

UK lineages summary report

This report gives summaries of lineages sampled in Scotland for week 2020-05-29. There are time lags due to batching, curation and analysis, the most recently sampled sequence is 2020-05-24. The analysis (eg time since last sample) is therefore undertaken from this date. 2520 sequences from Scotland have been included in this analysis. 725 lineages have been recorded, 554 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 726 and the maximum is 928

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

664 are lineages which were sampled less than five times in Scotland, 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 61 that remain: 22 are pending extinction, ie last seen three weeks ago. 20 have not been seen for more than one month, and so are viewed as extinct, but will continue to be monitored. 10 lineages have gone quiet, ie haven't been seen this week. 3 lineages have reactivated. 6 lineages have been continuously circulating.

The following table contains information about lineages and the number of sequences the dataset, 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	Date range	Number of sequences	Global lineage	Time since last sample (days)
UK36	Mar-20, May-11	216	B.1	13
UK52	Mar-16, May-12	175	B.1.p73	12
UK40	Mar-13, May-12	126	B.16, B	12
UK2464	Mar-19, May-12	92	B.1.p11	12
UK39	Mar-12, May-10	80	A.2	14
UK5	Mar-13, May-18	70	B.1.1.1	6
UK175	Mar-22, May-04	67	B.1	20
UK225	Mar-14, Apr-07	50	B.2	47

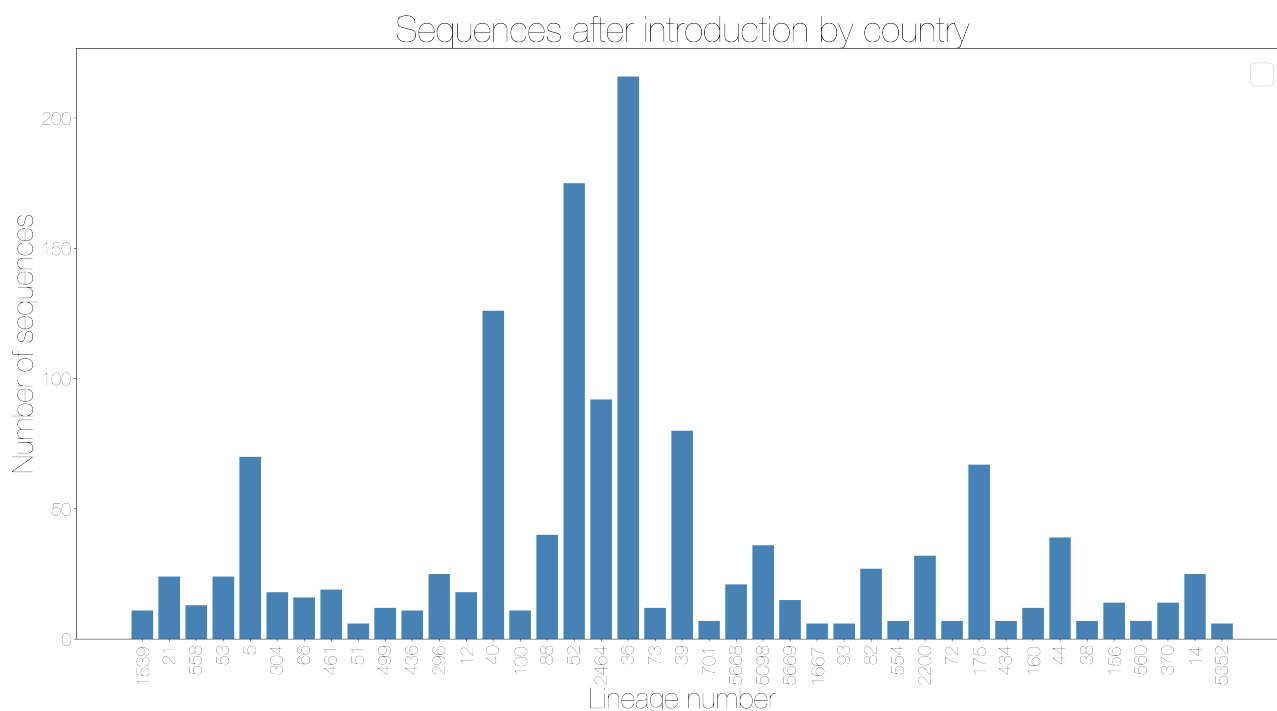
Lineage name	Date range	Number of sequences	Global lineage	Time since last sample (days)
UK88	Mar-22, May-12	40	B.1	12
UK44	Mar-17, May-01	39	B	23
UK5098	Mar-21, May-09	36	B.1.p73	15
UK2200	Mar-23, May-05	32	B.1.5, B.1.5.6	19
UK43	Mar-23, Apr-26	28	A.5	28
UK82	Mar-25, May-06	27	B.1.1, B.1.1.p11	18
UK296	Apr-08, May-13	25	B.1.5	11
UK14	Mar-14, Apr-27	25	B	27
UK21	Mar-18, May-23	24	B.1.40	1
UK53	Apr-16, May-21	24	B.1.1.4	3
UK5668	Mar-13, May-09	21	B.2	15
UK87	Mar-13, Apr-20	20	B.1.70	34
UK150	Mar-21, Apr-22	19	B.1.1.p12	32
UK461	Apr-18, May-19	19	B.1.5	5
UK304	Apr-16, May-20	18	B.1.1.14	4
UK502	Mar-06, Mar-30	18	B.1.69	55
UK12	Apr-12, May-13	18	B.1.p11	11
UK66	Mar-28, May-20	16	B.1.1.8	4
UK264	Mar-29, Apr-22	15	B.1.p11	32
UK5669	Mar-24, May-07	15	B.2	17
UK370	Apr-06, Apr-27	14	B.1.1.10	27
UK156	Mar-18, Apr-18	14	B.1.71	36
UK558	Apr-24, May-22	13	B.1.5	2
UK160	Mar-31, May-02	12	B.1.1	22

Lineage name	Date range	Number of sequences	Global lineage	Time since last sample (days)
UK261	Mar-15, Apr-08	12	A.3	46
UK73	Apr-01, May-10	12	B.1.p11	14
UK499	Apr-24, May-15	12	B.1.5	9
UK436	Apr-13, May-14	11	B.1.5	10
UK1539	May-09, May-24	11	B.1.5	0
UK562	Mar-27, Apr-25	11	B.1	29
UK100	Apr-06, May-12	11	B.1.5	12
UK414	Apr-05, Apr-22	10	B.1.5	32
UK137	Mar-10, Mar-31	10	B.1.1	54
UK1548	Apr-13, Apr-24	9	B.1.5, B.1.5.5	30
UK72	Mar-14, Apr-01	7	B.10	53
UK699	Mar-23, Apr-24	7	B.1.5	30
UK560	Apr-15, Apr-27	7	B.1.5	27
UK434	Apr-20, May-03	7	B.1.5	21
UK554	Apr-23, May-05	7	B.1.5	19
UK133	Mar-22, Apr-25	7	B.1	29
UK320	Mar-24, Apr-21	7	B.1.5, B.1	33
UK701	Mar-03, Mar-27	7	B.1	58
UK282	Mar-23, Apr-22	7	B.1.1	32
UK271	Apr-15, Apr-26	7	B.1	28
UK58	Mar-12, Apr-07	7	B.1	47
UK38	Mar-16, May-01	7	B.2.1	23
UK51	Mar-26, Apr-13	6	B.1.36	41
UK870	Mar-18, Mar-25	6	B.1.5	60

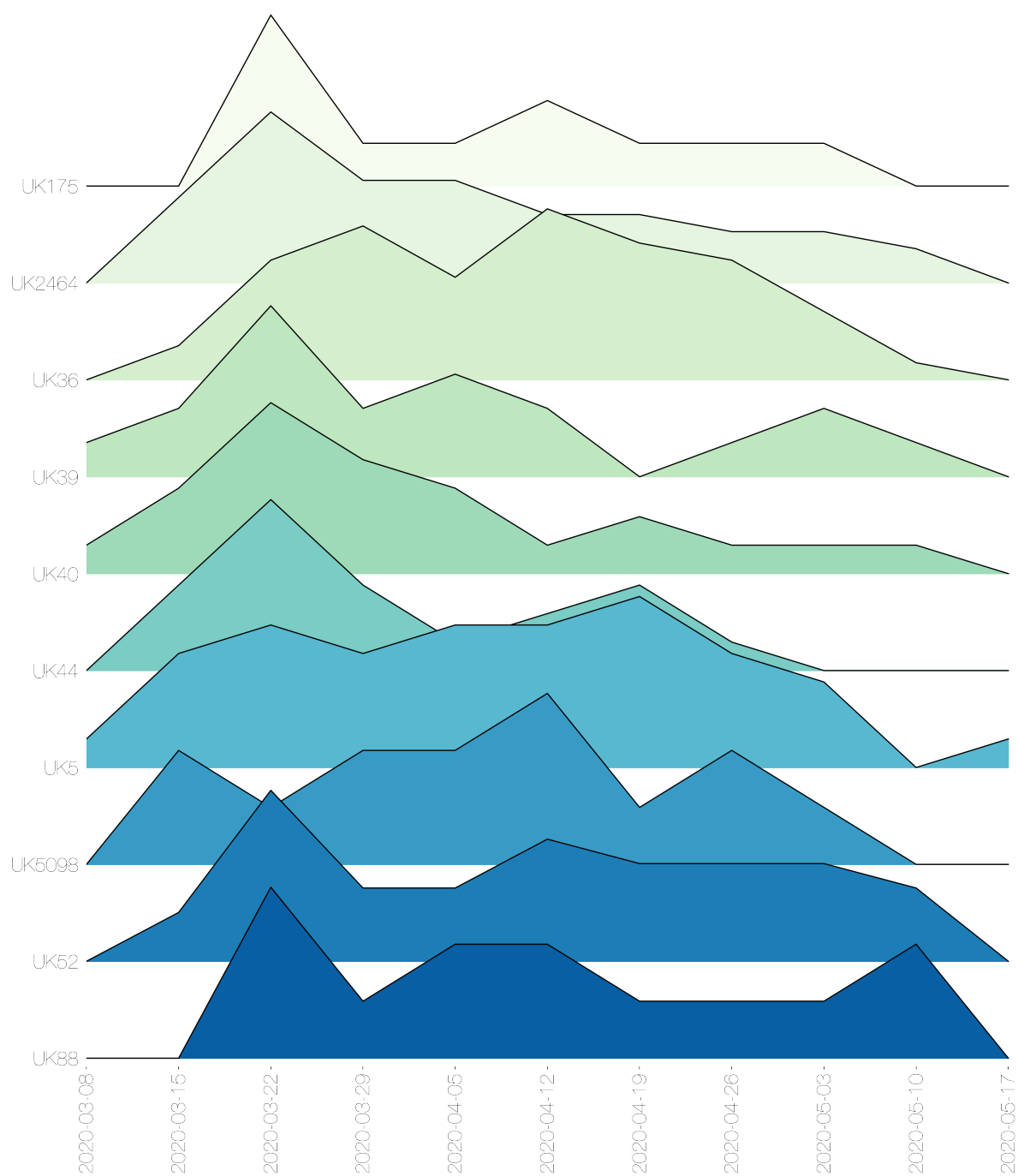
Lineage name	Date range	Number of sequences	Global lineage	Time since last sample (days)
UK198	Mar-18, Apr-15	6	A, B.1.5	39
UK1667	Mar-31, Apr-28	6	B.1.p9	26
UK93	Mar-21, May-06	6	B.1.1	18
UK5352	Apr-22, Apr-27	6	B.1.1.14	27
UK555	Apr-13, Apr-25	6	B.1.5	29

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.



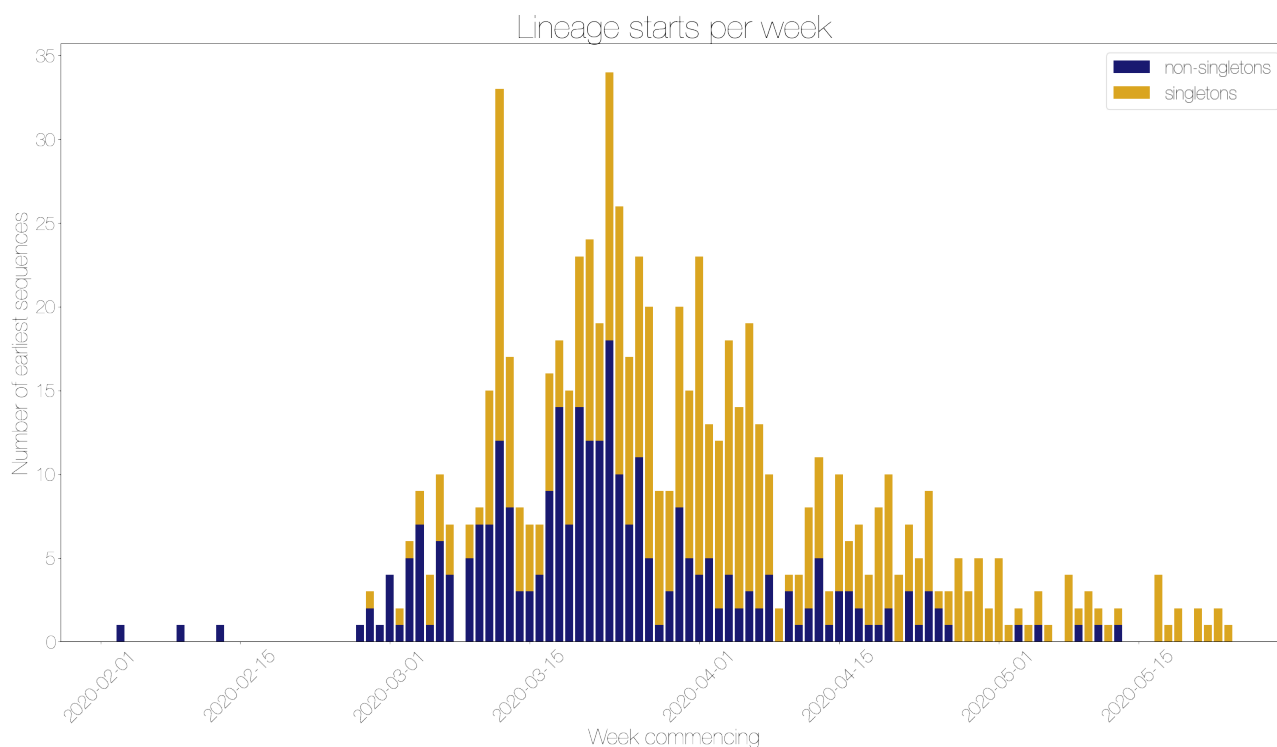
The relative growth and decline of the ten most sampled lineages in terms of number of counties they are present in is shown below. The raw data for the plot is shown below it, with each column representing a lineage, and the number of admin2 regions it is present in in each week.



Week commencing	UK36	UK52	UK40	UK2464	UK39	UK5	UK175	UK88	UK44	UK5098
2020-03-08	0	0	1	0	1	1	0	0	0	0
2020-03-15	2	2	3	5	2	4	0	0	3	2
2020-03-22	7	7	6	10	5	5	4	3	6	1
2020-03-29	9	3	4	6	2	4	1	1	3	2
2020-04-05	6	3	3	6	3	5	1	2	1	2
2020-04-12	10	5	1	4	2	5	2	2	2	3
2020-04-19	8	4	2	4	0	6	1	1	3	1
2020-04-26	7	4	1	3	1	4	1	1	1	2
2020-05-03	4	4	1	3	2	3	1	1	0	1
2020-05-10	1	3	1	2	1	0	0	2	0	0
2020-05-17	0	0	0	0	0	1	0	0	0	0

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

NB the lineage may have started anywhere in the UK, but has been recorded at least once in Scotland

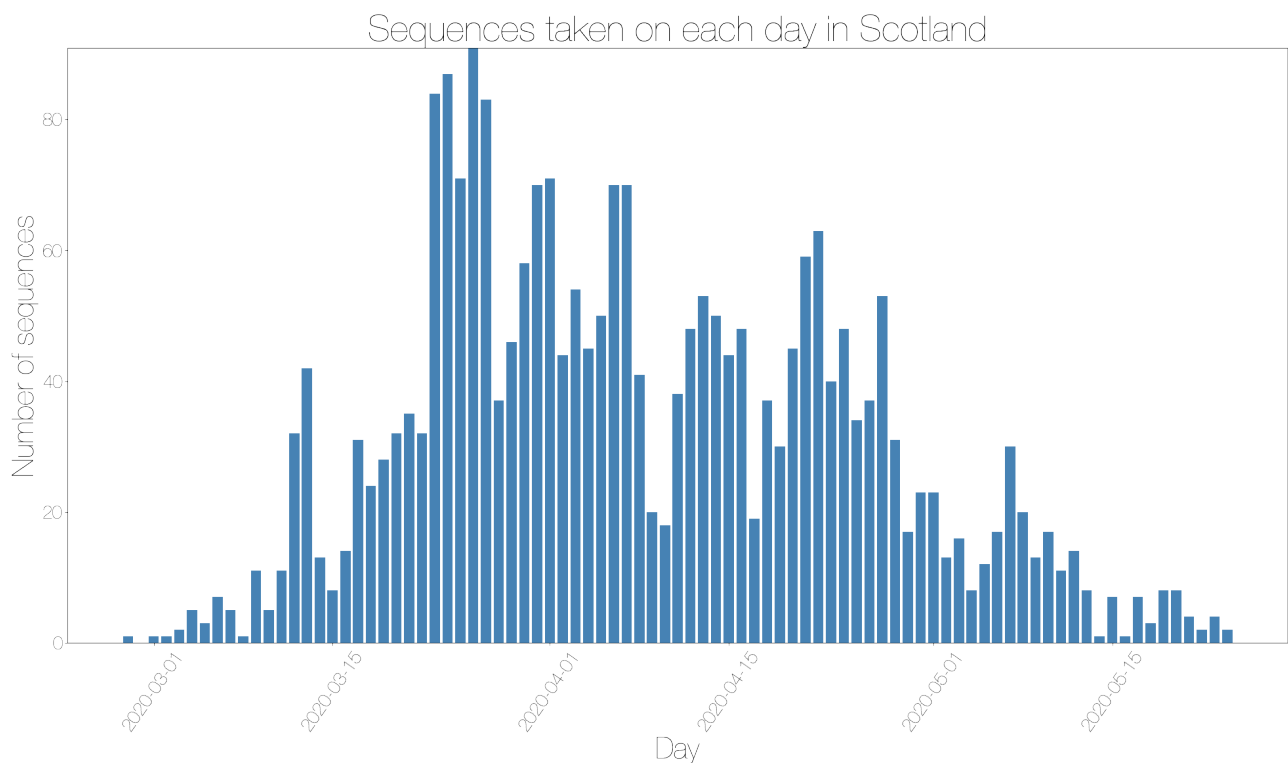


Day	Number of singleton starts	Number of non-singleton starts	Total
2020-02-03	0	1	1
2020-02-09	0	1	1
2020-02-13	0	1	1
2020-02-27	0	1	1
2020-02-28	1	2	3
2020-02-29	0	1	1
2020-03-01	0	4	4
2020-03-02	1	1	2
2020-03-03	1	5	6
2020-03-04	2	7	9
2020-03-05	3	1	4
2020-03-06	4	6	10
2020-03-07	3	4	7
2020-03-09	2	5	7
2020-03-10	1	7	8
2020-03-11	8	7	15
2020-03-12	21	12	33
2020-03-13	9	8	17
2020-03-14	5	3	8
2020-03-15	4	3	7
2020-03-16	3	4	7
2020-03-17	7	9	16
2020-03-18	4	14	18
2020-03-19	8	7	15
2020-03-20	9	14	23

Day	Number of singleton starts	Number of non-singleton starts	Total
2020-03-21	12	12	24
2020-03-22	7	12	19
2020-03-23	16	18	34
2020-03-24	16	10	26
2020-03-25	10	7	17
2020-03-26	12	11	23
2020-03-27	15	5	20
2020-03-28	8	1	9
2020-03-29	6	3	9
2020-03-30	12	8	20
2020-03-31	10	5	15
2020-04-01	19	4	23
2020-04-02	8	5	13
2020-04-03	10	2	12
2020-04-04	14	4	18
2020-04-05	12	2	14
2020-04-06	16	3	19
2020-04-07	11	2	13
2020-04-08	6	4	10
2020-04-09	2	0	2
2020-04-10	1	3	4
2020-04-11	3	1	4
2020-04-12	6	2	8
2020-04-13	6	5	11
2020-04-14	2	1	3
2020-04-15	7	3	10
2020-04-16	3	3	6
2020-04-17	5	2	7
2020-04-18	3	1	4
2020-04-19	7	1	8
2020-04-20	8	2	10
2020-04-21	4	0	4
2020-04-22	4	3	7
2020-04-23	4	1	5
2020-04-24	6	3	9
2020-04-25	1	2	3
2020-04-26	2	1	3
2020-04-27	5	0	5
2020-04-28	3	0	3
2020-04-29	5	0	5
2020-04-30	2	0	2
2020-05-01	5	0	5
2020-05-02	1	0	1
2020-05-03	1	1	2
2020-05-04	1	0	1
2020-05-05	2	1	3
2020-05-06	1	0	1
2020-05-08	4	0	4
2020-05-09	1	1	2

Day	Number of singleton starts	Number of non-singleton starts	Total
2020-05-10	3	0	3
2020-05-11	1	1	2
2020-05-12	1	0	1
2020-05-13	1	1	2
2020-05-17	4	0	4
2020-05-18	1	0	1
2020-05-19	2	0	2
2020-05-21	2	0	2
2020-05-22	1	0	1
2020-05-23	2	0	2
2020-05-24	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.

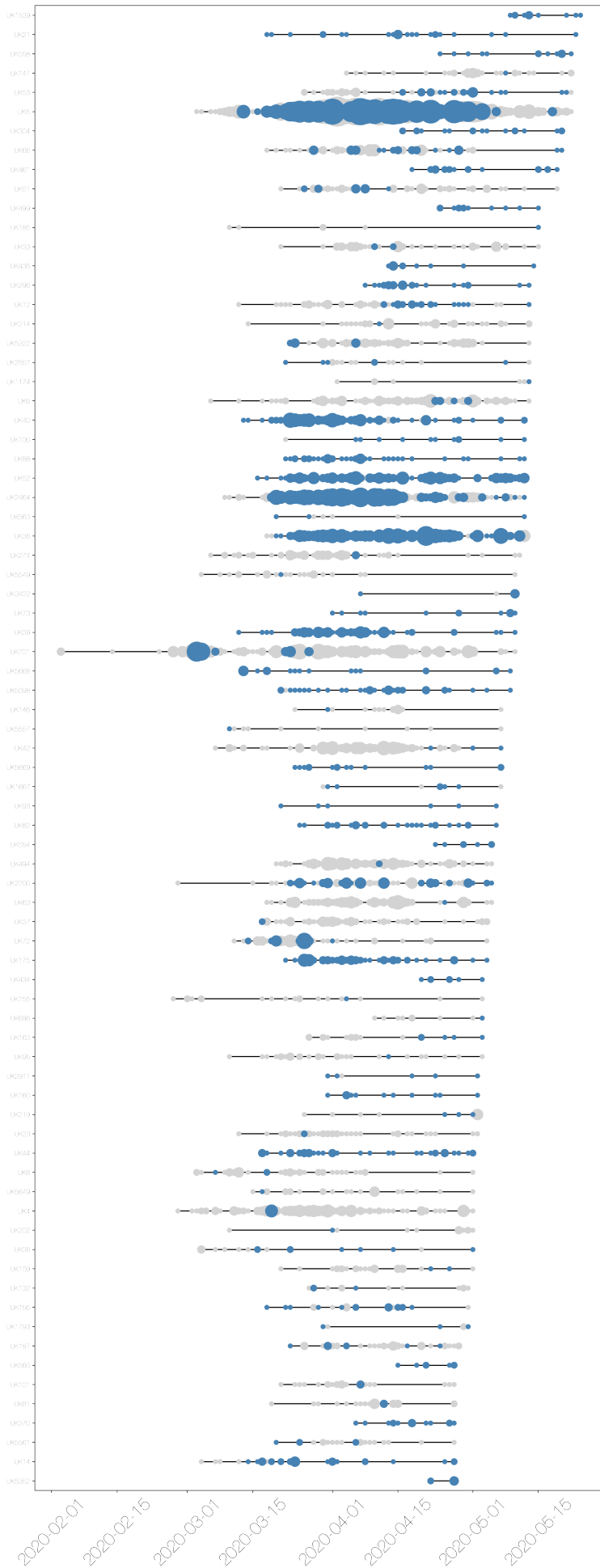


Day	Scotland
2020-02-28	1
2020-03-01	1
2020-03-02	1
2020-03-03	2
2020-03-04	5
2020-03-05	3
2020-03-06	7
2020-03-07	5
2020-03-08	1
2020-03-09	11

Day	Scotland
2020-03-10	5
2020-03-11	11
2020-03-12	32
2020-03-13	42
2020-03-14	13
2020-03-15	8
2020-03-16	14
2020-03-17	31
2020-03-18	24
2020-03-19	28
2020-03-20	32
2020-03-21	35
2020-03-22	32
2020-03-23	84
2020-03-24	87
2020-03-25	71
2020-03-26	91
2020-03-27	83
2020-03-28	37
2020-03-29	46
2020-03-30	58
2020-03-31	70
2020-04-01	71
2020-04-02	44
2020-04-03	54
2020-04-04	45
2020-04-05	50
2020-04-06	70
2020-04-07	70
2020-04-08	41
2020-04-09	20
2020-04-10	18
2020-04-11	38
2020-04-12	48
2020-04-13	53
2020-04-14	50
2020-04-15	44
2020-04-16	48
2020-04-17	19
2020-04-18	37
2020-04-19	30
2020-04-20	45
2020-04-21	59
2020-04-22	63
2020-04-23	40
2020-04-24	48
2020-04-25	34
2020-04-26	37
2020-04-27	53

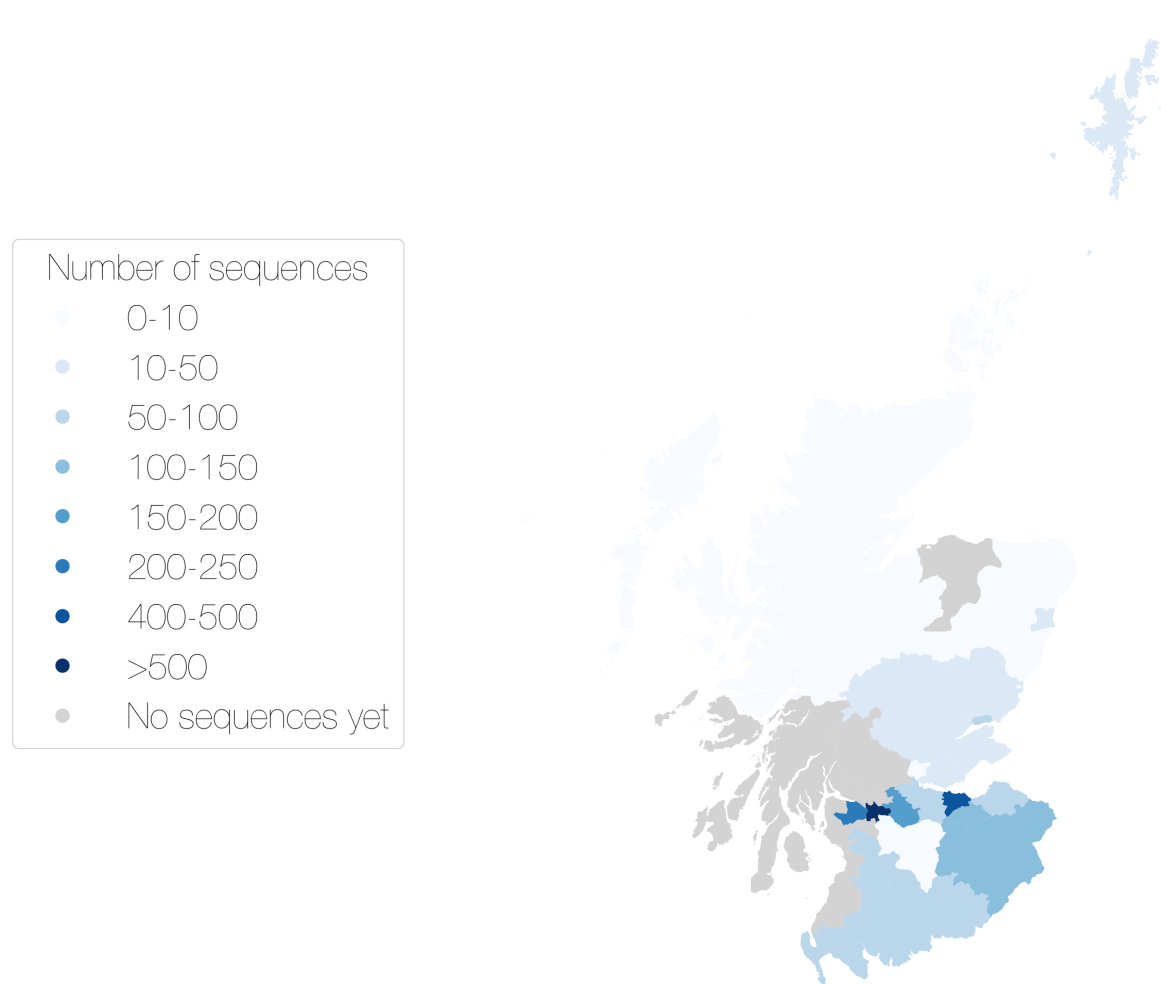
Day	Scotland
2020-04-28	31
2020-04-29	17
2020-04-30	23
2020-05-01	23
2020-05-02	13
2020-05-03	16
2020-05-04	8
2020-05-05	12
2020-05-06	17
2020-05-07	30
2020-05-08	20
2020-05-09	13
2020-05-10	17
2020-05-11	11
2020-05-12	14
2020-05-13	8
2020-05-14	1
2020-05-15	7
2020-05-16	1
2020-05-17	7
2020-05-18	3
2020-05-19	8
2020-05-20	8
2020-05-21	4
2020-05-22	2
2020-05-23	4
2020-05-24	2

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.

COVID-19 sequences from each Admn2 region in Scotland



Admin2	Country	Number of sequences	Sequence group
ABERDEEN	Scotland	22	10-50
ABERDEENSHIRE	Scotland	5	1-10
ANGUS	Scotland	13	10-50
ARGYLL AND BUTE	Scotland	0	0
CLACKMANNANSHIRE	Scotland	2	1-10
DUMFRIES AND GALLOWAY	Scotland	54	50-100
DUNDEE	Scotland	93	50-100
EAST AYRSHIRE	Scotland	75	50-100
EAST DUNBARTONSHIRE	Scotland	0	0
EAST LoTHIAN	Scotland	54	50-100
EAST RENFREWSHIRE	Scotland	0	0

Admin2	Country	Number of sequences	Sequence group
EDINBURGH	Scotland	412	400-500
EILEAN SIAR	Scotland	2	1-10
FALKIRK	Scotland	92	50-100
FIFE	Scotland	42	10-50
GLASGOW	Scotland	791	>500
HIGHLAND	Scotland	9	1-10
INVERCLYDE	Scotland	0	0
MIDLOTHIAN	Scotland	127	100-150
MORAY	Scotland	0	0
NORTH AYRSHIRE	Scotland	0	0
NORTH LANARKSHIRE	Scotland	158	150-200
ORKNEY ISLANDS	Scotland	1	1-10
PERTHSHIRE AND KINROSS	Scotland	48	10-50
RENFREWSHIRE	Scotland	209	200-250
SCOTTISH BORDERS	Scotland	128	100-150
SHETLAND ISLANDS	Scotland	14	10-50
SOUTH AYRSHIRE	Scotland	0	0
SOUTH LANARKSHIRE	Scotland	4	1-10
STIRLING	Scotland	0	0
WEST DUNBARTONSHIRE	Scotland	0	0
WEST Lothian	Scotland	92	50-100

There are some sequences with locations that are not matched to real Admin2 regions, some manual curation required.

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