Weekly update on Variants of Concern (VOC)

21 December, 2022

Of all positive samples sequenced* in epi week 49 (December 04 - December 10) in BC, nearly all were confirmed Variants of Concern (VOCs). Over time, the distribution of variants demonstrate the temporality and changing nature of VOCs circulating as shown in Figure 1. Detection of BA.5, including all descendant sublineages, has plateaued in BC.

Due to the large diversity in BA.5 sublineages (>100 descendants), the total sequenced for each individual descendant strain is low and collapsed in the "Other*" category in Figure 1. This report provides more detail for the breakdown of sequenced samples in the most recent six weeks of data available (Figure 5).

Data from epi week 49 may reflect partial data; estimates are expected to change as more specimens are received and sequenced.

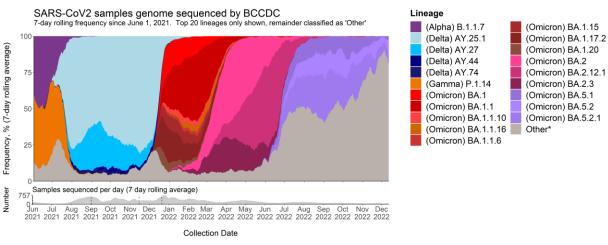


Figure 1. Twenty most prevalent lineages in British Columbia, June 1, 2021 - December 10, 2022**

Pangolin version: 4.1.3, Usher version: 1.17, Pango version: 1.17. Total Pango assignments: 55 650; Total Usher assignments: 78 621

*Data from the PLOVER system at the BCCDC Public Health Lab.

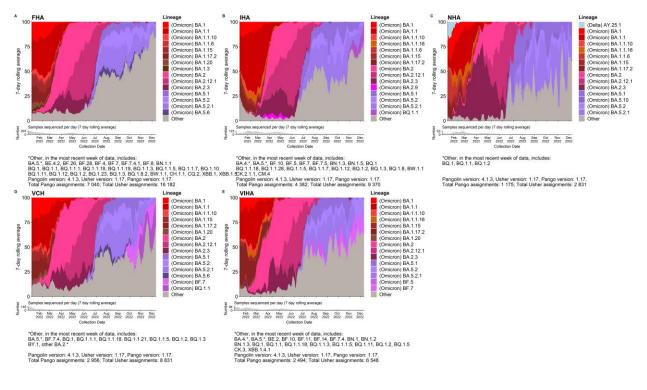
**Dashed lines indicate the time of changes in whole genome sequencing (WGS) sampling strategy (epi week 22: all positive samples; epi week 36: transition from full sequencing to sequencing a subset of 10% of representative samples in addition to all targeted samples, while keeping a monthly census of all positive samples on the first week of the month; epi week 46: transition to WGS of all positive samples; epi week 51: transition from full sequencing to sequencing a subset of representative positive samples in addition to priority cases (including outbreaks, long-term care, vaccine escape, travel-related, hospitalization).

BC Centre for Disease Control Provincial Health Services Authority

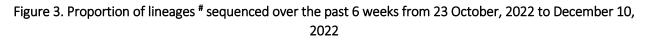
The main recent circulating variant is Omicron (Figure 1), accounting for nearly all positive specimens sequenced.

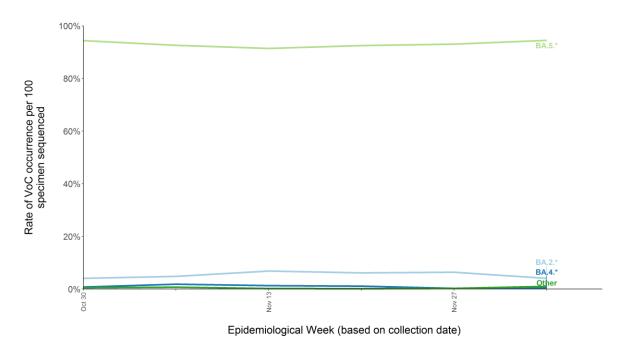
As shown in Figure 2, Omicron sub-lineages have different prevalence distribution in each health authority. In the past week, lineages classified as "Other" include several sub-lineages of BA.4 and BA.5 (refer to Figure 3).

Figure 2. Fifteen most prevalent lineages in British Columbia by Health Authority, January 1, 2022 - December 10, 2022



Pangolin designation beyond three sub-lineages (e.g. BA.5.x.x.x) results in the assignment of a new naming convention whereby a new lineage (e.g. BE) is assigned. These new designations (e.g. BE, BM, etc.) are collapsed in their parental lineage (e.g. BA.5*) in Figure 3. Recombinants (naturally occurring merge of virus variants) are collapsed in the "Other" category.





[#] See appendix for the definitions of VOC lineages

Monitoring of Variants

BCCDC Public Health Laboratory is continuously monitoring for both VOCs and VOIs and it is tracking a regularly updated Variants Under Monitoring (VUMs) by adapting and optimizing its sampling strategy. To address the latest VOC, Omicron, sequencing of all positives samples was resumed with retrospective specimens collected from November 15th 2021 - December 20th 2021. The sampling strategy for WGS was modified starting December 21st 2021 to capture a subset of representative positive specimens in addition to the priority cases (including outbreaks, long-term care, vaccine escape, travel-related, hospitalization). Reflecting the current testing guidelines, most sequencing is now through positive PCR samples as shown in Figure 4. As of October, 2022 priority cases no longer include travel testing due to the ending of COVID-19 emergency border measures.

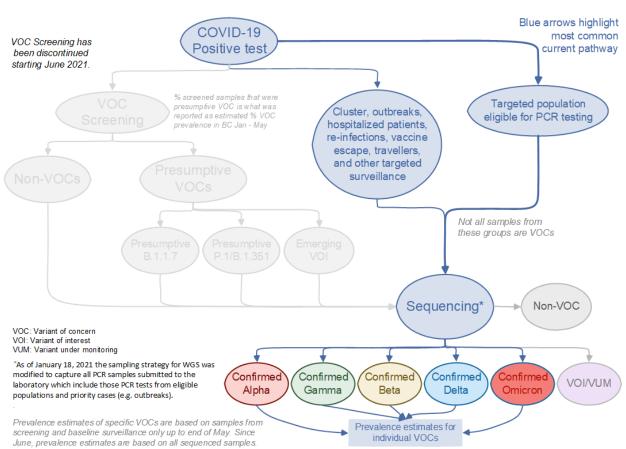


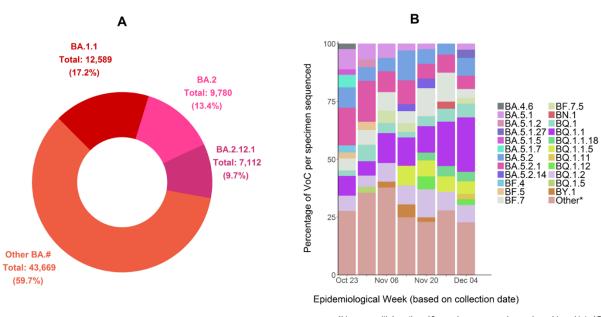
Figure 4. Overview of the screening and sequencing process applied to positive COVID-19 tests in BC, Dec 2022.

Please note the turnaround time sequencing which takes approximately 7-11 days, but it could also take longer if there are lab backlogs or if there are delays in receiving current positive samples from frontline laboratories.

Whole genome sequencing (WGS)

Whole genome sequencing (Illumina only) was performed on 182,695 specimens up to epi week 49 (December 04 - December 10) in BC, of which 160,159 came back as variants under closer observation. Figure 4 above illustrates BC's whole genome sequencing strategy of COVID cases.

The VOCs represent a cumulative 98.4% of all the variants that were detected in the province since the start of the pandemic (see <u>WGS frequency of lineages table</u> on BCCDC website). The Delta (n = 57,837) and Omicron (n = 73,150) variants account for largest proportion of the VOCs. Omicron includes B.1.1.529, the parent lineage, and BA sub-lineages (Figure 5 and appendix Table).





Panel A: three most prevalent lineages cumulatively; Panel B: sublineages in the past 6 weeks

Lineages with less than 10 samples sequenced a week are binned into `Other`

** These counts represent the total number of samples (not cases) sequenced.

BCCDC Public Health Laboratory updates the lineage assignment tool (Pangolin), on an at least weekly basis, to reflect current lineage classification changes. Figure 6 below demonstrates how these updates affect changes in the Delta and Omicron variants from one sub-lineage to another over time.

	BA.2.3_12-19
BA.2_12-12	
	D1 0 05 10 10
	BA.2.65_12-19
	BA.2.12_12-19 BA.2.17_12-19
BA.2.3.2_12-12	BA 2 76 12.19
BA.2.3.1 12-12	BA.2.16_12-19 BA.2.18_12-19 BA.2.37_12-19 BA.5_12-19 BA.2.1_12-19 BA.2.1_12-19
BP.1_12-12	BA.2.37_12-19 BA 5_12-19
BA.2.78_12-12	BA.2.1_12-19
BA.2.9.5_12-12	BA.2.9_12-19
BW.1_12-12	BW.1.1_12-19
BW. 1_12-12	BVV.1.1_12-15
BA.5.1.3_12-12	BA.5.1.15_12-19
BA.5.1_12-12	BA.5.1.22_12-19
	BA.5.1.17_12-19 BA.5.1.24_12-19 BA.5.1.30_12-19 DL.1_12-19
	BA.5.1.30_12-19 DL 1 12-19
BA.4.6_12-12	BA.4.6.5_12-19
	BA.4.6.4_12-19
BA.2.23_12-12	BA.2_12-19
BA.2.29_12-12	
BA.2.65_12-12	BA.5.1_12-19
BA.2.34_12-12 BA.2.37_12-12	
BA.2:34_12-12 BA.2:37_12-12 BA.5:1.17_12-12	BA.1.1_12-19
BA.2:37_12:12 BA.5:1:17_12:12 BA.5:1:25_12:12 BA.5:1:25_12:12	
BA.2.37_12-12 BA.5.1.17_12-12 BA.5.1.25_12 BA.5.1.25_12	BF.34_12-19
BA.2:37_12:12 BA.51.17_12:12 BA.51.25_12:12 BA.5_12:12 BF.4_12:12 BF.4_12:12	BF.34_12-19
BA2 837 12-12 BA5 1:17 12-12 BA5 1:25 12-12 BA5 125 12-12 BF 4_12-12 BA 5.1 30_12-12 BA 5.1 30_12-12	
BA2 897 - 12-12 BA5 61 25 - 12-12 BA6 61 25 - 12-12 BA7 61 27-12 BA 6 5 1 30_12-12 BA 5 1 30_12-12 BA 5 1 116_12-12	BF.34_12-19
BA2 897-12-12 BA3 81 25 12-12 BA3 81 25 12-12 BA4 81 25 12 BA5 1.130_12-12 BA5 1.130_12-12 BA5 1.1.16_12-12	BF.34_12-19 BF.26_12-19 BF.28_12-19 BF.28_12-19 XBE_12-19 BA.5.2_12-19
BA2 897-12-12 BA3 81 25 12-12 BA3 81 25 12-12 BA4 81 25 12 BA5 1.130_12-12 BA5 1.130_12-12 BA5 1.1.16_12-12	BF.34_12-19 BF.26, 12-19 BF.28, 12-19 XBE_12-19 BA.5.2_12-19 BA.5.2_12-19 BA.5.2_1_12-19
BA2 87 - 12-12 BA5 - 17 - 12-12 BA5 - 17 - 12-12 BA5 - 12-12 BA5 - 12-12 BA5 - 130 - 12-12 BA - 1.1.0 - 12-12 BA - 1.1.0 - 12-12 BA - 1.1.0 - 12-12 BA - 1.1.2 - 12-12	BF 34_12-19 BF 26_12-19 BF 28_12-19 XBE_12-19 BA.5.2_12-19 BA.5.2_12-19 BA.5.2_12-19 BA.5.2_42_12-19
BA 2 37 - 12 - 12 BA 6 : 17 - 12 - 12 BA 6 : 17 - 12 - 12 BA 6 : 12 - 12 - 12 BF 4 - 12 - 12 BA 1 : 1.16 - 12 - 12 BA 1 : 1.16 - 12 - 12 BA 1 : 1.16 - 12 - 12 BA 5 : 2 1 - 12 - 12 BA 5 : 2 1 - 12 - 12	BF34_12-19 BF20_12-19 BF20_12-19 XBE_12-19 BA.5.2_12-19 BA.5.2_12-19 BA.5.2_12-19 BA.5.2_42_12-19 BA.5_2.42_12-19
BA 2 37 - 12 - 12 BA 6 : 17 - 12 - 12 BA 6 : 17 - 12 - 12 BA 6 : 12 - 12 - 12 BF 4 - 12 - 12 BA 1 : 1.16 - 12 - 12 BA 1 : 1.16 - 12 - 12 BA 1 : 1.16 - 12 - 12 BA 5 : 2 1 - 12 - 12 BA 5 : 2 1 - 12 - 12	BF.34_12.19 BF.26_12.19 BF.28_12.19 XBE_12.19 BA.5.2_12.19 BA.5.2_12.19 BA.5.2_12.19 BA.5.2_12.19 BA.5.2.42_12.19 BA.5.1.10_12.19
BA 2 39, 12-12 BA 31, 12 12 BA 51, 12 12 BA 51, 12 12 BA 51, 12-12 BA 51, 130, 12-12 BA 51, 10, 12-12 BA 51, 10, 12-12 BA 52, 12, 12 BA 54, 1	BF 34_12.19 BF 26, 12.19 BF 26, 12.19 SEE 12.19 BA 5.2_12.19 BA 5.2_12.19 BA 5.2_12.19 BA 5.2_12.19 BA 5.2_12.19 BA 5.10_12.19 BA 5.10_12.19 BA 5.1.23_12.19
BA2 87 - 12-12 BA3 6: 17: 12: 12 BA 6: 17: 12: 12 BA 6: 17: 12: 12 BF 6: 17: 12 BF 6: 17: 12 BA 11: 16: 12: 12 BA 11: 16: 12: 12 BA 11: 10: 12: 12 BA 5: 2: 1_: 12: 12 BA 5: 2: 1_: 12: 12 BA 5: 2: 12: 12: 12 BA 5: 2: 12: 12: 12 BA 5: 2: 12: 12: 12: 12 BA 5: 2: 12: 12: 12: 12 BA 5: 2: 12: 12: 12: 12	BF34_12.19 BF26_12.19 BF26_12.19 BF26_12.19 BA5.2_12.19 BA5.2_12.19 BA5.2_12.19 BA5.2_12.19 BA5.2_12.19 BA5.1_10_12.19 BA5.1_10_12.19 BA1_12.19
BA & 5 / 12 - 12 BA & 1 / 25 - 12 / 2 BA & 1 / 10 - 12 - 12 BA & 1 / 10 - 12 - 12 BA & 1 / 10 - 12 - 12 BA & 5 / 2 / 12 - 12 BF & 1 / 2 - 12 BF & 1 / 2 - 12	BF34_12-19 BF26_12-19 BF26_12-19 XBE_12-19 BA 5.2_12-19 BA 5.2_12-19 BA 5.2_12-19 BA 5.2_12-19 BA 5.2_12-19 BA 2_10_12-19 BA 1_10_12-19 BA 1_17_12-19 BA 1_17_12-19
BA & 5 / 12 - 12 BA & 1 / 25 - 12 / 2 BA & 1 / 10 - 12 - 12 BA & 1 / 10 - 12 - 12 BA & 1 / 10 - 12 - 12 BA & 5 / 2 / 12 - 12 BF & 1 / 2 - 12 BF & 1 / 2 - 12	BF34_12.19 BF26_12.19 BF26_12.19 X8E_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA53_10_12.19 BA1_17_12.19 BA1_17_12.19 BA3_112.19
BA2 8.7 - 12-12 BA 6 1 25 - 12-12 BA 6 1 25 - 12 BA 7 2 - 12 BA 7 2 - 12 BA 5 1 30_12-12 BA 5 1 30_12-12 BA 7 1 10_12-12 BA 7 1 10_12-12 BA 7 2 20_12-12 BA 6 2 20_12-12 BA 7 20	BF34_12.19 BF28_12.19 BF28_12.19 XBE_12.19 BA5.2 12.19 BA5.2 12.19 BA5.2 12.19 BA5.2 12.19 BA5.2 10_12.19 BA5.1 10_12.19 BA1.22.19 BA1.122.19 BA1.122.19 BA1.122.19 BA2.31_12.19 BA2.32_12.19 BA2.32_12.19
BA2 397 12-12 BA2 12 12 BA 6 1 75 12 BA 6 1 75 12 BA 6 1 75 12 BA 6 1 75 12 BA 5 1 30 12-12 BA 1 11 16 12-12 BA 1 11 16 12-12 BA 5 1 10 12-12 BA 5 2 12 12 BA 5 2 20 12-12 BA 5 2 28 12-12 BA 5 2 28 12-12 BA 5 2 28 12-12 BA 5 2 29 12-12 BA 5 2 10 12-12 BF 5 12-12	BF34_12.19 BF26_12.19 BF26_12.19 BF21_129 BA52_129 BA52_1219 BA52_1219 BA52_1219 BA52_12219 BA52_12219 BA52_10_123 BA110_1219 BA117_12219 BA23_12219 BA23_12219 BA23_12219 BA23_12219 BA23_12219 BA23_12219 BA23_12219 BA23_22236 BA236_2236
BA2 87 12-12 BA3 61 17 12 12 BA 61 17 12 12 BA 61 17 12 12 BA 61 12-12 BA 61 12-12 BA 11.10 12-12 BA 11.10 12-12 BA 11.12 12-12 BA 52 20 12-12 BA 52 20 12-12 BA 52 20 12-12 BA 52 12 12-12 BA 52 12 12-12 BA 52 12 12-12 BA 52 12 12-12 BF 7, 12-12 BF 2, 12-12 BA 2, 10 1, 12-12 BA 2, 10 1, 12-12 BA 2, 10 1, 12-12	BF34, 12.19 BF20, 12.19 BF20, 12.19 BF20, 12.19 BA52, 12.19 BA52, 12.19 BA52, 12.19 BA52, 12.19 BA52, 12.19 BA52, 12.19 BA51, 10, 12.19 BA53, 10, 12.19 BA1, 12.19 BA1, 17, 12.19 BA23, 12.19 BA23, 12.19 BA23, 12.19 BA23, 23, 12.19 BA23, 21.219
BA 2 397 - 12 - 12 BA 3 - 15 - 12 - 12 BA 5 - 1 - 25 - 21 - 2 BA 6 - 1 - 25 - 21 - 2 BA 7 - 12 - 12 BA 5 - 1 - 30 - 12 - 12 BA 5 - 1 - 12 - 12 BA 5 - 2 - 12 - 12 BA 5 - 12 - 12 BF - 2 - 12 BF - 2 - 12 BF - 2 - 12 BF 2 - 12 - 1	BF34,12.19 BF20,12.19 BF20,12.19 BF20,12.19 BA52,12.19 BA52,12.19 BA52,12.19 BA52,12.19 BA52,12.19 BA5,10,12.19 BA5,110,12.19 BA7,12.19 BA7,12.19 BA2,36,12.1
BA2 397 12-12 BA2 11 12 12 BA 6 11 5 12 BA 6 11 5 12 BA 6 12-12 BA 7 12-12 BA 5 1 30 12-12 BA 1 11 10 12-12 BA 11 12 12 BA 5 2 10 12-12 BA 5 2 20 12-12 BA 5 2 10 12-12 BF 5	BF34_12.19 BF26_12.19 BF26_12.19 XBE_12.19 XBE_12.19 BA5.2_12.19 BA5.2_12.19 BA5.2_12.19 BA5.2_12.19 BA5.1_10_12.19 BA5.1_10_12.19 BA5.1_2.19 BA1.12.19 BA2.3_1_12.19 BA2.3_1_12.19 BA2.3_6_12.19
BA 2 37 12-12 BA 2 17 17 12 BA 6 17 17 12 BA 6 17 2-12 BA 7 12-12 BA 7 12-12 BA 5 1 30 12-12 BA 1 11 10 12-12 BA 11 10 12-12 BA 11 12 12-12 BA 5 2 12 12-12 BA 5 2 28 12-12 BA 6 2 28 12-12 BA 6 2 28 12-12 BA 6 2 28 12-12 BA 6 2 12-12 BA 6 2 12-12 BA 6 2 12-12 BA 6 2 12-12 BA 7 12-12 BF 8 12-12 BF 3 12-12 BF 3 12-12 BA 117 12-12	$\begin{array}{c} 8F34, 12.19\\ 8F26, 12.19\\ 8F26, 12.19\\ 8F22, 12.19\\ 8A52, 12.19\\ 8A51, 12.19\\ 8A51, 12.19\\ 8A51, 12.19\\ 8A51, 12.19\\ 8A51, 12.19\\ 8A23, 12.19\\ 8A33, 12.19$
BA 2 39, 12-12 BA 6 1, 25, 12 BA 6 1, 25, 12 BA 6 1, 12-12 BA 5 1, 30, 12-12 BA 5 1, 30, 12-12 BA 5 1, 30, 12-12 BA 5 2, 10, 12-12 BA 5 2, 10, 12-12 BA 5 2, 20, 12-12 BA 5 2,	BF34_12.19 BF26_12.19 BF26_12.19 BF21_219 BA52_1219 BA52_1219 BA52_1219 BA52_1219 BA52_12219 BA52_12219 BA210_12319 BA110_1219 BA1117_1219 BA23_12219 BA23_12219 BA123_1219 BA23_12219 BA23_12219 BA23_12219 BA23_12219 BA23_1229 BA23_1229 BA23_1229 BA23_1229 BA23_1229 BA23_1249 BA23_1249 BA23_1249 BA23_1249 BA1110_1249 BA23_148 BA23_1249 BA23_1249 BA23_1249 BA1110_18_1249 BA1110_18_1249
BA 2 39 - 12 - 12 BA 6 1, 7 1 - 12 12 BA 6 1, 130 - 12 - 12 BA 6 1, 30 - 12 - 12 BA 6 1, 30 - 12 - 12 BA 11, 16 - 12 - 12 BA 11, 10 - 12 - 12 BA 11, 10 - 12 - 12 BA 5 2, 20 - 12 - 12 BF 7 - 12 - 12 BF 7 - 12 - 12 BF 4 - 12	BF34_12.19 BF26_12.19 BF26_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.129 BA52_12.219 BA52_12.219 BA52_12.219 BA1_12.19 BA1_17_12.19 BA233_12.19 BA233_12.19 BA233_12.19 CM8_12.219 BA233_12.19 BA213_12.19 BA1_12.19 BA1_12.19 BA233_12.19 CM8_12.219 BA1_116_12.19 BA1_116_12.19 BA1_116_12.19 BA1_1116_12.19
BAL 897-12-12 BAL 897-12-12 BAL 81 7.25 (2-12 BAL 81 7.25 (2-12) BAL 81 7.25 (2-12) BAL 91.25 (2-12) BAL 91.	BF34_12.19 BF26_12.19 BF26_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.129 BA52_12.219 BA52_12.219 BA52_12.219 BA1_12.19 BA1_17_12.19 BA233_12.19 BA233_12.19 BA233_12.19 CM8_12.219 BA233_12.19 BA213_12.19 BA1_12.19 BA1_12.19 BA233_12.19 CM8_12.219 BA1_116_12.19 BA1_116_12.19 BA1_116_12.19 BA1_1116_12.19
BA 2 39, 12-12 BA 6 1, 25, 12 BA 6 1, 25, 12 BA 7, 12-12 BA 5, 1, 30, 12-12 BA 11, 10, 12-12 BA 11, 10, 12-12 BA 5, 2, 1, 12, 12 BA 5, 2, 1, 12, 12 BA 5, 2, 20, 12-12 BA 2, 10, 1, 12-12 BA 2, 10, 1, 12-12 BA 1, 17, 2, 12 BA 1, 17, 2, 12-12 BA 1, 17, 2, 12-12 BA 1, 17, 2, 12-12 BA 1, 17, 2, 12-12 BA 2, 30, 12-	$\begin{array}{c} 8F34_12.19\\ 8F26_12.19\\ 8F26_12.19\\ 8E512.19\\ 8A52_129\\ BA52_129\\ BA52_12.19\\ BA52_12.19\\ BA52_12.19\\ BA52_12.19\\ BA52_10_129\\ BA5_10_129\\ BA5_10_129\\ BA5_10_129\\ BA5_110_129\\ BA5_110_129\\ BA5_117_12.19\\ BA5_35_1219\\ BA5_35_129\\ BA5_35_129\\ BA5_35_129\\ BA5_35_129\\ CM3_25_129\\ CM3_25_129\\ CM3_25_129\\ CM3_25_129\\ CM3_25_129\\ CM3_25_129\\ CM3_1_129\\ CM3_1_12$
BAL 897-12-12 BAL 897-12-12 BAL 91-251-212 BAL 91-251-212 BAL 91-251-212 BAL 91-251-212 BAL 91-251-212 BAL 91-21-212 BAL 91-21-212 BAL 91-21-212 BAL 91-212 BAL 91-21	$\begin{array}{c} 8F34_12.19\\ 8F26_12.19\\ 8F26_12.19\\ 8A52_12.19\\ 8A52_12.19\\ 8A52_12.19\\ 8A52_12.19\\ 8A52_12.19\\ 8A51_10_12.19\\ 8A51_10_12.19\\ 8A51_10_12.19\\ 8A51_10_12.19\\ 8A1_12.19\\ 8A1_12.19\\ 8A1_12.19\\ 8A1_12.19\\ 8A2_3_1_2.19\\ 8A1_1_2.19\\ 8A1_1_2.19\\ 8A1_1_2.19\\ 8A1_1_1_2.19\\ 8A1_1_1_2.19$
BA 5 1 30_12-12 BA 11.10_12-12 BA 11.10_12-12 BA 11.2_12.12 BA 5 2.1_12-12 BA 5 2.20_12-12 BA 2 3.20_12-12 BA 3.20	BF34_12.19 BF26_12.19 F26_12.19 F22_12.19 XBE_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA51_10_12.19 BA51_10_12.19 BA51_12.19 BA11_17_12.19 BA23_112.19 BA23_12.19 BA23_12.219 BA23_6_12.19 BA23_6_12.19 BA276_5_12.19 BA11_18_12.19
BA 2 37, 12, 12 BA 51, 25, 12 BA 51, 15, 12 BA 51, 15, 12 BA 51, 15, 12 BA 51, 130, 12, 12 BA 11, 110, 12, 12 BA 11, 10, 12, 12 BA 11, 12, 12, 12 BA 52, 20, 12, 12 BA 11, 12, 12 BA 23, 20, 12, 12 BA 11, 12, 12 BA 11, 12, 12	BF34_12.19 BF26_12.19 F26_12.19 F22_12.19 XBE_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA51_10_12.19 BA51_10_12.19 BA51_12.19 BA11_17_12.19 BA23_112.19 BA23_12.19 BA23_12.219 BA23_6_12.19 BA23_6_12.19 BA276_5_12.19 BA11_18_12.19
BA 2 37, 12, 12 BA 6 1, 72, 12 BA 6 1, 12, 12 BA 6 1, 12, 12 BA 6 1, 130, 12, 12 BA 1, 110, 12, 12 BA 1, 110, 12, 12 BA 1, 12, 12, 12 BA 5, 12, 12, 12 BA 5, 22, 12, 12 BA 5, 12, 12 BA 1, 12, 12 BA 2, 10, 12, 12 BA 2, 7, 5, 3, 12, 12	BF34_12.19 BF26_12.19 BF26_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_12.19 BA52_10_12.19 BA51_12.19 BA11_12.19 BA11_17_12.19 BA23_1_12.19 BA12_12.19 BA11_12.19 BA23_1_12.19 BA11_12.19 BA23_1_12.19 BA11_12.19 BA11_14_12.19 BA11_14_12.19 BA11_14_2.129 BA11_14_2.129 BA11_14_2.129 BA11_14_2.129 BA11_14_2.129 BA11_14_2.129 BA11_14_2.129 BA11_14_2.129 BA11_14_2.129 BA1
BAA 297-12-12 BAA 275-12 BAA 27, 257-12 BAA 27, 257	$\begin{array}{c} 8F34_12.19\\ 8F26_12.19\\ 8F26_12.19\\ 8A52_12.19\\ BA52_12.19\\ BA52_12.19\\ BA52_12.19\\ BA52_12.19\\ BA52_10_1219\\ BA5_10_12.19\\ BA5_10_12.19\\ BA5_10_12.19\\ BA5_10_12.19\\ BA5_10_12.19\\ BA5_10_12.19\\ BA5_10_12.19\\ BA5_10_12.19\\ BA5_10_12.19\\ BA5_23_1_2.19\\ BA5_30_12.19\\ BA5_40_10_10\\ BB5_50_10_10\\ BA5_40_10_10\\ BB5_50_10_10\\ BB5_50_10_10\\ BB5_20_10_10\\ BB5_20_10_10_10_10\\ BB5_20_10_10_10_10_10_10_10_10_10_10_10_10_10$
BA2.89.7.12-12 BA3.51.72-12 BA.51.72-12 BA.51.72-12 BA.51.72-12 BA.51.72-12 BA.51.72-12 BA.51.72-12 BA.51.72-12 BA.52.72 BA.23 BA.52.72 BA.23 BA.52.72 BA.23 BA.77.72 BA.23	$\begin{array}{c} 8F34_12.19\\ 8F26_12.19\\ 8F26_12.19\\ 8A52_12.19\\ 8A5_12.19\\ 8A5_12.19\\ 8A5_12.19\\ 8A5_12.19\\ 8A5_12.19\\ 8A2_35_12.19\\ 8A1_12.19\\ 8A1_12.19\\ 8A1_12.19\\ 8A1_12.19\\ 8A1_12.19\\ 8A1_12.19\\ 8A1_114_12.19\\ 8A1_114_12.19\\ 8A1_12.19\\ 8A1_114_2.19\\ 8A1_12.12=19\\ 8A1_114_2.19\\ 8A1_12.12=19\\ 8A1_12_12=19\\ 8A1_12=12=19\\ 8A1_12_12=19\\ 8A1_12_12=19\\ 8A1_12_12=19\\ 8A1_12_12=19\\ 8A1_12=19\\ 8A1_12=19\\ 8A1_12=19\\18A1_12=19$
BA 2 37, 12, 12 BA 6 1, 72, 12 BA 6 1, 12, 12 BA 6 1, 12, 12 BA 6 1, 130, 12, 12 BA 1, 110, 12, 12 BA 1, 110, 12, 12 BA 1, 12, 12, 12 BA 5, 12, 12, 12 BA 5, 22, 12, 12 BA 5, 12, 12 BA 1, 12, 12 BA 2, 10, 12, 12 BA 2, 7, 5, 3, 12, 12	BF34_12.19 BF26_12.19 BF26_12.19 XBE_12.19 BA5.2_12.19 BA5.2_12.19 BA5.2_12.19 BA5.2_12.19 BA5.2_12.19 BA5.1_10_12.19 BA5.1_10_12.19 BA1.12.19 BA1.12.19 BA2.3_1_12.19 BA2.3_1_12.19 BA2.3_1_12.19 BA2.3_1_12.19 BA2.3_1_12.19 BA2.3_1_12.19 BA2.3_1_12.19 BA2.10_12.19 BA2.1_11_12.19 BA2.2_12.19 BA2.1_1.18_12.19 BA2.2_12.19 BA1.1_2.19 BA2.1_1.18_12.19 BA2.1_1.18_12.19 BA2.1_1.18_12.19 BA1.1_1.2_19 BA1.1_1.2_19 BA1.1_1.2_19 BA1.1_1.2_19 BA3.2_12.19 BA1.1.2_12.19 BA1.1.2_12.19 BA1.1.2_12.19 BA1.1.2_12.19 BA3.2_12.19 BA1.1.2_12.19 BA3.2_12.19 BA1.1.

Figure 6. Lineage assignment changes* in Pangolin

Data: datVis • Chart ID: SankeyID521c27db2cb7 • googleVis-0.6.3 R version 3.5.2 (2018-12-20) • Google Terms of Use • Documentation and Data Policy

12-12 BE.1.4_12-12 BE.1_12-12 BQ.1.1_12-12 Provincial Health Services Authority

Appendix — VOC Lineages*** Table

VOC	Associated Lineages
Alpha	B.1.1.7, Q.*
Beta	B.1.351, B.1.351.*
Gamma	P.1, P.1.*
Delta	B.1.617.2, AY.*
Omicron**	B.1.1.529, BA.*, BA, BC, BD, BE, BF, BG, BH, BJ, BK, BL, BM, BN, BP, BQ, BR, BS, BT, BU, BV, BW, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CJ, CK, CL, CM, CN, CP, CQ, CR, CS, CT, CU, CV, CW, CY, XE, XG, XH, XJ, XK, XL, XM, XN, XP, XQ, XR, XT, XU, XV, XW, XY, XZ, XAA, XAB, XAC, XAD, XAE, XAF, XAG, XAH, XAJ, XAK, XAL, XAM, XAN, XAP, XAQ, XAR, XAS, XAT, XAU, XAV, XAW, XAZ, XBC, XBD, XBE

* Indicates an additional numerical value (e.g. Q.1).

** Lineages starting with X indicate a recombination of Omicron variants.

*** Lineage assignments are based on the use of Pangolin, an epidemiological lineage assignment tool (github.com/cov-lineages/pangolin); these may change with time as new SARS-CoV-2 genomic data becomes available.