of breakthrough infections and disease during a defined time period, stratified by the time of vaccination. A recent study from Israel measured incidence during a 3-week period in July 2021 when the Delta variant was the predominant variant, stratified by the month of vaccination[12]. It found rates of SARS-CoV-2 infection in July 2021 were two-fold or higher for those vaccinated in late January 2021 compared to May 2021. A case-only approach does not yield a VE estimate, which requires a comparison to unvaccinated persons, so this study did not provide estimates of waning VE.

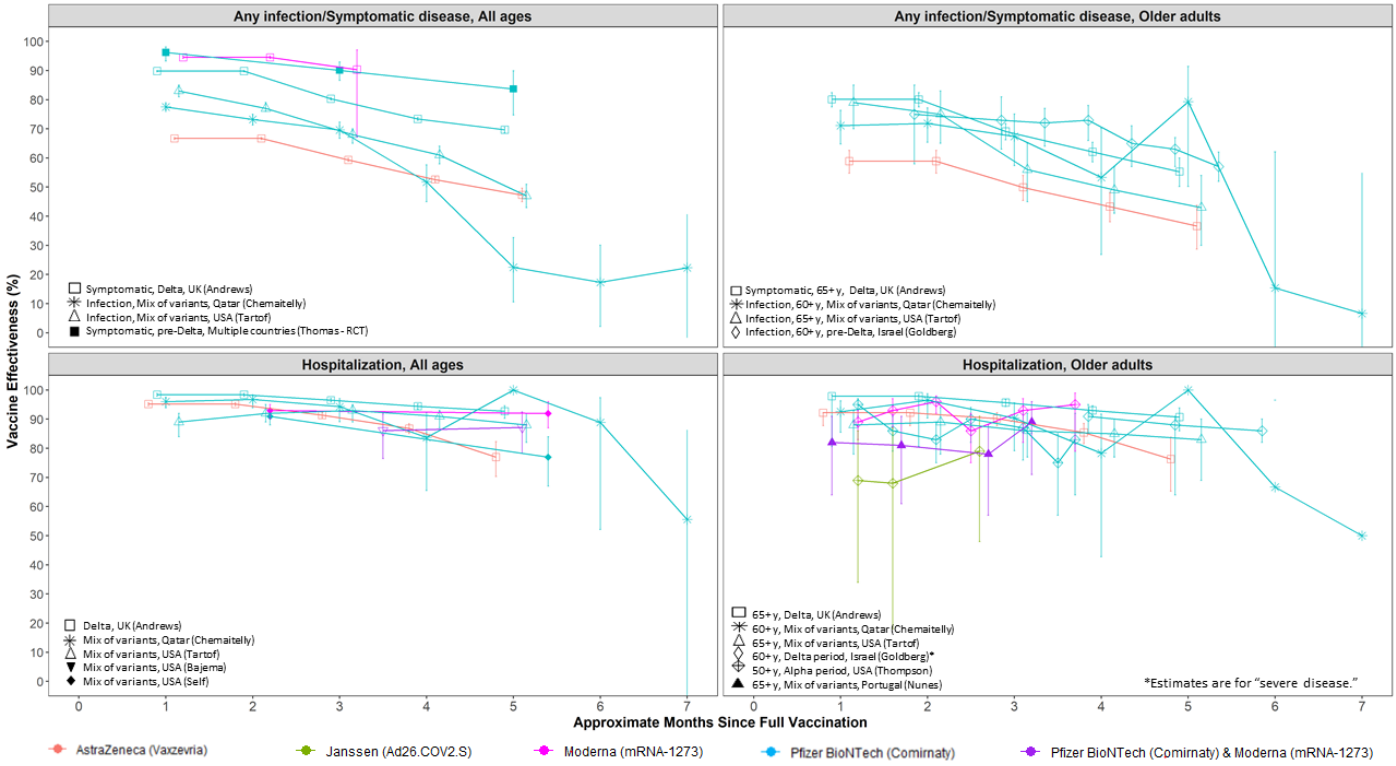
Comparison of disease occurrence

Another methodology to assess waning VE is using rates of breakthrough cases to compare the incidence rate ratio (IRR) between vaccinated and unvaccinated persons at different time points. This approach was used in 13 jurisdictions the United States of America where the age-standardized IRR for all COVID-19 symptomatic disease between those not fully vaccinated and those who were fully vaccinated decreased from 11.1 (95% CI, 7.8-15.8) between 5 April – 19 June 2021, to 4.6 (95% CI, 2.5-8.5) between 20 June - 17 July 2021[15]. A limitation of this study was the inability to disaggregate the effect of waning due to time since vaccination versus the increased circulation of the Delta variant in the later time period. An additional limitation was the challenge of accounting for confounding.

Approaches to assess waning immunity against hospitalization and severe disease

These same approaches described above have also been used to assess waning VE against hospitalization/severe disease. In contrast to the findings for infection and symptomatic disease, the VE against severe outcomes remains high ($\geq$75%) over time for Pfizer BioNTech-Comirnaty, AstraZeneca-Vaxzevria, Moderna-mRNA-1273, and $\geq$68% for Janssen-Ad26.COV2.S. (Figure 1)[9, 10, 11, 14]. However, some studies, done in settings where the Delta variant was predominant, have shown that VE against severe disease dropped by 5-15 percentage points from four months after vaccination with Pfizer BioNTech-Comirnaty in Israel, the United Kingdom, Qatar and the United States of America[7, 8, 12, 13], and AstraZeneca-Vaxzevria in the United Kingdom[7]. No waning was seen for Moderna-mRNA-1273, and Janssen-Ad26.COV2.S, although there was less follow-up time for these vaccines. Further follow-up of the VE against severe disease for all vaccines is needed to clarify if and how much waning VE might occur after more time has elapsed since full vaccination.

Figure 4: Vaccine effectiveness against infection and symptomatic disease and hospitalization for all ages and older adults[6-14]



What type of biases must be considered?

There are multiple sources of bias that are present in observational studies of VE and that need to be considered by researchers who design and conduct the studies, as well as media professionals and the public when interpreting the study results. While none of these biases invalidate findings from observational studies which assess VE, we should pay close attention to them to understand results from studies. These potential biases include:

- Individuals prioritized for vaccination early in vaccination campaigns were often those at higher risk for SARS-CoV-2 infection and/or severe COVID-19, such as frontline workers, older people and long-term care facility residents. These people may continue to be at higher risk of exposure, infection, and/or severe disease over time and they will be over-represented among individuals with the longest follow-up time after vaccination, resulting in apparent waning VE.

- Those who have been vaccinated may change their behavior, engaging in activities that may increase their exposure to the virus as they gain a sense of increased protection.

- Those who have been vaccinated may differ from those who remain unvaccinated with respect to their propensity to get tested for COVID-19 over time. The use of a test-negative study design partially addresses this potential bias[16] through accounting, in part, for health seeking behaviours.

- As more time elapses since vaccination, it is possible that there may be more misclassification of vaccine status, whereby vaccination status is not documented for some people, falsely assigning them to the unvaccinated group, even though they may indeed have vaccine-derived protection.

- The cause of death may be misclassified as being COVID-19, particularly in elderly individuals who have a higher likelihood of dying from *any* cause, as compared to other age groups.

- SARS-CoV-2 infection and subsequent infection-derived immunity will increase over time in the unvaccinated group, resulting in protection from further infection, leading to some apparent waning of VE[17].

- In settings with high vaccine coverage, the risk for the remaining unvaccinated comparison group may differ from the general population in terms of risk behaviour, among other factors, resulting in distorted VE estimates.

Despite these limitations, when different methodologies, carefully employed in different settings, yield similar results by outcome, target group and vaccine platform, it provides a more consistent picture of waning VE; information which is critical for public health response and policy decisions.

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Special Focus: Update on SARS-CoV-2 Variants of Interest and Variants of Concern

WHO, in collaboration with national authorities, institutions and researchers, routinely assesses if variants of SARS-CoV-2 alter transmission or disease characteristics, or impact vaccine, therapeutics, diagnostics or effectiveness of public health and social measures (PHSM) applied by national authorities to control disease spread. “Signals” of potential Variants of Concern (VOCs) or Variants of Interest (VOIs) are detected and assessed based on the risk posed to global public health.

As these risks evolve, WHO will continue to update lists of global VOIs and VOCs to support setting priorities for surveillance and research, and ultimately guide response strategies (for more information, please see the Tracking SARS-CoV-2 variants website).

National authorities may choose to designate other variants of local interest/concern and are encouraged to investigate and report on impacts of these variants.

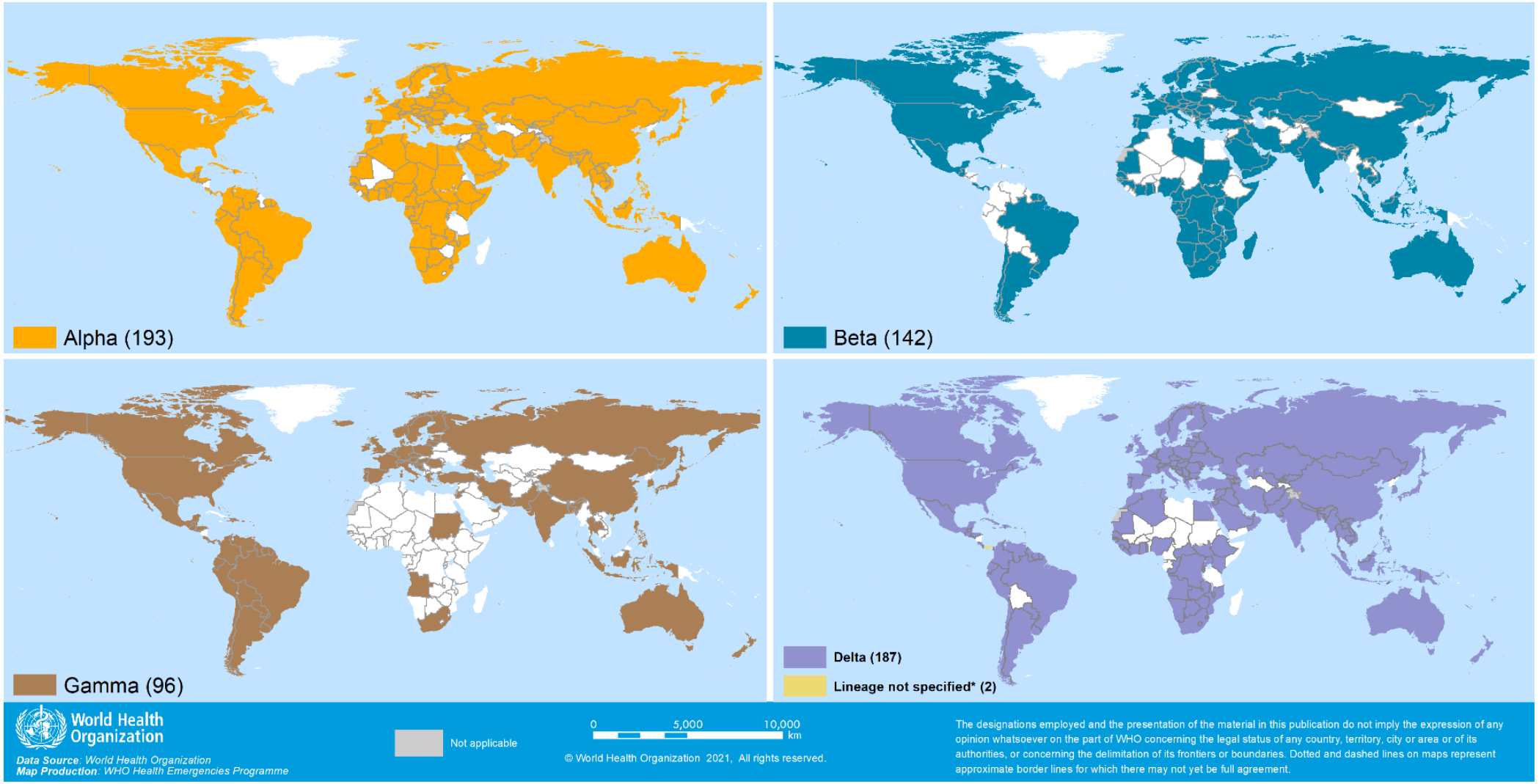
As surveillance activities to detect SARS-CoV-2 variants are strengthened at national and subnational levels, including through the expansion of genomic sequencing capacities, the number of countries/areas/territories (hereafter countries) reporting VOCs continues to increase (Figure 5, Annex 1). This distribution should nonetheless be interpreted with due consideration of surveillance limitations, including differences in sequencing capacities and sampling strategies between countries.

As countries gradually resume non-essential international travel, the introduction of risk mitigation measures aiming to reduce travel-associated exportation, importation and onward transmission of SARS-CoV-2 should be based on thorough risk assessments conducted systematically and routinely.

Additional resources

- Tracking SARS-CoV-2 Variants
- COVID-19 new variants: Knowledge gaps and research
- Genomic sequencing of SARS-CoV-2: a guide to implementation for maximum impact on public health
- Considerations for implementing and adjusting public health and social measures in the context of COVID-19

Figure 5. Countries, territories and areas reporting variants Alpha, Beta, Gamma and Delta, as of 28 September 2021**



**Includes countries/territories/areas reporting the detection of B.1.617 without further specification of lineage at this time. These will be reallocated as further details become available.*

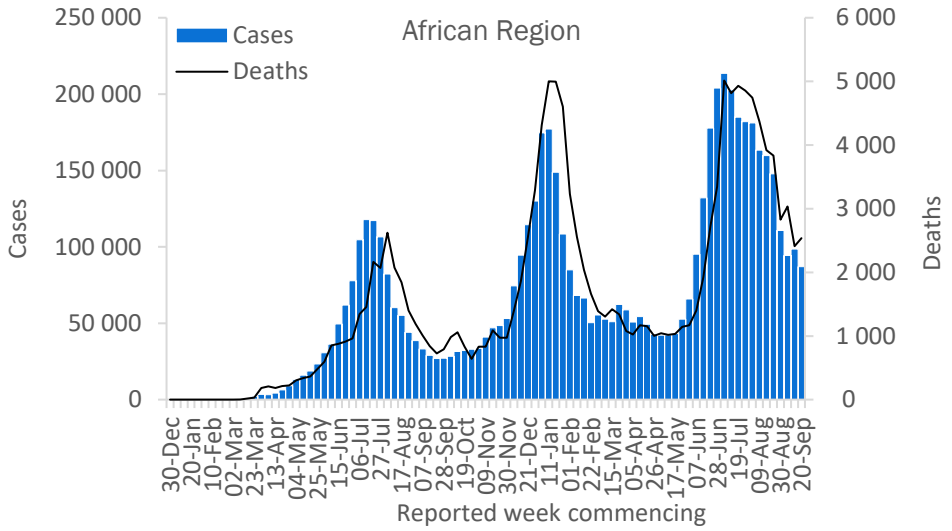
***Countries/territories/areas highlighted include both official and unofficial reports of VOC detections, and do not presently differentiate between detections among travellers (e.g., at Points of Entry) or local community cases. Please see Annex 2 for further details*

WHO regional overviews Epidemiological week 20 – 26 September 2021

African Region

The African Region reported over 87 000 new cases and over 2500 new deaths, a 12% decrease and a 5% increase respectively as compared to the previous week. Since the latest peak early July, the number of weekly cases has been decreasing continuously for almost three months; while weekly deaths remain elevated. Approximately one third of countries (29%; 14/49) in the Region reported an increase in new cases, ranging from 17 to 61%, highlighting the heterogeneity of trends in the Region.

The highest numbers of new cases were reported from the United Republic of Tanzania (24 307 new cases, a country which has not reported regularly), South Africa (15 627 new cases; 26.3 new cases per 100 000; a 40% decrease), and Ethiopia (8842 new cases; 7.7 new cases per 100 000; a 5% decrease). The highest numbers of new deaths were reported from South Africa (885 new deaths; 1.5 new deaths per 100 000 population; a 35% decrease), the United Republic of Tanzania (664 new deaths this week), and Ethiopia (254 new deaths; <1 new deaths per 100 000; a 22% increase).

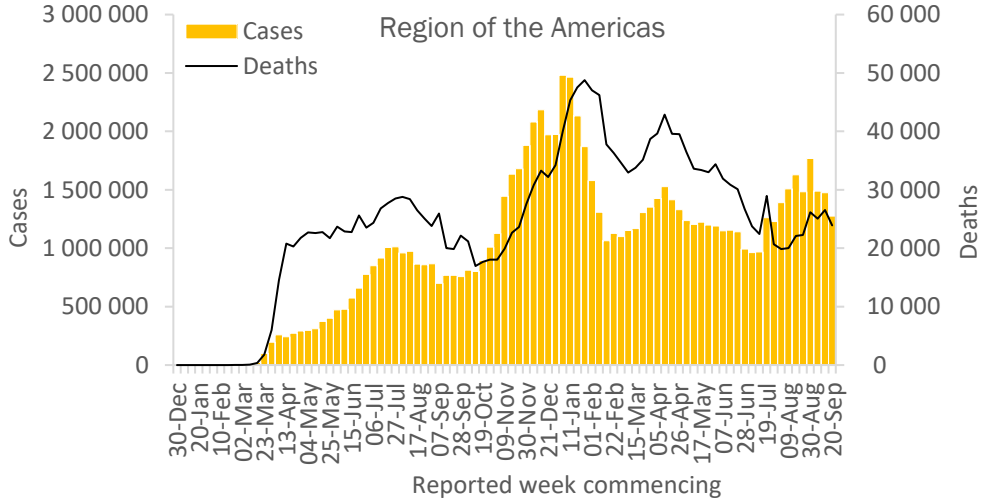


Updates from the African Region

Region of the Americas

The Region of the Americas reported over 1.2 million new cases and over 23 000 new deaths, decreases of 14% and 10% respectively as compared to the previous week. Despite the declining trend in new weekly cases and deaths, the overall epidemiological situation has not improved significantly since a surge in mid-July 2021. While the case incidence in the Region has decreased, in some countries, such as Dominica and French Guiana, the number of cases and the case incidence per 100 000 population have increased in the past week. Dominica reported 610 new cases/100 000 population this week, as compared to 361 the previous week. Similarly, French Guiana reported 510 new cases/100 000 population this week as compared to 471 the previous week.

The highest numbers of new cases were reported from the United States of America (765 827 new cases; 231.4 new cases per 100 000; a 31% decrease), Brazil (247 397 new cases; 116.4 new cases per 100 000; a 135% increase due to changes in reporting), and Mexico (66 132 new cases; 51.3 new cases per 100 000; a 13% increase). The highest numbers of new deaths were reported from the United States of America (12 312 new deaths; 3.7 new deaths per 100 000; a 17% decrease), Mexico (4165 new deaths; 3.2 new deaths per 100 000; a 13% increase), and Brazil (4090 new deaths; 1.9 new deaths per 100 000; a 10% increase).

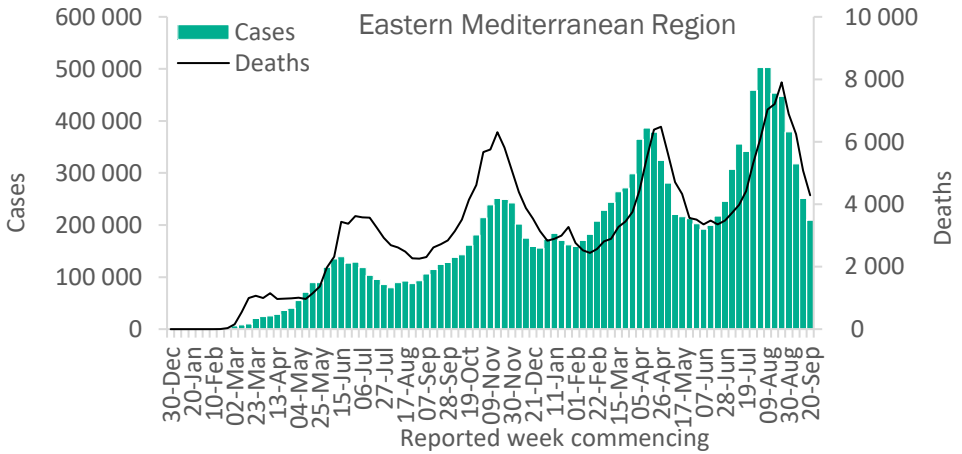


Updates from the Region of the Americas

Eastern Mediterranean Region

The Eastern Mediterranean Region continued to report decreases in case and death incidences this week, with over 209 000 new cases and over 4200 new deaths, decreases of 17% and 16% respectively as compared to the previous week. The decline in the number of weekly cases was driven by decreases reported from the three countries reporting the highest numbers of new cases: the Islamic Republic of Iran (110 868 new cases; 132.0 new cases per 100 000; a 17% decrease), Iraq (18 923 new cases; 47.0 new cases per 100 000; a 26% decrease), and Pakistan (15 627 new cases; 7.1 new cases per 100 000; a 21% decrease). Together these countries accounted for 69% of new cases reported in the Region.

A decrease in death incidence was reported from 9 of the 22 countries in the Region, including the three countries which reported the highest numbers of new deaths in the past week: the Islamic Republic of Iran (2281 new deaths; 2.7 new deaths per 100 000; a 23% decrease), Pakistan (389 new deaths; 0.2 new deaths per 100 000; an 18% decrease), and Morocco (302 new deaths; 0.8 new deaths per 100 000; a 12% decrease).

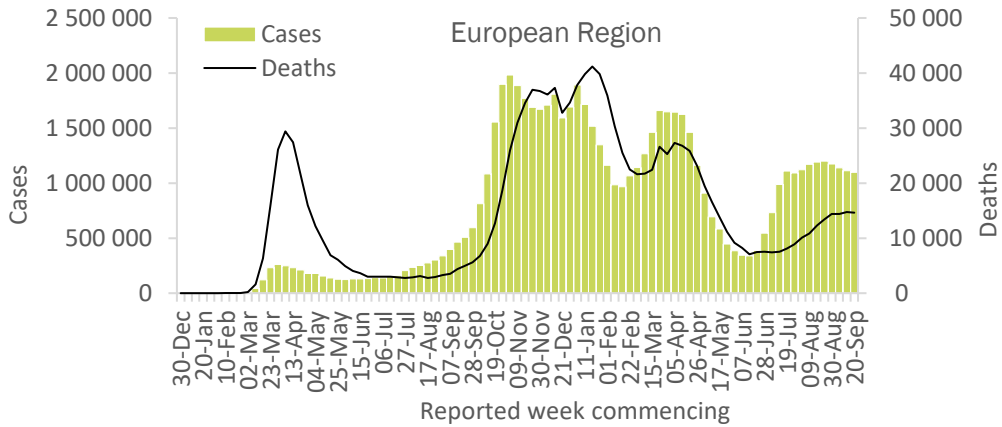


Updates from the Eastern Mediterranean Region

European Region

The European Region reported just under 1.1 million new cases and over 14 000 new deaths, similar numbers to those reported during the previous week. For over two months, the number of new weekly cases in the Region has oscillated within range of a <5% change week-on-week, although within the Region, countries have reported varying trends. For example, case incidence in Romania and Serbia have increased sharply, while case incidence has decreased in Israel over the past month. The highest numbers of new cases were reported from the United Kingdom (230 494 new cases; 339.5 new cases per 100 000; a 14% increase), Turkey (192 778 new cases; 228.6 new cases per 100 000; a 5% increase), and the Russian Federation (145 985 new cases; 100.0 new cases per 100 000; an 8% increase).

Death incidence has plateaued over the past month, after the Region reported a gradual increase in weekly deaths from mid-July to late-August. The three countries reporting the highest numbers of new deaths in the Region accounted for 56% of the Region's deaths this week: the Russian Federation (5682 new deaths; 3.9 new deaths per 100 000; a 4% increase), Turkey (1577 new deaths; 1.9 new deaths per 100 000; an 8% decrease), and the United Kingdom (958 new deaths; 1.4 new deaths per 100 000; a 4% decrease).

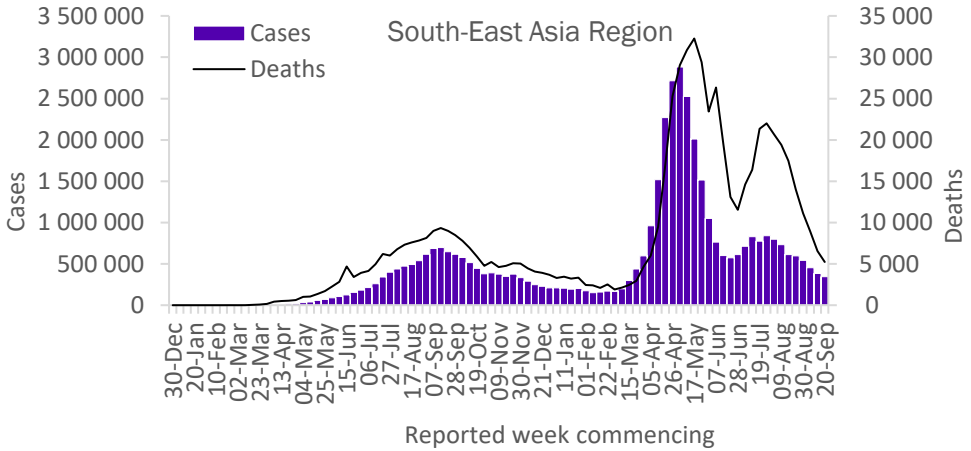


Updates from the European Region

South-East Asia Region

In the South-East Asian Region, both case and death incidence have declined for the past two months. In the past week, over 344 000 new cases and 5200 new deaths were reported, decreases of 10% and 20% respectively as compared to the previous week. All but two countries in the Region have reported declines in new cases over the past several weeks. This week, the highest numbers of new cases were reported from India (204 582 new cases; 14.8 new cases per 100 000; similar to last week's figures), Thailand (85 143 new cases; 122.0 new cases per 100 000; a 10% decrease), and Indonesia (17 250 new cases; 6.3 new cases per 100 000; a 26% decrease).

Seven of the 10 countries in the Region reported a decline in weekly deaths, with notable decreases reported from Nepal (by 38%) and Indonesia (by 37%). Bhutan did not report any new deaths, while the Maldives and Timor-Leste reported similar weekly figures as last week. The highest numbers of new deaths were reported from India (2080 new deaths; <1 new deaths per 100 000; similar to last week's figures), Indonesia (999 new deaths; <1 new deaths per 100 000; a 37% decrease), and Thailand (905 new deaths; 1.3 new deaths per 100 000; a 10% decrease).

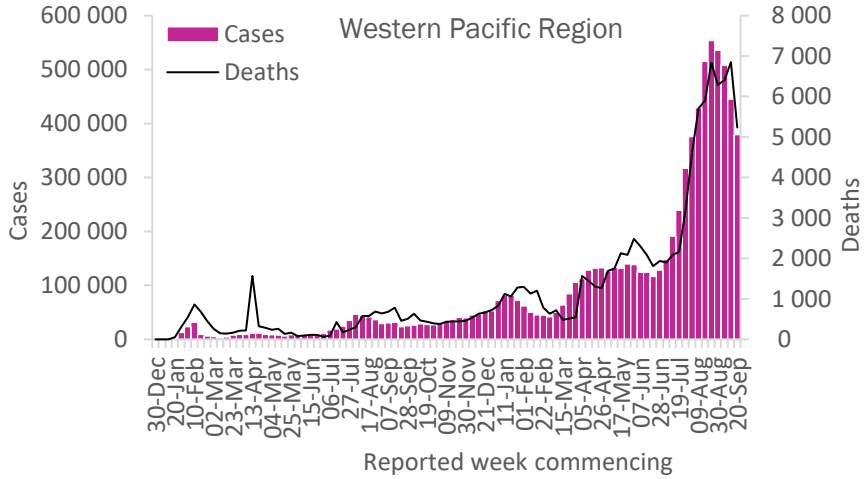


Updates from the South-East Asia Region

Western Pacific Region

The Western Pacific Region reported just under 379 000 new cases and over 5200 new deaths, decreases of 15% and 24% respectively as compared to the previous week. Although the regional case incidence has continued to decline for a month, weekly incidence increased in 5 of 26 (19%) countries, including in Singapore (63% increase) and Lao People's Democratic Republic (62% increase). The highest numbers of new cases were reported from the Philippines (122 625 new cases; 111.9 new cases per 100 000; a 13% decrease), Malaysia (102 255 new cases; 315.9 new cases per 100 000; a 16% decrease), and Viet Nam (69 655 new cases; 71.6 new cases per 100 000; an 8% decrease).

While there was a marked decline in the number of weekly deaths reported this week, four countries including Singapore, New Caledonia, Mongolia and China reported over 100% increase in new deaths as compared to the previous week. The highest numbers of new deaths were reported from Malaysia (2092 new deaths; 6.5 new deaths per 100 000; a 21% decrease), Viet Nam (1543 new deaths; 1.6 new deaths per 100 000; a 16% decrease), and the Philippines (822 new deaths; <1 new deaths per 100 000; a 49% decrease).



Updates from the Western Pacific Region

Summary of the COVID-19 Weekly Operational Update

The Weekly Operational Update (WOU) is a report provided by the COVID-19 Strategic Preparedness and Response Plan (SPRP) monitoring and evaluation team which aims to update on the ongoing global progress against the COVID-19 SPRP 2021 framework.

In this week's edition of the COVID-19 Weekly Operational Update, published on 28 September, highlights of country-level actions and WHO support to countries include:

- Delivering 2 million syringes for Sri Lanka's COVID-19 vaccination drive
- Shipment of WHO life-saving medical supplies to Kabul, Afghanistan with support from Qatar
- WHO logistics hub airlifts largest single shipment of humanitarian cargo to Ethiopia
- WHO/Europe and Germany support children with disabilities in Belarus
- Rebooting COVID-19 response strategy and measures in Cambodia
- Expanding capacity for Integrated Disease Surveillance and Response (IDSR) in the African Region
- External Quality Assessment for laboratories testing for SARS-CoV-2
- Testing Rapid Response Mobile Laboratories (RRML) deployment procedures and minimum standards in first virtual tabletop (V-TTX) exercise for RRML/GOARN
- Connecting countries to share experiences and learnings from their COVID-19 vaccine roll-out using the mini-cPIE (COVID-19 vaccination Intra-Action Review) process
- Progress on a subset of indicators from the SPRP 2021 Monitoring and Evaluation Framework
- Updates on WHO's financing to support countries in SPRP 2021 implementation and provision of critical supplies.

For more information, see the Weekly operational update on COVID-19

Annex

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.

Annex 1. List of countries/territories/areas reporting Variants of Concern as of 28 September 2021

Country/Territory/Area	Alpha	Beta	Gamma	Delta	Unspecified B.1.617
Afghanistan	●	-	-	●	-
Albania	●	-	-	○	-
Algeria	●	-	-	●	-
Andorra	○	○	-	○	-
Angola	●	●	●	●	-
Anguilla	●	-	-	●	-
Antigua and Barbuda	●	●	●	●	-
Argentina	●	●	●	●	-
Armenia	●	-	-	●	-
Aruba	●	●	●	●	-
Australia	●	●	●	●	-
Austria	●	●	●	●	-
Azerbaijan	●	-	-	○	-
Bahamas	●	-	●	●	-
Bahrain	●	●	●	●	-
Bangladesh	●	●	○	●	-
Barbados	●	-	●	●	-
Belarus	●	-	-	○	-
Belgium	●	●	●	●	-
Belize	●	-	●	●	-
Benin	●	-	-	-	-
Bermuda	●	●	-	●	-
Bhutan	●	●	-	●	-
Bolivia (Plurinational State of)	●	-	●	-	-
Bonaire	●	-	●	●	-
Bosnia and Herzegovina	●	●	●	○	-
Botswana	○	●	-	●	-
Brazil	●	●	●	●	-
British Virgin Islands	●	-	●	●	-
Brunei Darussalam	●	●	-	●	-
Bulgaria	●	●	-	●	-
Burkina Faso	●	-	-	-	-
Burundi	●	●	-	●	-
Cabo Verde	●	-	-	●	-
Cambodia	●	●	-	●	-
Cameroon	●	●	-	-	-
Canada	●	●	●	●	-
Cayman Islands	●	●	●	●	-
Central African Republic	●	●	-	●	-
Chad	●	-	-	-	-
Chile	●	●	●	●	-
China	●	●	●	○	-
Colombia	●	-	●	●	-
Comoros	-	●	-	-	-
Congo	●	○	-	●	-
Costa Rica	●	●	●	●	-
Croatia	●	●	●	○	-
Cuba	●	●	-	●	-
Curaçao	●	●	●	●	●
Cyprus	●	●	-	○	-
Czechia	●	●	●	●	-
Côte d'Ivoire	●	●	-	○	-
Democratic Republic of the Congo	●	●	-	●	-
Denmark	●	●	●	●	-
Djibouti	●	●	-	-	-
Dominica	●	-	-	●	-
Dominican Republic	●	-	●	●	-
Ecuador	●	-	●	●	-
Egypt	●	-	-	●	-
El Salvador	●	-	●	●	-
Equatorial Guinea	●	●	-	-	-
Estonia	●	●	○	○	-
Eswatini	●	●	-	●	-
Ethiopia	●	-	-	●*	-
Falkland Islands (Malvinas)	●	●	-	-	-
Faroe Islands	●	-	●	-	-
Fiji	-	-	-	●	-
Finland	●	●	●	●	-
France	●	●	●	●	-
French Guiana	●	●	●	●	-
French Polynesia	●	●	●	●	-

Country/Territory/Area	Alpha	Beta	Gamma	Delta	Unspecified B.1.617
Gabon	●	●	-	-	-
Gambia	●	-	-	●	-
Georgia	●	○	-	●	-
Germany	●	●	●	●	-
Ghana	●	●	-	●	-
Gibraltar	●	-	-	○	-
Greece	●	●	●	●	-
Grenada	●	-	-	●	-
Guadeloupe	●	●	●	●	-
Guam	●	●	●	●	-
Guatemala	●	●	●	●	-
Guinea	●	●	-	●	-
Guinea-Bissau	●	●	-	●	-
Guyana	-	-	●	●	-
Haiti	●	-	●	●	-
Honduras	●	-	●	●	-
Hungary	●	○	●	○	-
Iceland	●	●	●	●	-
India	●	●	●	●	-
Indonesia	●	●	●	●	-
Iran (Islamic Republic of)	●	●	●	●	-
Iraq	●	●	-	●	-
Ireland	●	●	●	●	-
Israel	●	●	●	●	-
Italy	●	●	●	●	-
Jamaica	●	-	-	●	-
Japan	●	●	●	●	-
Jordan	●	●	●	●	-
Kazakhstan	●	○	-	●	-
Kenya	●	●	-	●	-
Kosovo[1]	●	○	-	○	-
Kuwait	●	●	-	●	-
Kyrgyzstan	●	●	-	●	-
Lao People's Democratic Republic	●	-	-	●	-
Latvia	●	●	●	○	-
Lebanon	●	-	-	●	-
Lesotho	-	●	-	●	-
Liberia	●	-	-	●	-
Libya	●	●	-	-	-
Liechtenstein	●	-	-	○	-
Lithuania	●	●	●	○	-
Luxembourg	●	●	●	●	-
Madagascar	-	●	-	-	-
Malawi	●	●	-	●	-
Malaysia	●	●	-	●	-
Maldives	●	-	-	●	-
Malta	●	○	●	○	-
Martinique	●	●	●	●	-
Mauritania	●	●	-	●	-
Mauritius	●	●	-	●	-
Mayotte	●	●	-	-	-
Mexico	●	●	●	●	-
Monaco	●	●	-	●	-
Mongolia	●	-	-	●	-
Montenegro	●	-	○	○	-
Montserrat	●	-	●	●	-
Morocco	●	●	-	●	-
Mozambique	●	●	-	●	-
Myanmar	●	-	-	●	-
Namibia	●	●	-	●	-
Nepal	●	-	-	●	-
Netherlands	●	●	●	●	-
New Caledonia	●	-	-	●	-
New Zealand	●	●	○	○	-
Niger	●	-	-	-	-
Nigeria	●	●	-	●	-
North Macedonia	●	●	-	○	-
Northern Mariana Islands (Commonwealth of the)	○	-	-	●	-
Norway	●	●	●	●	-
Occupied Palestinian Territory	●	●	-	●	-
Oman	●	●	-	●	-
Pakistan	●	●	●	●	-
Panama	●	●	●	●	●
Papua New Guinea	-	-	-	●	-
Paraguay	●	-	●	●	-
Peru	●	-	●	●	-
Philippines	●	●	●	●	-
Poland	●	○	●	●	-
Portugal	●	●	●	●	-
Puerto Rico	●	●	●	●	-
Qatar	●	●	-	●	-
Republic of Korea	●	●	●	●	-
Republic of Moldova	●	-	-	●	-
Romania	●	●	●	●	-
Russian Federation	●	●	○	●	-
Rwanda	●	●	-	●	-
Réunion	●	●	●	○	-
Saba	-	-	-	●	-
Saint Barthélemy	●	-	-	●	-
Saint Kitts and Nevis	-	-	-	●	-

Country/Territory/Area	Alpha	Beta	Gamma	Delta	Unspecified B.1.617
Saint Lucia	●	-	-	●	-
Saint Martin	●	●	-	●	-
Saint Pierre and Miquelon	-	-	-	●	-
Saint Vincent and the Grenadines	-	-	●	●	-
Sao Tome and Principe	●	-	-	○	-
Saudi Arabia	●	●	-	●	-
Senegal	●	●	-	●	-
Serbia	●	-	-	●	-
Seychelles	●	●	-	●	-
Sierra Leone	-	-	-	●	-
Singapore	●	●	●	●	-
Sint Maarten	●	●	●	●	-
Slovakia	●	●	-	●	-
Slovenia	●	●	●	●	-
Somalia	●	●	-	-	-
South Africa	●	●	○	●	-
South Sudan	●	●	-	●	-
Spain	●	●	●	●	-
Sri Lanka	●	●	-	●	-
Sudan	●	●	●	-	-
Suriname	●	●	●	●	-
Sweden	●	●	●	●	-
Switzerland	●	●	●	●	-
Syrian Arab Republic	-	-	-	○*	-
Thailand	●	●	●	●	-
Timor-Leste	●	-	-	●	-
Togo	●	●	-	●	-
Trinidad and Tobago	●	-	●	●	-
Tunisia	●	●	-	●	-
Turkey	●	●	●	●	-
Turks and Caicos Islands	●	-	●	●	-
Uganda	●	●	-	●	-
Ukraine	●	○	-	○	-
United Arab Emirates	●	●	●	●	-
United Kingdom	●	●	●	●	-
United Republic of Tanzania	-	●	-	-	-
United States Virgin Islands	●	●	-	●	-
United States of America	●	●	●	●	-
Uruguay	●	●	●	●	-
Uzbekistan	●	●	-	○	-
Venezuela (Bolivarian Republic of)	●	-	●	●	-
Viet Nam	●	●	-	●	-
Wallis and Futuna	●	-	-	-	-
Yemen	●	●	-	-	-
Zambia	●	●	-	●	-
Zimbabwe	-	●	-	●	-

**Newly reported in this update.*
"Unspecified B.1.617" reflects countries/territories/areas reporting detection of B.1.617 without further specification of lineage at this time. These will be reallocated as further details become available.
"●" indicates that information for this variant was received by WHO from official sources.
"○" indicates that information for this variant was received by WHO from unofficial sources and will be reviewed as more information become available.
***Includes countries/territories/areas reporting the detection of VOCs among travelers (e.g., imported cases detected at points of entry), or local cases (detected in the community). Excludes countries, territories, and areas that have never reported the detection of a variant of concern.*

See also Annex 2: Data, table and figure notes.

Annex 2. Data, table and figure notes

Data presented are based on official laboratory-confirmed COVID-19 case 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 incidence, and variable delays to reflecting these data at 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. Due to public health authorities conducting data reconciliation exercises which remove large numbers of cases or deaths from their total counts, negative numbers may be displayed in the new cases/deaths columns as appropriate. When additional details become available that allow the subtractions to be suitably apportioned to previous days, graphics will be updated accordingly.

A record of historic data adjustment made is available upon request by emailing epi-data-support@who.int. Please specify the country(ies) of interest, time period(s), and purpose of the request/intended usage. Prior situation reports will not be edited; see covid19.who.int for the most up-to-date data.

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 except, the names of proprietary products are distinguished by initial capital letters.

[1] All references to Kosovo should be understood to be in the context of the United Nations Security Council resolution 1244 (1999). In the map, number of cases of Serbia and Kosovo (UNSCR 1244, 1999) have been aggregated for visualization purposes.

Technical guidance and other resources

- WHO technical guidance
- WHO COVID-19 Dashboard
- WHO Weekly Operational Updates on COVID-19
- WHO COVID-19 case definitions
- COVID-19 Supply Chain Inter-Agency Coordination Cell Weekly Situational Update
- Research and Development
- OpenWHO courses on COVID-19 in official UN languages and in additional national languages
- WHO Academy COVID-19 mobile learning app
- The Strategic Preparedness and Response Plan (SPRP) outlining the support the international community can provide to all countries to prepare and respond to the virus
- Recommendations and advice for the public:
  - Protect yourself
  - Questions and answers
  - Travel advice
- EPI-WIN: tailored information for individuals, organizations and communities