GECO Philippines SARS-CoV-2 Situation Report - 2022 November

Highlights

- BA.2.3.20 has rapidly increased since September (identified as PH_640), and the lineage has become the dominant in some of the administrative regions
- Both recombinant strains XBB and XBC were detected in September. Whether these two will continue to spread is unclear
- No recent BA.2.75 or BQ.1 was isolated

SARS-CoV-2 variants detected in the Philippines

WHO label	Pango lineage	Classification	New submission	Isolated in 3 months	Total
Alpha	B.1.1.7/Q.x	VOC	3 (0.1)	0	2811
Beta	B.1.351	VOC	5 (0.2)	0	3282
Delta	B.1.617.2/AY.x	VOC	4 (0.2)	3 (0.4)	3497
Gamma	P.1	VOC	0	0	3
Omicron	B.1.1.529/BA.x	VOC	2258 (95.5)	630 (90.6)	11363
Eta	B.1.525	VUM	0	0	8
Theta	P.3	VUM	0	0	523

Table 1. Number of available sequences by variant in the Philippines as of 27 November 2022. The variants (VOC/VUM) here only include sequences that present in the GISAID or GECO data base and fulfill the definitions of WHO at the time the report is prepared. *New submission*, new sequences submitted from the last report. *Isolated in 3 months*, sequences isolated from 1 September 2022 to 27 November 2022. Numbers in the parentheses are percentage of the category (%).

- **VOC (Variant of Concern):** A SARS-CoV-2 variant that meets the definition of a VOI (see below) and, through a comparative assessment, has been demonstrated to be associated with (a) increase in transmissibility, (b) increase in clinical disease presentation or (c) decrease in effectiveness of public health measures including diagnostics, vaccines, therapeutics.
- **VOI (Variant of Interest):** A SARS-CoV-2 variant: (a) with genetic changes that are predicted or known to affect virus characteristics such as transmissibility, disease severity, immune escape, diagnostic or therapeutic escape; AND (b) identified to cause significant community transmission or multiple COVID-19 clusters, in multiple countries with increasing relative prevalence alongside increasing number of cases over time.

- **VUM (Variant Under monitoring):** A SARS-CoV-2 variant with genetic changes that are suspected to affect virus characteristics with some indication that it may pose a future risk, but evidence of phenotypic or epidemiological impact is currently unclear, requiring enhanced monitoring and repeat assessment pending new evidence.
- **Pango lineage:** A dynamic SARS-CoV-2 naming system that uses a phylogenetic framework (methods that involve a tree-like structure inferred based on genetic information of viruses) to identify actively spreading lineages. The Pango system is designed to track the transmission and spread of SARS-CoV-2, but does not attempt to identify or define VOCs or VOIs.

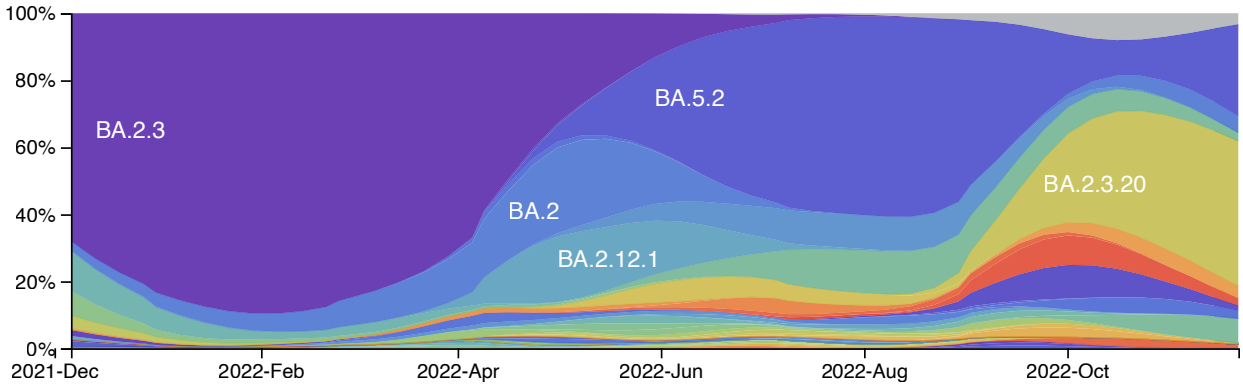

Figure 1. Temporal frequencies of SARS-CoV-2 variants in the Philippines. The figure is constructed with a subsampled genomic data set from all available sequences (methods). Different ways of classification of SARS-CoV-2 lineages isolated in the country can be visualised by selecting options for coloring in the control panel (icon on top left/right). **Note** that the latest available Philippine sequences were isolated on 18 October 2022, thus the frequencies after the time point could harbor great uncertainty.

Diversity within the Omicron variant

Pango lineage	New submission	Isolated in 3 months	Total
BA.1.*	0	0	598
BA.2	7 (0.3)	5 (0.7)	477
BA.2.3	8 (0.3)	5 (0.7)	6001
BA.2.3.20.*	182 (7.7)	178 (25.6)	183
BA.2.12.1	0	0	119
BA.2.75.*	4 (0.2)	0	5
Other BA.2.*	20 (0.8)	9 (1.3)	193
BA.4.*	15 (0.6)	1 (0.1)	120
BA.5	4 (0.2)	2 (0.3)	15
BA.5.2.*	1721 (72.8)	306 (44)	3060
Other BA.5.*	203 (8.6)	69 (9.9)	427
BE.1.*	3 (0.1)	1 (0.1)	17
BQ.1.*	0	0	0
XBB.*	18 (0.8)	18 (2.6)	18
XBC.*	21 (0.9)	15 (2.2)	25

Table 1b. Number of available Omicron sequences in the Philippines as of 27 November 2022. *New submission*, new sequences submitted from the last report. *Isolated in 3 months*, sequences isolated

from 1 September 2022 to 27 November 2022. Numbers in the parentheses are percentage of the category (%). Phylogenetic relationship of the sublineages of Omicron variant is available here.

- **BA.2.3.20** includes its descending sulbineages CM. **BE.1** = BA.5.3.1.1, a sublineage of BA.5.3; **BQ.1** = BE.1.1.1.1, a sublineage of BE.1 (and also a sublineage of BA.5.3). **XBB** sublineages are recombinant viruses between BJ.1 (BA.2.10.1.1) and BA.2.75, whereas **XBC** are recombinant viruses between BA.2 and Delta.

Diversity within the Delta variants

More than 70 Pango lineages have been found among Delta variants isolated in the Philippines, with >40 sublineages that have more than 2 isolated sequences as of March 2022. Phylogenetic relationship of the sublineages of Delta variant is available here.

SARS-CoV-2 variants detected by administrative region

Region	New submission	Dominant variant in 3 months	Isolated in 3 months	Total
NCR	22 (0.9)	Omicron (100)	3 (0.4)	5779
Ilocos	25 (1.1)	Omicron (90.9)	11 (1.6)	715
CAR	14 (0.6)	Omicron (7.1)	14 (2)	1331
Cagayan Valley	0	-	0	1559
Central Luzon	26 (1.1)	Omicron (81.8)	22 (3.2)	1654
Calabarzon	117 (4.9)	Omicron (75.8)	91 (13.1)	3346
Mimaropa	61 (2.6)	Omicron (90.5)	42 (6)	608
Bicol	21 (0.9)	Omicron (93.8)	16 (2.3)	674
Western Visayas	1822 (77)	Omicron (99.7)	350 (50.4)	3069
Central Visayas	3 (0.1)	Omicron (100)	1 (0.1)	1187
Eastern Visayas	0	-	0	234
Zamboanga Peninsula	0	-	0	778
Northern Mindanao	0	-	0	522
Davao	190 (8)	Omicron (90.6)	117 (16.8)	2446
Soccsksargen	41 (1.7)	Omicron (73.9)	23 (3.3)	618
Caraga	14 (0.6)	Omicron (60)	5 (0.7)	553
BARMM	0	-	0	131

Table 2. Number of available sequences by administrative region in the Philippines as of 27 November 2022. The variant definition is identical to Table 1 based on the WHO website. *New submission*, new sequences submitted from the last report. *Dominant variant in 3 months*, the major variant isolated from 1 September 2022 to 27 November 2022. A dash indicates no sequence isolated. *Isolated in 3 months*, sequences isolated from 1 September 2022 to 27 November 2022. Numbers next to the dominant variant indicate percentage of the variant in the region, whereas other numbers in the parentheses are percentage of the category.

NCR, National Capital Region; CAR, Cordillera Administrative Region; BARMM, Bangsamoro Autonomous Region in Muslim Mindanao.

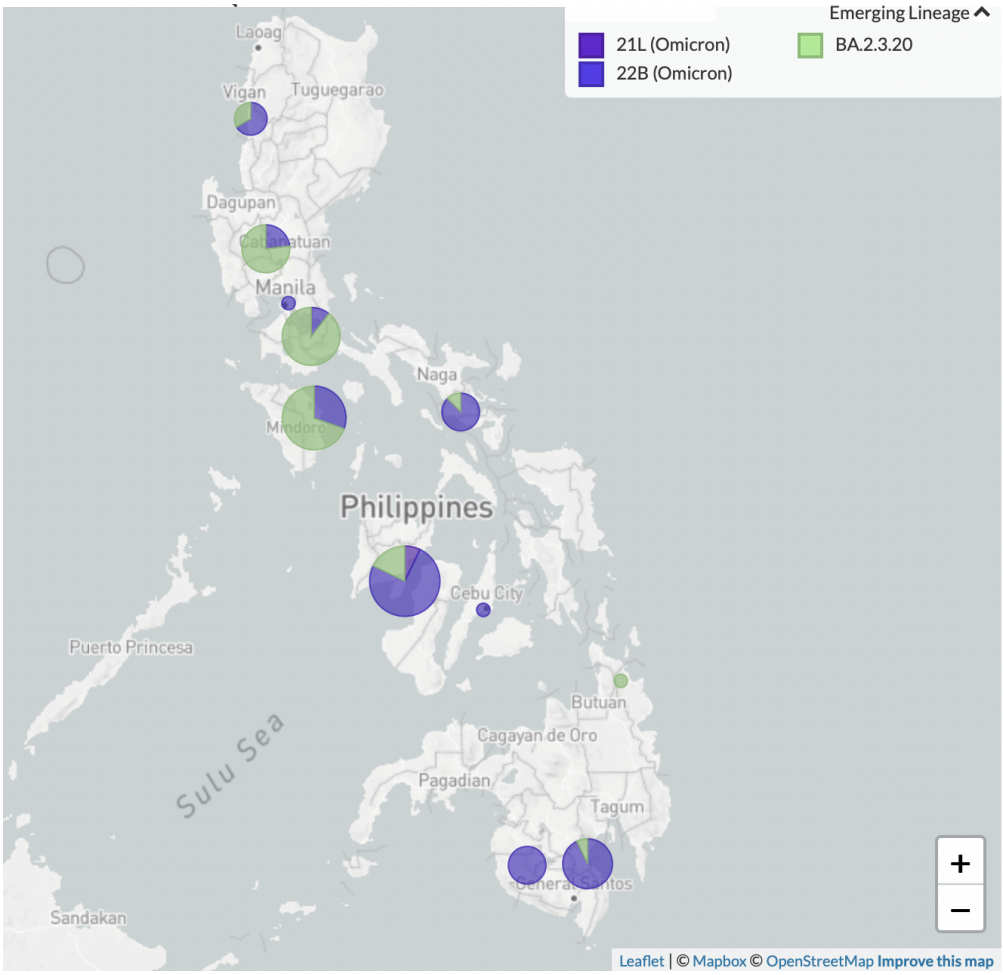

Figure 2. Frequencies of SARS-CoV-2 variants by administrative region in the Philippines since 1 September 2022. The figure is constructed with a subsampled genomic data set from all available sequences as Figure 1. Frequencies of isolates in a particular time frame and frequencies classified with the Pango linage can be adjusted with the control panel (icon on top left/right).

- **Nextstrain clade** and the corresponding Pango lineage name: **21L** = BA.2, **22B** = BA.5.

Philippines specific SARS-CoV-2 lineages

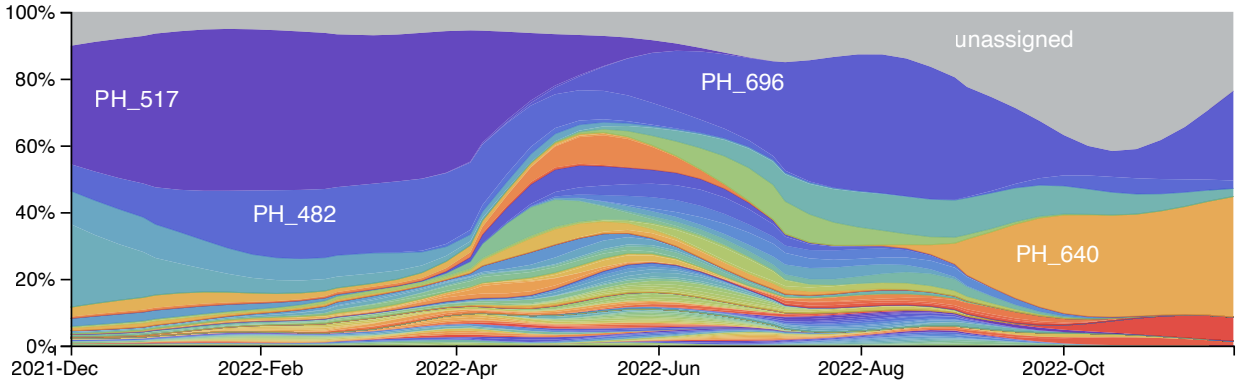

Figure 3. Temporal frequencies of Philippine lineages (clusters) identified by Grapevine-anywhere. Each sequence submitted to GECO database would undergo *Grapevine-anywhere* pipeline to detect sustain local transmission. A cluster is defined based on multiple sequences isolated in the Philippines that appeared to descend from the same introductory event on a phylogenetic tree. Phylogenetic relationships of these lineages can be found here.

Cluster name	Date first identified	Pango lineage	Distribution	New sub-mission	Isolated in 3 months	Total
PH_696	2022-05-19	BA.5.2	>3 regions	1280	199	1858
PH_640	2022-01-10	BA.2.3.20	>3 regions	117	115	118
PH_682	2022-06-08	BA.5.10	>3 regions	88	31	216
PH_680	2022-06-23	BA.5.1.22	Western Visayas; Ilocos; NCR	36	8	37
PH_482	2021-12-19	BA.2.3	>3 regions	13	8	1086
PH_694	2022-06-08	BA.5.2	>3 regions	30	7	73
PH_715	2022-05-15	BA.5.2	>3 regions	38	7	74
PH_742	2022-01-07	BA.5.2.1	>3 regions	25	7	44
PH_684	2022-06-15	BA.5.2	Davao; Soccsksargen	4	4	15
PH_690	2022-05-12	BA.5.2.11	>3 regions	20	4	292
PH_718	2022-07-26	BA.5.2	Western Visayas	16	3	16
PH_760	2022-06-15	BA.5.2.1	>3 regions	4	2	35
PH_664	2022-07-26	BA.5.1.1	Davao; Central Visayas; NCR	1	1	6
PH_712	2022-07-25	BA.5.2.20	Davao; Soccsksargen	3	1	14
PH_728	2022-07-23	BA.5.2.27	Western Visayas; Calabarzon	16	1	17
PH_743	2022-07-18	BA.5.2.1	Davao; Soccsksargen	1	1	7
PH_732	2022-07-14	BA.5.2.1	Davao	2	1	24
PH_755	2022-06-07	BF.5	>3 regions	2	1	12
PH_667	2022-05-26	BA.5.1	>3 regions	7	1	11
PH_745	2022-05-25	BA.5.2.1	>3 regions	11	1	35
PH_757	2022-08-13	BF.5	Western Visayas; Soccsksargen	4	0	5
PH_746	2022-08-08	BF.20	Davao	4	0	6
PH_704	2022-08-07	BA.5.2	Davao; Mimaropa; Soccsksargen	0	0	5

Cluster name	Date first identified	Pango lineage	Distribution	New sub-mission	Isolated in 3 months	Total
PH_725	2022-08-02	BA.5.2.22	Bicol	1	0	7
PH_726	2022-07-29	BA.5.2	Bicol; Western Visayas	3	0	6
PH_416	2022-07-28	BA.2.76	Western Visayas; Soccsksargen	4	0	5
PH_643	2022-07-24	BA.5	Mimaropa; Bicol	0	0	7
PH_697	2022-07-13	BA.5.2	Western Visayas; Soccsksargen	5	0	6
PH_669	2022-07-05	BA.5.1	Soccsksargen; Davao	1	0	6
PH_657	2022-06-27	BE.1	Bicol; Calabarzon	0	0	6
PH_612	2022-06-23	BA.4.1	>3 regions	3	0	8
PH_720	2022-06-23	BA.5.2	Cagayan Valley; Ilocos; Western Visayas	1	0	5
PH_642	2022-06-22	BA.5.8	Western Visayas; Davao	4	0	6
PH_709	2022-06-21	BA.5.2	Mimaropa	0	0	10
PH_417	2022-06-17	BA.2.74	Davao; Calabarzon; Soccsksargen	2	0	9
PH_647	2022-06-09	BA.5.5	Davao; Northern Mindanao	0	0	8
PH_425	2022-06-05	BA.2.12.1	Davao	0	0	5
PH_604	2022-06-03	BA.4	Bicol; Western Visayas	1	0	11
PH_598	2022-05-31	BA.2	NCR; Calabarzon; Western Visayas	0	0	7
PH_609	2022-05-28	BA.4	Soccsksargen; Davao; Northern Mindanao	6	0	66
PH_608	2022-05-25	BA.4	>3 regions	0	0	8
PH_422	2022-05-24	BA.2.12.1	Davao; Caraga	0	0	5
PH_688	2022-05-22	BA.5.2	>3 regions	0	0	27
PH_717	2022-05-15	BA.5.2	>3 regions	1	0	5
PH_440	2022-04-29	BA.2.12.1	Mimaropa; Calabarzon	0	0	13
PH_470	2022-04-26	BA.2	NCR; Calabarzon	0	0	10
PH_429	2022-04-22	BA.2.12.1	>3 regions	0	0	26
PH_459	2022-04-21	BA.2	Cagayan Valley; NCR; CAR	0	0	10
PH_432	2022-04-15	BA.2.12.1	Davao; Ilocos; NCR	0	0	12
PH_469	2022-03-24	BA.2	>3 regions	0	0	9
PH_458	2022-02-13	BA.2	NCR; Calabarzon; Western Visayas	0	0	5
PH_519	2022-02-05	BA.2.3	Zamboanga Peninsula; Davao	0	0	5
PH_630	2022-01-30	BA.2.10	>3 regions	0	0	7
PH_629	2022-01-29	BA.2	NCR	0	0	5
PH_419	2022-01-16	BA.2	>3 regions	0	0	11
PH_514	2022-01-10	BA.2.3	>3 regions	0	0	10
PH_515	2022-01-10	BA.2.3	>3 regions	0	0	7
PH_552	2022-01-08	BA.2.3	>3 regions	0	0	6
PH_635	2022-01-08	BA.2	Central Visayas; NCR	0	0	6
PH_529	2022-01-06	BA.2.3	>3 regions	0	0	8
PH_507	2022-01-05	BA.2.3	>3 regions	0	0	7
PH_538	2022-01-04	BA.2.3	>3 regions	0	0	13
PH_562	2022-01-04	BA.2.3	>3 regions	0	0	12
PH_546	2022-01-03	BA.2.3	>3 regions	0	0	7
PH_572	2022-01-03	BA.2.3	>3 regions	0	0	7
PH_568	2022-01-02	BA.2.3	>3 regions	0	0	14

Cluster name	Date first identified	Pango lineage	Distribution	New sub-mission	Isolated in 3 months	Total
PH_550	2021-12-31	BA.2.3	>3 regions	0	0	5
PH_594	2021-12-31	BA.2	>3 regions	0	0	6
PH_454	2021-12-29	BA.2	Central Luzon; NCR	0	0	6
PH_530	2021-12-29	BA.2.3	>3 regions	0	0	10
PH_534	2021-12-29	BA.2.3	>3 regions	0	0	6
PH_581	2021-12-29	BA.2	>3 regions	0	0	52
PH_616	2021-12-29	BA.2	>3 regions	0	0	59
PH_626	2021-12-29	BA.2	Central Luzon; Central Visayas; NCR	0	0	5
PH_490	2021-12-28	BA.2.3	>3 regions	0	0	21
PH_520	2021-12-27	BA.2.3	>3 regions	0	0	211
PH_532	2021-12-27	BA.2.3	>3 regions	0	0	20
PH_533	2021-12-27	BA.2.3	>3 regions	0	0	12
PH_542	2021-12-27	BA.2.3	>3 regions	0	0	34
PH_570	2021-12-27	BA.2.3	>3 regions	0	0	133
PH_573	2021-12-26	BA.2.3	>3 regions	0	0	37
PH_521	2021-12-22	BA.2.3	>3 regions	0	0	56
PH_406	2021-11-20	BA.1.1	>3 regions	0	0	475
PH_88	2021-08-15	AY.122	Mimaropa; Calabarzon; Bicol	0	0	6
PH_81	2021-08-13	BA.2.3	>3 regions	0	0	17
PH_175	2021-07-29	AY.75.2	Central Visayas	0	0	5
PH_114	2021-07-24	AY.98.1	NCR	0	0	6
PH_142	2021-07-18	B.1.617.2	NCR	0	0	5
PH_99	2021-07-16	AY.107	>3 regions	0	0	27
PH_103	2021-07-13	AY.107	Central Luzon; NCR	0	0	6
PH_179	2021-07-13	AY.75.2	>3 regions	0	0	8
PH_109	2021-07-10	AY.23	Calabarzon	0	0	5
PH_106	2021-07-08	AY.112	Northern Mindanao; Cagayan Valley; BARMM	0	0	8
PH_143	2021-07-07	AY.112	>3 regions	0	0	21
PH_182	2021-07-07	AY.122	>3 regions	0	0	148
PH_95	2021-07-07	AY.122	>3 regions	0	0	7
PH_107	2021-07-05	AY.23	>3 regions	0	0	23
PH_170	2021-07-04	AY.65	NCR; Calabarzon	0	0	11
PH_187	2021-07-01	B.1.617.2	>3 regions	0	0	72
PH_189	2021-06-30	B.1.617.2	>3 regions	0	0	24
PH_178	2021-06-28	AY.75.2	>3 regions	0	0	136
PH_86	2021-06-28	AY.122	>3 regions	0	0	61
PH_120	2021-06-27	AY.112	>3 regions	0	0	32
PH_129	2021-06-27	AY.106	>3 regions	0	0	92
PH_121	2021-06-23	AY.1	>3 regions	0	0	277
PH_90	2021-06-21	AY.122	>3 regions	0	0	18
PH_140	2021-06-19	B.1.617.2	>3 regions	2	0	465
PH_177	2021-06-16	AY.75.2	>3 regions	0	0	97
PH_165	2021-05-29	B.1.617.2	>3 regions	0	0	168
PH_575	2021-05-25	BA.2.3	>3 regions	0	0	589
PH_517	2021-05-15	BA.2.3	>3 regions	1	0	3073
PH_168	2021-05-08	B.1.617.2	>3 regions	0	0	1220
PH_259	2021-05-06	B.1.1.7	>3 regions	0	0	7
PH_266	2021-04-30	B.1.1.7	Davao; Caraga; NCR	0	0	19

Cluster name	Date first identified	Pango lineage	Distribution	New sub-mission	Isolated in 3 months	Total
PH_162	2021-04-29	AY.14	>3 regions	0	0	150
PH_166	2021-04-24	B.1.617.2	>3 regions	0	0	14
PH_262	2021-04-19	B.1.1.7	Davao; Soccsksargen	0	0	18
PH_271	2021-04-19	B.1.1.7	>3 regions	0	0	16
PH_252	2021-04-14	B.1.1.7	>3 regions	0	0	21
PH_265	2021-04-13	B.1.1.7	Davao; Caraga; Central Luzon	0	0	13
PH_349	2021-04-02	B.1.1.519	NCR	0	0	5
PH_264	2021-03-25	B.1.1.7	>3 regions	0	0	29
PH_254	2021-03-22	B.1.1.7	>3 regions	0	0	31
PH_267	2021-03-19	B.1.1.7	>3 regions	0	0	12
PH_224	2021-03-05	B.1.1.7	>3 regions	0	0	32
PH_261	2021-03-05	B.1.1.7	>3 regions	0	0	32
PH_272	2021-03-05	B.1.1.7	>3 regions	0	0	24
PH_336	2021-03-05	B.1.1.63	NCR; Calabarzon	0	0	5
PH_268	2021-02-22	B.1.1.7	NCR; Calabarzon; Central Luzon	0	0	13
PH_240	2021-02-15	B.1.1.7	>3 regions	0	0	55
PH_214	2021-02-12	B.1.1.7	>3 regions	0	0	72
PH_223	2021-02-11	B.1.1.7	>3 regions	0	0	14
PH_27	2021-02-10	B.1.1.7	Calabarzon; NCR; Mimaropa	0	0	7
PH_190	2021-01-31	B.1.351	>3 regions	5	0	3021
PH_323	2021-01-27	B.1.1.63	NCR; Calabarzon	0	0	7
PH_210	2021-01-26	B.1.1.7	>3 regions	0	0	48
PH_283	2021-01-26	B.1.1.7	NCR; Calabarzon; Central Visayas	0	0	5
PH_327	2021-01-25	B.1.1.63	Calabarzon	0	0	5
PH_69	2021-01-21	B.1.466.1	Calabarzon; NCR	0	0	21
PH_357	2021-01-19	B.1.1	>3 regions	0	0	29
PH_381	2021-01-15	B.1.1.28	Davao; NCR; Soccsksargen	0	0	9
PH_250	2021-01-14	B.1.1.7	NCR; Central Visayas; CAR	0	0	5
PH_70	2021-01-12	B.1.441	NCR; Central Visayas	0	0	5
PH_388	2021-01-11	B.1.1.28	Davao	0	0	14
PH_393	2021-01-08	P.3	>3 regions	0	0	458
PH_395	2021-01-08	B.1.1	Calabarzon; Central Visayas; NCR	0	0	6
PH_280	2021-01-07	B.1.1.7	>3 regions	0	0	342
PH_284	2021-01-07	B.1.1.7	NCR	0	0	7
PH_286	2021-01-07	B.1.1.7	NCR; Central Luzon; Central Visayas	0	0	6
PH_379	2021-01-06	B.1.1.28	Davao; Soccsksargen; Calabarzon	0	0	19
PH_389	2021-01-06	B.1.1.28	>3 regions	0	0	45
PH_239	2021-01-05	B.1.1.7	>3 regions	0	0	133
PH_390	2021-01-03	B.1.1.28	Davao; Soccsksargen	0	0	17
PH_281	2020-12-29	B.1.1.7	>3 regions	0	0	8
PH_36	2020-12-28	B.1.1.7	>3 regions	2	0	1491
PH_43	2020-12-28	B.1.524	>3 regions	0	0	10
PH_304	2020-12-18	B.1.1.63	Cagayan Valley; NCR	0	0	7

Cluster name	Date first identified	Pango lineage	Distribution	New sub-mission	Isolated in 3 months	Total
PH_376	2020-12-17	B.1.1.263	CAR; Cagayan Valley; Central Luzon	0	0	65
PH_312	2020-12-15	B.1.1.63	NCR; Calabarzon; CAR	0	0	11
PH_222	2020-12-10	B.1.1.7	NCR; Calabarzon; Central Visayas	0	0	5
PH_309	2020-12-10	B.1.1.63	Calabarzon; NCR	0	0	5
PH_339	2020-12-04	B.1.1.63	NCR; Central Luzon	0	0	10
PH_384	2020-12-02	B.1.1.28	>3 regions	0	0	36
PH_385	2020-12-02	B.1.1.28	NCR; Calabarzon; Caraga	0	0	20
PH_296	2020-11-25	B.1.1	Calabarzon; NCR	0	0	11
PH_322	2020-11-22	B.1.1.63	Calabarzon; NCR	0	0	9
PH_370	2020-11-15	B.1.1.263	CAR; Cagayan Valley; Calabarzon	0	0	9
PH_19	2020-11-10	B.6	NCR; Calabarzon	0	0	5
PH_386	2020-11-07	B.1.1.28	Calabarzon; NCR; Central Luzon	0	0	6
PH_71	2020-11-06	B.1.36	Calabarzon; NCR	0	0	10
PH_321	2020-11-03	B.1.1.63	Calabarzon	0	0	6
PH_314	2020-11-02	B.1.1.63	>3 regions	0	0	35
PH_334	2020-11-01	B.1.1.63	>3 regions	0	0	14
PH_369	2020-10-30	B.1.1.263	NCR; Ilocos; Central Visayas	0	0	6
PH_367	2020-10-11	B.1.1.263	>3 regions	0	0	67
PH_73	2020-09-17	B.1.1.7	>3 regions	0	0	7
PH_387	2020-08-24	B.1.1.28	>3 regions	0	0	15
PH_44	2020-08-22	B.1	NCR; Calabarzon; Davao	0	0	12
PH_316	2020-08-13	B.1.1.63	>3 regions	0	0	189
PH_294	2020-08-07	B.1.1	NCR	0	0	5
PH_338	2020-08-07	B.1.1.63	>3 regions	0	0	21
PH_18	2020-08-06	B.6	>3 regions	0	0	40
PH_297	2020-08-05	B.1.1	Calabarzon; NCR	0	0	5
PH_346	2020-08-04	B.1.1	Calabarzon; NCR	0	0	10
PH_92	2020-07-22	B.1.1.63	>3 regions	0	0	128
PH_315	2020-07-19	B.1.1.63	Calabarzon; NCR; Western Visayas	0	0	24
PH_26	2020-07-15	B.1	>3 regions	0	0	30
PH_355	2020-07-12	B.1.1	NCR; Calabarzon; Mimaropa	1	0	13
PH_345	2020-07-10	B.1.1	>3 regions	3	0	187
PH_303	2020-07-09	B.1.1.63	>3 regions	0	0	121
PH_292	2020-07-08	B.1.1	>3 regions	0	0	64
PH_329	2020-07-08	B.1.1.63	>3 regions	1	0	80
PH_45	2020-07-08	B.1	Mimaropa; NCR; Central Visayas	0	0	9
PH_302	2020-07-07	B.1.1.63	>3 regions	0	0	26
PH_342	2020-07-07	B.1.1.63	NCR; Calabarzon; Cagayan Valley	1	0	13
PH_378	2020-07-05	B.1.1.28	>3 regions	1	0	224
PH_300	2020-07-01	B.1.1.63	Calabarzon; NCR; CAR	0	0	9
PH_325	2020-07-01	B.1.1.63	>3 regions	0	0	234
PH_307	2020-06-29	B.1.1.63	>3 regions	0	0	137

Cluster name	Date first identified	Pango lineage	Distribution	New sub-mission	Isolated in 3 months	Total
PH_330	2020-06-23	B.1.1.63	NCR	0	0	5
PH_365	2020-06-16	B.1.1.263	>3 regions	1	0	140
PH_35	2020-06-11	B.1	NCR; Western Visayas	0	0	9
PH_15	2020-03-11	B.6	NCR; Cagayan Valley	0	0	6
PH_2	2020-03-10	B.6	>3 regions	1	0	20

Table 3. Number of sequences by cluster identified with the Grapevine-anywhere as of 27 November 2022. A cluster is defined based on multiple sequences isolated in the Philippines that appeared to descend from the same introductory event on a phylogenetic tree. *Date first identified*, the isolation date of the first identified sequence. *Pango lineage*, the major Pango lineage of the sequences that belong to the same cluster. *New submission*, new sequences submitted from the last report. *Isolated in 3 months*, sequences isolated from 1 September 2022 to 27 November 2022.

SARS-CoV-2 sequencing in the Philippines

Total available SARS-CoV-2 sequences in the Philippines: 25231

SARS-CoV-2 sequences from GECO project: 2959

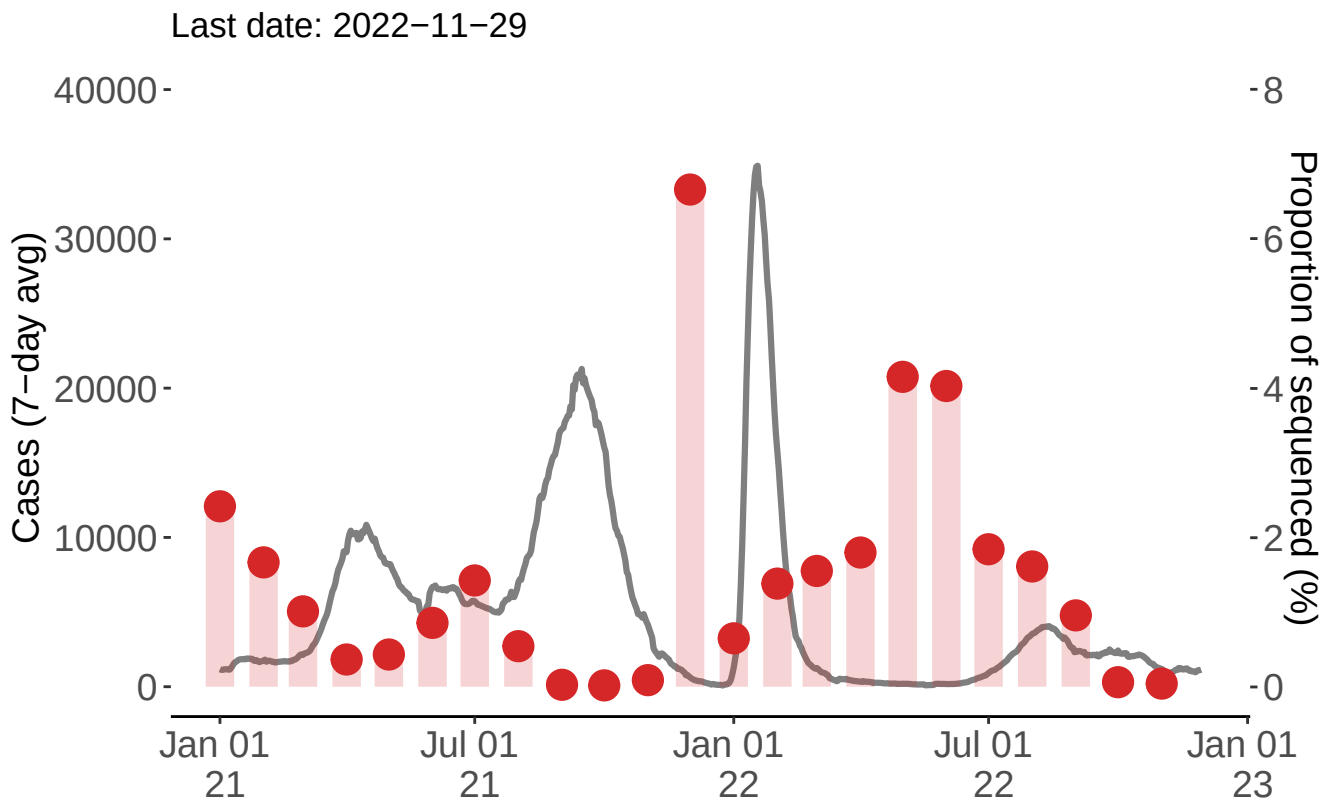

Figure 4. Number of COVID-19 cases and the proportion of sequenced samples in the Philippines from January 2021. The gray line indicates the mean cases in a 7 days window based on the JHU data base, whereas the red bars indicate the estimated percentage of sequenced samples among cases in a month.

Epidemiology of COVID-19 in the Philippines

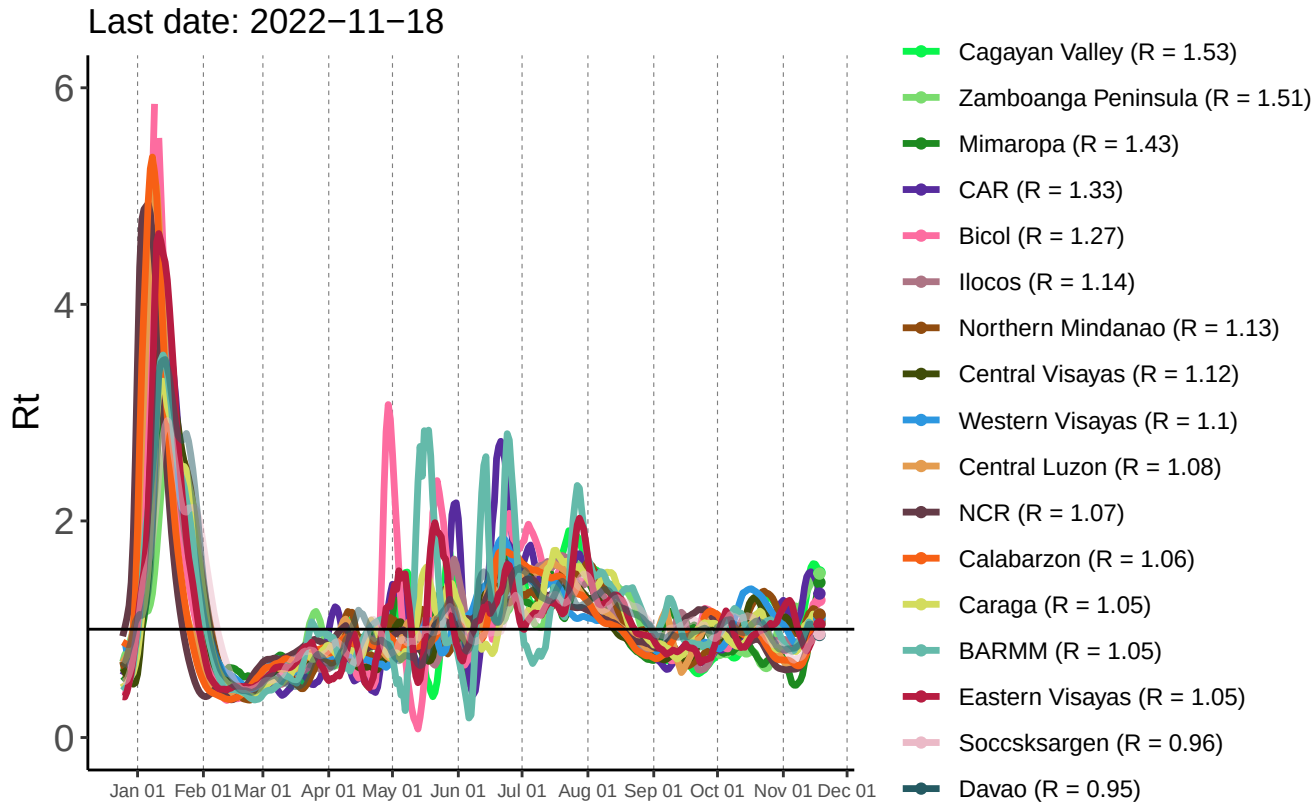

Figure 5. Mean effective reproductive number (Rt) of COVID-19 in the Philippines by region from December 2021. The reproductive number (R) is defined as the number of new infections that one infected patient can cause in a susceptible population. Here, *the mean effective reproductive number* (Rt) was inferred by daily number of cases reported in MOH, Philippines in a window of seven days. The horizontal line indicates one. If Rt is greater than 1, the case number in the region will likely continue to grow. If the Rt is below 1, the new cases may continue to appear at a slower rate. The R values denoted with the region name represent the most recent estimates. More regional epidemiological statistics can be found here.

SARS-CoV-2 mutations of interest

Omicron sublineage convergent sites

- **R346X** (K: BA.1.1; T: BA.5.2, BA.2.75.2): Distribution on the Philippine isolates

- **K444X** (R: BA.2.3.20; M: BR.1 [a BA.2.75.4.*]; T: BQ.1): Distribution on the Philippine isolates
- **L452X** (R: BA.4/BA.5, BA.2.35; M: BA.2.3.20): Distribution on the Philippine isolates
- **N460X** (K: BA.2.75, BQ.1 [a BA.5.3.*], BA.2.3.20): Distribution on the Philippine isolates
- **F486X** (V: BA.4/BA.5, S: BA.2.75.2): Distribution on the Philippine isolates
- **R493X** (Q: BA.4/BA.5, BA.2.75, BA.2.3.20): Distribution on the Philippine isolates

Other Spike protein

- **69-70Del** (Alpha, Omicron): Distribution on the Philippine isolates
- **T95I** (Mu, Omicron): Distribution on the Philippine isolates
- **144-** (Alpha, Eta, Omicron): Distribution on the Philippine isolates
- **K417N** (Beta, Omicron): Distribution on the Philippine isolates
- **T478K** (Delta, Omicron): Distribution on the Philippine isolates
- **E484K** (Beta, Gamma, Eta, Mu): Distribution on the Philippine isolates
- **N501Y** (Alpha, Beta, Gamma, Mu, Omicron): Distribution on the Philippine isolates
- **H655Y** (Gamma, Omicron): Distribution on the Philippine isolates

Relevant functions including antibody escape (S 69-70Del, S 144, S 346, S 417, S 484) and receptor binding (S 417, S 484, S 501). 69-70Del, deletions at positions 69-70.

Data sources and references

Data

- GECO website
- DOH Data drop
- GISAID (EPI-SET: EPI_SET_220930td)
- JHU COVID data

Methods

- Analyses in this report
- Nextstrain (build for GECO project)
- Grapevine-anywhere

References

- WHO
- Pango lineage list

Online version and previous reports

GECO Monthly Report

2022-10 pdf