```
fitVirus03(@getDataBangladesh_Apr,"April");
```

```
**** Estimation of epidemy size for Bangladesh
  Initial guess K = 11149.3  r = 0.185448  A = 3.3419
  Initial guess K = 11149.3  r = 0.185448  A = 3.3419
Regression parameters for complet data set
mdl =

Nonlinear regression model:
    y ~ fitVirus03/fun(b,X)

Estimated Coefficients:
         Estimate       SE       tStat      pValue
         _____    _____    _____    _____

    K      9906.1       293.99    33.695    1.6062e-36
    r     0.20187    0.0051219    39.412    7.2604e-40
    A       14920       2756.7    5.4124      1.68e-06


Number of observations: 54, Error degrees of freedom: 51
Root Mean Squared Error: 87.6
R-Squared: 0.998,  Adjusted R-Squared 0.998
F-statistic vs. zero model: 1.45e+04, p-value = 9.8e-75
```
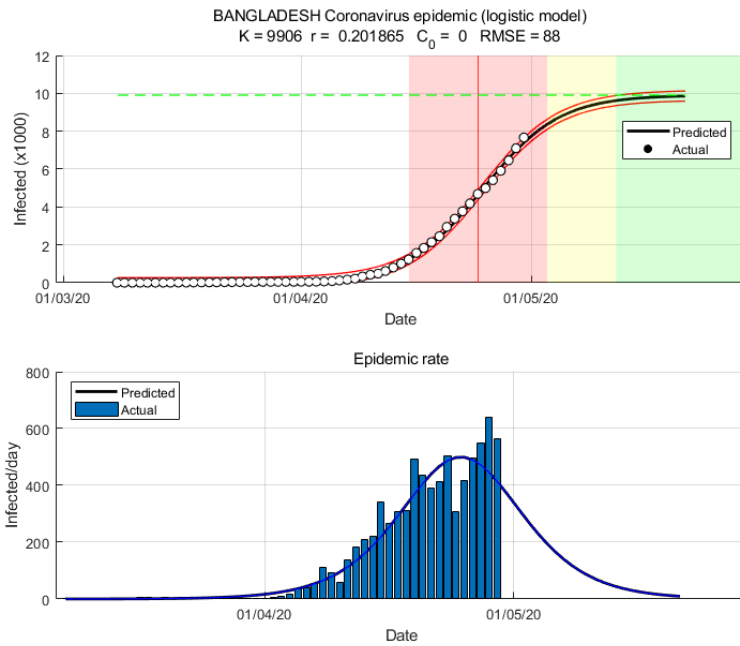
```
Evaluation of model parameters for Bangladesh
 day        date        C       K      r     C0   Tau        end  dCdt tpeak      peak    R2
                     (cases) (cases) (1/day) (cases) (day)          (c/day) (day)
  22 29-Mar-2020      48      55    0.304     0    13 03-Apr-2020     4    13 21-Mar-2020 0.995
  23 30-Mar-2020      49      53    0.312     0    12 03-Apr-2020     4    13 21-Mar-2020 0.995
  24 31-Mar-2020      51      53    0.313     0    12 03-Apr-2020     4    13 21-Mar-2020 0.995
  25 01-Apr-2020      54      54    0.306     0    13 03-Apr-2020     4    13 21-Mar-2020 0.996
  26 02-Apr-2020      56      55    0.297     0    13 03-Apr-2020     4    13 21-Mar-2020 0.995
  27 03-Apr-2020      61      58    0.279     1    14 05-Apr-2020     4    14 22-Mar-2020 0.993
  28 04-Apr-2020      70      63    0.245     1    16 07-Apr-2020     3    15 23-Mar-2020 0.984
  29 05-Apr-2020      88      84    0.178     2    22 13-Apr-2020     3    18 26-Mar-2020 0.957
  30 06-Apr-2020     123   45005    0.099     5    40 04-Sep-2020  1108    90 06-Jun-2020 0.925
  31 07-Apr-2020     164 1051228    0.117     3    34 06-Oct-2020 30773   106 22-Jun-2020 0.910
  32 08-Apr-2020     218  132181    0.148     1    27 05-Aug-2020  4884    75 22-May-2020 0.910
  33 09-Apr-2020     330  646125    0.220     0    18 20-Jul-2020 35489    67 14-May-2020 0.917
  34 10-Apr-2020     424  133408    0.258     0    15 26-Jun-2020  8591    55 02-May-2020 0.951
  35 11-Apr-2020     482  119252    0.242     0    16 28-Jun-2020  7229    56 03-May-2020 0.968
  36 12-Apr-2020     621  460647    0.240     0    16 10-Jul-2020 27599    62 09-May-2020 0.980
  37 13-Apr-2020     803  201777    0.242     0    16 02-Jul-2020 12199    58 05-May-2020 0.988
  38 14-Apr-2020    1012   95493    0.242     0    16 26-Jun-2020  5772    55 02-May-2020 0.993
  39 15-Apr-2020    1231    8778    0.252     0    15 06-Jun-2020   553    45 22-Apr-2020 0.995
  40 16-Apr-2020    1572   16305    0.245     0    16 12-Jun-2020   997    48 25-Apr-2020 0.997
  41 17-Apr-2020    1838    6313    0.263     0    15 02-Jun-2020   414    43 20-Apr-2020 0.998
  42 18-Apr-2020    2144    5023    0.274     0    14 31-May-2020   343    42 19-Apr-2020 0.998
  43 19-Apr-2020    2456    4645    0.279     0    14 29-May-2020   324    41 18-Apr-2020 0.999
  44 20-Apr-2020    2948    5749    0.262     0    15 31-May-2020   376    42 19-Apr-2020 0.999
  45 21-Apr-2020    3382    6486    0.253     0    15 02-Jun-2020   410    43 20-Apr-2020 0.999
  46 22-Apr-2020    3772    6565    0.252     0    15 02-Jun-2020   414    43 20-Apr-2020 0.999
  47 23-Apr-2020    4186    6660    0.251     0    15 02-Jun-2020   417    43 20-Apr-2020 0.999
  48 24-Apr-2020    4689    7117    0.244     0    16 04-Jun-2020   434    44 21-Apr-2020 0.999
  49 25-Apr-2020    4998    7069    0.245     0    16 04-Jun-2020   433    44 21-Apr-2020 1.000
  50 26-Apr-2020    5416    7217    0.242     0    16 04-Jun-2020   437    44 21-Apr-2020 1.000
  51 27-Apr-2020    5913    7606    0.235     0    17 06-Jun-2020   447    45 22-Apr-2020 1.000
  52 28-Apr-2020    6462    8195    0.225     0    17 06-Jun-2020   461    45 22-Apr-2020 0.999
  53 29-Apr-2020    7103    9053    0.212     0    18 08-Jun-2020   480    46 23-Apr-2020 0.999
  54 30-Apr-2020    7667    9906    0.202     0    19 10-Jun-2020   499    47 24-Apr-2020 0.998
```

BANGLADESH Coronavirus epidemic (logistic model)
K = 9906 r = 0.201865 C$_0$ = 0 RMSE = 88

Epidemic rate

```
ans = 8
ans = 8
```

```
    pause(3)
    fitVirus03(@getDataBangladesh_Aug,"August");
```

```
**** Estimation of epidemy size for Bangladesh
  Initial guess K = 326512  r = 0.0549333  A = 628.292
  Initial guess K = 326512  r = 0.0549333  A = 628.292
Regression parameters for complet data set

mdl =

Nonlinear regression model:
    y ~ fitVirus03/fun(b,X)

Estimated Coefficients:
          Estimate         SE         tStat        pValue

          _____    _____    _____    _____

    K     3.1759e+05        2453.7    129.43     6.6909e-175
    r        0.047567    0.00067929    70.024     2.1171e-129
    A          294.56        19.418    15.169       1.1592e-33


Number of observations: 177, Error degrees of freedom: 174
Root Mean Squared Error: 5.46e+03
R-Squared: 0.997,  Adjusted R-Squared 0.997
F-statistic vs. zero model: 4.36e+04, p-value = 5.83e-250
```
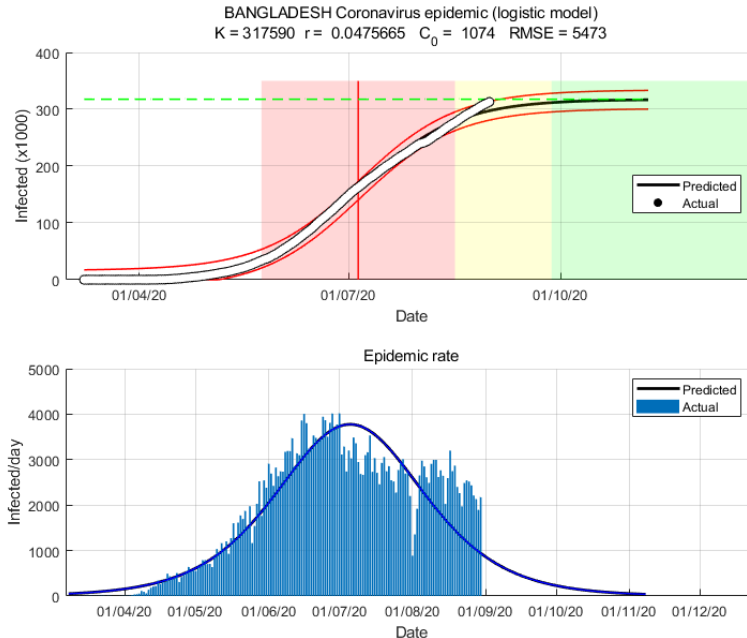
Evaluation of model parameters for Bangladesh

day	date	C (cases)	K (cases)	r (1/day)	C0 (cases)	Tau (day)	end	dCdt (c/day)	tpeak (day)	peak	R2
71	17-May-2020	22268	32739	0.112	24	35	14-Jul-2020	919	64	11-May-2020	0.997
72	18-May-2020	23870	35822	0.108	28	36	16-Jul-2020	971	65	12-May-2020	0.997
73	19-May-2020	25121	38751	0.105	32	37	20-Jul-2020	1020	67	14-May-2020	0.997
74	20-May-2020	26738	42328	0.102	37	39	22-Jul-2020	1080	68	15-May-2020	0.997
75	21-May-2020	28511	46784	0.099	44	40	26-Jul-2020	1155	70	17-May-2020	0.997
76	22-May-2020	30205	51617	0.096	50	41	30-Jul-2020	1236	72	19-May-2020	0.997
77	23-May-2020	32078	57148	0.093	57	43	03-Aug-2020	1328	74	21-May-2020	0.997
78	24-May-2020	33610	61707	0.091	62	43	05-Aug-2020	1404	75	22-May-2020	0.997
79	25-May-2020	35585	66835	0.089	68	44	09-Aug-2020	1489	77	24-May-2020	0.997

2

80	26-May-2020	36751	69007	0.088	71	45	09-Aug-2020	1524	77	24-May-2020	0.997
81	27-May-2020	38292	70396	0.088	72	45	11-Aug-2020	1547	78	25-May-2020	0.998
82	28-May-2020	40321	72743	0.087	75	45	11-Aug-2020	1584	78	25-May-2020	0.998
83	29-May-2020	42844	77116	0.086	81	46	15-Aug-2020	1651	80	27-May-2020	0.998
84	30-May-2020	44608	80433	0.085	85	47	15-Aug-2020	1702	80	27-May-2020	0.998
85	31-May-2020	47153	85203	0.083	91	48	19-Aug-2020	1774	82	29-May-2020	0.998
86	01-Jun-2020	49534	90380	0.082	97	48	21-Aug-2020	1851	83	30-May-2020	0.998
87	02-Jun-2020	52445	97425	0.080	106	49	23-Aug-2020	1956	84	31-May-2020	0.998
88	03-Jun-2020	55140	105028	0.079	115	50	27-Aug-2020	2067	86	02-Jun-2020	0.998
89	04-Jun-2020	57563	111701	0.078	123	51	29-Aug-2020	2165	87	03-Jun-2020	0.998
90	05-Jun-2020	60391	118750	0.076	131	52	02-Sep-2020	2267	89	05-Jun-2020	0.998
91	06-Jun-2020	63026	124992	0.075	137	53	04-Sep-2020	2356	90	06-Jun-2020	0.998
92	07-Jun-2020	65769	130657	0.075	144	53	06-Sep-2020	2436	91	07-Jun-2020	0.999
93	08-Jun-2020	68504	135525	0.074	149	54	08-Sep-2020	2504	92	08-Jun-2020	0.999
94	09-Jun-2020	71675	141129	0.073	155	54	10-Sep-2020	2582	93	09-Jun-2020	0.999
95	10-Jun-2020	74865	147041	0.072	162	55	10-Sep-2020	2663	93	09-Jun-2020	0.999
96	11-Jun-2020	78052	152868	0.072	168	55	12-Sep-2020	2742	94	10-Jun-2020	0.999
97	12-Jun-2020	81523	159317	0.071	176	56	14-Sep-2020	2828	95	11-Jun-2020	0.999
98	13-Jun-2020	84379	163844	0.071	181	56	16-Sep-2020	2888	96	12-Jun-2020	0.999
99	14-Jun-2020	87520	167687	0.070	186	57	18-Sep-2020	2938	97	13-Jun-2020	0.999
100	15-Jun-2020	90619	170706	0.070	189	57	18-Sep-2020	2977	97	13-Jun-2020	0.999
101	16-Jun-2020	94481	175307	0.069	195	57	20-Sep-2020	3035	98	14-Jun-2020	0.999
102	17-Jun-2020	98489	181160	0.069	202	58	20-Sep-2020	3108	98	14-Jun-2020	0.999
103	18-Jun-2020	102292	187170	0.068	210	58	22-Sep-2020	3182	99	15-Jun-2020	0.999
104	19-Jun-2020	105535	191633	0.068	216	59	24-Sep-2020	3237	100	16-Jun-2020	0.999
105	20-Jun-2020	108775	194820	0.067	221	59	24-Sep-2020	3275	100	16-Jun-2020	0.999
106	21-Jun-2020	112306	197712	0.067	225	59	26-Sep-2020	3309	101	17-Jun-2020	0.999
107	22-Jun-2020	115786	200220	0.067	228	59	26-Sep-2020	3338	101	17-Jun-2020	0.999
108	23-Jun-2020	119198	202284	0.066	232	60	26-Sep-2020	3362	101	17-Jun-2020	0.999
109	24-Jun-2020	122660	204122	0.066	235	60	28-Sep-2020	3382	102	18-Jun-2020	0.999
110	25-Jun-2020	126606	206635	0.066	239	60	28-Sep-2020	3410	102	18-Jun-2020	0.999
111	26-Jun-2020	130474	209463	0.066	244	60	28-Sep-2020	3440	102	18-Jun-2020	0.999
112	27-Jun-2020	133978	211917	0.065	248	61	30-Sep-2020	3466	103	19-Jun-2020	1.000
113	28-Jun-2020	137787	214538	0.065	253	61	30-Sep-2020	3493	103	19-Jun-2020	1.000
114	29-Jun-2020	141801	217547	0.065	259	61	30-Sep-2020	3523	103	19-Jun-2020	1.000
115	30-Jun-2020	145483	220380	0.064	265	62	02-Oct-2020	3551	104	20-Jun-2020	1.000
116	01-Jul-2020	149258	223189	0.064	271	62	02-Oct-2020	3578	104	20-Jun-2020	1.000
117	02-Jul-2020	153277	226259	0.064	278	62	04-Oct-2020	3607	105	21-Jun-2020	1.000
118	03-Jul-2020	156391	228495	0.064	283	62	04-Oct-2020	3628	105	21-Jun-2020	1.000
119	04-Jul-2020	159679	230319	0.063	288	63	04-Oct-2020	3644	105	21-Jun-2020	1.000
120	05-Jul-2020	162417	231331	0.063	290	63	04-Oct-2020	3653	105	21-Jun-2020	1.000
121	06-Jul-2020	165618	232230	0.063	293	63	04-Oct-2020	3661	105	21-Jun-2020	1.000
122	07-Jul-2020	168645	232945	0.063	295	63	04-Oct-2020	3667	105	21-Jun-2020	1.000
123	08-Jul-2020	172134	233937	0.063	297	63	06-Oct-2020	3675	106	22-Jun-2020	1.000
124	09-Jul-2020	175494	235068	0.063	301	63	06-Oct-2020	3683	106	22-Jun-2020	1.000
125	10-Jul-2020	178443	236049	0.063	304	63	06-Oct-2020	3691	106	22-Jun-2020	1.000
126	11-Jul-2020	181129	236784	0.062	306	64	06-Oct-2020	3696	106	22-Jun-2020	1.000
127	12-Jul-2020	183795	237365	0.062	308	64	06-Oct-2020	3700	106	22-Jun-2020	1.000
128	13-Jul-2020	186894	238114	0.062	311	64	06-Oct-2020	3705	106	22-Jun-2020	1.000
129	14-Jul-2020	190057	239053	0.062	314	64	06-Oct-2020	3711	106	22-Jun-2020	1.000
130	15-Jul-2020	193590	240345	0.062	319	64	06-Oct-2020	3719	106	22-Jun-2020	1.000
131	16-Jul-2020	196323	241550	0.062	324	64	08-Oct-2020	3726	107	23-Jun-2020	1.000
132	17-Jul-2020	199357	242843	0.061	329	65	08-Oct-2020	3733	107	23-Jun-2020	1.000
133	18-Jul-2020	202066	244082	0.061	335	65	08-Oct-2020	3739	107	23-Jun-2020	1.000
134	19-Jul-2020	204525	245196	0.061	339	65	08-Oct-2020	3745	107	23-Jun-2020	1.000
135	20-Jul-2020	207453	246410	0.061	345	65	08-Oct-2020	3751	107	23-Jun-2020	1.000
136	21-Jul-2020	210510	247765	0.061	351	65	10-Oct-2020	3757	108	24-Jun-2020	1.000
137	22-Jul-2020	213254	249137	0.060	358	66	10-Oct-2020	3762	108	24-Jun-2020	1.000
138	23-Jul-2020	216110	250571	0.060	366	66	10-Oct-2020	3768	108	24-Jun-2020	1.000
139	24-Jul-2020	218658	251968	0.060	373	66	10-Oct-2020	3773	108	24-Jun-2020	1.000
140	25-Jul-2020	221178	253336	0.060	381	67	10-Oct-2020	3778	108	24-Jun-2020	1.000
141	26-Jul-2020	223453	254618	0.059	388	67	12-Oct-2020	3782	109	25-Jun-2020	1.000
142	27-Jul-2020	226225	255980	0.059	396	67	12-Oct-2020	3786	109	25-Jun-2020	1.000
143	28-Jul-2020	229185	257467	0.059	405	67	12-Oct-2020	3791	109	25-Jun-2020	1.000
144	29-Jul-2020	232194	259077	0.059	415	68	12-Oct-2020	3795	109	25-Jun-2020	1.000

```
145 30-Jul-2020   234889   260719   0.058   426     68 14-Oct-2020  3799    110 26-Jun-2020 1.000
146 31-Jul-2020   237661   262412   0.058   437     69 14-Oct-2020  3802    110 26-Jun-2020 1.000
147 01-Aug-2020   239860   264018   0.058   448     69 14-Oct-2020  3805    110 26-Jun-2020 0.999
148 02-Aug-2020   240746   265257   0.057   457     69 14-Oct-2020  3808    110 26-Jun-2020 0.999
149 03-Aug-2020   242102   266296   0.057   465     69 14-Oct-2020  3809    110 26-Jun-2020 0.999
150 04-Aug-2020   244020   267291   0.057   472     70 16-Oct-2020  3811    111 27-Jun-2020 0.999
151 05-Aug-2020   246674   268403   0.057   481     70 16-Oct-2020  3812    111 27-Jun-2020 0.999
152 06-Aug-2020   249651   269682   0.057   491     70 16-Oct-2020  3813    111 27-Jun-2020 0.999
153 07-Aug-2020   252502   271085   0.056   503     71 16-Oct-2020  3814    111 27-Jun-2020 0.999
154 08-Aug-2020   255113   272554   0.056   515     71 16-Oct-2020  3815    111 27-Jun-2020 0.999
155 09-Aug-2020   257600   274064   0.056   529     71 18-Oct-2020  3815    112 28-Jun-2020 0.999
156 10-Aug-2020   260507   275683   0.055   543     72 18-Oct-2020  3815    112 28-Jun-2020 0.999
157 11-Aug-2020   263503   277416   0.055   560     72 18-Oct-2020  3815    112 28-Jun-2020 0.999
158 12-Aug-2020   266498   279252   0.055   577     73 20-Oct-2020  3815    113 29-Jun-2020 0.999
159 13-Aug-2020   269115   281122   0.054   596     73 20-Oct-2020  3815    113 29-Jun-2020 0.999
160 14-Aug-2020   271881   283048   0.054   616     74 20-Oct-2020  3814    113 29-Jun-2020 0.999
161 15-Aug-2020   274525   285006   0.054   636     74 20-Oct-2020  3813    113 29-Jun-2020 0.999
162 16-Aug-2020   276549   286903   0.053   657     75 22-Oct-2020  3812    114 30-Jun-2020 0.999
163 17-Aug-2020   279144   288829   0.053   679     75 22-Oct-2020  3811    114 30-Jun-2020 0.999
164 18-Aug-2020   282344   290870   0.052   702     76 22-Oct-2020  3809    114 30-Jun-2020 0.999
165 19-Aug-2020   285091   292953   0.052   727     76 24-Oct-2020  3807    115 01-Jul-2020 0.999
166 20-Aug-2020   287959   295091   0.052   753     77 24-Oct-2020  3805    115 01-Jul-2020 0.998
167 21-Aug-2020   290360   297219   0.051   779     78 26-Oct-2020  3803    116 02-Jul-2020 0.998
168 22-Aug-2020   292625   299318   0.051   806     78 26-Oct-2020  3801    116 02-Jul-2020 0.998
169 23-Aug-2020   294598   301354   0.050   833     79 26-Oct-2020  3799    116 02-Jul-2020 0.998
170 24-Aug-2020   297083   303398   0.050   861     79 28-Oct-2020  3796    117 03-Jul-2020 0.998
171 25-Aug-2020   299628   305459   0.050   890     80 28-Oct-2020  3794    117 03-Jul-2020 0.998
172 26-Aug-2020   302147   307534   0.049   919     81 28-Oct-2020  3791    117 03-Jul-2020 0.998
173 27-Aug-2020   304583   309611   0.049   950     81 30-Oct-2020  3788    118 04-Jul-2020 0.998
174 28-Aug-2020   306794   311662   0.049   981     82 30-Oct-2020  3785    118 04-Jul-2020 0.998
175 29-Aug-2020   308925   313682   0.048   1012    82 30-Oct-2020  3782    118 04-Jul-2020 0.998
176 30-Aug-2020   310822   315645   0.048   1043    83 01-Nov-2020  3779    119 05-Jul-2020 0.998
177 31-Aug-2020   312996   317590   0.048   1074    84 01-Nov-2020  3776    119 05-Jul-2020 0.997
```


BANGLADESH Coronavirus epidemic (logistic model)
K = 317590 r = 0.0475665 C_0 = 1074 RMSE = 5473

```
ans = 8
ans = 8
```

```
    pause(3)
    fitVirus03(@getDataBangladesh_Sep,"September");
```

**** Estimation of epidemy size for Bangladesh

```
  Initial guess K = 367669  r = 0.0557945  A = 429.323
  Initial guess K = 367669  r = 0.0557945  A = 429.323
Regression parameters for complet data set

mdl =

Nonlinear regression model:
    y ~ fitVirus03/fun(b,X)

Estimated Coefficients:
         Estimate          SE         tStat         pValue

         _____    _____    _____    _____

    K    3.6253e+05        2509.1    144.49     1.9726e-207
    r     0.040528    0.00061908    65.465     6.5065e-139
    A      176.18        11.641    15.134      3.4665e-35


Number of observations: 207, Error degrees of freedom: 204
Root Mean Squared Error: 7.98e+03
R-Squared: 0.996,  Adjusted R-Squared 0.996
F-statistic vs. zero model: 3.87e+04, p-value = 9.48e-281
```
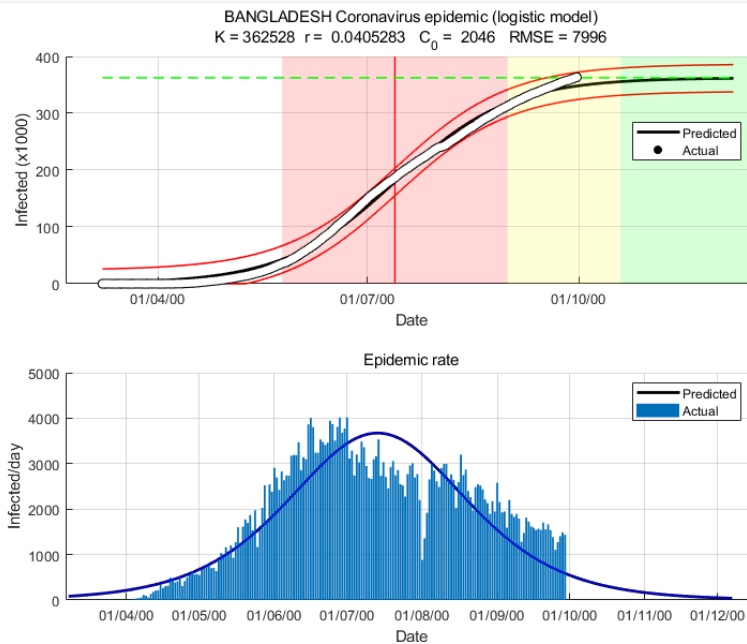
Evaluation of model parameters for Bangladesh

day	date	C (cases)	K (cases)	r (1/day)	C0 (cases)	Tau (day)	end	dCdt (c/day)	tpeak (day)	peak	R2
83	29-May-0200	42844	77116	0.086	81	46	15-Aug-0200	1651	80	27-May-0200	0.998
84	30-May-0200	44608	80434	0.085	85	47	15-Aug-0200	1702	80	27-May-0200	0.998
85	31-May-0200	47153	85204	0.083	91	48	19-Aug-0200	1774	82	29-May-0200	0.998
86	01-Jun-0200	49534	90378	0.082	97	48	21-Aug-0200	1851	83	30-May-0200	0.998
87	02-Jun-0200	52445	97423	0.080	106	49	23-Aug-0200	1956	84	31-May-0200	0.998
88	03-Jun-0200	55140	105029	0.079	115	50	27-Aug-0200	2067	86	02-Jun-0200	0.998
89	04-Jun-0200	57563	111697	0.078	123	51	29-Aug-0200	2165	87	03-Jun-0200	0.998
90	05-Jun-0200	60391	118758	0.076	131	52	02-Sep-0200	2267	89	05-Jun-0200	0.998
91	06-Jun-0200	63026	124993	0.075	137	53	04-Sep-0200	2356	90	06-Jun-0200	0.998
92	07-Jun-0200	65769	130644	0.075	144	53	06-Sep-0200	2436	91	07-Jun-0200	0.999
93	08-Jun-0200	68504	135524	0.074	149	54	08-Sep-0200	2504	92	08-Jun-0200	0.999
94	09-Jun-0200	71675	141130	0.073	155	54	10-Sep-0200	2582	93	09-Jun-0200	0.999
95	10-Jun-0200	74865	147038	0.072	162	55	10-Sep-0200	2663	93	09-Jun-0200	0.999
96	11-Jun-0200	78052	152869	0.072	168	55	12-Sep-0200	2742	94	10-Jun-0200	0.999
97	12-Jun-0200	81523	159277	0.071	176	56	14-Sep-0200	2827	95	11-Jun-0200	0.999
98	13-Jun-0200	84379	163842	0.071	181	56	16-Sep-0200	2888	96	12-Jun-0200	0.999
99	14-Jun-0200	87520	167687	0.070	186	57	18-Sep-0200	2938	97	13-Jun-0200	0.999
100	15-Jun-0200	90619	170702	0.070	189	57	18-Sep-0200	2977	97	13-Jun-0200	0.999
101	16-Jun-0200	94481	175321	0.069	195	57	20-Sep-0200	3035	98	14-Jun-0200	0.999
102	17-Jun-0200	98489	181157	0.069	202	58	20-Sep-0200	3108	98	14-Jun-0200	0.999
103	18-Jun-0200	102292	187176	0.068	210	58	22-Sep-0200	3182	99	15-Jun-0200	0.999
104	19-Jun-0200	105535	191635	0.068	216	59	24-Sep-0200	3237	100	16-Jun-0200	0.999
105	20-Jun-0200	108775	194819	0.067	221	59	24-Sep-0200	3275	100	16-Jun-0200	0.999
106	21-Jun-0200	112306	197712	0.067	225	59	26-Sep-0200	3309	101	17-Jun-0200	0.999
107	22-Jun-0200	115786	200220	0.067	228	59	26-Sep-0200	3338	101	17-Jun-0200	0.999
108	23-Jun-0200	119198	201511	0.067	232	60	26-Sep-0200	3350	101	17-Jun-0200	0.999
109	24-Jun-0200	122660	204124	0.066	235	60	28-Sep-0200	3382	102	18-Jun-0200	0.999
110	25-Jun-0200	126606	206637	0.066	239	60	28-Sep-0200	3410	102	18-Jun-0200	0.999
111	26-Jun-0200	130474	209463	0.066	244	60	28-Sep-0200	3440	102	18-Jun-0200	0.999
112	27-Jun-0200	133978	211917	0.065	248	61	30-Sep-0200	3466	103	19-Jun-0200	1.000
113	28-Jun-0200	137787	214538	0.065	253	61	30-Sep-0200	3493	103	19-Jun-0200	1.000
114	29-Jun-0200	141801	217547	0.065	259	61	30-Sep-0200	3523	103	19-Jun-0200	1.000
115	30-Jun-0200	145483	220380	0.064	265	62	02-Oct-0200	3551	104	20-Jun-0200	1.000
116	01-Jul-0200	149258	223189	0.064	271	62	02-Oct-0200	3578	104	20-Jun-0200	1.000
117	02-Jul-0200	153277	226258	0.064	278	62	04-Oct-0200	3607	105	21-Jun-0200	1.000
118	03-Jul-0200	156391	228495	0.064	283	62	04-Oct-0200	3628	105	21-Jun-0200	1.000
119	04-Jul-0200	159679	230319	0.063	288	63	04-Oct-0200	3644	105	21-Jun-0200	1.000
120	05-Jul-0200	162417	231331	0.063	290	63	04-Oct-0200	3653	105	21-Jun-0200	1.000
121	06-Jul-0200	165618	232230	0.063	293	63	04-Oct-0200	3661	105	21-Jun-0200	1.000
122	07-Jul-0200	168645	232945	0.063	295	63	04-Oct-0200	3667	105	21-Jun-0200	1.000
123	08-Jul-0200	172134	233937	0.063	297	63	06-Oct-0200	3675	106	22-Jun-0200	1.000

124	09-Jul-0200	175494	235068	0.063	301	63	06-Oct-0200	3683	106	22-Jun-0200	1.000
125	10-Jul-0200	178443	236049	0.063	304	63	06-Oct-0200	3691	106	22-Jun-0200	1.000
126	11-Jul-0200	181129	236784	0.062	306	64	06-Oct-0200	3696	106	22-Jun-0200	1.000
127	12-Jul-0200	183795	237365	0.062	308	64	06-Oct-0200	3700	106	22-Jun-0200	1.000
128	13-Jul-0200	186894	238114	0.062	311	64	06-Oct-0200	3705	106	22-Jun-0200	1.000
129	14-Jul-0200	190057	239052	0.062	314	64	06-Oct-0200	3711	106	22-Jun-0200	1.000
130	15-Jul-0200	193590	240345	0.062	319	64	06-Oct-0200	3719	106	22-Jun-0200	1.000
131	16-Jul-0200	196323	241550	0.062	324	64	08-Oct-0200	3726	107	23-Jun-0200	1.000
132	17-Jul-0200	199357	242843	0.061	329	65	08-Oct-0200	3733	107	23-Jun-0200	1.000
133	18-Jul-0200	202066	244082	0.061	335	65	08-Oct-0200	3739	107	23-Jun-0200	1.000
134	19-Jul-0200	204525	245196	0.061	339	65	08-Oct-0200	3745	107	23-Jun-0200	1.000
135	20-Jul-0200	207453	246410	0.061	345	65	08-Oct-0200	3751	107	23-Jun-0200	1.000
136	21-Jul-0200	210510	247765	0.061	351	65	10-Oct-0200	3757	108	24-Jun-0200	1.000
137	22-Jul-0200	213254	249137	0.060	358	66	10-Oct-0200	3762	108	24-Jun-0200	1.000
138	23-Jul-0200	216110	250571	0.060	366	66	10-Oct-0200	3768	108	24-Jun-0200	1.000
139	24-Jul-0200	218658	251968	0.060	373	66	10-Oct-0200	3773	108	24-Jun-0200	1.000
140	25-Jul-0200	221178	253336	0.060	381	67	10-Oct-0200	3778	108	24-Jun-0200	1.000
141	26-Jul-0200	223453	254618	0.059	388	67	12-Oct-0200	3782	109	25-Jun-0200	1.000
142	27-Jul-0200	226225	255980	0.059	396	67	12-Oct-0200	3786	109	25-Jun-0200	1.000
143	28-Jul-0200	229185	257467	0.059	405	67	12-Oct-0200	3791	109	25-Jun-0200	1.000
144	29-Jul-0200	232194	259077	0.059	415	68	12-Oct-0200	3795	109	25-Jun-0200	1.000
145	30-Jul-0200	234889	260719	0.058	426	68	14-Oct-0200	3799	110	26-Jun-0200	1.000
146	31-Jul-0200	237661	262412	0.058	437	69	14-Oct-0200	3802	110	26-Jun-0200	1.000
147	01-Aug-0200	239860	264018	0.058	448	69	14-Oct-0200	3805	110	26-Jun-0200	0.999
148	02-Aug-0200	240746	265257	0.057	457	69	14-Oct-0200	3808	110	26-Jun-0200	0.999
149	03-Aug-0200	242102	266296	0.057	465	69	14-Oct-0200	3809	110	26-Jun-0200	0.999
150	04-Aug-0200	244020	267291	0.057	472	70	16-Oct-0200	3811	111	27-Jun-0200	0.999
151	05-Aug-0200	246674	268404	0.057	481	70	16-Oct-0200	3812	111	27-Jun-0200	0.999
152	06-Aug-0200	249651	269682	0.057	491	70	16-Oct-0200	3813	111	27-Jun-0200	0.999
153	07-Aug-0200	252502	271085	0.056	503	71	16-Oct-0200	3814	111	27-Jun-0200	0.999
154	08-Aug-0200	255113	272554	0.056	515	71	16-Oct-0200	3815	111	27-Jun-0200	0.999
155	09-Aug-0200	257600	274064	0.056	529	71	18-Oct-0200	3815	112	28-Jun-0200	0.999
156	10-Aug-0200	260507	275682	0.055	543	72	18-Oct-0200	3815	112	28-Jun-0200	0.999
157	11-Aug-0200	263503	277416	0.055	560	72	18-Oct-0200	3815	112	28-Jun-0200	0.999
158	12-Aug-0200	266498	279252	0.055	577	73	20-Oct-0200	3815	113	29-Jun-0200	0.999
159	13-Aug-0200	269115	281122	0.054	596	73	20-Oct-0200	3815	113	29-Jun-0200	0.999
160	14-Aug-0200	271881	283047	0.054	616	74	20-Oct-0200	3814	113	29-Jun-0200	0.999
161	15-Aug-0200	274525	285006	0.054	636	74	20-Oct-0200	3813	113	29-Jun-0200	0.999
162	16-Aug-0200	276549	286902	0.053	657	75	22-Oct-0200	3812	114	30-Jun-0200	0.999
163	17-Aug-0200	279144	288828	0.053	679	75	22-Oct-0200	3811	114	30-Jun-0200	0.999
164	18-Aug-0200	282344	290869	0.052	702	76	22-Oct-0200	3809	114	30-Jun-0200	0.999
165	19-Aug-0200	285091	292952	0.052	727	76	24-Oct-0200	3807	115	01-Jul-0200	0.999
166	20-Aug-0200	287959	295091	0.052	753	77	24-Oct-0200	3805	115	01-Jul-0200	0.998
167	21-Aug-0200	290360	297219	0.051	779	78	24-Oct-0200	3803	116	02-Jul-0200	0.998
168	22-Aug-0200	292625	299318	0.051	806	78	26-Oct-0200	3801	116	02-Jul-0200	0.998
169	23-Aug-0200	294598	301354	0.050	833	79	26-Oct-0200	3799	116	02-Jul-0200	0.998
170	24-Aug-0200	297083	303399	0.050	861	79	28-Oct-0200	3796	117	03-Jul-0200	0.998
171	25-Aug-0200	299628	305461	0.050	890	80	28-Oct-0200	3794	117	03-Jul-0200	0.998
172	26-Aug-0200	302147	307535	0.049	920	81	28-Oct-0200	3791	117	03-Jul-0200	0.998
173	27-Aug-0200	304583	309612	0.049	950	81	30-Oct-0200	3788	118	04-Jul-0200	0.998
174	28-Aug-0200	306794	311664	0.049	981	82	30-Oct-0200	3785	118	04-Jul-0200	0.998
175	29-Aug-0200	308925	313684	0.048	1012	82	30-Oct-0200	3782	118	04-Jul-0200	0.998
176	30-Aug-0200	310822	315647	0.048	1043	83	01-Nov-0200	3779	119	05-Jul-0200	0.998
177	31-Aug-0200	312996	317591	0.048	1074	84	01-Nov-0200	3776	119	05-Jul-0200	0.997
178	01-Sep-0200	314946	319493	0.047	1106	84	01-Nov-0200	3773	119	05-Jul-0200	0.997
179	02-Sep-0200	317528	321426	0.047	1138	85	03-Nov-0200	3770	120	06-Jul-0200	0.997
180	03-Sep-0200	319686	323342	0.047	1171	85	03-Nov-0200	3766	120	06-Jul-0200	0.997
181	04-Sep-0200	321615	325218	0.046	1204	86	03-Nov-0200	3763	120	06-Jul-0200	0.997
182	05-Sep-0200	323565	327060	0.046	1237	86	05-Nov-0200	3760	121	07-Jul-0200	0.997
183	06-Sep-0200	325157	328833	0.046	1270	87	05-Nov-0200	3756	121	07-Jul-0200	0.997
184	07-Sep-0200	327359	330603	0.045	1303	88	05-Nov-0200	3753	121	07-Jul-0200	0.997
185	08-Sep-0200	329251	332345	0.045	1337	88	07-Nov-0200	3750	122	08-Jul-0200	0.997
186	09-Sep-0200	331078	334055	0.045	1370	89	07-Nov-0200	3746	122	08-Jul-0200	0.997
187	10-Sep-0200	332970	335737	0.045	1404	89	07-Nov-0200	3743	122	08-Jul-0200	0.997
188	11-Sep-0200	334762	337386	0.044	1437	90	09-Nov-0200	3739	123	09-Jul-0200	0.997

```
189 12-Sep-0200   336044   338960   0.044   1470    90 09-Nov-0200   3736   123 09-Jul-0200 0.997
190 13-Sep-0200   337520   340477   0.044   1502    91 09-Nov-0200   3732   123 09-Jul-0200 0.997
191 14-Sep-0200   339332   341978   0.044   1534    91 09-Nov-0200   3729   123 09-Jul-0200 0.997
192 15-Sep-0200   341056   343454   0.043   1567    92 11-Nov-0200   3726   124 10-Jul-0200 0.997
193 16-Sep-0200   342671   344899   0.043   1599    92 11-Nov-0200   3722   124 10-Jul-0200 0.997
194 17-Sep-0200   344264   346313   0.043   1631    93 11-Nov-0200   3719   124 10-Jul-0200 0.997
195 18-Sep-0200   345805   347695   0.043   1663    93 11-Nov-0200   3715   124 10-Jul-0200 0.997
196 19-Sep-0200   347374   349050   0.043   1695    94 13-Nov-0200   3712   125 11-Jul-0200 0.997
197 20-Sep-0200   348916   350381   0.042   1727    94 13-Nov-0200   3708   125 11-Jul-0200 0.996
198 21-Sep-0200   350621   351699   0.042   1759    94 13-Nov-0200   3705   125 11-Jul-0200 0.996
199 22-Sep-0200   352178   352997   0.042   1791    95 13-Nov-0200   3701   125 11-Jul-0200 0.996
200 23-Sep-0200   353844   354284   0.042   1824    95 15-Nov-0200   3698   126 12-Jul-0200 0.996
201 24-Sep-0200   355384   355552   0.042   1856    96 15-Nov-0200   3694   126 12-Jul-0200 0.996
202 25-Sep-0200   356767   356790   0.041   1889    96 15-Nov-0200   3690   126 12-Jul-0200 0.996
203 26-Sep-0200   357873   357981   0.041   1920    97 15-Nov-0200   3687   126 12-Jul-0200 0.996
204 27-Sep-0200   359148   359141   0.041   1951    97 15-Nov-0200   3683   126 12-Jul-0200 0.996
205 28-Sep-0200   360555   360282   0.041   1983    97 17-Nov-0200   3680   127 13-Jul-0200 0.996
206 29-Sep-0200   362043   361412   0.041   2014    98 17-Nov-0200   3676   127 13-Jul-0200 0.996
207 30-Sep-0200   363479   362528   0.041   2046    98 17-Nov-0200   3673   127 13-Jul-0200 0.996
```


BANGLADESH Coronavirus epidemic (logistic model)
K = 362528 r = 0.0405283 C_0 = 2046 RMSE = 7996

Epidemic rate

```
ans = 8
ans = 8
```

```
    pause(3)
    fitVirus03(@getDataBangladesh_Jul,"July");
```

```
**** Estimation of epidemy size for Bangladesh
  Initial guess K = 269622  r = 0.058921  A = 523.335
  Initial guess K = 269622  r = 0.058921  A = 523.335
Regression parameters for complet data set

mdl =

Nonlinear regression model:
    y ~ fitVirus03/fun(b,X)

Estimated Coefficients:
          Estimate          SE        tStat        pValue

          _____    _____    _____    _____

    K     2.6241e+05          1371    191.41    3.0892e-174
    r       0.057966    0.00041637    139.22     1.428e-154
```

7

```
         A          598.92          21.136    28.337      1.5496e-60
```

Number of observations: 146, Error degrees of freedom: 143
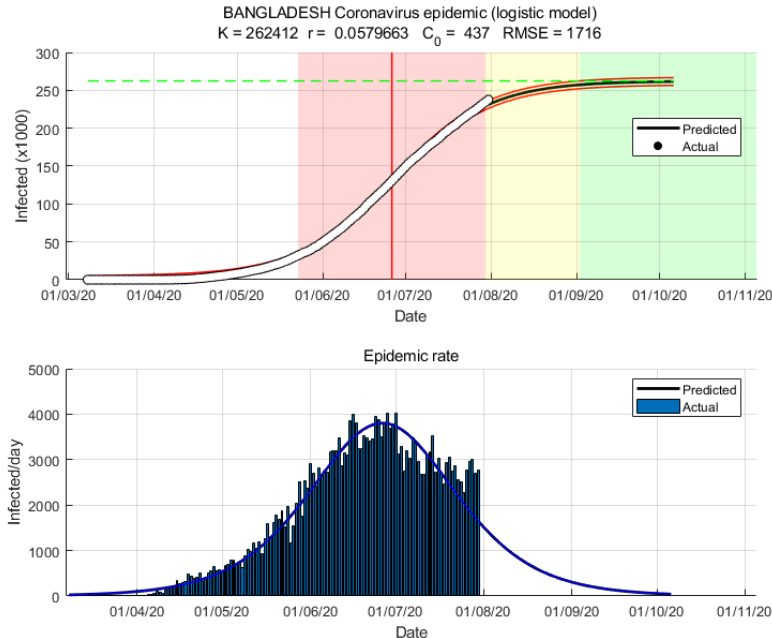Root Mean Squared Error: 1.71e+03
R-Squared: 1, Adjusted R-Squared 1
F-statistic vs. zero model: 1.73e+05, p-value = 3.06e-254

Evaluation of model parameters for Bangladesh

day	date	C (cases)	K (cases)	r (1/day)	C0 (cases)	Tau (day)	end	dCdt (c/day)	tpeak (day)	peak	R2
59	05-May-2020	10929	14348	0.165	2	24	18-Jun-2020	592	51	28-Apr-2020	0.998
60	06-May-2020	11719	15604	0.158	3	25	20-Jun-2020	617	52	29-Apr-2020	0.998
61	07-May-2020	12425	16736	0.153	4	26	22-Jun-2020	639	53	30-Apr-2020	0.998
62	08-May-2020	13134	17742	0.149	5	26	24-Jun-2020	659	54	01-May-2020	0.998
63	09-May-2020	13770	18507	0.146	5	27	26-Jun-2020	673	55	02-May-2020	0.998
64	10-May-2020	14657	19513	0.142	6	28	26-Jun-2020	691	55	02-May-2020	0.998
65	11-May-2020	15691	20900	0.137	8	29	28-Jun-2020	715	56	03-May-2020	0.998
66	12-May-2020	16660	22433	0.132	10	30	02-Jul-2020	742	58	05-May-2020	0.998
67	13-May-2020	17822	24379	0.127	12	31	04-Jul-2020	776	59	06-May-2020	0.997
68	14-May-2020	18863	26382	0.123	15	32	06-Jul-2020	810	60	07-May-2020	0.997
69	15-May-2020	20065	28676	0.119	18	33	08-Jul-2020	850	61	08-May-2020	0.997
70	16-May-2020	20995	30556	0.116	21	34	12-Jul-2020	882	63	10-May-2020	0.997
71	17-May-2020	22268	32739	0.112	24	35	14-Jul-2020	919	64	11-May-2020	0.997
72	18-May-2020	23870	35822	0.108	28	36	16-Jul-2020	971	65	12-May-2020	0.997
73	19-May-2020	25121	38751	0.105	32	37	20-Jul-2020	1020	67	14-May-2020	0.997
74	20-May-2020	26738	42328	0.102	37	39	22-Jul-2020	1080	68	15-May-2020	0.997
75	21-May-2020	28511	46784	0.099	44	40	26-Jul-2020	1155	70	17-May-2020	0.997
76	22-May-2020	30205	51617	0.096	50	41	30-Jul-2020	1236	72	19-May-2020	0.997
77	23-May-2020	32078	57149	0.093	57	43	03-Aug-2020	1328	74	21-May-2020	0.997
78	24-May-2020	33610	61712	0.091	62	43	05-Aug-2020	1404	75	22-May-2020	0.997
79	25-May-2020	35585	66836	0.089	68	44	09-Aug-2020	1489	77	24-May-2020	0.997
80	26-May-2020	36751	69008	0.088	71	45	09-Aug-2020	1524	77	24-May-2020	0.997
81	27-May-2020	38292	70396	0.088	72	45	11-Aug-2020	1547	78	25-May-2020	0.998
82	28-May-2020	40321	72743	0.087	75	45	11-Aug-2020	1584	78	25-May-2020	0.998
83	29-May-2020	42844	77116	0.086	81	46	15-Aug-2020	1651	80	27-May-2020	0.998
84	30-May-2020	44608	80434	0.085	85	47	15-Aug-2020	1702	80	27-May-2020	0.998
85	31-May-2020	47153	85202	0.083	91	48	19-Aug-2020	1774	82	29-May-2020	0.998
86	01-Jun-2020	49534	90379	0.082	97	48	21-Aug-2020	1851	83	30-May-2020	0.998
87	02-Jun-2020	52445	97422	0.080	106	49	23-Aug-2020	1956	84	31-May-2020	0.998
88	03-Jun-2020	55140	105030	0.079	115	50	27-Aug-2020	2067	86	02-Jun-2020	0.998
89	04-Jun-2020	57563	111697	0.078	123	51	29-Aug-2020	2165	87	03-Jun-2020	0.998
90	05-Jun-2020	60391	118758	0.076	131	52	02-Sep-2020	2267	89	05-Jun-2020	0.998
91	06-Jun-2020	63026	124992	0.075	137	53	04-Sep-2020	2356	90	06-Jun-2020	0.998
92	07-Jun-2020	65769	130645	0.075	144	53	06-Sep-2020	2436	91	07-Jun-2020	0.999
93	08-Jun-2020	68504	135541	0.074	149	54	08-Sep-2020	2505	92	08-Jun-2020	0.999
94	09-Jun-2020	71675	141033	0.073	155	54	08-Sep-2020	2581	92	08-Jun-2020	0.999
95	10-Jun-2020	74865	147020	0.072	162	55	10-Sep-2020	2663	93	09-Jun-2020	0.999
96	11-Jun-2020	78052	152868	0.072	168	55	12-Sep-2020	2742	94	10-Jun-2020	0.999
97	12-Jun-2020	81523	159317	0.071	176	56	14-Sep-2020	2828	95	11-Jun-2020	0.999
98	13-Jun-2020	84379	163842	0.071	181	56	16-Sep-2020	2888	96	12-Jun-2020	0.999
99	14-Jun-2020	87520	167431	0.070	185	57	18-Sep-2020	2934	97	13-Jun-2020	0.999
100	15-Jun-2020	90619	170760	0.070	189	57	18-Sep-2020	2977	97	13-Jun-2020	0.999
101	16-Jun-2020	94481	175325	0.069	195	57	20-Sep-2020	3035	98	14-Jun-2020	0.999
102	17-Jun-2020	98489	181159	0.069	202	58	20-Sep-2020	3108	98	14-Jun-2020	0.999
103	18-Jun-2020	102292	186953	0.068	210	58	22-Sep-2020	3179	99	15-Jun-2020	0.999
104	19-Jun-2020	105535	191418	0.068	216	59	24-Sep-2020	3234	100	16-Jun-2020	0.999
105	20-Jun-2020	108775	194820	0.067	221	59	24-Sep-2020	3275	100	16-Jun-2020	0.999
106	21-Jun-2020	112306	197712	0.067	225	59	26-Sep-2020	3309	101	17-Jun-2020	0.999
107	22-Jun-2020	115786	200219	0.067	228	59	26-Sep-2020	3338	101	17-Jun-2020	0.999
108	23-Jun-2020	119198	202275	0.066	232	60	26-Sep-2020	3361	101	17-Jun-2020	0.999
109	24-Jun-2020	122660	204126	0.066	235	60	28-Sep-2020	3382	102	18-Jun-2020	0.999
110	25-Jun-2020	126606	206637	0.066	239	60	28-Sep-2020	3410	102	18-Jun-2020	0.999
111	26-Jun-2020	130474	209465	0.066	244	60	28-Sep-2020	3440	102	18-Jun-2020	0.999
112	27-Jun-2020	133978	211917	0.065	248	61	30-Sep-2020	3466	103	19-Jun-2020	1.000
113	28-Jun-2020	137787	214539	0.065	253	61	30-Sep-2020	3493	103	19-Jun-2020	1.000

114	29-Jun-2020	141801	217547	0.065	259	61	30-Sep-2020	3523	103	19-Jun-2020	1.000
115	30-Jun-2020	145483	220381	0.064	265	62	02-Oct-2020	3551	104	20-Jun-2020	1.000
116	01-Jul-2020	149258	223189	0.064	271	62	02-Oct-2020	3578	104	20-Jun-2020	1.000
117	02-Jul-2020	153277	226257	0.064	278	62	04-Oct-2020	3607	105	21-Jun-2020	1.000
118	03-Jul-2020	156391	228496	0.064	283	62	04-Oct-2020	3628	105	21-Jun-2020	1.000
119	04-Jul-2020	159679	230320	0.063	288	63	04-Oct-2020	3644	105	21-Jun-2020	1.000
120	05-Jul-2020	162417	231331	0.063	290	63	04-Oct-2020	3653	105	21-Jun-2020	1.000
121	06-Jul-2020	165618	232230	0.063	293	63	04-Oct-2020	3661	105	21-Jun-2020	1.000
122	07-Jul-2020	168645	232946	0.063	295	63	04-Oct-2020	3667	105	21-Jun-2020	1.000
123	08-Jul-2020	172134	233937	0.063	297	63	06-Oct-2020	3675	106	22-Jun-2020	1.000
124	09-Jul-2020	175494	235068	0.063	301	63	06-Oct-2020	3683	106	22-Jun-2020	1.000
125	10-Jul-2020	178443	236049	0.063	304	63	06-Oct-2020	3691	106	22-Jun-2020	1.000
126	11-Jul-2020	181129	236785	0.062	306	64	06-Oct-2020	3696	106	22-Jun-2020	1.000
127	12-Jul-2020	183795	237366	0.062	308	64	06-Oct-2020	3700	106	22-Jun-2020	1.000
128	13-Jul-2020	186894	238114	0.062	311	64	06-Oct-2020	3705	106	22-Jun-2020	1.000
129	14-Jul-2020	190057	239053	0.062	314	64	06-Oct-2020	3711	106	22-Jun-2020	1.000
130	15-Jul-2020	193590	240345	0.062	319	64	06-Oct-2020	3719	106	22-Jun-2020	1.000
131	16-Jul-2020	196323	241550	0.062	324	64	08-Oct-2020	3726	107	23-Jun-2020	1.000
132	17-Jul-2020	199357	242843	0.061	329	65	08-Oct-2020	3733	107	23-Jun-2020	1.000
133	18-Jul-2020	202066	244082	0.061	335	65	08-Oct-2020	3739	107	23-Jun-2020	1.000
134	19-Jul-2020	204525	245196	0.061	339	65	08-Oct-2020	3745	107	23-Jun-2020	1.000
135	20-Jul-2020	207453	246410	0.061	345	65	08-Oct-2020	3751	107	23-Jun-2020	1.000
136	21-Jul-2020	210510	247765	0.061	351	65	10-Oct-2020	3757	108	24-Jun-2020	1.000
137	22-Jul-2020	213254	249137	0.060	358	66	10-Oct-2020	3762	108	24-Jun-2020	1.000
138	23-Jul-2020	216110	250571	0.060	366	66	10-Oct-2020	3768	108	24-Jun-2020	1.000
139	24-Jul-2020	218658	251968	0.060	373	66	10-Oct-2020	3773	108	24-Jun-2020	1.000
140	25-Jul-2020	221178	253336	0.060	381	67	10-Oct-2020	3778	108	24-Jun-2020	1.000
141	26-Jul-2020	223453	254618	0.059	388	67	12-Oct-2020	3782	109	25-Jun-2020	1.000
142	27-Jul-2020	226225	255980	0.059	396	67	12-Oct-2020	3786	109	25-Jun-2020	1.000
143	28-Jul-2020	229185	257467	0.059	405	67	12-Oct-2020	3791	109	25-Jun-2020	1.000
144	29-Jul-2020	232194	259078	0.059	415	68	12-Oct-2020	3795	109	25-Jun-2020	1.000
145	30-Jul-2020	234889	260720	0.058	426	68	14-Oct-2020	3799	110	26-Jun-2020	1.000
146	31-Jul-2020	237661	262412	0.058	437	69	14-Oct-2020	3802	110	26-Jun-2020	1.000

BANGLADESH Coronavirus epidemic (logistic model)
K = 262412 r = 0.0579663 C_0 = 437 RMSE = 1716

Epidemic rate

ans = 8
ans = 8

```
    pause(3)
    fitVirus03(@getDataBangladesh_Jun,"June");
```

**** Estimation of epidemy size for Bangladesh

9

```
  Initial guess K = 243075   r = 0.0604396   A = 497.913
  Initial guess K = 243075   r = 0.0604396   A = 497.913
Regression parameters for complet data set

mdl =

Nonlinear regression model:
    y ~ fitVirus03/fun(b,X)

Estimated Coefficients:
          Estimate          SE          tStat          pValue

          _____    _____    _____    _____

    K     2.2038e+05       0.11377    1.9371e+06             0
    r       0.064461    0.00023208       277.75    5.0614e-162
    A         828.18         18.69        44.312    2.8528e-73


Number of observations: 115, Error degrees of freedom: 113
Root Mean Squared Error: 893
R-Squared: 1,  Adjusted R-Squared 1
F-statistic vs. zero model: 1.97e+05, p-value = 6.2e-201
```
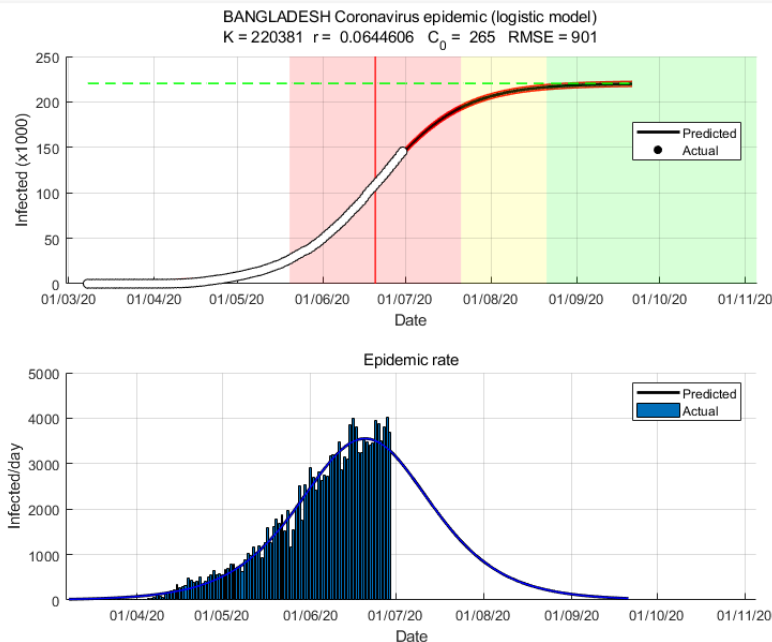
Evaluation of model parameters for Bangladesh

day	date	C (cases)	K (cases)	r (1/day)	C0 (cases)	Tau (day)	end	dCdt (c/day)	tpeak (day)	peak	R2
46	22-Apr-2020	3772	6565	0.252	0	15	02-Jun-2020	414	43	20-Apr-2020	0.999
47	23-Apr-2020	4186	6660	0.251	0	15	02-Jun-2020	417	43	20-Apr-2020	0.999
48	24-Apr-2020	4689	7117	0.244	0	16	04-Jun-2020	434	44	21-Apr-2020	0.999
49	25-Apr-2020	4998	7069	0.245	0	16	04-Jun-2020	433	44	21-Apr-2020	1.000
50	26-Apr-2020	5416	7217	0.242	0	16	04-Jun-2020	437	44	21-Apr-2020	1.000
51	27-Apr-2020	5913	7606	0.235	0	17	06-Jun-2020	447	45	22-Apr-2020	1.000
52	28-Apr-2020	6462	8195	0.225	0	17	06-Jun-2020	461	45	22-Apr-2020	0.999
53	29-Apr-2020	7103	9053	0.212	0	18	08-Jun-2020	480	46	23-Apr-2020	0.999
54	30-Apr-2020	7667	9906	0.202	0	19	10-Jun-2020	499	47	24-Apr-2020	0.998
55	01-May-2020	8238	10721	0.193	0	20	12-Jun-2020	517	48	25-Apr-2020	0.998
56	02-May-2020	8790	11441	0.187	1	21	14-Jun-2020	533	49	26-Apr-2020	0.998
57	03-May-2020	9455	12280	0.179	1	22	14-Jun-2020	550	49	26-Apr-2020	0.998
58	04-May-2020	10143	13210	0.173	2	23	16-Jun-2020	569	50	27-Apr-2020	0.998
59	05-May-2020	10929	14348	0.165	2	24	18-Jun-2020	592	51	28-Apr-2020	0.998
60	06-May-2020	11719	15604	0.158	3	25	20-Jun-2020	617	52	29-Apr-2020	0.998
61	07-May-2020	12425	16737	0.153	4	26	22-Jun-2020	640	53	30-Apr-2020	0.998
62	08-May-2020	13134	17742	0.149	5	26	24-Jun-2020	659	54	01-May-2020	0.998
63	09-May-2020	13770	18507	0.146	5	27	26-Jun-2020	673	55	02-May-2020	0.998
64	10-May-2020	14657	19514	0.142	6	28	26-Jun-2020	691	55	02-May-2020	0.998
65	11-May-2020	15691	20900	0.137	8	29	28-Jun-2020	715	56	03-May-2020	0.998
66	12-May-2020	16660	22433	0.132	10	30	02-Jul-2020	742	58	05-May-2020	0.998
67	13-May-2020	17822	24379	0.127	12	31	04-Jul-2020	776	59	06-May-2020	0.997
68	14-May-2020	18863	26383	0.123	15	32	06-Jul-2020	810	60	07-May-2020	0.997
69	15-May-2020	20065	28676	0.119	18	33	08-Jul-2020	850	61	08-May-2020	0.997
70	16-May-2020	20995	30555	0.116	21	34	12-Jul-2020	882	63	10-May-2020	0.997
71	17-May-2020	22268	32738	0.112	24	35	14-Jul-2020	919	64	11-May-2020	0.997
72	18-May-2020	23870	35823	0.108	28	36	16-Jul-2020	971	65	12-May-2020	0.997
73	19-May-2020	25121	38751	0.105	32	37	20-Jul-2020	1020	67	14-May-2020	0.997
74	20-May-2020	26738	42327	0.102	37	39	22-Jul-2020	1080	68	15-May-2020	0.997
75	21-May-2020	28511	46784	0.099	44	40	26-Jul-2020	1155	70	17-May-2020	0.997
76	22-May-2020	30205	51618	0.096	50	41	30-Jul-2020	1236	72	19-May-2020	0.997
77	23-May-2020	32078	57148	0.093	57	43	03-Aug-2020	1328	74	21-May-2020	0.997
78	24-May-2020	33610	61711	0.091	62	43	05-Aug-2020	1404	75	22-May-2020	0.997
79	25-May-2020	35585	66838	0.089	68	44	09-Aug-2020	1489	77	24-May-2020	0.997
80	26-May-2020	36751	69007	0.088	71	45	09-Aug-2020	1524	77	24-May-2020	0.997
81	27-May-2020	38292	70396	0.088	72	45	11-Aug-2020	1547	78	25-May-2020	0.998
82	28-May-2020	40321	72743	0.087	75	45	11-Aug-2020	1584	78	25-May-2020	0.998
83	29-May-2020	42844	77116	0.086	81	46	15-Aug-2020	1651	80	27-May-2020	0.998
84	30-May-2020	44608	80432	0.085	85	47	15-Aug-2020	1702	80	27-May-2020	0.998
85	31-May-2020	47153	85201	0.083	91	48	19-Aug-2020	1774	82	29-May-2020	0.998
86	01-Jun-2020	49534	90384	0.082	97	48	21-Aug-2020	1851	83	30-May-2020	0.998

87	02-Jun-2020	52445	97421	0.080	106	49	23-Aug-2020	1956	84	31-May-2020	0.998
88	03-Jun-2020	55140	105033	0.079	115	50	27-Aug-2020	2067	86	02-Jun-2020	0.998
89	04-Jun-2020	57563	111700	0.078	123	51	29-Aug-2020	2165	87	03-Jun-2020	0.998
90	05-Jun-2020	60391	118759	0.076	131	52	02-Sep-2020	2267	89	05-Jun-2020	0.998
91	06-Jun-2020	63026	124991	0.075	137	53	04-Sep-2020	2356	90	06-Jun-2020	0.998
92	07-Jun-2020	65769	130653	0.075	144	53	06-Sep-2020	2436	91	07-Jun-2020	0.999
93	08-Jun-2020	68504	135525	0.074	149	54	08-Sep-2020	2504	92	08-Jun-2020	0.999
94	09-Jun-2020	71675	141126	0.073	155	54	10-Sep-2020	2582	93	09-Jun-2020	0.999
95	10-Jun-2020	74865	147039	0.072	162	55	10-Sep-2020	2663	93	09-Jun-2020	0.999
96	11-Jun-2020	78052	152868	0.072	168	55	12-Sep-2020	2742	94	10-Jun-2020	0.999
97	12-Jun-2020	81523	159007	0.071	176	56	14-Sep-2020	2823	95	11-Jun-2020	0.999
98	13-Jun-2020	84379	163843	0.071	181	56	16-Sep-2020	2888	96	12-Jun-2020	0.999
99	14-Jun-2020	87520	167688	0.070	186	57	18-Sep-2020	2938	97	13-Jun-2020	0.999
100	15-Jun-2020	90619	170708	0.070	189	57	18-Sep-2020	2977	97	13-Jun-2020	0.999
101	16-Jun-2020	94481	175203	0.069	195	57	20-Sep-2020	3034	98	14-Jun-2020	0.999
102	17-Jun-2020	98489	181142	0.069	202	58	20-Sep-2020	3108	98	14-Jun-2020	0.999
103	18-Jun-2020	102292	187135	0.068	210	58	22-Sep-2020	3182	99	15-Jun-2020	0.999
104	19-Jun-2020	105535	191631	0.068	216	59	24-Sep-2020	3237	100	16-Jun-2020	0.999
105	20-Jun-2020	108775	194813	0.067	221	59	24-Sep-2020	3275	100	16-Jun-2020	0.999
106	21-Jun-2020	112306	197702	0.067	225	59	26-Sep-2020	3309	101	17-Jun-2020	0.999
107	22-Jun-2020	115786	200224	0.067	229	59	26-Sep-2020	3338	101	17-Jun-2020	0.999
108	23-Jun-2020	119198	202286	0.066	232	60	26-Sep-2020	3362	101	17-Jun-2020	0.999
109	24-Jun-2020	122660	204124	0.066	235	60	28-Sep-2020	3382	102	18-Jun-2020	0.999
110	25-Jun-2020	126606	206637	0.066	239	60	28-Sep-2020	3410	102	18-Jun-2020	0.999
111	26-Jun-2020	130474	209464	0.066	244	60	28-Sep-2020	3440	102	18-Jun-2020	0.999
112	27-Jun-2020	133978	211918	0.065	248	61	30-Sep-2020	3466	103	19-Jun-2020	1.000
113	28-Jun-2020	137787	214539	0.065	253	61	30-Sep-2020	3493	103	19-Jun-2020	1.000
114	29-Jun-2020	141801	217547	0.065	259	61	30-Sep-2020	3523	103	19-Jun-2020	1.000
115	30-Jun-2020	145483	220381	0.064	265	62	02-Oct-2020	3551	104	20-Jun-2020	1.000

BANGLADESH Coronavirus epidemic (logistic model)
K = 220381 r = 0.0644606 C_0 = 265 RMSE = 901

Epidemic rate

```
ans = 8
ans = 8
```

```
    pause(3)
    fitVirus03(@getDataBangladesh_Mar,"March");
```

```
**** Estimation of epidemy size for Bangladesh
  Initial guess K = 52.9424  r = 0.345528  A = 2.62913
  Initial guess K = 52.9424  r = 0.345528  A = 2.62913
Regression parameters for complet data set
```

```
mdl =
Nonlinear regression model:
    y ~ fitVirus03/fun(b,X)

Estimated Coefficients:
          Estimate        SE        tStat        pValue

          _____    _____    _____    _____

    K       53.816        1.206     44.623     2.707e-22
    r      0.31274     0.015115     20.691       1.9e-15
    A       68.534       11.228     6.1038     4.6759e-06


Number of observations: 24, Error degrees of freedom: 21
Root Mean Squared Error: 1.32
R-Squared: 0.995,  Adjusted R-Squared 0.995
F-statistic vs. zero model: 3.91e+03, p-value = 5.35e-29
```
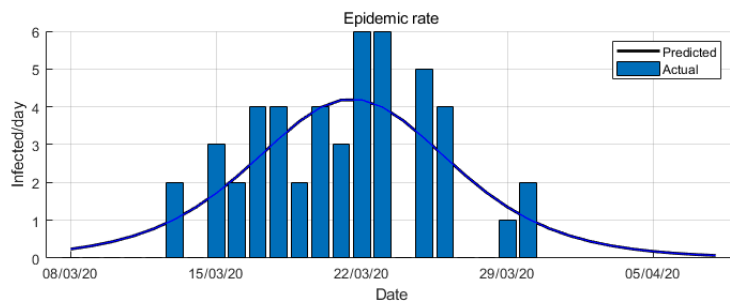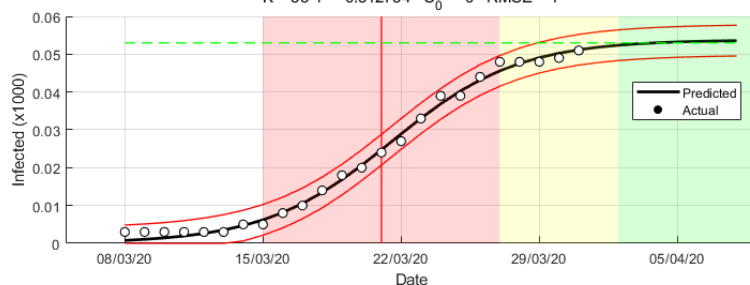
Evaluation of model parameters for Bangladesh

day	date	C (cases)	K (cases)	r (1/day)	C0 (cases)	Tau (day)	end	dCdt (c/day)	tpeak (day)	peak	R2
10	17-Mar-2020	10	113168	0.191	1	20	02-Jul-2020	5402	58	05-May-2020	0.865
11	18-Mar-2020	14	25541	0.231	1	17	31-May-2020	1477	42	19-Apr-2020	0.923
12	19-Mar-2020	18	70130	0.249	1	16	04-Jun-2020	4364	44	21-Apr-2020	0.959
13	20-Mar-2020	20	36619	0.230	1	17	04-Jun-2020	2109	44	21-Apr-2020	0.970
14	21-Mar-2020	24	102	0.251	1	15	11-Apr-2020	6	17	25-Mar-2020	0.979
15	22-Mar-2020	27	55	0.283	1	14	03-Apr-2020	3	13	21-Mar-2020	0.984
16	23-Mar-2020	33	68	0.265	1	15	07-Apr-2020	4	15	23-Mar-2020	0.989
17	24-Mar-2020	39	87	0.248	1	16	09-Apr-2020	5	16	24-Mar-2020	0.992
18	25-Mar-2020	39	59	0.284	0	14	05-Apr-2020	4	14	22-Mar-2020	0.991
19	26-Mar-2020	44	59	0.284	0	14	05-Apr-2020	4	14	22-Mar-2020	0.993
20	27-Mar-2020	48	61	0.279	1	14	05-Apr-2020	4	14	22-Mar-2020	0.995
21	28-Mar-2020	48	58	0.290	0	13	05-Apr-2020	4	14	22-Mar-2020	0.995
22	29-Mar-2020	48	55	0.304	0	13	03-Apr-2020	4	13	21-Mar-2020	0.995
23	30-Mar-2020	49	53	0.312	0	12	03-Apr-2020	4	13	21-Mar-2020	0.995
24	31-Mar-2020	51	53	0.313	0	12	03-Apr-2020	4	13	21-Mar-2020	0.995

BANGLADESH Coronavirus epidemic (logistic model)
K = 53 r = 0.312734 C_0 = 0 RMSE = 1

Epidemic rate

```
ans = 8
ans = 8

   pause(3)
```

```
    fitVirus03(@getDataBangladesh_May,"May");
```

**** Estimation of epidemy size for Bangladesh
  Initial guess K = 155977 r = 0.0672811 A = 331.554
  Initial guess K = 155977 r = 0.0672811 A = 331.554
Regression parameters for complet data set

mdl =

Nonlinear regression model:
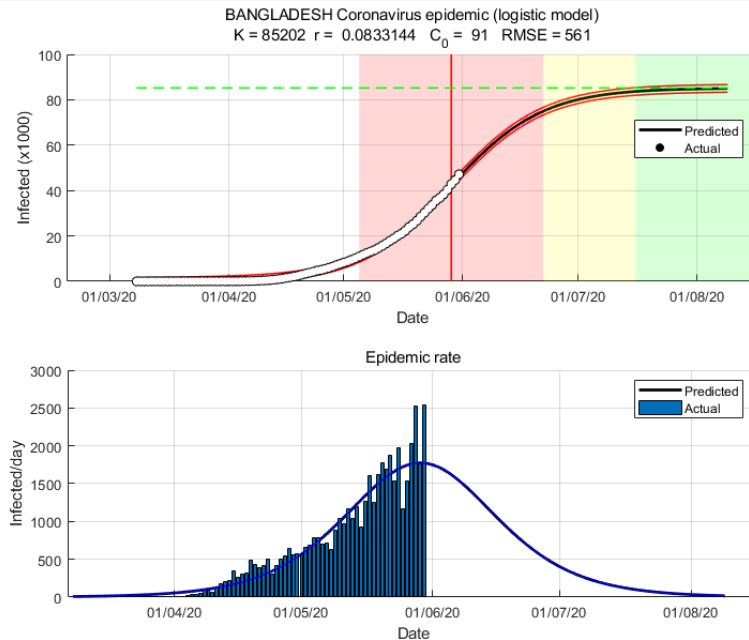   y ~ fitVirus03/fun(b,X)

Estimated Coefficients:
        Estimate   SE   tStat   pValue
        _____   _____   _____   _____

    K   85202   4142.8   20.566   2.5081e-34
    r   0.083314   0.0017414   47.843   3.3388e-62
    A   931.01   59.932   15.534   2.7537e-26

Number of observations: 85, Error degrees of freedom: 83
Root Mean Squared Error: 558
R-Squared: 0.998, Adjusted R-Squared 0.998
F-statistic vs. zero model: 3.53e+04, p-value = 2.59e-122

Evaluation of model parameters for Bangladesh

day	date	C	K	r	C0	Tau	end	dCdt	tpeak	peak	R2
		(cases)	(cases)	(1/day)	(cases)	(day)		(c/day)	(day)		
34	10-Apr-2020	424	307684	0.258	0	15	02-Jul-2020	19825	58	05-May-2020	0.951
35	11-Apr-2020	482	408024	0.242	0	16	08-Jul-2020	24712	61	08-May-2020	0.968
36	12-Apr-2020	621	172953	0.240	0	16	02-Jul-2020	10376	58	05-May-2020	0.980
37	13-Apr-2020	803	2044347	0.241	0	16	22-Jul-2020	123401	68	15-May-2020	0.988
38	14-Apr-2020	1012	213998	0.241	0	16	04-Jul-2020	12900	59	06-May-2020	0.993
39	15-Apr-2020	1231	8777	0.252	0	15	06-Jun-2020	553	45	22-Apr-2020	0.995
40	16-Apr-2020	1572	63561	0.236	0	16	24-Jun-2020	3745	54	01-May-2020	0.997
41	17-Apr-2020	1838	6313	0.263	0	15	02-Jun-2020	414	43	20-Apr-2020	0.998
42	18-Apr-2020	2144	5023	0.274	0	14	31-May-2020	343	42	19-Apr-2020	0.998
43	19-Apr-2020	2456	4645	0.279	0	14	29-May-2020	324	41	18-Apr-2020	0.999
44	20-Apr-2020	2948	5750	0.262	0	15	31-May-2020	376	42	19-Apr-2020	0.999
45	21-Apr-2020	3382	6486	0.253	0	15	02-Jun-2020	410	43	20-Apr-2020	0.999
46	22-Apr-2020	3772	6565	0.252	0	15	02-Jun-2020	414	43	20-Apr-2020	0.999
47	23-Apr-2020	4186	6660	0.251	0	15	02-Jun-2020	417	43	20-Apr-2020	0.999
48	24-Apr-2020	4689	7117	0.244	0	16	04-Jun-2020	434	44	21-Apr-2020	0.999
49	25-Apr-2020	4998	7069	0.245	0	16	04-Jun-2020	433	44	21-Apr-2020	1.000
50	26-Apr-2020	5416	7217	0.242	0	16	04-Jun-2020	437	44	21-Apr-2020	1.000
51	27-Apr-2020	5913	7606	0.235	0	17	06-Jun-2020	447	45	22-Apr-2020	1.000
52	28-Apr-2020	6462	8195	0.225	0	17	06-Jun-2020	461	45	22-Apr-2020	0.999
53	29-Apr-2020	7103	9053	0.212	0	18	08-Jun-2020	480	46	23-Apr-2020	0.999
54	30-Apr-2020	7667	9906	0.202	0	19	10-Jun-2020	499	47	24-Apr-2020	0.998
55	01-May-2020	8238	10721	0.193	0	20	12-Jun-2020	517	48	25-Apr-2020	0.998
56	02-May-2020	8790	11441	0.187	1	21	14-Jun-2020	533	49	26-Apr-2020	0.998
57	03-May-2020	9455	12280	0.179	1	22	14-Jun-2020	550	49	26-Apr-2020	0.998
58	04-May-2020	10143	13210	0.173	2	23	16-Jun-2020	569	50	27-Apr-2020	0.998
59	05-May-2020	10929	14348	0.165	2	24	18-Jun-2020	592	51	28-Apr-2020	0.998
60	06-May-2020	11719	15604	0.158	3	25	20-Jun-2020	617	52	29-Apr-2020	0.998
61	07-May-2020	12425	16736	0.153	4	26	22-Jun-2020	639	53	30-Apr-2020	0.998
62	08-May-2020	13134	17742	0.149	5	26	24-Jun-2020	659	54	01-May-2020	0.998
63	09-May-2020	13770	18507	0.146	5	27	26-Jun-2020	673	55	02-May-2020	0.998
64	10-May-2020	14657	19513	0.142	6	28	26-Jun-2020	691	55	02-May-2020	0.998
65	11-May-2020	15691	20900	0.137	8	29	28-Jun-2020	715	56	03-May-2020	0.998
66	12-May-2020	16660	22433	0.132	10	30	02-Jul-2020	742	58	05-May-2020	0.998
67	13-May-2020	17822	24379	0.127	12	31	04-Jul-2020	776	59	06-May-2020	0.997
68	14-May-2020	18863	26383	0.123	15	32	06-Jul-2020	810	60	07-May-2020	0.997
69	15-May-2020	20065	28677	0.119	18	33	08-Jul-2020	850	61	08-May-2020	0.997
70	16-May-2020	20995	30555	0.116	21	34	12-Jul-2020	882	63	10-May-2020	0.997

71	17-May-2020	22268	32738	0.112	24	35	14-Jul-2020	919	64	11-May-2020	0.997
72	18-May-2020	23870	35822	0.108	28	36	16-Jul-2020	971	65	12-May-2020	0.997
73	19-May-2020	25121	38750	0.105	32	37	20-Jul-2020	1020	67	14-May-2020	0.997
74	20-May-2020	26738	42328	0.102	37	39	22-Jul-2020	1080	68	15-May-2020	0.997
75	21-May-2020	28511	46784	0.099	44	40	26-Jul-2020	1155	70	17-May-2020	0.997
76	22-May-2020	30205	51618	0.096	50	41	30-Jul-2020	1236	72	19-May-2020	0.997
77	23-May-2020	32078	57149	0.093	57	43	03-Aug-2020	1328	74	21-May-2020	0.997
78	24-May-2020	33610	61712	0.091	62	43	05-Aug-2020	1404	75	22-May-2020	0.997
79	25-May-2020	35585	66836	0.089	68	44	09-Aug-2020	1489	77	24-May-2020	0.997
80	26-May-2020	36751	69007	0.088	71	45	09-Aug-2020	1524	77	24-May-2020	0.997
81	27-May-2020	38292	70396	0.088	72	45	11-Aug-2020	1547	78	25-May-2020	0.998
82	28-May-2020	40321	72744	0.087	75	45	11-Aug-2020	1584	78	25-May-2020	0.998
83	29-May-2020	42844	77115	0.086	81	46	15-Aug-2020	1651	80	27-May-2020	0.998
84	30-May-2020	44608	80432	0.085	85	47	15-Aug-2020	1702	80	27-May-2020	0.998
85	31-May-2020	47153	85202	0.083	91	48	19-Aug-2020	1774	82	29-May-2020	0.998

BANGLADESH Coronavirus epidemic (logistic model)
K = 85202 r = 0.0833144 C_0 = 91 RMSE = 561

Epidemic rate

```
ans = 8
ans = 8
```

```
    pause(3)
    fitVirus03(@getDataBangladesh_Nov,"November");
```

```
**** Estimation of epidemy size for Bangladesh
  Initial guess K = 464978  r = 0.0747893  A = 14.5072
  Initial guess K = 464978  r = 0.0747893  A = 14.5072
Regression parameters for complet data set

mdl =

Nonlinear regression model:
    y ~ fitVirus03/fun(b,X)

Estimated Coefficients:
          Estimate        SE        tStat        pValue

          _____    _____    _____    _____

    K     4.3095e+05      2916.3    147.77    1.3641e-256
    r      0.031186    0.0005786      53.9    7.8517e-145
    A        82.831       5.8785    14.091     4.9496e-34


Number of observations: 268, Error degrees of freedom: 265
```
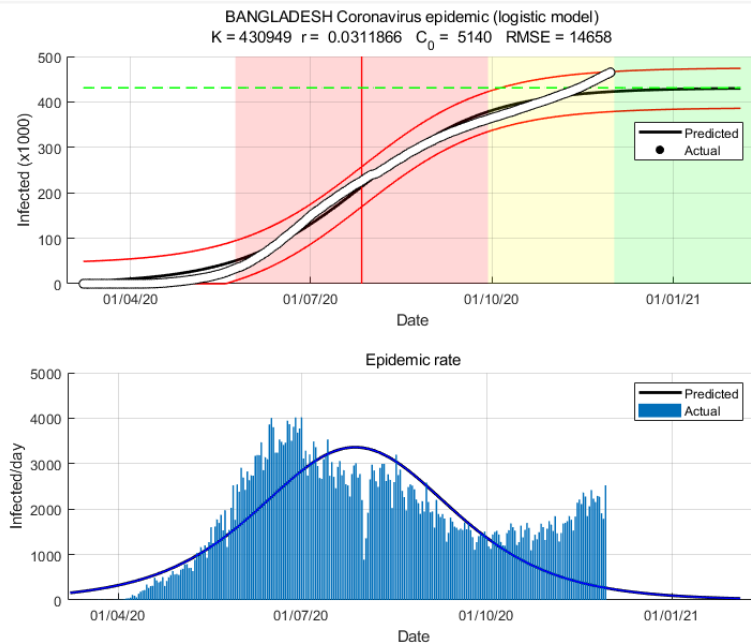
Root Mean Squared Error: 1.46e+04
R-Squared: 0.992, Adjusted R-Squared 0.992
F-statistic vs. zero model: 2.75e+04, p-value = 0

Evaluation of model parameters for Bangladesh

day	date	C (cases)	K (cases)	r (1/day)	C0 (cases)	Tau (day)	end	dCdt (c/day)	tpeak (day)	peak	R2
108	23-Jun-2020	119198	202287	0.066	232	60	26-Sep-2020	3362	101	17-Jun-2020	0.999
109	24-Jun-2020	122660	204124	0.066	235	60	28-Sep-2020	3382	102	18-Jun-2020	0.999
110	25-Jun-2020	126606	206637	0.066	239	60	28-Sep-2020	3410	102	18-Jun-2020	0.999
111	26-Jun-2020	130474	209464	0.066	244	60	28-Sep-2020	3440	102	18-Jun-2020	0.999
112	27-Jun-2020	133978	211917	0.065	248	61	30-Sep-2020	3466	103	19-Jun-2020	1.000
113	28-Jun-2020	137787	214539	0.065	253	61	30-Sep-2020	3493	103	19-Jun-2020	1.000
114	29-Jun-2020	141801	217547	0.065	259	61	30-Sep-2020	3523	103	19-Jun-2020	1.000
115	30-Jun-2020	145483	220380	0.064	265	62	02-Oct-2020	3551	104	20-Jun-2020	1.000
116	01-Jul-2020	149258	223189	0.064	271	62	02-Oct-2020	3578	104	20-Jun-2020	1.000
117	02-Jul-2020	153277	226259	0.064	278	62	04-Oct-2020	3607	105	21-Jun-2020	1.000
118	03-Jul-2020	156391	228495	0.064	283	62	04-Oct-2020	3628	105	21-Jun-2020	1.000
119	04-Jul-2020	159679	230319	0.063	288	63	04-Oct-2020	3644	105	21-Jun-2020	1.000
120	05-Jul-2020	162417	231331	0.063	290	63	04-Oct-2020	3653	105	21-Jun-2020	1.000
121	06-Jul-2020	165618	232230	0.063	293	63	04-Oct-2020	3661	105	21-Jun-2020	1.000
122	07-Jul-2020	168645	232941	0.063	295	63	04-Oct-2020	3667	105	21-Jun-2020	1.000
123	08-Jul-2020	172134	233937	0.063	297	63	06-Oct-2020	3675	106	22-Jun-2020	1.000
124	09-Jul-2020	175494	235068	0.063	301	63	06-Oct-2020	3683	106	22-Jun-2020	1.000
125	10-Jul-2020	178443	236049	0.063	304	63	06-Oct-2020	3691	106	22-Jun-2020	1.000
126	11-Jul-2020	181129	236784	0.062	306	64	06-Oct-2020	3696	106	22-Jun-2020	1.000
127	12-Jul-2020	183795	237365	0.062	308	64	06-Oct-2020	3700	106	22-Jun-2020	1.000
128	13-Jul-2020	186894	238114	0.062	311	64	06-Oct-2020	3705	106	22-Jun-2020	1.000
129	14-Jul-2020	190057	239052	0.062	314	64	06-Oct-2020	3711	106	22-Jun-2020	1.000
130	15-Jul-2020	193590	240345	0.062	319	64	06-Oct-2020	3719	106	22-Jun-2020	1.000
131	16-Jul-2020	196323	241550	0.062	324	64	08-Oct-2020	3726	107	23-Jun-2020	1.000
132	17-Jul-2020	199357	242843	0.061	329	65	08-Oct-2020	3733	107	23-Jun-2020	1.000
133	18-Jul-2020	202066	244082	0.061	335	65	08-Oct-2020	3739	107	23-Jun-2020	1.000
134	19-Jul-2020	204525	245196	0.061	339	65	08-Oct-2020	3745	107	23-Jun-2020	1.000
135	20-Jul-2020	207453	246410	0.061	345	65	08-Oct-2020	3751	107	23-Jun-2020	1.000
136	21-Jul-2020	210510	247765	0.061	351	65	10-Oct-2020	3757	108	24-Jun-2020	1.000
137	22-Jul-2020	213254	249137	0.060	358	66	10-Oct-2020	3762	108	24-Jun-2020	1.000
138	23-Jul-2020	216110	250571	0.060	366	66	10-Oct-2020	3768	108	24-Jun-2020	1.000
139	24-Jul-2020	218658	251968	0.060	373	66	10-Oct-2020	3773	108	24-Jun-2020	1.000
140	25-Jul-2020	221178	253336	0.060	381	67	10-Oct-2020	3778	108	24-Jun-2020	1.000
141	26-Jul-2020	223453	254618	0.059	388	67	12-Oct-2020	3782	109	25-Jun-2020	1.000
142	27-Jul-2020	226225	255980	0.059	396	67	12-Oct-2020	3786	109	25-Jun-2020	1.000
143	28-Jul-2020	229185	257467	0.059	405	67	12-Oct-2020	3791	109	25-Jun-2020	1.000
144	29-Jul-2020	232194	259078	0.059	415	68	12-Oct-2020	3795	109	25-Jun-2020	1.000
145	30-Jul-2020	234889	260720	0.058	426	68	14-Oct-2020	3799	110	26-Jun-2020	1.000
146	31-Jul-2020	237661	262412	0.058	437	69	14-Oct-2020	3802	110	26-Jun-2020	1.000
147	01-Aug-2020	239860	264018	0.058	448	69	14-Oct-2020	3805	110	26-Jun-2020	0.999
148	02-Aug-2020	240746	265257	0.057	457	69	14-Oct-2020	3808	110	26-Jun-2020	0.999
149	03-Aug-2020	242102	266296	0.057	465	69	14-Oct-2020	3809	110	26-Jun-2020	0.999
150	04-Aug-2020	244020	267291	0.057	472	70	16-Oct-2020	3811	111	27-Jun-2020	0.999
151	05-Aug-2020	246674	268404	0.057	481	70	16-Oct-2020	3812	111	27-Jun-2020	0.999
152	06-Aug-2020	249651	269683	0.057	491	70	16-Oct-2020	3813	111	27-Jun-2020	0.999
153	07-Aug-2020	252502	271085	0.056	503	71	16-Oct-2020	3814	111	27-Jun-2020	0.999
154	08-Aug-2020	255113	272555	0.056	515	71	16-Oct-2020	3815	111	27-Jun-2020	0.999
155	09-Aug-2020	257600	274064	0.056	529	71	18-Oct-2020	3815	112	28-Jun-2020	0.999
156	10-Aug-2020	260507	275683	0.055	543	72	18-Oct-2020	3815	112	28-Jun-2020	0.999
157	11-Aug-2020	263503	277416	0.055	560	72	18-Oct-2020	3815	112	28-Jun-2020	0.999
158	12-Aug-2020	266498	279252	0.055	577	73	20-Oct-2020	3815	113	29-Jun-2020	0.999
159	13-Aug-2020	269115	281122	0.054	596	73	20-Oct-2020	3815	113	29-Jun-2020	0.999
160	14-Aug-2020	271881	283048	0.054	616	74	20-Oct-2020	3814	113	29-Jun-2020	0.999
161	15-Aug-2020	274525	285006	0.054	636	74	20-Oct-2020	3813	113	29-Jun-2020	0.999
162	16-Aug-2020	276549	286903	0.053	657	75	22-Oct-2020	3812	114	30-Jun-2020	0.999
163	17-Aug-2020	279144	288829	0.053	679	75	22-Oct-2020	3811	114	30-Jun-2020	0.999
164	18-Aug-2020	282344	290869	0.052	702	76	22-Oct-2020	3809	114	30-Jun-2020	0.999
165	19-Aug-2020	285091	292952	0.052	727	76	24-Oct-2020	3807	115	01-Jul-2020	0.999
166	20-Aug-2020	287959	295092	0.052	753	77	24-Oct-2020	3805	115	01-Jul-2020	0.998

167	21-Aug-2020	290360	297219	0.051	779	78	26-Oct-2020	3803	116	02-Jul-2020	0.998
168	22-Aug-2020	292625	299319	0.051	806	78	26-Oct-2020	3801	116	02-Jul-2020	0.998
169	23-Aug-2020	294598	301355	0.050	833	79	26-Oct-2020	3799	116	02-Jul-2020	0.998
170	24-Aug-2020	297083	303399	0.050	861	79	28-Oct-2020	3796	117	03-Jul-2020	0.998
171	25-Aug-2020	299628	305461	0.050	890	80	28-Oct-2020	3794	117	03-Jul-2020	0.998
172	26-Aug-2020	302147	307535	0.049	919	81	28-Oct-2020	3791	117	03-Jul-2020	0.998
173	27-Aug-2020	304583	309612	0.049	950	81	30-Oct-2020	3788	118	04-Jul-2020	0.998
174	28-Aug-2020	306794	311664	0.049	981	82	30-Oct-2020	3785	118	04-Jul-2020	0.998
175	29-Aug-2020	308925	313684	0.048	1012	82	30-Oct-2020	3782	118	04-Jul-2020	0.998
176	30-Aug-2020	310822	315647	0.048	1043	83	01-Nov-2020	3779	119	05-Jul-2020	0.998
177	31-Aug-2020	312996	317590	0.048	1074	84	01-Nov-2020	3776	119	05-Jul-2020	0.997
178	01-Sep-2020	314946	319491	0.047	1105	84	01-Nov-2020	3773	119	05-Jul-2020	0.997
179	02-Sep-2020	317528	321424	0.047	1138	85	03-Nov-2020	3770	120	06-Jul-2020	0.997
180	03-Sep-2020	319686	323340	0.047	1171	85	03-Nov-2020	3767	120	06-Jul-2020	0.997
181	04-Sep-2020	321615	325216	0.046	1204	86	03-Nov-2020	3763	120	06-Jul-2020	0.997
182	05-Sep-2020	323565	327059	0.046	1237	86	05-Nov-2020	3760	121	07-Jul-2020	0.997
183	06-Sep-2020	325157	328832	0.046	1270	87	05-Nov-2020	3757	121	07-Jul-2020	0.997
184	07-Sep-2020	327359	330605	0.045	1303	88	05-Nov-2020	3753	121	07-Jul-2020	0.997
185	08-Sep-2020	329251	332345	0.045	1337	88	07-Nov-2020	3750	122	08-Jul-2020	0.997
186	09-Sep-2020	331078	334054	0.045	1370	89	07-Nov-2020	3746	122	08-Jul-2020	0.997
187	10-Sep-2020	332970	335737	0.045	1404	89	07-Nov-2020	3743	122	08-Jul-2020	0.997
188	11-Sep-2020	334762	337388	0.044	1437	90	09-Nov-2020	3739	123	09-Jul-2020	0.997
189	12-Sep-2020	336044	338959	0.044	1470	90	09-Nov-2020	3736	123	09-Jul-2020	0.997
190	13-Sep-2020	337520	340478	0.044	1502	91	09-Nov-2020	3732	123	09-Jul-2020	0.997
191	14-Sep-2020	339332	341978	0.044	1534	91	09-Nov-2020	3729	123	09-Jul-2020	0.997
192	15-Sep-2020	341056	343454	0.043	1567	92	11-Nov-2020	3726	124	10-Jul-2020	0.997
193	16-Sep-2020	342671	344899	0.043	1599	92	11-Nov-2020	3722	124	10-Jul-2020	0.997
194	17-Sep-2020	344264	346312	0.043	1631	93	11-Nov-2020	3719	124	10-Jul-2020	0.997
195	18-Sep-2020	345805	347696	0.043	1663	93	11-Nov-2020	3715	124	10-Jul-2020	0.997
196	19-Sep-2020	347374	349049	0.043	1695	94	13-Nov-2020	3712	125	11-Jul-2020	0.997
197	20-Sep-2020	348916	350379	0.042	1727	94	13-Nov-2020	3708	125	11-Jul-2020	0.996
198	21-Sep-2020	350621	351698	0.042	1759	94	13-Nov-2020	3705	125	11-Jul-2020	0.996
199	22-Sep-2020	352178	352996	0.042	1791	95	13-Nov-2020	3701	125	11-Jul-2020	0.996
200	23-Sep-2020	353844	354283	0.042	1824	95	15-Nov-2020	3698	126	12-Jul-2020	0.996
201	24-Sep-2020	355384	355552	0.042	1856	96	15-Nov-2020	3694	126	12-Jul-2020	0.996
202	25-Sep-2020	356767	356791	0.041	1889	96	15-Nov-2020	3690	126	12-Jul-2020	0.996
203	26-Sep-2020	357873	357981	0.041	1920	97	15-Nov-2020	3687	126	12-Jul-2020	0.996
204	27-Sep-2020	359148	359141	0.041	1951	97	15-Nov-2020	3683	126	12-Jul-2020	0.996
205	28-Sep-2020	360555	360281	0.041	1983	97	17-Nov-2020	3680	127	13-Jul-2020	0.996
206	29-Sep-2020	362043	361413	0.041	2014	98	17-Nov-2020	3676	127	13-Jul-2020	0.996
207	30-Sep-2020	363479	362527	0.041	2046	98	17-Nov-2020	3673	127	13-Jul-2020	0.996
208	01-Oct-2020	364987	363636	0.040	2077	99	17-Nov-2020	3669	127	13-Jul-2020	0.996
209	02-Oct-2020	366383	364730	0.040	2109	99	19-Nov-2020	3665	128	14-Jul-2020	0.996
210	03-Oct-2020	367565	365798	0.040	2141	99	19-Nov-2020	3662	128	14-Jul-2020	0.996
211	04-Oct-2020	368690	366837	0.040	2172	100	19-Nov-2020	3658	128	14-Jul-2020	0.996
212	05-Oct-2020	370132	367871	0.040	2203	100	19-Nov-2020	3655	128	14-Jul-2020	0.996
213	06-Oct-2020	371631	368902	0.040	2235	101	19-Nov-2020	3651	128	14-Jul-2020	0.996
214	07-Oct-2020	373151	369934	0.039	2268	101	21-Nov-2020	3647	129	15-Jul-2020	0.996
215	08-Oct-2020	374592	370962	0.039	2300	101	21-Nov-2020	3643	129	15-Jul-2020	0.996
216	09-Oct-2020	375870	371976	0.039	2333	102	21-Nov-2020	3640	129	15-Jul-2020	0.996
217	10-Oct-2020	377073	372973	0.039	2366	102	21-Nov-2020	3636	129	15-Jul-2020	0.996
218	11-Oct-2020	378266	373955	0.039	2399	102	21-Nov-2020	3632	129	15-Jul-2020	0.996
219	12-Oct-2020	379738	374938	0.039	2432	103	21-Nov-2020	3628	129	15-Jul-2020	0.996
220	13-Oct-2020	381275	375926	0.039	2465	103	23-Nov-2020	3624	130	16-Jul-2020	0.996
221	14-Oct-2020	382959	376927	0.038	2500	104	23-Nov-2020	3620	130	16-Jul-2020	0.996
222	15-Oct-2020	384559	377936	0.038	2535	104	23-Nov-2020	3616	130	16-Jul-2020	0.996
223	16-Oct-2020	386086	378949	0.038	2571	104	23-Nov-2020	3612	130	16-Jul-2020	0.996
224	17-Oct-2020	387295	379949	0.038	2608	105	23-Nov-2020	3608	130	16-Jul-2020	0.996
225	18-Oct-2020	388569	380941	0.038	2644	105	25-Nov-2020	3604	131	17-Jul-2020	0.996
226	19-Oct-2020	390206	381944	0.038	2681	106	25-Nov-2020	3599	131	17-Jul-2020	0.996
227	20-Oct-2020	391586	382945	0.038	2719	106	25-Nov-2020	3595	131	17-Jul-2020	0.996
228	21-Oct-2020	393131	383951	0.037	2757	106	25-Nov-2020	3591	131	17-Jul-2020	0.996
229	22-Oct-2020	394827	384971	0.037	2796	107	25-Nov-2020	3586	131	17-Jul-2020	0.996
230	23-Oct-2020	396413	385999	0.037	2836	107	27-Nov-2020	3582	132	18-Jul-2020	0.996
231	24-Oct-2020	397507	387010	0.037	2877	108	27-Nov-2020	3577	132	18-Jul-2020	0.996

232	25-Oct-2020	398815	388017	0.037	2917	108	27-Nov-2020	3573	132	18-Jul-2020	0.996
233	26-Oct-2020	400251	389025	0.037	2958	109	27-Nov-2020	3568	132	18-Jul-2020	0.996
234	27-Oct-2020	401586	390030	0.037	2999	109	27-Nov-2020	3564	132	18-Jul-2020	0.995
235	28-Oct-2020	403079	391039	0.036	3042	109	29-Nov-2020	3559	133	19-Jul-2020	0.995
236	29-Oct-2020	404760	392061	0.036	3085	110	29-Nov-2020	3554	133	19-Jul-2020	0.995
237	30-Oct-2020	406364	393092	0.036	3129	110	29-Nov-2020	3549	133	19-Jul-2020	0.995
238	31-Oct-2020	407684	394119	0.036	3174	111	29-Nov-2020	3545	133	19-Jul-2020	0.995
239	01-Nov-2020	409252	395153	0.036	3219	111	29-Nov-2020	3540	133	19-Jul-2020	0.995
240	02-Nov-2020	410988	396202	0.036	3266	112	01-Dec-2020	3535	134	20-Jul-2020	0.995
241	03-Nov-2020	412647	397261	0.036	3313	112	01-Dec-2020	3529	134	20-Jul-2020	0.995
242	04-Nov-2020	414164	398325	0.035	3362	113	01-Dec-2020	3524	134	20-Jul-2020	0.995
243	05-Nov-2020	416006	399406	0.035	3412	113	01-Dec-2020	3519	134	20-Jul-2020	0.995
244	06-Nov-2020	417475	400489	0.035	3463	113	03-Dec-2020	3514	135	21-Jul-2020	0.995
245	07-Nov-2020	418764	401567	0.035	3514	114	03-Dec-2020	3508	135	21-Jul-2020	0.995
246	08-Nov-2020	420238	402648	0.035	3566	114	03-Dec-2020	3503	135	21-Jul-2020	0.995
247	09-Nov-2020	421921	403739	0.035	3619	115	03-Dec-2020	3498	135	21-Jul-2020	0.995
248	10-Nov-2020	423620	404842	0.035	3673	115	05-Dec-2020	3492	136	22-Jul-2020	0.995
249	11-Nov-2020	425353	405957	0.034	3728	116	05-Dec-2020	3487	136	22-Jul-2020	0.995
250	12-Nov-2020	427198	407087	0.034	3785	116	05-Dec-2020	3481	136	22-Jul-2020	0.994
251	13-Nov-2020	428965	408230	0.034	3844	117	05-Dec-2020	3475	136	22-Jul-2020	0.994
252	14-Nov-2020	430496	409377	0.034	3903	117	05-Dec-2020	3469	136	22-Jul-2020	0.994
253	15-Nov-2020	432333	410539	0.034	3964	118	07-Dec-2020	3463	137	23-Jul-2020	0.994
254	16-Nov-2020	434472	411728	0.034	4026	119	07-Dec-2020	3457	137	23-Jul-2020	0.994
255	17-Nov-2020	436684	412944	0.033	4091	119	07-Dec-2020	3451	137	23-Jul-2020	0.994
256	18-Nov-2020	438795	414184	0.033	4158	120	07-Dec-2020	3445	137	23-Jul-2020	0.994
257	19-Nov-2020	441159	415456	0.033	4228	120	09-Dec-2020	3438	138	24-Jul-2020	0.994
258	20-Nov-2020	443434	416757	0.033	4300	121	09-Dec-2020	3432	138	24-Jul-2020	0.994
259	21-Nov-2020	445281	418070	0.033	4373	122	09-Dec-2020	3425	138	24-Jul-2020	0.993
260	22-Nov-2020	447341	419403	0.033	4449	122	11-Dec-2020	3418	139	25-Jul-2020	0.993
261	23-Nov-2020	449760	420768	0.032	4527	123	11-Dec-2020	3411	139	25-Jul-2020	0.993
262	24-Nov-2020	451990	422158	0.032	4608	123	11-Dec-2020	3404	139	25-Jul-2020	0.993
263	25-Nov-2020	454146	423570	0.032	4691	124	13-Dec-2020	3397	140	26-Jul-2020	0.993
264	26-Nov-2020	456438	425009	0.032	4777	125	13-Dec-2020	3390	140	26-Jul-2020	0.993
265	27-Nov-2020	458711	426473	0.032	4865	126	13-Dec-2020	3382	140	26-Jul-2020	0.992
266	28-Nov-2020	460619	427949	0.032	4954	126	13-Dec-2020	3375	140	26-Jul-2020	0.992
267	29-Nov-2020	462407	429432	0.031	5046	127	15-Dec-2020	3367	141	27-Jul-2020	0.992
268	30-Nov-2020	464932	430949	0.031	5140	128	15-Dec-2020	3359	141	27-Jul-2020	0.992

BANGLADESH Coronavirus epidemic (logistic model)
$K = 430949$ $r = 0.0311866$ $C_0 = 5140$ RMSE = 14658

Epidemic rate

ans = 8
ans = 8

```
pause(3)
```

```
    fitVirus03(@getDataBangladesh_Oct,"October");
```

**** Estimation of epidemy size for Bangladesh
  Initial guess K = 407806 r = 0.0780016 A = 18.9235
  Initial guess K = 407806 r = 0.0780016 A = 18.9235
Regression parameters for complet data set

mdl =

Nonlinear regression model:
    y ~ fitVirus03/fun(b,X)

Estimated Coefficients:

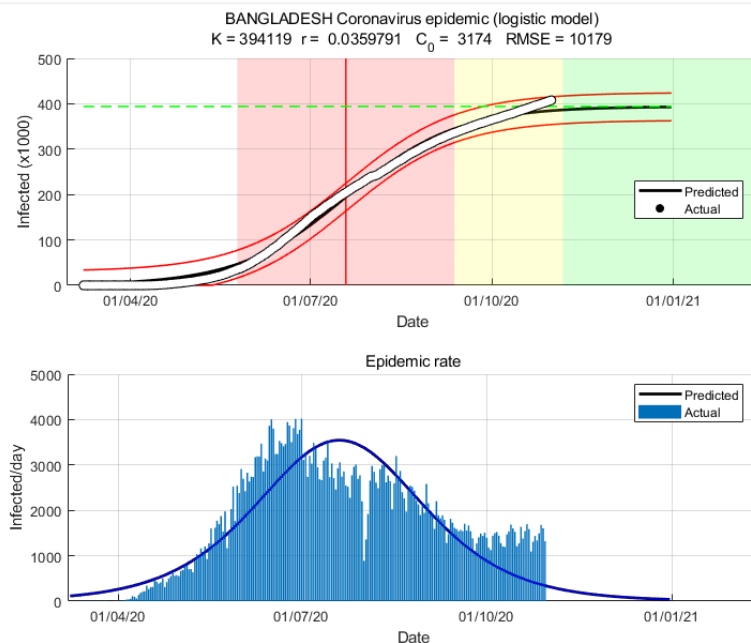|	Estimate	SE	tStat	pValue
K	3.9412e+05	2349	167.78	1.1951e-246
r	0.035979	0.00055713	64.579	1.4427e-151
A	123.16	7.9225	15.546	5.8921e-38

Number of observations: 238, Error degrees of freedom: 235
Root Mean Squared Error: 1.02e+04
R-Squared: 0.995, Adjusted R-Squared 0.995
F-statistic vs. zero model: 3.88e+04, p-value = 2.5e-316

Evaluation of model parameters for Bangladesh

day	date	C (cases)	K (cases)	r (1/day)	C0 (cases)	Tau (day)	end	dCdt (c/day)	tpeak (day)	peak	R2
96	11-Jun-2020	78052	152869	0.072	168	55	12-Sep-2020	2742	94	10-Jun-2020	0.999
97	12-Jun-2020	81523	159317	0.071	176	56	14-Sep-2020	2828	95	11-Jun-2020	0.999
98	13-Jun-2020	84379	163846	0.071	181	56	16-Sep-2020	2888	96	12-Jun-2020	0.999
99	14-Jun-2020	87520	167645	0.070	185	57	18-Sep-2020	2937	97	13-Jun-2020	0.999
100	15-Jun-2020	90619	170751	0.070	189	57	18-Sep-2020	2977	97	13-Jun-2020	0.999
101	16-Jun-2020	94481	175322	0.069	195	57	20-Sep-2020	3035	98	14-Jun-2020	0.999
102	17-Jun-2020	98489	181157	0.069	202	58	20-Sep-2020	3108	98	14-Jun-2020	0.999
103	18-Jun-2020	102292	187177	0.068	210	58	22-Sep-2020	3182	99	15-Jun-2020	0.999
104	19-Jun-2020	105535	191648	0.068	216	59	24-Sep-2020	3237	100	16-Jun-2020	0.999
105	20-Jun-2020	108775	194802	0.067	221	59	24-Sep-2020	3275	100	16-Jun-2020	0.999
106	21-Jun-2020	112306	197685	0.067	225	59	26-Sep-2020	3309	101	17-Jun-2020	0.999
107	22-Jun-2020	115786	200220	0.067	228	59	26-Sep-2020	3338	101	17-Jun-2020	0.999
108	23-Jun-2020	119198	202287	0.066	232	60	26-Sep-2020	3362	101	17-Jun-2020	0.999
109	24-Jun-2020	122660	204122	0.066	235	60	28-Sep-2020	3382	102	18-Jun-2020	0.999
110	25-Jun-2020	126606	206638	0.066	239	60	28-Sep-2020	3410	102	18-Jun-2020	0.999
111	26-Jun-2020	130474	209463	0.066	244	60	28-Sep-2020	3440	102	18-Jun-2020	0.999
112	27-Jun-2020	133978	211918	0.065	248	61	30-Sep-2020	3466	103	19-Jun-2020	1.000
113	28-Jun-2020	137787	214538	0.065	253	61	30-Sep-2020	3493	103	19-Jun-2020	1.000
114	29-Jun-2020	141801	217547	0.065	259	61	30-Sep-2020	3523	103	19-Jun-2020	1.000
115	30-Jun-2020	145483	220380	0.064	265	62	02-Oct-2020	3551	104	20-Jun-2020	1.000
116	01-Jul-2020	149258	223189	0.064	271	62	02-Oct-2020	3578	104	20-Jun-2020	1.000
117	02-Jul-2020	153277	226258	0.064	278	62	04-Oct-2020	3607	105	21-Jun-2020	1.000
118	03-Jul-2020	156391	228495	0.064	283	62	04-Oct-2020	3628	105	21-Jun-2020	1.000
119	04-Jul-2020	159679	230319	0.063	288	63	04-Oct-2020	3644	105	21-Jun-2020	1.000
120	05-Jul-2020	162417	231328	0.063	290	63	04-Oct-2020	3653	105	21-Jun-2020	1.000
121	06-Jul-2020	165618	232230	0.063	293	63	04-Oct-2020	3661	105	21-Jun-2020	1.000
122	07-Jul-2020	168645	232940	0.063	295	63	04-Oct-2020	3667	105	21-Jun-2020	1.000
123	08-Jul-2020	172134	233937	0.063	297	63	06-Oct-2020	3675	106	22-Jun-2020	1.000
124	09-Jul-2020	175494	235068	0.063	301	63	06-Oct-2020	3683	106	22-Jun-2020	1.000
125	10-Jul-2020	178443	236049	0.063	304	63	06-Oct-2020	3691	106	22-Jun-2020	1.000
126	11-Jul-2020	181129	236784	0.062	306	64	06-Oct-2020	3696	106	22-Jun-2020	1.000
127	12-Jul-2020	183795	237362	0.062	308	64	06-Oct-2020	3700	106	22-Jun-2020	1.000
128	13-Jul-2020	186894	238114	0.062	311	64	06-Oct-2020	3705	106	22-Jun-2020	1.000
129	14-Jul-2020	190057	239052	0.062	314	64	06-Oct-2020	3711	106	22-Jun-2020	1.000
130	15-Jul-2020	193590	240345	0.062	319	64	06-Oct-2020	3719	106	22-Jun-2020	1.000
131	16-Jul-2020	196323	241550	0.062	324	64	08-Oct-2020	3726	107	23-Jun-2020	1.000
132	17-Jul-2020	199357	242843	0.061	329	65	08-Oct-2020	3733	107	23-Jun-2020	1.000

133	18-Jul-2020	202066	244082	0.061	335	65	08-Oct-2020	3739	107	23-Jun-2020	1.000
134	19-Jul-2020	204525	245196	0.061	339	65	08-Oct-2020	3745	107	23-Jun-2020	1.000
135	20-Jul-2020	207453	246410	0.061	345	65	08-Oct-2020	3751	107	23-Jun-2020	1.000
136	21-Jul-2020	210510	247765	0.061	351	65	10-Oct-2020	3757	108	24-Jun-2020	1.000
137	22-Jul-2020	213254	249137	0.060	358	66	10-Oct-2020	3762	108	24-Jun-2020	1.000
138	23-Jul-2020	216110	250571	0.060	366	66	10-Oct-2020	3768	108	24-Jun-2020	1.000
139	24-Jul-2020	218658	251968	0.060	373	66	10-Oct-2020	3773	108	24-Jun-2020	1.000
140	25-Jul-2020	221178	253336	0.060	381	67	10-Oct-2020	3778	108	24-Jun-2020	1.000
141	26-Jul-2020	223453	254618	0.059	388	67	12-Oct-2020	3782	109	25-Jun-2020	1.000
142	27-Jul-2020	226225	255980	0.059	396	67	12-Oct-2020	3786	109	25-Jun-2020	1.000
143	28-Jul-2020	229185	257467	0.059	405	67	12-Oct-2020	3791	109	25-Jun-2020	1.000
144	29-Jul-2020	232194	259078	0.059	415	68	12-Oct-2020	3795	109	25-Jun-2020	1.000
145	30-Jul-2020	234889	260720	0.058	426	68	14-Oct-2020	3799	110	26-Jun-2020	1.000
146	31-Jul-2020	237661	262412	0.058	437	69	14-Oct-2020	3802	110	26-Jun-2020	1.000
147	01-Aug-2020	239860	264018	0.058	448	69	14-Oct-2020	3805	110	26-Jun-2020	0.999
148	02-Aug-2020	240746	265257	0.057	457	69	14-Oct-2020	3808	110	26-Jun-2020	0.999
149	03-Aug-2020	242102	266296	0.057	465	69	14-Oct-2020	3809	110	26-Jun-2020	0.999
150	04-Aug-2020	244020	267291	0.057	472	70	16-Oct-2020	3811	111	27-Jun-2020	0.999
151	05-Aug-2020	246674	268404	0.057	481	70	16-Oct-2020	3812	111	27-Jun-2020	0.999
152	06-Aug-2020	249651	269682	0.057	491	70	16-Oct-2020	3813	111	27-Jun-2020	0.999
153	07-Aug-2020	252502	271085	0.056	503	71	16-Oct-2020	3814	111	27-Jun-2020	0.999
154	08-Aug-2020	255113	272555	0.056	515	71	16-Oct-2020	3815	111	27-Jun-2020	0.999
155	09-Aug-2020	257600	274064	0.056	529	71	18-Oct-2020	3815	112	28-Jun-2020	0.999
156	10-Aug-2020	260507	275683	0.055	543	72	18-Oct-2020	3815	112	28-Jun-2020	0.999
157	11-Aug-2020	263503	277416	0.055	560	72	18-Oct-2020	3815	112	28-Jun-2020	0.999
158	12-Aug-2020	266498	279252	0.055	577	73	20-Oct-2020	3815	113	29-Jun-2020	0.999
159	13-Aug-2020	269115	281122	0.054	596	73	20-Oct-2020	3815	113	29-Jun-2020	0.999
160	14-Aug-2020	271881	283048	0.054	616	74	20-Oct-2020	3814	113	29-Jun-2020	0.999
161	15-Aug-2020	274525	285006	0.054	636	74	20-Oct-2020	3813	113	29-Jun-2020	0.999
162	16-Aug-2020	276549	286902	0.053	657	75	22-Oct-2020	3812	114	30-Jun-2020	0.999
163	17-Aug-2020	279144	288828	0.053	679	75	22-Oct-2020	3811	114	30-Jun-2020	0.999
164	18-Aug-2020	282344	290869	0.052	702	76	22-Oct-2020	3809	114	30-Jun-2020	0.999
165	19-Aug-2020	285091	292952	0.052	727	76	24-Oct-2020	3807	115	01-Jul-2020	0.999
166	20-Aug-2020	287959	295092	0.052	753	77	24-Oct-2020	3805	115	01-Jul-2020	0.998
167	21-Aug-2020	290360	297220	0.051	779	78	26-Oct-2020	3803	116	02-Jul-2020	0.998
168	22-Aug-2020	292625	299319	0.051	806	78	26-Oct-2020	3801	116	02-Jul-2020	0.998
169	23-Aug-2020	294598	301355	0.050	833	79	26-Oct-2020	3799	116	02-Jul-2020	0.998
170	24-Aug-2020	297083	303400	0.050	861	79	28-Oct-2020	3796	117	03-Jul-2020	0.998
171	25-Aug-2020	299628	305461	0.050	890	80	28-Oct-2020	3794	117	03-Jul-2020	0.998
172	26-Aug-2020	302147	307533	0.049	919	81	28-Oct-2020	3791	117	03-Jul-2020	0.998
173	27-Aug-2020	304583	309610	0.049	950	81	30-Oct-2020	3788	118	04-Jul-2020	0.998
174	28-Aug-2020	306794	311663	0.049	981	82	30-Oct-2020	3785	118	04-Jul-2020	0.998
175	29-Aug-2020	308925	313683	0.048	1012	82	30-Oct-2020	3782	118	04-Jul-2020	0.998
176	30-Aug-2020	310822	315646	0.048	1043	83	01-Nov-2020	3779	119	05-Jul-2020	0.998
177	31-Aug-2020	312996	317589	0.048	1074	84	01-Nov-2020	3776	119	05-Jul-2020	0.997
178	01-Sep-2020	314946	319492	0.047	1105	84	01-Nov-2020	3773	119	05-Jul-2020	0.997
179	02-Sep-2020	317528	321425	0.047	1138	85	03-Nov-2020	3770	120	06-Jul-2020	0.997
180	03-Sep-2020	319686	323342	0.047	1171	85	03-Nov-2020	3766	120	06-Jul-2020	0.997
181	04-Sep-2020	321615	325218	0.046	1204	86	03-Nov-2020	3763	120	06-Jul-2020	0.997
182	05-Sep-2020	323565	327060	0.046	1237	86	05-Nov-2020	3760	121	07-Jul-2020	0.997
183	06-Sep-2020	325157	328833	0.046	1270	87	05-Nov-2020	3756	121	07-Jul-2020	0.997
184	07-Sep-2020	327359	330606	0.045	1303	88	05-Nov-2020	3753	121	07-Jul-2020	0.997
185	08-Sep-2020	329251	332348	0.045	1337	88	07-Nov-2020	3750	122	08-Jul-2020	0.997
186	09-Sep-2020	331078	334056	0.045	1370	89	07-Nov-2020	3746	122	08-Jul-2020	0.997
187	10-Sep-2020	332970	335738	0.045	1404	89	07-Nov-2020	3743	122	08-Jul-2020	0.997
188	11-Sep-2020	334762	337388	0.044	1437	90	09-Nov-2020	3739	123	09-Jul-2020	0.997
189	12-Sep-2020	336044	338960	0.044	1470	90	09-Nov-2020	3736	123	09-Jul-2020	0.997
190	13-Sep-2020	337520	340478	0.044	1502	91	09-Nov-2020	3732	123	09-Jul-2020	0.997
191	14-Sep-2020	339332	341978	0.044	1534	91	09-Nov-2020	3729	123	09-Jul-2020	0.997
192	15-Sep-2020	341056	343455	0.043	1567	92	11-Nov-2020	3726	124	10-Jul-2020	0.997
193	16-Sep-2020	342671	344899	0.043	1599	92	11-Nov-2020	3722	124	10-Jul-2020	0.997
194	17-Sep-2020	344264	346314	0.043	1631	93	11-Nov-2020	3719	124	10-Jul-2020	0.997
195	18-Sep-2020	345805	347696	0.043	1663	93	11-Nov-2020	3715	124	10-Jul-2020	0.997
196	19-Sep-2020	347374	349052	0.043	1695	94	13-Nov-2020	3712	125	11-Jul-2020	0.997
197	20-Sep-2020	348916	350381	0.042	1727	94	13-Nov-2020	3708	125	11-Jul-2020	0.996

```
198 21-Sep-2020  350621  351700  0.042  1759   94 13-Nov-2020  3705  125 11-Jul-2020 0.996
199 22-Sep-2020  352178  352998  0.042  1791   95 13-Nov-2020  3701  125 11-Jul-2020 0.996
200 23-Sep-2020  353844  354284  0.042  1824   95 15-Nov-2020  3698  126 12-Jul-2020 0.996
201 24-Sep-2020  355384  355552  0.042  1856   96 15-Nov-2020  3694  126 12-Jul-2020 0.996
202 25-Sep-2020  356767  356791  0.041  1889   96 15-Nov-2020  3690  126 12-Jul-2020 0.996
203 26-Sep-2020  357873  357983  0.041  1920   97 15-Nov-2020  3687  126 12-Jul-2020 0.996
204 27-Sep-2020  359148  359143  0.041  1952   97 15-Nov-2020  3683  126 12-Jul-2020 0.996
205 28-Sep-2020  360555  360284  0.041  1983   97 17-Nov-2020  3680  127 13-Jul-2020 0.996
206 29-Sep-2020  362043  361413  0.041  2014   98 17-Nov-2020  3676  127 13-Jul-2020 0.996
207 30-Sep-2020  363479  362529  0.041  2046   98 17-Nov-2020  3673  127 13-Jul-2020 0.996
208 01-Oct-2020  364987  363637  0.040  2077   99 17-Nov-2020  3669  127 13-Jul-2020 0.996
209 02-Oct-2020  366383  364731  0.040  2109   99 19-Nov-2020  3665  128 14-Jul-2020 0.996
210 03-Oct-2020  367565  365799  0.040  2141   99 19-Nov-2020  3662  128 14-Jul-2020 0.996
211 04-Oct-2020  368690  366838  0.040  2172  100 19-Nov-2020  3658  128 14-Jul-2020 0.996
212 05-Oct-2020  370132  367871  0.040  2203  100 19-Nov-2020  3655  128 14-Jul-2020 0.996
213 06-Oct-2020  371631  368902  0.040  2235  101 19-Nov-2020  3651  128 14-Jul-2020 0.996
214 07-Oct-2020  373151  369934  0.039  2268  101 21-Nov-2020  3647  129 15-Jul-2020 0.996
215 08-Oct-2020  374592  370961  0.039  2300  101 21-Nov-2020  3643  129 15-Jul-2020 0.996
216 09-Oct-2020  375870  371976  0.039  2333  102 21-Nov-2020  3640  129 15-Jul-2020 0.996
217 10-Oct-2020  377073  372973  0.039  2366  102 21-Nov-2020  3636  129 15-Jul-2020 0.996
218 11-Oct-2020  378266  373955  0.039  2398  102 21-Nov-2020  3632  129 15-Jul-2020 0.996
219 12-Oct-2020  379738  374938  0.039  2431  103 21-Nov-2020  3628  129 15-Jul-2020 0.996
220 13-Oct-2020  381275  375926  0.039  2465  103 23-Nov-2020  3624  130 16-Jul-2020 0.996
221 14-Oct-2020  382959  376927  0.038  2500  104 23-Nov-2020  3620  130 16-Jul-2020 0.996
222 15-Oct-2020  384559  377936  0.038  2535  104 23-Nov-2020  3616  130 16-Jul-2020 0.996
223 16-Oct-2020  386086  378949  0.038  2571  104 23-Nov-2020  3612  130 16-Jul-2020 0.996
224 17-Oct-2020  387295  379950  0.038  2608  105 23-Nov-2020  3608  130 16-Jul-2020 0.996
225 18-Oct-2020  388569  380942  0.038  2644  105 25-Nov-2020  3604  131 17-Jul-2020 0.996
226 19-Oct-2020  390206  381945  0.038  2681  106 25-Nov-2020  3600  131 17-Jul-2020 0.996
227 20-Oct-2020  391586  382945  0.038  2719  106 25-Nov-2020  3595  131 17-Jul-2020 0.996
228 21-Oct-2020  393131  383952  0.037  2757  106 25-Nov-2020  3591  131 17-Jul-2020 0.996
229 22-Oct-2020  394827  384972  0.037  2796  107 25-Nov-2020  3586  131 17-Jul-2020 0.996
230 23-Oct-2020  396413  385999  0.037  2837  107 27-Nov-2020  3582  132 18-Jul-2020 0.996
231 24-Oct-2020  397507  387010  0.037  2877  108 27-Nov-2020  3577  132 18-Jul-2020 0.996
232 25-Oct-2020  398815  388017  0.037  2917  108 27-Nov-2020  3573  132 18-Jul-2020 0.996
233 26-Oct-2020  400251  389025  0.037  2958  109 27-Nov-2020  3568  132 18-Jul-2020 0.996
234 27-Oct-2020  401586  390030  0.037  3000  109 27-Nov-2020  3564  132 18-Jul-2020 0.995
235 28-Oct-2020  403079  391039  0.036  3042  109 29-Nov-2020  3559  133 19-Jul-2020 0.995
236 29-Oct-2020  404760  392061  0.036  3085  110 29-Nov-2020  3554  133 19-Jul-2020 0.995
237 30-Oct-2020  406364  393092  0.036  3129  110 29-Nov-2020  3549  133 19-Jul-2020 0.995
238 31-Oct-2020  407684  394119  0.036  3174  111 29-Nov-2020  3545  133 19-Jul-2020 0.995
```


BANGLADESH Coronavirus epidemic (logistic model)
K = 394119 r = 0.0359791 C_0 = 3174 RMSE = 10179

Epidemic rate

```
ans = 8
ans = 8
```

```
    pause(3)
```