Trajectory Mapping Results

analysis x

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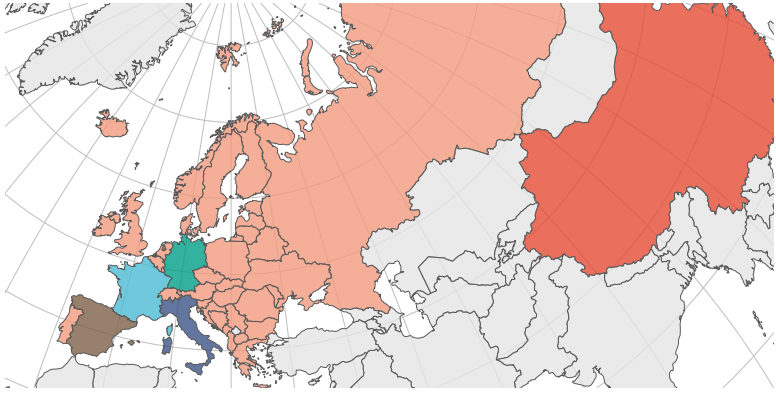
Deme configuration



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

deme	cumcases	pop	cas100
France	7730	65273.5	11.8
Germany	7156	83783.9	8.5
China	81086	1439323.8	5.6
Italy	31506	60461.8	52.1
OtherEuropean	19994	491362.0	4.1
Spain	17688	46754.8	37.8

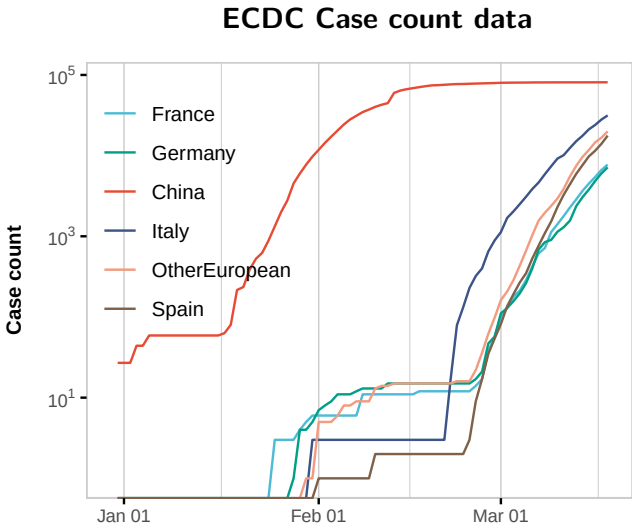


Figure 1: ECDC case counts for each deme from the beginning of the pandemic to March 18

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

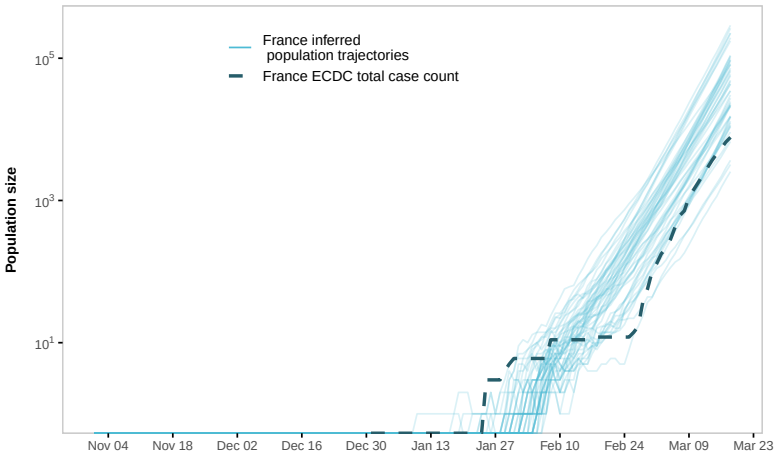
Table 4: Events dataset

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.

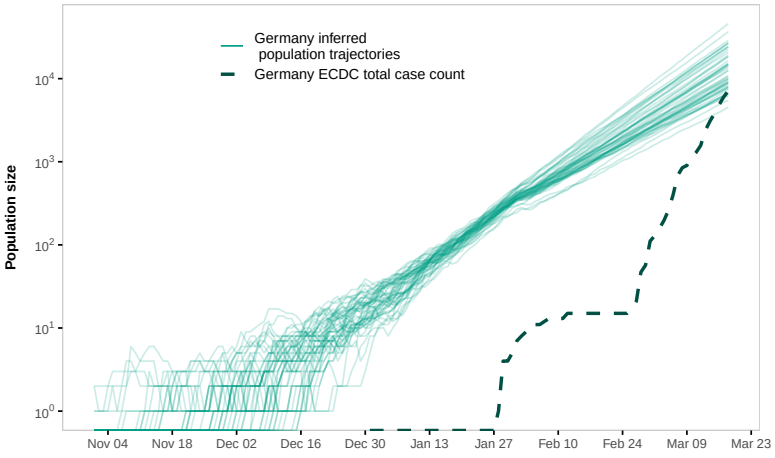
To facilitate visualization and summarise the results, we take a grid time of 1 day and summarise the number of events that day as the sum of the events in the corresponding time interval; and the number of inferred cases as the maximum of the interval.

Inferred case counts v2 - France



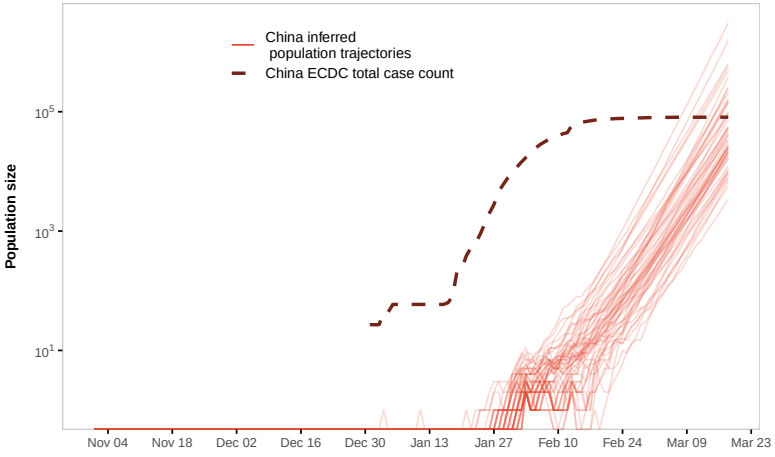
lmean	63285.6
lmedian	34774.5
llow	3300.52
lhigh	255441
cumcases	7730
cumdeaths	175
pop	65273.51
cas100	11.84
fc	0.22
lfc	0.03
hfc	2.34
rc	4.5
lrc	0.43
hrc	33.05
mcas100	53.28

Inferred case counts v2 - Germany



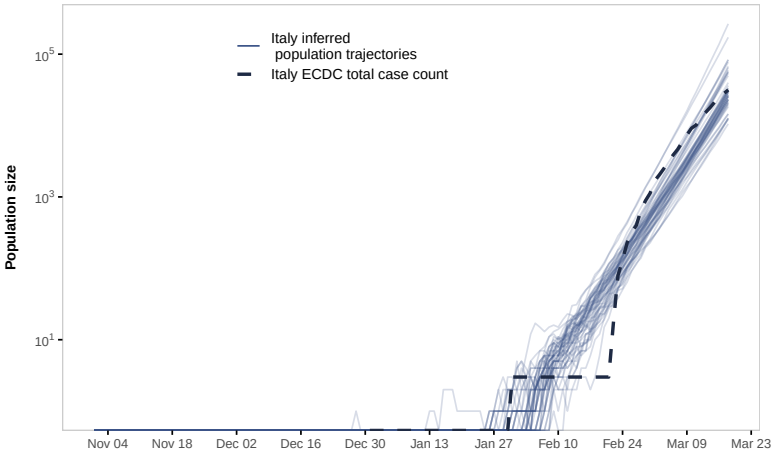
lmean	14347.52
lmedian	10755.5
llow	5619.43
lhigh	34831.57
cumcases	7156
cumdeaths	13
pop	83783.95
cas100	8.54
fc	0.67
lfc	0.21
hfc	1.27
rc	1.5
lrc	0.79
hrc	4.87
mcas100	12.84

Inferred case counts v2 - China



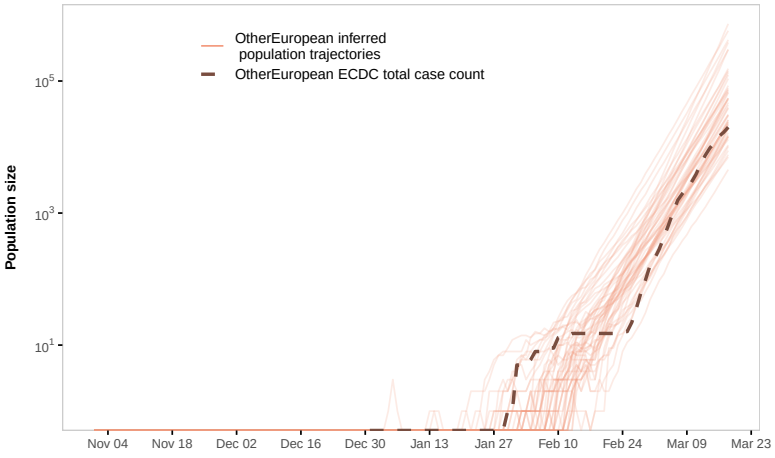
lmean	183979.8
lmedian	33540.5
llow	5904.12
lhigh	1347854
cumcases	81086
cumdeaths	3241
pop	1439324
cas100	5.63
fc	2.42
lfc	0.06
hfc	13.73
rc	0.41
lrc	0.07
hrc	16.62
mcas100	2.33

Inferred case counts v2 - Italy



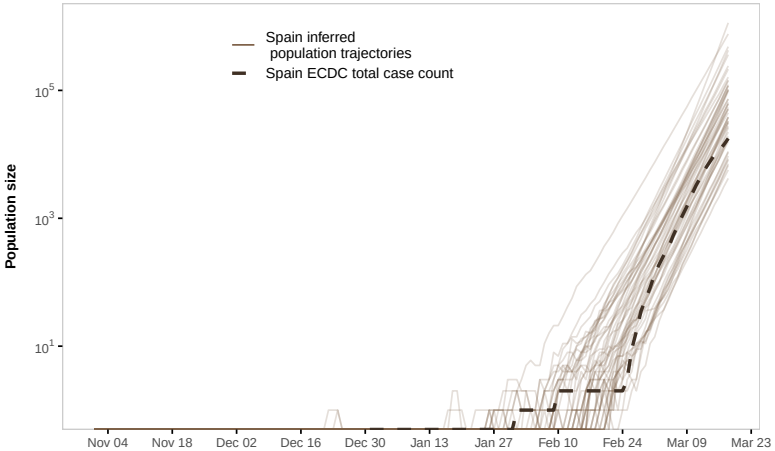
lmean	40351.24
lmedian	28243
llow	12246.98
lhigh	152018.9
cumcases	31506
cumdeaths	2505
pop	60461.83
cas100	52.11
fc	1.12
lfc	0.21
hfc	2.57
rc	0.9
lrc	0.39
hrc	4.83
mcas100	46.71

Inferred case counts v2 - OtherEuropean



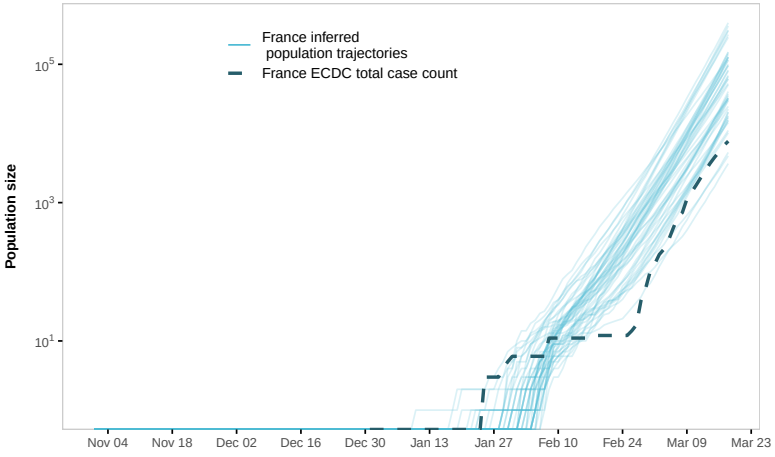
lmean	93235.38
lmedian	34850
llow	7177.35
lhigh	542259
cumcases	19994
cumdeaths	252
pop	491362
cas100	4.07
fc	0.57
lfc	0.04
hfc	2.79
rc	1.74
lrc	0.36
hrc	27.12
mcas100	7.09

Inferred case counts v2 - Spain



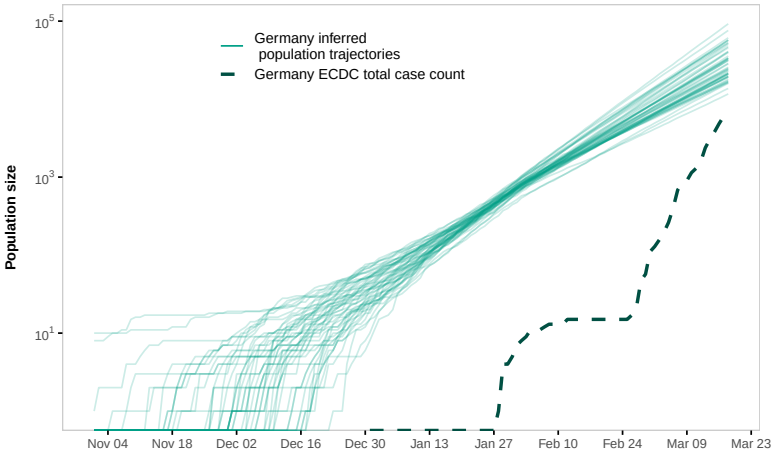
lmean	117065
lmedian	47696.5
llow	5930.38
lhigh	699828.3
cumcases	17688
cumdeaths	491
pop	46754.78
cas100	37.83
fc	0.37
lfc	0.03
hfc	2.98
rc	2.7
lrc	0.34
hrc	39.57
mcas100	102.01

Inferred case counts - France



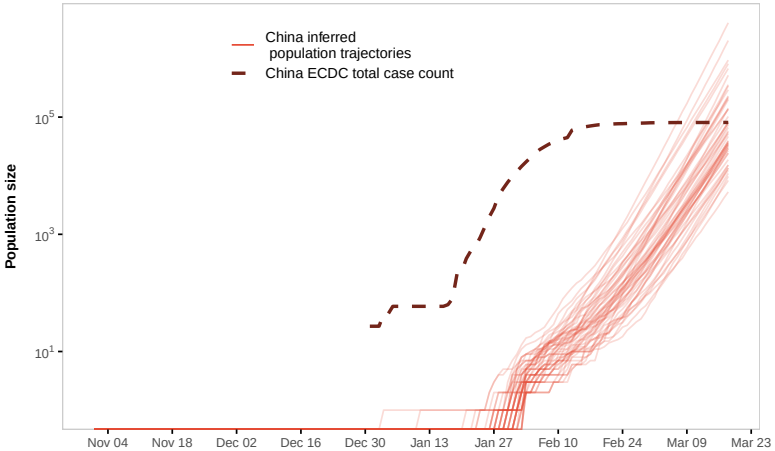
lmean	88060.16
lmedian	51607.5
llow	4868.05
lhigh	348413.1
cumcases	7730
cumdeaths	175
pop	65273.51
cas100	11.84
fc	0.15
lfc	0.02
hfc	1.59
rc	6.68
lrc	0.63
hrc	45.07
mcas100	79.06

Inferred case counts - Germany



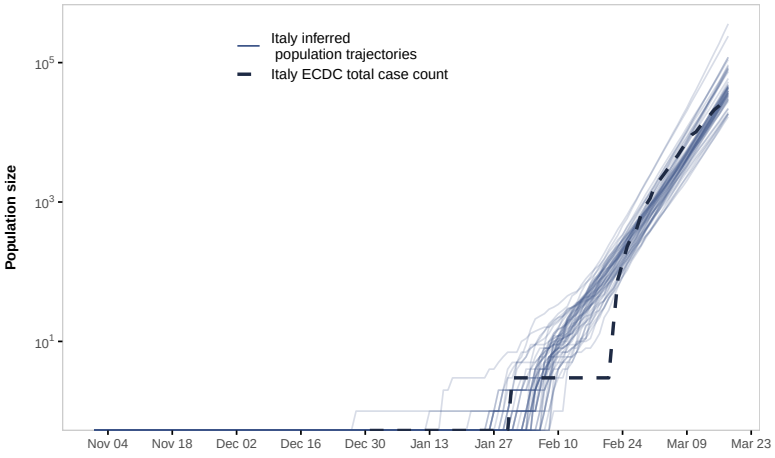
lmean	32075.54
lmedian	25268.5
llow	14201.23
lhigh	72573.3
cumcases	7156
cumdeaths	13
pop	83783.95
cas100	8.54
fc	0.28
lfc	0.1
hfc	0.5
rc	3.53
lrc	1.98
hrc	10.14
mcas100	30.16

Inferred case counts - China



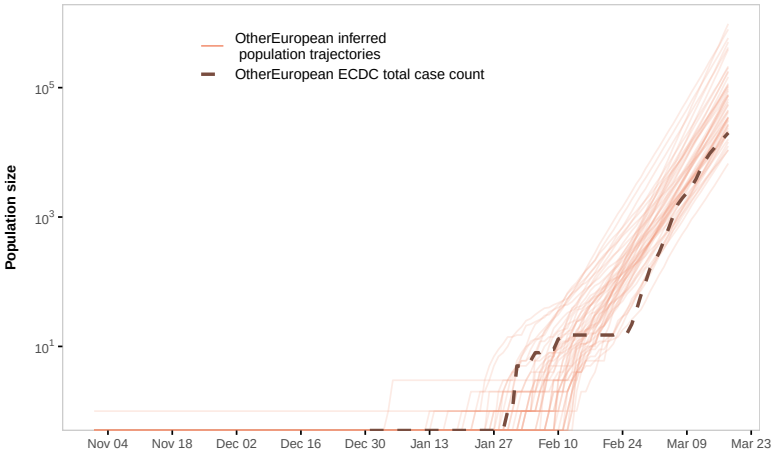
lmean	251223.2
lmedian	49283
llow	8621.65
lhigh	1778206
cumcases	81086
cumdeaths	3241
pop	1439324
cas100	5.63
fc	1.65
lfc	0.05
hfc	9.4
rc	0.61
lrc	0.11
hrc	21.93
mcas100	3.42

Inferred case counts - Italy



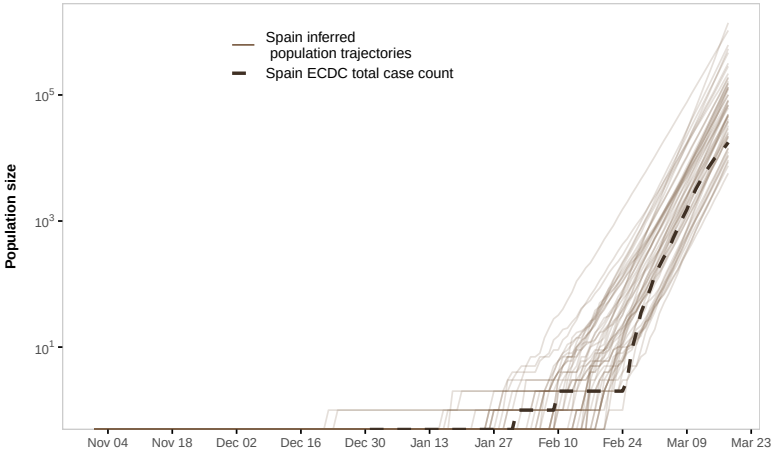
lmean	57951.16
lmedian	40635
llow	18331.95
lhigh	212813.6
cumcases	31506
cumdeaths	2505
pop	60461.83
cas100	52.11
fc	0.78
lfc	0.15
hfc	1.72
rc	1.29
lrc	0.58
hrc	6.75
mcas100	67.21

Inferred case counts - OtherEuropean



lmean	127738.4
lmedian	49419
llow	10832.45
lhigh	748102.1
cumcases	19994
cumdeaths	252
pop	491362
cas100	4.07
fc	0.4
lfc	0.03
hfc	1.85
rc	2.47
lrc	0.54
hrc	37.42
mcas100	10.06

Inferred case counts - Spain



Imean	152243.6
Imedian	64775
Ilow	7811.38
Ihigh	956752.3
cumcases	17688
cumdeaths	491
pop	46754.78
cas100	37.83
fc	0.27
lfc	0.02
hfc	2.26
rc	3.66
lrc	0.44
hrc	54.09
mcas100	138.54