Patient pathways paper - results

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1 Setup
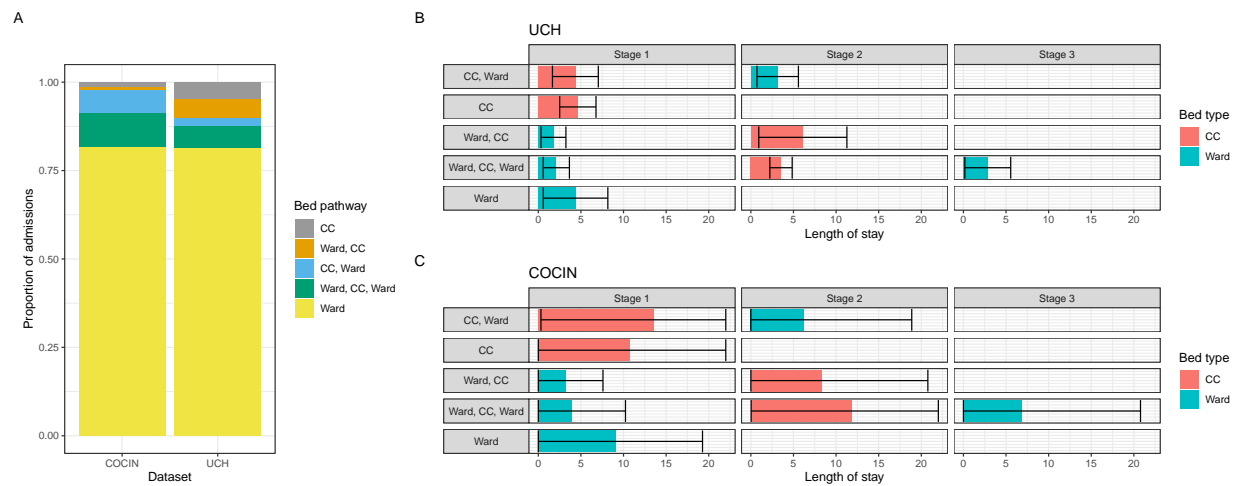
1.1 Load packages

1.2 Load England hospital data

1.3 Load UCH data

1.4 Load model results

1.5 Load NHS Trust results

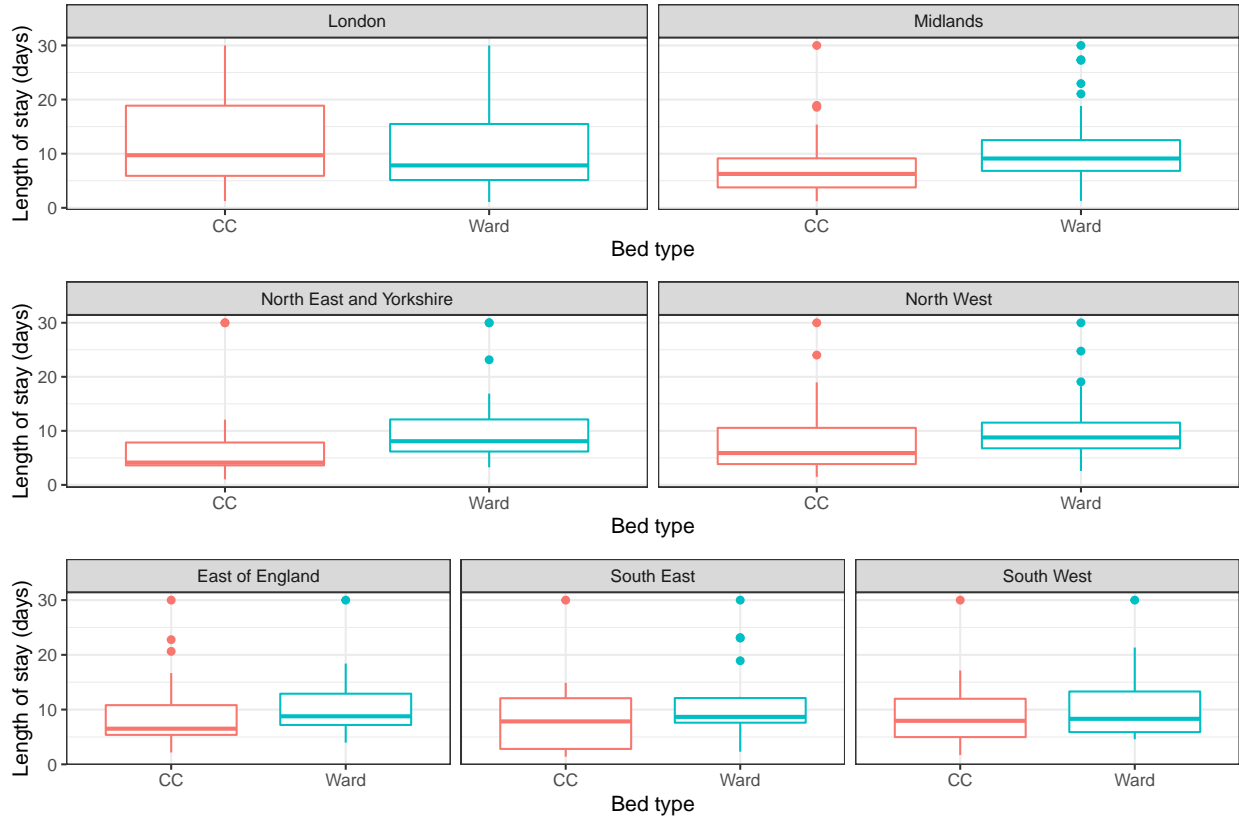# 2 Visualise pathways

3 Visualise model results

```
##
## FALSE   TRUE
##  0.05   0.95


##
## FALSE   TRUE
##  0.11   0.89
```
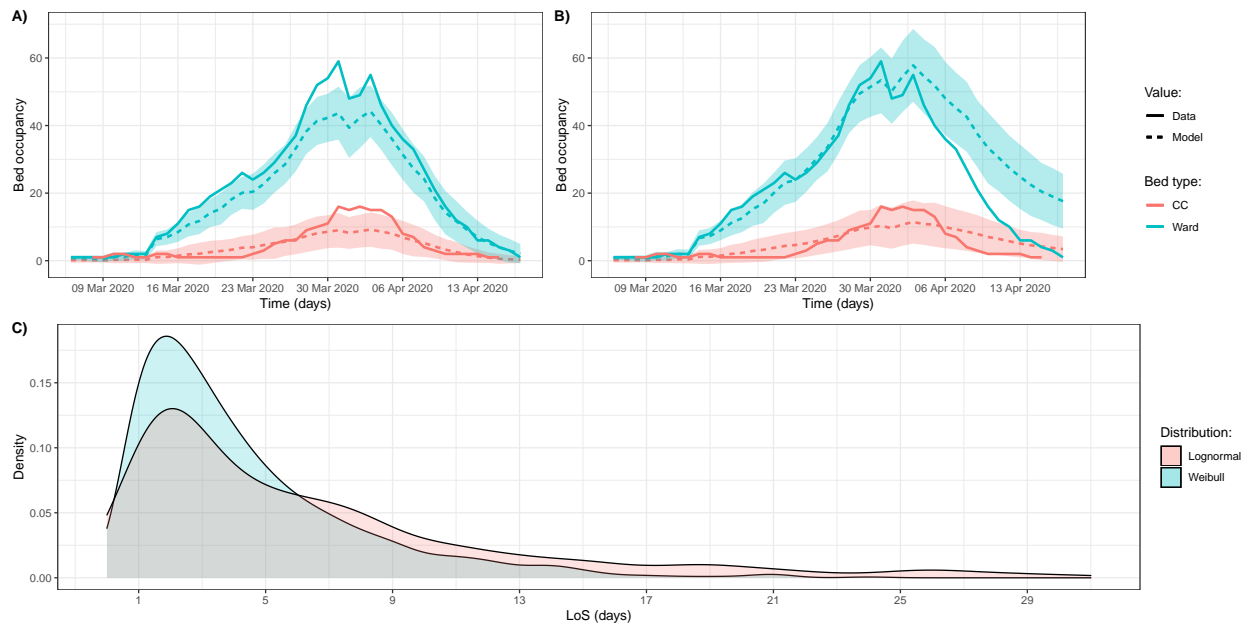
Table 1: Squared difference between model results for average LoS or bed pathways, and Weibull or Lognormal distribution.

Rounding	Distribution	LoS used	Squared difference
Round	Weibull	Average LoS	2667.1369
Round	Weibull	Bed pathways	916.0301
Round	Lognormal	Average LoS	3265.6580
Round	Lognormal	Bed pathways	5698.7053
Ceiling	Weibull	Average LoS	1431.0788
Ceiling	Weibull	Bed pathways	586.7672
Ceiling	Lognormal	Average LoS	3888.0200
Ceiling	Lognormal	Bed pathways	7311.7892

4 Best-fit LoS distribution by NHS Trust

5 Supplementary

6 Look at COCIN data

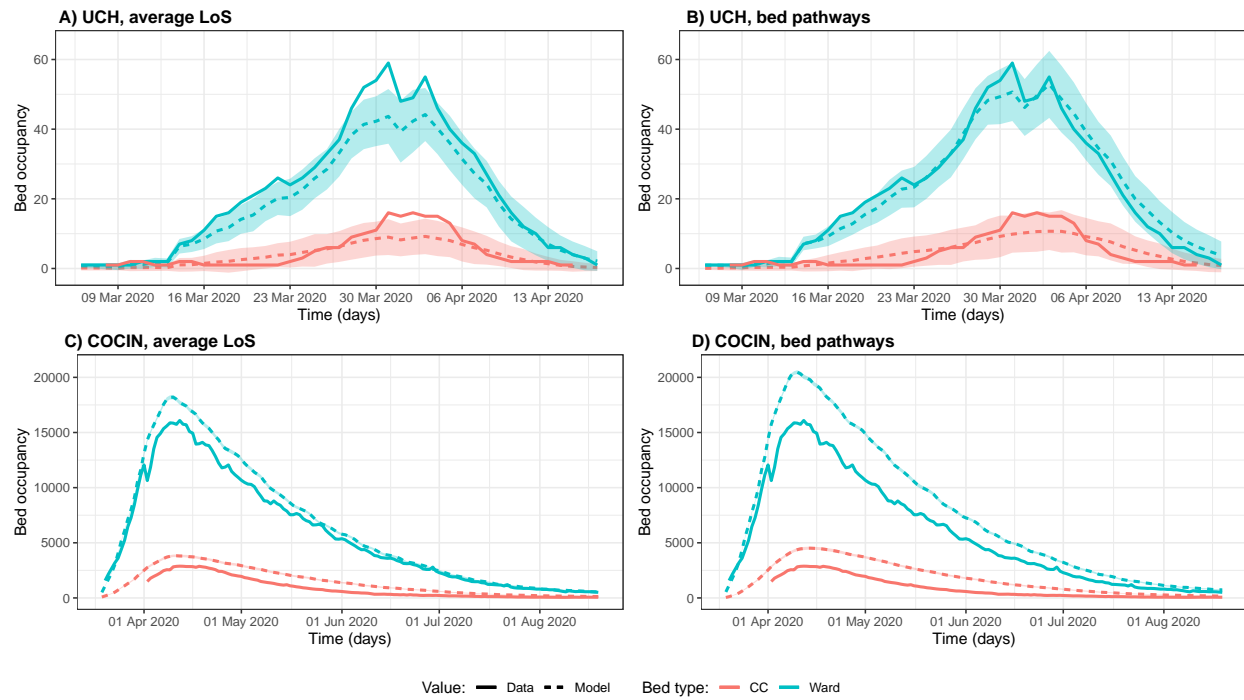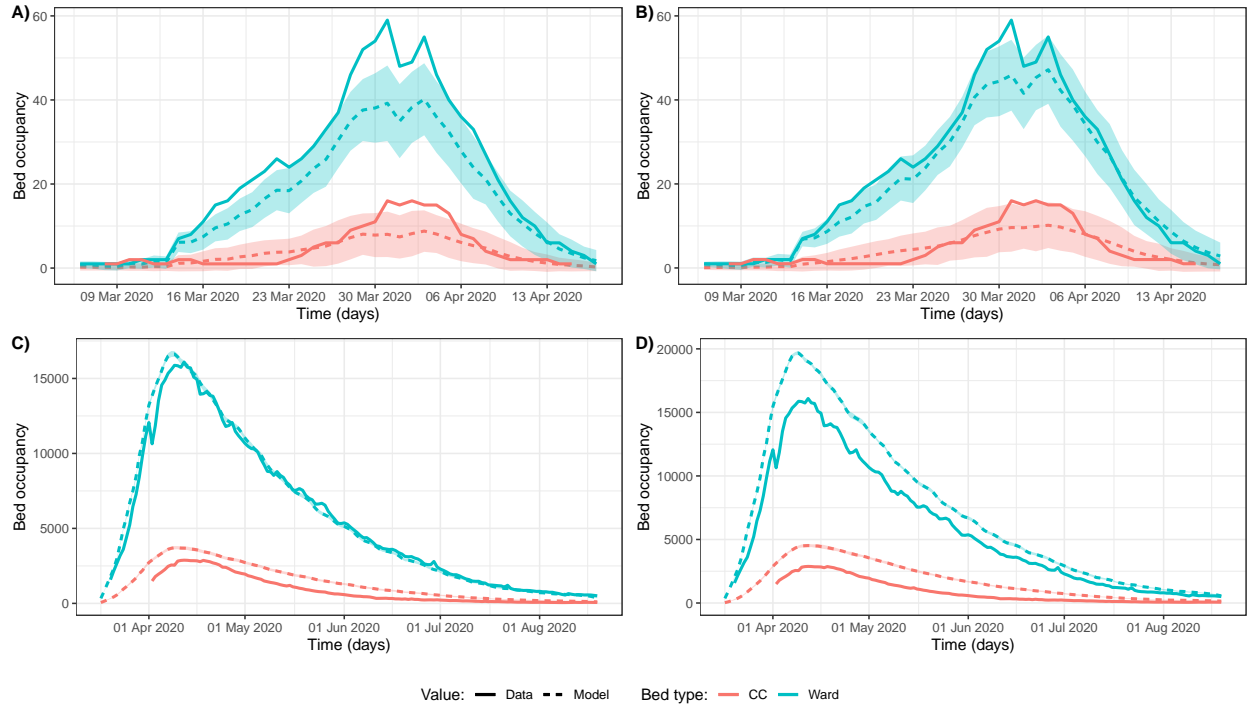## 6.1 Plot all the simulations together

6.2 Massive figure for both datasets

Table 2: Summary bed occupancy for the 2 models and the data. CC: critical care (ICU or HDU).
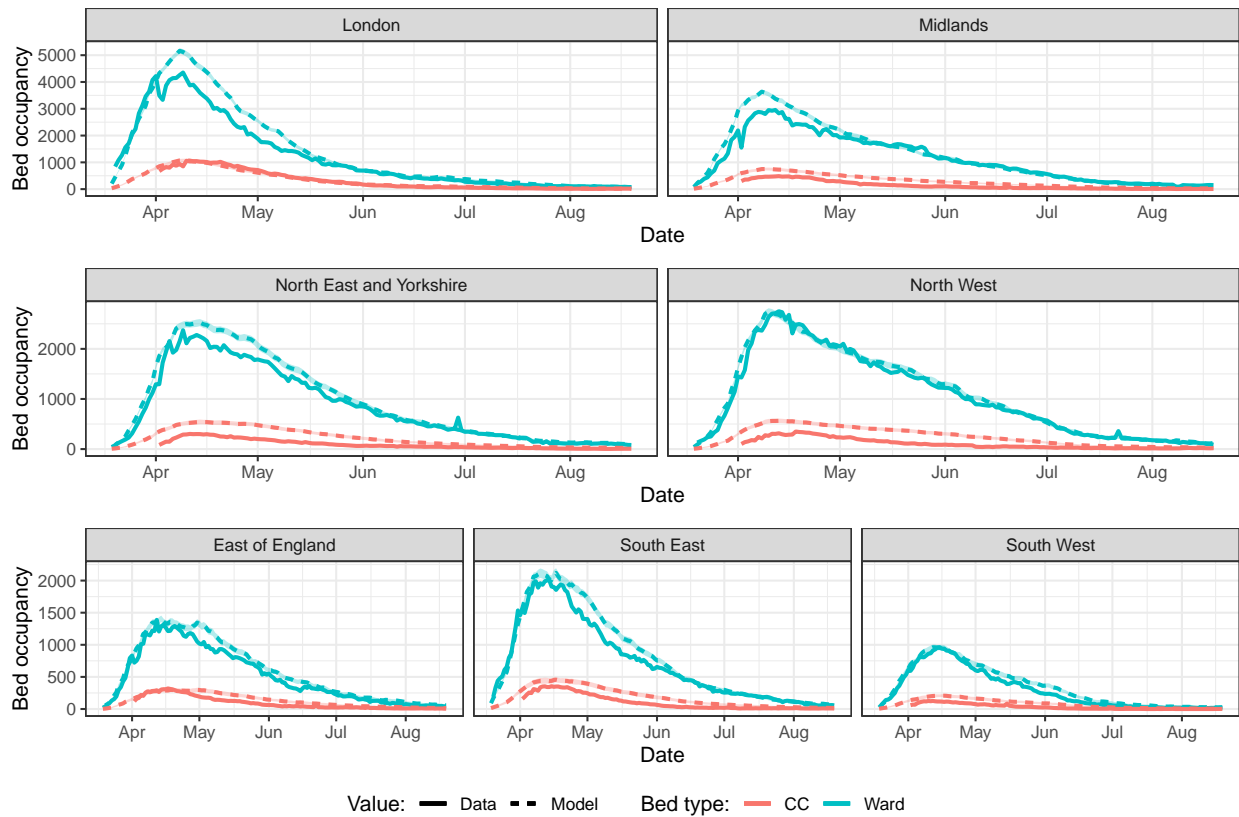
		Ward peak bed occupancy					CC peak bed occupancy				
Dataset	LoS used	Peak time	Peak IQR1	Peak IQR2	Mean beds	SD	Peak time	Peak IQR1	Peak IQR2	Mean beds	SD
UCH	Average LoS	2020-03-31	2020-03-30	2020-04-03	45.92	3.506646	2020-03-31	2020-03-30	2020-04-03	10.88	2.123842
UCH	Bed pathways	2020-04-03	2020-03-31	2020-04-03	54.39	4.059893	2020-04-02	2020-03-31	2020-04-04	12.73	2.505973
UCH	Data	2020-03-31	NA	NA	59.00	NA	2020-03-31	NA	NA	16.00	NA
COCIN	Average LoS	2020-04-10	2020-04-09	2020-04-10	18209.02	99.066449	2020-04-11	2020-04-10	2020-04-12	3835.37	56.255308
COCIN	Bed pathways	2020-04-10	2020-04-10	2020-04-10	20468.86	89.893092	2020-04-14	2020-04-13	2020-04-15	4529.52	65.046600
COCIN	Data	2020-04-12	NA	NA	16093.00	NA	2020-04-12	NA	NA	2881.00	NA

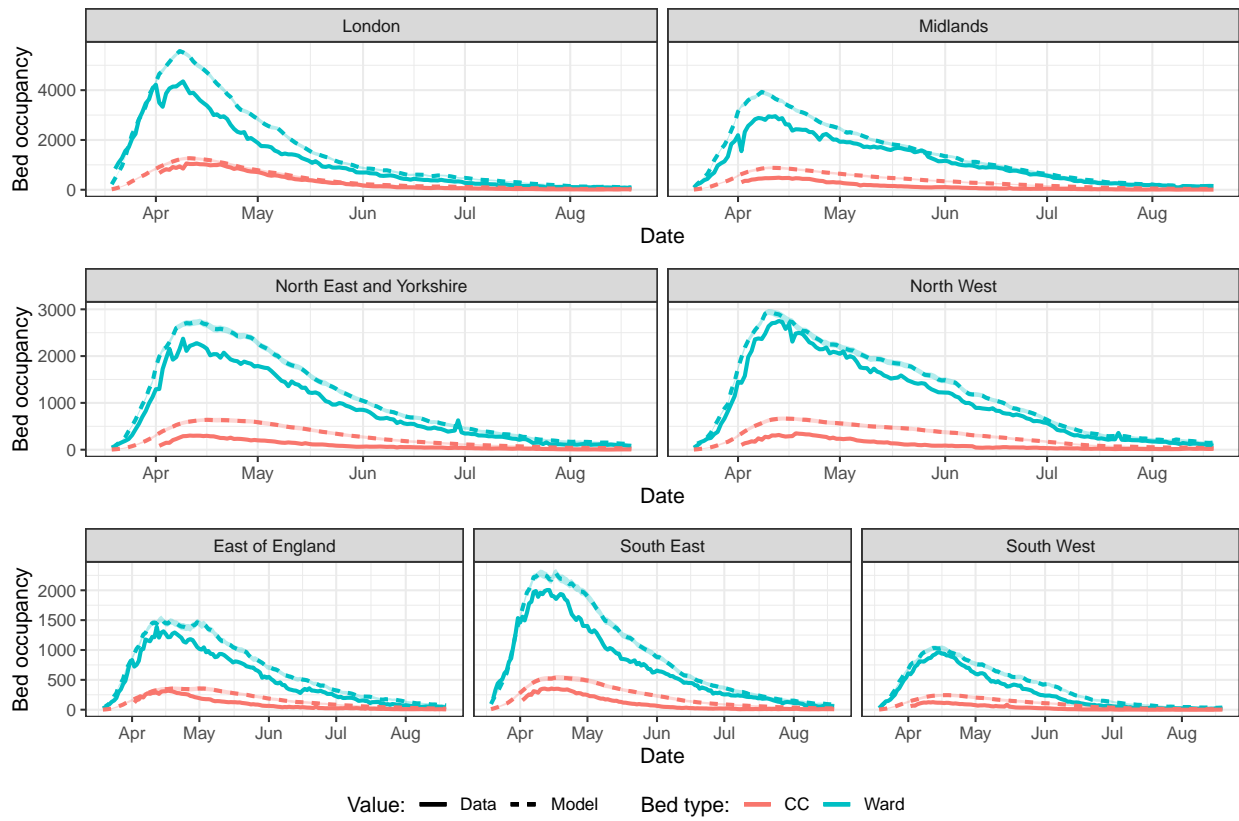## 6.3 Supplementary - Massive figure for both datasets, round instead of ceiling
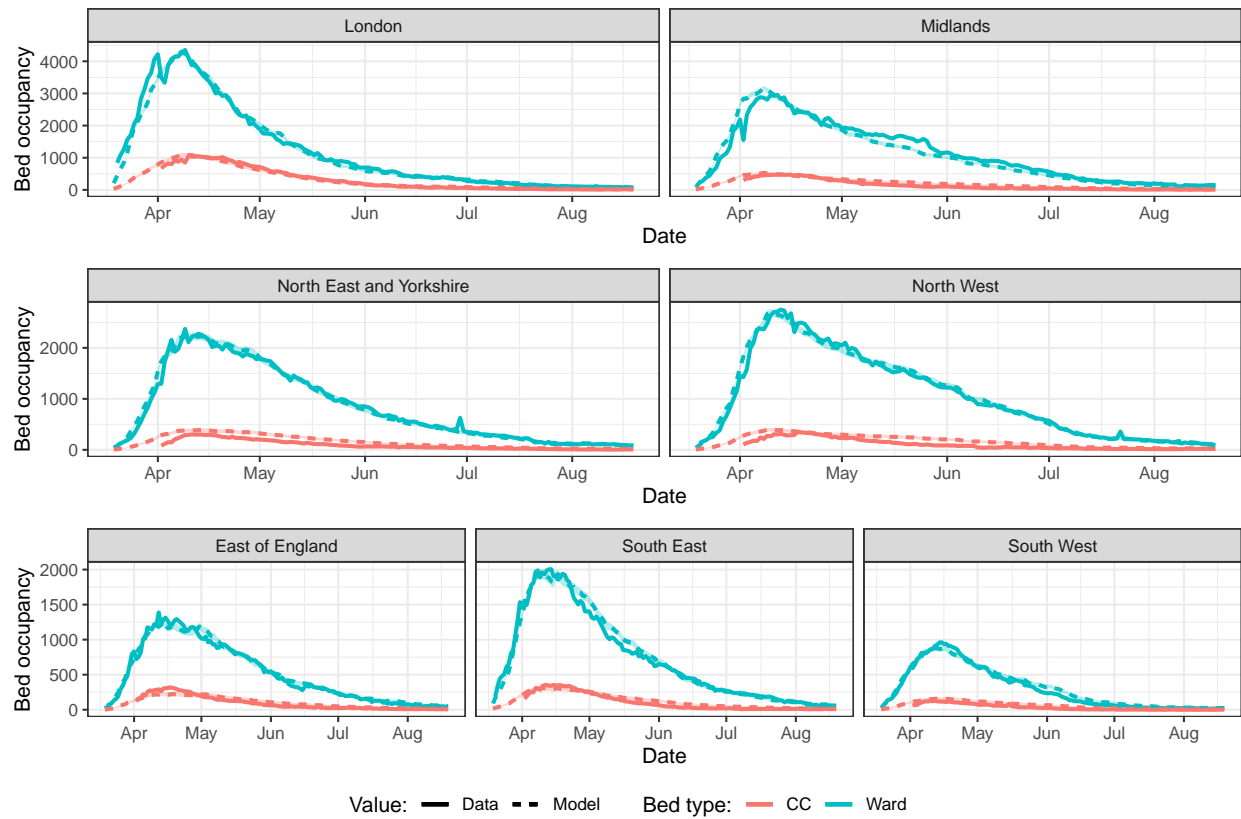
6.4 Summary table of peaks

6.5 By region

6.6 By region (full pathways)

6.7 Plot fit by region
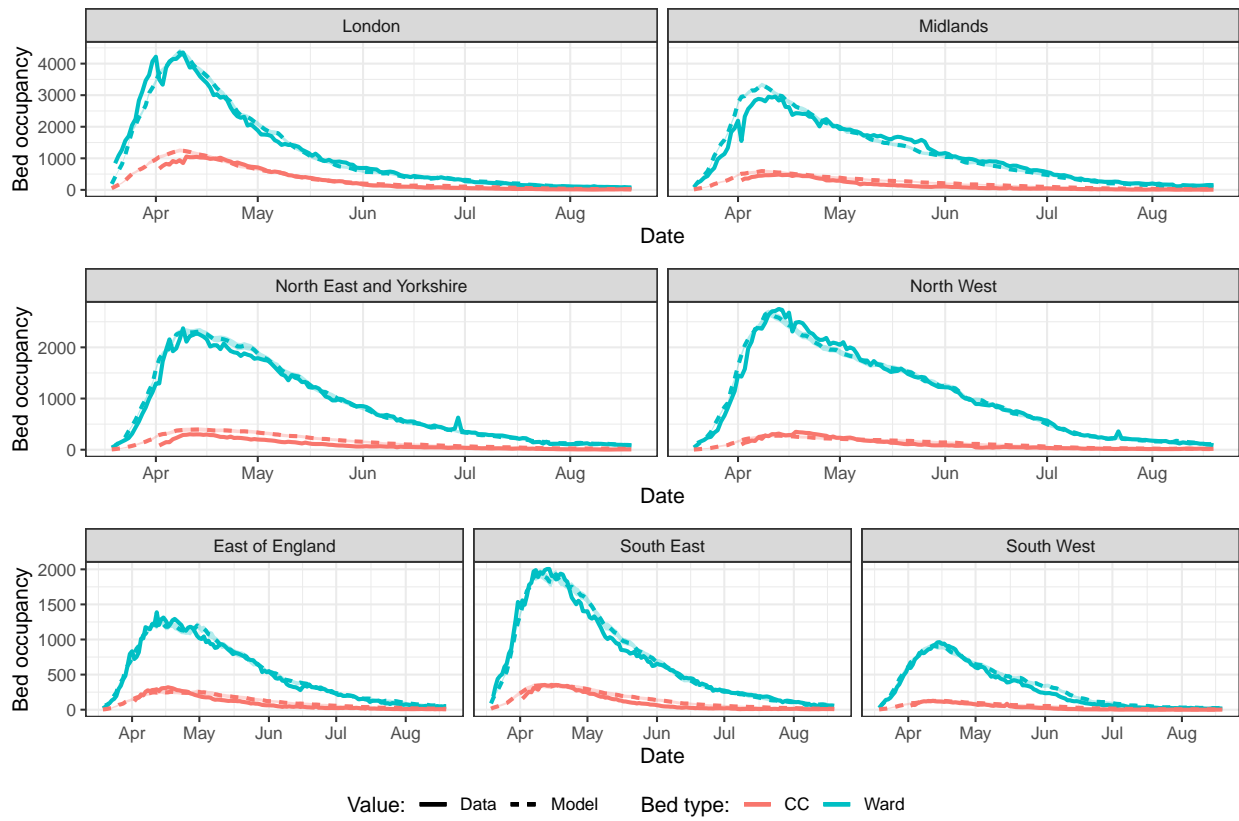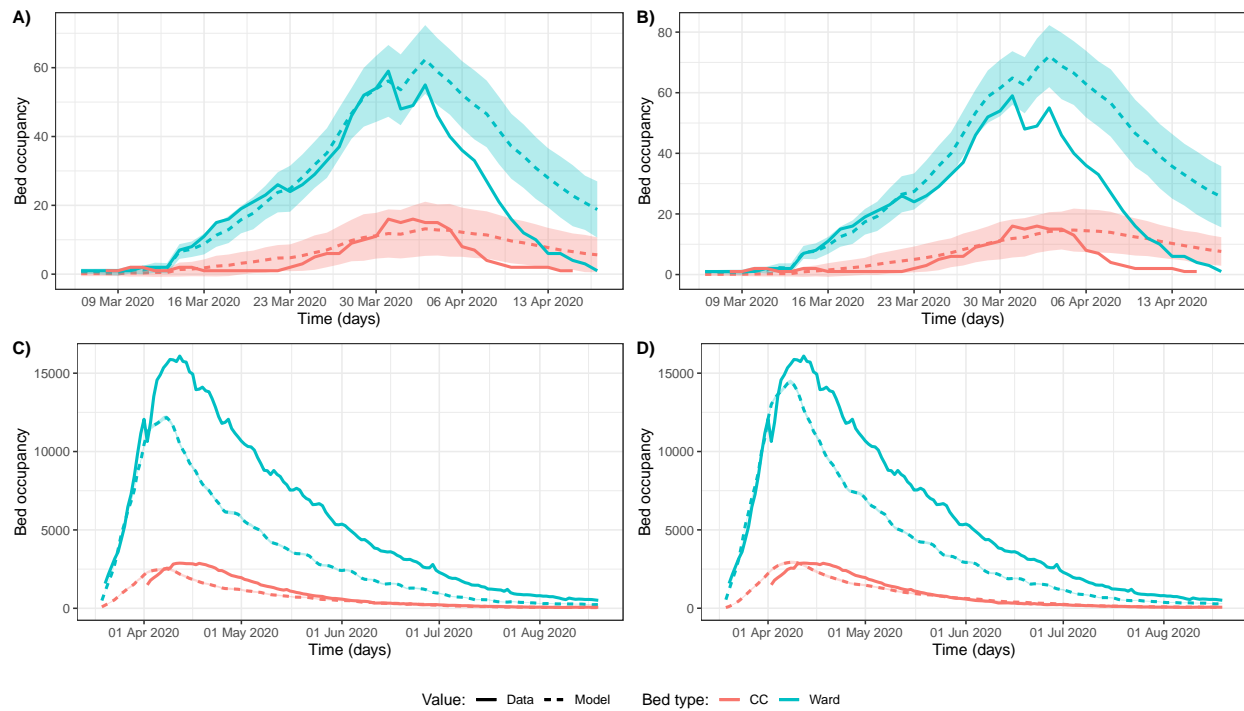
6.8 Plot fit by region (proba)

Table 3: Squared difference between model predicted occupancy and data. CC: critical care (ICU or HDU).

NHS region	Average LoS	Full pathways	Best fit LoS	Best fit prop to CC
East of England	22.00	62.50	6.42	6.99
London	262.51	553.09	48.90	67.23
Midlands	173.03	356.06	69.98	81.66
North East and Yorkshire	85.29	207.31	17.86	23.25
North West	56.58	142.66	21.32	17.60
South East	47.08	125.04	12.76	13.95
South West	11.16	28.10	4.46	4.16

6.9 Massive figure for both datasets, LoS flipped between datasets

6.10 Supplementary table - sq diff