```
month = ["April" "August" "September" "October" "November" "July" "June" "May" "March"]
```

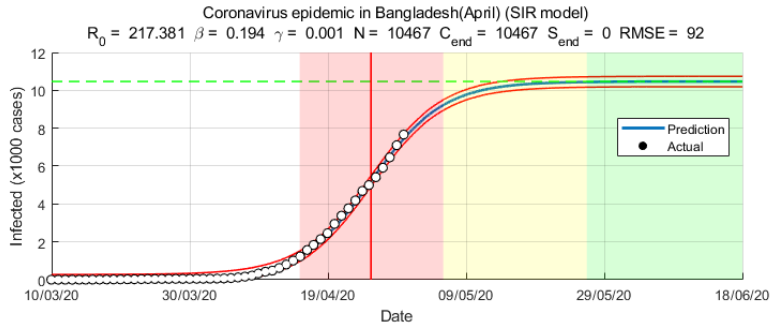
```
month = 1×9 string array
    "April"    "August"    "September"    "October"    "November"    "July"    "June"    "May"    "March"
```

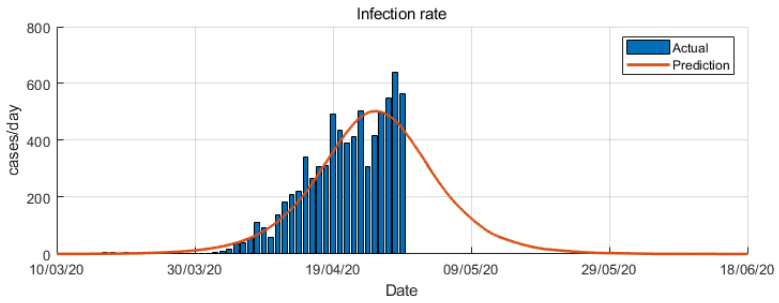
```
% data = [@getDataBangladesh_Apr @getDataBangladesh_Aug];
```

```
Error using horzcat
Nonscalar arrays of function handles are not allowed; use cell arrays instead.
```

```
fitVirusCV19(@getDataBangladesh_Apr,"April",'prn','on');
```

```
Epidemic modeling by susceptible-infected-recovered (SIR) model
  Country                        Bangladesh
  Day                            54
Estimated the SIR model parameters
  Contact rate (beta)            0.194 (1/day)
  Removal rate (gamma)           0.001 (1/day)
  Population size (N)            10467
  Initial number of cases (I0)   0
Basic reproduction number (R0)   217.381
Final state
  Final number of cases          10467
  Final number of susceptibles   0
Daily forcast for 01-May-2020
  Total                          7854
  Increase                       187
Estimated logistic model parameters
  Epidemic size (K)              10443 (cases)
  Epidemic rate (r)              0.192778 (1/day)
  Initial doubling time          3.6 (day)
Estimated duration (days)
  Turning day                    48
  Acceleration   phase           10 (days)
  Deaceleration  phsee           10 (days)
  Total duration                 21 (days)
Estimated datums
  Outbreak                       08-Mar-2020
  Start of acceleration          15-Apr-2020
  Turning point                  25-Apr-2020
  Start of steady growth         06-May-2020
  Start of ending phase          26-May-2020
Statistics
  Number of observations         54
  Degrees of freedom             50
  Root Mean Squared Error        91.6005
  R-Squared                      0.998
  Adjusted R-Squared             0.998
  F-statistics vs. zero model    9446.3
  p-value                        7.99875e-69
Method
  Total cases weight             0.5
  Infection rate weight          0.5
  Objective function value       512.959
  Exit condition (1=OK)          0
```

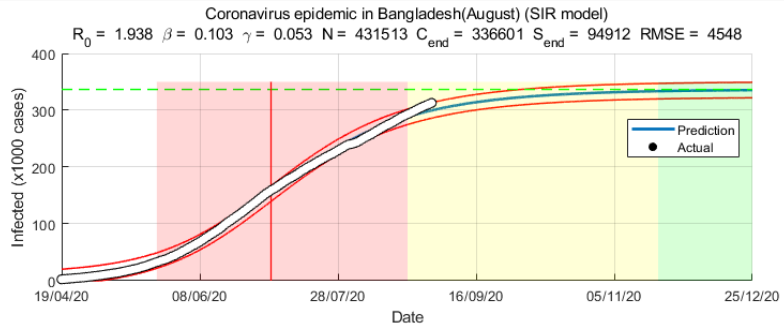


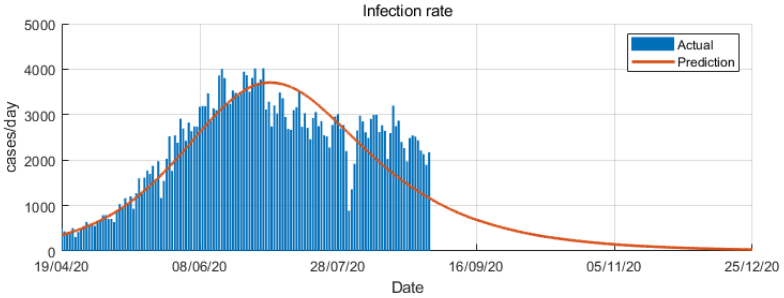



```
pause(3)
fitVirusCV19(@getDataBangladesh_Aug,"August",'prn','on');
```

```
Epidemic modeling by susceptible-infected-recovered (SIR) model
  Country                        Bangladesh
  Day                            177
Estimated the SIR model parameters
  Contact rate (beta)            0.103 (1/day)
  Removal rate (gamma)           0.053 (1/day)
  Population size (N)            431513
  Initial number of cases (I0)   437
Basic reproduction number (R0)   1.938
Final state
  Final number of cases          336600
  Final number of susceptibles   94912
Daily forcast for 01-Sep-2020
  Total                          NaN
  Increase                       NaN
Estimated logistic model parameters
  Epidemic size (K)              281687 (cases)
  Epidemic rate (r)              0.0498651 (1/day)
  Initial doubling time          13.9 (day)
Estimated duration (days)
  Turning day                    118
  Acceleration   phase           41 (days)
  Deaceleration  phsee           49 (days)
  Total duration                 91 (days)
Estimated datums
  Outbreak                       08-Mar-2020
  Start of acceleration          23-May-2020
  Turning point                  04-Jul-2020
  Start of steady growth         22-Aug-2020
  Start of ending phase          21-Nov-2020
Statistics
  Number of observations         177
  Degrees of freedom             173
  Root Mean Squared Error        4548.19
  R-Squared                      0.998
  Adjusted R-Squared             0.998
```

```
  F-statistics vs. zero model   31799.6
  p-value                       6.52953e-237
Method
  Total cases weight            0.5
  Infection rate weight         0.5
  Objective function value      33127.4
  Exit condition (1=OK)         0
```

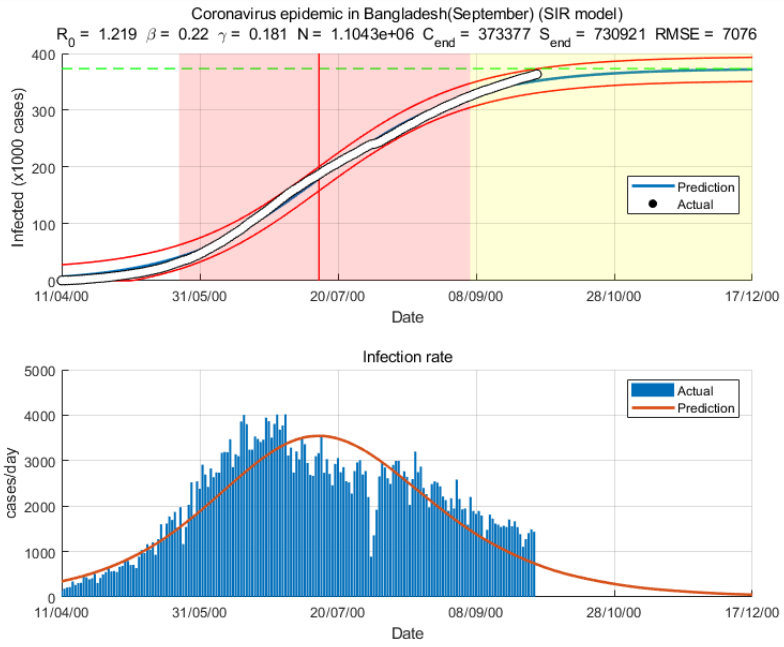





```
    pause(3)
    fitVirusCV19(@getDataBangladesh_Sep,"September",'prn','on');
```

```
Epidemic modeling by susceptible-infected-recovered (SIR) model
  Country                       Bangladesh
  Day                           207
Estimated the SIR model parameters
  Contact rate (beta)           0.22 (1/day)
  Removal rate (gamma)          0.181 (1/day)
  Population size (N)           1.1043e+06
  Initial number of cases (I0)  416
Basic reproduction number (R0)  1.219
Final state
  Final number of cases         373377
  Final number of susceptibles  730921
Daily forcast for 01-Oct-0200
  Total                         NaN
  Increase                      NaN
Estimated logistic model parameters
  Epidemic size (K)             336746 (cases)
  Epidemic rate (r)             0.0396668 (1/day)
  Initial doubling time         17.5 (day)
Estimated duration (days)
  Turning day                   127
  Acceleration   phase          51 (days)
  Deaceleration  phsee          55 (days)
  Total duration                105 (days)
Estimated datums
  Outbreak                      08-Mar-0200
  Start of acceleration         24-May-0200
  Turning point                 13-Jul-0200
  Start of steady growth        06-Sep-0200
```

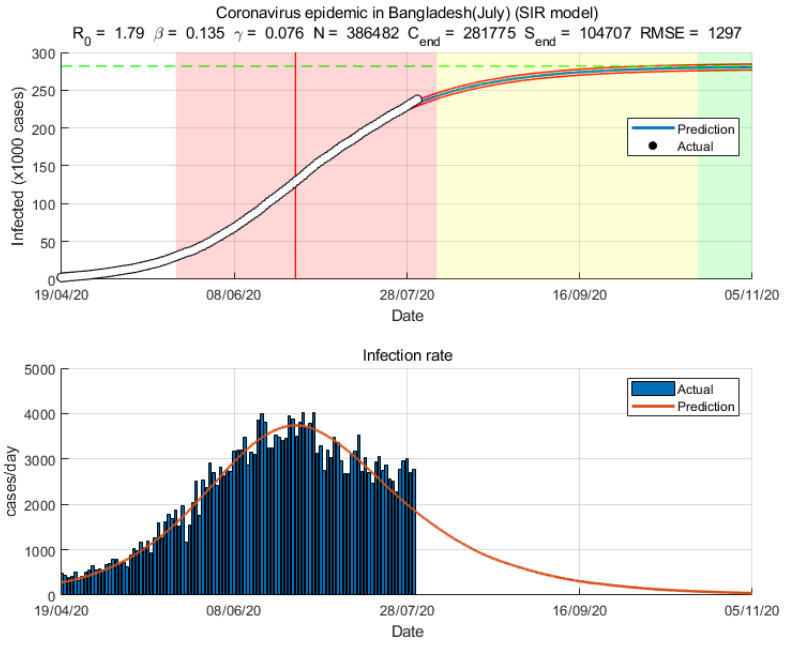
```
  Start of ending phase         20-Dec-0200
Statistics
  Number of observations        207
  Degrees of freedom            203
  Root Mean Squared Error       7075.78
  R-Squared                     0.997
  Adjusted R-Squared            0.997
  F-statistics vs. zero model   22289.9
  p-value                       2.36124e-255
Method
  Total cases weight            0.5
  Infection rate weight         0.5
  Objective function value      54002.8
  Exit condition (1=OK)         0
```




```
    pause(3)
    fitVirusCV19(@getDataBangladesh_Jul,"July",'prn','on');
```

```
Epidemic modeling by susceptible-infected-recovered (SIR) model
  Country                       Bangladesh
  Day                           146
Estimated the SIR model parameters
  Contact rate (beta)           0.135 (1/day)
  Removal rate (gamma)          0.076 (1/day)
  Population size (N)           386482
  Initial number of cases (I0)  170
Basic reproduction number (R0)  1.79
Final state
  Final number of cases         281775
  Final number of susceptibles  104707
Daily forcast for 01-Aug-2020
  Total                         NaN
  Increase                      NaN
Estimated logistic model parameters
  Epidemic size (K)             236751 (cases)
  Epidemic rate (r)             0.0597282 (1/day)
  Initial doubling time         11.6 (day)
Estimated duration (days)
  Turning day                   110
  Acceleration   phase          35 (days)
```

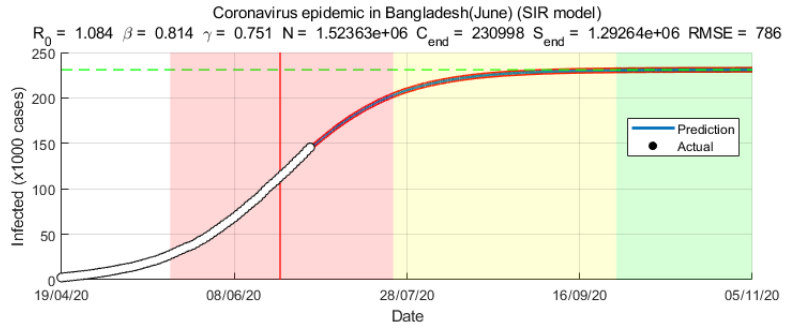
```
  Deaceleration  phsee          41 (days)
  Total duration                75 (days)
Estimated datums
  Outbreak                      08-Mar-2020
  Start of acceleration         22-May-2020
  Turning point                 26-Jun-2020
  Start of steady growth        06-Aug-2020
  Start of ending phase         20-Oct-2020
Statistics
  Number of observations        146
  Degrees of freedom            142
  Root Mean Squared Error       1296.88
  R-Squared                     1
  Adjusted R-Squared            1
  F-statistics vs. zero model   171382
  p-value                       1.98195e-252
Method
  Total cases weight            0.5
  Infection rate weight         0.5
  Objective function value      9395.91
  Exit condition (1=OK)         0
```

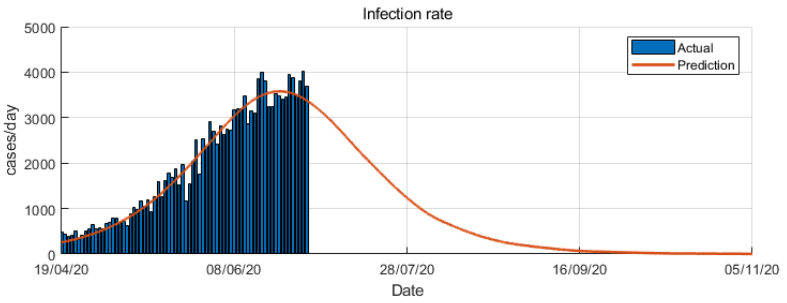



```
    pause(3)
    fitVirusCV19(@getDataBangladesh_Jun,"June",'prn','on');
```

```
Epidemic modeling by susceptible-infected-recovered (SIR) model
  Country                       Bangladesh
  Day                           115
Estimated the SIR model parameters
  Contact rate (beta)           0.814 (1/day)
  Removal rate (gamma)          0.751 (1/day)
  Population size (N)           1.52363e+06
  Initial number of cases (I0)  22
Basic reproduction number (R0)  1.084
Final state
  Final number of cases         230997
  Final number of susceptibles  1.29264e+06
Daily forcast for 01-Jul-2020
  Total                         147520
  Increase                      2037
```

```
Estimated logistic model parameters
  Epidemic size (K)             219958 (cases)
  Epidemic rate (r)             0.0633614 (1/day)
  Initial doubling time         10.9 (day)
Estimated duration (days)
  Turning day                   105
  Acceleration   phase          32 (days)
  Deaceleration  phsee          33 (days)
  Total duration                65 (days)
Estimated datums
  Outbreak                      08-Mar-2020
  Start of acceleration         20-May-2020
  Turning point                 21-Jun-2020
  Start of steady growth        24-Jul-2020
  Start of ending phase         27-Sep-2020
Statistics
  Number of observations        115
  Degrees of freedom            111
  Root Mean Squared Error       785.621
  R-Squared                     1
  Adjusted R-Squared            1
  F-statistics vs. zero model   106703
  p-value                       7.77231e-192
Method
  Total cases weight            0.5
  Infection rate weight         0.5
  Objective function value      5192.67
  Exit condition (1=OK)         0
```

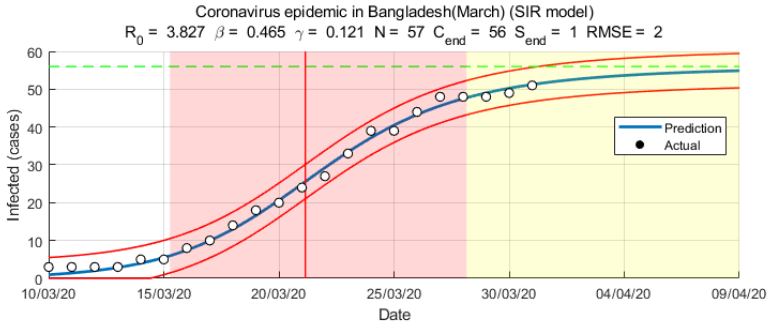


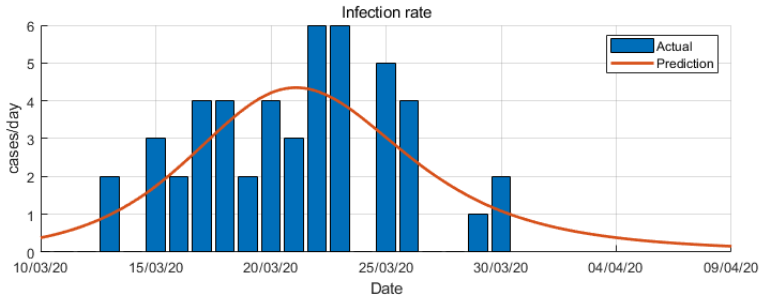



```
    pause(3)
    fitVirusCV19(@getDataBangladesh_Mar,"March",'prn','on');
```

```
Epidemic modeling by susceptible-infected-recovered (SIR) model
  Country                       Bangladesh
  Day                           24
Estimated the SIR model parameters
  Contact rate (beta)           0.465 (1/day)
  Removal rate (gamma)          0.121 (1/day)
  Population size (N)           57
  Initial number of cases (I0)  0
```

```
Basic reproduction number (R0)  3.827
Final state
  Final number of cases         56
  Final number of susceptibles  1
Daily forcast for 01-Apr-2020
  Total                         52
  Increase                      1
Estimated logistic model parameters
  Epidemic size (K)             48 (cases)
  Epidemic rate (r)             0.344101 (1/day)
  Initial doubling time         2 (day)
Estimated duration (days)
  Turning day                   13
  Acceleration   phase          6 (days)
  Deaceleration  phsee          7 (days)
  Total duration                13 (days)
Estimated datums
  Outbreak                      08-Mar-2020
  Start of acceleration         15-Mar-2020
  Turning point                 21-Mar-2020
  Start of steady growth        28-Mar-2020
  Start of ending phase         10-Apr-2020
Statistics
  Number of observations        24
  Degrees of freedom            20
  Root Mean Squared Error       1.51146
  R-Squared                     0.994
  Adjusted R-Squared            0.993
  F-statistics vs. zero model   1229.27
  p-value                       7.69635e-23
Method
  Total cases weight            0.5
  Infection rate weight         0.5
  Objective function value      6.79922
  Exit condition (1=OK)         0
```

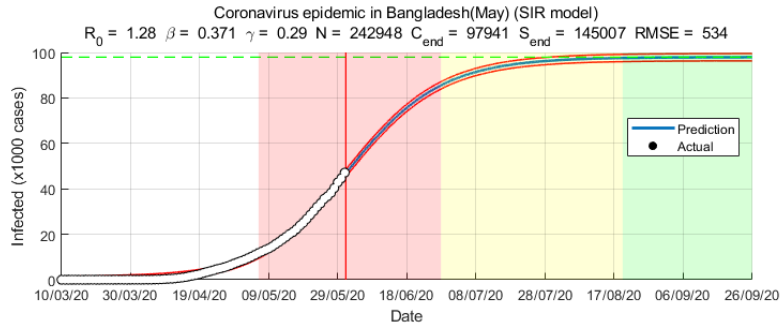


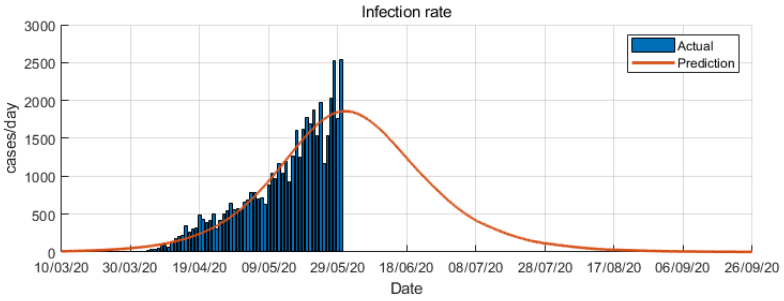



```
    pause(3)
    fitVirusCV19(@getDataBangladesh_May,"May",'prn','on');
```

```
Epidemic modeling by susceptible-infected-recovered (SIR) model
```

```
  Country                       Bangladesh
  Day                           85
Estimated the SIR model parameters
  Contact rate (beta)           0.371 (1/day)
  Removal rate (gamma)          0.29 (1/day)
  Population size (N)           242947
  Initial number of cases (I0)  22
Basic reproduction number (R0)  1.28
Final state
  Final number of cases         97941
  Final number of susceptibles  145006
Daily forcast for 01-Jun-2020
  Total                         48181
  Increase                      1028
Estimated logistic model parameters
  Epidemic size (K)             87191 (cases)
  Epidemic rate (r)             0.0811381 (1/day)
  Initial doubling time         8.5 (day)
Estimated duration (days)
  Turning day                   84
  Acceleration   phase          25 (days)
  Deaceleration  phsee          27 (days)
  Total duration                53 (days)
Estimated datums
  Outbreak                      08-Mar-2020
  Start of acceleration         06-May-2020
  Turning point                 31-May-2020
  Start of steady growth        28-Jun-2020
  Start of ending phase         20-Aug-2020
Statistics
  Number of observations        85
  Degrees of freedom            81
  Root Mean Squared Error       534
  R-Squared                     0.998
  Adjusted R-Squared            0.998
  F-statistics vs. zero model   16239.1
  p-value                       1.87554e-112
Method
  Total cases weight            0.5
  Infection rate weight         0.5
  Objective function value      3157.4
  Exit condition (1=OK)         0
```

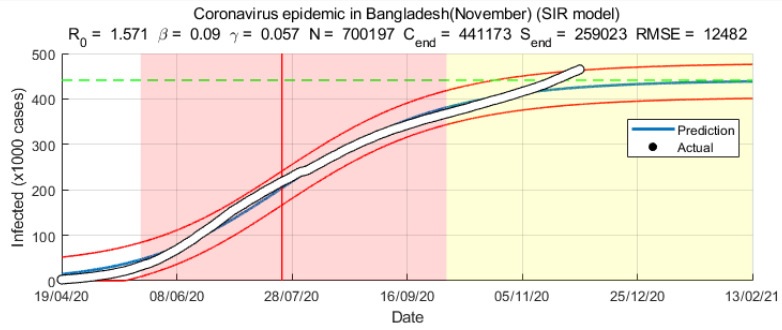


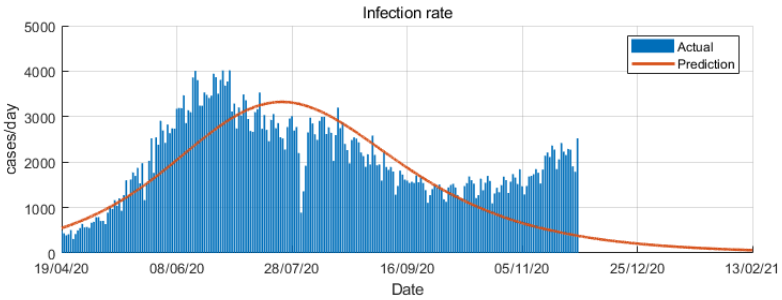



```
    pause(3)
    fitVirusCV19(@getDataBangladesh_Nov,"November",'prn','on');
```

```
Epidemic modeling by susceptible-infected-recovered (SIR) model
  Country                        Bangladesh
  Day                            268
Estimated the SIR model parameters
  Contact rate (beta)            0.09 (1/day)
  Removal rate (gamma)           0.057 (1/day)
  Population size (N)            700196
  Initial number of cases (I0)   1610
Basic reproduction number (R0)   1.571
Final state
  Final number of cases          441173
  Final number of susceptibles   259023
Daily forcast for 01-Dec-2020
  Total                          NaN
  Increase                       NaN
Estimated logistic model parameters
  Epidemic size (K)              374417 (cases)
  Epidemic rate (r)              0.0329804 (1/day)
  Initial doubling time          21 (day)
Estimated duration (days)
  Turning day                    138
  Acceleration   phase           61 (days)
  Deaceleration  phsee           71 (days)
  Total duration                 133 (days)
Estimated datums
  Outbreak                       08-Mar-2020
  Start of acceleration          23-May-2020
  Turning point                  24-Jul-2020
  Start of steady growth         03-Oct-2020
  Start of ending phase          13-Feb-2021
Statistics
  Number of observations         268
  Degrees of freedom             264
  Root Mean Squared Error        12482.3
  R-Squared                      0.994
  Adjusted R-Squared             0.994
```

```
  F-statistics vs. zero model   14347.8
  p-value                       5.47081e-292
Method
  Total cases weight            1
  Infection rate weight         0
  Objective function value      202813
  Exit condition (1=OK)         0
```

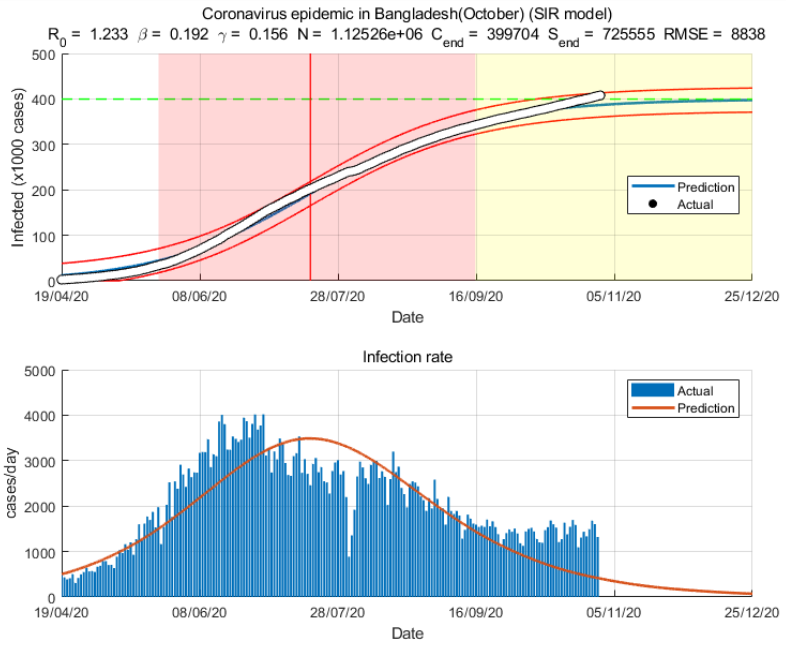





```
pause(3)
fitVirusCV19(@getDataBangladesh_Oct,"October",'prn','on');
```

```
Epidemic modeling by susceptible-infected-recovered (SIR) model
  Country                       Bangladesh
  Day                           238
Estimated the SIR model parameters
  Contact rate (beta)           0.192 (1/day)
  Removal rate (gamma)          0.156 (1/day)
  Population size (N)           1.12526e+06
  Initial number of cases (I0)  588
Basic reproduction number (R0)  1.233
Final state
  Final number of cases         399704
  Final number of susceptibles  725554
Daily forcast for 01-Nov-2020
  Total                         NaN
  Increase                      NaN
Estimated logistic model parameters
  Epidemic size (K)             358670 (cases)
  Epidemic rate (r)             0.036447 (1/day)
  Initial doubling time         19 (day)
Estimated duration (days)
  Turning day                   132
  Acceleration   phase          55 (days)
  Deaceleration  phsee          60 (days)
  Total duration                115 (days)
Estimated datums
  Outbreak                      08-Mar-2020
  Start of acceleration         24-May-2020
  Turning point                 18-Jul-2020
  Start of steady growth        16-Sep-2020
```

```
  Start of ending phase          08-Jan-2021
Statistics
  Number of observations         238
  Degrees of freedom             234
  Root Mean Squared Error        8838.41
  R-Squared                      0.996
  Adjusted R-Squared             0.996
  F-statistics vs. zero model    21146
  p-value                        1.67229e-284
Method
  Total cases weight             0.5
  Infection rate weight          0.5
  Objective function value       71884.7
  Exit condition (1=OK)          0
```




```
pause(3)
```