Patient pathways paper - results

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1 Setup

We load packages, pathways data, and model results.

2 Visualise pathways

3 Try looking at uclh true occupancy
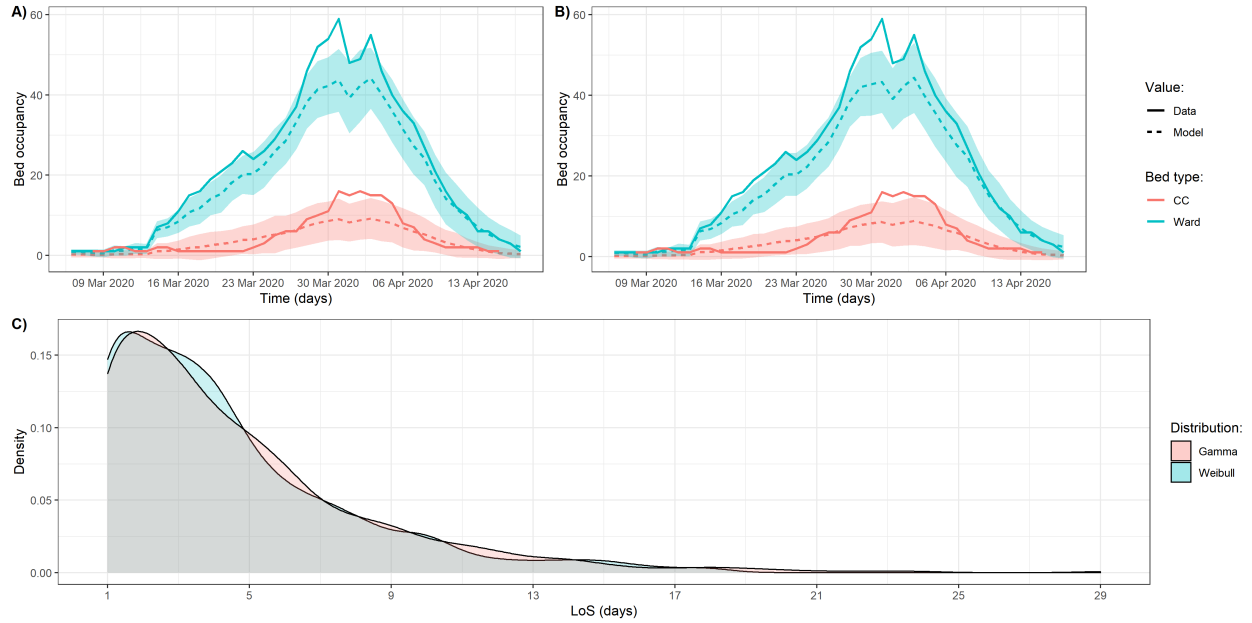
3.1 Plot all the simulations together

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

```
##
## FALSE   TRUE
##  0.11   0.89
```

Table 1: Squared difference between model results for average LoS or full pathways, and Weibull or Gamma distribution.

Rounding	Distribution	LoS used	Squared difference
Round	Weibull	Average LoS	2674.6400
Round	Weibull	Full pathways	965.3542
Round	Gamma	Average LoS	2629.7358
Round	Gamma	Full pathways	948.7876
Ceiling	Weibull	Average LoS	1431.0788
Ceiling	Weibull	Full pathways	586.7672
Ceiling	Gamma	Average LoS	1446.5995
Ceiling	Gamma	Full pathways	576.1261

3.2 Sensitivity: run with Gamma instead of default Weibull & round instead of ceiling

4 Look at COCIN data

4.1 Plot all the simulations together

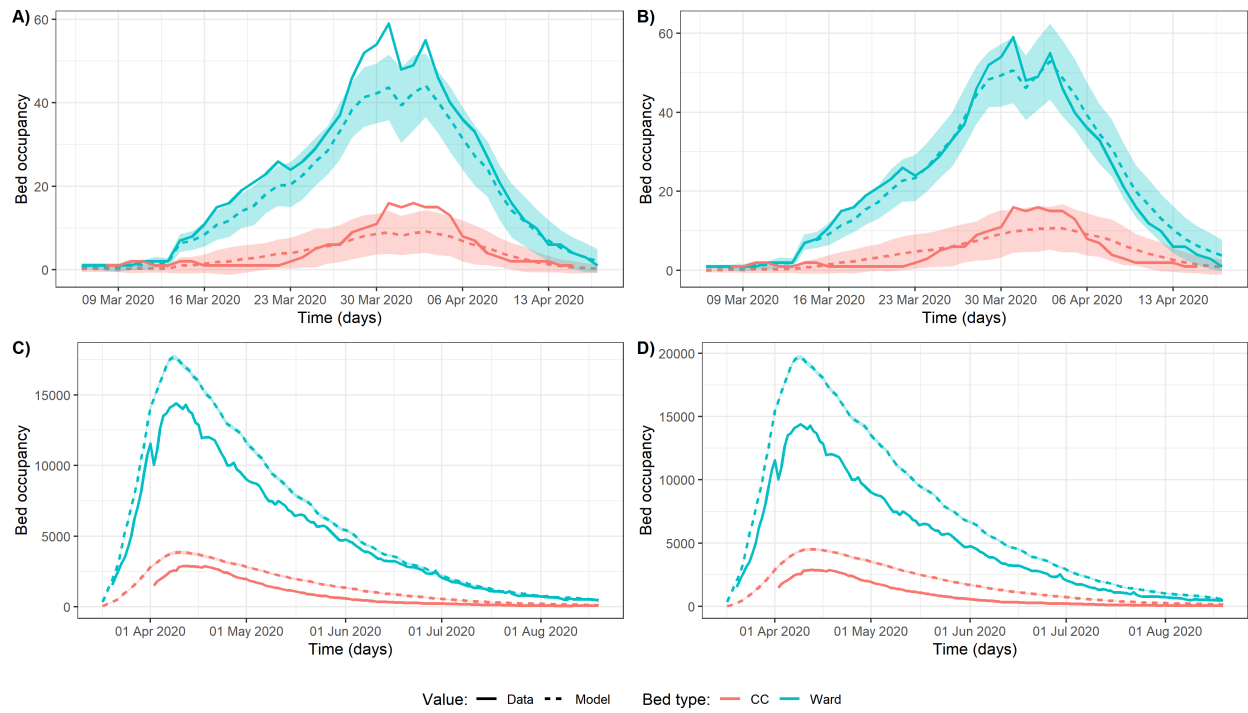## 4.2 Massive figure for both datasets

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 IQR	Mean beds	SD	Peak time	Peak IQR	Mean beds	SD
UCLH	Average LoS	2020-03-31	4	45.92	3.506646	2020-03-31	4.00	10.88	2.123842
UCLH	Full pathways	2020-04-03	3	54.39	4.059893	2020-04-02	4.00	12.73	2.505973
UCLH	Data	2020-03-31	NA	59.00	NA	2020-03-31	NA	16.00	NA
COCIN	Average LoS	2020-04-08	1	17662.69	93.624513	2020-04-10	1.00	3858.71	64.317755
COCIN	Full pathways	2020-04-09	0	19691.74	96.592617	2020-04-13	1.25	4529.16	60.369689
COCIN	Data	2020-04-09	NA	14406.00	NA	2020-04-12	NA	2881.00	NA

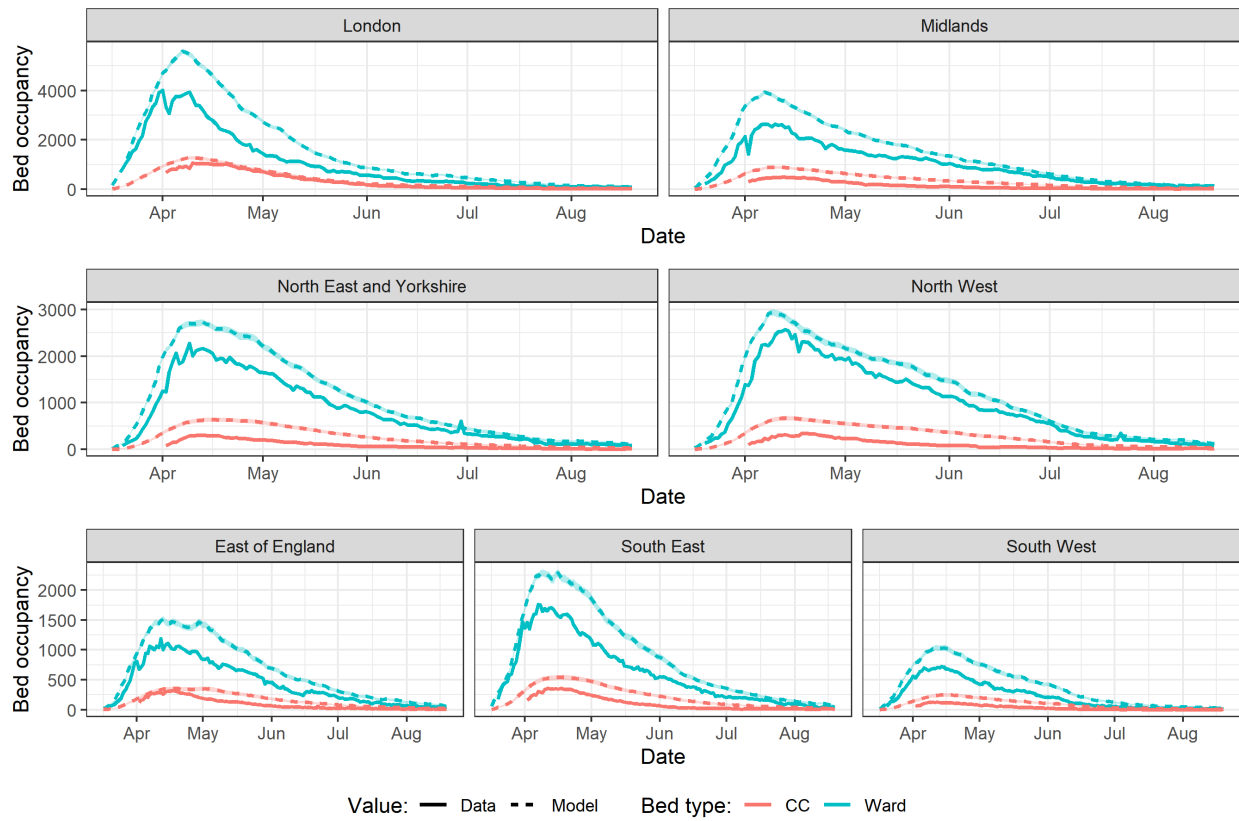## 4.3 Supplementary - Massive figure for both datasets, round instead of ceiling
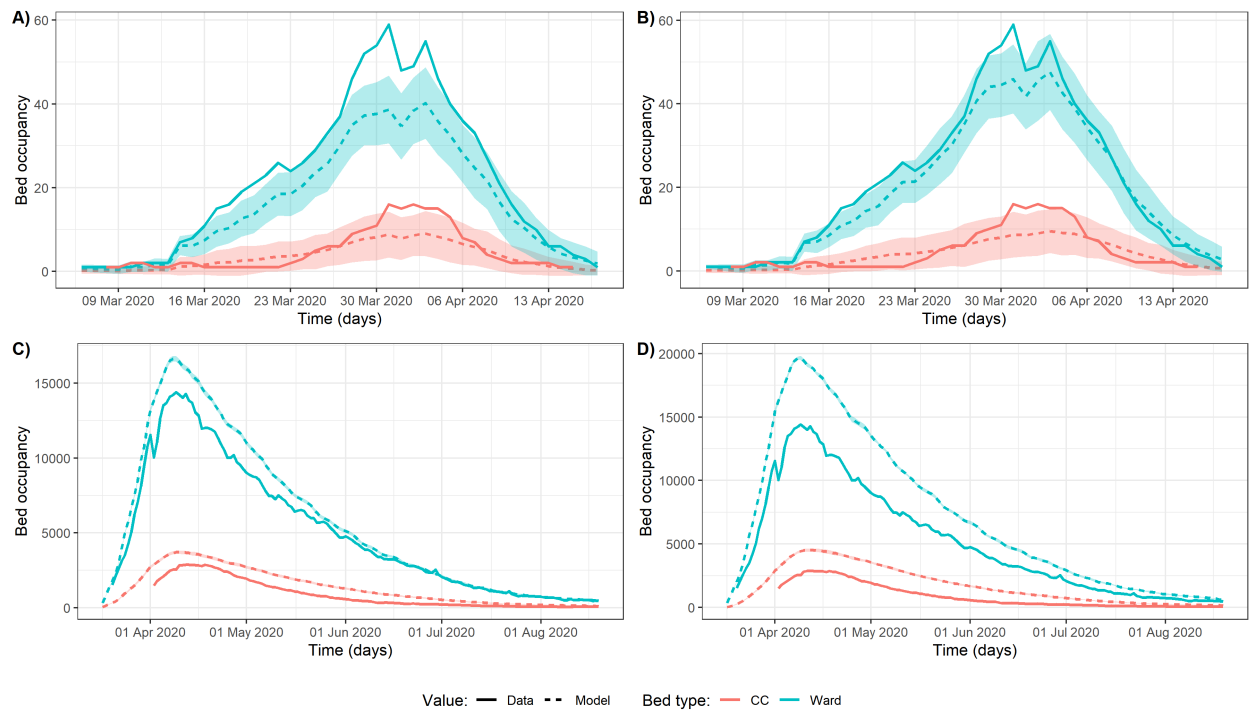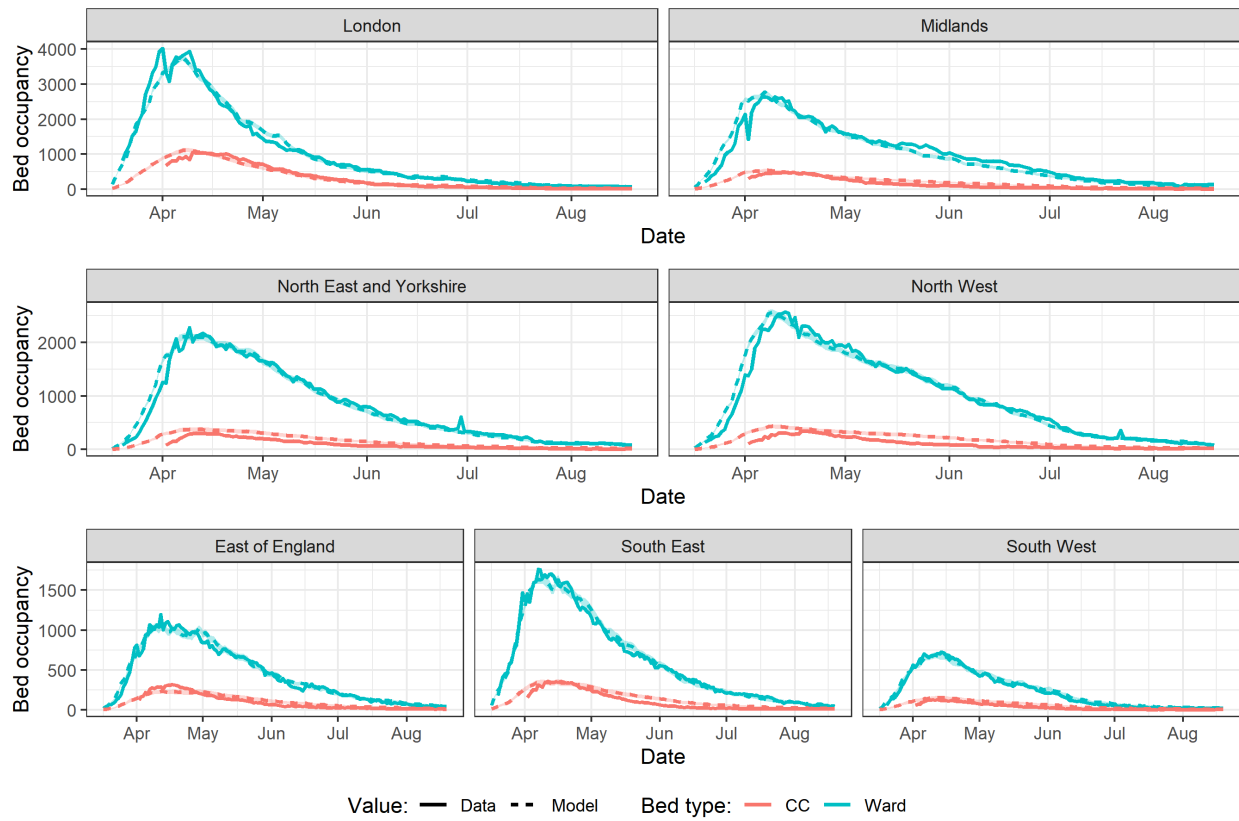
4.4 Summary table of peaks

4.5 By region
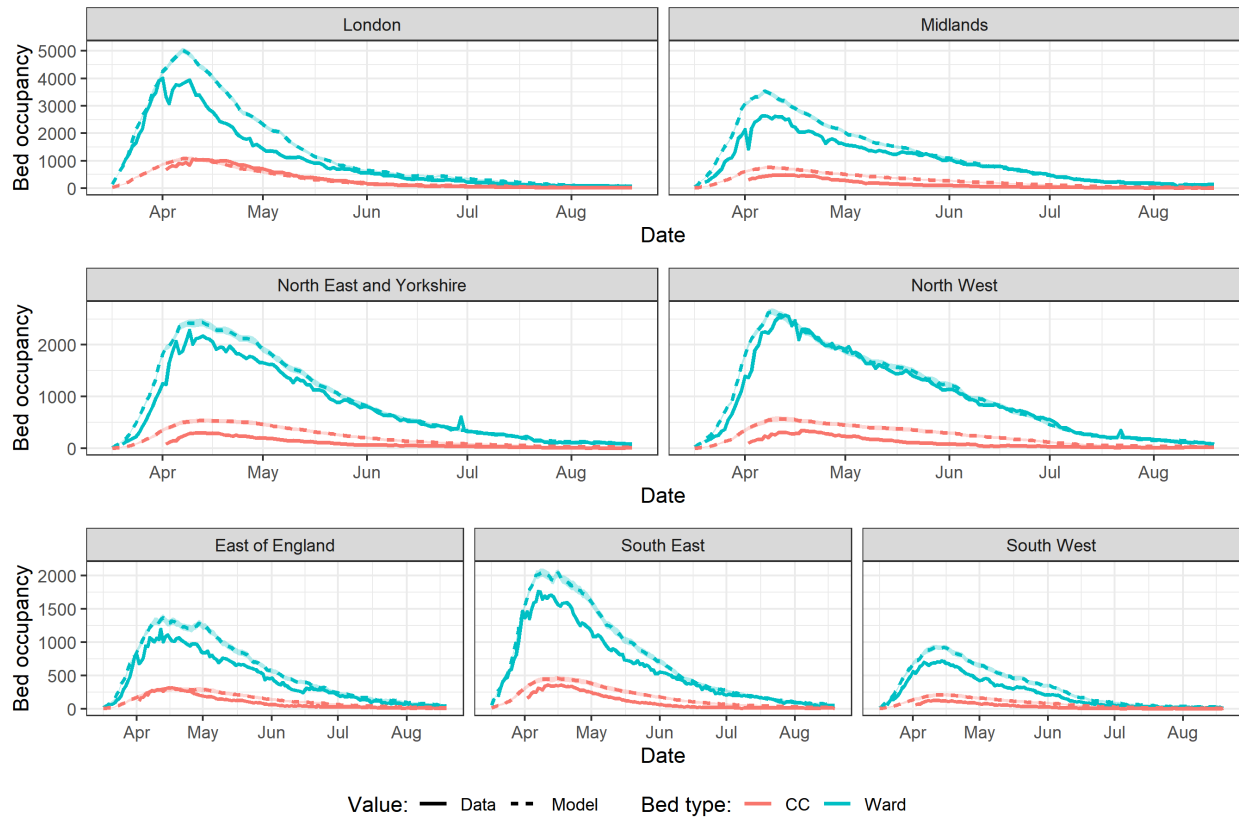
4.6   By region (full pathways)

4.7   Plot fit by region
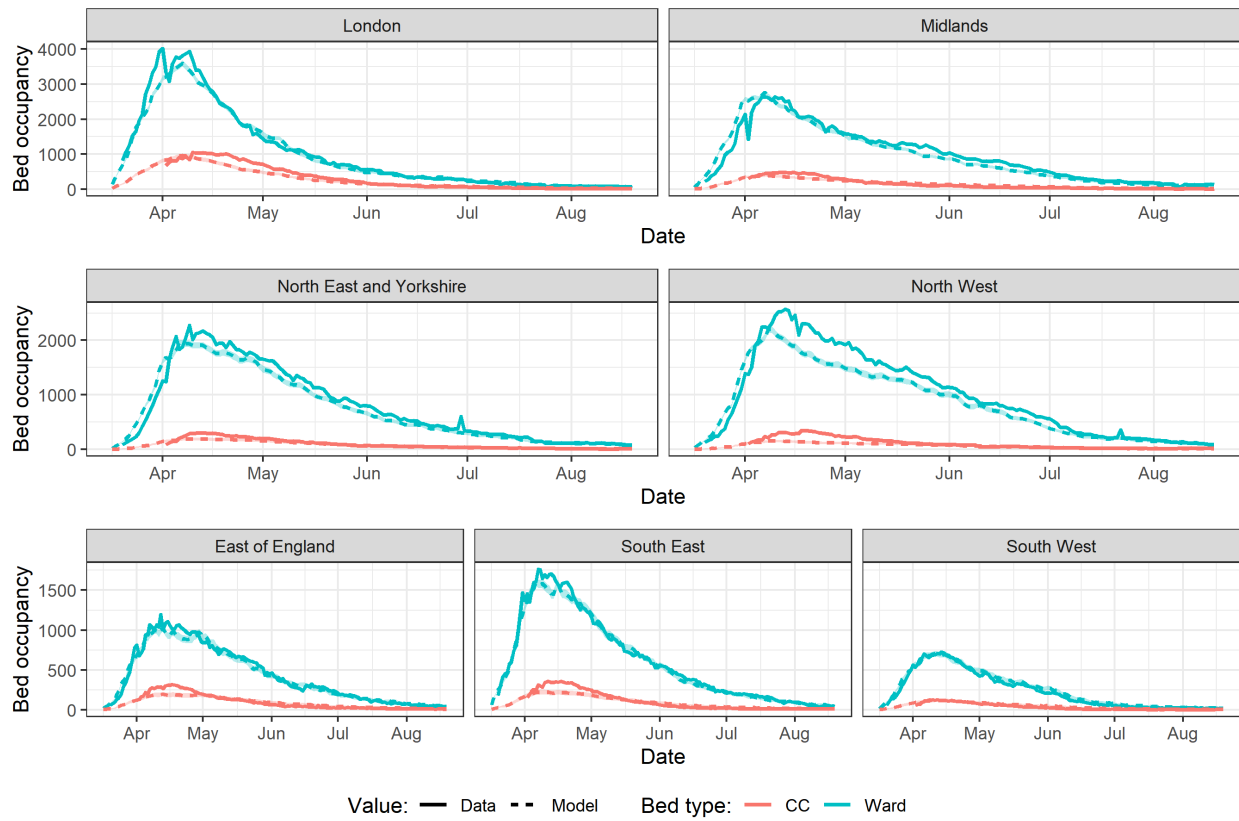
4.8   Plot fit by region (proba)

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	47.21	125.95	5.96	7.33
London	446.20	1036.47	42.82	67.06
Midlands	274.01	633.18	56.77	57.66
North East and Yorkshire	95.16	266.22	23.81	31.36
North West	70.04	201.87	37.56	94.11
South East	84.94	237.78	8.22	9.78
South West	27.81	64.99	2.17	1.79

4.9 Massive figure for both datasets, LoS flipped between datasets
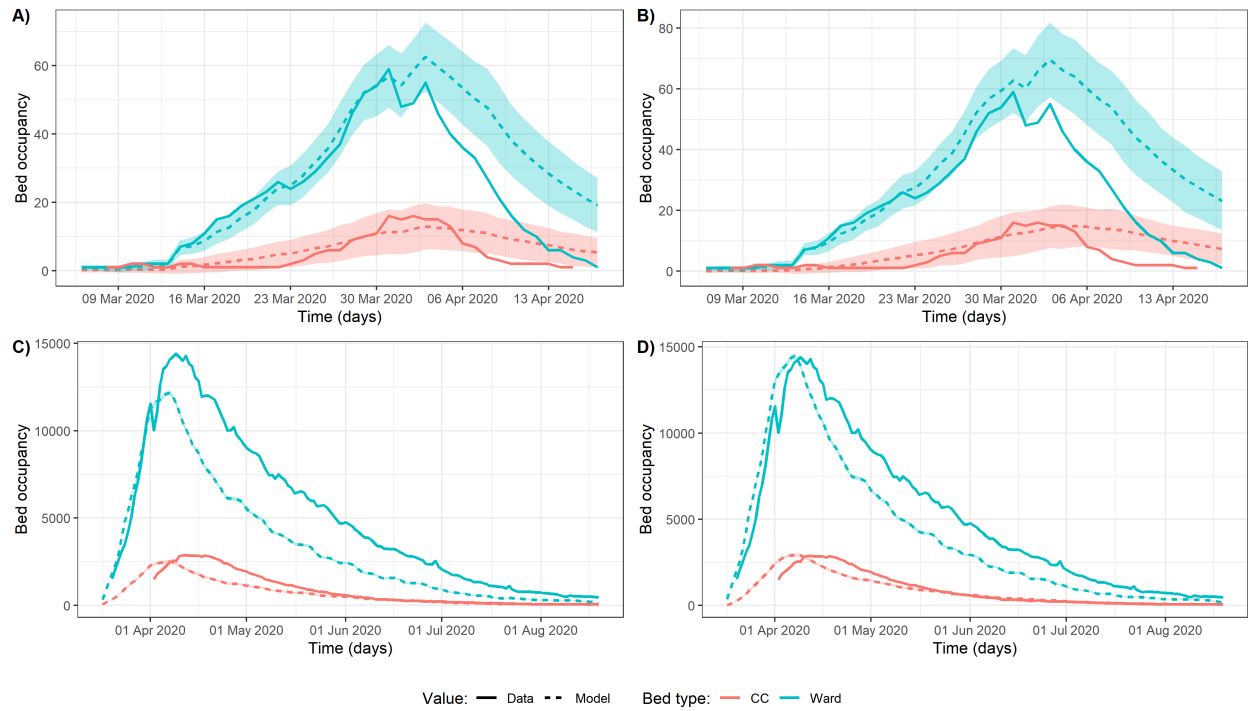
4.10 Supplementary table - sq diff