COVID-19 and Mpox

Situational Report in the ASEAN Region

ASEAN BioDiaspora Virtual Center (ABVC)

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ASSOCIATION OF SOUTHEAST ASIAN NATIONS

ASEAN BIODIASPORA VIRTUAL CENTER (ABVC)

GLOBAL PARTNERS

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COVID-19: Highlights and Situation Overview

Global Update

- **Worldwide**, there have been over 645 million cases and over 6 million deaths attributed to COVID-19.
- **China**'s government will abolish its COVID-19 trace tracking service, the "Mobile Itinerary Card" starting December 13 (Tuesday). China has used the itinerary card system to track individuals' travel histories for 14 days wherein the system is tied to people's phone numbers and aims to identify individuals who have visited cities within any area designated a "high-risk zone" by authorities. If a person has been to a city with a "high-risk zone" in the prior 14 days, then the city will be marked with a star sign in the system. This system, together with a health QR code that tracks individuals' health statuses regarding COVID-19, determined people's movements into public spaces across China. China announced 10 new guidelines including removal of health code tracking for most public places, rolled back mass testing, allowed many positive cases to quarantine at home and imposed limits on lockdowns of areas deemed "high risk". Meanwhile, Macao's government will allow individuals with COVID-19 to isolate at home and self-monitor for five days starting December 14 (Wednesday) as part of the government's step towards relaxing strict COVID-19 measures. The health ministry said that these steps would help reduce the pressure on medical resources and maintain the "normal functioning of society".

Regional Update

- **Cambodia:** The largest new COVID case day since September, as active cases in Cambodia continue to rise.[1] Cambodia's active COVID case count increased on December 12, with new cases increasing by double digits - the highest day since September 22nd.[1] December 12's official daily new COVID case total (as determined by a PCR test) was 25, bringing the total number of COVID cases to 138,276.[1] Cambodia announced 0 new deaths, bringing the total number of direct COVID-19 deaths in Cambodia to 3,056.[1] [Full Article]
- **Laos:** Although the number of cases has increased in recent weeks, medical experts in Laos believe that a fresh wave is not imminent.[5] Visith Khamleusa, Director of the Centre for Communication and Education on Health (CCEH), told the Laotian Times that there are still some cases in Laos and warned people to be cautious when traveling to or from adjacent countries.[5] According to Visith, the most common Covid type now impacting Lao people is Omicron.[5] Health authorities are still encouraging individuals to continue wearing masks, wash hands frequently, avoid congested areas, and have third and fourth booster shots especially for individuals in at-risk groups. [Full Article]
- **Philippines:** From December 5 to 11, the country saw a 7% increase in new COVID-19 cases, with the Department of Health (DOH) recording 8,292 new infections.[6] According to the DOH's weekly bulletin, the daily average number of COVID-19 cases over the week was 1,185.[6] [Full Article]
- **Thailand:** The Department of Disease Control (DDC) voiced worry about the increased number of COVID-19 patients reported since the Omicron subvariant BA.2.75 became widespread in Thailand.[8] Recent single-nucleotide polymorphisms (SNP/deletion) testing, according to the Department of Medical Science, have revealed that the BA.2.75 subvariant is now the dominant strain, accounting for 75.9% of cases, up from 58.9% last week.[8] BA.2.75 supplanted the previous dominant subvariant, BA.5, because it possesses a critical mutation in its spike proteins that enhances its resistance to

antibodies.[8] Dr. Tares Krassanairawiwong, director-general of the DDC, stated that there has been a surge in Covid-19 cases for inpatients, patients in critical condition, and fatalities in Bangkok, its nearby provinces, as well as areas in Thailand's east and south.[8] [Full Article]

Research Update (Published and peer-reviewed studies)

- The multicenter prospective observational cohort study, ***Pituitary-gonadal hormones associated with respiratory failure in men and women hospitalized with COVID-19 – an observational cohort study***, assessed the association of pituitary-gonadal hormone concentrations to inflammation, severe respiratory failure and mortality in hospitalized men and women with COVID-19 and compared these to hormone concentrations in hospitalized patients with bacterial community-acquired pneumonia (CAP), influenza virus CAP, and to concentrations in a reference group of healthy individuals.[2] 278 patients with COVID-19, 21 with influenza virus CAP, and 76 with bacterial CAP were included.[2] Testosterone concentrations were suppressed in men hospitalized with COVID-19, bacterial- and influenza virus CAP and moderately suppressed in women.[2] Reductions in testosterone (OR 3.43 [1.14-10.30], p=0.028) and Luteinizing Hormone (LH) (OR 2.51 [1.28-4.92], p=0.008) were associated higher odds of mechanical ventilation (MV) in men with COVID-19.[2] In women with COVID-19, reductions in LH (OR 3.34 [1.02-10-90], p=0.046) and Follicle Stimulating Hormonen(FSH) (OR 2.52 [1.01-6.27], p=0.047) were associated with higher odds of MV.[2] Low testosterone and LH concentrations were predictive of severe respiratory failure in men with COVID-19, whereas low concentrations of LH and FSH predicted severe respiratory failure in women with COVID-19.[2] [Full Text]

- To investigate whether female participants and racial and ethnic minority individuals are adequately represented in COVID-19 prevention and treatment trials in the US, Xiao et al conducted the study, ***Sex, Racial, and Ethnic Representation in COVID-19 Clinical Trials a Systematic Review and Meta-analysis***.[3] Included studies registered on ClinicalTrials.gov or published in the PubMed database from October 2019 to February 2022 have provided the number of enrolled participants by sex, race, or ethnicity.[3] Overall, 122 US-based COVID-19 clinical trials comprising 176 654 participants were analyzed. Studies were predominantly randomized trials (n = 95) for treatment of COVID-19 (n = 103).[3] Sex, race, and ethnicity were reported in 109 (89.3%), 95 (77.9%), and 87 (71.3%) trials, respectively.[3] Estimated representation in prevention and treatment trials vs the US population with COVID-19 was 48.9% and 44.6% vs 52.4% for female participants; 23.0% and 36.6% vs 17.7% for Hispanic or Latino participants; 7.2% and 16.5% vs 14.1% for Black participants; 3.8% and 4.6% vs 3.7% for Asian participants; 0.2% and 0.9% vs 0.2% for Native Hawaiian or Other Pacific Islander participants; and 1.3% and 1.4% vs 1.1% for American Indian or Alaska Native participants.[3] Compared with expected rates in the COVID-19 reference population, female participants were underrepresented in treatment trials (85.1% of expected; P < .001), Black participants (53.7% of expected; P = .003) and Asian participants (64.4% of expected; P = .003) were underrepresented in prevention trials, and Hispanic or Latino participants were overrepresented in treatment trials (206.8% of expected; P < .001).[3] [Full Text]

- This case-control study, ***Trends in Risk Factors and Symptoms Associated With SARS-CoV-2 and Rhinovirus Test Positivity in King County, Washington, June 2020 to July 2022***, evaluated how risk factors and symptoms associated with SARS-CoV-2 changed over the course of the pandemic and compared with the risk factors associated with rhinovirus infection.[4] This case-control study used a test-negative design with multivariable logistic regression to assess associations between SARS-CoV-2 and rhinovirus test positivity and self-reported demographic and symptom variables over a 25-month period in King County, Washington, from June 2020 to July 2022.[4] Analyses

included data from 23 498 individuals. The median (IQR) age of participants was 34.33 (22.42-45.08) years, 13,878 (59.06%) were female, 4,018 (17.10%) identified as Asian, 654 (2.78%) identified as Black, and 2,193 (9.33%) identified as Hispanic.[4] Close contact with an individual with SARS-CoV-2 (adjusted odds ratio [aOR], 3.89; 95% CI, 3.34-4.57) and loss of smell or taste (aOR, 3.49; 95% CI, 2.77-4.41) were the variables most associated with SARS-CoV-2 test positivity, but both attenuated during the Omicron period. Contact with a vaccinated individual with SARS-CoV-2 (aOR, 2.03; 95% CI, 1.56-2.79) was associated with lower odds of testing positive than contact with an unvaccinated individual with SARS-CoV-2 (aOR, 4.04; 95% CI, 2.39-7.23).[4] Sore throat was associated with Omicron infection (aOR, 2.27; 95% CI, 1.68-3.20) but not Delta infection.[4] Vaccine effectiveness for participants fully vaccinated with a booster dose was 93% (95% CI, 73%-100%) for Delta, but not significant for Omicron.[4] Variables associated with rhinovirus test positivity included being younger than 12 years (aOR, 3.92; 95% CI, 3.42-4.51) and experiencing a runny or stuffy nose (aOR, 4.58; 95% CI, 4.07-5.21).[4] Black race, residing in south King County, and households with 5 or more people were significantly associated with both SARS-CoV-2 and rhinovirus test positivity.[4] [Full Article]

- The study ***Efficacy of Antiviral Agents against Omicron Subvariants BQ.1.1 and XBB*** by the University of Tokyo researchers found that Omicron BQ.1.1 and XBB SARS-CoV-2 subvariants evade the monoclonal antibodies imdevimab, casirivimab, tixagevimab, cilgavimab, bebtelovimab, and S309, but not the antiviral drugs remdesivir, molnupiravir, and nirmatrelvir (Paxlovid).[7] researchers used a live-virus neutralization assay to test the efficacy of the monoclonal antibodies and antivirals against BQ.1.1 and XBB isolated from infected patients.[7] Imdevimab, casirivimab, tixagevimab, cilgavimab, and S309 didn't neutralize BQ.1.1 or XBB, even at the highest concentrations tested, while Bebtelovimab, which neutralizesOmicron BA.1, BA.2, BA.4, and BA.5, had no efficacy against BQ.1.1 or XBB. However, neither combination of antibodies tested (imdevimab-casirivimab and tixagevimab-cilgavimab) neutralized BQ.1.1 or XBB.[7] The researchers noted that, compared with older Omicron subvariants, BQ.1.1 and XBB have more mutations in the spike protein, the main target of COVID-19 vaccines and monoclonal antibodies, and thus are more likely to evade immunity.[7] [Full Article]

COVID-19 Cases and Deaths as of 12 December 2022

- As of 12 December 2022 (2PM, GMT+8), worldwide, there were **645,986,784** confirmed cases, including **6,661,795** deaths. Globally, Case Fatality Rate (CFR) was **1.2%.**
- **35,417,705 confirmed cases** of COVID-19 have been reported in the **ASEAN Region.**
- The Case Fatality Rate in the **ASEAN** Region is range between **0.1 to 3.1%.**

COVID-19 cases in ASEAN region

REGION	COUNTRY	FIRST CONFIRMED CASE(S)	LATEST REPORT ON CONFIRMED CASE(S)	TOTAL CONFIRMED CASES	NEW CASES	TOTAL DEATHS	NEW DEATHS	CUMULATIVE CASES/ 100,000	CUMULATIVE VACCINATED	CUMULATIVE FULLY VACCINATED	CUMULATIVE BOOSTERED	FULLY VACCINATED/ 100
ASEAN REGION	**Brunei Darussalam**	10 Mar 20	11-Dec-22	261,440	-	225	-	60,339	450,404	445,929	338,987	99.3
	Cambodia	27 Jan 20	11-Dec-22	138,251	13	3,056	-	839	15,226,312	14,590,810	10,358,897	87.0
	Indonesia	02 Mar 20	11-Dec-22	6,698,790	1,589	160,224	26	2,475	203,715,848	174,119,714	66,624,569	63.2
	Lao PDR	24 Mar 20	11-Dec-22	217,161	16	758	-	3,029	5,888,649	5,222,417		69.4
	Malaysia	25 Jan 20	11-Dec-22	5,010,634	867	36,763	10	15,683	28,117,286	27,528,317	16,876,578	81.1
	Myanmar	23 Mar 20	11-Dec-22	633,457	39	19,488	-	1,172	34,777,314	27,545,329	2,227,351	50.8
	Philippines	30 Jan 20	11-Dec-22	4,049,042	1,164	64,880	24	3,745	78,196,194	73,738,568	20,946,059	63.8
	Singapore	23 Jan 20	11-Dec-22	2,176,763	1,102	1,707	-	38,165	5,156,279	5,113,405	4,440,289	90.7
	Thailand	13 Jan 20	11-Dec-22	4,711,528	-	33,285	-	6,767	57,005,497	53,486,086	32,143,431	74.6
	Vietnam	23 Jan 20	11-Dec-22	11,520,639	194	43,178	-	11,943	90,156,999	84,690,714	56,988,856	86.3
	ASEAN COUNTRIES			**35,417,705**	**4,984**	**363,564**	**60**	**144,157**	**518,690,782**	**466,481,289**	**210,945,017**	

*There have been no tests reported in the last 14 days in the **ASEAN** Region.

COVID-19 cases in Asia-Pacific region

REGION	COUNTRY/ TERRITORY	FIRST CONFIRMED CASE(S)	LATEST REPORT ON CONFIRMED CASE(S)	TOTAL CONFIRMED CASES	NEW CASES	TOTAL DEATHS	NEW DEATHS	CUMULATIVE CASES/ 100,000	CUMULATIVE VACCINATED	CUMULATIVE FULLY VACCINATED	CUMULATIVE BOOSTERED	FULLY VACCINATED/ 100
ASIA-PACIFIC REGION	**Afghanistan**	24-Feb-20	11-Dec-22	206,603	60	7,839	-	543	11,320,910	10,615,628		25.8
	Australia	25-Jan-20	07-Dec-22	10,750,748	-	16,224	-	41,913	22,235,551	21,656,364	19,613,644	82.7
	Bangladesh	08-Mar-20	11-Dec-22	2,036,806	29	29,436	-	1,249	149,137,913	125,670,627	60,611,619	73.4
	Bhutan	05-Mar-20	06-Dec-22	62,512	-	21	-	8,192	699,116	677,669	634,641	86.6
	People's Republic of China*		11-Dec-22	11,081,224	31,417	30,879	0	66,223	1,334,000,977	1,300,807,104	209,892,094	89.1
	Cook Islands	17-Feb-22	14-Sep-22	6,389	-	1	-	29,872	15,084	14,715	10,209	86.4
	Fiji	18-Mar-20	04-Dec-22	68,451	-	878	-	7,692	711,429	640,282	169,174	68.9
	French Polynesia	12-Mar-20	07-Dec-22	77,275	-	649	-	27,669	190,765	186,059	112,237	60.8
	Guam	15-Mar-20	05-Dec-22	59,460	-	409	-	35,542	158,105	143,551		85.2
	India	30-Jan-20	11-Dec-22	44,674,822	173	530,658	4	3,269	1,027,083,897	950,898,240	221,664,746	67.1

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	Japan	16-Jan-20	19-Oct-22	21,858,528	-	46,014	-	17,312	104,454,849	103,024,369	148,802,535	83.1
	Kiribati	25-Jan-22	25-Jul-22	3,430	-	13	-	2,917	96,184	73,888	23,419	56.3
	Maldives	07-Mar-20	06-Dec-22	185,632	-	311	-	34,962	399,146	385,076	167,176	73.5
	Marshall Islands	26-Oct-20	09-Dec-22	15,547	-	17	-	26,445	42,920	34,305		44.1
	Micronesia	11-Jan-21	31-Oct-22	22,203	-	55	-	19,508	83,562	70,339		68.7
	Mongolia	10-Mar-20	10-Dec-22	993,997	-	2,179	-	30,820	2,272,965	2,175,617	1,044,337	64.0
	Nepal	24-Jan-20	11-Dec-22	1,000,932	2	12,019	-	3,499	27,398,529	23,857,858	8,674,375	78.1
	New Caledonia	17-Mar-20	06-Dec-22	77,127	-	314	-	26,799	191,672	184,136	94,041	63.5
	New Zealand	28-Feb-20	05-Dec-22	1,979,614	-	3,337	-	40,261	4,299,152	4,137,155	3,479,861	79.8
	Niue	03-Sep-21	09-Dec-22	191	-	-	-	8,818	1,255	1,227	1,153	62.9
	Northern Mariana Islands	28-Mar-20	07-Dec-22	13,227	-	41	-	23,118	46,340	43,770		84.4
	Pakistan	26-Feb-20	11-Dec-22	1,575,471	30	30,635	-	727	139,644,465	132,317,738	48,935,695	56.1
	Palau	31-May-21	06-Dec-22	5,896	-	7	-	32,741	20,714	18,458		85.7
	Papua New Guinea	21-Mar-20	07-Dec-22	46,247	-	668	-	527	364,894	304,687	30,676	3.0
	Samoa	18-Nov-20	25-Nov-22	15,967	-	29	-	8,101	231,546	215,077	79,061	96.7
	Solomon Islands	03-Oct-20	24-Nov-22	24,575	-	153	-	3,669	343,821	254,352	27,783	35.1
	Republic of Korea**	20-Jan-20	11-Dec-22	27,738,116	25,617	31,083	30	53,643	45,133,461	44,703,801	41,321,209	86.3
	Sri Lanka	27-Jan-20	11-Dec-22	671,756	4	16,808	-	3,081	17,143,761	14,752,827	8,220,002	67.6
	Timor Leste	21-Mar-20	10-Dec-22	23,364	-	138	-	1,807	872,617	779,475	291,233	58.1
	Tonga	05-Nov-21	06-Sep-22	16,182	-	12	-	15,486	91,949	77,464	38,331	72.5
	Türkiye	10-Mar-20	23-Nov-22	17,004,130	-	101,395	-	20,381	57,941,051	53,176,961	41,425,329	62.3
	Vanuatu	11-Nov-20	02-Nov-22	11,952	-	14	-	3,986	144,824	131,697	16,996	40.3
	Wallis et Futuna	17-Oct-20	28-Jul-22	761	-	7	-	4,749	7,136	6,794	3,742	58.6
			ASIA PACIFIC	**142,309,135**	**57,332**	**862,243**	**34**	**605,519**	**2,946,780,560**	**2,792,037,310**	**815,385,318**	

*Includes cases from Hong Kong (SAR), Macau (SAR), and Republic of China (Taiwan).
**Republic of Korea – South Korea

- **468,259,944 confirmed cases** of COVID-19 have been reported in other **4 regions** (other than ASEAN and Asia-Pacific countries):

REGION	TOTAL CONFIRMED CASES	NEW CASES	TOTAL DEATHS	NEW DEATHS	CUMULATIVE CASES/ 100,000	CUMULATIVE VACCINATED	CUMULATIVE FULLY VACCINATED	CUMULATIVE BOOSTERED
AFRICA	12,982,408	1,172	259,111	-	246,566	456,796,189	371,422,236	59,667,116
AMERICAS	186,571,504	10,145	2,912,088	10	1,218,715	833,072,131	732,595,807	485,539,058
EUROPE	246,095,088	60,538	2,026,096	69	2,073,059	568,572,737	539,560,037	376,044,393
MIDDLE EAST	22,610,944	721	238,693	5	214,544	144,506,578	129,815,699	59,956,888
TOTAL	**468,259,944**	**72,576**	**5,435,988**	**84**	**3,752,884**	**2,002,947,635**	**1,773,393,779**	**981,207,455**

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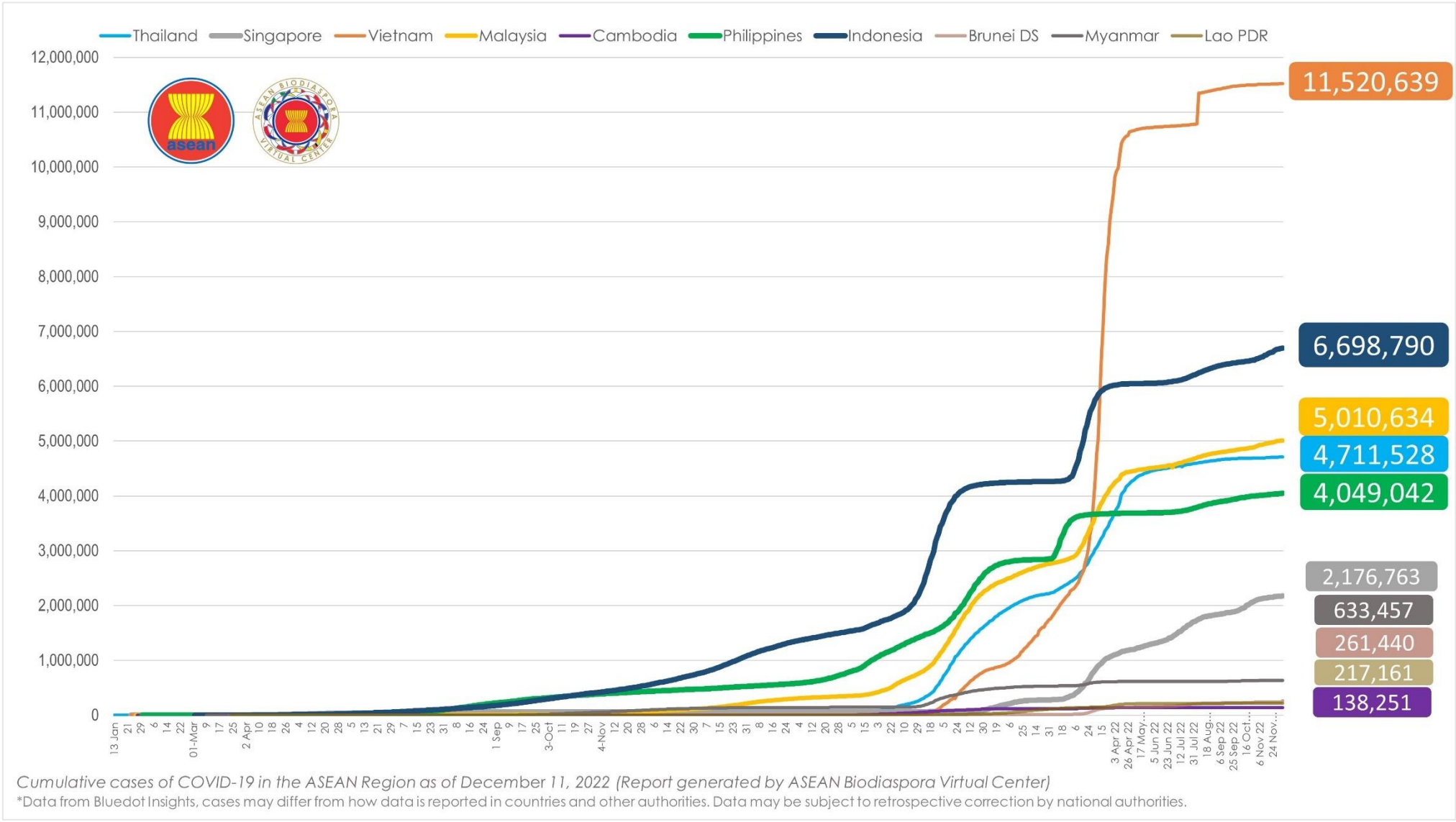
COVID-19 Epi curve among ASEAN Countries:

From January 1, 2021 to December 11, 2022



Cumulative cases of COVID-19 in the ASEAN Region as of December 11, 2022 (Report generated by ASEAN Biodiaspora Virtual Center)

*Data from Bluedot Insights, cases may differ from how data is reported in countries and other authorities. Data may be subject to retrospective correction by national authorities.

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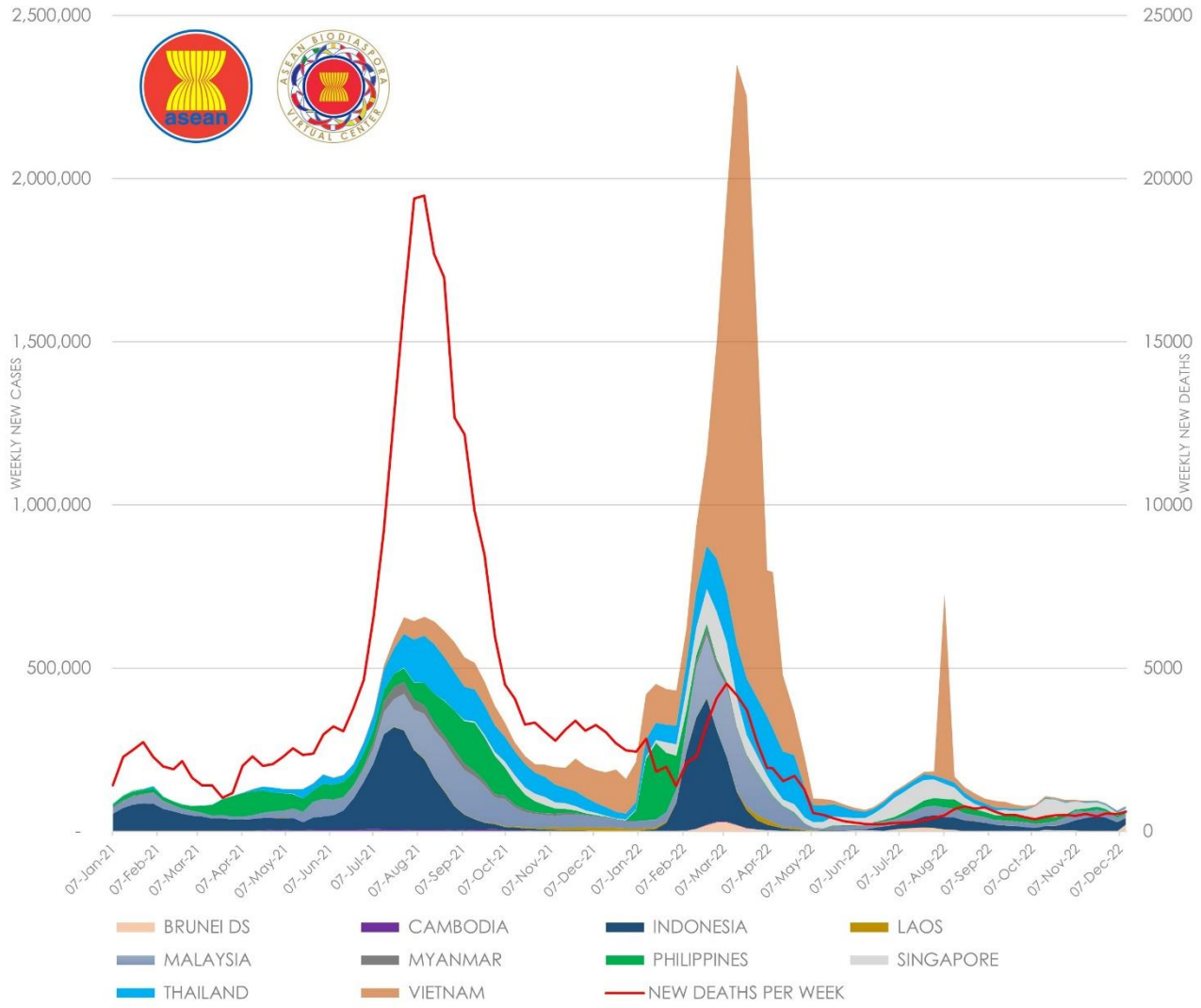
ASEAN Weekly COVID-19 New Cases and New Deaths

From January 1, 2021 to December 11, 2022



ASEAN Country	Weekly New Cases December 5-11, 2022	Weekly New Deaths December 5-11, 2022
Brunei Darussalam	20,396	0
Cambodia	109	0
Indonesia	21,135	271
Lao PDR	337	0
Malaysia	10,302	50
Myanmar	139	0
Philippines	9,064	179
Singapore	8,596	2
Thailand	4,284	105
Vietnam	3,122	1

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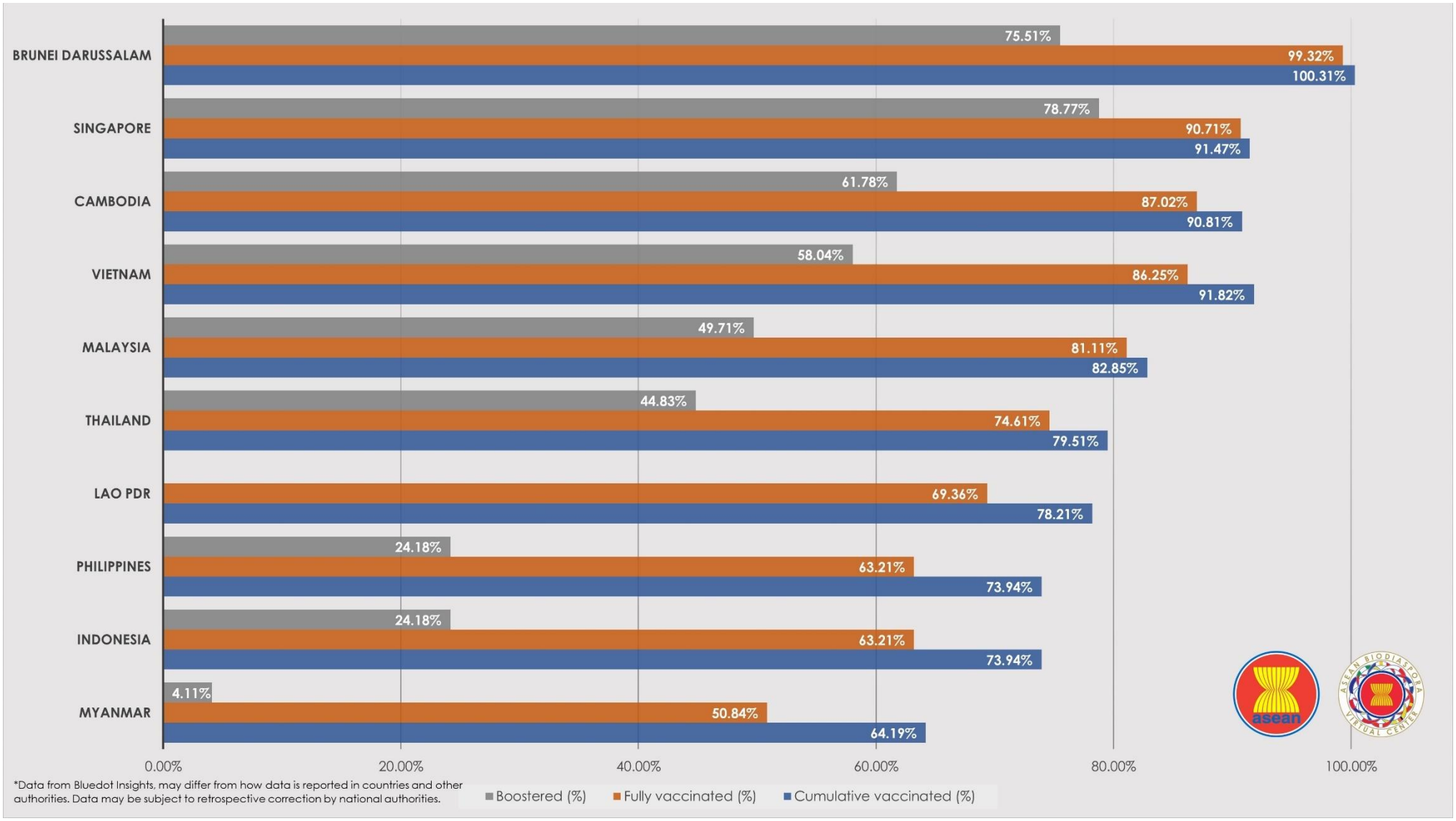
ASEAN COVID-19 Vaccination Status

as of 11 December 2022



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ASEAN COVID-19 Outlook Assessment

as of 09 December 2022

ASEAN MEMBER STATE	At least **65% of the total population has a level of immunity** to COVID-19; either recovered from COVID-19 or have been vaccinated with at least one dose of a COVID-19 vaccine.		**Case levels are generally low** (a 7-day rolling average number of daily new cases that is <10 cases per 100,000, with each day's past-14-day test positivity is consistently <5%).	**Government Policy** on containment and health (strictness and comprehensiveness in COVID-19 related government policies)
	% of Total population fully vaccinated / boostered	Population vaccinated/ day *(7-day average)*	Daily cases/ 100,000	Containment and health index score - *Oxford COVID-19 Government Response Tracker (OxCGRT)*
Brunei Darussalam	≥90.0/75.5	Unknown	672.47	31.0/100
Cambodia	≥90.0/61.8	Unknown	0.09	31.5/100
Indonesia	66.7/24.2	Unknown	1.12	54.2/100
Lao PDR	77.3/ND	Unknown	0.67	61.6/100
Malaysia	84.5/49.7	0%/day	4.61	51.8/100
Myanmar	52.1/4.1	Unknown	0.04	69.1/100
Philippines	71.4/18.1	Unknown	1.20	55.4/100
Singapore	≥90.0/78.8	0%/day	21.53	58.9/100
Thailand	77.7/44.8	Unknown	0.89	31.5/100
Vietnam	≥90.0/58.0	Unknown	0.46	43.5/100

All of the countries have achieved the Population vaccinated/ day (7-day average) except Vietnam.

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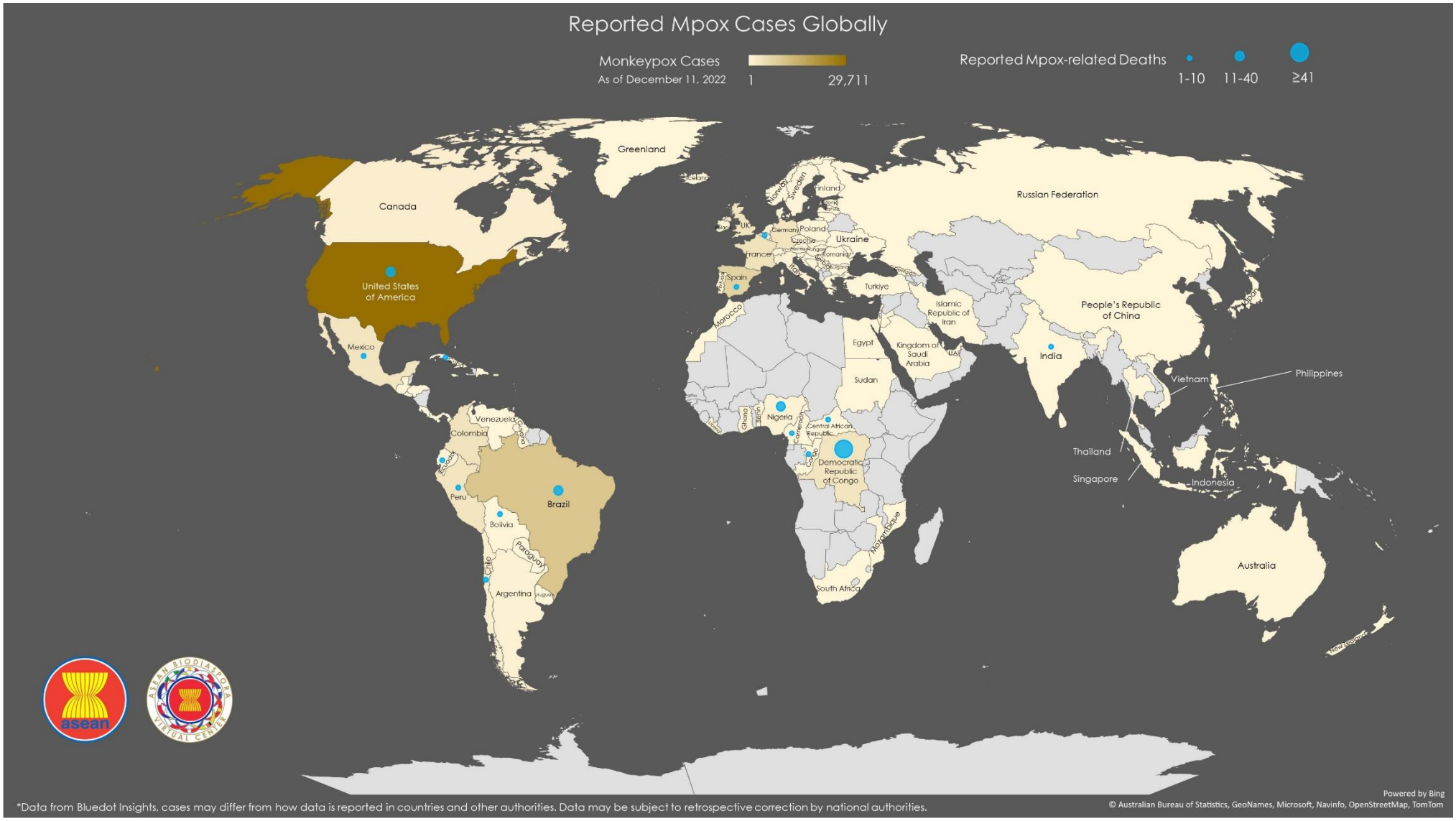
Mpox (Monkeypox) Cases Reported Globally

as of December 11, 2022



*Mpox data is now automatically collected by Bluedot from Our World in Data. Adjustments were made to correct the data.

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Mpox: Highlights and Situation Overview

- As of 12 December 2022 (2PM, GMT+8), worldwide, there were **87,674** confirmed cases, including **213** deaths. Globally, Case Fatality Rate (CFR) was **0.24%.**
- **40 confirmed cases** in the ASEAN region, with CFR of **0%.**
- **87,634 confirmed cases** of Mpox have been reported in other **5 regions** (other than ASEAN region):

Mpox cases in ASEAN region

Country	Total Cases	New Cases	Deaths	Case Fatality Rate (CFR)
Indonesia	1	-	-	0.00%
Philippines	4	-	-	0.00%
Singapore	19	-	-	0.00%
Thailand	12	-	-	0.00%
Vietnam	4	-	-	0.00%
ASEAN Total	**40**	**-**	**-**	**0.00%**

Mpox cases in Asia-Pacific region

Country/Territory	Total Cases	New Cases	Deaths	Case Fatality Rate (CFR)
Australia	143	-	-	0.00%
Hong Kong (SAR)	1	-	-	0.00%
India	19	-	1	5.00%
Japan	7	-	-	0.00%
New Caledonia	1	-	-	0.00%
New Zealand	39	-	-	0.00%
People's Republic of China*	5	-	-	0.00%
Republic of China*	4	-	-	0.00%
Republic of Korea*	4	-	-	0.00%
Sri Lanka	2	-	-	0.00%
Asia-Pacific Total	**225**	**-**	**1**	**0.45%**

*People's Republic of China – China, Republic of China – Taiwan, Republic of Korea – South Korea
**Cases adjusted

Top 5 countries with most mpox cases globally

Country	Total Cases	New Cases	Deaths	Case Fatality Rate (CFR)
United States of America	29,711	-	20	0.07%
Brazil	10,231	144	14	0.14%
Spain	7,412	4	3	0.04%
France	4,110	-	-	0.00%
Colombia	3,880	19	-	0.00%

Mpox cases per region

REGION	TOTAL CONFIRMED CASES SINCE JANUARY 1, 2022	NEW CASES SINCE THE PREVIOUS REPORT	TOTAL DEATHS	CASE FATALITY RATE
AFRICA	5,136	-	160	3.12%
AMERICAS	55,972	245	47	0.08%
ASEAN	40	-	-	0.00%
ASIA PACIFIC	225	-	1	0.44%
EUROPE	25,982	29	4	0.02%
MIDDLE EAST	319	-	-	0.00%
TOTAL	**87,674**	**274**	**213**	**0.24%**

Global Update

- Researchers revealed the findings of a cross-sectional survey conducted in Australia between August and September 2022 in a recent paper published (not peer-reviewed yet) on the medRxiv platform.[9] Concerns about mpox virus (MPXV) infections were examined in a national survey of bisexual, queer, and homosexual people who self-identified as non-binary and men.[9] The researchers were particularly interested in determining their willingness to undertake behavioral changes to lower the risk of MPXV transmission and their desire to get vaccinated for MPXV.[9] The current study focused on GBMSM in Australia's understanding and attitude concerning MPXV.[9] The survey results revealed that these individuals were aware of the common clinical symptoms of MPXV.[9] Though incorrect views about past vaccination may hinder individuals from receiving one, addressing this issue through public education efforts emphasizing the protection provided by historical smallpox immunization should help improve the situation.[9] [Full Article]

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