

UK lineages summary report

This report gives summaries of UK specific lineages sequenced by CAMB for week 2020-05-22. There are time lags due to batching, curation and analysis, the most recently sampled sequence is 2020-05-17. The analysis (eg time since last sample) is therefore undertaken from this date. 1067 sequences in the UK from the sequencing centre CAMB have been included in this analysis. 422 lineages have been recorded, 303 of which only contain one sequence.

A few notes: the size of a lineage may be due to a low amount of transmission of this lineage, but it is likely also that it just hasn't been sampled as frequently, especially for newer lineages. It's also important to realise that these lineages are *estimates* of how we think the virus is spreading in the UK after being introduced from abroad, as the low evolutionary rate of the virus makes it difficult to separate lineages with certainty.

The minimum number of introductions is 5185 and the maximum is 8310

Sequences which were replicates or too error-prone were removed from this analysis.

387 are lineages which only contained five sequences or fewer, and so have been left out of visualisation in the interests of clarity

Furthermore, those sequences which haven't been sampled in the last month are not shown.

Of the 33 that remain: 11 are pending extinction, ie last seen three weeks ago. 5 lineages have gone quiet, ie haven't been seen this week. 5 lineages have reactivated. 12 lineages have been continuously circulating.

The following table contains information about lineages and the number of sequences in each country in the UK for each lineage, in reverse size order.

Each entry is the count of sequences from each lineage in each country, with the percentage of the total sequences from that lineage that this count represents.

The global lineages are correct as of the data release on 2020-05-19

It is written to "summary_files" as "lineage_summary.tsv" for further use, and the full list of lineages is available in the same directory as "all_lineages.csv"

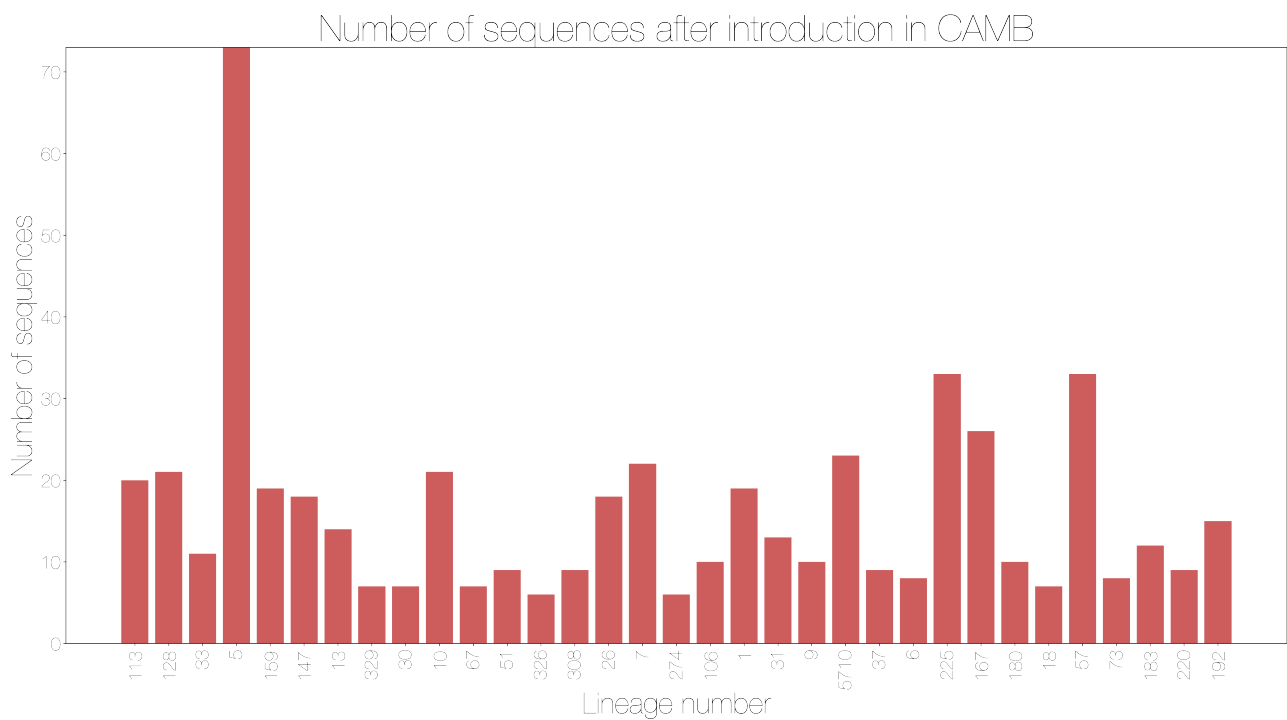
Lineage name	England	Date range	Total sequences	Global lineage	Time since last sample (days)
UK5	73 (100.0%)	Mar-15, May-15	73	B.1.1.1	2
UK57	33 (100.0%)	Apr-05, Apr-28	33	B.1.1	19
UK225	33 (100.0%)	Mar-14, May-01	33	B.2.2, B.2.6, B.2	16
UK167	26 (100.0%)	Apr-01, Apr-29	26	B.1.66	18
UK5710	23 (100.0%)	Mar-20, May-04	23	B.1.p11	13
UK7	22 (100.0%)	Mar-17, May-11	22	B.1.p11	6
UK128	21 (100.0%)	Apr-09, May-16	21	B.1.1	1
UK10	21 (100.0%)	Mar-31, May-13	21	B.1.1	4

Lineage name	England	Date range	Total sequences	Global lineage	Time since last sample (days)
UK113	20 (100.0%)	Apr-09, May-17	20	B.1.1	0
UK1	19 (100.0%)	Mar-17, May-08	19	B.1	9
UK159	19 (100.0%)	Apr-10, May-15	19	B.1.1	2
UK147	18 (100.0%)	Apr-08, May-14	18	B.1.1	3
UK26	18 (100.0%)	Apr-05, May-11	18	B.1.1.3	6
UK192	15 (100.0%)	Mar-30, Apr-20	15	B.1.1	27
UK13	14 (100.0%)	Mar-31, May-13	14	B.1.1	4
UK31	13 (100.0%)	Mar-30, May-08	13	B.1	9
UK183	12 (100.0%)	Apr-02, Apr-23	12	B.1.1	24
UK33	11 (100.0%)	Apr-05, May-15	11	B.1.1	2
UK106	10 (100.0%)	Apr-04, May-10	10	B.1	7
UK180	10 (100.0%)	Mar-30, Apr-29	10	B.1.1	18
UK9	10 (100.0%)	Mar-28, May-07	10	B.1.13	10
UK51	9 (100.0%)	Apr-20, May-12	9	B.1.36	5
UK220	9 (100.0%)	Mar-27, Apr-22	9	B.1.1	25
UK37	9 (100.0%)	Mar-29, May-03	9	B.1.30	14
UK308	9 (100.0%)	Apr-09, May-11	9	B.1.1	6
UK565	8 (100.0%)	Mar-28, Apr-17	8	B.1.1	30
UK6	8 (100.0%)	Mar-19, May-01	8	B.1	16
UK73	8 (100.0%)	Mar-29, Apr-27	8	B.1.p11	20
UK30	7 (100.0%)	May-02, May-13	7	B.1.1	4
UK36	7 (100.0%)	Mar-30, Apr-15	7	B.1	32
UK67	7 (100.0%)	Apr-22, May-13	7	B.1.1	4
UK329	7 (100.0%)	Apr-22, May-13	7	B.1.1	4

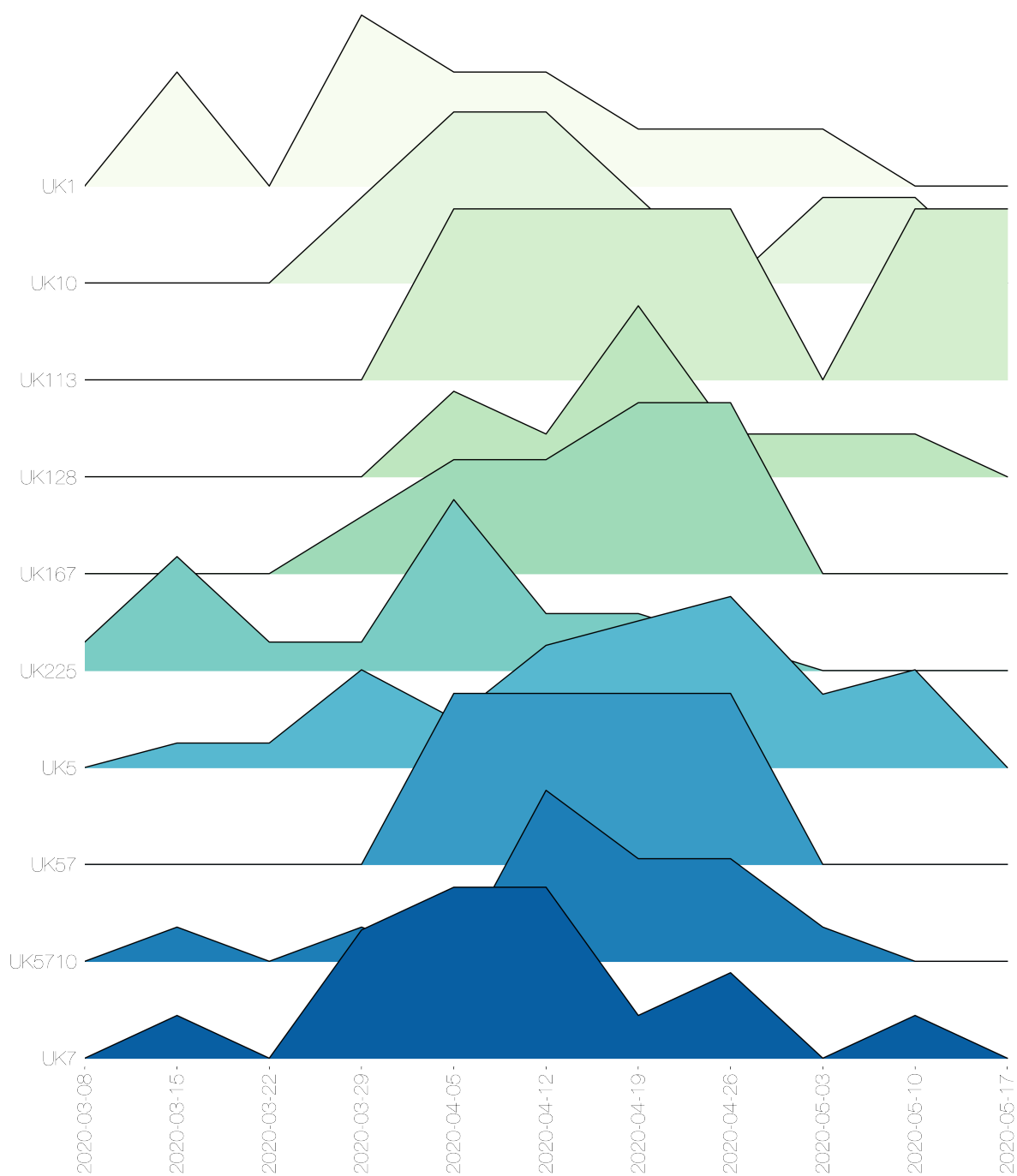
Lineage name	England	Date range	Total sequences	Global lineage	Time since last sample (days)
UK18	7 (100.0%)	Apr-09, Apr-28	7	B.1.1.7	19
UK274	6 (100.0%)	Mar-19, May-11	6	B.3	6
UK326	6 (100.0%)	Apr-07, May-12	6	B.1.1.10	5

These data is represented in the stacked bar chart below. Note that the number of sequences is likely to be due more to differing sampling efforts in different regions, rather than genuine differences in numbers of cases.

The raw data for this bar chart are in the table above.

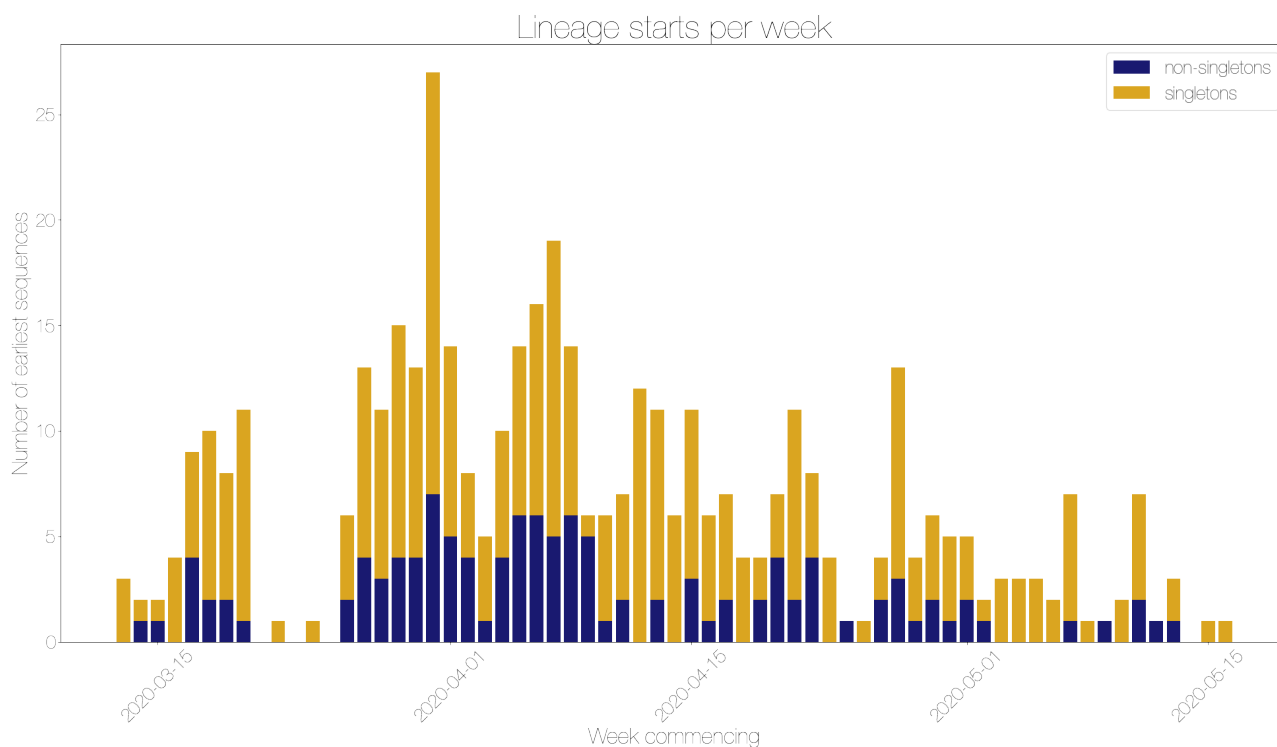


The relative growth and decline of the ten most sampled lineages in terms of number of counties they are present in is shown below. The raw data for the plot is shown below it, with each column representing a lineage, and the number of admin2 regions it is present in each week.



Week commencing	UK5	UK57	UK225	UK167	UK5710	UK7	UK10	UK128	UK113	UK1
2020-03-08	0	0	1	0	0	0	0	0	0	0
2020-03-15	1	0	4	0	1	1	0	0	0	2
2020-03-22	1	0	1	0	0	0	0	0	0	0
2020-03-29	4	0	1	1	1	3	1	0	0	3
2020-04-05	2	1	6	2	0	4	2	2	1	2
2020-04-12	5	1	2	2	5	4	2	1	1	2
2020-04-19	6	1	2	3	3	1	1	4	1	1
2020-04-26	7	1	1	3	3	2	0	1	1	1
2020-05-03	3	0	0	0	1	0	1	1	0	1
2020-05-10	4	0	0	0	0	1	1	1	1	0
2020-05-17	0	0	0	0	0	0	0	0	1	0

The date of first sequence in the cluster is shown below for every cluster with date information.

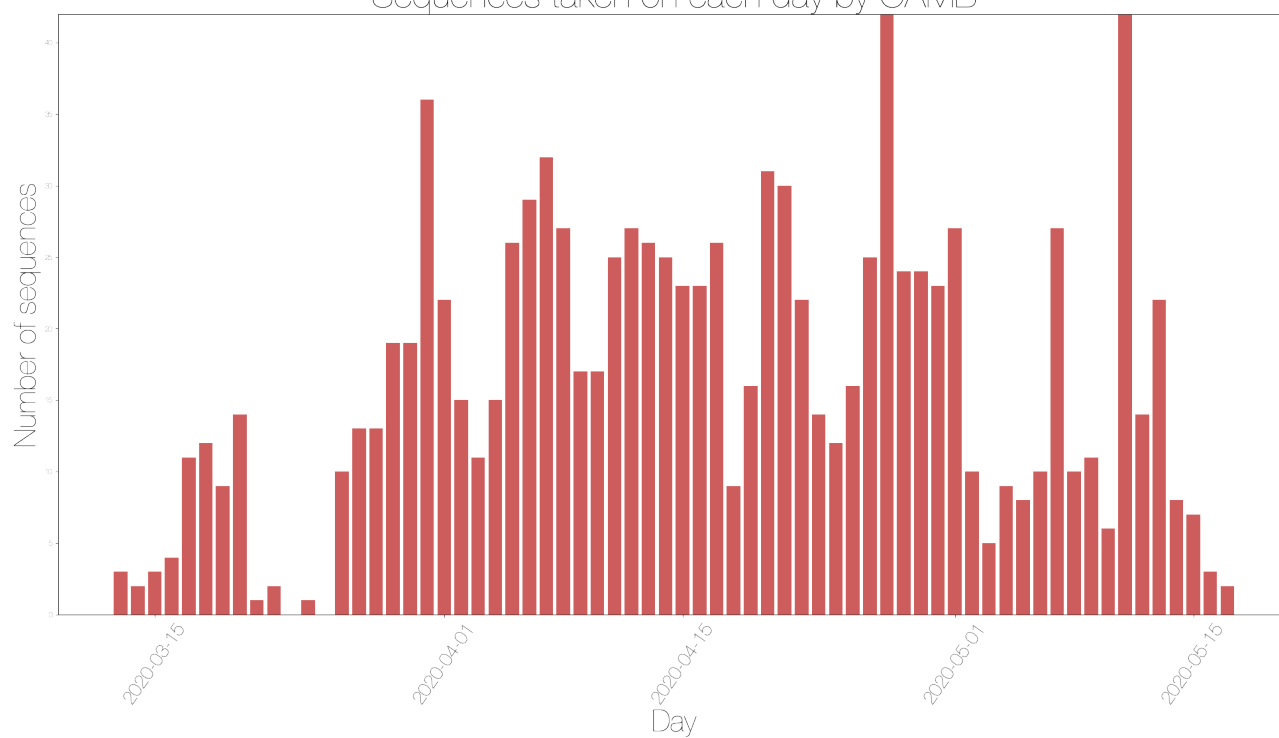


Day	Number of singleton starts	Number of non-singleton starts	Total
2020-03-13	3	0	3
2020-03-14	1	1	2
2020-03-15	1	1	2
2020-03-16	4	0	4
2020-03-17	5	4	9
2020-03-18	8	2	10
2020-03-19	6	2	8
2020-03-20	10	1	11
2020-03-22	1	0	1
2020-03-24	1	0	1
2020-03-26	4	2	6
2020-03-27	9	4	13
2020-03-28	8	3	11
2020-03-29	11	4	15
2020-03-30	9	4	13
2020-03-31	20	7	27
2020-04-01	9	5	14
2020-04-02	4	4	8
2020-04-03	4	1	5
2020-04-04	6	4	10
2020-04-05	8	6	14
2020-04-06	10	6	16
2020-04-07	14	5	19
2020-04-08	8	6	14
2020-04-09	1	5	6
2020-04-10	5	1	6

Day	Number of singleton starts	Number of non-singleton starts	Total
2020-04-11	5	2	7
2020-04-12	12	0	12
2020-04-13	9	2	11
2020-04-14	6	0	6
2020-04-15	8	3	11
2020-04-16	5	1	6
2020-04-17	5	2	7
2020-04-18	4	0	4
2020-04-19	2	2	4
2020-04-20	3	4	7
2020-04-21	9	2	11
2020-04-22	4	4	8
2020-04-23	4	0	4
2020-04-24	0	1	1
2020-04-25	1	0	1
2020-04-26	2	2	4
2020-04-27	10	3	13
2020-04-28	3	1	4
2020-04-29	4	2	6
2020-04-30	4	1	5
2020-05-01	3	2	5
2020-05-02	1	1	2
2020-05-03	3	0	3
2020-05-04	3	0	3
2020-05-05	3	0	3
2020-05-06	2	0	2
2020-05-07	6	1	7
2020-05-08	1	0	1
2020-05-09	0	1	1
2020-05-10	2	0	2
2020-05-11	5	2	7
2020-05-12	0	1	1
2020-05-13	2	1	3
2020-05-15	1	0	1
2020-05-16	1	0	1

For comparison, here is a plot of the day that every sequence was taken, coloured by country. Note that sequences without dates were not included.

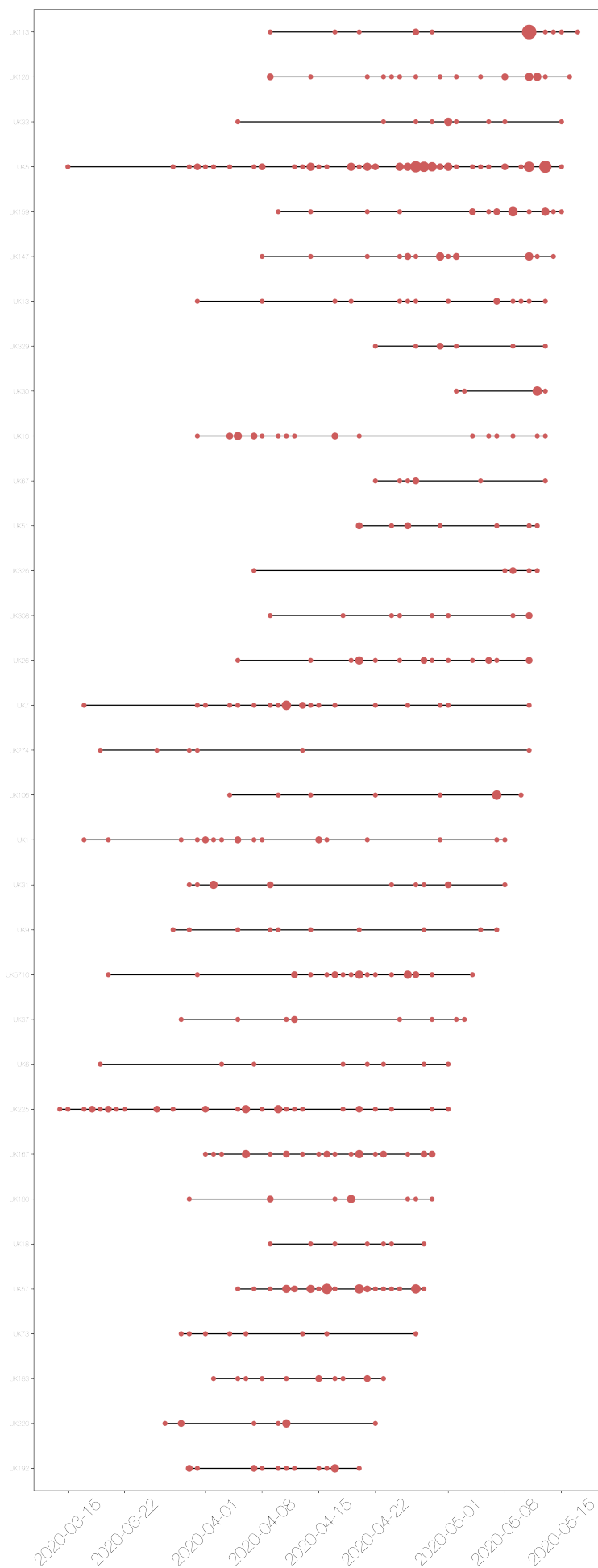
Sequences taken on each day by CAMB



Day	England
2020-03-13	2
2020-03-14	3
2020-03-15	22
2020-03-16	7
2020-03-17	8
2020-03-18	14
2020-03-19	42
2020-03-20	27
2020-03-21	10
2020-03-22	6
2020-03-24	10
2020-03-26	11
2020-03-27	8
2020-03-28	9
2020-03-29	27
2020-03-30	5
2020-03-31	10
2020-04-01	23
2020-04-02	24
2020-04-03	24
2020-04-04	42
2020-04-05	25
2020-04-06	12
2020-04-07	26
2020-04-08	31
2020-04-09	16
2020-04-10	22

Day	England
2020-04-11	14
2020-04-12	30
2020-04-13	23
2020-04-14	25
2020-04-15	23
2020-04-16	9
2020-04-17	16
2020-04-18	26
2020-04-19	27
2020-04-20	25
2020-04-21	17
2020-04-22	17
2020-04-23	27
2020-04-24	32
2020-04-25	29
2020-04-26	26
2020-04-27	15
2020-04-28	13
2020-04-29	10
2020-04-30	11
2020-05-01	15
2020-05-02	22
2020-05-03	36
2020-05-04	19
2020-05-05	19
2020-05-06	13
2020-05-07	14
2020-05-08	12
2020-05-09	1
2020-05-10	9
2020-05-11	2
2020-05-12	1
2020-05-13	11
2020-05-14	4
2020-05-15	2
2020-05-16	3
2020-05-17	3

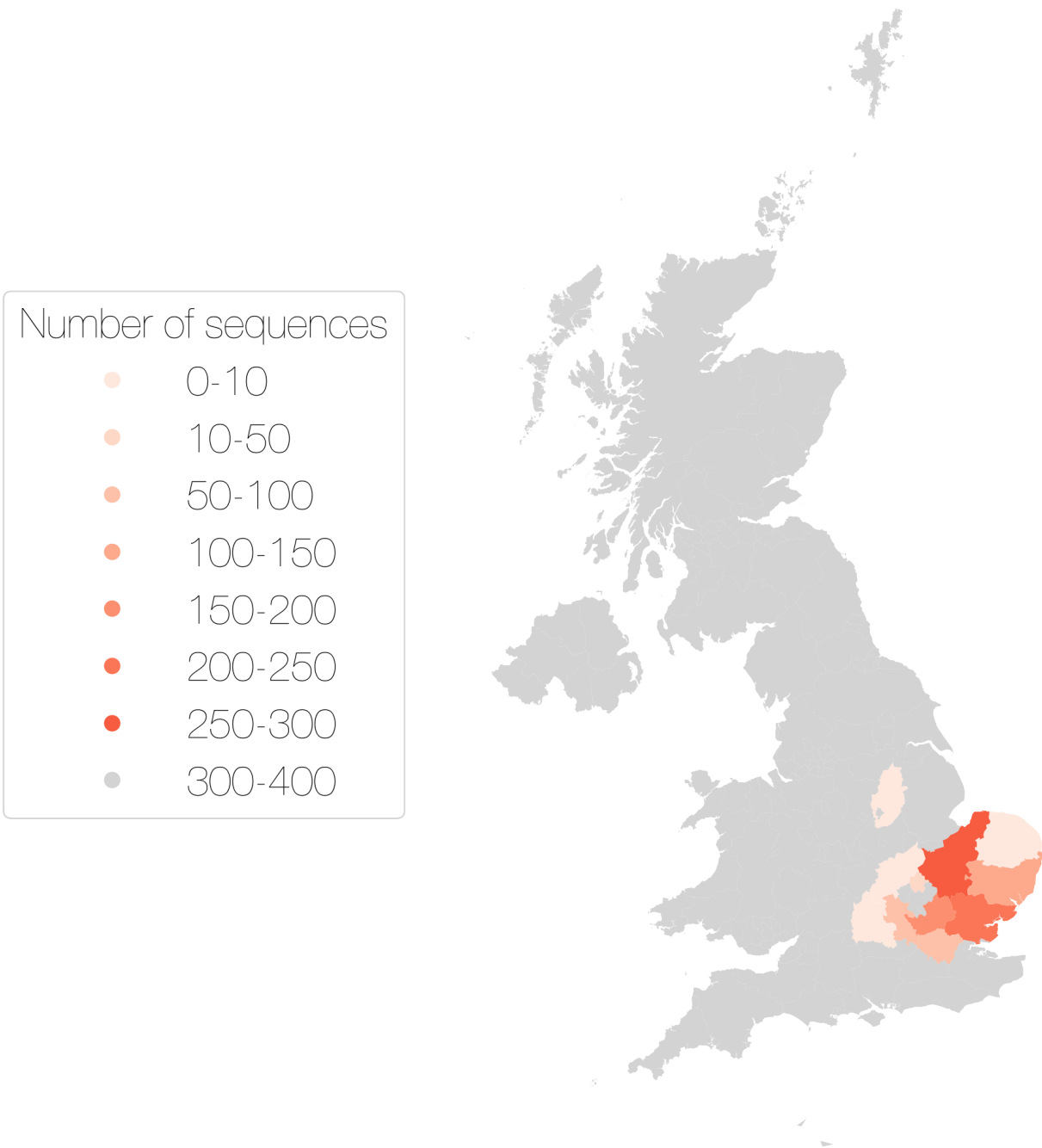
These lineages are shown on the timeline below. Each line represents the length of the cluster, from oldest to most recent sampling date. The dots are sized by the number of sequences taken on that date, and again are colour coded by country. The raw data has been written to a summary file.



The map below shows the number of sequences sampled in each admin2 region in the UK. The colour scale is the same for all four countries, but with different underlying base colours.

There are 28 sequences without enough geographical information to map from this centre.

COVID-19 sequences from each Admin2 region UK



Admin2	Country	Number of sequences	Sequence group
BEDFORDSHIRE	England	35	10-50
BUCKINGHAMSHIRE	England	56	50-100
CAMBRIDGESHIRE	England	363	300-400
ESSEX	England	233	200-250
GREATER LONDON	England	82	50-100
HERTFORDSHIRE	England	154	150-200
NORFOLK	England	4	1-10
NORTHAMPTONSHIRE	England	3	1-10
NOTTINGHAMSHIRE	England	1	1-10
OXFORDSHIRE	England	1	1-10
SUFFOLK	England	107	100-150

Other results modules for UK lineage analysis can be added in here if required.