

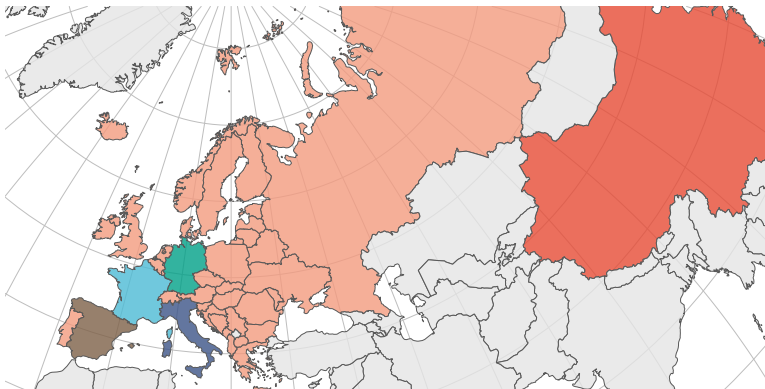
Trajectory Mapping Results

analysis x

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16 December, 2020

Deme configuration



deme	division	country	region	exclude_country	min_date	max_date
France	Hubei	France	Europe	France,Germany,Italy,Spain	2020-01-23	2020-03-08
Germany		Germany	Europe		2020-01-28	2020-03-08
China		China	Asia		2019-12-24	2020-01-23
Italy		Italy	Europe		2020-01-29	2020-03-08
OtherEuropean		Europe	Europe		2020-01-29	2020-03-08
Spain		Spain	Europe		2020-02-24	2020-03-08

Table 2: Total number of cases reported to ECDC
18th March

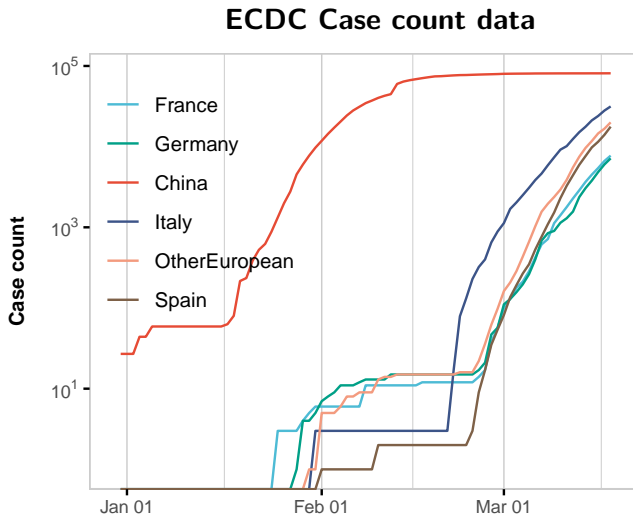
[illegible]

Figure 1: ECDC case counts for each deme from the beginning of the pandemic to March 18

Epidemic trajectory data

From the Stochastic Trajectory Mapping analysis, we obtain one epidemic trajectory per set of parameters + typed node tree.

The processing of the trajectory data includes the generation of two different datasets:

- **states:** We have the total number of inferred cases by trajectory, deme and time.
- **events:** We have each event that happened in a epidemic trajectory, with its type (origin, birth, death or migration), the source/destination deme and time.

Table 3: States dataset

traj	type	time	N	age	date_model	date
1	China	0.0000000	0	0.2724047	2019-11-29	2019-12-09
1	China	0.0196264	0	0.2527784	2019-12-06	2019-12-16
1	China	0.0250744	0	0.2473303	2019-12-08	2019-12-18
1	China	0.0332466	0	0.2391581	2019-12-11	2019-12-21
1	China	0.0332466	0	0.2391581	2019-12-11	2019-12-21

Epidemic trajectory data

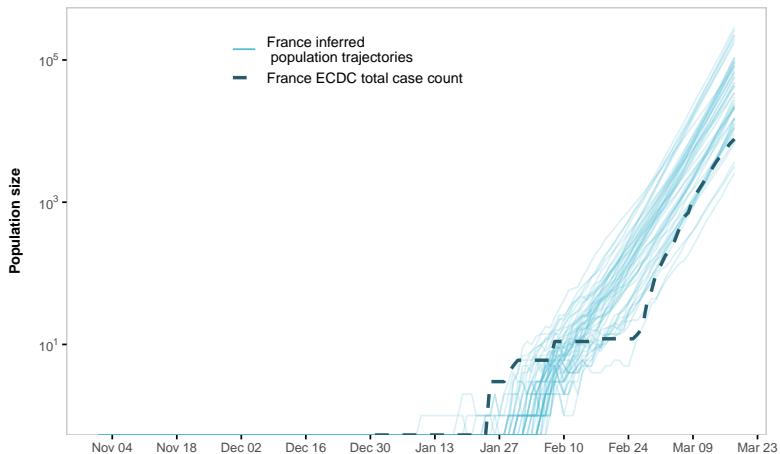
Table 4: Events dataset

traj	time	event	src	dest	mult	age	date_model	date
1	0.0000000	O				0.2724047	2019-11-29	2019-12-09
1	0.0196264	B	Germany	Germany	1	0.2527784	2019-12-06	2019-12-16
1	0.0250744	B	Germany	Germany	1	0.2473303	2019-12-08	2019-12-18
1	0.0332466	B	Germany	Germany	2	0.2391581	2019-12-11	2019-12-21
1	0.0332466	D	Germany	Germany	1	0.2391581	2019-12-11	2019-12-21

To have a feasible time of analysis of the epidemic trajectories we take a random subsample of 500 trajectories.

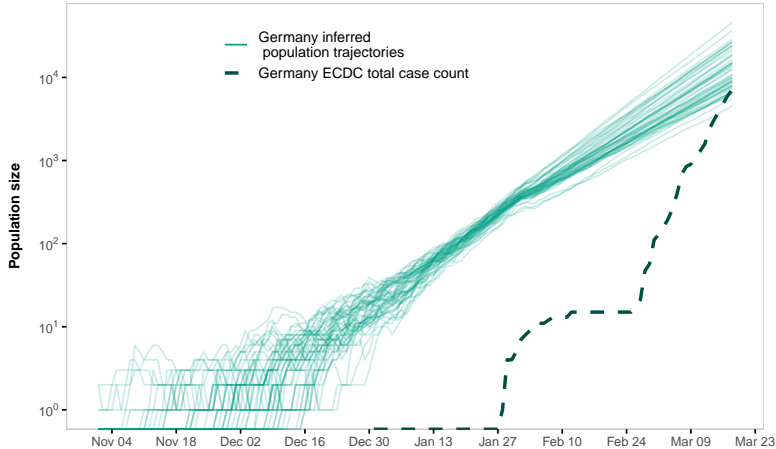
To facilitate visualization and summarise the results, we take a grid time of 1 day and summarise the number of events that day as the sum of the events in the corresponding time interval; and the number of inferred cases as the maximum of the interval.

Inferred case counts - France



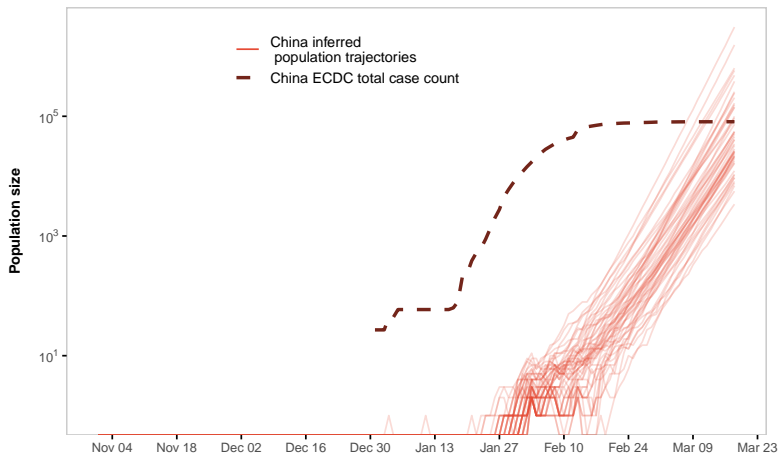
<i>Imedian</i>	34774.5
<i>llow</i>	3300.52
<i>lhigh</i>	255441
<i>cumcases</i>	7730
<i>cumdeaths</i>	175
<i>cases</i>	1097
<i>pop</i>	65273.51
<i>cas100</i>	11.84
<i>fc</i>	0.22
<i>lfc</i>	0.03
<i>hfc</i>	2.34
<i>rc</i>	4.5
<i>lrc</i>	0.43
<i>hrc</i>	33.05

Inferred case counts - Germany



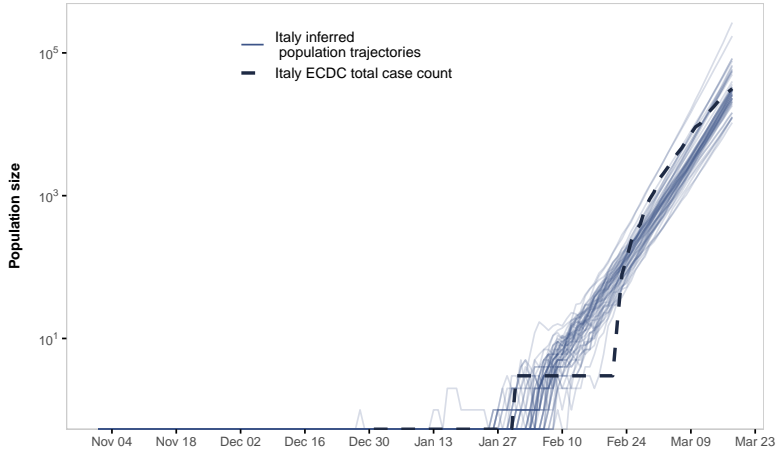
<i>Imedian</i>	10755.5
<i>llow</i>	5619.43
<i>lhigh</i>	34831.57
<i>cumcases</i>	7156
<i>cumdeaths</i>	13
<i>cases</i>	1144
<i>pop</i>	83783.95
<i>cas100</i>	8.54
<i>fc</i>	0.67
<i>lfc</i>	0.21
<i>hfc</i>	1.27
<i>rc</i>	1.5
<i>lrc</i>	0.79
<i>hrc</i>	4.87

Inferred case counts - China



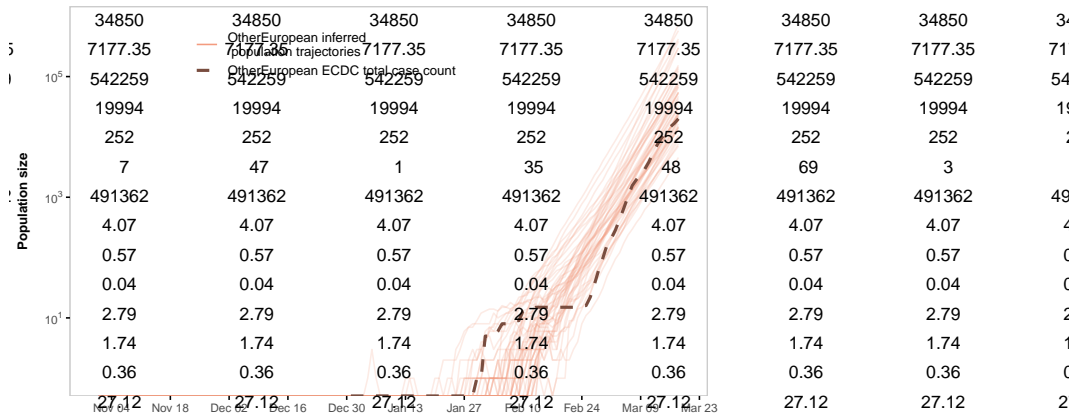
<i>Imedian</i>	33540.5
<i>llow</i>	5904.12
<i>lhigh</i>	1347854
<i>cumcases</i>	81086
<i>cumdeaths</i>	3241
<i>cases</i>	23
<i>pop</i>	1439324
<i>cas100</i>	5.63
<i>fc</i>	2.42
<i>lfc</i>	0.06
<i>hfc</i>	13.73
<i>rc</i>	0.41
<i>lrc</i>	0.07
<i>hrc</i>	16.62

Inferred case counts - Italy

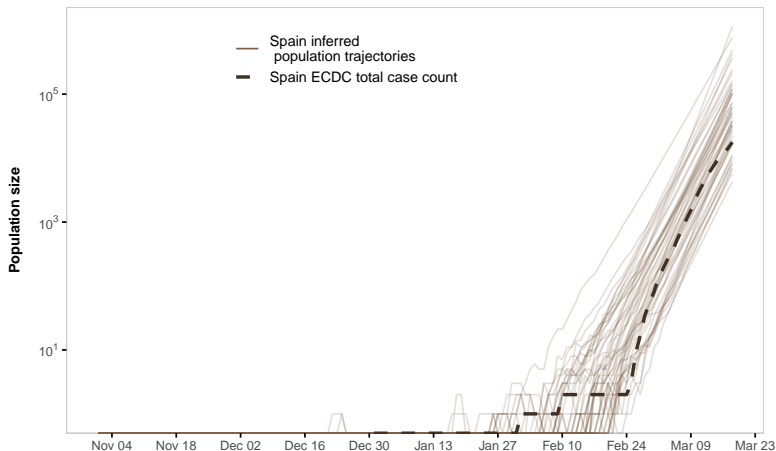


<i>Imedian</i>	28243
<i>llow</i>	12246.98
<i>lhigh</i>	152018.9
<i>cumcases</i>	31506
<i>cumdeaths</i>	2505
<i>cases</i>	3526
<i>pop</i>	60461.83
<i>cas100</i>	52.11
<i>fc</i>	1.12
<i>lfc</i>	0.21
<i>hfc</i>	2.57
<i>rc</i>	0.9
<i>lrc</i>	0.39
<i>hrc</i>	4.83

Inferred case counts - OtherEuropean

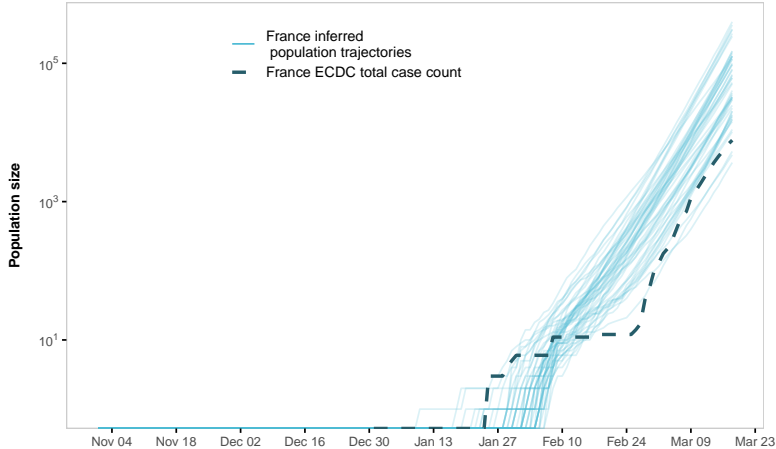


Inferred case counts - Spain



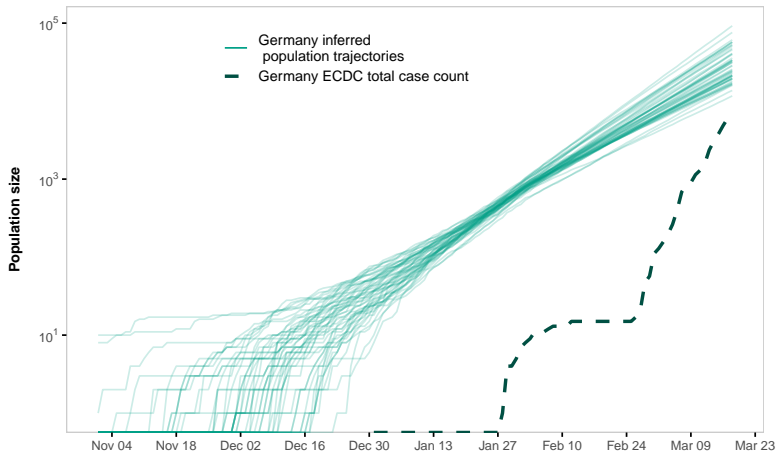
<i>Imedian</i>	47696.5
<i>llow</i>	5930.38
<i>lhigh</i>	699828.3
<i>cumcases</i>	17688
<i>cumdeaths</i>	491
<i>cases</i>	3694
<i>pop</i>	46754.78
<i>cas100</i>	37.83
<i>fc</i>	0.37
<i>lfc</i>	0.03
<i>hfc</i>	2.98
<i>rc</i>	2.7
<i>lrc</i>	0.34
<i>hrc</i>	39.57

Inferred case counts v2- France



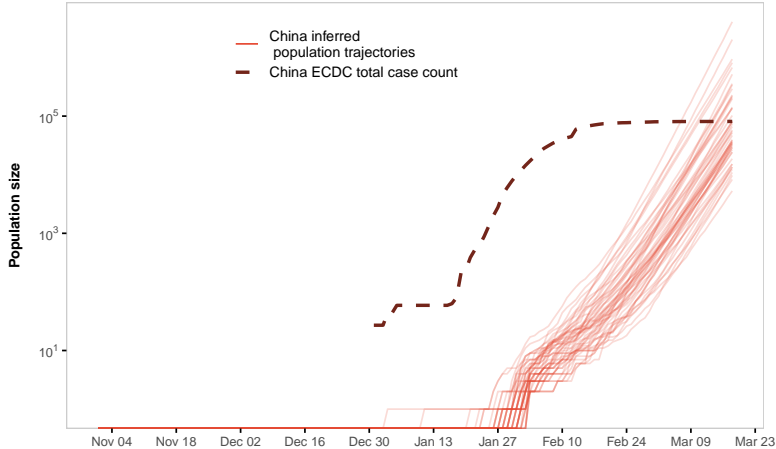
<i>l</i> low	4868.05
<i>l</i> high	348413.1
<i>D</i> median	10855.5
<i>D</i> low	1016.92
<i>D</i> high	89716.35
<i>cumcases</i>	7730
<i>cumdeaths</i>	175
<i>cases</i>	1097
<i>pop</i>	65273.51
<i>cas100</i>	11.84
<i>fc</i>	0.15
<i>lfc</i>	0.02
<i>hfc</i>	1.59
<i>rc</i>	6.68
<i>lrc</i>	0.63

Inferred case counts v2- Germany



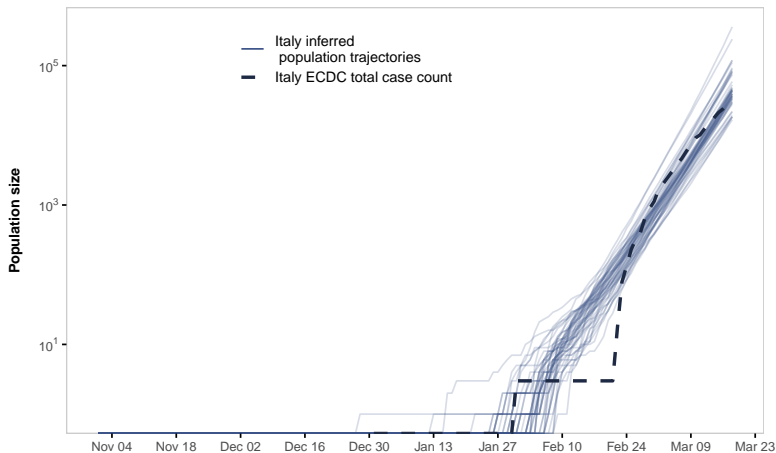
<i>l</i> low	14201.23
<i>l</i> high	72573.3
<i>D</i> median	1818
<i>D</i> low	855.73
<i>D</i> high	6375.65
<i>cumcases</i>	7156
<i>cumdeaths</i>	13
<i>cases</i>	1144
<i>pop</i>	83783.95
<i>cas100</i>	8.54
<i>fc</i>	0.28
<i>lfc</i>	0.1
<i>hfc</i>	0.5
<i>rc</i>	3.53
<i>lrc</i>	1.98

Inferred case counts v2- China



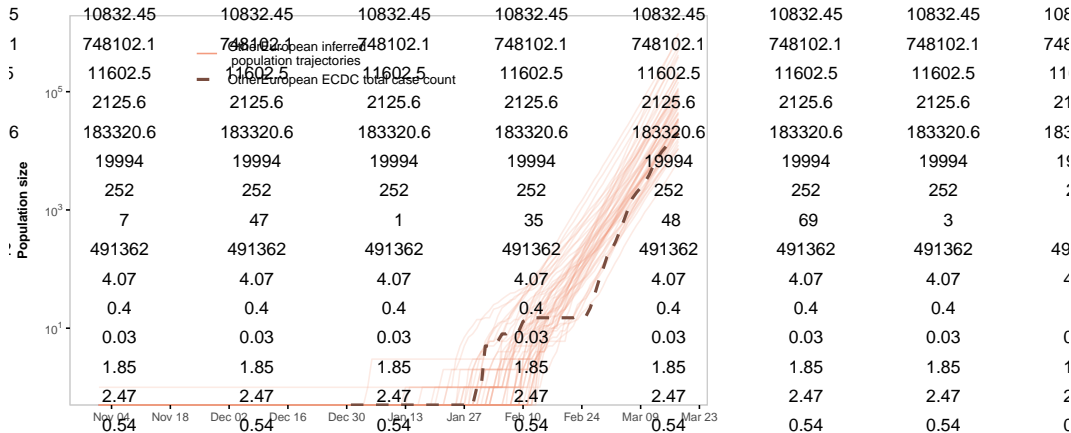
<i>l</i> low	8621.65
<i>l</i> high	1778206
<i>D</i> median	11350
<i>D</i> low	2119.57
<i>D</i> high	514795.2
<i>cumcases</i>	81086
<i>cumdeaths</i>	3241
<i>cases</i>	23
<i>pop</i>	1439324
<i>cas100</i>	5.63
<i>fc</i>	1.65
<i>lfc</i>	0.05
<i>hfc</i>	9.4
<i>rc</i>	0.61
<i>lrc</i>	0.11

Inferred case counts v2- Italy

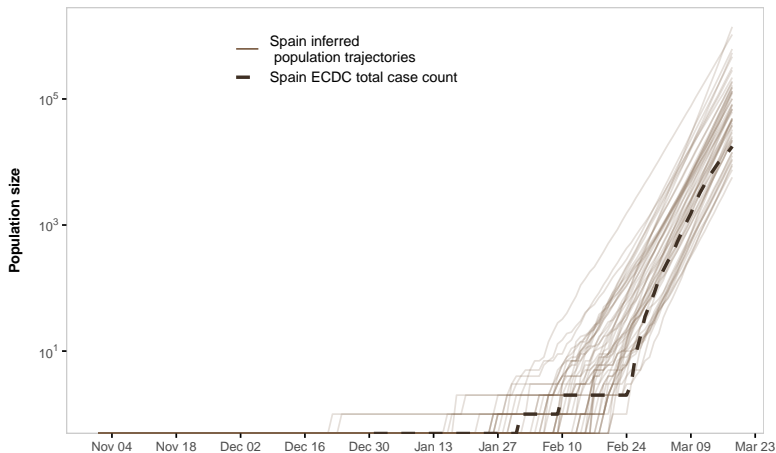


<i>l</i> low	18331.95
<i>l</i> high	212813.6
<i>D</i> median	9346
<i>D</i> low	3533.15
<i>D</i> high	50948.52
<i>cumcases</i>	31506
<i>cumdeaths</i>	2505
<i>cases</i>	3526
<i>pop</i>	60461.83
<i>cas100</i>	52.11
<i>fc</i>	0.78
<i>lfc</i>	0.15
<i>hfc</i>	1.72
<i>rc</i>	1.29
<i>lrc</i>	0.58

Inferred case counts v2- OtherEuropean

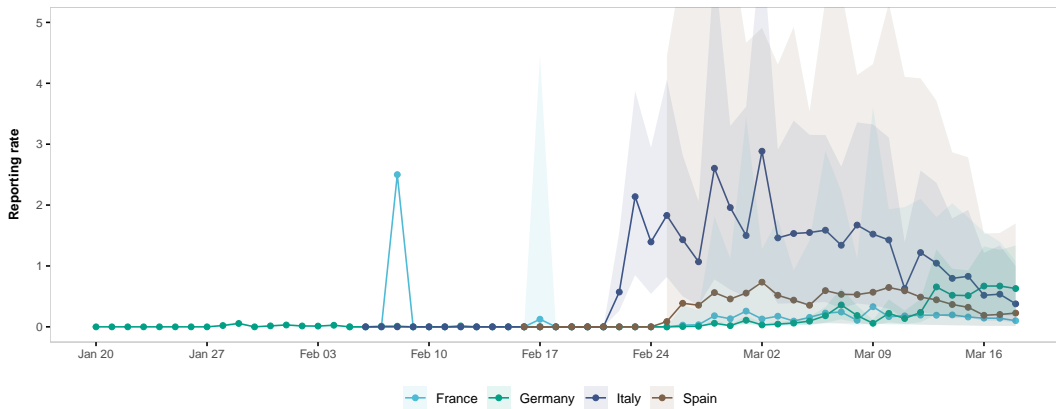


Inferred case counts v2- Spain



<i>l</i> low	7811.38
<i>l</i> high	956752.3
<i>D</i> median	16344.5
<i>D</i> low	2174.75
<i>D</i> high	245838.7
<i>cumcases</i>	17688
<i>cumdeaths</i>	491
<i>cases</i>	3694
<i>pop</i>	46754.78
<i>cas100</i>	37.83
<i>fc</i>	0.27
<i>lfc</i>	0.02
<i>hfc</i>	2.26
<i>rc</i>	3.66
<i>lrc</i>	0.44

Reporting rate



Inferred case counts - Additional figures

