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)

```
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```
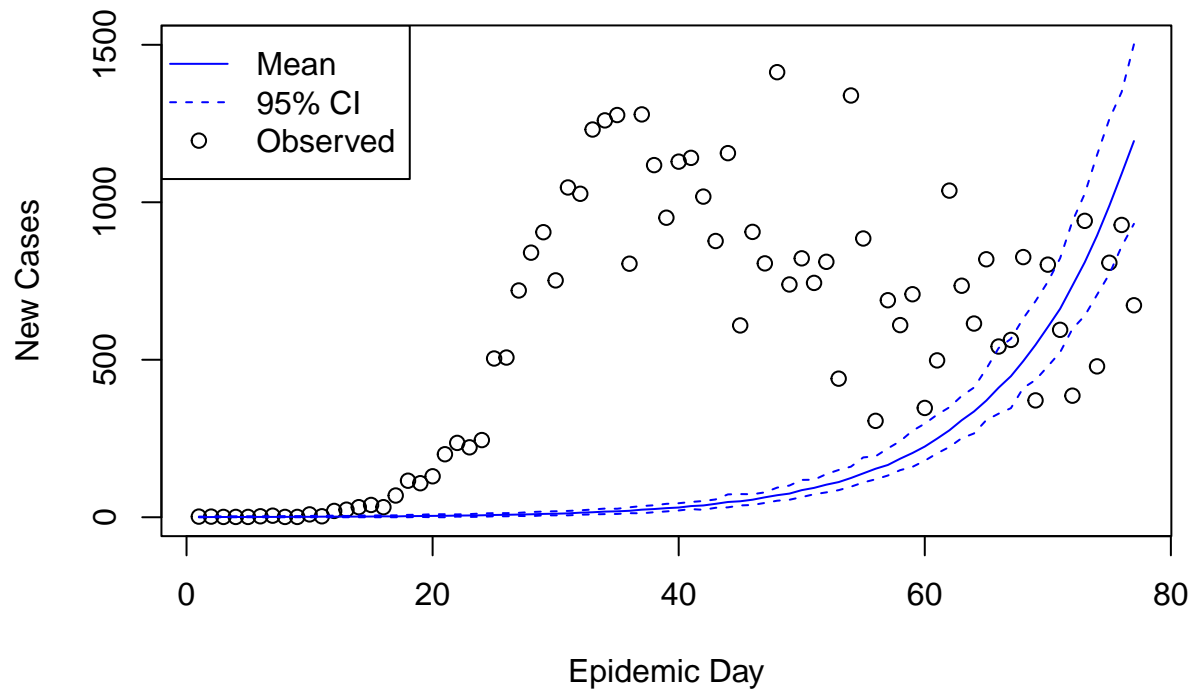
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## Loading required package: parallel
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## Loading required package: compiler
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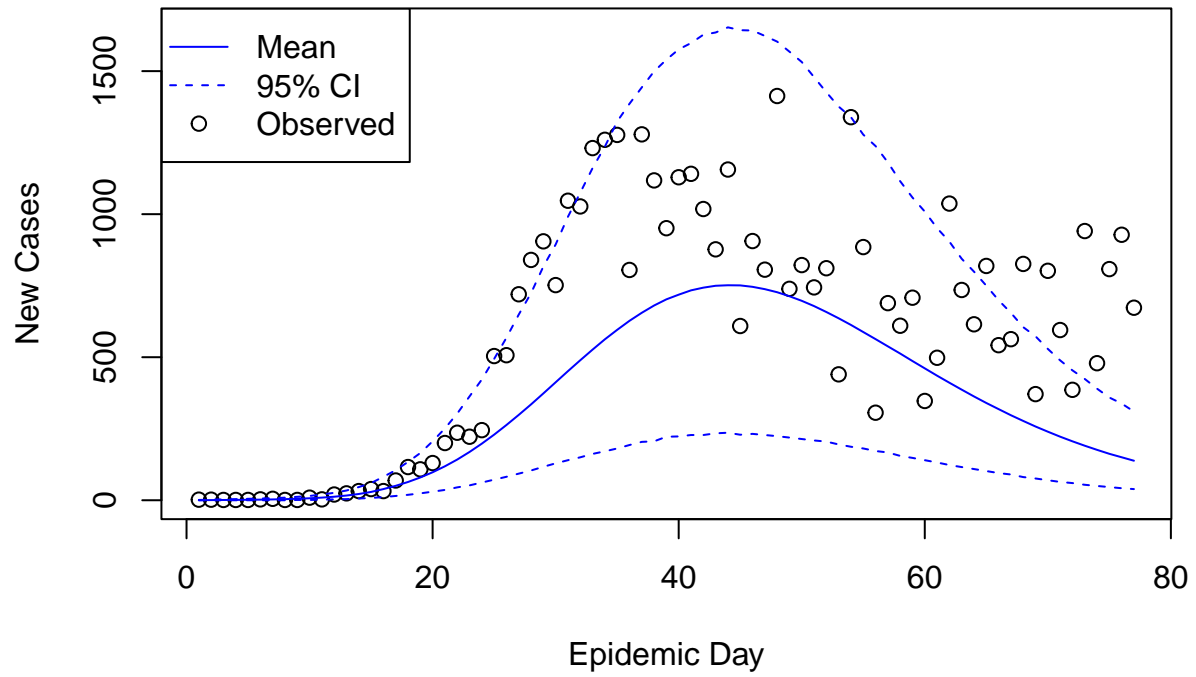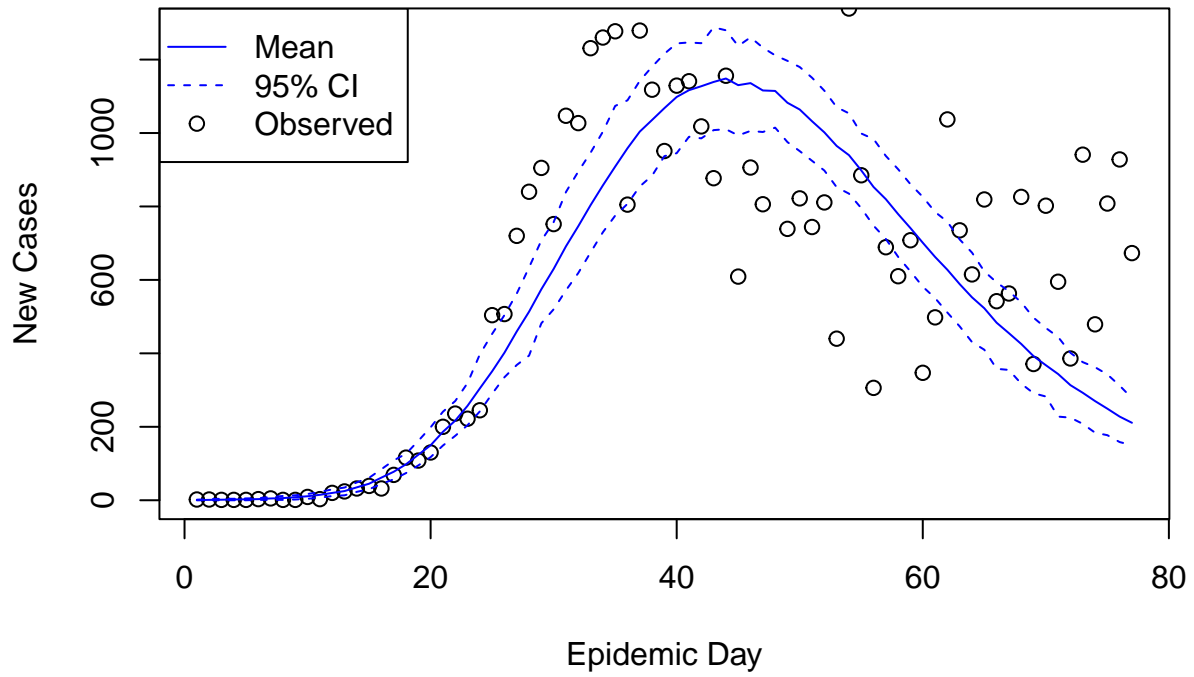
Model 1: Posterior Predictive Distribution

Model 1: Posterior Distribution
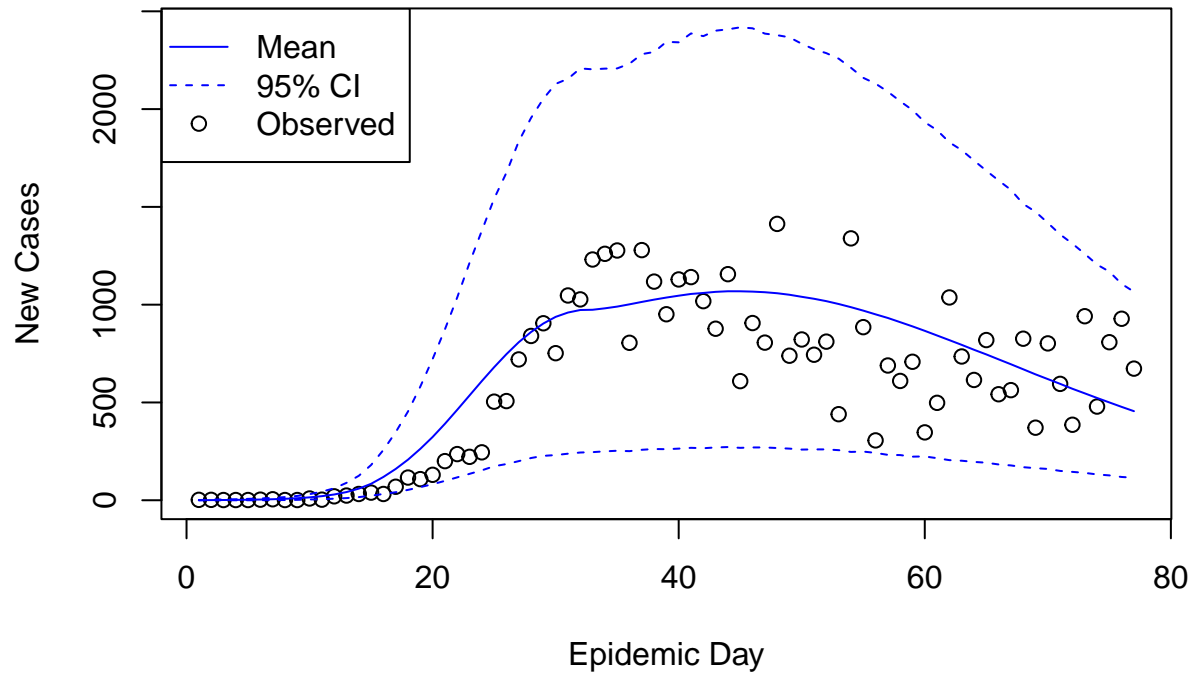

New Cases

Epidemic Day

- Mean
- 95% CI
- ○ Observed
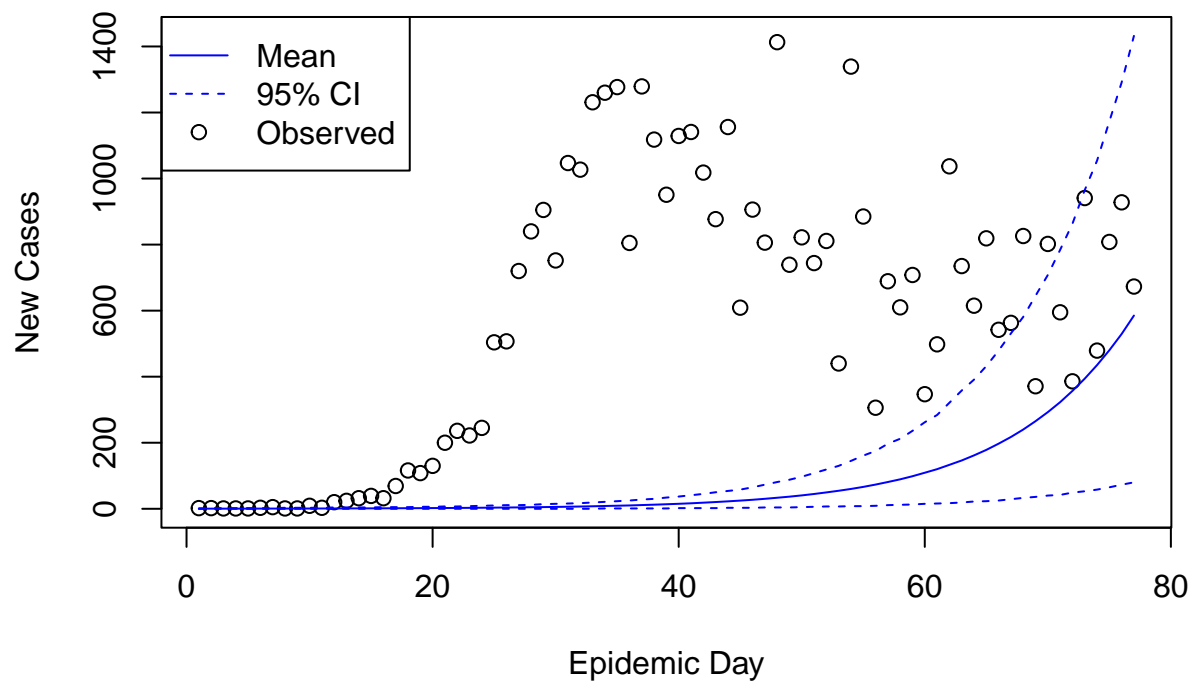
Model 2: Posterior Predictive Distribution

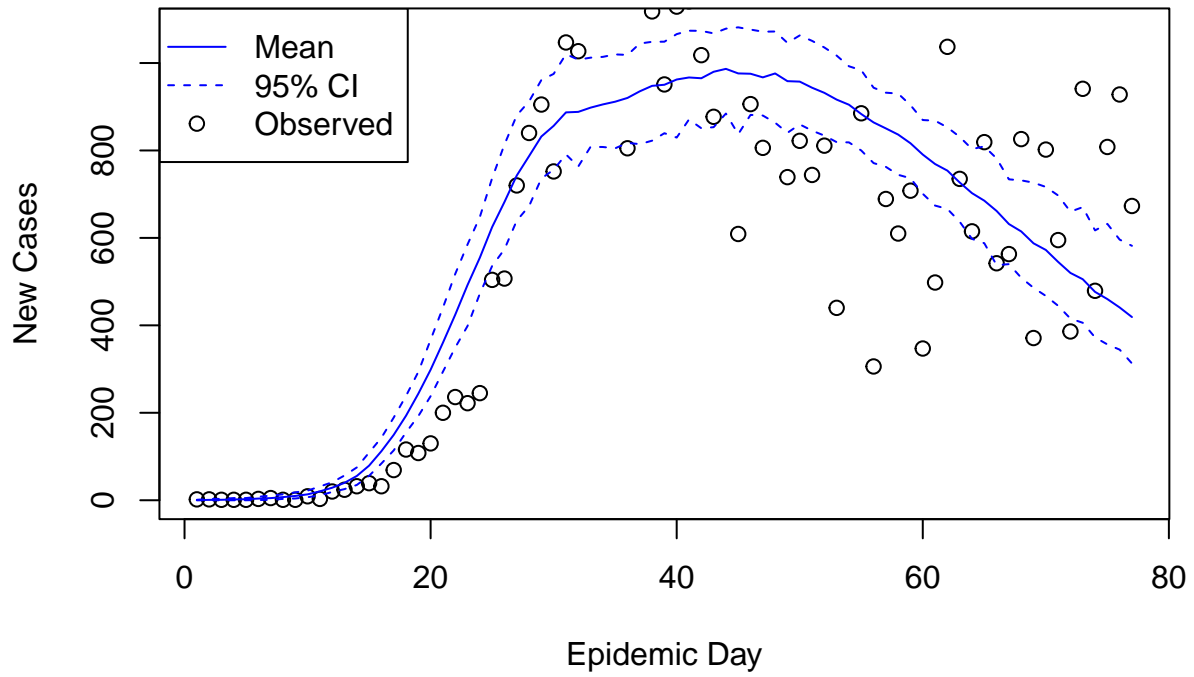# Model 2: Posterior Distribution

Model 3: Posterior Predictive Distribution

Model 3: Posterior Distribution

Model 4: Posterior Predictive Distribution

Model 4: Posterior Distribution

Model 5: Posterior Predictive Distribution

Model 5: Posterior Distribution

Model 6: Posterior Predictive Distribution

Model 6: Posterior Distribution

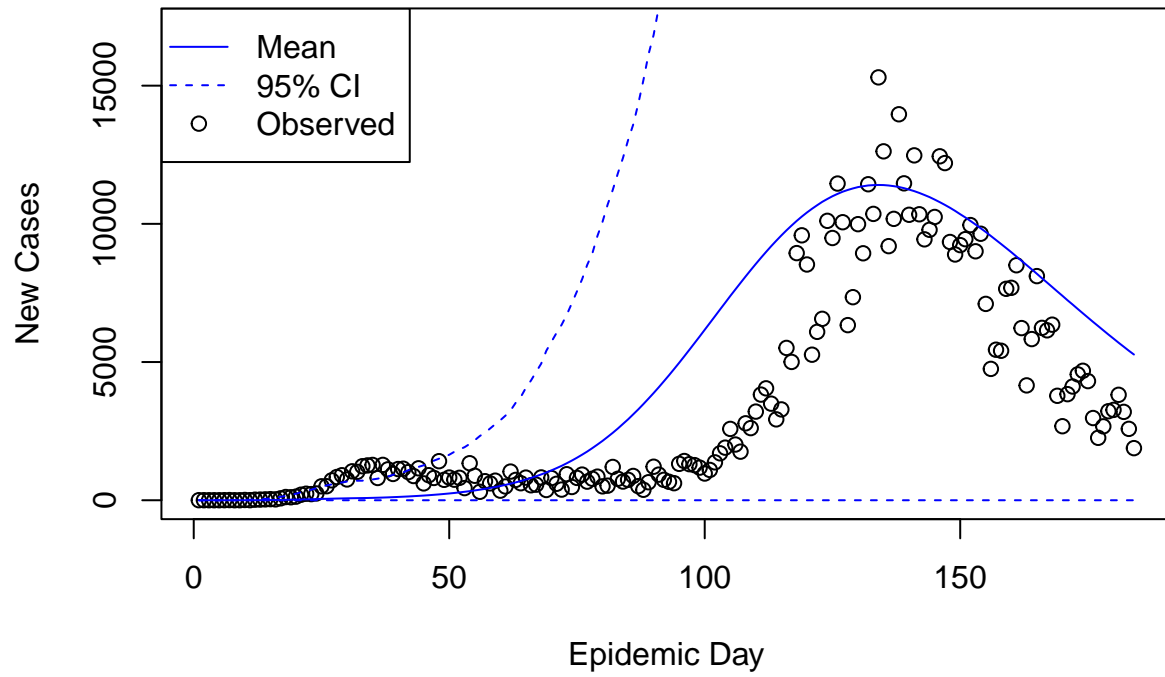**Model 7: Posterior Predictive Distribution**
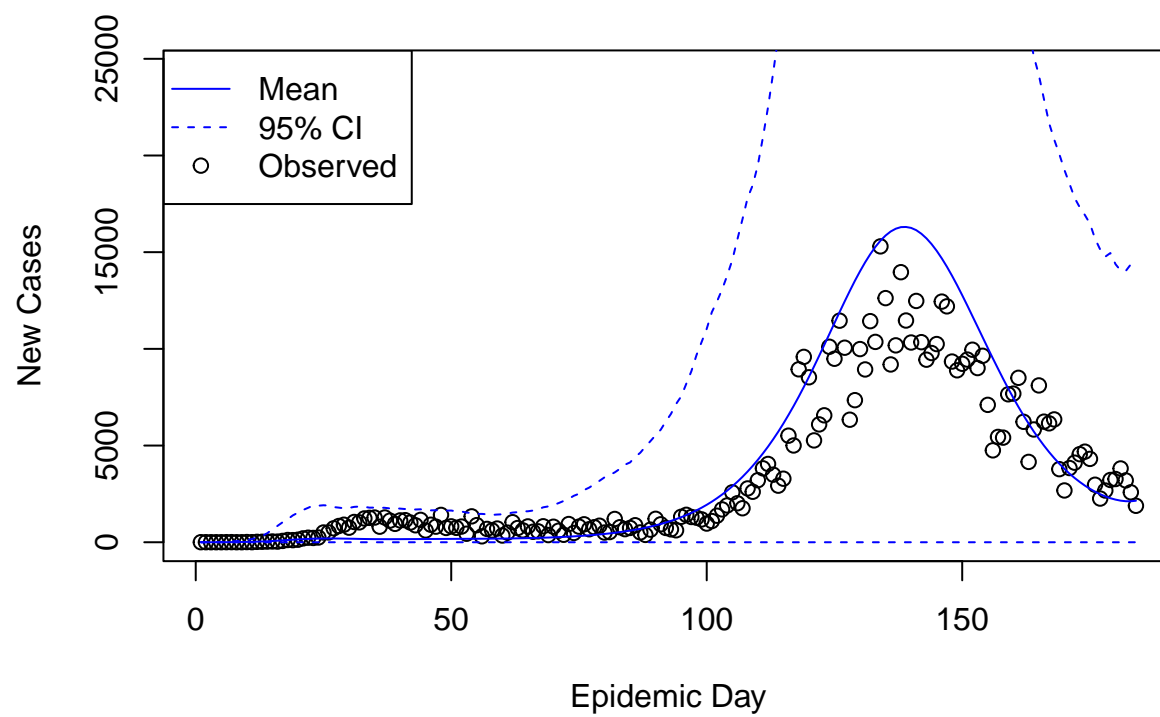
Model 7: Posterior Distribution
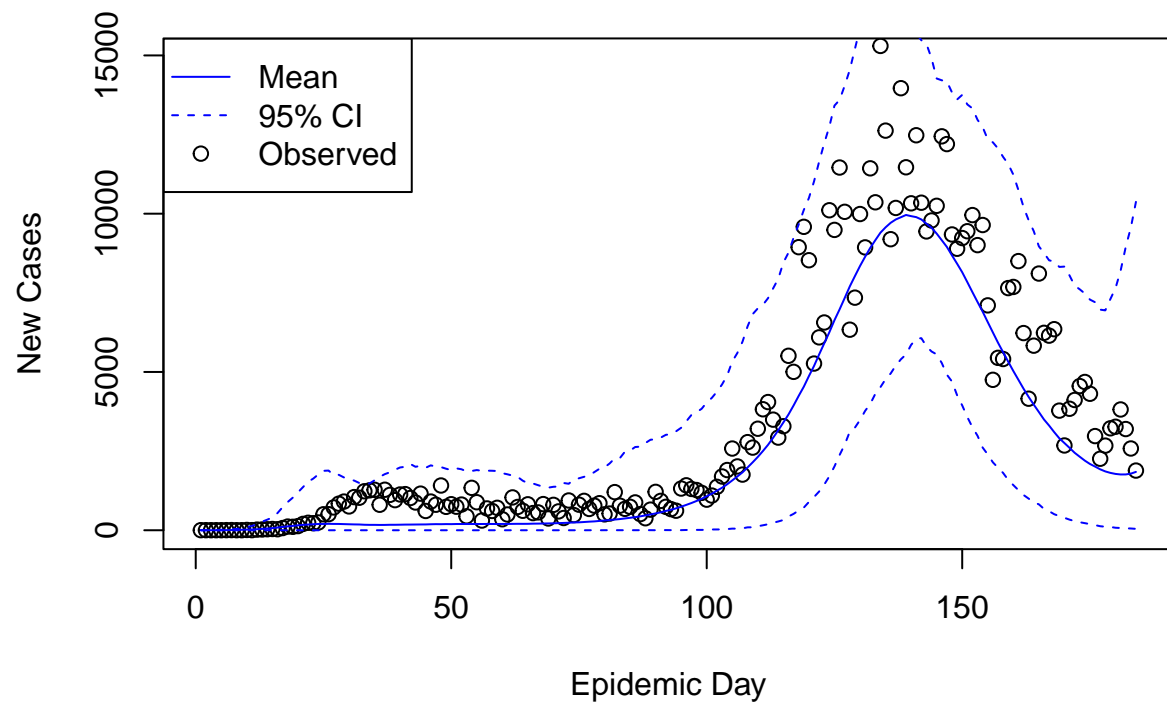
Model 8: Posterior Predictive Distribution
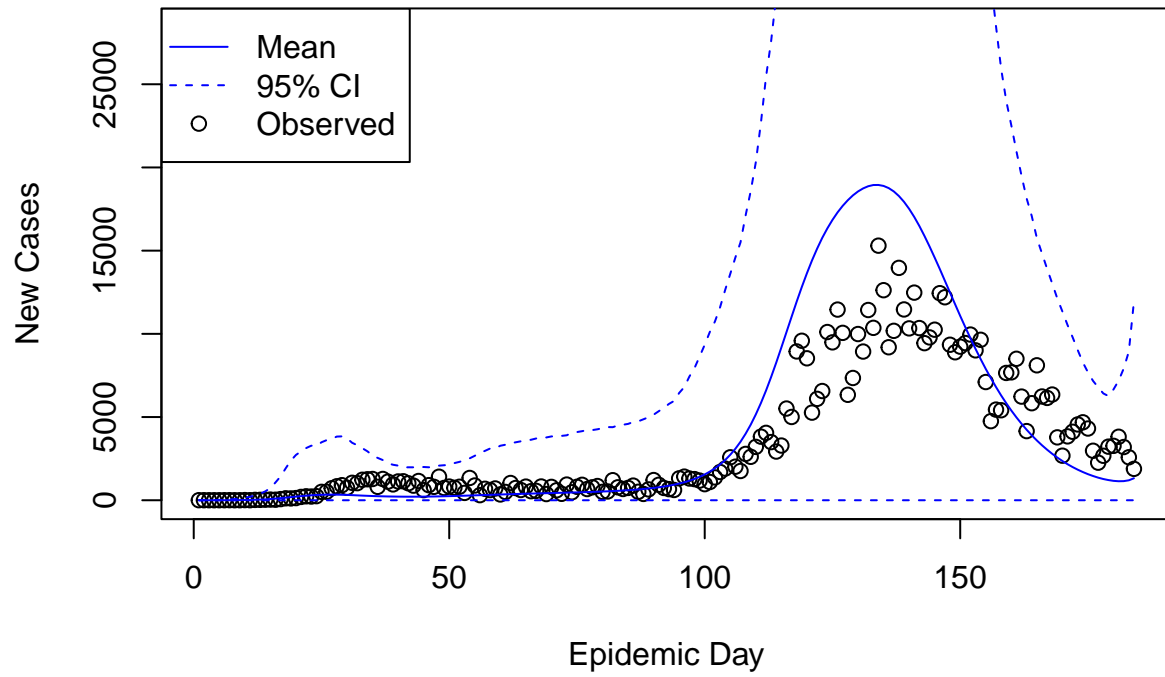
Model 8: Posterior Distribution
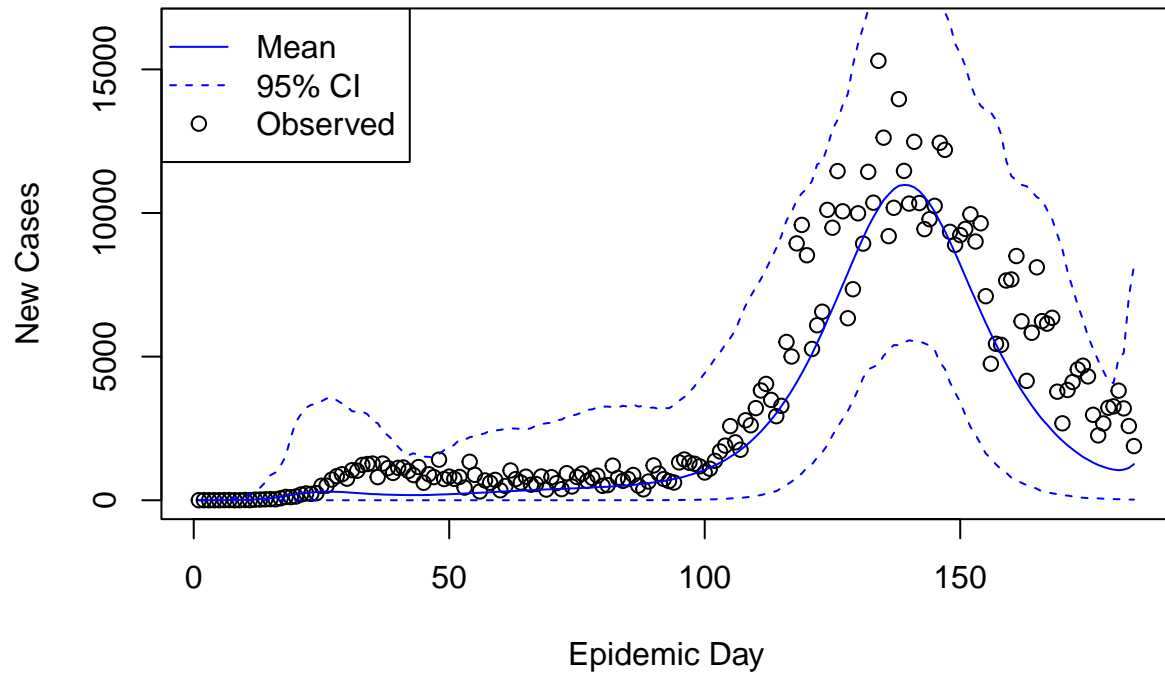
Model 9: Posterior Predictive Distribution
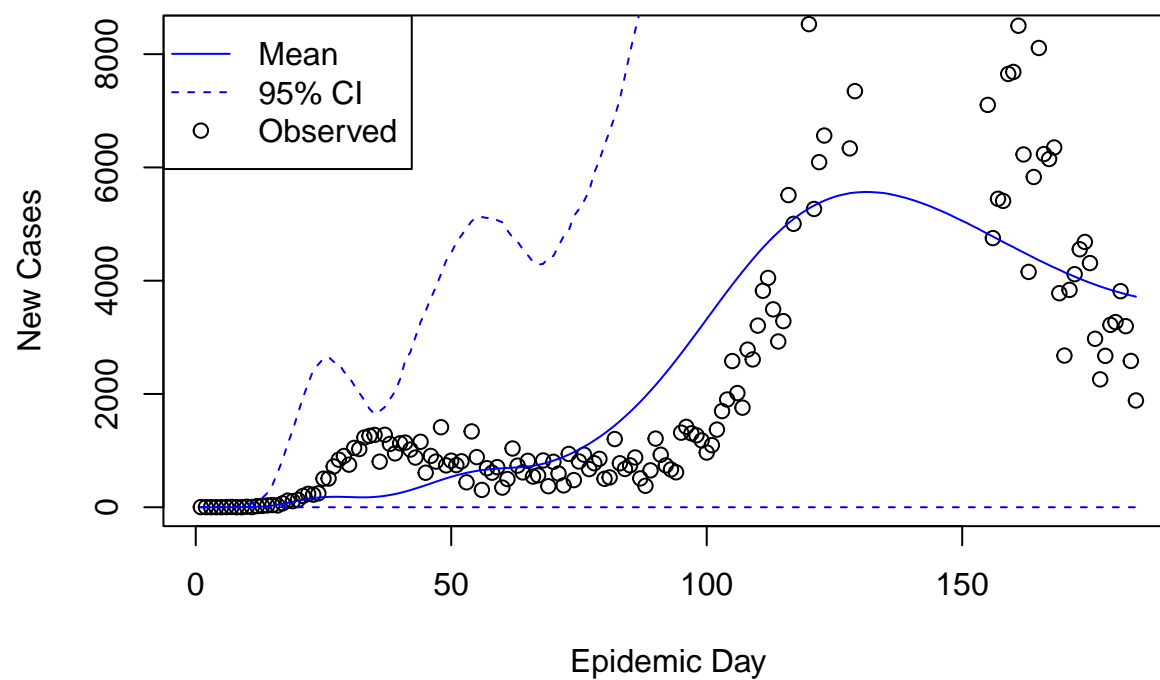
Model 9: Posterior Distribution
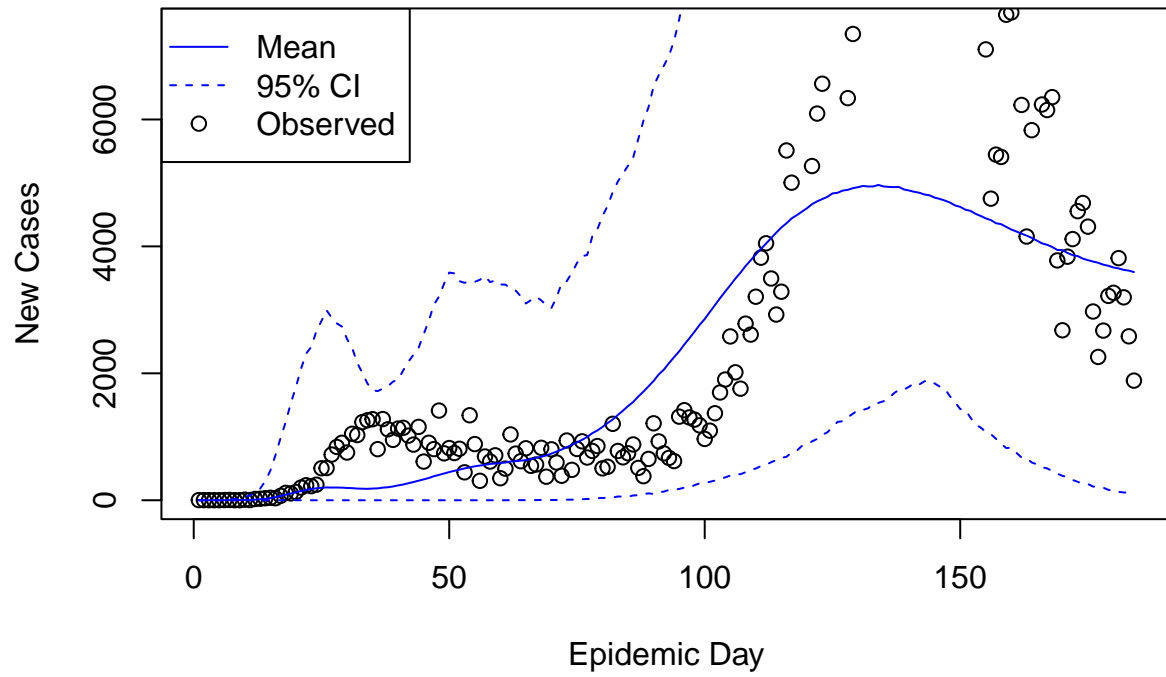
Model 10: Posterior Predictive Distribution
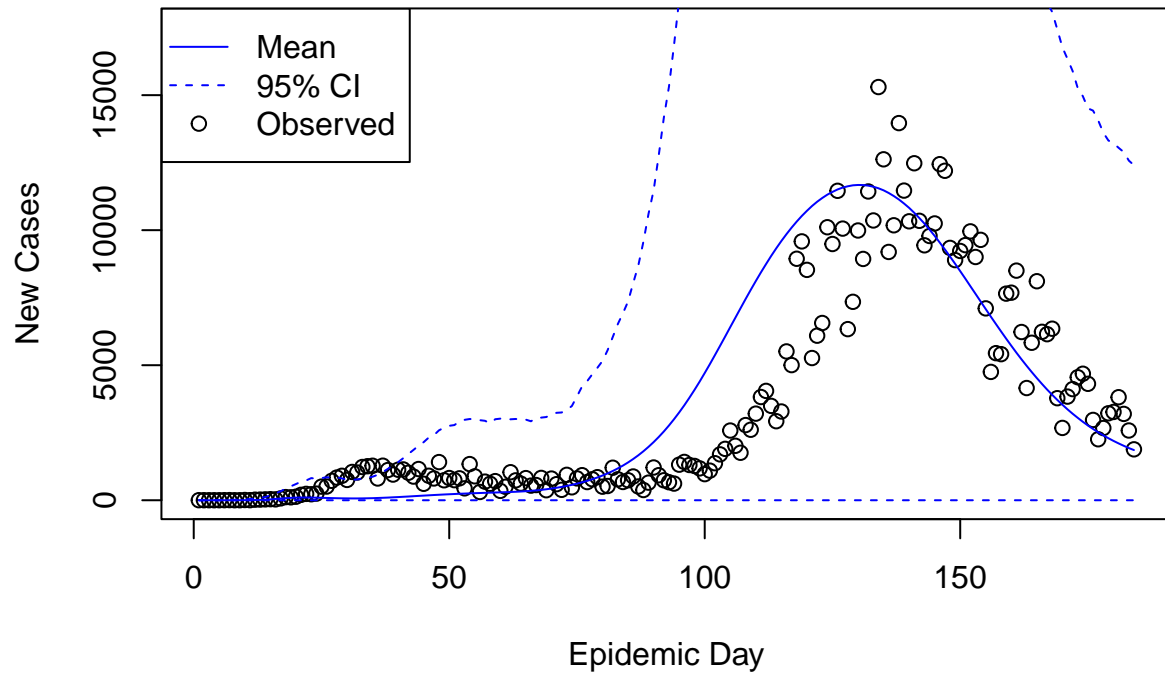
Model 10: Posterior Distribution
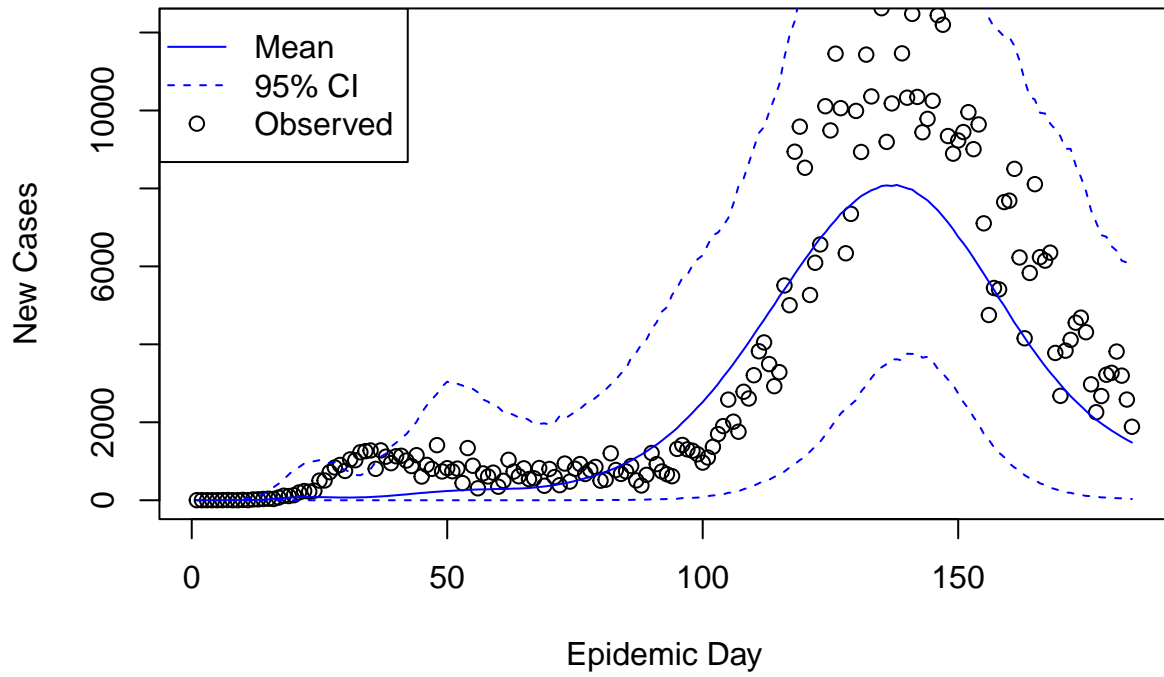
Model 11: Posterior Predictive Distribution
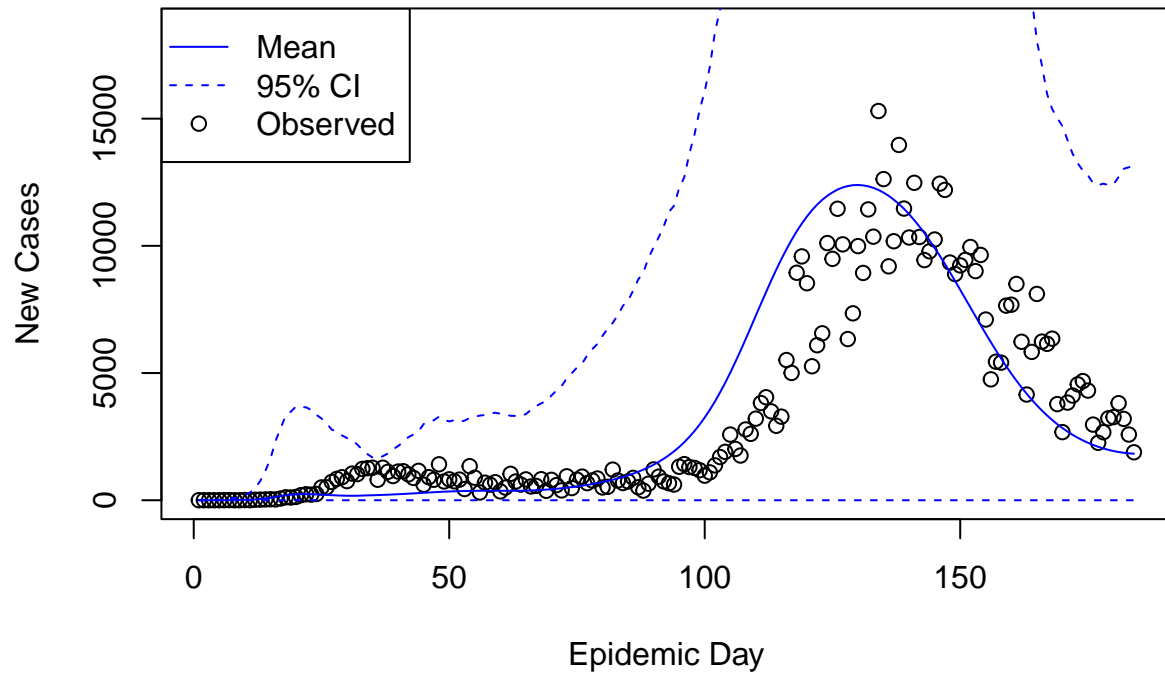
Model 11: Posterior Distribution
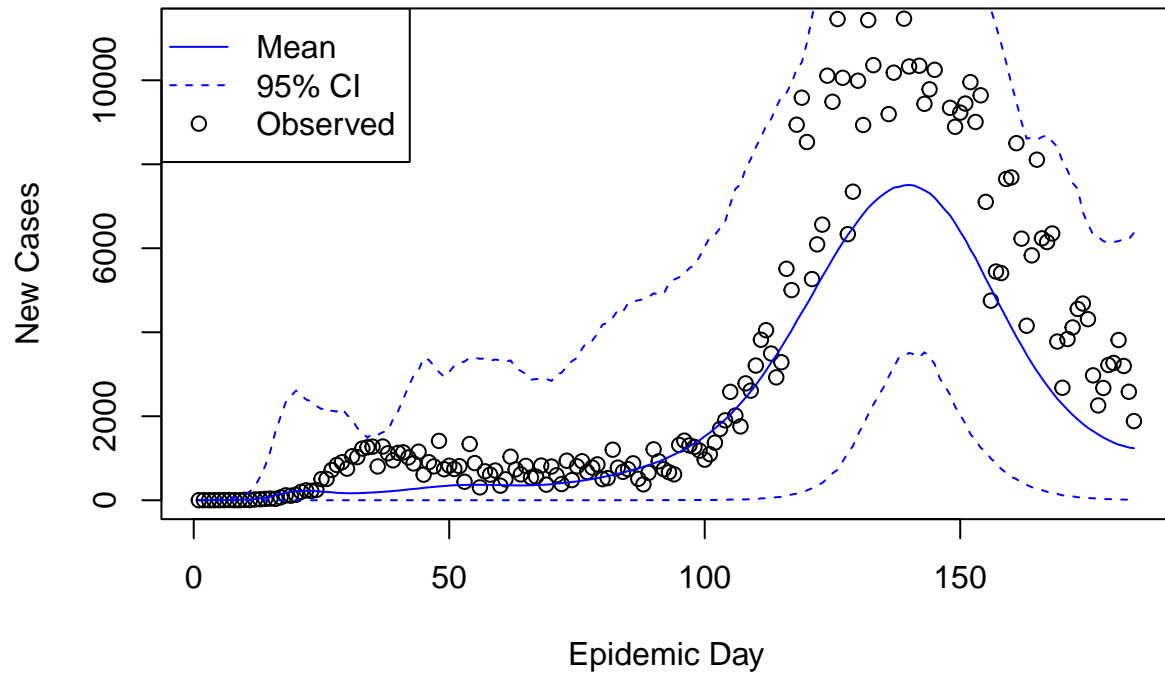
Model 12: Posterior Predictive Distribution
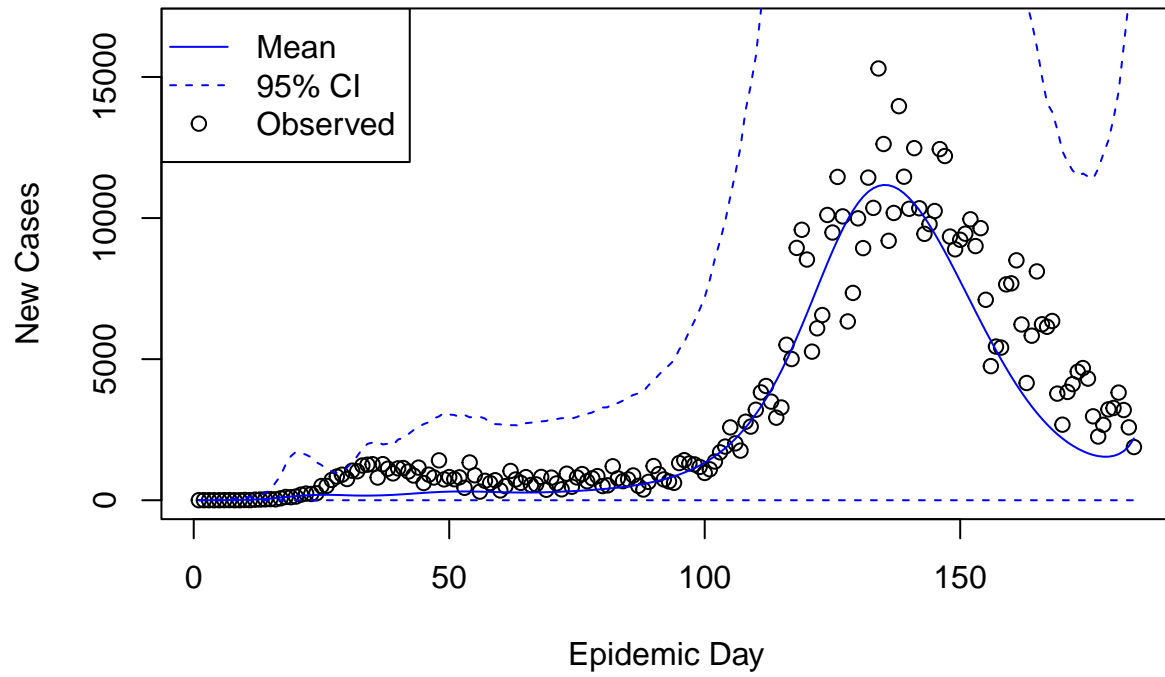
Model 12: Posterior Distribution
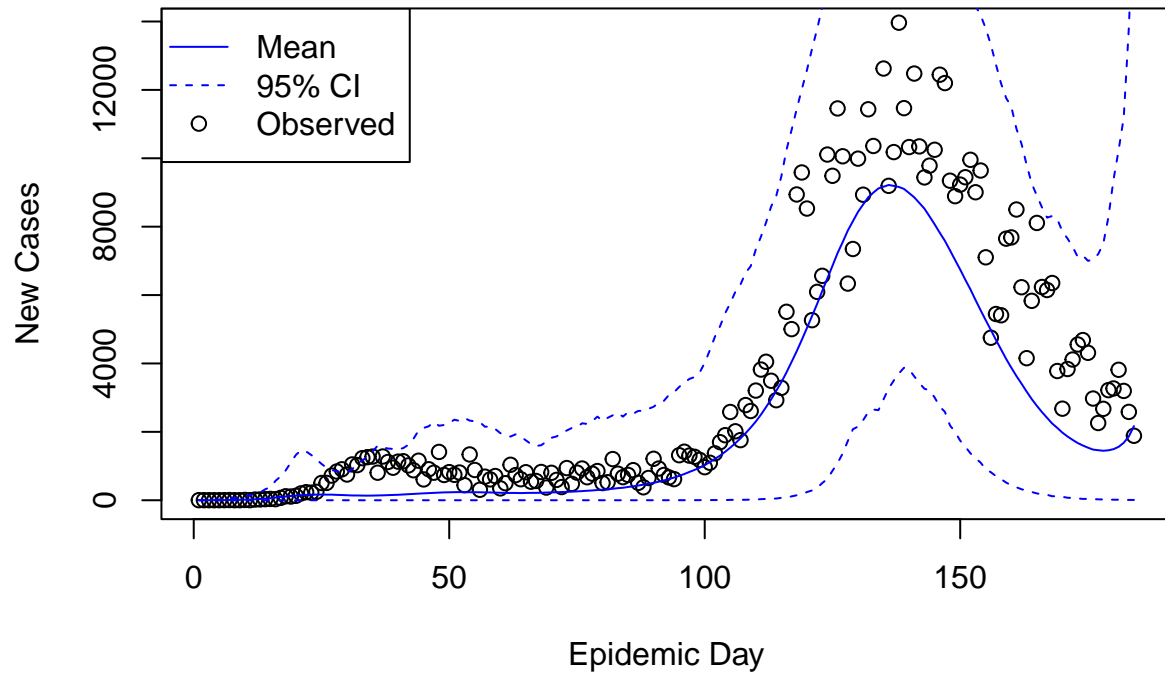
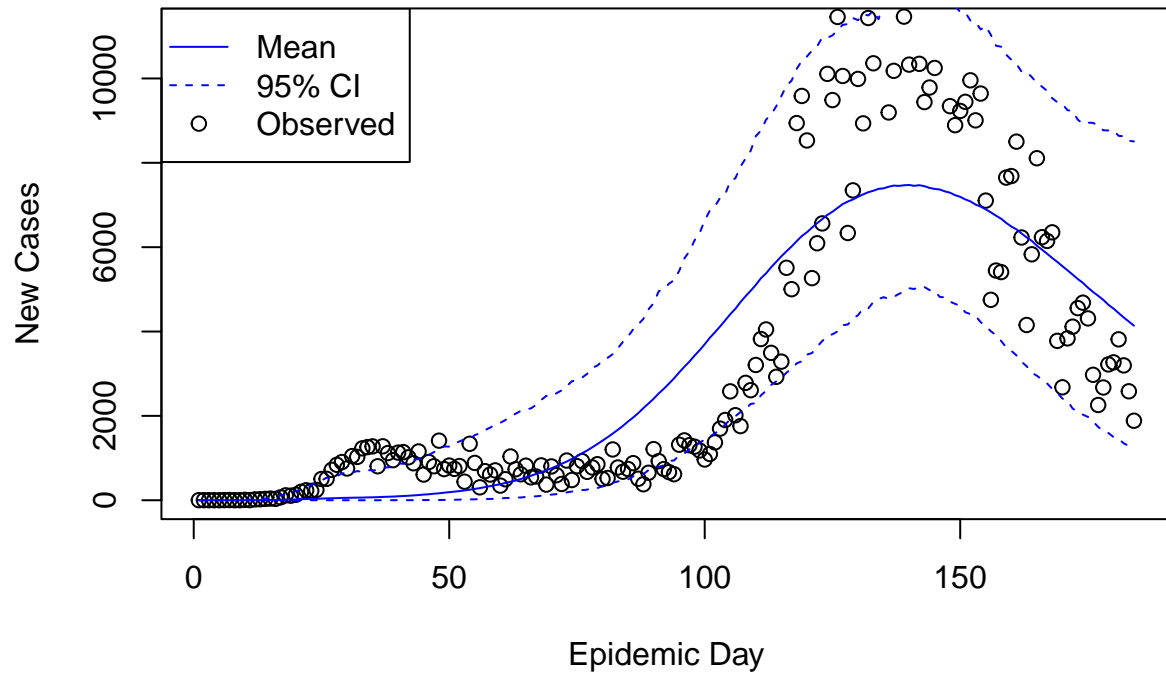# Model 13: Posterior Predictive Distribution
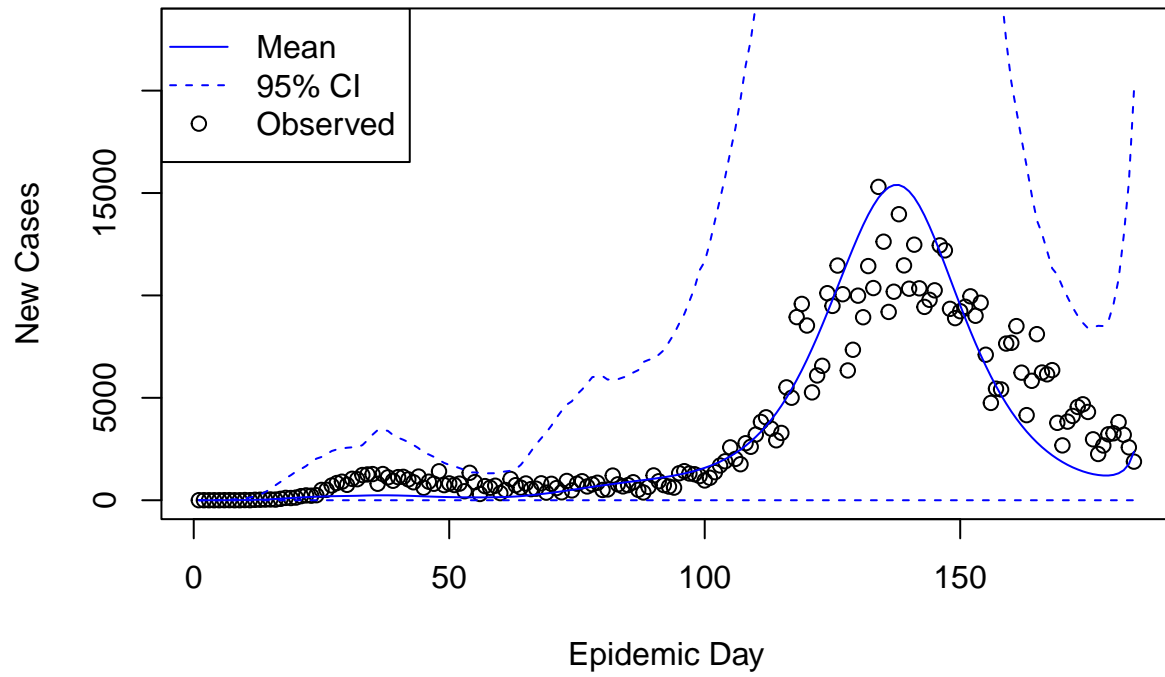
Model 13: Posterior Distribution
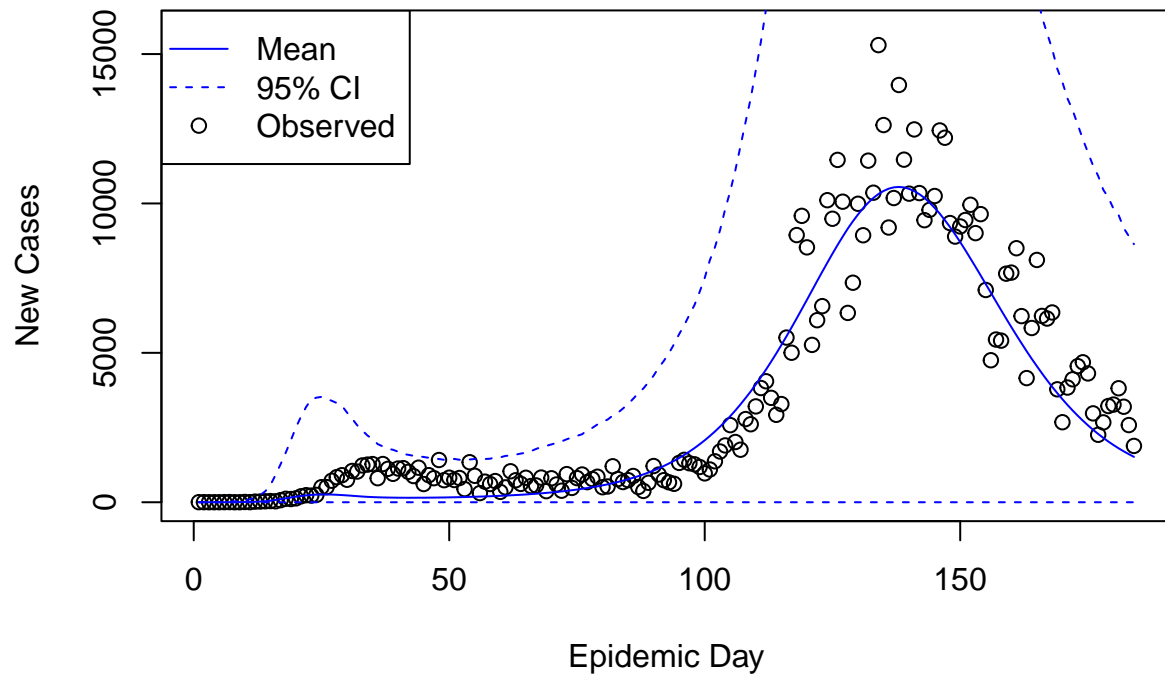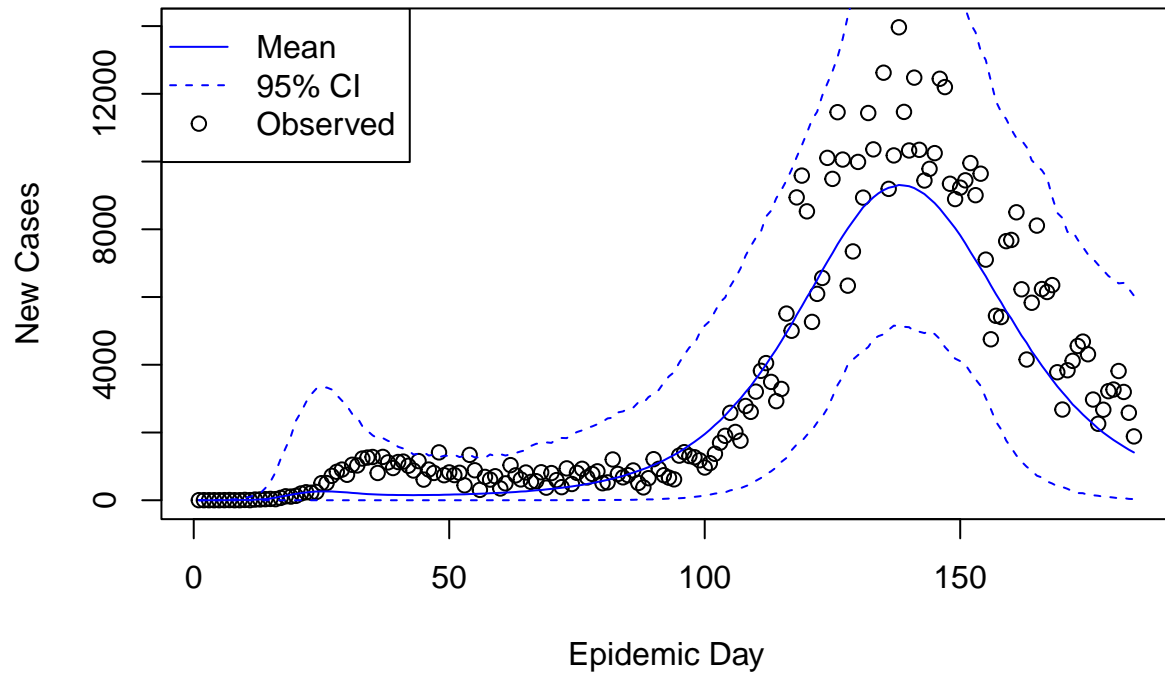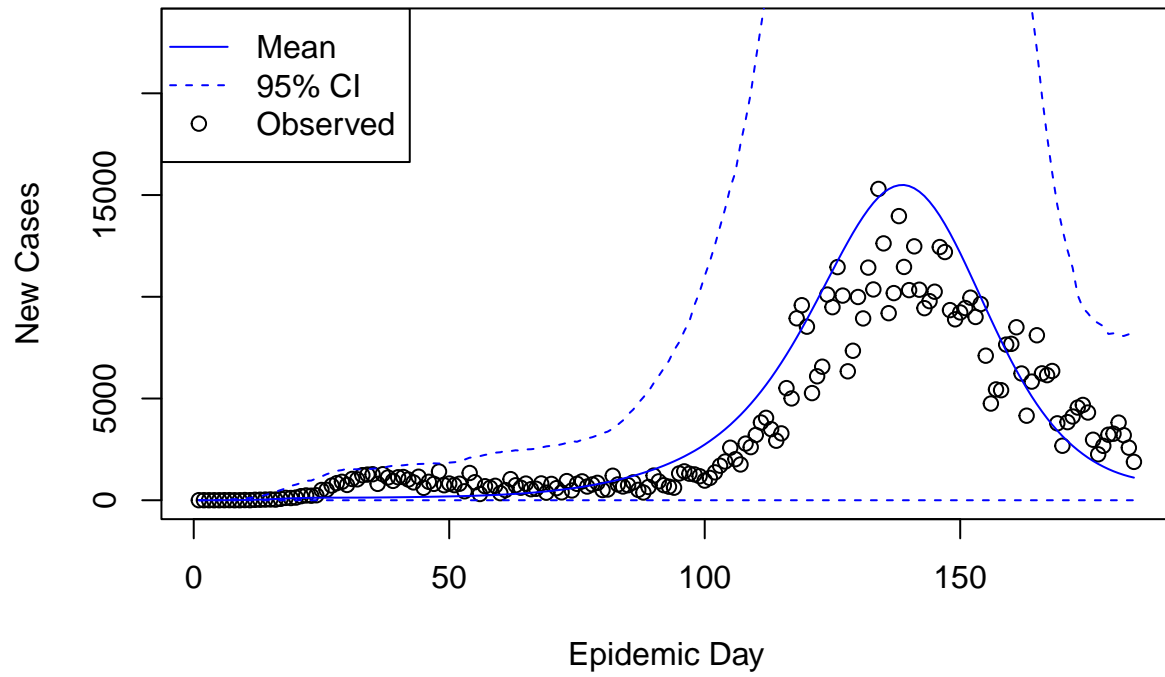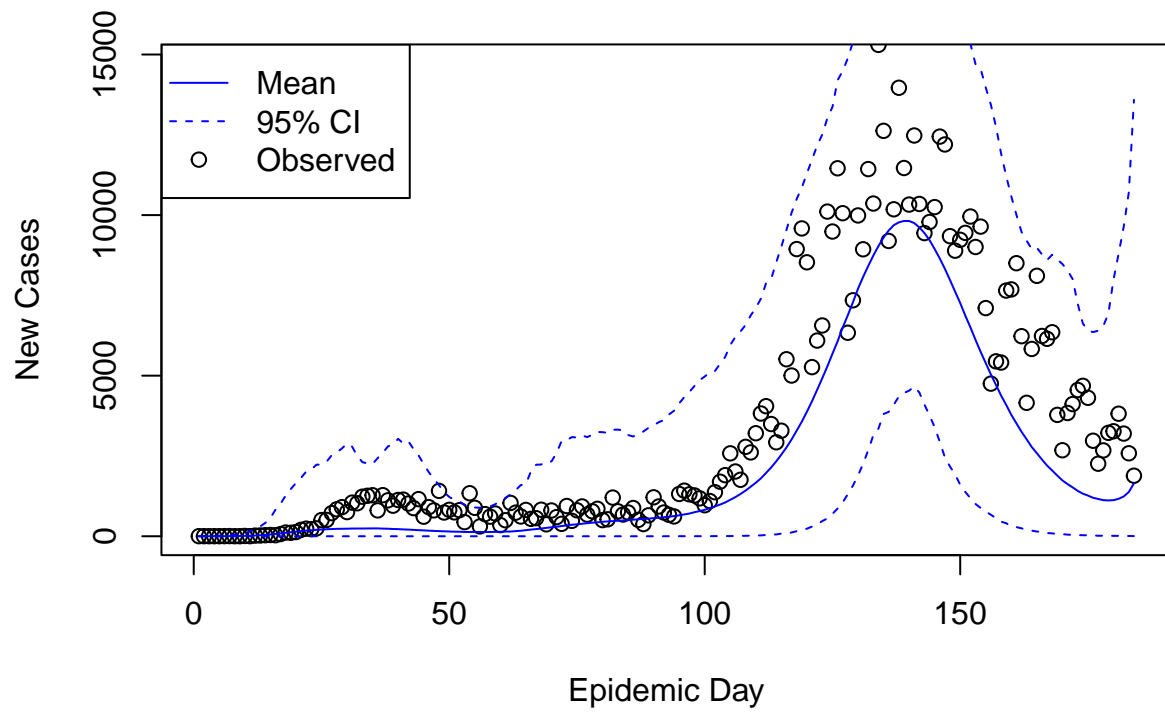
Model 14: Posterior Predictive Distribution
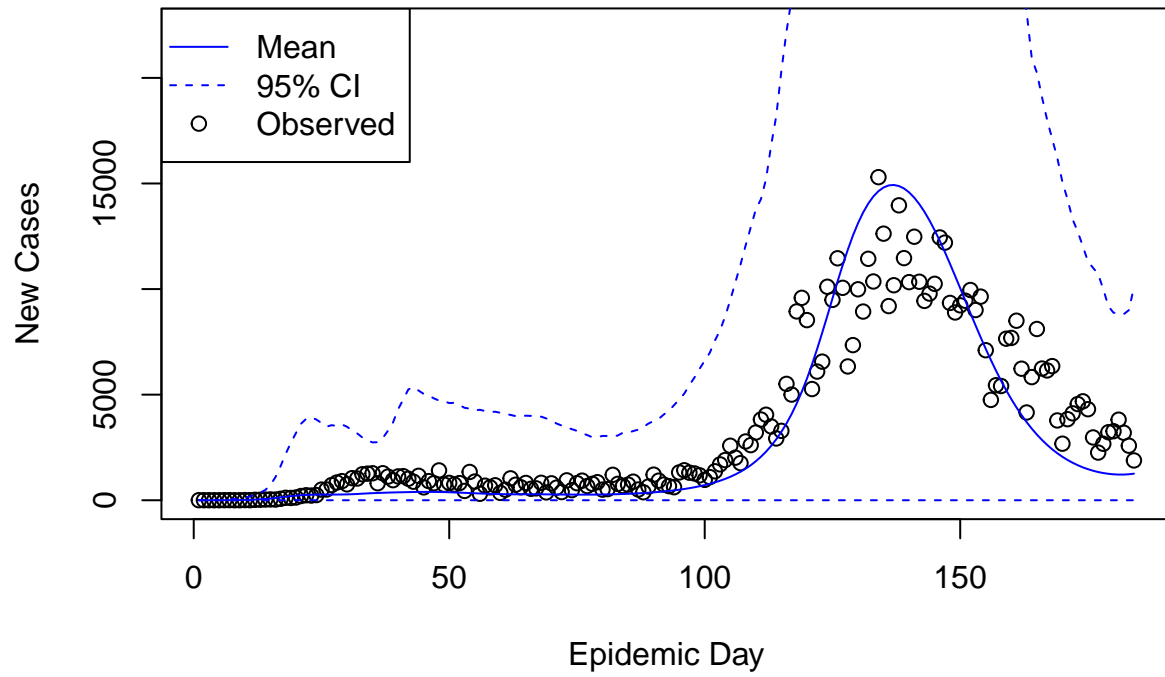
Model 14: Posterior Distribution
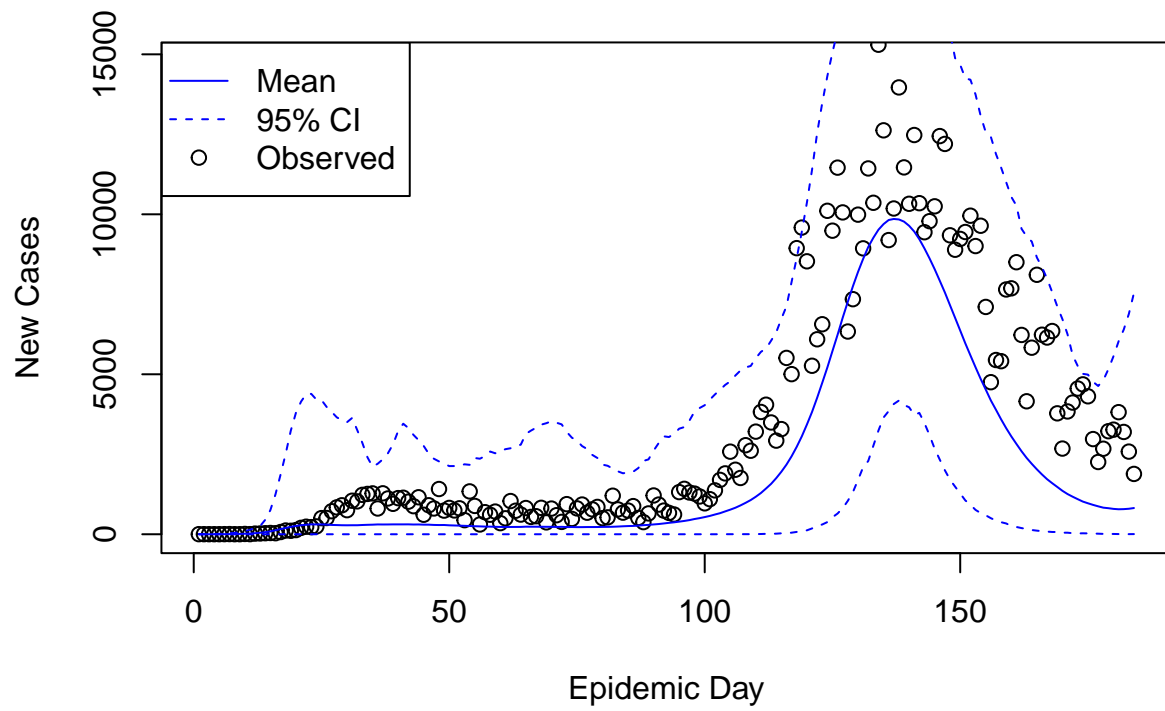
Model 6 (Weibull Distribution): Posterior Predictive Distribution
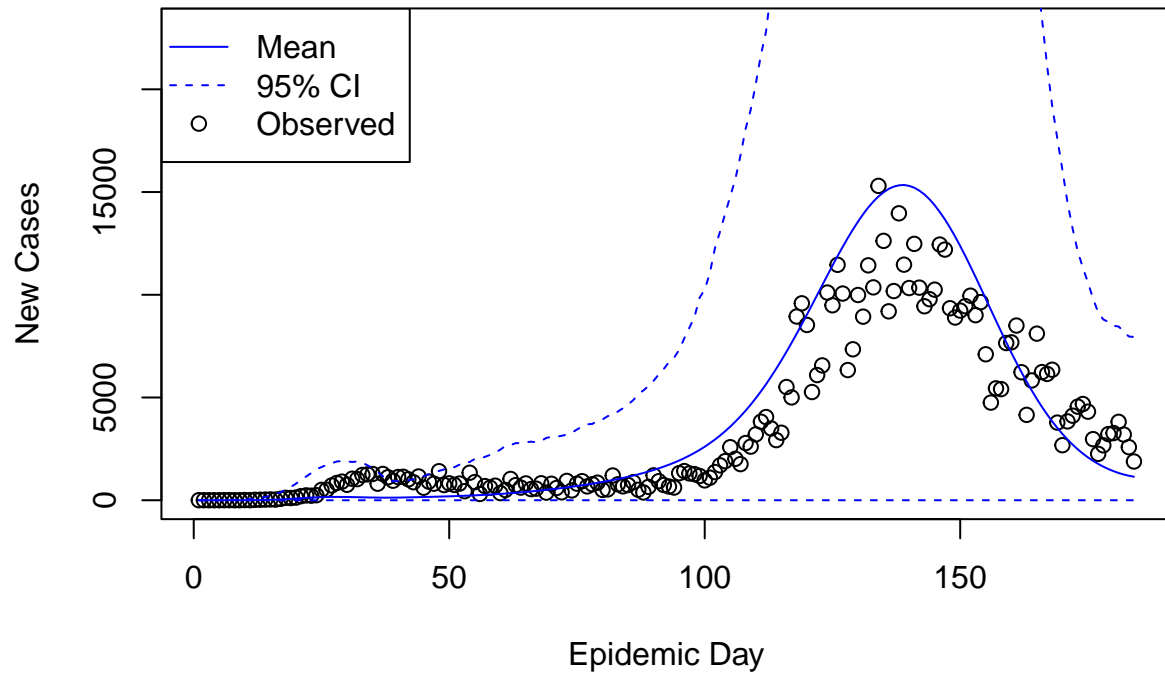
Model 6 (Weibull Distribution): Posterior Distribution
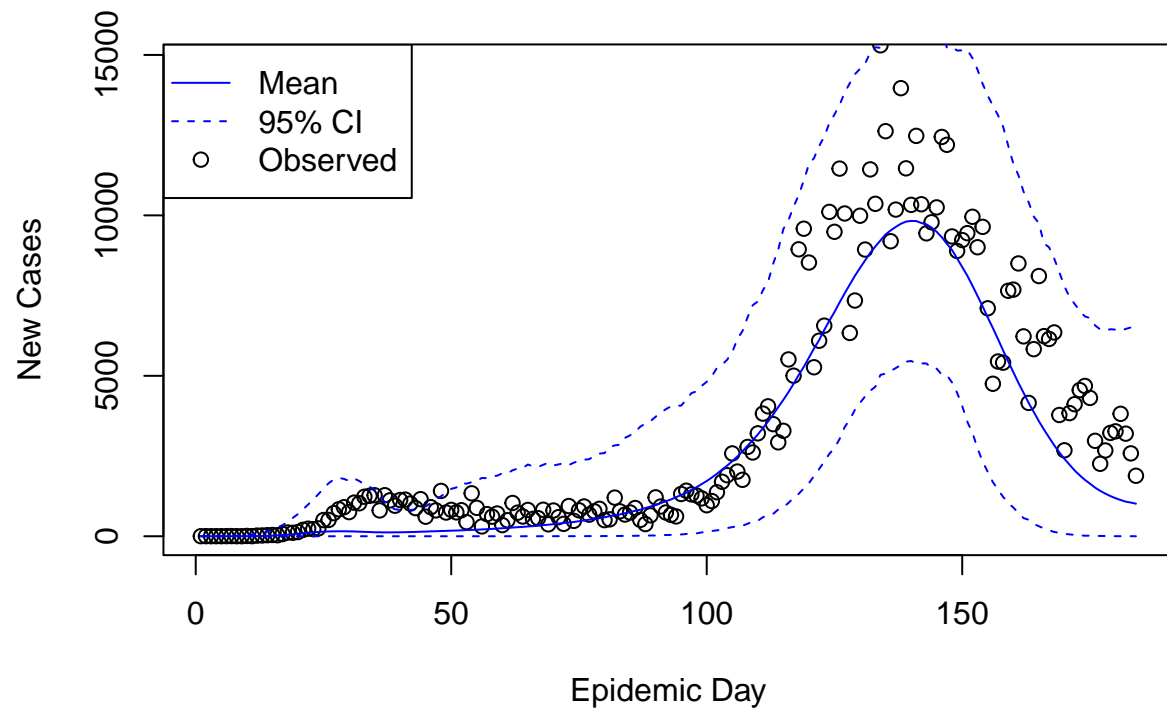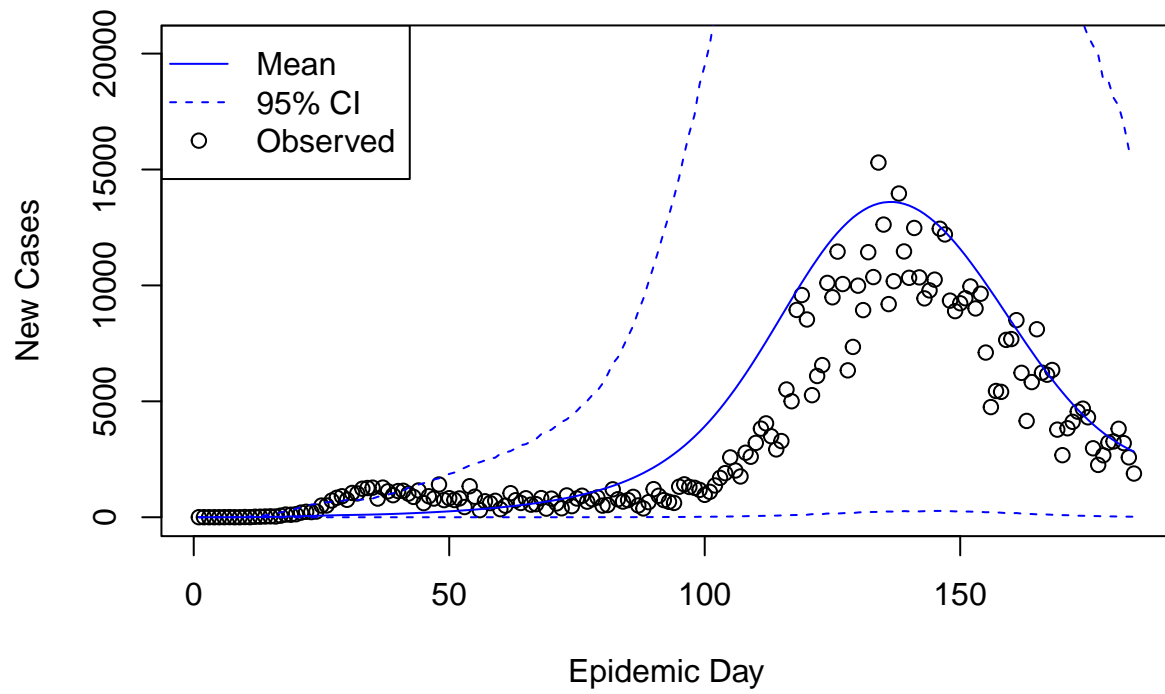
Model 6 (Basic ABC): Posterior Predictive Distribution

Model 6 (Basic ABC): Posterior Distribution
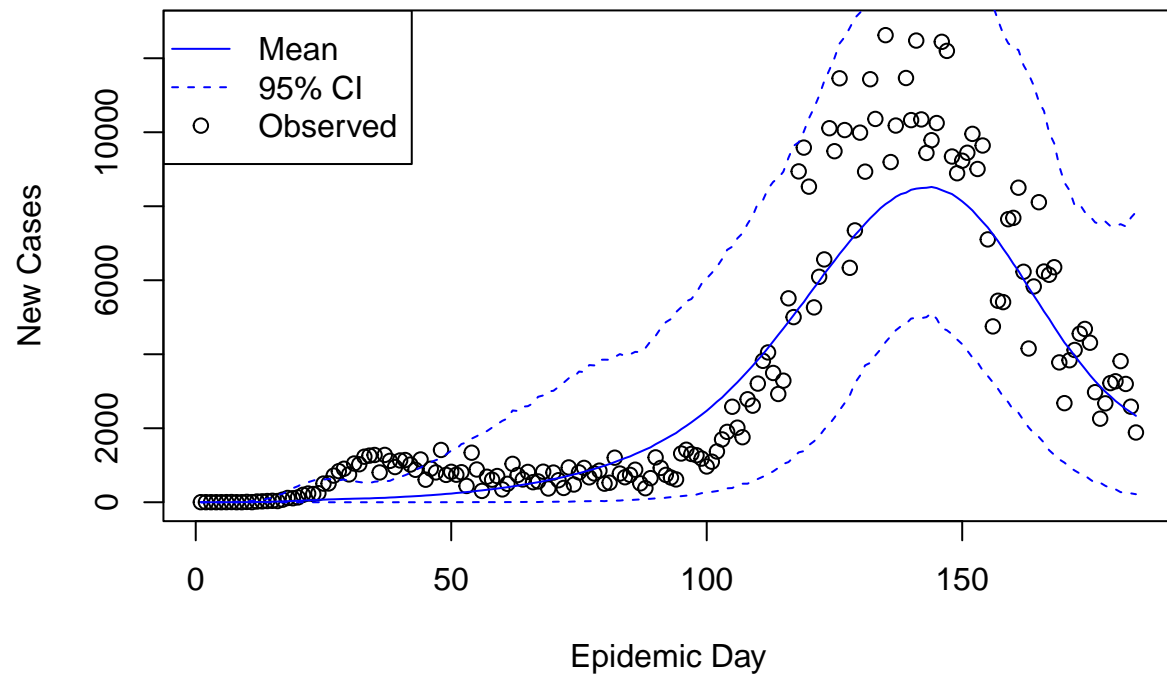
Model 6 (Weibull, Basic ABC): Posterior Predictive Distribution
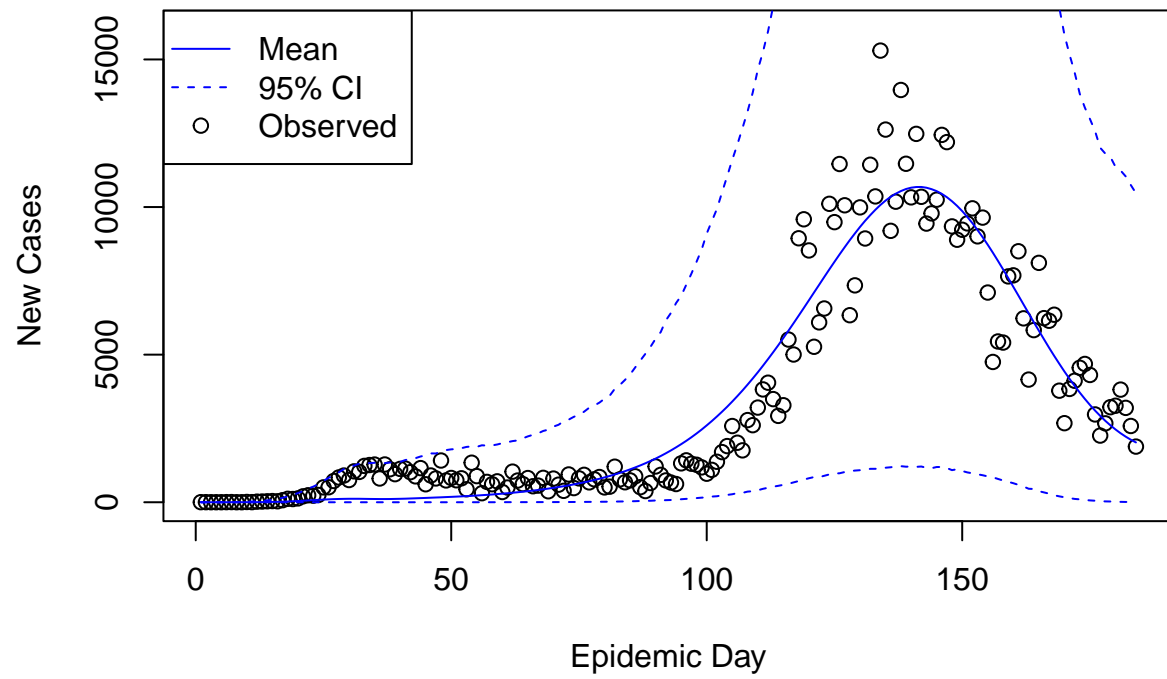
Model 6 (Weibull, Basic ABC): Posterior Distribution
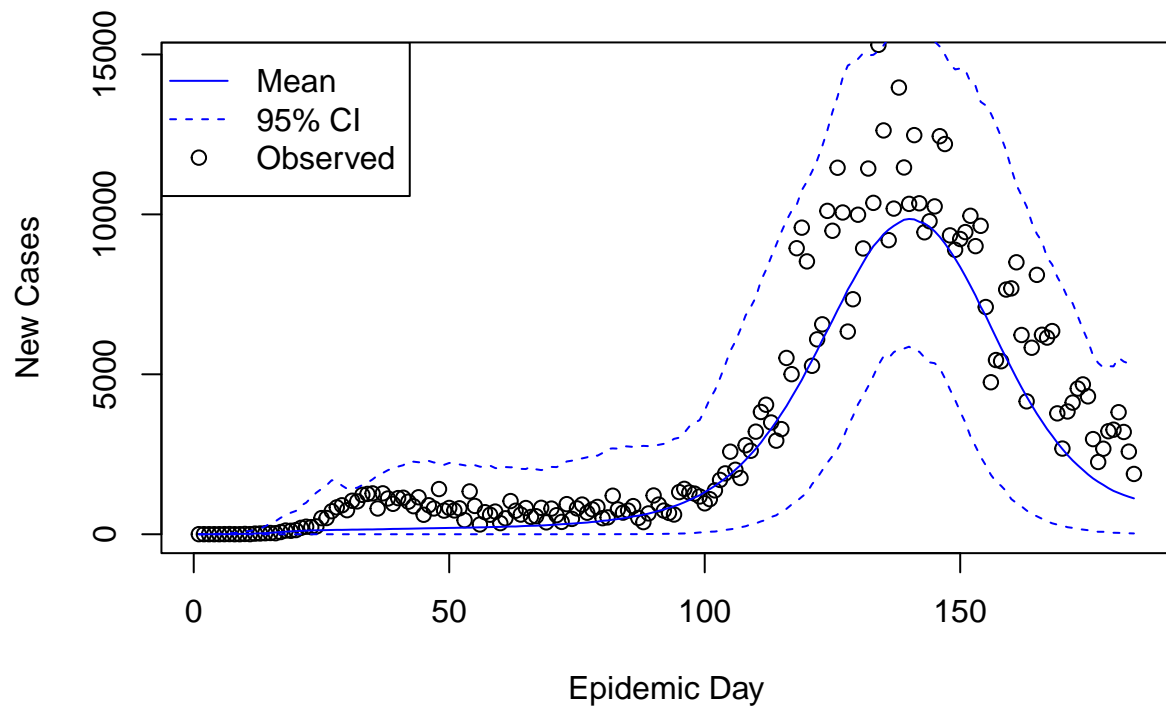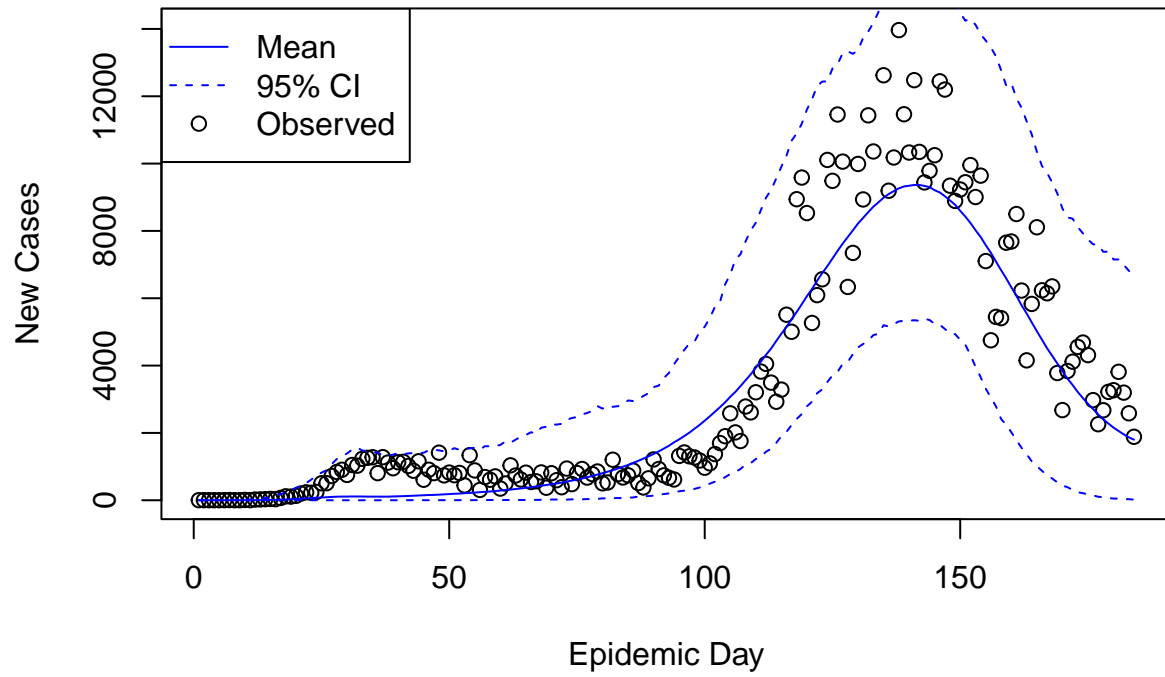
Model 15: Posterior Predictive Distribution

New Cases

Epidemic Day
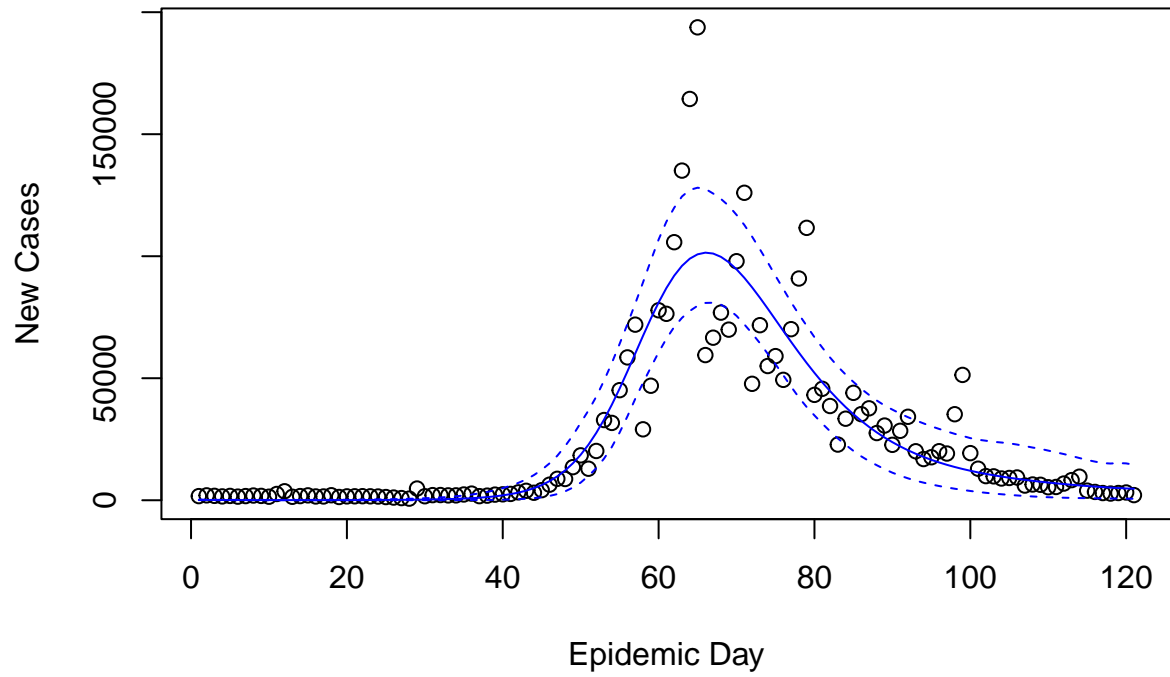
Model 15: Posterior Distribution
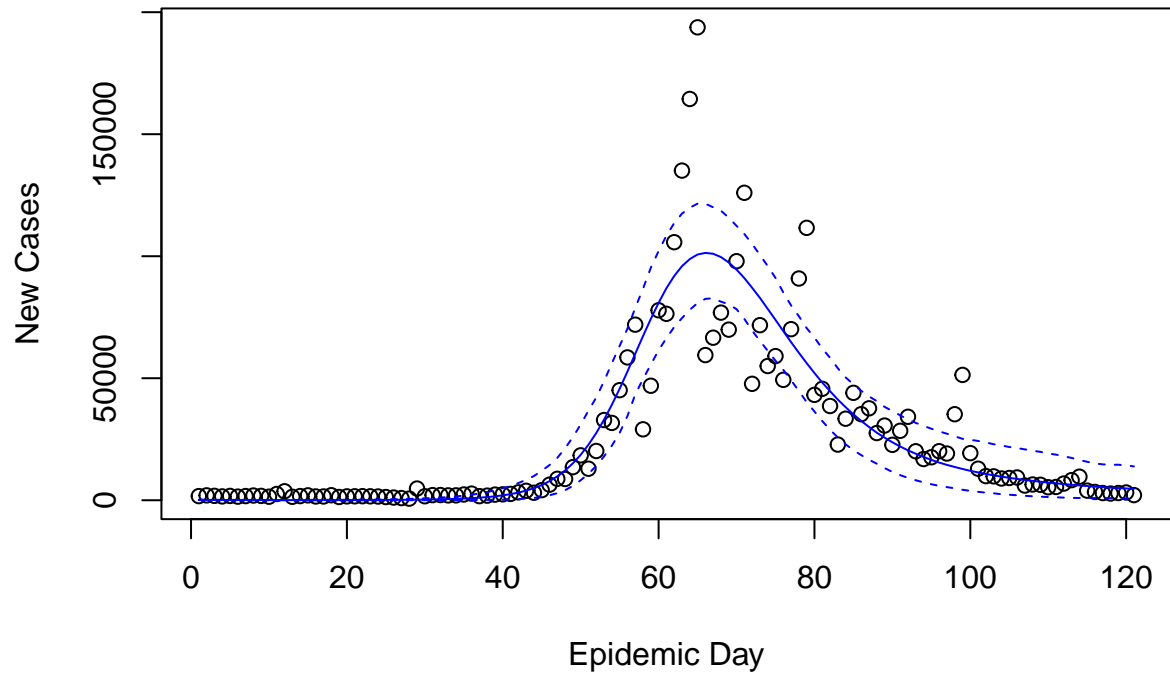
Model 3 Intensity Prediction
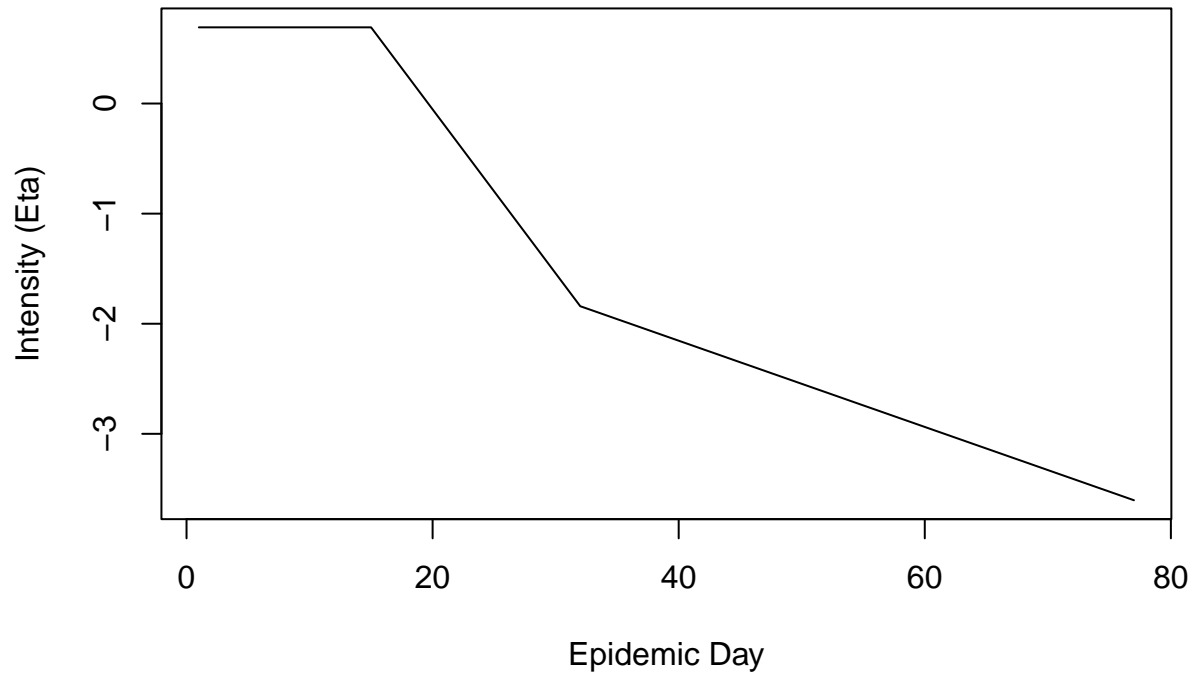
Model 6 Intensity Prediction

Epidemic Day
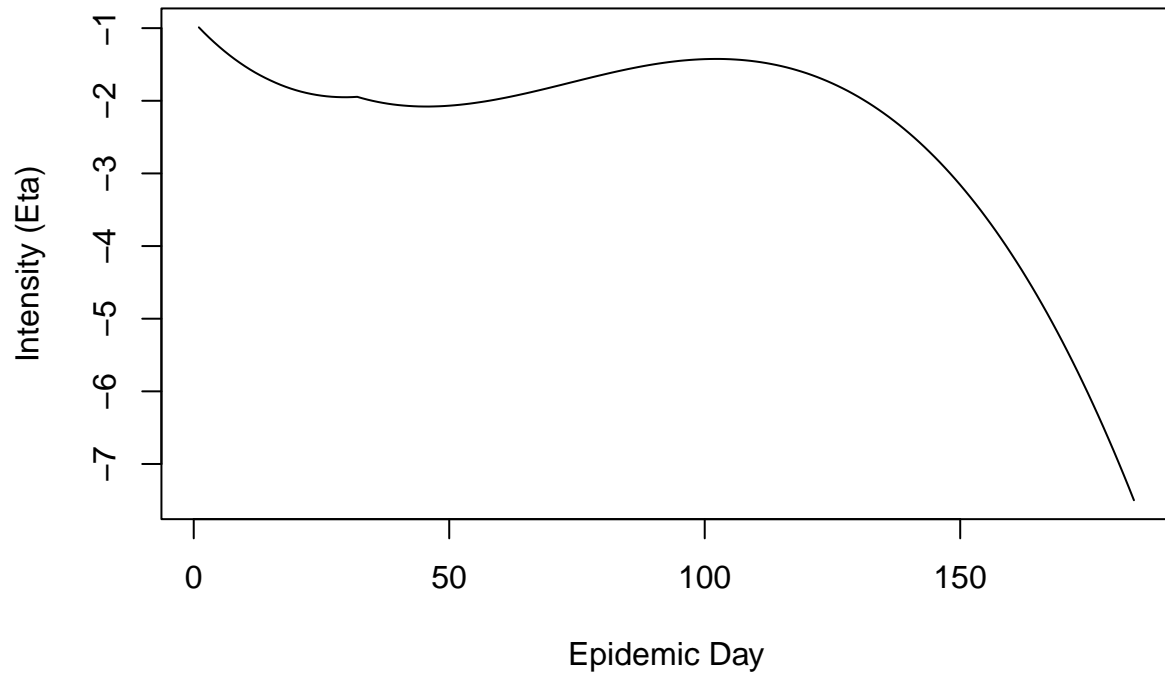
Model 11 Intensity Prediction
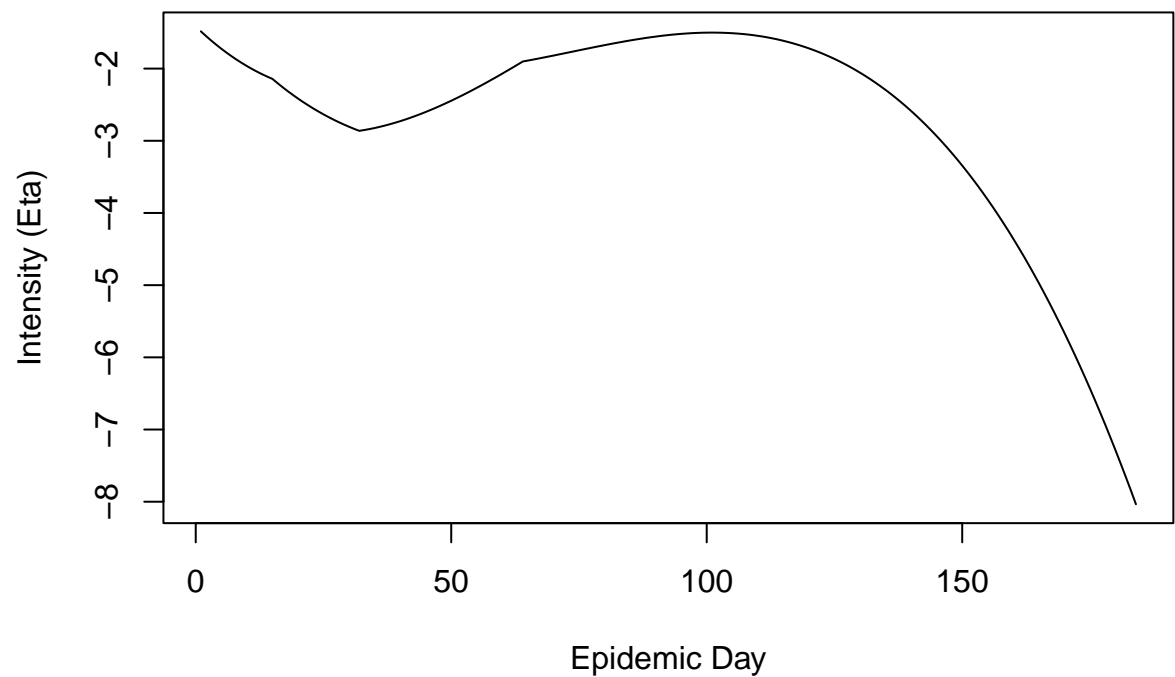
Model 1

```
## 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 (SMC-ABC, Exponential 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: 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 6 (SMC-ABC, 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
```

Model 6 (Basic ABC, 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              -1.065 1.198       -3.323        1.322
## Beta_SE_2               0.113 0.945       -1.895        1.563
## Beta_SE_3              -0.300 1.006       -1.848        1.859
## Beta_SE_4              -1.077 1.701       -4.132        2.463
## Beta_SE_5               0.811 1.723       -2.150        4.048
## Beta_SE_6               0.456 1.717       -2.909        3.516
## Beta_SE_7              -0.966 1.963       -5.071        2.163
## latent_shape            2.198 0.076        2.064        2.368
## latent_scale            6.518 0.197        6.183        6.868
## infectious_shape        4.358 0.450        3.506        5.251
## infectious_scale       15.870 1.500       13.014       18.922
## 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 (Basic ABC, Exponential 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: 2
##
```

```
##
## Parameter Estimates:
##                    Mean    SD      95% LB       95% UB
## Beta_SE_1        -0.935 1.255      -3.457        0.976
## Beta_SE_2        -0.049 1.051      -1.814        1.874
## Beta_SE_3        -0.120 1.114      -2.171        1.932
## Beta_SE_4        -0.886 1.675      -4.152        2.331
## Beta_SE_5         0.795 1.707      -2.501        3.910
## Beta_SE_6         0.591 1.991      -2.918        4.523
## Beta_SE_7        -1.095 1.823      -4.630        2.106
## gamma_EI          0.166 0.006       0.155        0.178
## gamma_IR          0.062 0.006       0.052        0.074
## 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
```

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 0.7468828 0.7130952 0.8424754 1.073477
## [2,] 1.3388982 1.0000000 0.9547619 1.1279887 1.437276
## [3,] 1.4023372 1.0473815 1.0000000 1.1814346 1.505376
## [4,] 1.1869783 0.8865337 0.8464286 1.0000000 1.274194
## [5,] 0.9315526 0.6957606 0.6642857 0.7848101 1.000000
```

Bayes Factor (Comparison Between Models 9-14)

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

```
##           [,1]      [,2]      [,3]      [,4]      [,5]      [,6]
## [1,] 1.000000 0.6793146 0.6159822 0.6719128 0.7152062 0.6928839
## [2,] 1.472072 1.0000000 0.9067703 0.9891041 1.0528351 1.0199750
## [3,] 1.623423 1.1028152 1.0000000 1.0907990 1.1610825 1.1248439
## [4,] 1.488288 1.0110159 0.9167592 1.0000000 1.0644330 1.0312110
## [5,] 1.398198 0.9498164 0.8612653 0.9394673 1.0000000 0.9687890
## [6,] 1.443243 0.9804162 0.8890122 0.9697337 1.0322165 1.0000000
```

Bayes Factor (Model 6 vs Model 11)

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

```
##           [,1]     [,2]
## [1,] 1.0000000 1.701258
## [2,] 0.5878004 1.000000
```

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

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

```
##          [,1]      [,2]
## [1,] 1.000000 0.9369989
## [2,] 1.067237 1.0000000
```

Coverage, width and bias for model 6 with exponential distribution, SMC-ABC (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 6 with exponential distribution, basic ABC (latent and infectious period estimates)

```
## $coverage
## [1] 1
##
## $width
## [1] 0.01989488
##
## $bias
## [1] 0.1114783


## $coverage
## [1] 1
##
## $width
## [1] 0.02191821
##
## $bias
## [1] 0.4101989
```

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, SMC-ABC (latent and infectious period estimates (shape and scale))

```
## $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
```

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

```
## $coverage
## [1] 1
##
## $width
## [1] 0.3256474
##
## $bias
## [1] 5.566533


## $coverage
## [1] 1
##
## $width
## [1] 0.6912316
```

```
## 
## $bias
## [1] -4.248362


## $coverage
## [1] 1
## 
## $width
## [1] 1.819829
## 
## $bias
## [1] 14.71174


## $coverage
## [1] 1
## 
## $width
## [1] 6.040971
## 
## $bias
## [1] -11.63822
```

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
## model 17      520.705   26.133  92.888
## model 18     1555.317   34.943 242.690
```