Florida (Non-Spatial Analysis) Results

2022-08-25

Models 1-3: 77 timepoints

- Model 1: Unconstrained growth; no interventions
- Model 2: Baseline intensity plus linear time component beginning on first intervention date (school closure)
- Model 3: Baseline intensity plus two linear time components, beginning on respective intervention dates (school closure and state mandated stay-at-home-order)

Models 4-14: 184 timepoints

- Model 4: Baseline intensity plus two linear time components, beginning on respective intervention dates (school closure and state mandated stay-at-home-order)
- Model 5: Baseline intensity plus two linear time components, beginning on respective intervention dates (school closure and state mandated stay-at-home-order) and temporal basis splines of 3 degrees of freedom
- Model 6: Baseline intensity plus two linear time components, beginning on respective intervention dates (school closure and state mandated stay-at-home-order) and temporal basis splines of 4 degrees of freedom
- Model 7: Baseline intensity plus two linear time components, beginning on respective intervention dates (school closure and state mandated stay-at-home-order) and temporal basis splines of 5 degrees of freedom
- Model 8: Baseline intensity plus two linear time components, beginning on respective intervention dates (school closure and state mandated stay-at-home-order) and temporal basis splines of 6 degrees of freedom
- Model 9: Baseline intensity plus three linear time components, two beginning on respective intervention dates (school closure and state mandated stay-at-home-order) and one beginning on the end of the stay-at-home order
- Model 10: Baseline intensity plus three linear time components, two beginning on respective intervention dates (school closure and state mandated stay-at-home-order), one beginning on the end of the stay-at-home order and temporal basis splines of 3 degrees of freedom
- Model 11: Baseline intensity plus three linear time components, two beginning on respective intervention dates (school closure and state mandated stay-at-home-order), one beginning on the end of the stay-at-home order and temporal basis splines of 4 degrees of freedom
- Model 12: Baseline intensity plus three linear time components, two beginning on respective intervention dates (school closure and state mandated stay-at-home-order), one beginning on the end of the stay-at-home order and temporal basis splines of 5 degrees of freedom
- Model 13: Baseline intensity plus three linear time components, two beginning on respective intervention dates (school closure and state mandated stay-at-home-order), one beginning on the end of the stay-at-home order and temporal basis splines of 6 degrees of freedom
- Model 14: Baseline intensity plus three linear time components, two beginning on respective intervention dates (school closure and state mandated stay-at-home-order), one beginning on the end of the stay-at-home order and a temporal trigonometric term

Models 15: 121 timepoints

- Model 15: Baseline intensity, a temporal trigonometric term and proportion of population vaccinated (at least one vaccine shot) and proportion fully vaccinated (all doses prescribed by the initial vaccination protocol)

```
## Loading required package: Rcpp
```

```
## Loading required package: parallel
```

```
## Loading required package: compiler
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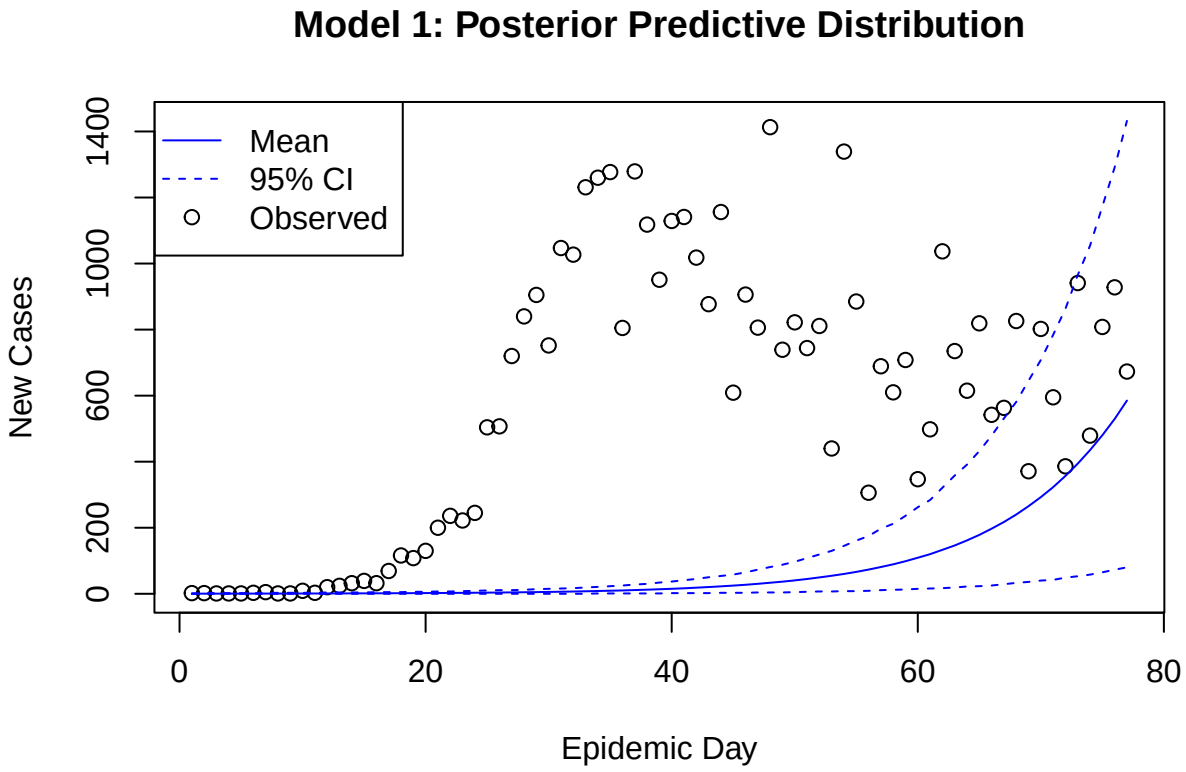
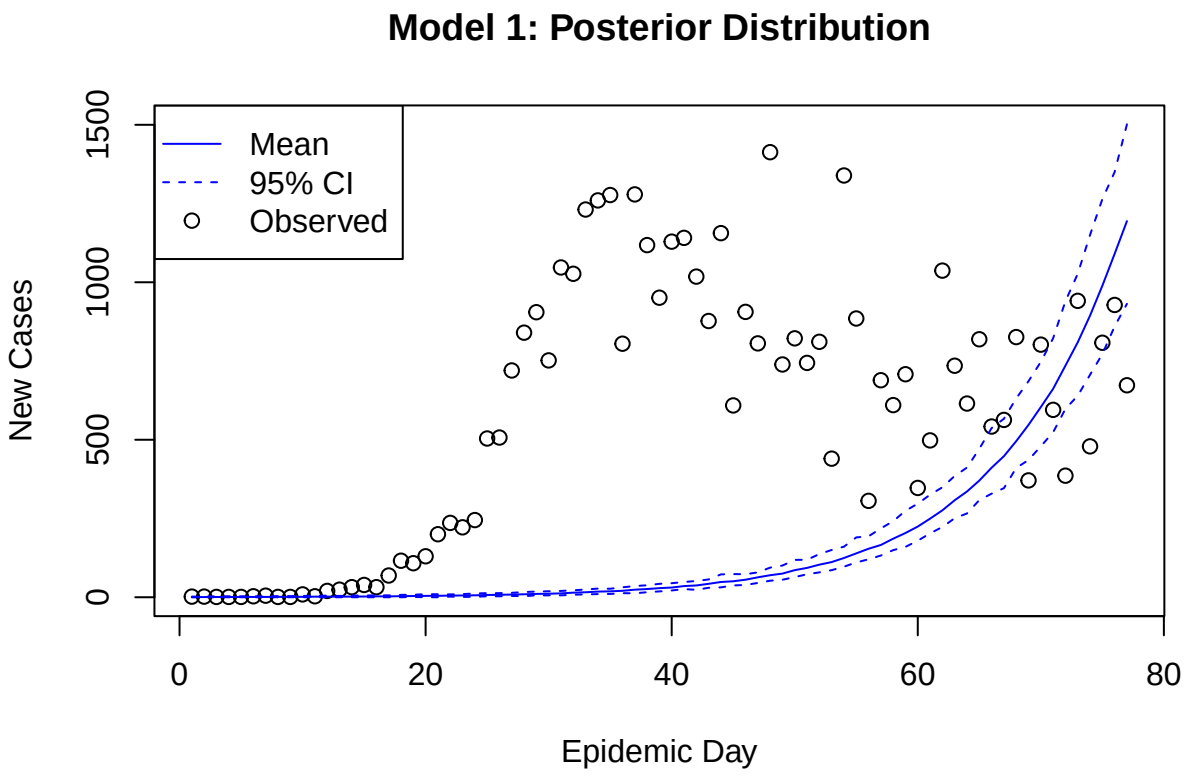
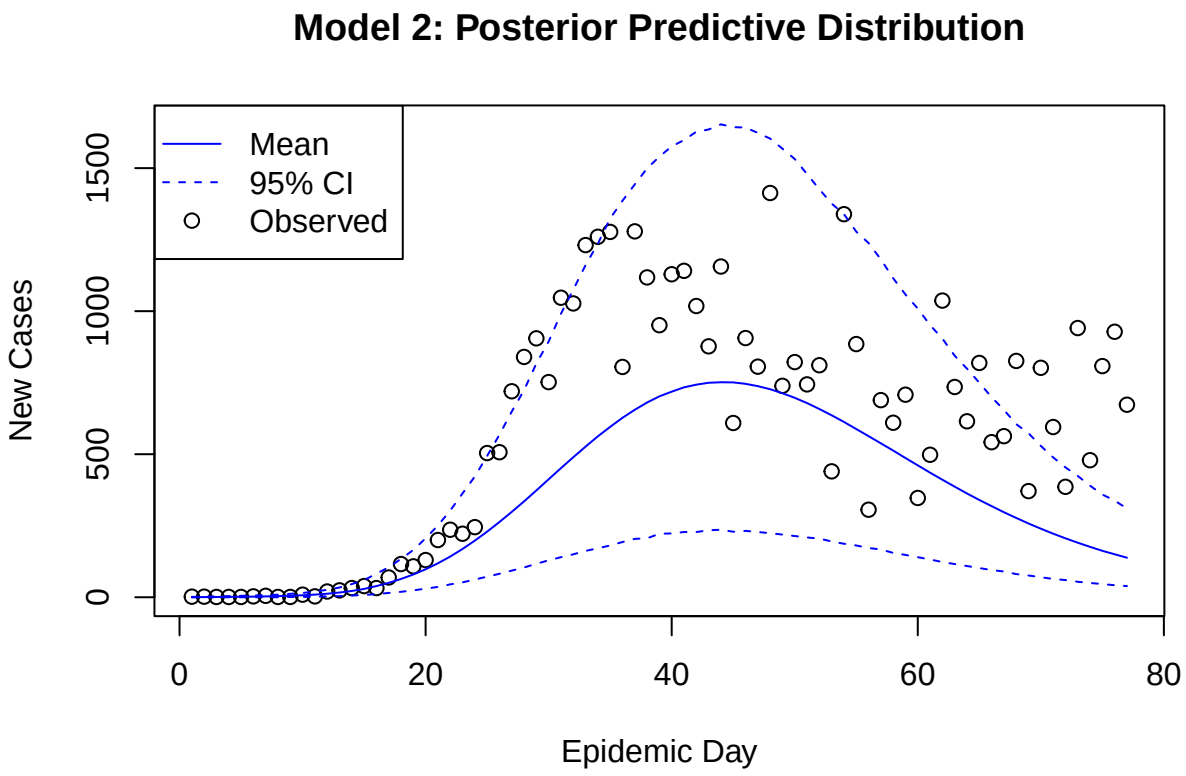
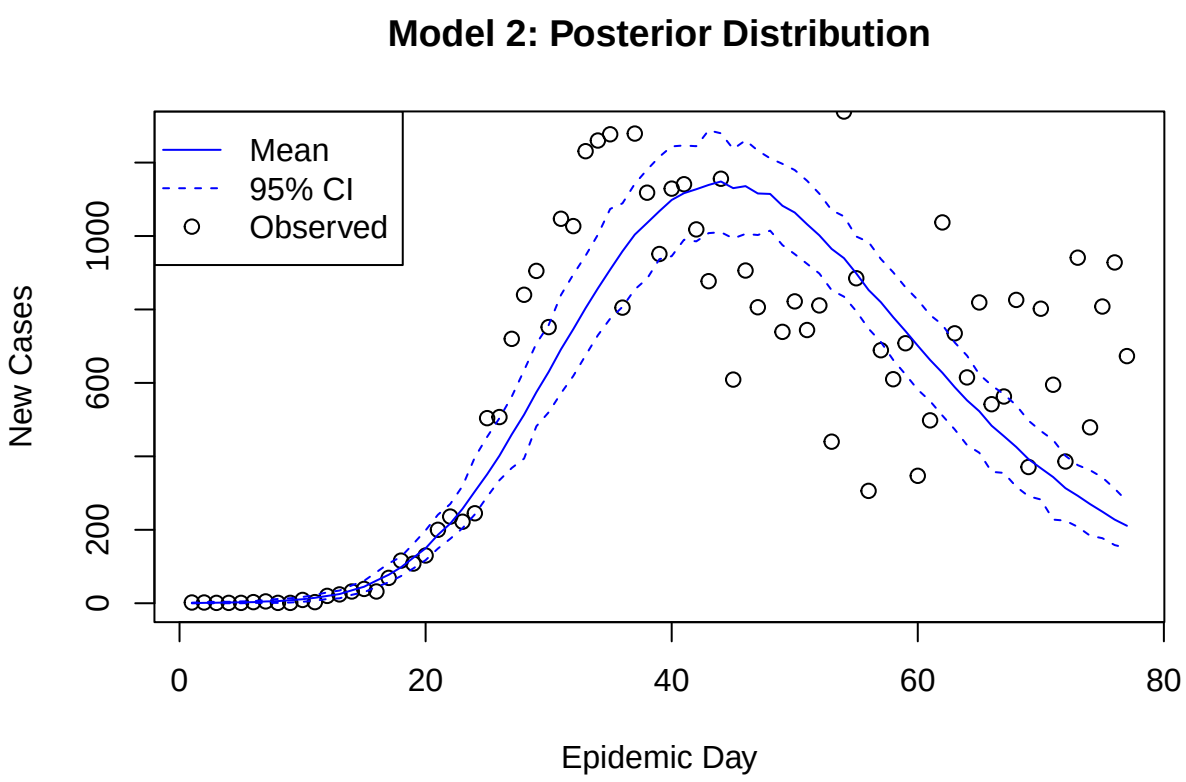
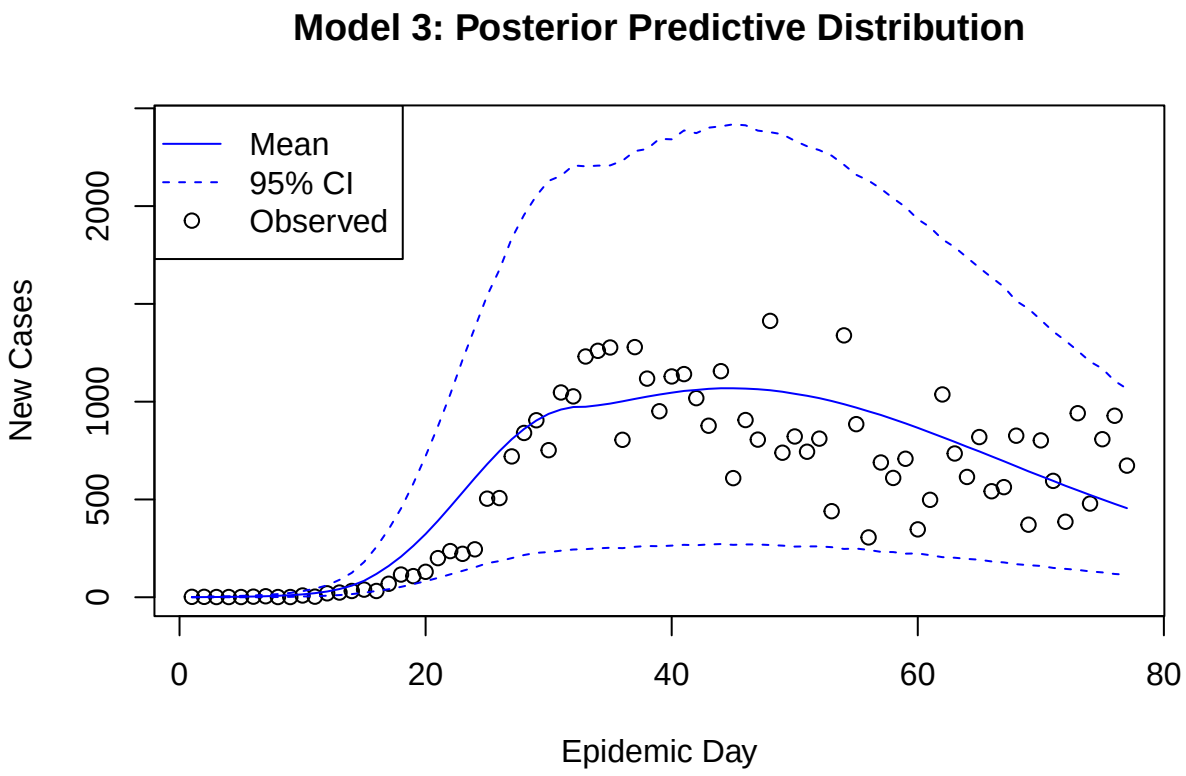
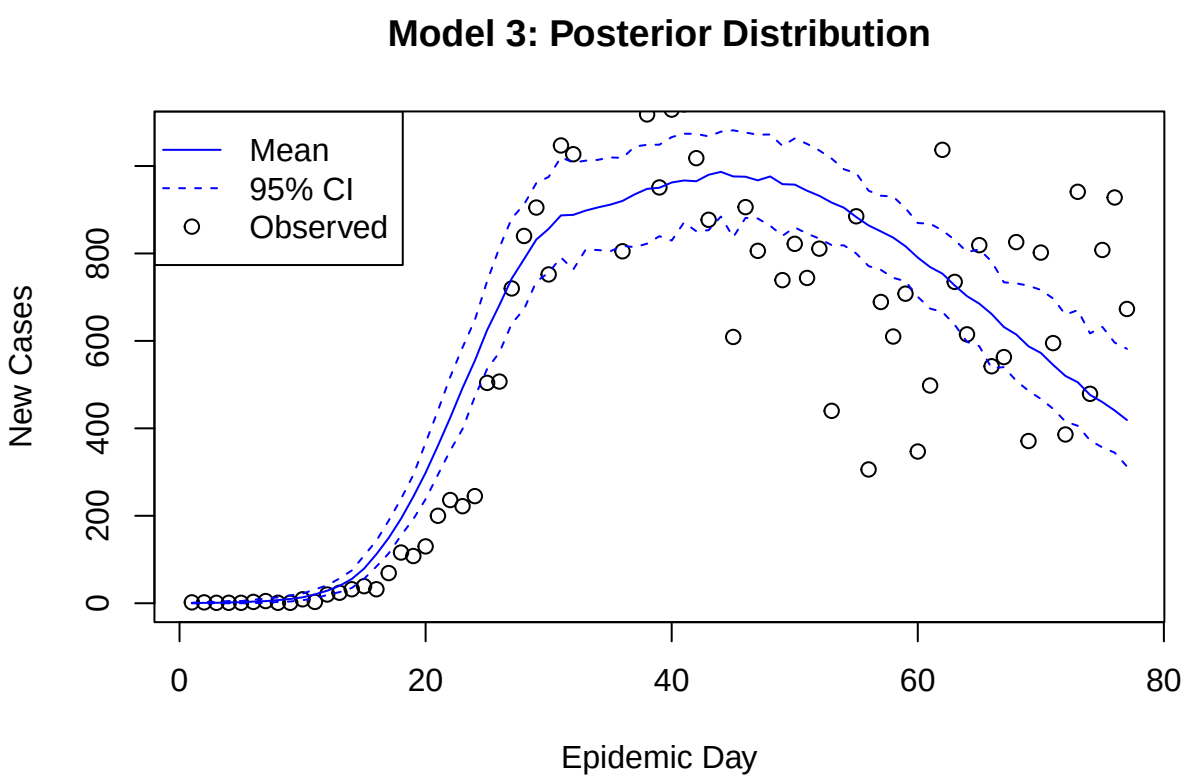


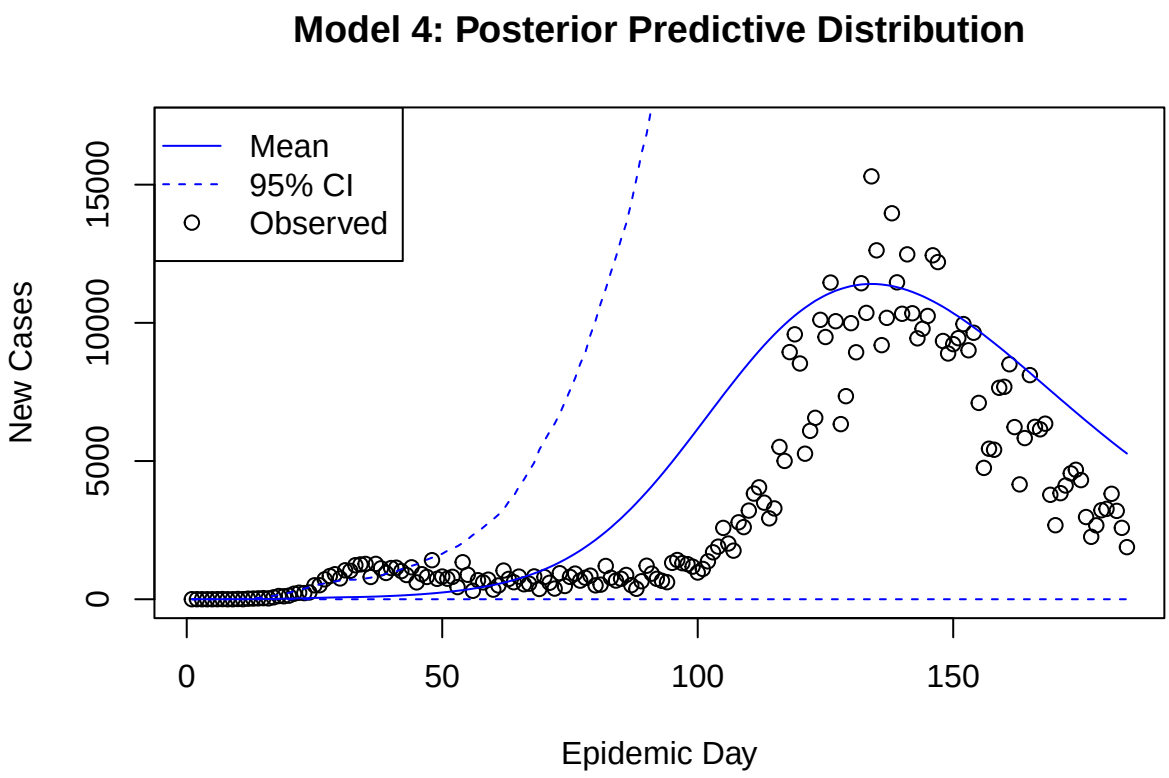

Model 1: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
500
1000
1500
0
20
40
60
80
Epidemic Day

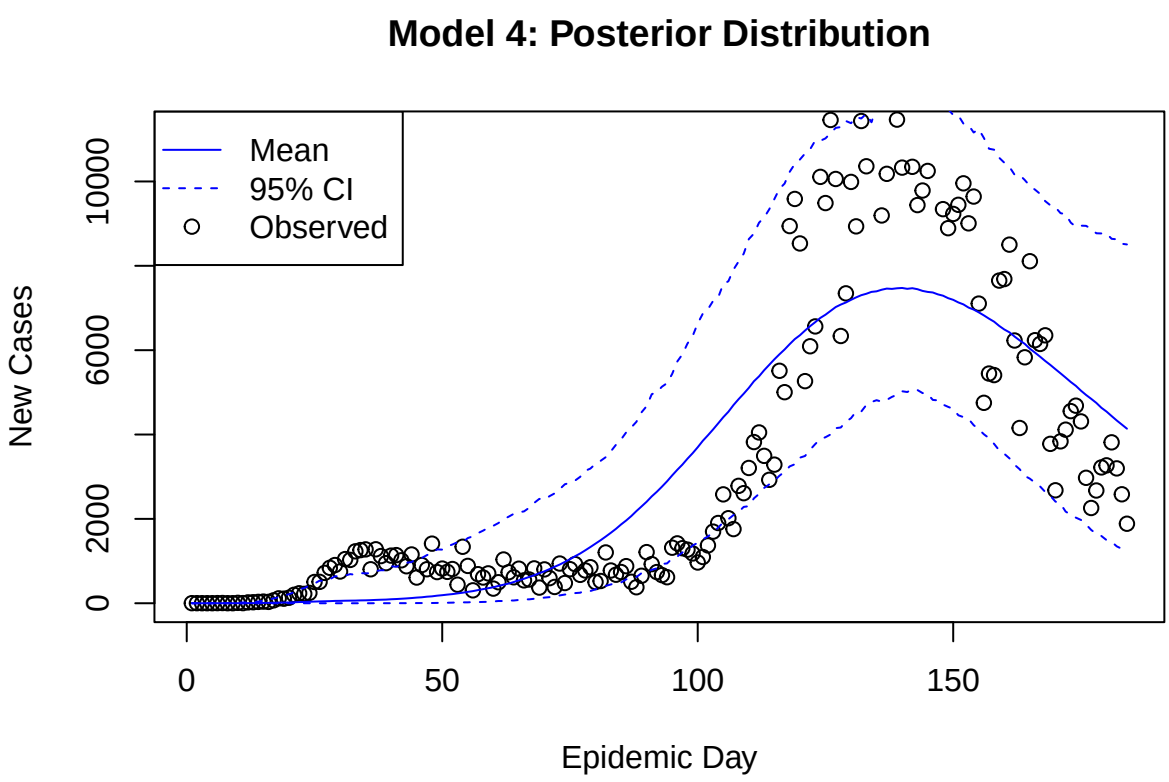

Model 2: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
500
1000
1500
0
20
40
60
80
Epidemic Day

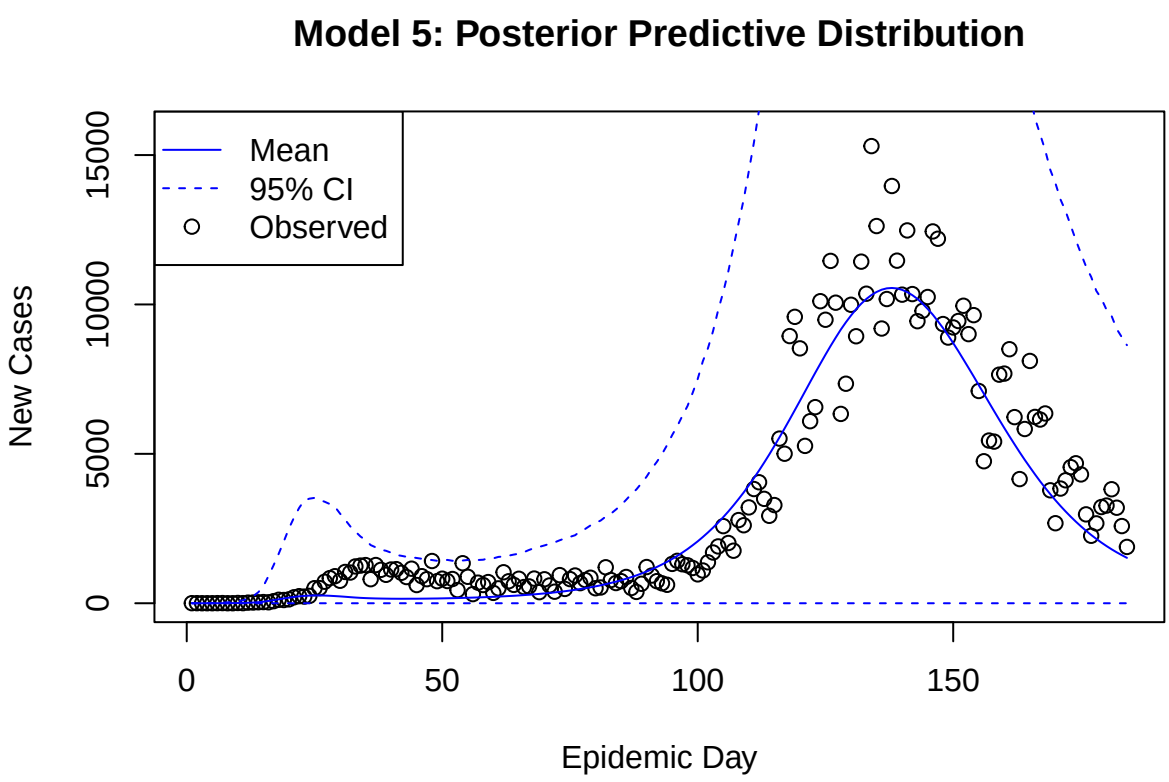

Model 2: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
200
600
1000
0
20
40
60
80
Epidemic Day

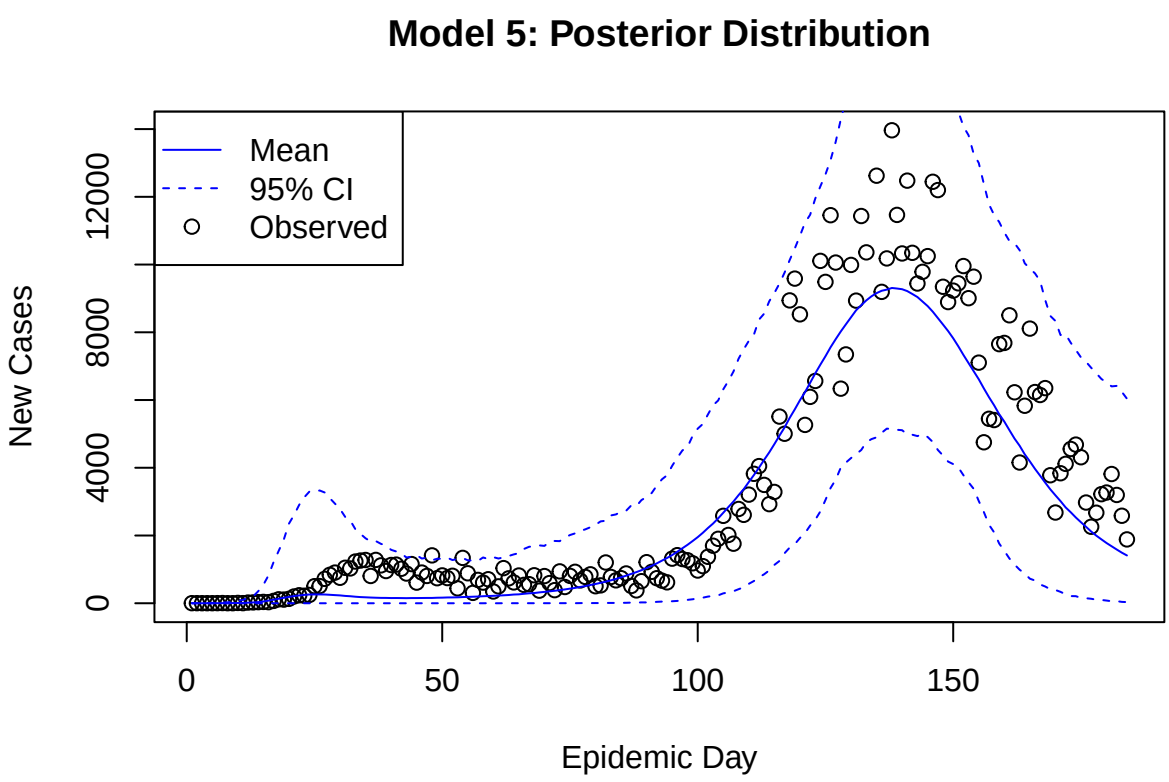

Model 3: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
500
1000
2000
0
20
40
60
80
Epidemic Day

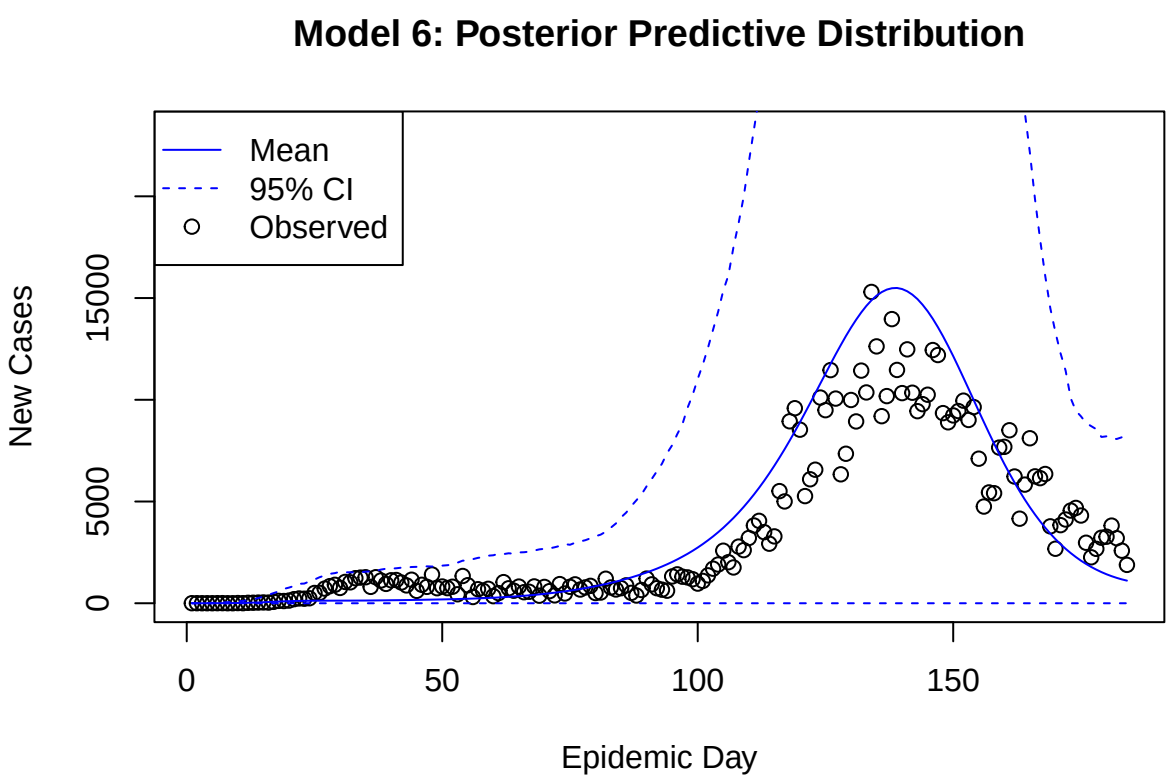

Model 3: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
200
400
600
800
0
20
40
60
80
Epidemic Day

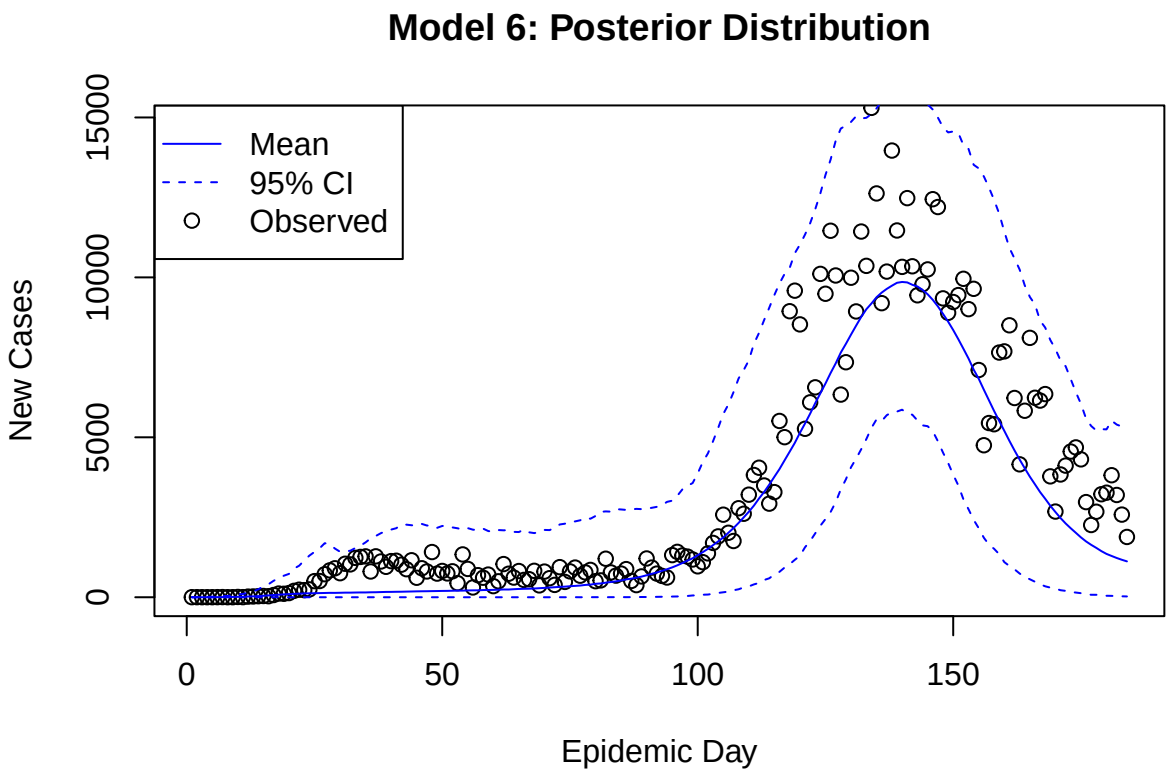

Model 4: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
5000
10000
15000
0
50
100
150
Epidemic Day

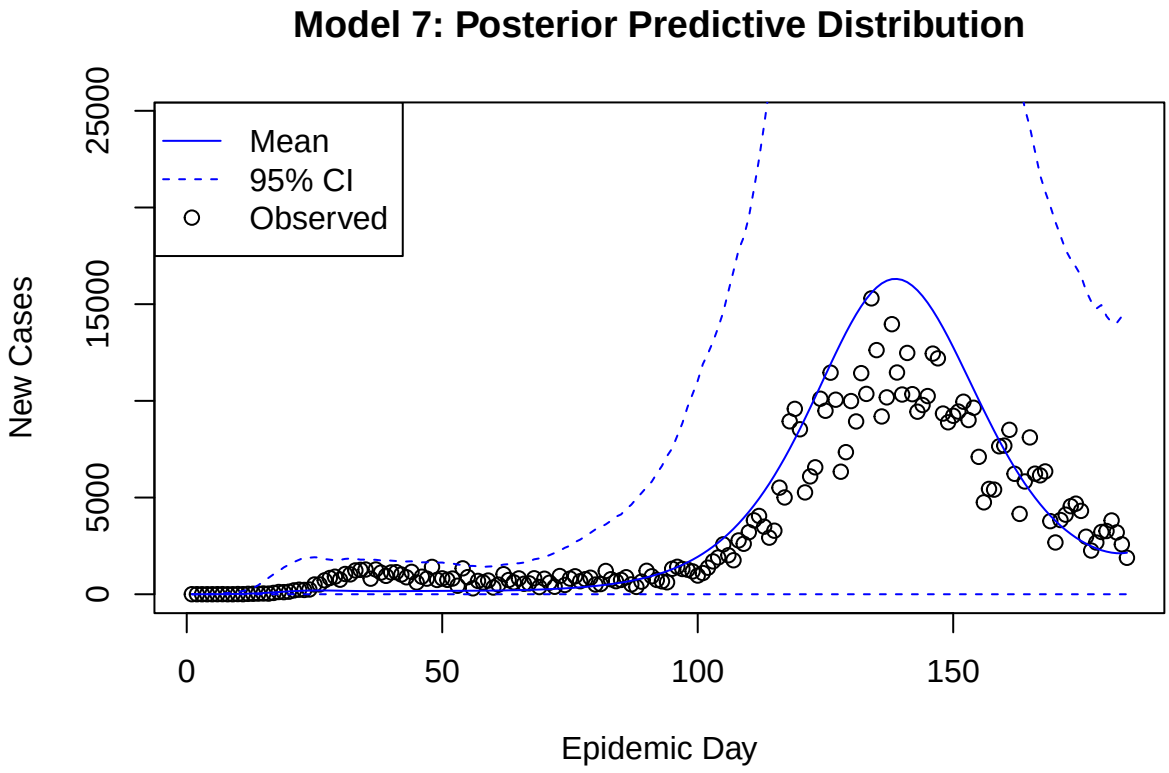

Model 4: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
2000
6000
10000
0
50
100
150
Epidemic Day

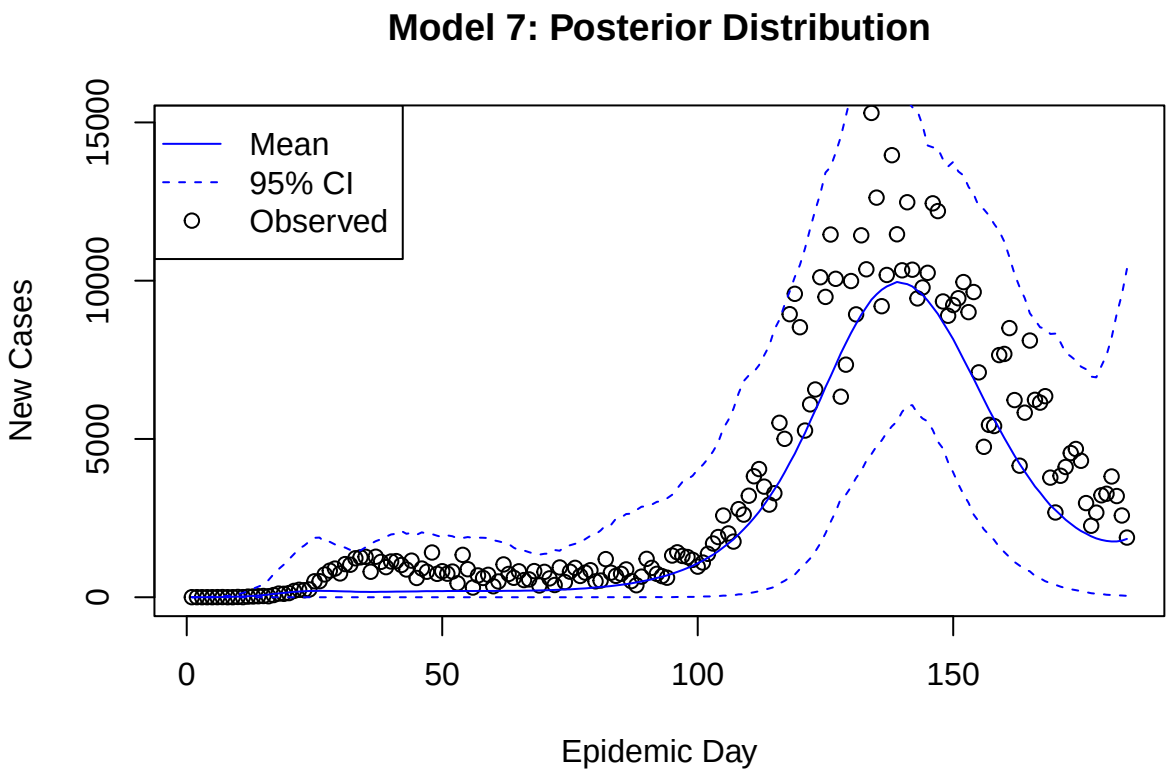

Model 5: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
5000
10000
15000
0
50
100
150
Epidemic Day

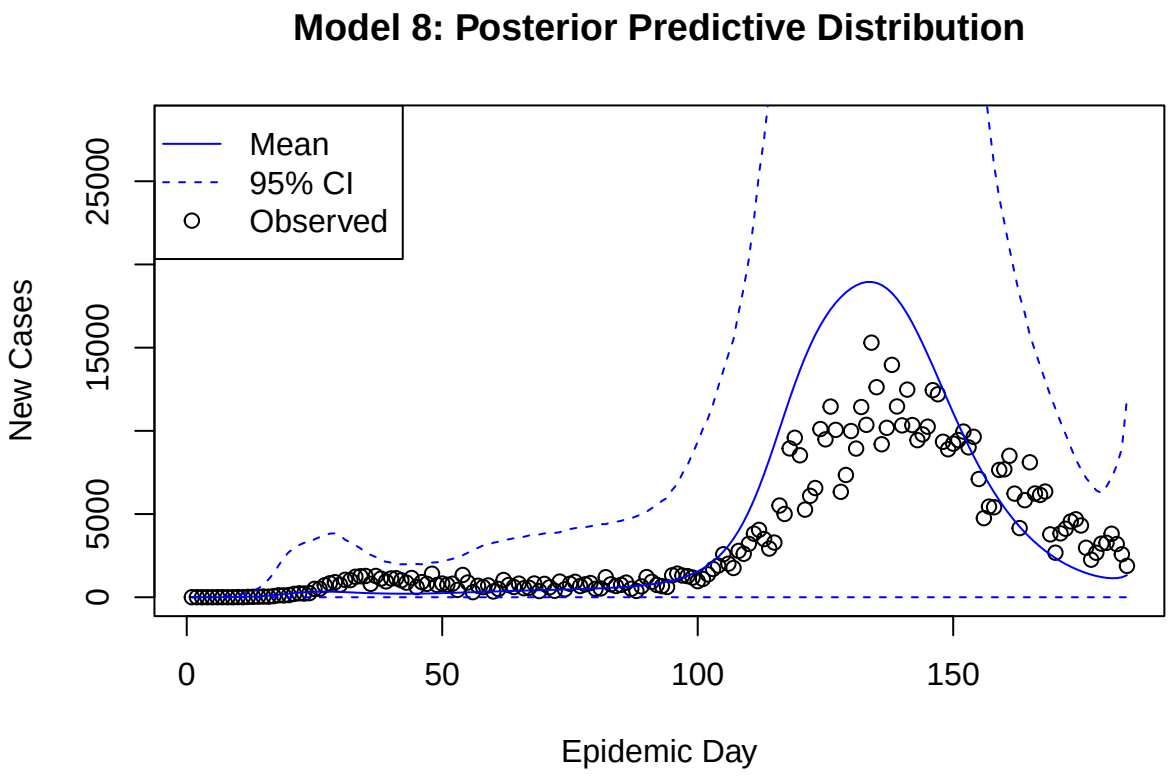

Model 5: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
4000
8000
12000
0
50
100
150
Epidemic Day

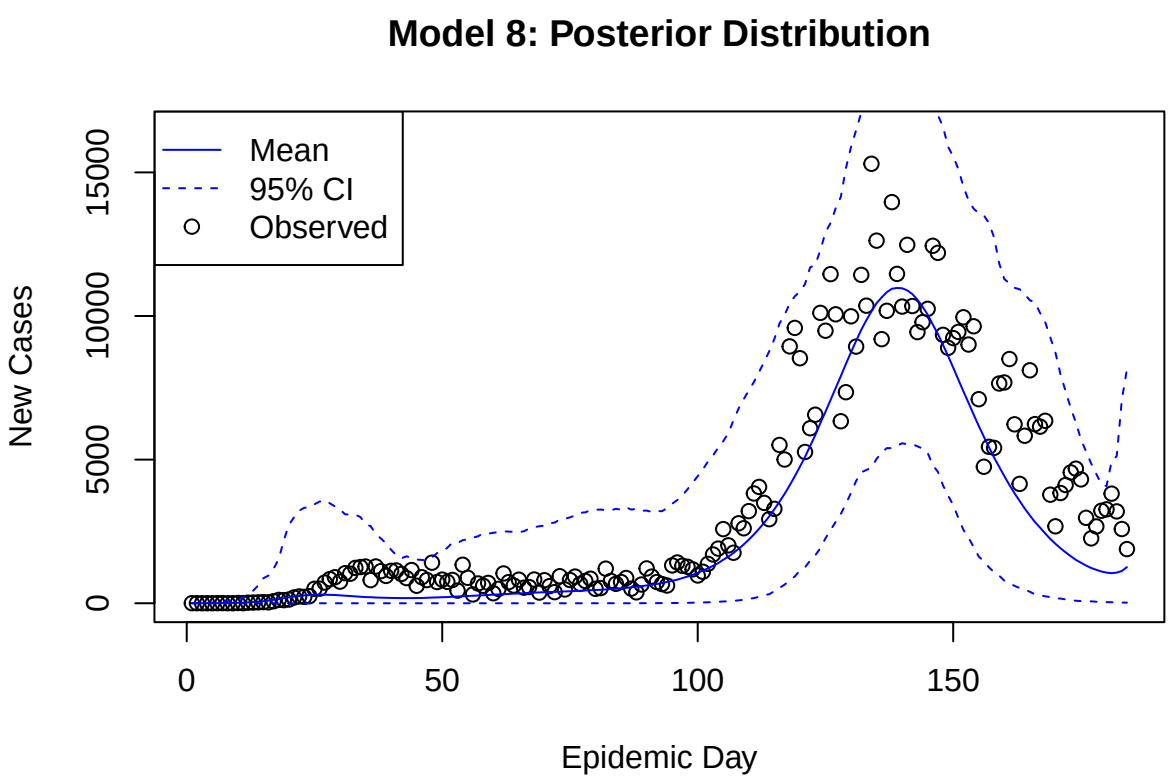

Model 6: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
5000
15000
0
50
100
150
Epidemic Day

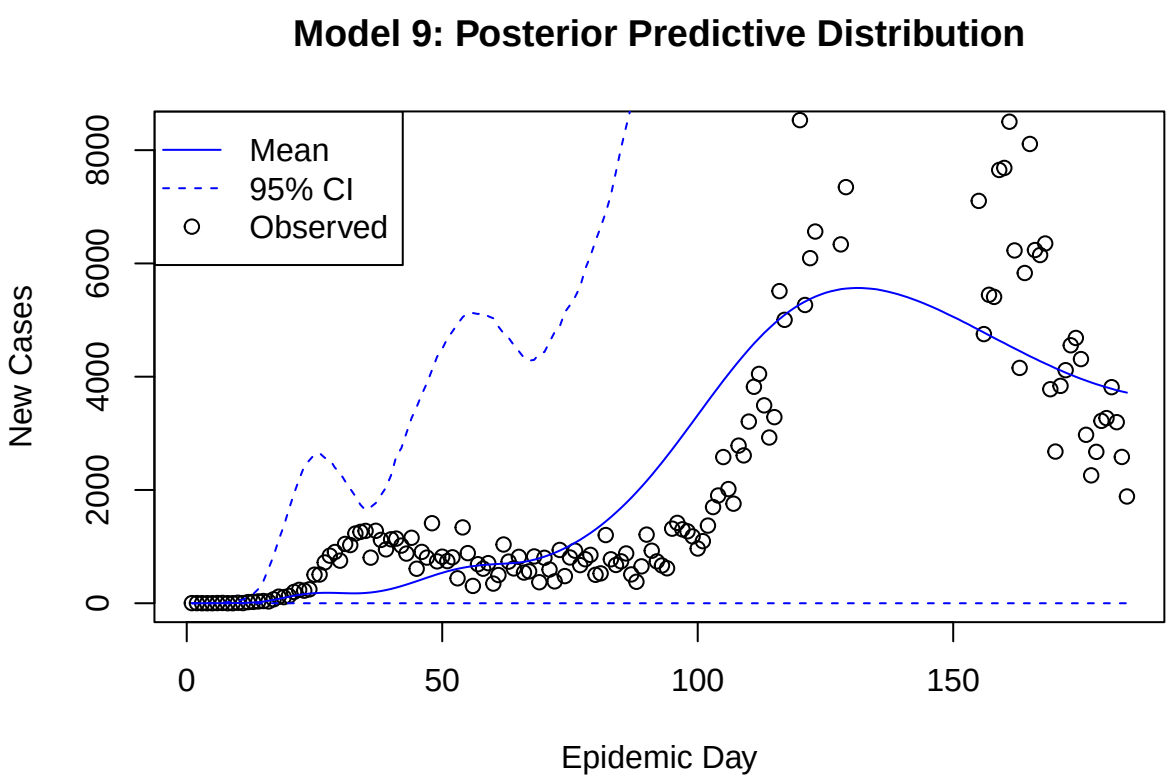

Model 6: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
5000
10000
15000
0
50
100
150
Epidemic Day

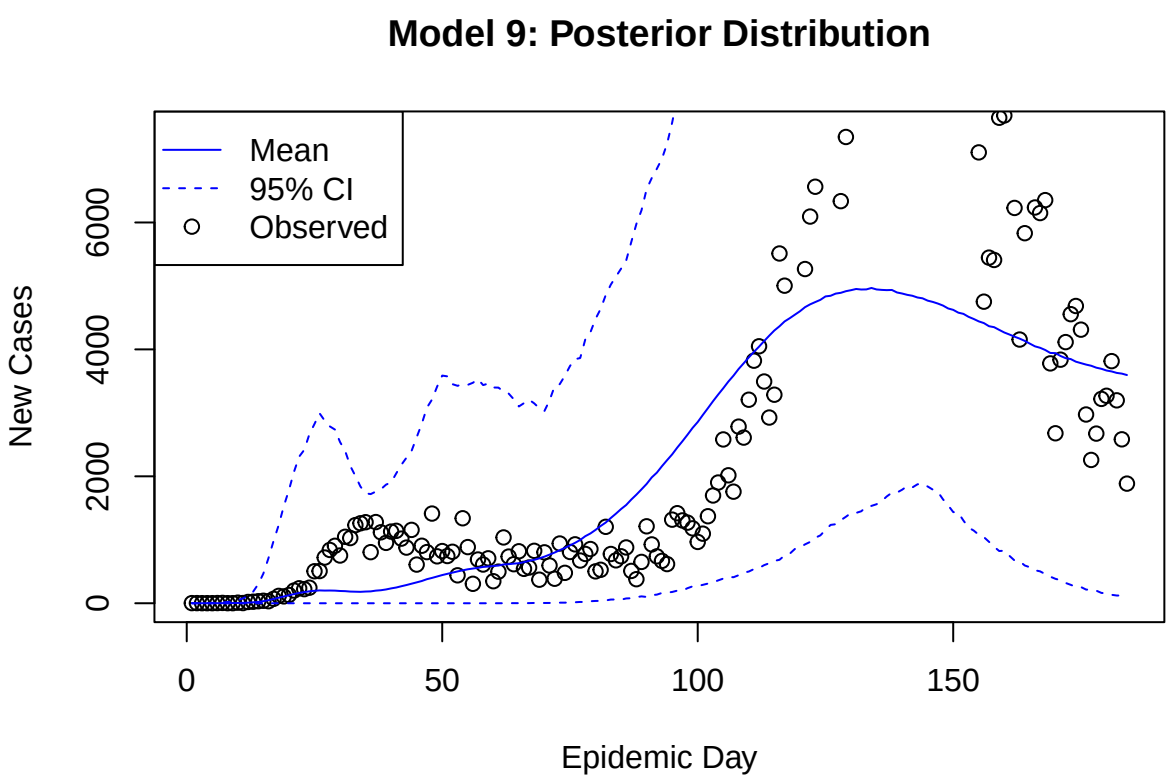

Model 7: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
5000
15000
25000
0
50
100
150
Epidemic Day

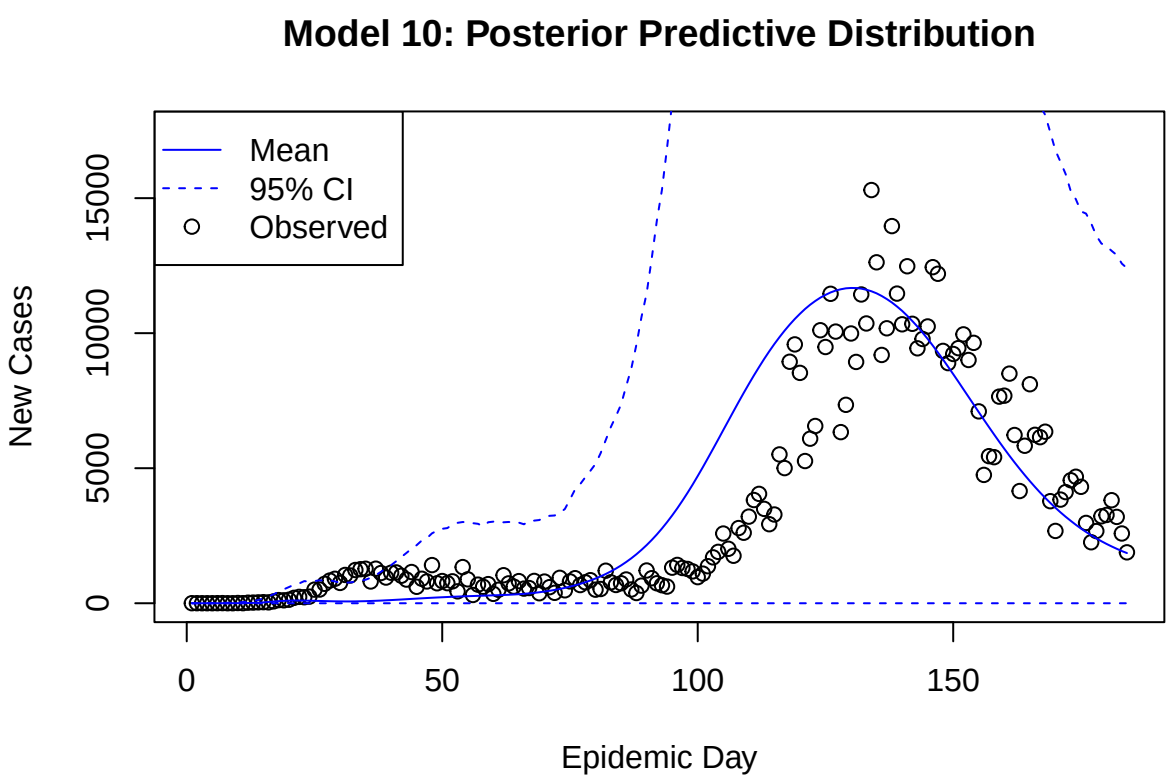

Model 7: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
5000
10000
15000
0
50
100
150
Epidemic Day

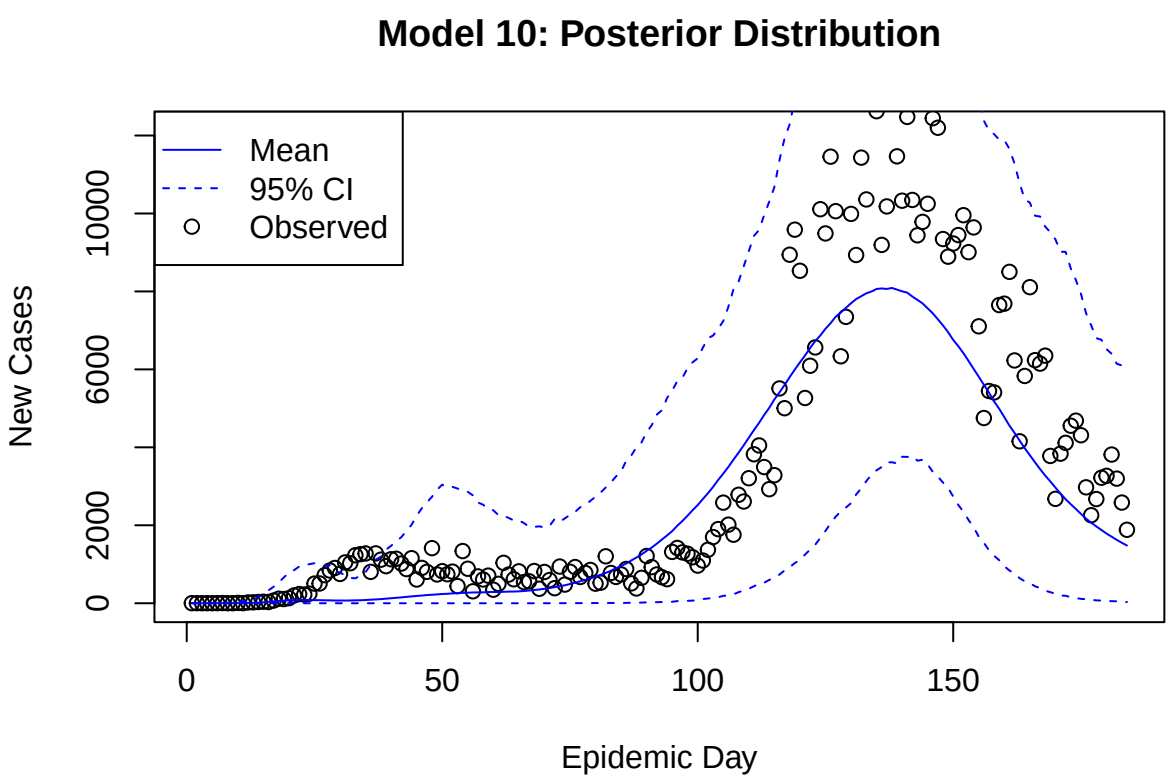

Model 8: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
5000
15000
25000
0
50
100
150
Epidemic Day

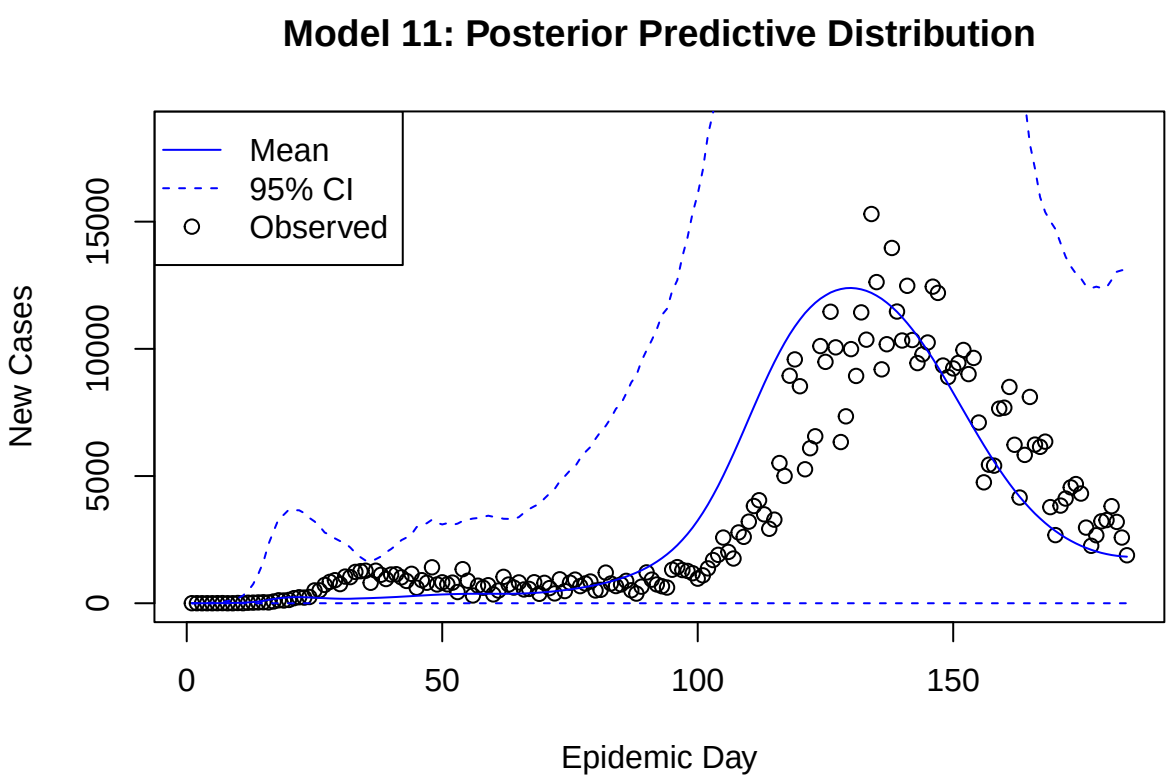

Model 8: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
5000
10000
15000
0
50
100
150
Epidemic Day

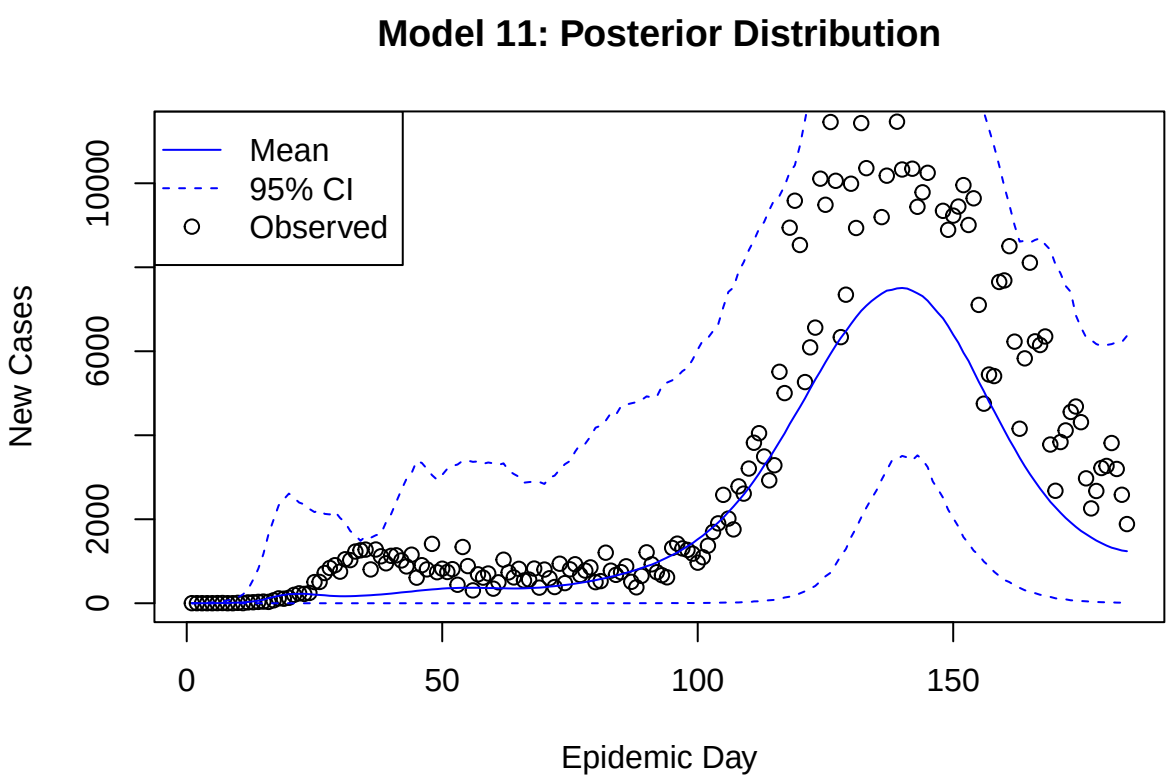

Model 9: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
2000
4000
6000
8000
0
50
100
150
Epidemic Day

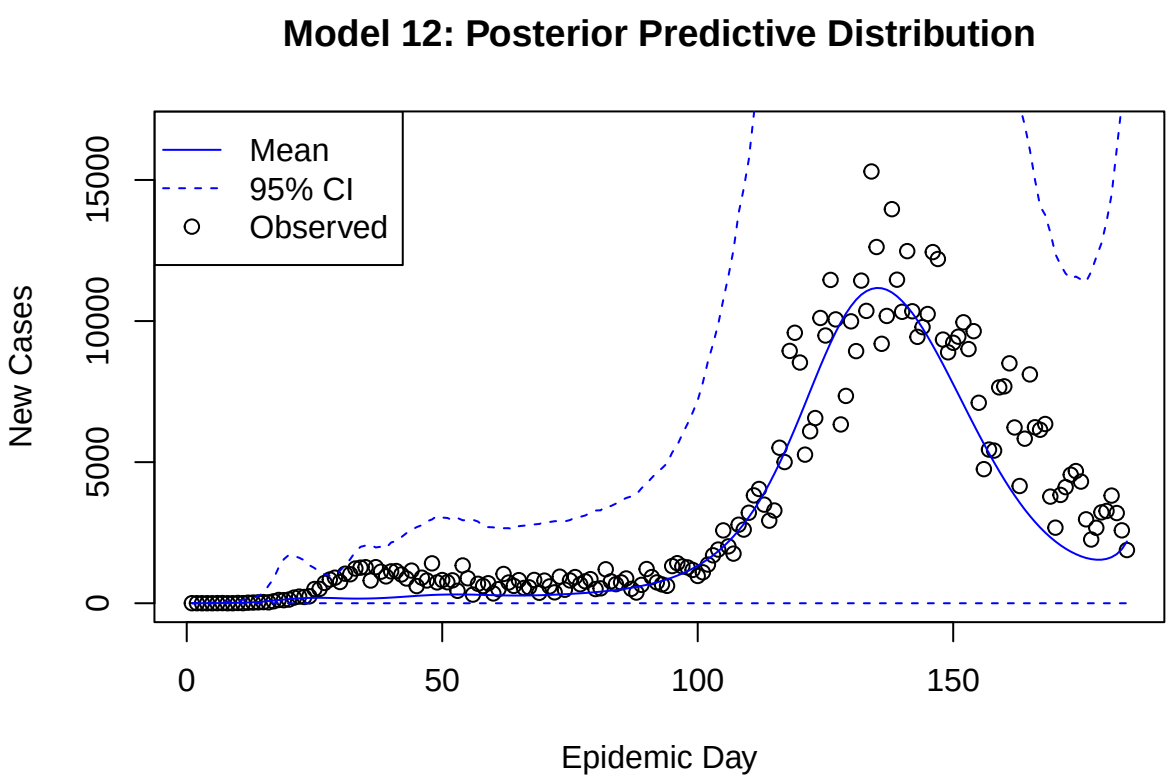

Model 9: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
2000
4000
6000
0
50
100
150
Epidemic Day

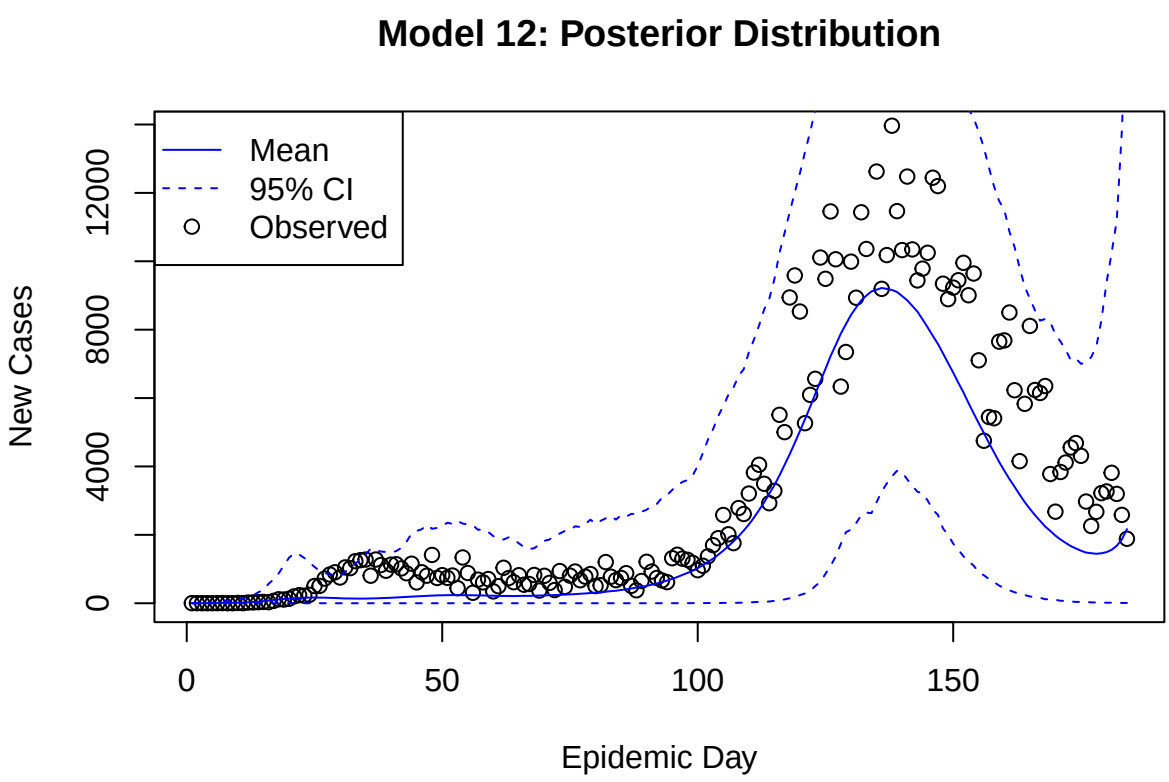

Model 10: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
5000
10000
15000
0
50
100
150
Epidemic Day

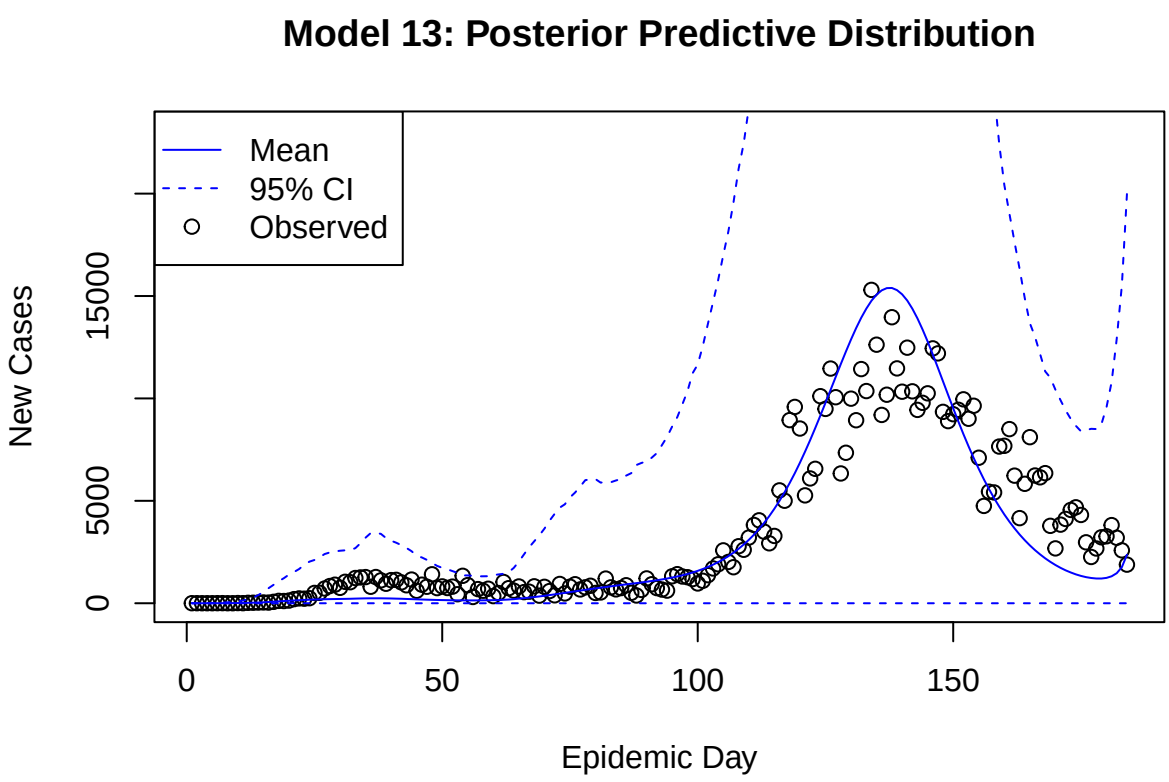

Model 10: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
2000
6000
10000
0
50
100
150
Epidemic Day

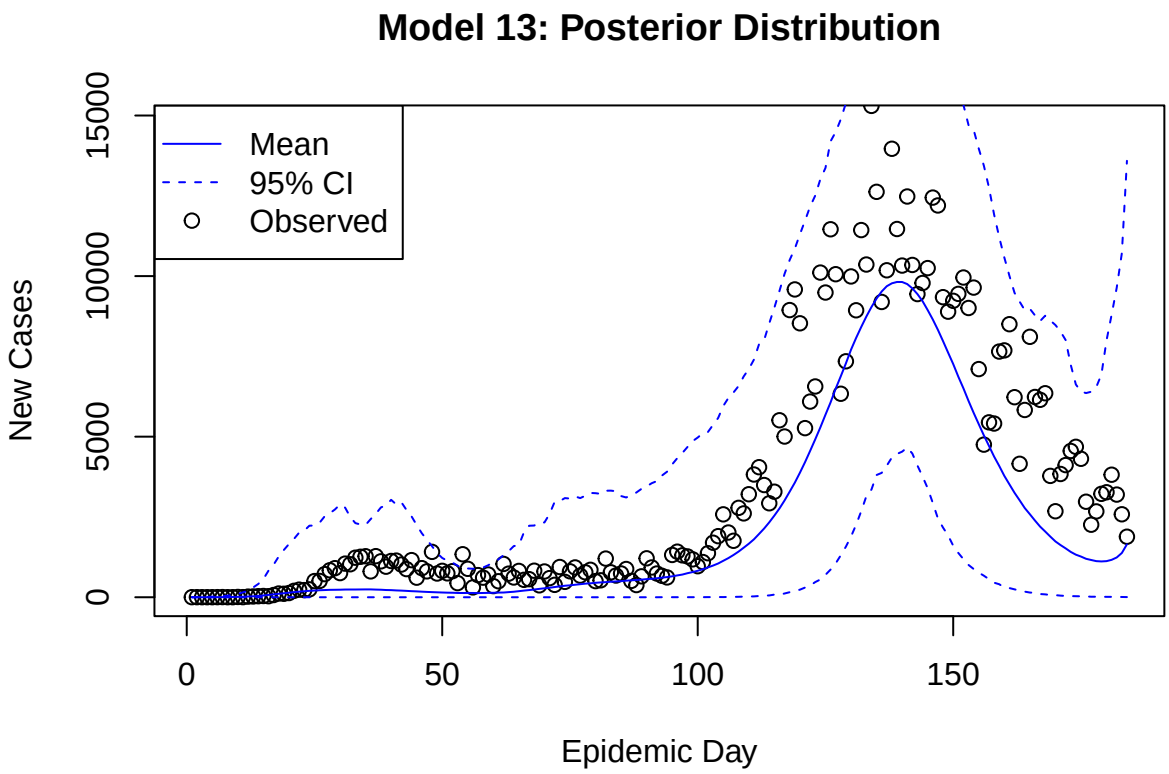

Model 11: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
5000
10000
15000
0
50
100
150
Epidemic Day

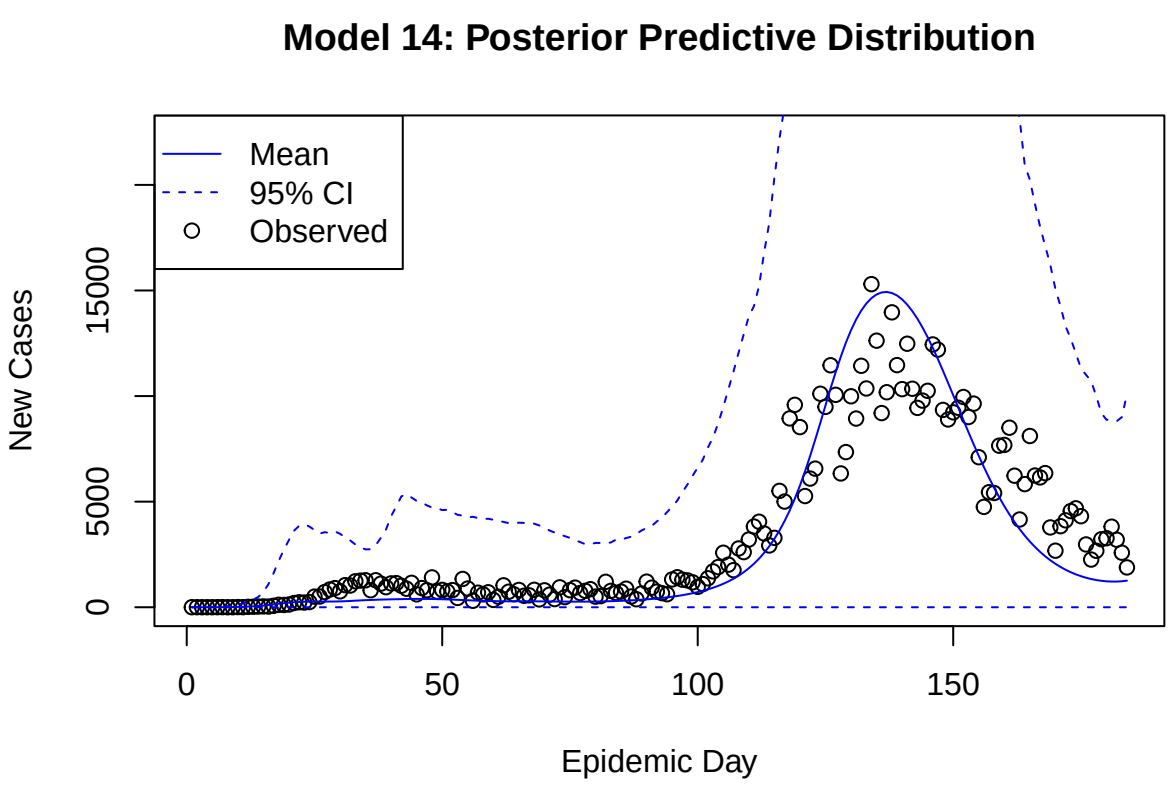

Model 11: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
2000
6000
10000
0
50
100
150
Epidemic Day

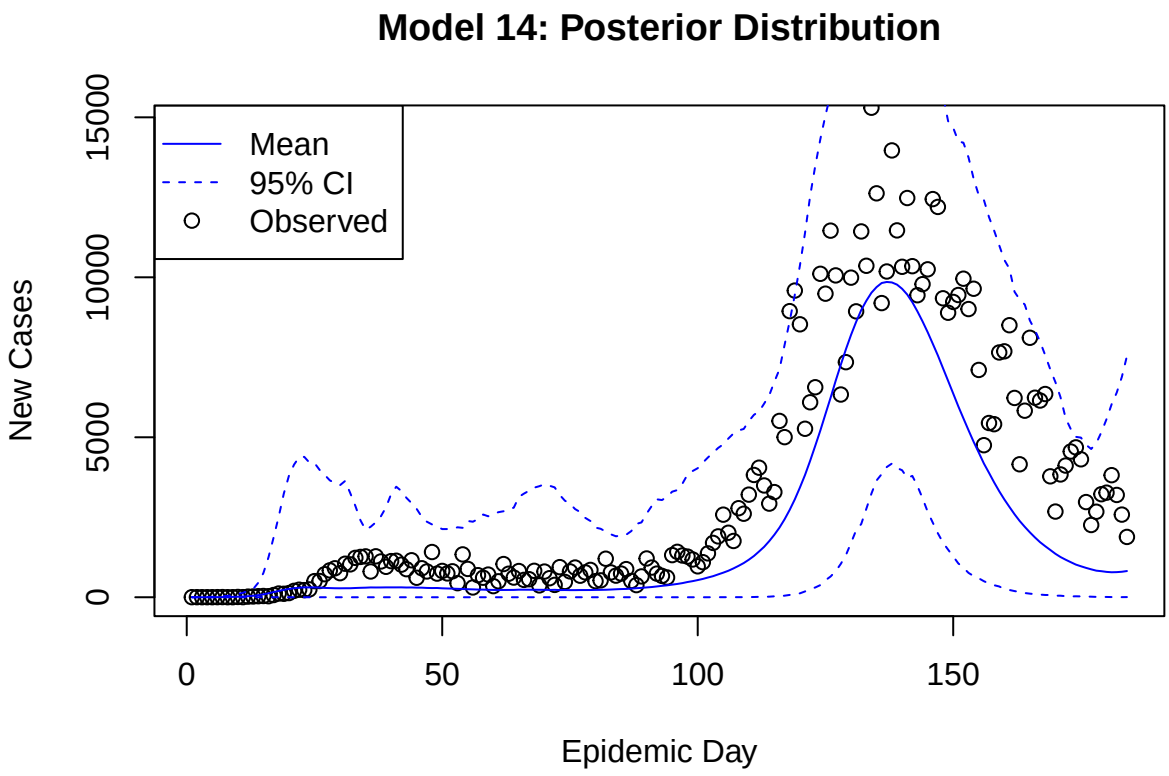

Model 12: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
5000
10000
15000
0
50
100
150
Epidemic Day

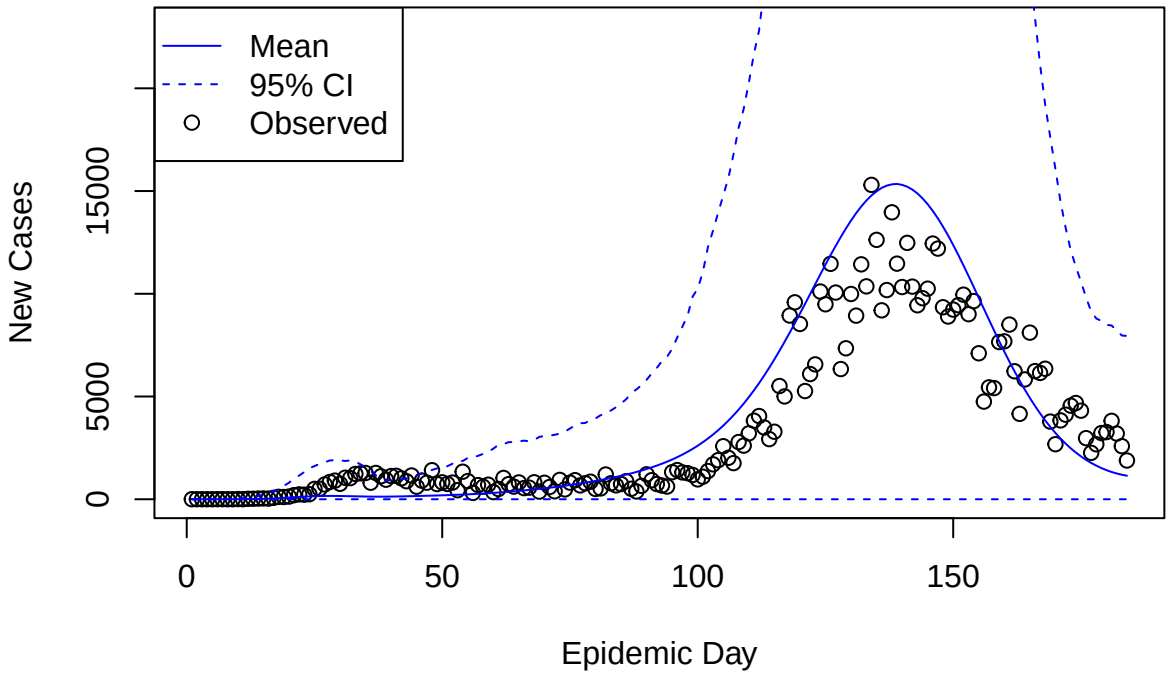

Model 12: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
4000
8000
12000
0
50
100
150
Epidemic Day

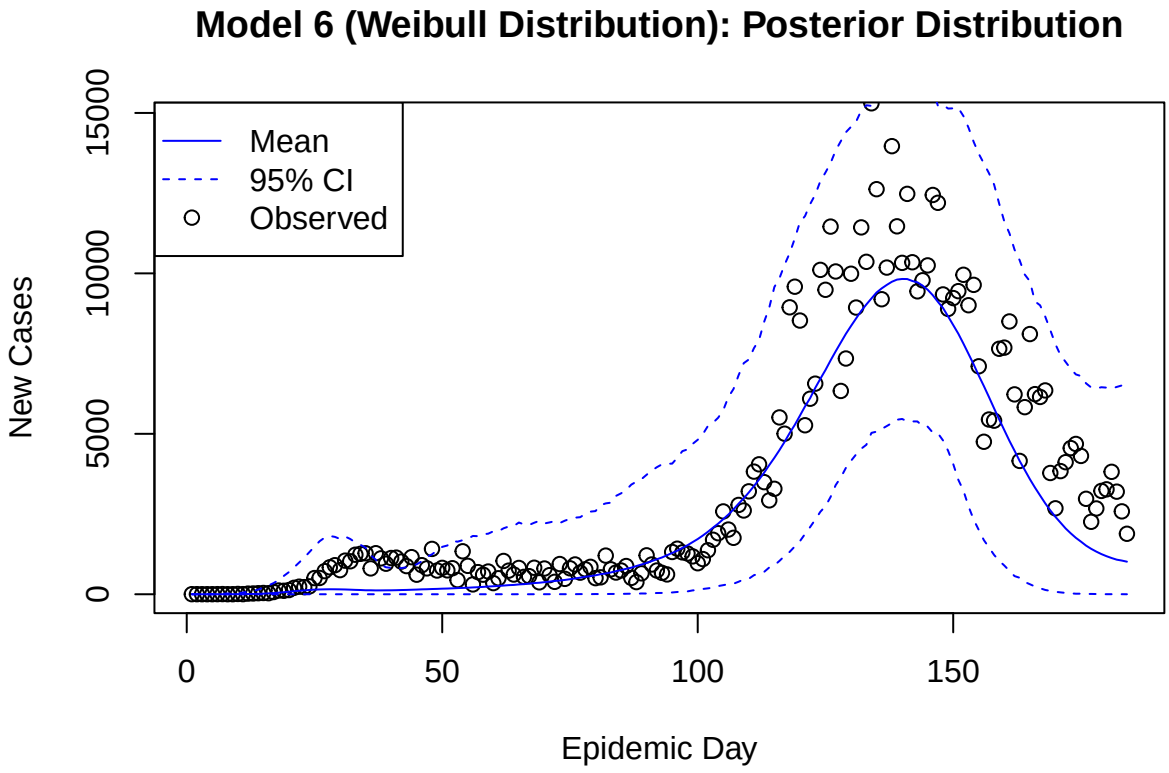

Model 13: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
5000
15000
0
50
100
150
Epidemic Day

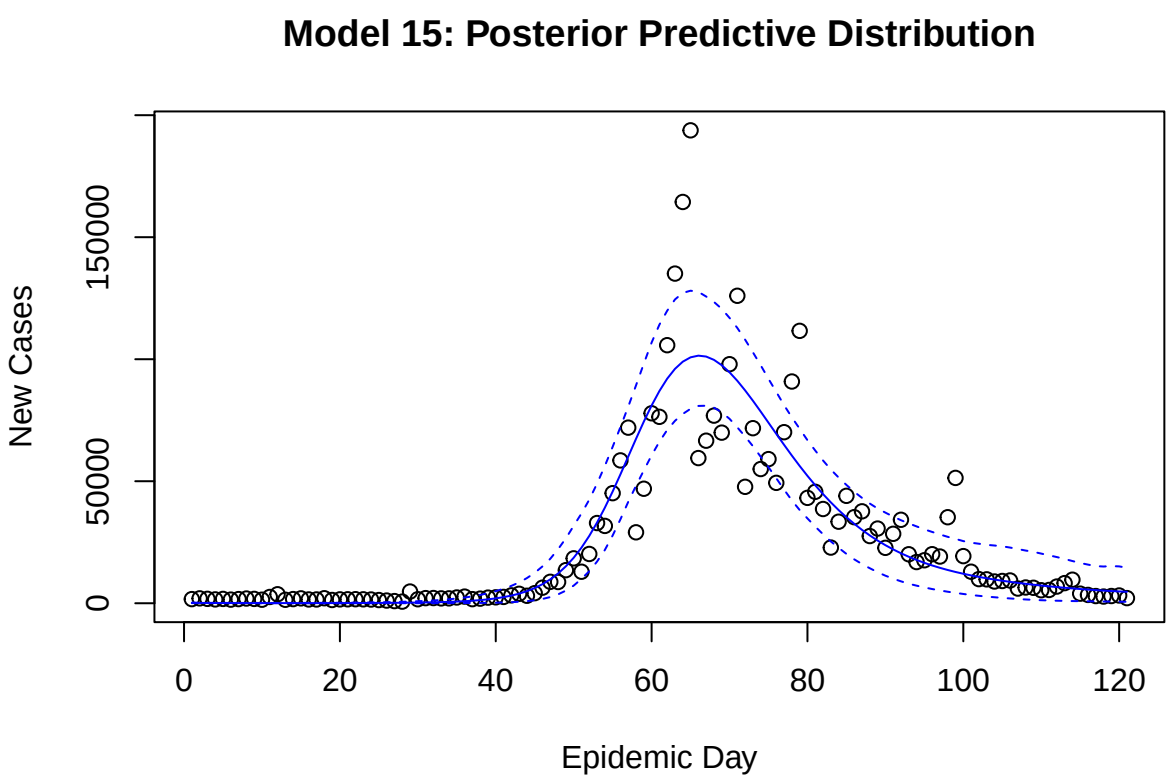

Model 13: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
5000
10000
15000
0
50
100
150
Epidemic Day

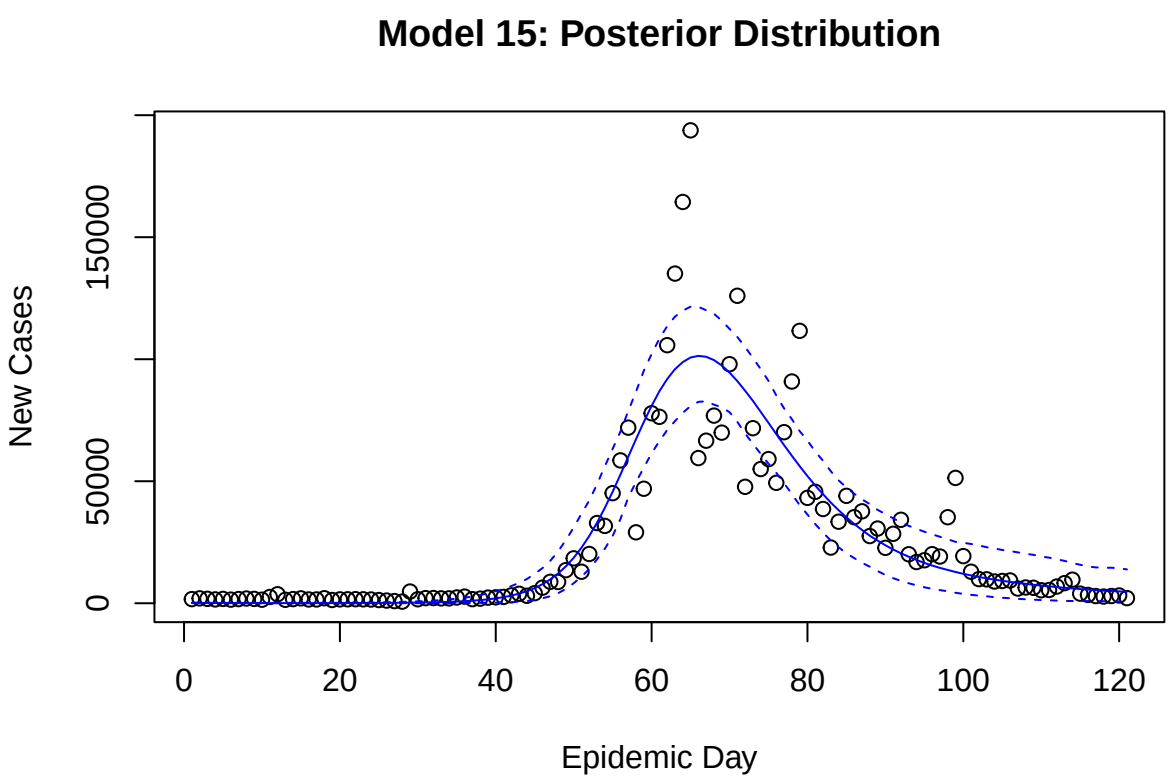

Model 14: Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
5000
15000
0
50
100
150
Epidemic Day

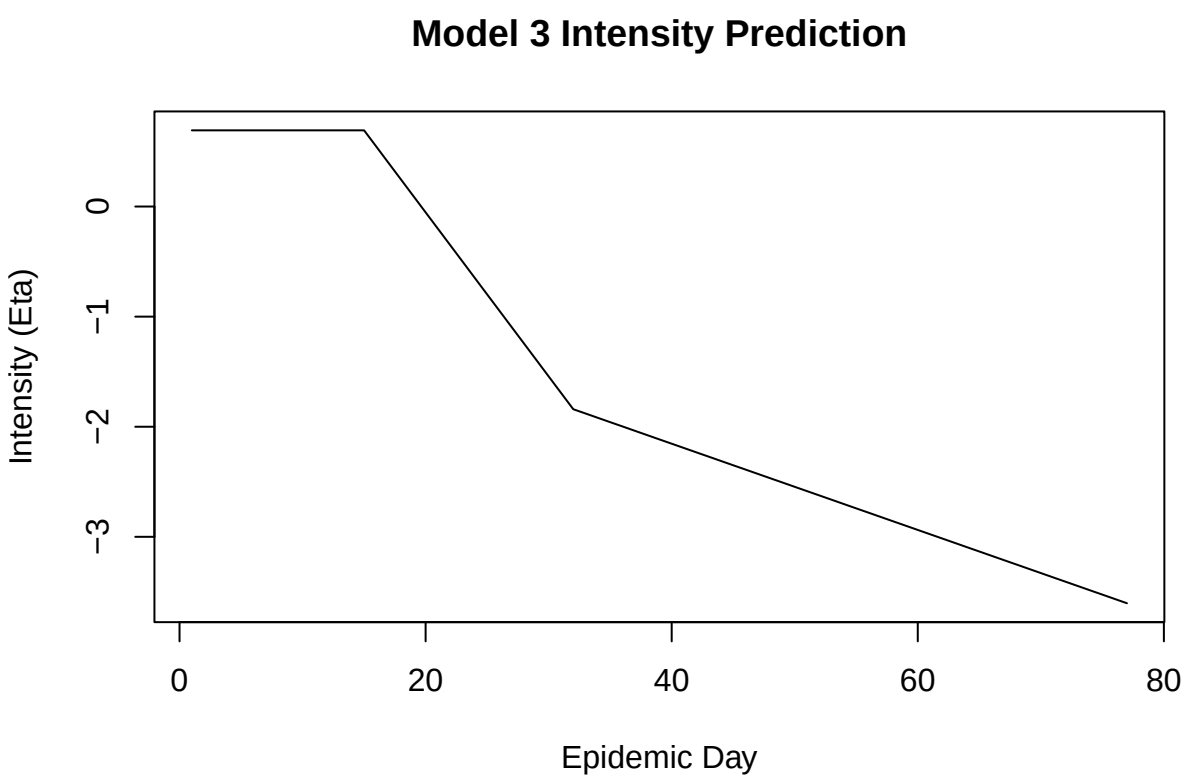

Model 14: Posterior Distribution
Mean
95% CI
Observed
New Cases
0
5000
10000
15000
0
50
100
150
Epidemic Day

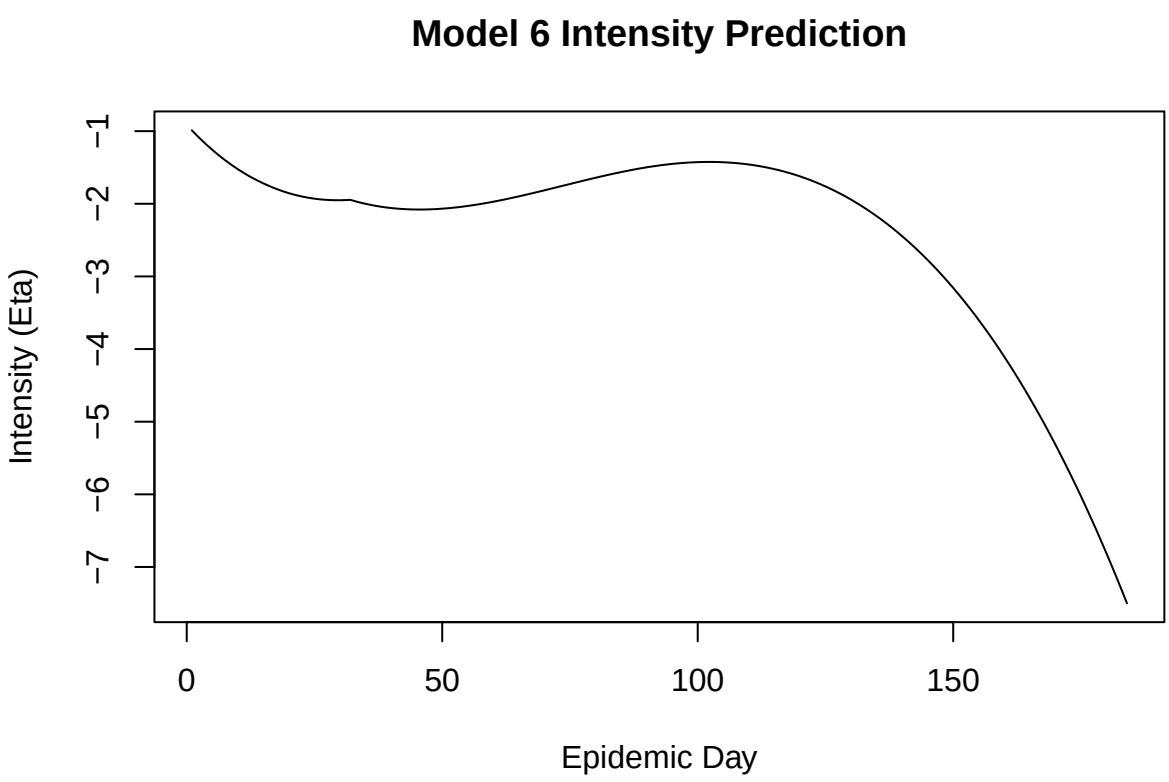

Model 6 (Weibull Distribution): Posterior Predictive Distribution
Mean
95% CI
Observed
New Cases
0
5000
15000
0
50
100
150
Epidemic Day

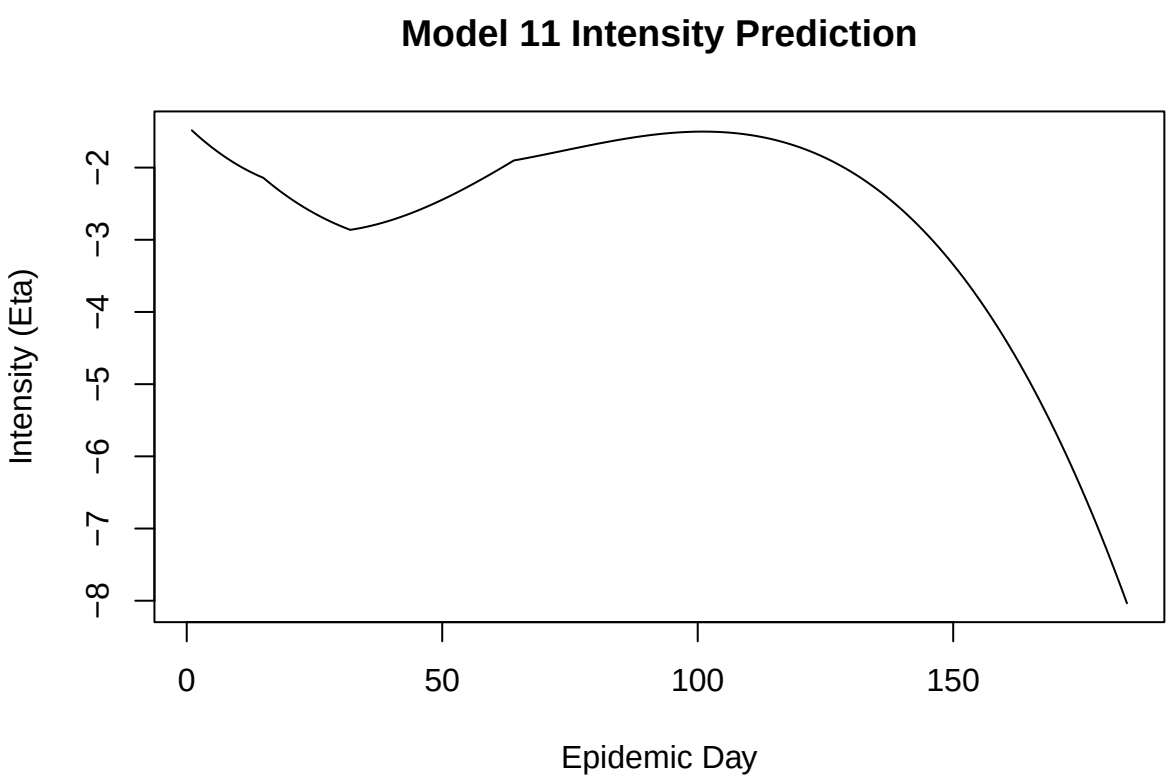

Model 6 (Weibull Distribution): Posterior Distribution
Mean
95% CI
Observed
New Cases
0
5000
10000
15000
0
50
100
150
Epidemic Day


Model 15: Posterior Predictive Distribution
New Cases
0
50000
150000
0
20
40
60
80
100
120
Epidemic Day


Model 15: Posterior Distribution
New Cases
0
50000
150000
0
20
40
60
80
100
120
Epidemic Day


Model 3 Intensity Prediction
Intensity (Eta)
0
−1
−2
−3
0
20
40
60
80
Epidemic Day


Model 6 Intensity Prediction
Intensity (Eta)
−1
−2
−3
−4
−5
−6
−7
0
50
100
150
Epidemic Day



Model 1

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 77
## Data Model Parameters: 0
## Exposure Process Parameters: 1
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                   Mean    SD       95% LB       95% UB
## Beta_SE_1       -1.290 0.052       -1.404       -1.200
## gamma_EI         0.170 0.009        0.152        0.191
## gamma_IR         0.064 0.009        0.050        0.081
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1             2.000 0.000        2.000        2.000
## I0_1             2.000 0.000        2.000        2.000
## R0_1             0.000 0.000        0.000        0.000
```

Model 2

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 77
## Data Model Parameters: 0
## Exposure Process Parameters: 2
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                   Mean    SD       95% LB       95% UB
## Beta_SE_1        0.274 0.224       -0.129        0.659
## Beta_SE_2       -0.940 0.050       -1.023       -0.826
## gamma_EI         0.143 0.042        0.095        0.259
## gamma_IR         0.034 0.028        0.001        0.099
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1             2.000 0.000        2.000        2.000
## I0_1             2.000 0.000        2.000        2.000
## R0_1             0.000 0.000        0.000        0.000
```

Model 3

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 77
## Data Model Parameters: 0
## Exposure Process Parameters: 3
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                   Mean    SD       95% LB       95% UB
## Beta_SE_1        0.692 0.218        0.309        1.132
## Beta_SE_2       -1.490 0.141       -1.741       -1.207
## Beta_SE_3        1.098 0.134        0.850        1.349
## gamma_EI         0.151 0.039        0.073        0.224
## gamma_IR         0.085 0.056        0.009        0.212
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1             2.000 0.000        2.000        2.000
## I0_1             2.000 0.000        2.000        2.000
## R0_1             0.000 0.000        0.000        0.000
```

Model 4

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 3
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                   Mean    SD       95% LB       95% UB
## Beta_SE_1       -1.736 1.302       -3.806        0.389
## Beta_SE_2        0.542 1.027       -1.297        2.169
## Beta_SE_3       -0.713 1.071       -2.416        1.240
## gamma_EI         0.170 0.015        0.138        0.201
## gamma_IR         0.060 0.016        0.032        0.088
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1             2.000 0.000        2.000        2.000
## I0_1             2.000 0.000        2.000        2.000
## R0_1             0.000 0.000        0.000        0.000
```

Model 5

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 6
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                   Mean    SD       95% LB       95% UB
## Beta_SE_1       -1.251 1.658       -4.671        1.361
## Beta_SE_2       -0.745 1.195       -3.124        1.189
## Beta_SE_3        0.728 1.235       -1.397        3.314
## Beta_SE_4        0.244 3.593       -6.002        7.776
## Beta_SE_5        3.764 4.789       -5.715       13.239
## Beta_SE_6       -3.450 5.064      -12.215        5.996
## gamma_EI         0.165 0.025        0.119        0.204
## gamma_IR         0.057 0.023        0.014        0.104
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1             2.000 0.000        2.000        2.000
## I0_1             2.000 0.000        2.000        2.000
## R0_1             0.000 0.000        0.000        0.000
```

Model 6

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 7
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                    Mean    SD       95% LB       95% UB
## Beta_SE_1        -0.989 1.876       -4.418        2.181
## Beta_SE_2        -0.010 1.446       -2.905        2.581
## Beta_SE_3        -0.257 1.624       -3.555        2.918
## Beta_SE_4        -2.238 3.859       -9.918        6.064
## Beta_SE_5         2.332 3.307       -2.575        9.014
## Beta_SE_6         2.177 3.790       -5.730        9.316
## Beta_SE_7        -2.433 3.295       -8.391        4.035
## gamma_EI          0.168 0.011        0.148        0.189
## gamma_IR          0.059 0.015        0.029        0.092
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1              2.000 0.000        2.000        2.000
## I0_1              2.000 0.000        2.000        2.000
## R0_1              0.000 0.000        0.000        0.000
```

Model 7

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 8
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                    Mean    SD       95% LB       95% UB
## Beta_SE_1        -0.890 1.742       -4.392        2.124
## Beta_SE_2        -0.203 1.348       -2.957        2.309
## Beta_SE_3         0.017 1.512       -2.901        2.928
## Beta_SE_4        -1.564 2.954       -7.467        4.304
## Beta_SE_5        -0.639 2.636       -5.349        3.361
## Beta_SE_6         2.852 2.323       -1.216        6.911
## Beta_SE_7        -0.712 2.760       -5.063        4.427
## Beta_SE_8        -2.101 2.960       -7.801        2.356
```

```
## gamma_EI         0.167 0.009        0.151        0.181
## gamma_IR         0.060 0.009        0.043        0.078
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1             2.000 0.000        2.000        2.000
## I0_1             2.000 0.000        2.000        2.000
## R0_1             0.000 0.000        0.000        0.000
```

Model 8

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 9
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                   Mean    SD       95% LB       95% UB
## Beta_SE_1       -0.815 1.936       -5.395        2.259
## Beta_SE_2       -0.346 1.534       -2.888        2.626
## Beta_SE_3        0.099 1.699       -3.236        3.025
## Beta_SE_4       -1.565 3.497       -7.432        5.390
## Beta_SE_5       -1.087 3.726       -8.353        5.430
## Beta_SE_6        1.421 2.709       -3.498        5.862
## Beta_SE_7        3.200 3.118       -1.783        9.041
## Beta_SE_8       -1.486 3.253       -7.171        4.567
## Beta_SE_9       -1.716 3.813       -9.435        4.379
## gamma_EI         0.165 0.012        0.143        0.185
## gamma_IR         0.060 0.015        0.029        0.088
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1             2.000 0.000        2.000        2.000
## I0_1             2.000 0.000        2.000        2.000
## R0_1             0.000 0.000        0.000        0.000
```

Model 9

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 4
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
```

```
## Parameter Estimates:
##                    Mean    SD       95% LB       95% UB
## Beta_SE_1        -1.666 1.590       -4.509        1.116
## Beta_SE_2        -0.440 1.548       -2.963        2.627
## Beta_SE_3         0.814 2.178       -3.504        4.319
## Beta_SE_4        -0.597 0.957       -2.223        1.262
## gamma_EI          0.157 0.029        0.092        0.214
## gamma_IR          0.050 0.030        0.003        0.111
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1              2.000 0.000        2.000        2.000
## I0_1              2.000 0.000        2.000        2.000
## R0_1              0.000 0.000        0.000        0.000
```

Model 10

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 7
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                    Mean    SD       95% LB       95% UB
## Beta_SE_1        -1.802 1.704       -4.762        1.095
## Beta_SE_2        -0.357 1.581       -3.748        2.138
## Beta_SE_3         0.691 2.160       -2.772        4.767
## Beta_SE_4        -0.518 1.086       -2.421        1.681
## Beta_SE_5        -0.875 3.954       -7.736        7.210
## Beta_SE_6         2.708 4.038       -3.236       11.219
## Beta_SE_7        -2.203 4.806      -12.828        5.985
## gamma_EI          0.167 0.014        0.136        0.189
## gamma_IR          0.059 0.012        0.035        0.081
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1              2.000 0.000        2.000        2.000
## I0_1              2.000 0.000        2.000        2.000
## R0_1              0.000 0.000        0.000        0.000
```

Model 11

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 8
## Reinfection Model Parameters: 0
```

```
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                   Mean    SD       95% LB       95% UB
## Beta_SE_1       -1.484 2.007       -5.485        2.378
## Beta_SE_2       -0.304 1.724       -3.472        3.043
## Beta_SE_3        0.371 2.289       -3.651        4.538
## Beta_SE_4       -0.299 1.289       -2.369        2.365
## Beta_SE_5       -2.004 4.343      -10.485        6.024
## Beta_SE_6        1.952 4.373       -6.124       10.076
## Beta_SE_7        1.746 3.825       -5.407        8.348
## Beta_SE_8       -3.468 4.473      -12.774        5.290
## gamma_EI         0.169 0.011        0.148        0.188
## gamma_IR         0.053 0.018        0.021        0.089
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1             2.000 0.000        2.000        2.000
## I0_1             2.000 0.000        2.000        2.000
## R0_1             0.000 0.000        0.000        0.000
```

Model 12

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 9
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                   Mean    SD       95% LB       95% UB
## Beta_SE_1       -1.123 2.246       -5.622        2.474
## Beta_SE_2       -0.317 2.110       -4.110        3.589
## Beta_SE_3        0.157 2.776       -5.108        4.894
## Beta_SE_4       -0.141 1.295       -2.701        2.110
## Beta_SE_5       -2.038 4.466      -11.219        5.206
## Beta_SE_6       -1.111 4.544      -10.764        6.783
## Beta_SE_7        4.642 3.544       -1.906       12.060
## Beta_SE_8       -0.271 3.719       -7.281        5.573
## Beta_SE_9       -1.953 3.603       -8.667        4.264
## gamma_EI         0.164 0.014        0.137        0.195
## gamma_IR         0.056 0.017        0.024        0.090
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1             2.000 0.000        2.000        2.000
## I0_1             2.000 0.000        2.000        2.000
## R0_1             0.000 0.000        0.000        0.000
```

Model 13

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 10
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                     Mean    SD       95% LB       95% UB
## Beta_SE_1         -1.343 2.163       -6.216        1.977
## Beta_SE_2         -0.448 1.579       -3.130        2.612
## Beta_SE_3          0.698 2.270       -4.317        5.102
## Beta_SE_4         -0.618 1.614       -3.677        2.769
## Beta_SE_5         -1.190 4.113       -9.198        5.346
## Beta_SE_6         -2.557 4.555      -11.457        6.550
## Beta_SE_7          0.831 3.718       -5.913        7.435
## Beta_SE_8          3.754 3.208       -2.421        9.498
## Beta_SE_9         -2.175 4.476      -10.814        5.416
## Beta_SE_10        -1.260 4.354       -9.437        6.728
## gamma_EI           0.167 0.014        0.144        0.192
## gamma_IR           0.058 0.014        0.030        0.085
## S0_1       21477737.000 0.000 21477737.000 21477737.000
## E0_1               2.000 0.000        2.000        2.000
## I0_1               2.000 0.000        2.000        2.000
## R0_1               0.000 0.000        0.000        0.000
```

Model 14

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 7
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                    Mean    SD       95% LB       95% UB
## Beta_SE_1        -0.085 2.194       -4.124        3.661
## Beta_SE_2        -2.692 1.918       -6.532        0.649
## Beta_SE_3        -0.872 2.013       -4.434        2.298
## Beta_SE_4         1.659 2.170       -2.112        6.135
## Beta_SE_5        -0.525 1.593       -4.086        2.207
```

```
## Beta_SE_6        0.347 2.137       -3.626        5.024
## Beta_SE_7       -0.297 1.716       -3.574        3.338
## gamma_EI         0.167 0.009        0.151        0.185
## gamma_IR         0.060 0.009        0.041        0.078
## S0_1      21477737.000 0.000 21477737.000 21477737.000
## E0_1             2.000 0.000        2.000        2.000
## I0_1             2.000 0.000        2.000        2.000
## R0_1             0.000 0.000        0.000        0.000
```

Model 15

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 121
## Data Model Parameters: 0
## Exposure Process Parameters: 7
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 2
##
##
## Parameter Estimates:
##                    Mean     SD       95% LB       95% UB
## Beta_SE_1        -0.028  7.756      -13.406       14.014
## Beta_SE_2        -0.290  7.211      -13.941       12.732
## Beta_SE_3         1.682  0.501        0.899        2.771
## Beta_SE_4        -1.697  0.520       -2.612       -0.822
## Beta_SE_5        -0.927  0.830       -2.583        0.568
## Beta_SE_6        -1.884 11.591      -22.361       19.515
## Beta_SE_7        -2.017 10.878      -23.838       18.023
## gamma_EI          0.155  0.054        0.068        0.271
## gamma_IR          0.069  0.036        0.014        0.142
## S0_1       21415373.000  0.000 21415373.000 21415373.000
## E0_1          1000.000  0.000     1000.000     1000.000
## I0_1          1694.000  0.000     1694.000     1694.000
## R0_1         59670.000  0.000    59670.000    59670.000
```

Model 6 (Weibull Distribution)

```
## Summary: SEIR Model
##
## Locations: 1
## Time Points: 184
## Data Model Parameters: 0
## Exposure Process Parameters: 7
## Reinfection Model Parameters: 0
## Spatial Parameters: 0
## Transition Parameters: 4
##
##
```

```
## Parameter Estimates:
##                           Mean    SD       95% LB       95% UB
## Beta_SE_1               -1.015 1.440       -4.354        1.952
## Beta_SE_2               -0.049 1.163       -2.634        2.319
## Beta_SE_3               -0.165 1.302       -2.573        2.495
## Beta_SE_4               -1.355 2.692       -7.030        3.263
## Beta_SE_5                1.598 2.233       -2.609        5.612
## Beta_SE_6                1.332 2.849       -4.297        5.981
## Beta_SE_7               -2.273 2.900       -8.369        2.238
## latent_shape             2.176 0.136        1.937        2.416
## latent_scale             6.607 0.384        5.857        7.244
## infectious_shape         4.384 0.841        2.946        6.392
## infectious_scale        15.940 1.902       12.019       19.425
## S0_1             21477737.000 0.000 21477737.000 21477737.000
## E0_1                     2.000 0.000        2.000        2.000
## I0_1                     2.000 0.000        2.000        2.000
## R0_1                     0.000 0.000        0.000        0.000
```

Bayes Factor (Model 2 vs Model 3)

```
## [1] "Assuming equal prior probabilities."
```

```
##      [,1] [,2]
## [1,]  NaN    0
## [2,]  Inf    1
```

Bayes Factor (Comparison Between Models 4-8)

```
## [1] "Assuming equal prior probabilities."
```

```
##           [,1]      [,2]      [,3]     [,4]     [,5]
## [1,] 1.0000000 0.7723378 0.7685749 0.915820 1.091696
## [2,] 1.2947702 1.0000000 0.9951279 1.185776 1.413495
## [3,] 1.3011094 1.0048960 1.0000000 1.191582 1.420415
## [4,] 1.0919176 0.8433293 0.8392205 1.000000 1.192042
## [5,] 0.9160063 0.7074663 0.7040195 0.838897 1.000000
```

Bayes Factor (Comparison Between Models 9-14)

```
## [1] "Assuming equal prior probabilities."
```

```
##          [,1]      [,2]      [,3]      [,4]      [,5]      [,6]
## [1,] 1.000000 0.6521226 0.6178771 0.6199552 0.6670688 0.7153946
## [2,] 1.533454 1.0000000 0.9474860 0.9506726 1.0229192 1.0970246
## [3,] 1.618445 1.0554245 1.0000000 1.0033632 1.0796140 1.1578266
## [4,] 1.613020 1.0518868 0.9966480 1.0000000 1.0759952 1.1539457
## [5,] 1.499096 0.9775943 0.9262570 0.9293722 1.0000000 1.0724450
## [6,] 1.397830 0.9115566 0.8636872 0.8665919 0.9324487 1.0000000
```

Bayes Factor (Model 6 vs Model 11)

```
## [1] "Assuming equal prior probabilities."
```

```
##           [,1]    [,2]
## [1,] 1.0000000 1.58679
## [2,] 0.6302033 1.00000
```

Bayes Factor (Model 6: Exponential Distribution vs Weibull Distribution)

```
## [1] "Assuming equal prior probabilities."
```

```
##          [,1]      [,2]
## [1,] 1.000000 0.9630058
## [2,] 1.038415 1.0000000
```

Coverage, width and bias for model 6 (latent and infectious period estimates)

```
## $coverage
## [1] 1
##
## $width
## [1] 0.03707391
##
## $bias
## [1] -0.8755908
```

```
## $coverage
## [1] 1
##
## $width
## [1] 0.06515869
##
## $bias
## [1] 4.894005
```

Coverage, width and bias for model 11 (latent and infectious period estimates)

```
## $coverage
## [1] 1
##
## $width
## [1] 0.03474615
##
```

```
## $bias
## [1] -1.033315
```

```
## $coverage
## [1] 1
##
## $width
## [1] 0.0653197
##
## $bias
## [1] 14.28755
```

Coverage, width and bias for model 6 with weibull distribution (latent and infectious period estimates (scale and shape))

```
## $coverage
## [1] 1
##
## $width
## [1] 0.488165
##
## $bias
## [1] 4.520094
```

```
## $coverage
## [1] 1
##
## $width
## [1] 1.461511
##
## $bias
## [1] -2.941719
```

```
## $coverage
## [1] 1
##
## $width
## [1] 3.616202
##
## $bias
## [1] 15.38377
```

```
## $coverage
## [1] 1
##
## $width
## [1] 7.557618
##
## $bias
## [1] -11.25038
```

Runtimes

```
##          user.self sys.self elapsed
## model 1    375.599    6.037  54.145
## model 2    511.774    9.676  76.667
## model 3    579.565   10.708 198.104
## model 4   1298.063   16.737 195.776
## model 5   1135.537   16.896 178.343
## model 6   1349.993   18.055 210.122
## model 7   1275.806   16.836 198.717
## model 8    897.741   12.775 135.069
## model 9   1742.396   23.287 270.864
## model 10  1248.183   20.035 202.015
## model 11  1283.735   20.784 209.601
## model 12  1184.804   20.033 195.820
## model 13  1267.504   19.162 203.757
## model 14  1005.582   15.906 158.613
## model 15  1227.843   18.600 195.543
## model 16  3119.865   47.148 524.453
```