Supplementary Materials

Table S1. The priors used for the BDSKY model for phylodynamic analysis. Clock rate was set according to the previously estimated value in [1]. Becoming uninfectious rate corresponds to an average of 7 days being infectious [2]

Parameter	Prior
clockModel	Strict clock with fixed mean (0.0009)
Re change times	'2021-09-01 2021-08-01 2021-07-01 2021-06-01 2021-05-01'
sampling proportion change times	'2021-09-01 2021-08-01 2021-07-01 2021-06-01 2021-05-01'
becoming uninfectious rate	52.2857 (fixed)

Table S2. Fractions of samples belonging to the main import among Delta samples from different regions of Russia. Regions with more than five samples of Delta lineage are shown in bold.

region	Delta samples	earliest Delta sample	main import samples	earliest main import sample	fraction of main import
Bashkortostan	4	2021-06-15	3	2021-06-15	0.75
Belgorod	**13**	**2021-07-16**	**13**	**2021-07-16**	**1**
Bryansk	1	2021-07-05	1	2021-07-05	1
Buryatia	**6**	**2021-07-01**	**6**	**2021-07-01**	**1**
Chelyabinsk	3	2021-06-27	3	2021-06-27	1
Chukotka	**8**	**2021-06-17**	**8**	**2021-06-17**	**1**
Ivanovo	**24**	**2021-06-11**	**21**	**2021-06-11**	**0.88**
Kabardino-Balkaria	1	2021-07-05	1	2021-07-05	1
Kaliningrad	1	2021-06-09	1	2021-06-09	1
Kamchatka	**17**	**2021-06-15**	**16**	**2021-06-15**	**0.94**
Karachay-Cherkess	**25**	**2021-06-09**	**24**	**2021-06-09**	**0.96**
Kemerovo	**6**	**2021-06-16**	**5**	**2021-06-16**	**0.83**
Khanty-Mansi	**6**	**2021-06-16**	**4**	**2021-06-16**	**0.67**
Kirov	2	2021-06-15	2	2021-06-15	1
Kostroma	**30**	**2021-06-14**	**29**	**2021-06-14**	**0.97**
Krasnodar	**31**	**2021-06-09**	**30**	**2021-06-09**	**0.97**
Kursk	2	2021-06-15	2	2021-06-15	1
Lipetsk	3	2021-07-02	3	2021-07-02	1
Magadan	**19**	**2021-06-14**	**18**	**2021-06-14**	**0.95**

Moscow	**637**	**2021-04-19**	**573**	**2021-04-19**	**0.9**
Murmansk	2	2021-07-05	2	2021-07-05	1
Novgorod	4	2021-06-22	4	2021-06-22	1
Orenburg	1	2021-07-05	1	2021-07-05	1
Penza	5	2021-05-23	3	2021-05-23	0.6
Perm	**6**	**2021-07-10**	**5**	**2021-07-10**	**0.83**
Pskov	1	2021-07-04	1	2021-07-04	1
Rostov	**6**	**2021-07-05**	**5**	**2021-07-05**	**0.83**
Ryazan	3	2021-06-29	2	2021-06-29	0.67
Saint-Petersburg	**330**	**2021-04-12**	**304**	**2021-04-23**	**0.92**
Saratov	**7**	**2021-06-11**	**7**	**2021-06-11**	**1**
Simferopol	**8**	**2021-07-01**	**6**	**2021-07-01**	**0.75**
Smolensk	**20**	**2021-07-06**	**18**	**2021-07-07**	**0.9**
Tambov	**17**	**2021-06-10**	**17**	**2021-06-10**	**1**
Tver	**16**	**2021-04-07**	**10**	**2021-06-15**	**0.625**
Tyumen	**7**	**2021-06-22**	**4**	**2021-06-22**	**0.57**
Ulyanovsk	**7**	**2021-06-15**	**7**	**2021-06-15**	**1**
Vladimir	**90**	**2021-06-15**	**89**	**2021-06-15**	**0.99**
Vologda	**8**	**2021-06-14**	**6**	**2021-06-15**	**0.75**
Voronezh	3	2021-06-09	3	2021-06-09	1
Yaroslavl	**48**	**2021-05-06**	**46**	**2021-05-06**	**0.96**
Zabaykalsky	**6**	**2021-06-09**	**5**	**2021-06-09**	**0.83**

Table S3. Number of GISAID samples retained after filtering (see Methods) for countries shown in Figure 5.

Country	**Filtered samples**
Australia	8722
Austria	2526
Belgium	13509
Brazil	8273
Canada	41244
Croatia	2123
Czech Republic	2721
Denmark	50910
Finland	5835
France	34531
Germany	59222
Greece	1834
Iceland	3383
India	17059
Indonesia	2924
Ireland	12950
Italy	18703
Japan	40597
Lithuania	3747

Malaysia	1795
Mexico	9150
Netherlands	18782
Norway	8089
Poland	2764
Portugal	7394
Romania	2108
Russia	1440
Singapore	5840
Slovakia	2789
Slovenia	7953
South Africa	3802
South Korea	4306
Spain	14114
Sweden	22967
Switzerland	20058
Turkey	44690
United Kingdom	472589
USA	443374

Table S4. Dates of the first sample with the nsp2:K81N+ORF7a:P45L combination of mutations in each country where it has been observed. Countries where this variant was detected before Russia are shown in bold. Countries that are among ten locations with the highest passenger traffic with Russia in the first half of 2021 are underlined.

Country	Date of earliest sample
Sweden*	**2020-11-19**
Slovakia**	**2021-01-09**
Italy***	**2021-02-07**
Slovenia******	**2021-02-10**
Czech Republic********	**2021-02-12**
Turkey********	**2021-03-09**
Israel	**2021-04-10**
Singapore	**2021-04-15**
Japan	**2021-04-16**
Switzerland	**2021-04-17**

USA	2021-04-19
Northern Ireland	2021-04-22
England	2021-04-22
Germany	2021-04-26
Austria	2021-04-26
Georgia	2021-05-12
Poland	2021-05-14
Latvia	2021-05-15
France	2021-05-17
Netherlands	2021-05-20
Monaco	2021-05-21
Lithuania	2021-05-27
Norway	2021-05-27

Spain	2021-05-28
Denmark	2021-05-31
Iceland	2021-06-01
Scotland	2021-06-02
Luxembourg	2021-06-02
Ireland	2021-06-05
New Zealand	2021-06-06
Canada	2021-06-07
Portugal	2021-06-08
Finland	2021-06-09
Belgium	2021-06-10
Estonia	2021-06-10
Wales	2021-06-11

South Korea	2021-06-12
Chile	2021-06-17
Greece	2021-06-17
Moldova	2021-06-17
Ukraine	2021-06-18
Montenegro	2021-06-18
Hong Kong	2021-06-19
Brazil	2021-06-21
Bulgaria	2021-06-21
Ecuador	2021-06-22
Malawi	2021-06-22
Croatia	2021-06-25
Uzbekistan	2021-06-25

Serbia	2021-06-26
Mexico	2021-06-28
Curacao	2021-06-28
Bosnia and Herzegovina	2021-06-30
Romania	2021-07-02
Bahrain	2021-07-02
Guatemala	2021-07-05
Australia	2021-07-08
Peru	2021-07-10
Sint Maarten	2021-07-19
Guadeloupe	2021-07-20
North Macedonia	2021-07-20
Jiangsu	2021-07-20

Costa Rica	2021-07-21
Puerto Rico	2021-07-21
Kosovo	2021-07-25
Colombia	2021-07-26
Gibraltar	2021-07-28
Argentina	2021-08-15
Thailand	2021-08-16
India	2021-08-17
Kazakhstan	2021-08-17
Nigeria	2021-08-26
Vietnam	2021-09-03
Ghana	2021-09-04
Indonesia	2021-09-05

Liechtenstein	2021-09-07
Aruba	2021-09-13

* submitted on August 30, 2021; the next sample with this combination of mutations in Sweden dates to May, 2021.

** probably erroneous dates (likely confused month and day: samples carrying this mutation date to Jan 9, Feb 9, March 9 and April 9, and the opposite ordering of month and day to that in GISAID submission forms is common in Europe).

*** submitted on July 20, 2021; the next sample with this pair of mutations in Italy dates to May 20, 2021.

**** submitted on October 19, 2021; the next sample with this pair of mutations in Slovenia dates to June 5, 2021.

***** submitted to GISAID on August 10, 2021; the next sample with this pair of mutations in Czech Republic dates to April 22, 2021.

******submitted to GISAID on September 09, 2021; the next sample with this pair of mutations in Turkey dates to May 24, 2021.

Table S5. Traffic volumes through Russian airports for international airlines in 2020-2021 according to Federal Air Transport Agency of Russia (https://favt.gov.ru/dejatelnost-ajeroporty-i-ajerodromy-osnovnie-proizvodstvennie-pokazateli-aeroportov-obyom-perevoz/)

year	month	Passenger traffic: departing + arriving passengers
2020	1	4 929 170
2020	2	4 166 359
2020	3	2 505 968
2020	4	30 426
2020	5	48 884
2020	6	69 601
2020	7	110 828
2020	8	912 802
2020	9	1 522 681
2020	10	1 430 033
2020	11	720 836
2020	12	731 440
2021	1	727 361
2021	2	756 012
2021	3	1 205 488
2021	4	1 346 025
2021	5	1 452 228
2021	6	2 095 960

2021	7	3 464 726
2021	8	4 023 019
2021	9	4 138 497

Figure S1. Phylogenetic inference of imports into Russia. Tips are marked as Russian (*R*) or non-Russian (*O*) by place of collection. All internal nodes are numbered in order along each lineage from root to tip. Moving from the nodes with the highest numbers (here, 4) towards the lowest (root), each node N is labelled according to the labels of its immediate descendants (tips or internal nodes) as follows. If more than one descendant is labelled *R*, N is labelled *R*. If no descendants are labelled *R*, N is not labelled. If exactly one descendant is labelled *R*, the branch leading to this descendant is marked as an import, and N is not labelled. In case of nested imports, only the deepest import marks are retained; i.e., among multiple imports inferred for a root-to-tip lineage, only the one closest to the root is retained. In the illustrated case, only the dark purple import is retained. Imports into other countries were identified analogously.

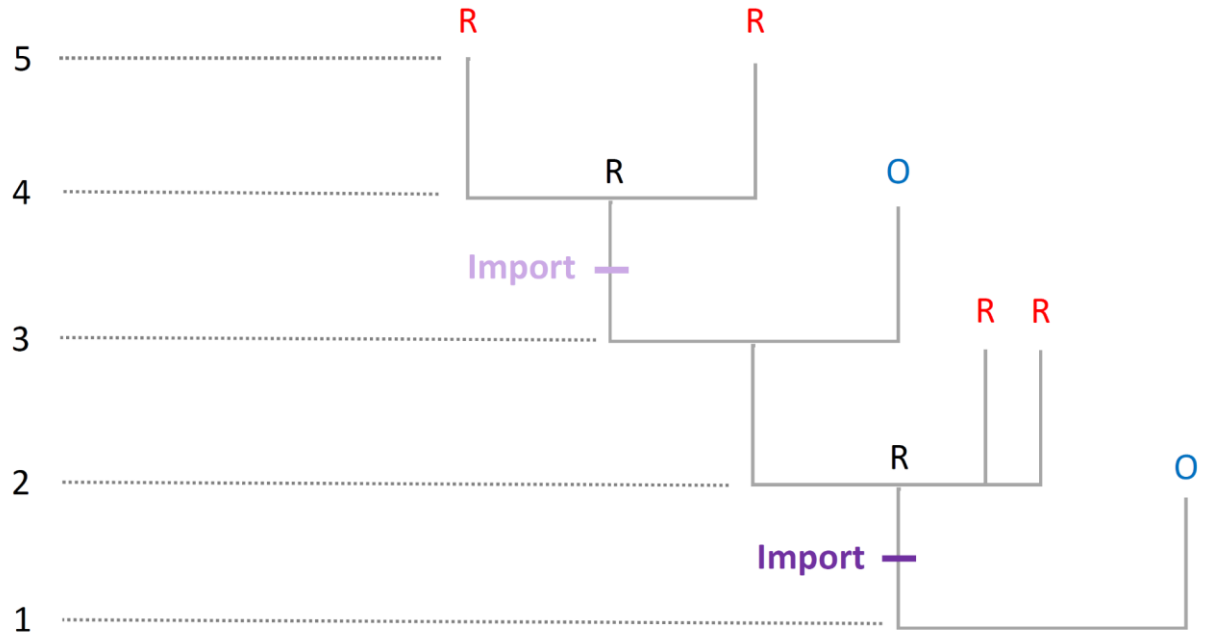


Figure S2. The effect of subsampling on the number of samples used for the phylodynamic analysis

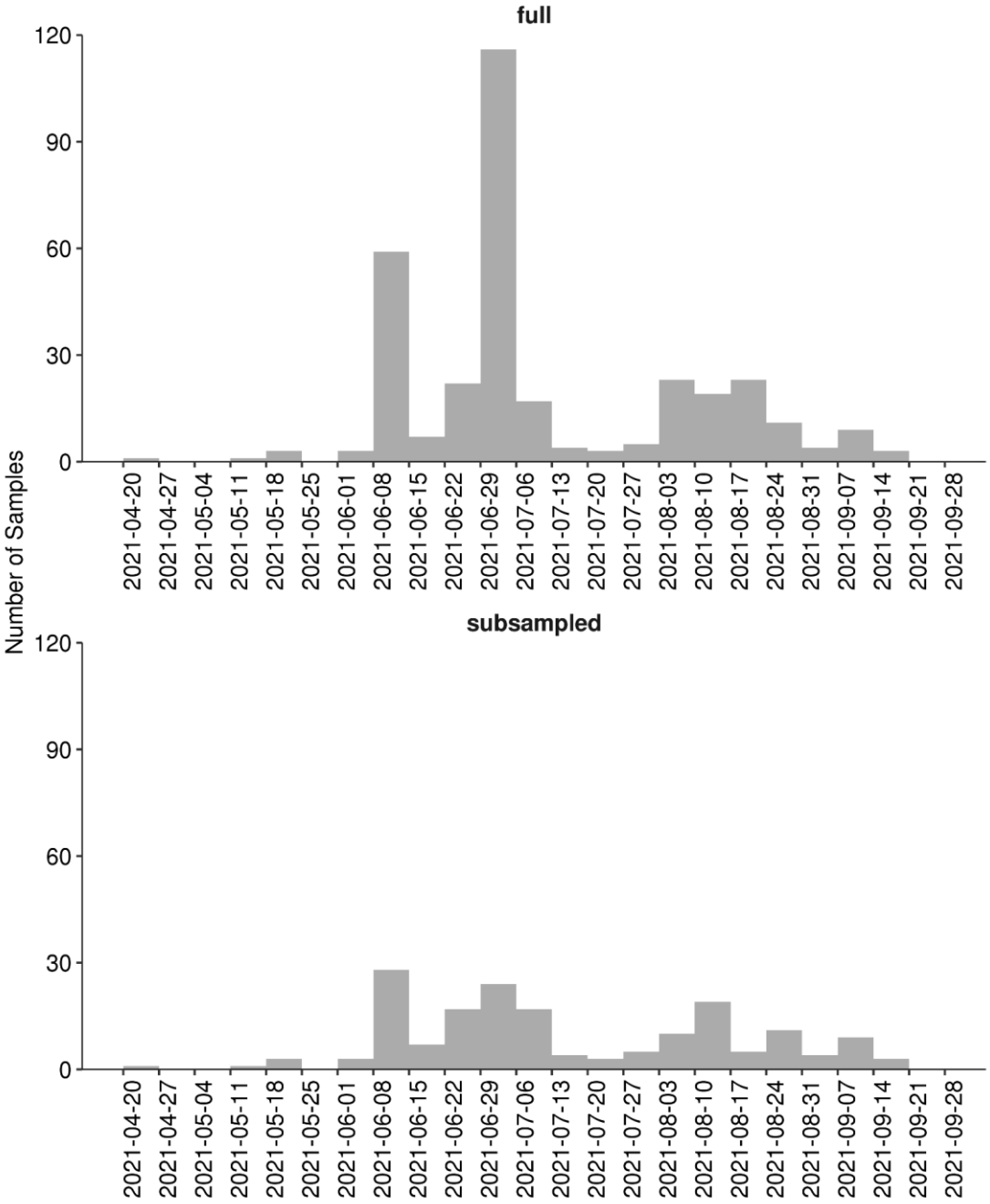


Figure S3. **UpSet plot for mutations of the Delta lineage with frequency greater than 5% in Russia.** Only the combinations that were seen in more than five samples in Russia are shown. The following mutations that characterize the major sublineage of B.1.617.2 ("21J" in Nextstrain nomenclature) and occur in >85% of Delta samples both in Russia and globally are not shown: RdRp:G671S, exonuclease:A394V, nsp6:T77A, nsp3:A488S, nsp3:P1228L, nsp6:V120V, ORF7b:T40I, nsp3:P1469S, N:G215C, nsp4:D144D, nsp4:V167L, and nsp4:T492I.

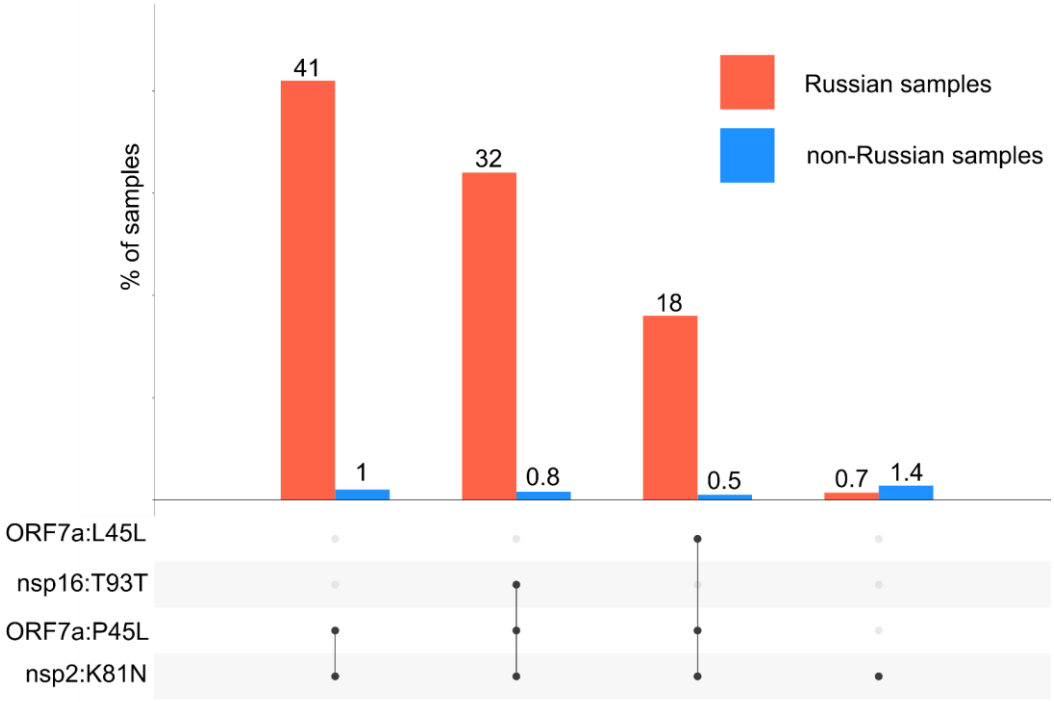
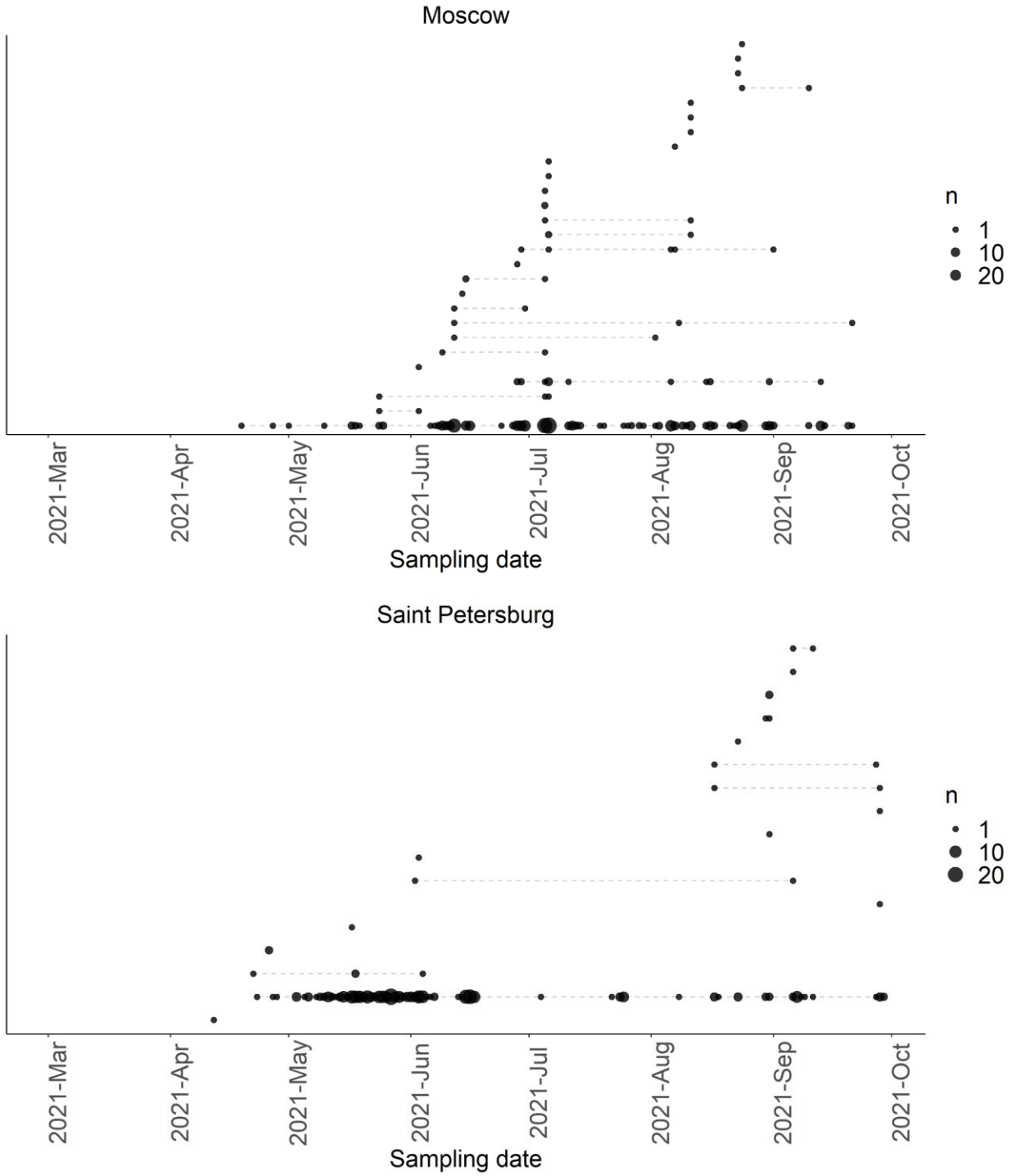


Figure S4. Timeline for imports of Delta subclades into Russia's regions. The figure is similar to Fig. 3B, but the samples from Moscow (A), Saint Petersburg (B) and other regions of Russia (C) are shown separately.



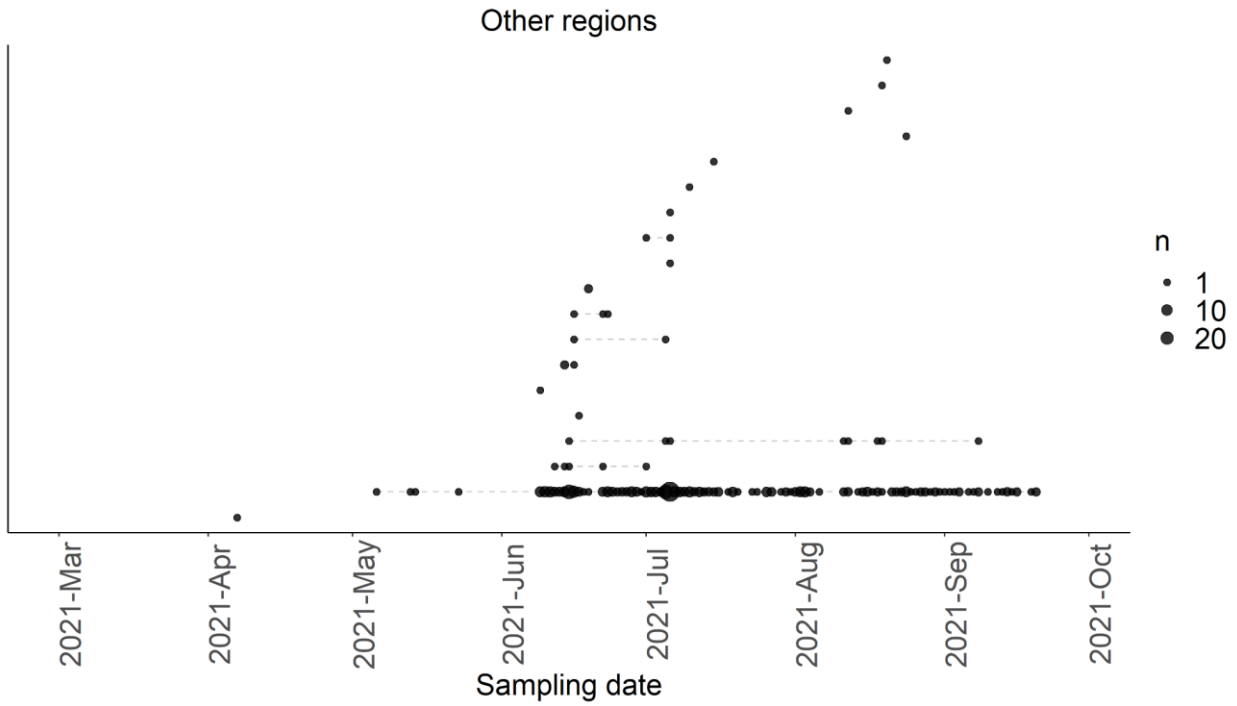
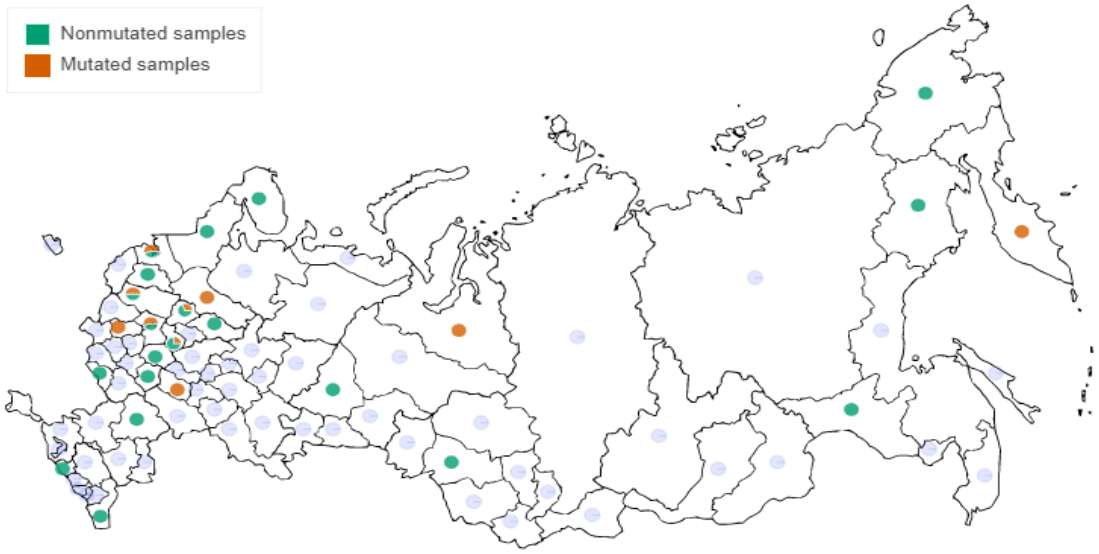

Other regions
n
1
10
20
2021-Mar
2021-Apr
2021-May
2021-Jun
2021-Jul
2021-Aug
2021-Sep
2021-Oct
Sampling date

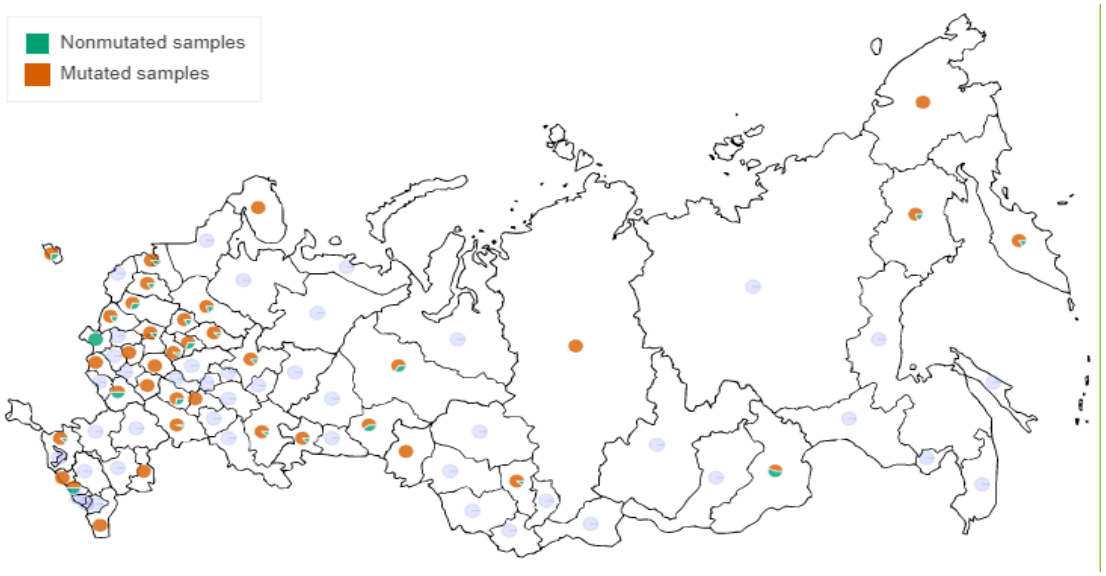
Figure S5. Frequency of the ORF7a:P45L variant among all Russian samples by month of sampling.

April 2021 (https://taxameter.ru/?mutation=ORF7a:P45L&lang=EN&min_date=2021-4-1&max_date=2021-4-30)

May 2021 (https://taxameter.ru/?mutation=ORF7a:P45L&lang=EN&min_date=2021-5-1&max_date=2021-5-31)



June 2021 (https://taxameter.ru/?mutation=ORF7a:P45L&lang=EN&min_date=2021-6-1&max_date=2021-6-30)



July-October (up to Oct 13, https://taxameter.ru/?mutation=ORF7a:P45L&lang=EN&min_date=2021-7-1&max_date=2021-10-13)

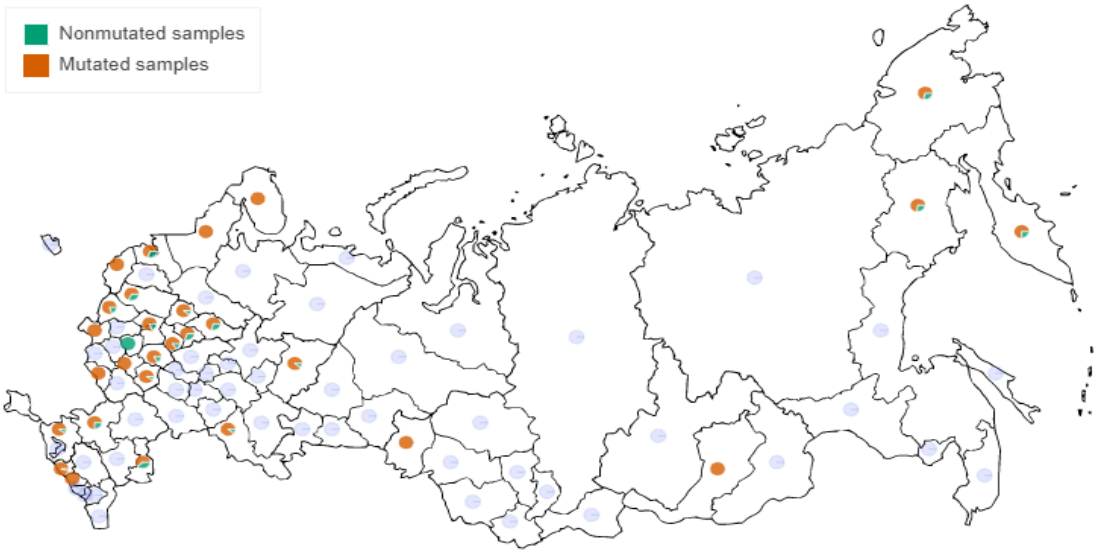


Figure S6. Re inference is robust to the density of subsampling of overrepresented dates.

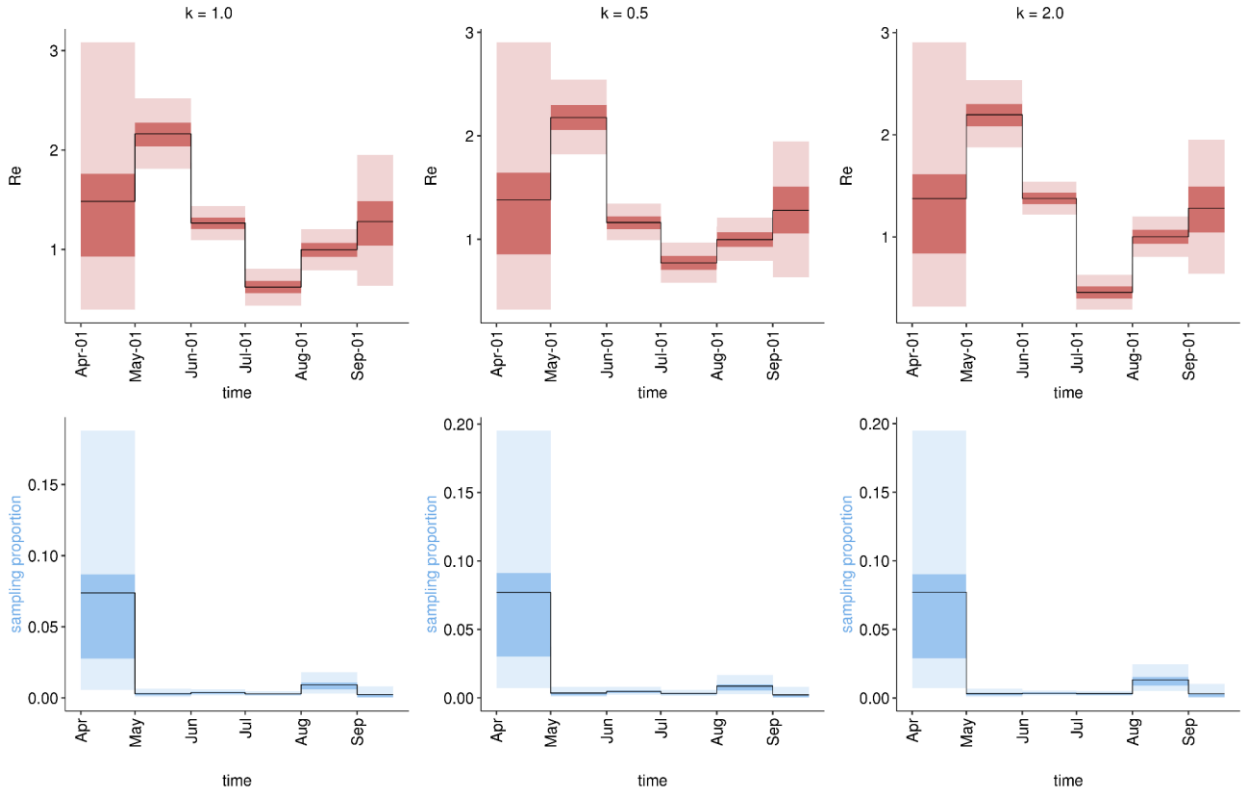


Figure S7. Dynamics of nsp2:K81N+ORF7a:P45L frequency among all samples in various countries. A) Frequencies of nsp2:K81N+ORF7a:P45L among ALL samples measured in 15-days sliding windows; windows with less than 20 samples are filtered out. B) Logistic growth rates estimated for nsp2:K81N+ORF7a:P45L among Delta samples before and after July 1st.

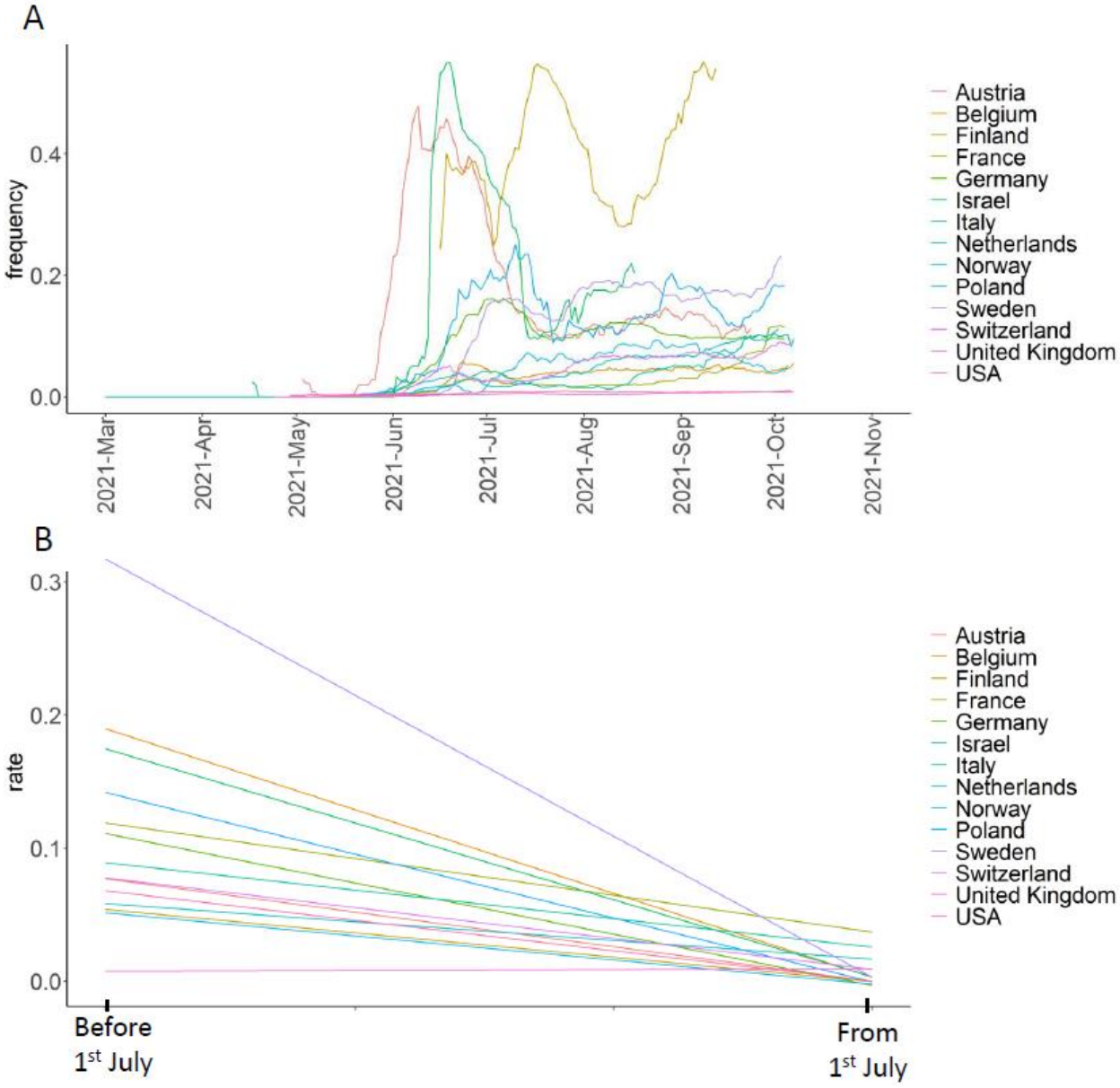


Figure S8. Dynamics of nsp2:K81N+ORF7a:P45L frequency among Delta samples in various countries. A) Frequencies of nsp2:K81N+ORF7a:P45L among Delta samples measured in 15-days sliding windows; windows with less than 20 Delta samples are filtered out. B) Logistic growth rates estimated for nsp2:K81N+ORF7a:P45L among Delta samples before and from July 1st.

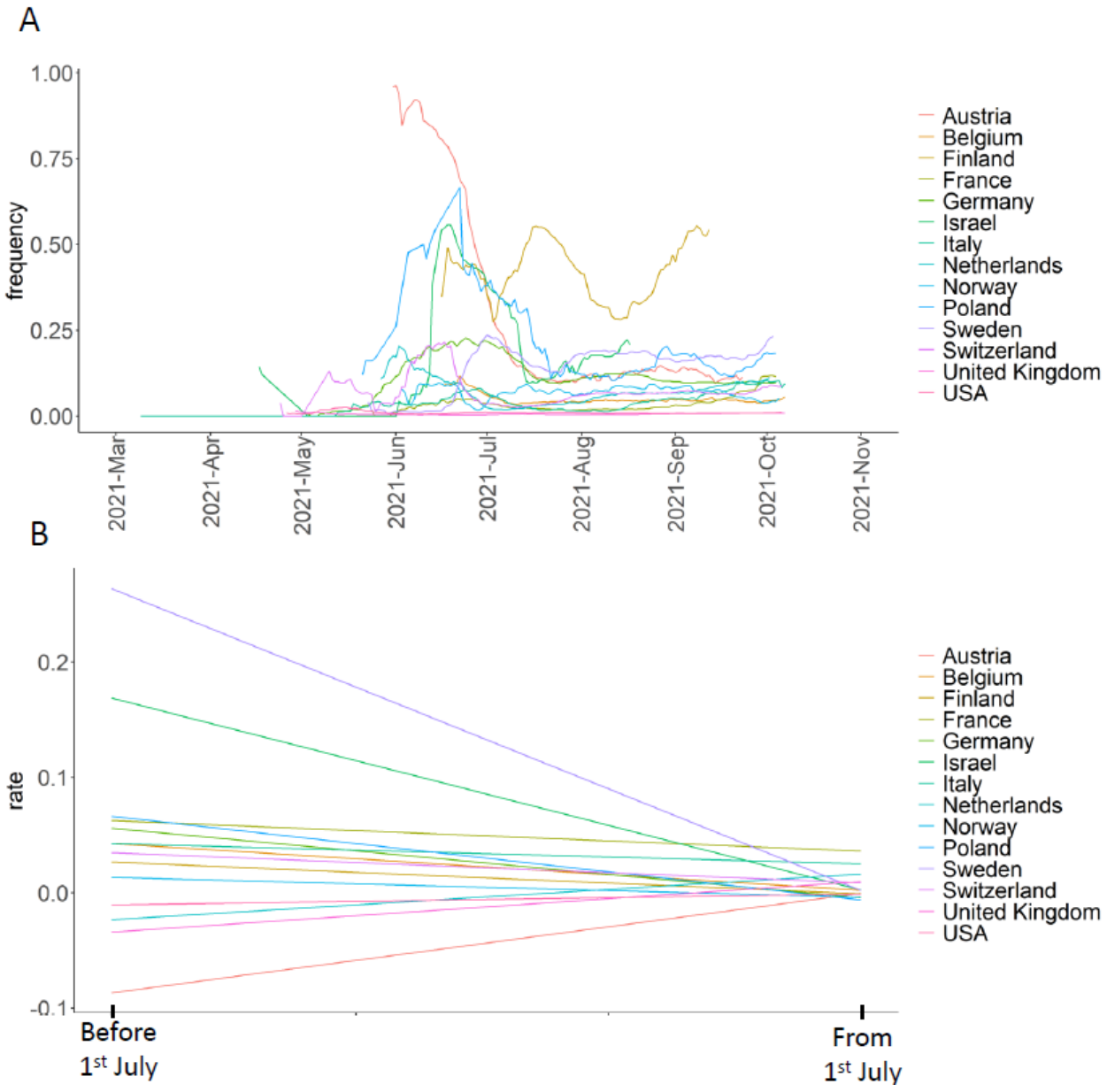


Figure S9. Fraction of Delta samples in the largest import and relatedness of Delta samples, for countries with at least 50 Delta samples in the UShER tree. Notation as in Fig. 5.

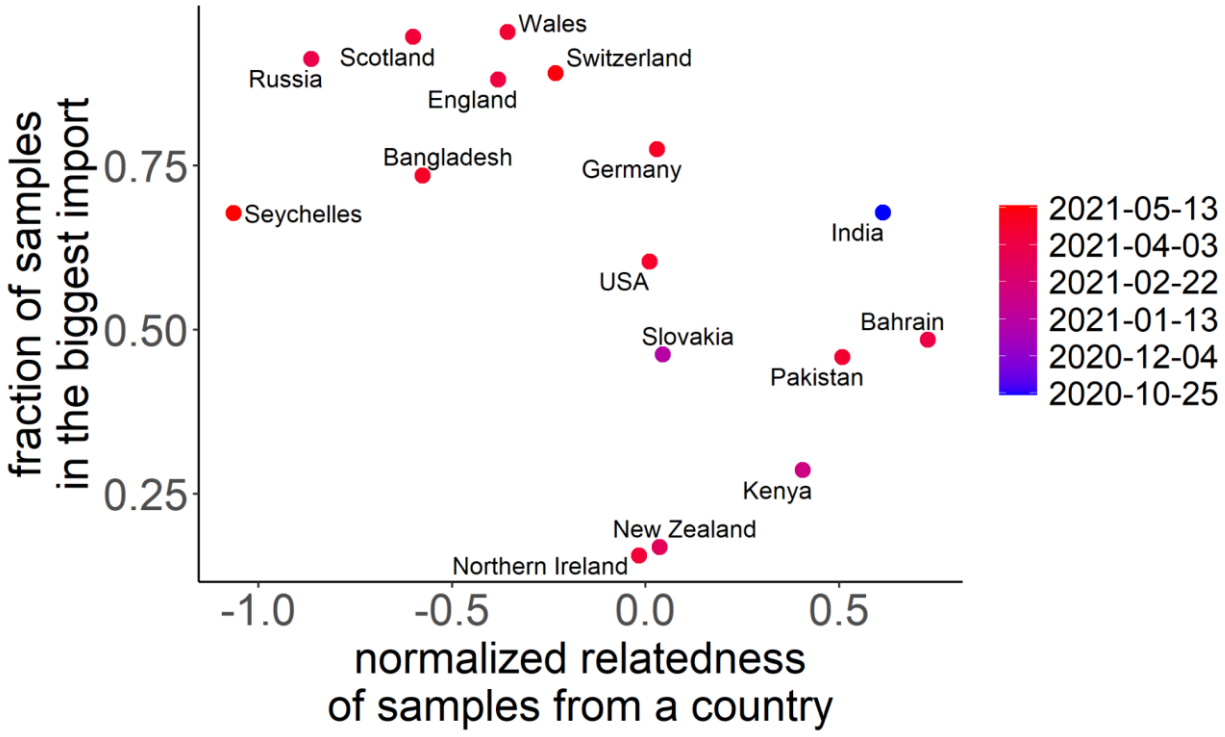
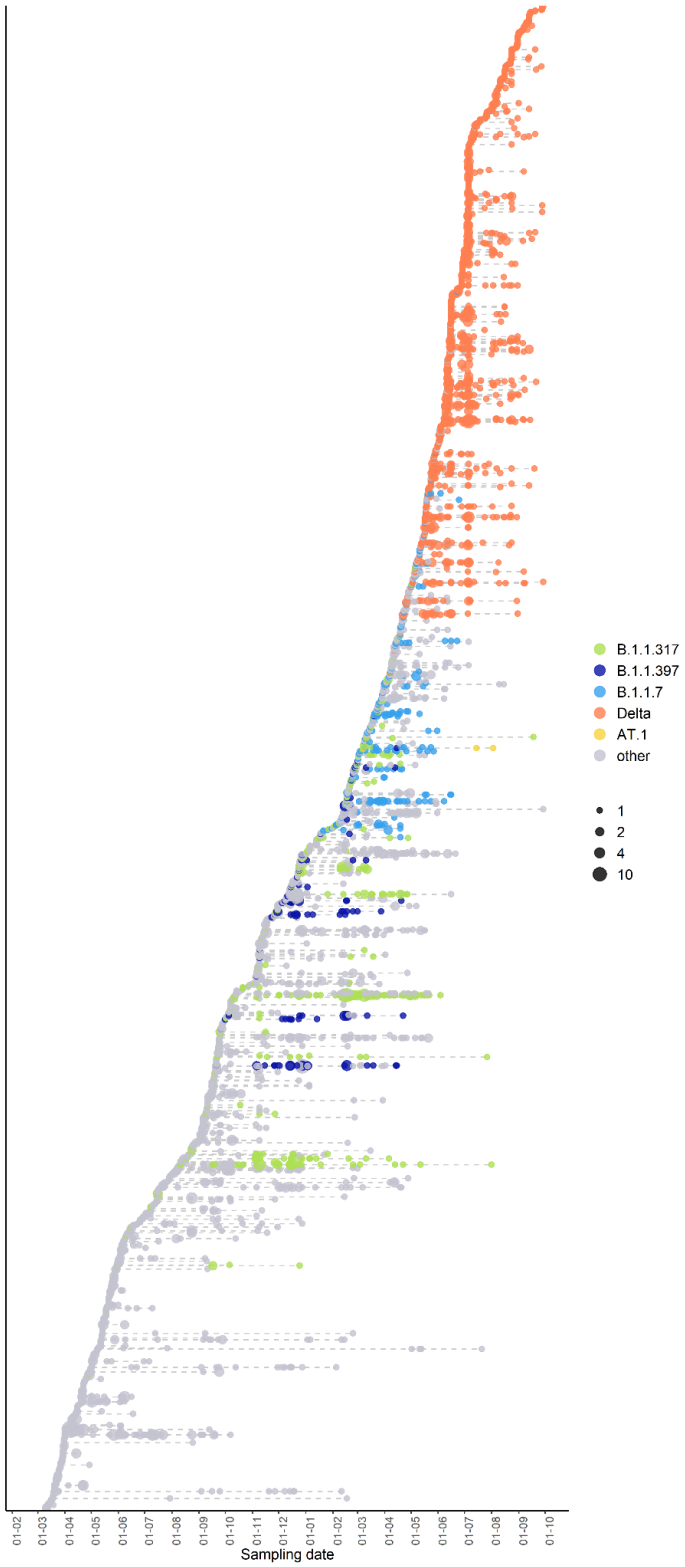


Figure S10. Russian transmission lineages. Each horizontal line represents a Russian transmission lineage, ordered by the date of the earliest sample. Circles represent samples taken on a particular date, with circle size representing the number of samples. Circle color indicates the PANGOLIN designation of the corresponding sample.



Supplementary References

[1] du Plessis L, McCrone JT, Zarebski AE, Hill V, Ruis C, Gutierrez B, et al. Establishment and lineage dynamics of the SARS-CoV-2 epidemic in the UK. Science 2021;371:708–12. https://doi.org/10.1126/science.abf2946.

[2] Stadler T. Phylodynamic Analyses of outbreaks in China, Italy, Washington State (USA), and the Diamond Princess n.d.