



MINISTRY OF NATIONAL HEALTH SERVICES,
REGULATIONS & COORDINATION
GOVERNMENT OF PAKISTAN

DEPARTMENT OF VIROLOGY
NATIONAL INSTITUTE OF HEALTH (NIH)
PUBLIC HEALTH LABORATORIES DIVISION (PHLD)

SARS-COV-2 VARIANTS OF CONCERN
SITUATIONAL REPORT # 10
MAY 01, 2021 TO MAY 10, 2022
PHONE # +92-51-9255238



HIGHLIGHTS

- The emergence of SARS-CoV-2 variants of concern (VOCs) have posed a serious challenge to the public health. Among the VOCs, delta, omicron and more recently omicron BA.2.12.1 has been associated with an increased number of cases in United States of America.
- In Pakistan, all the five VOCs (alpha, beta, gamma, delta and omicron) have been detected through whole genome sequencing. The first case of Omicron was reported on Dec 13, 2021, and as of May 10, 2022, 6,526 cases have been detected from Pakistan (based on whole-genome sequencing and PCR-based genotyping). Further, one case of omicron sublineage, BA.2.12.1, associated with an international travel was first reported in Pakistan on May 09, 2022.

S.No	Sequencing & PCR Testing	Alpha	Beta	Gamma	Delta	Omicron	Number (n)
1	Whole genome sequences (as of May 10, 2022)	495	100	1	1,276	436	2,308
2	Partial Sequences (as of May 10, 2022)	30	2	0	8	58	98
3	PCR based VOCs genotyping (May 2021 to Apr 29, 2022)	2,889	196	42	7,040	6,526	16,693

Detection of variants of concern based on whole genome
sequencing and PCR Genotyping



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VARIANTS OF CONCERN (VOCs)

Nextstrain clade	20I (V1)	20H (V2)	20J (V3)	21A, 21I, 21J	21K, 21L 21M	
GISAID clade	GRY	GH/501Y.V2	GR/501Y.V3	G/478K.V1	GRA	
WHO label	Alpha	Beta	Gamma	Delta	Omicron	Omicron sublineage BA.2.12.1
First detected in	United Kingdom	South Africa	Brazil	India	South Africa & Botswana	USA
Defining mutations (spike)	N501Y, A570D, P681H, T716I, S982A, D1118H	D80A, D215G, K417N, A701V, N501Y, E484K	L18F, T20N, P26S, D138Y, R190S, K417T, E484K, N501Y, H655Y, T1027I	T19R, L452R, T478K, P681R, D950N	A67V, T95I, G339D, S371L, S373P, K417N, N440K, G446S, S477N, T478K, E484A, Q493R, G496S, Q498R, T547K, D614G, N501Y, H655Y, N679K, P681H, N764K, D796Y, N856K, Q954H, N969K	+ L452Q + S704L
Available sequences worldwide	1,182,673	41,965	125,840	4,379,899	3,552,532	18,063
Cumulative prevalence worldwide	11%	< 0.5%	1%	42%	32%	< 0.5%
Available sequences Pakistan	495	100	1	1,276	436	1
*First detection from Pakistan	Dec 25, 2020	March 15, 2021	May 17, 2021	Apr 12, 2021	Dec 3, 2021	Apr 20, 2022
**Cumulative prevalence in Pakistan	20%	4%	< 0.5%	54%	31%	N/A

*Based on date of sample collection

**Apparent cumulative prevalence is the ratio of the VOC sequences to all sequences collected since its identification in Pakistan.

Overview of variants of concern (as of May 10, 2022)



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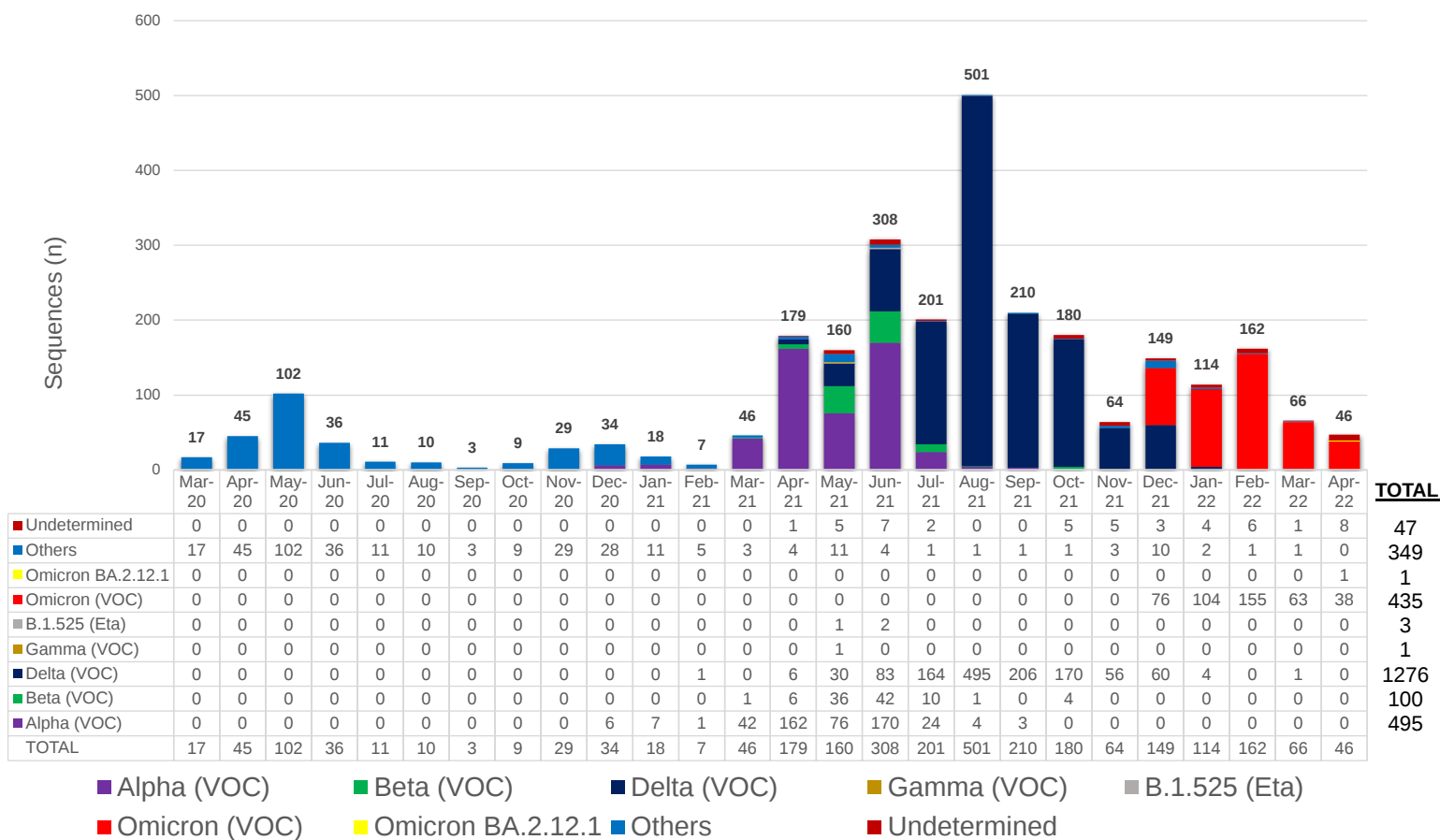
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SARS-CoV-2 Whole-Genome sequences from Pakistan (n=2,707)

(MAY 2020 TO MAY 10, 2022)



*Based on date of sample collection



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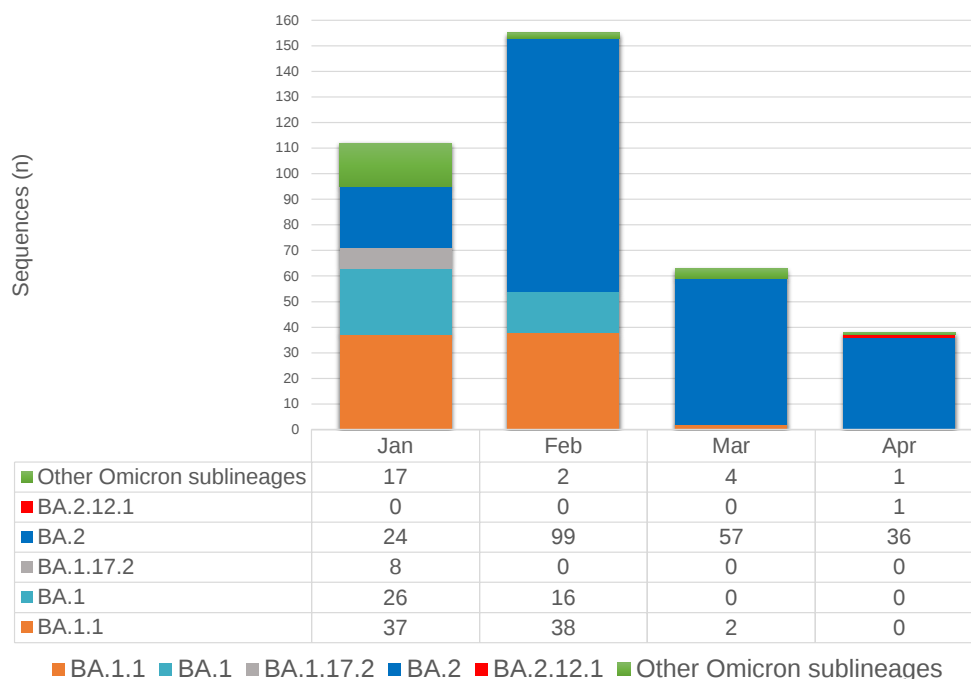
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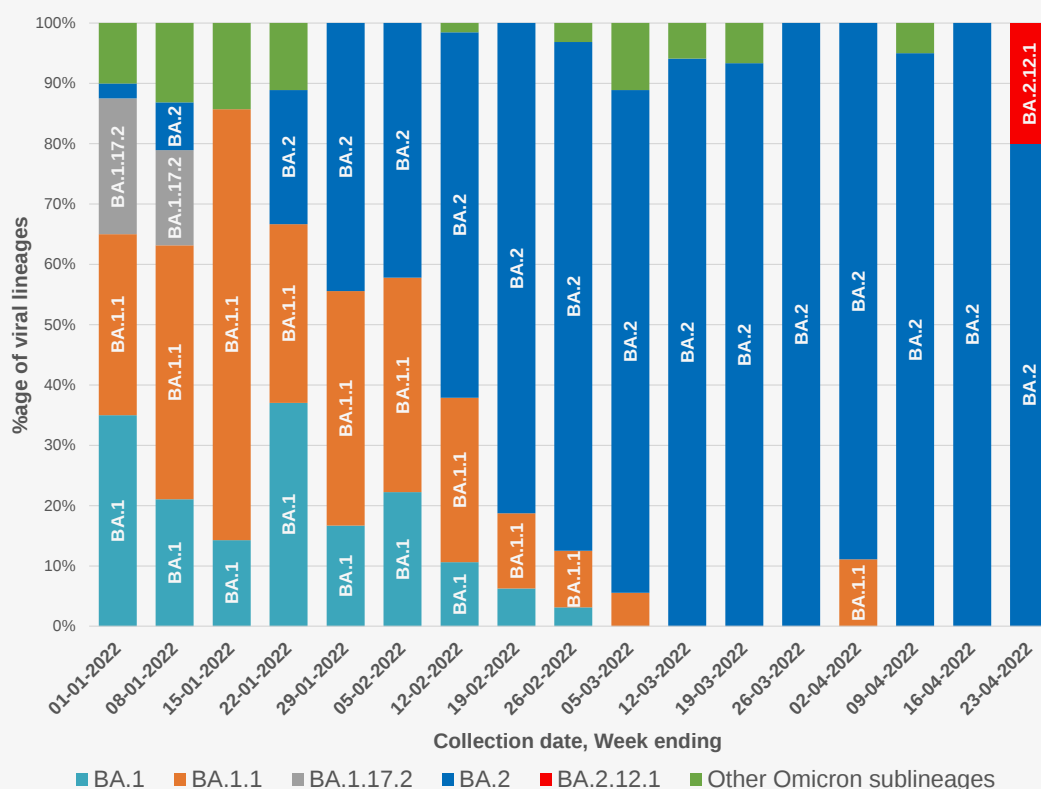


Distribution of Omicron sublineages based on Whole-Genome sequences from Pakistan

(JAN 2022 TO MAY 10, 2022)



*Based on date of sample collection





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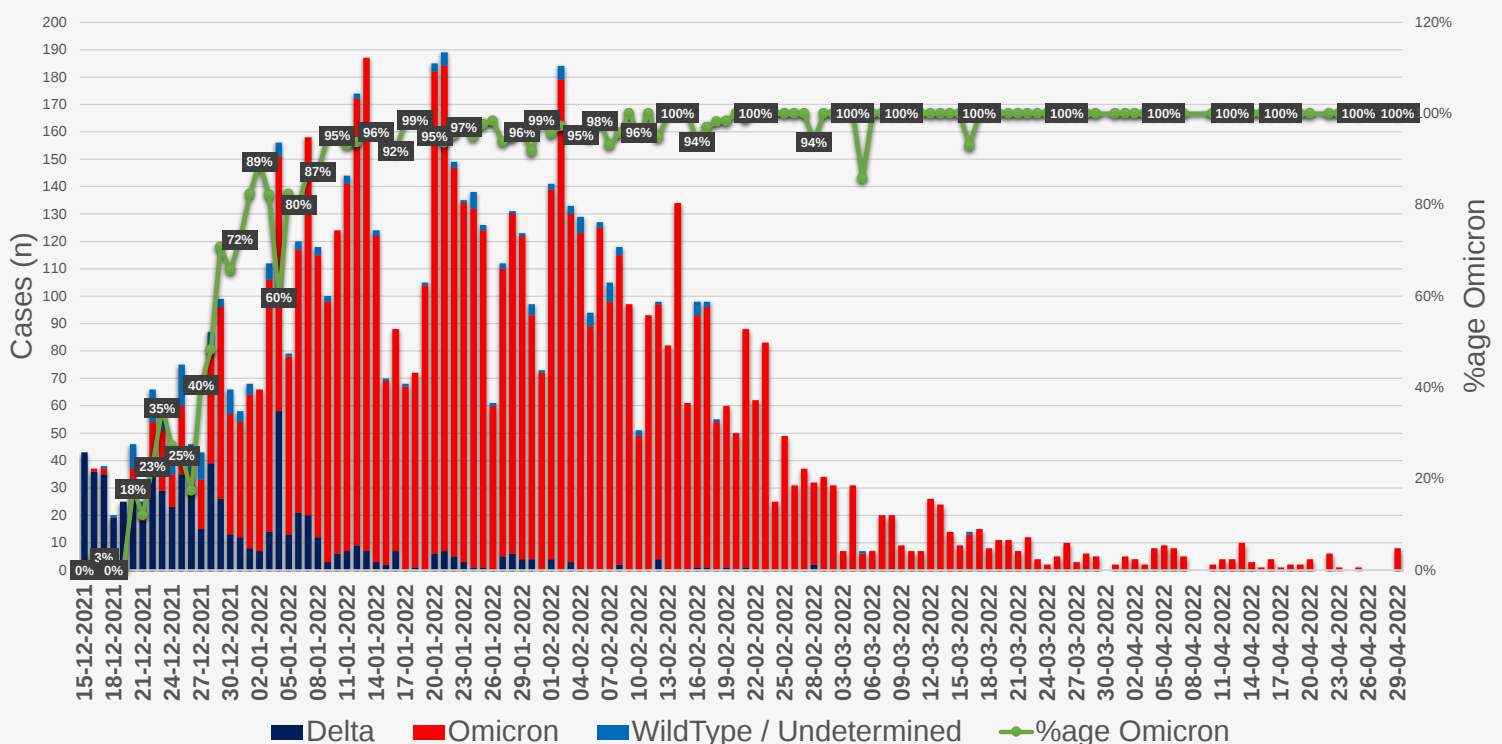
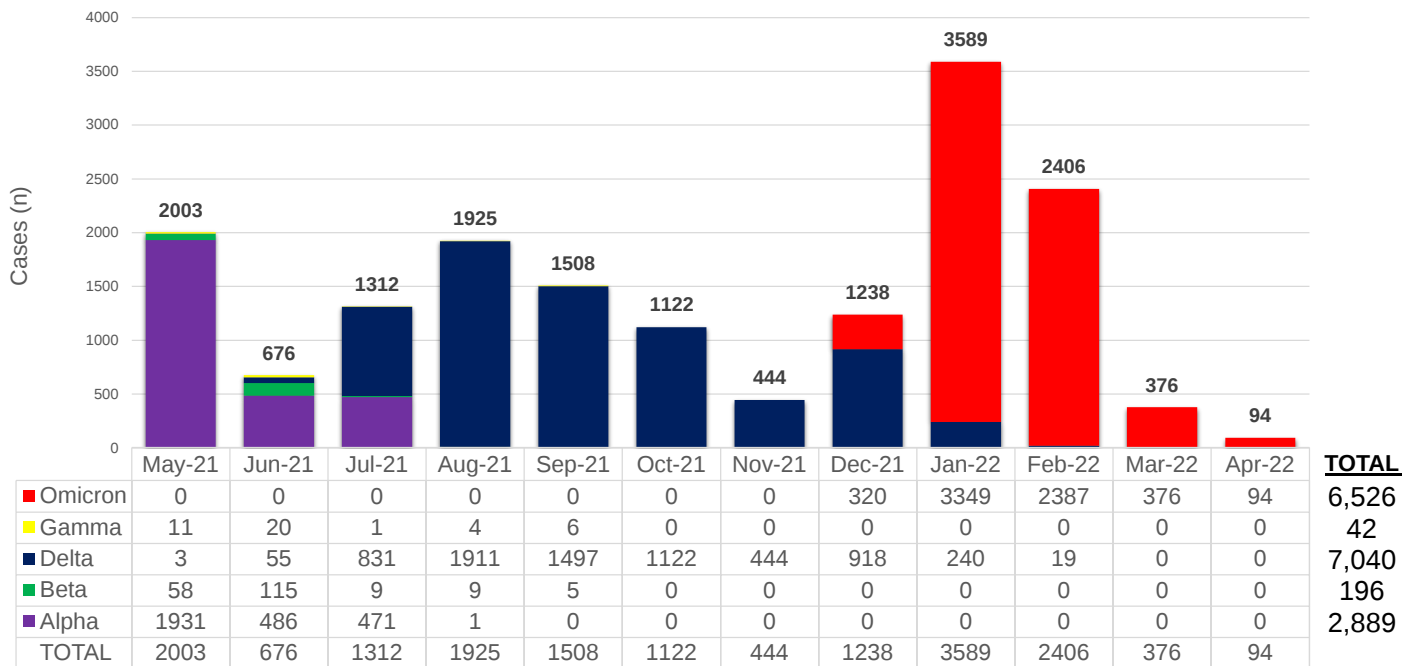
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PCR-based Genotyping of VOCs from Pakistan (n=16,693)

(MAY 2021 TO APR 29, 2022)

Alpha Beta Delta Gamma Omicron



Distribution of VOCs from Pakistan during Dec 15, 2021, to Apr 29, 2022



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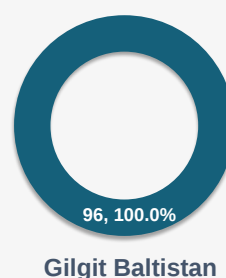
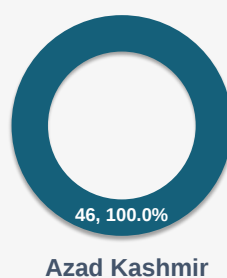
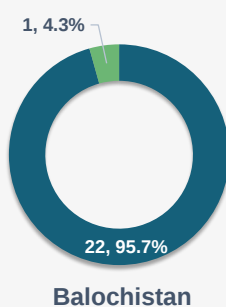
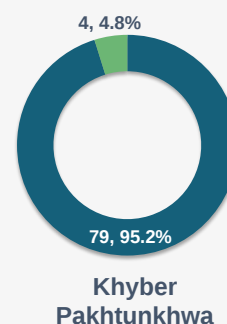
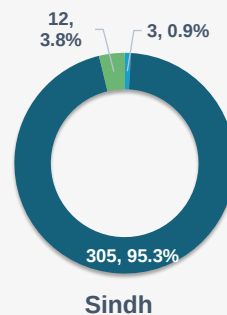
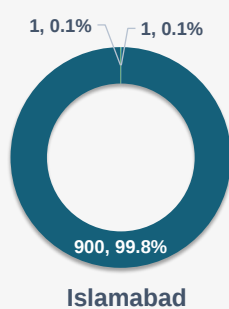
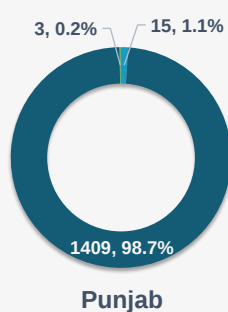
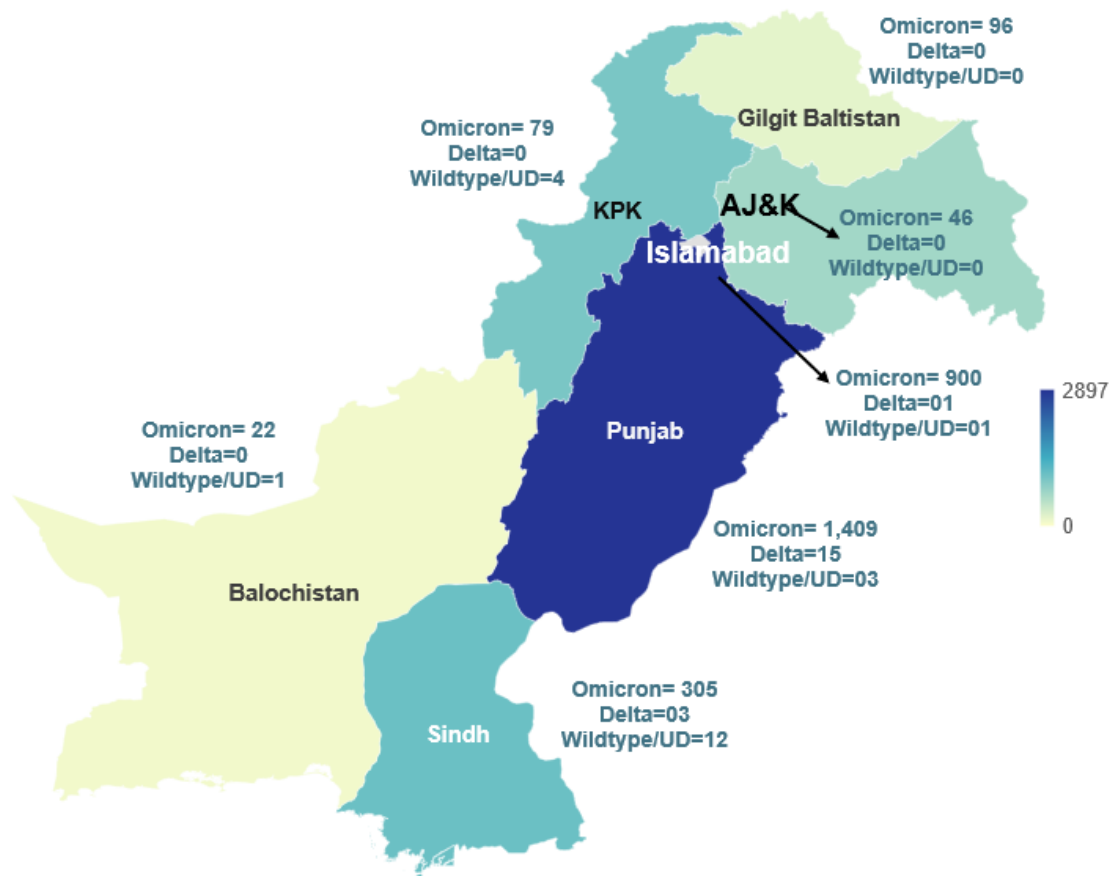
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Distribution of VOCs from Pakistan

(FEB 2022 TO APR 29, 2022)



■ Delta
■ Omicron
■ WildType / Undetermined