Argentina Covid Report

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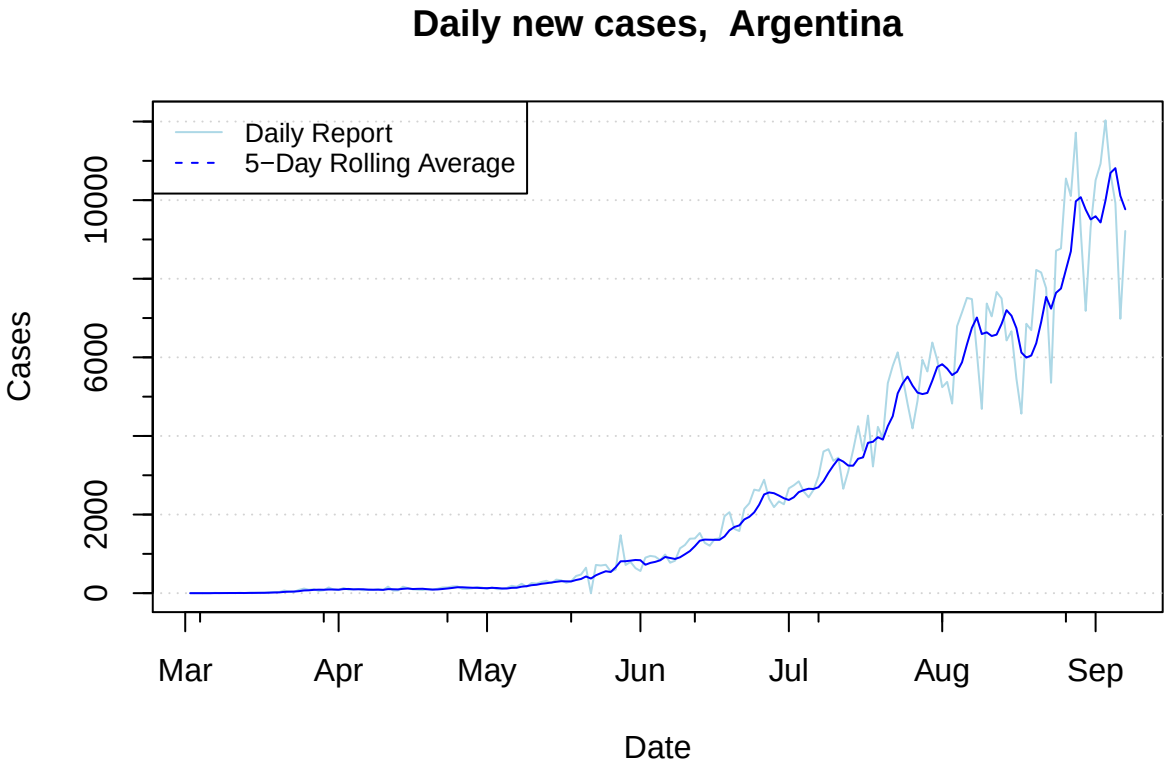
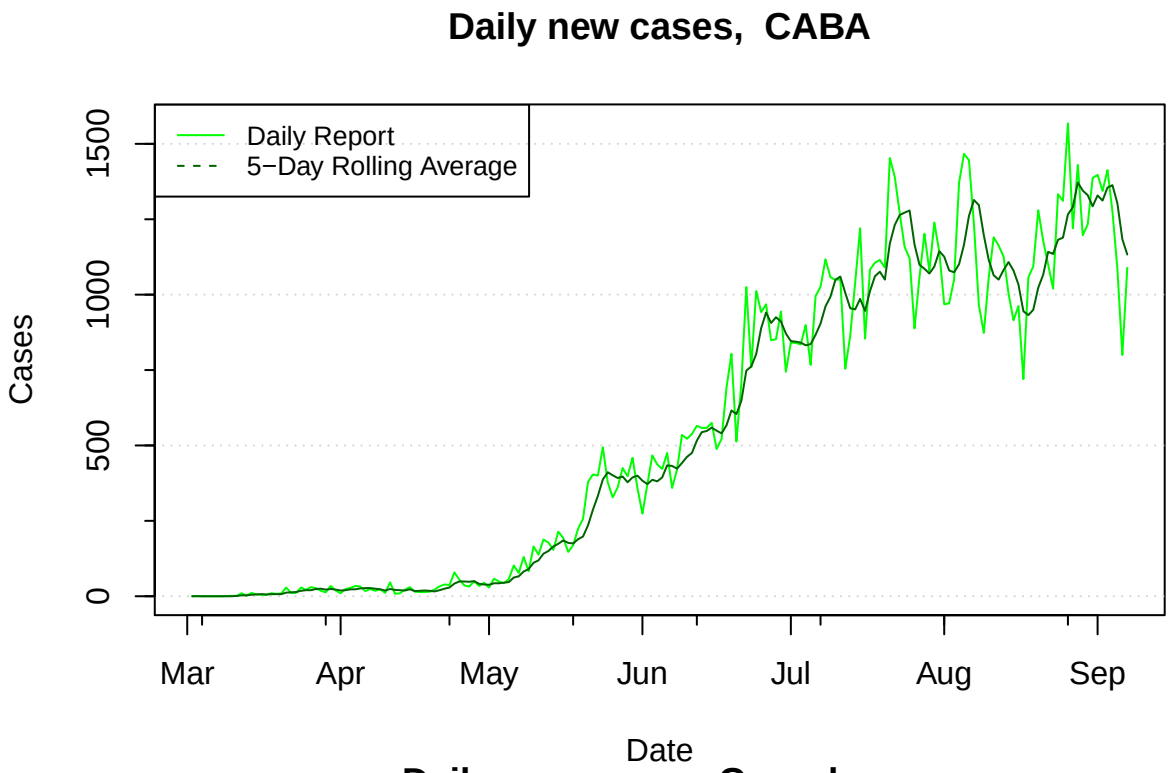
9/7/2020

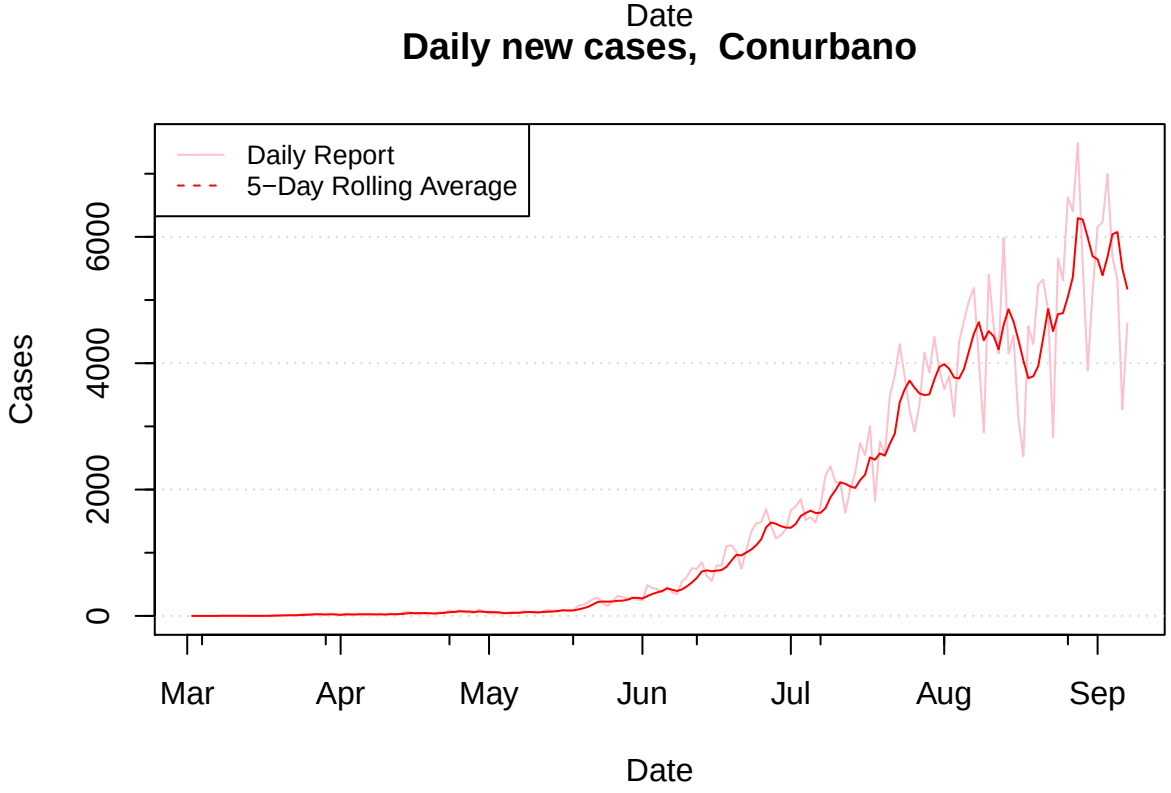
Data as of 8pm 7-SEP-2020

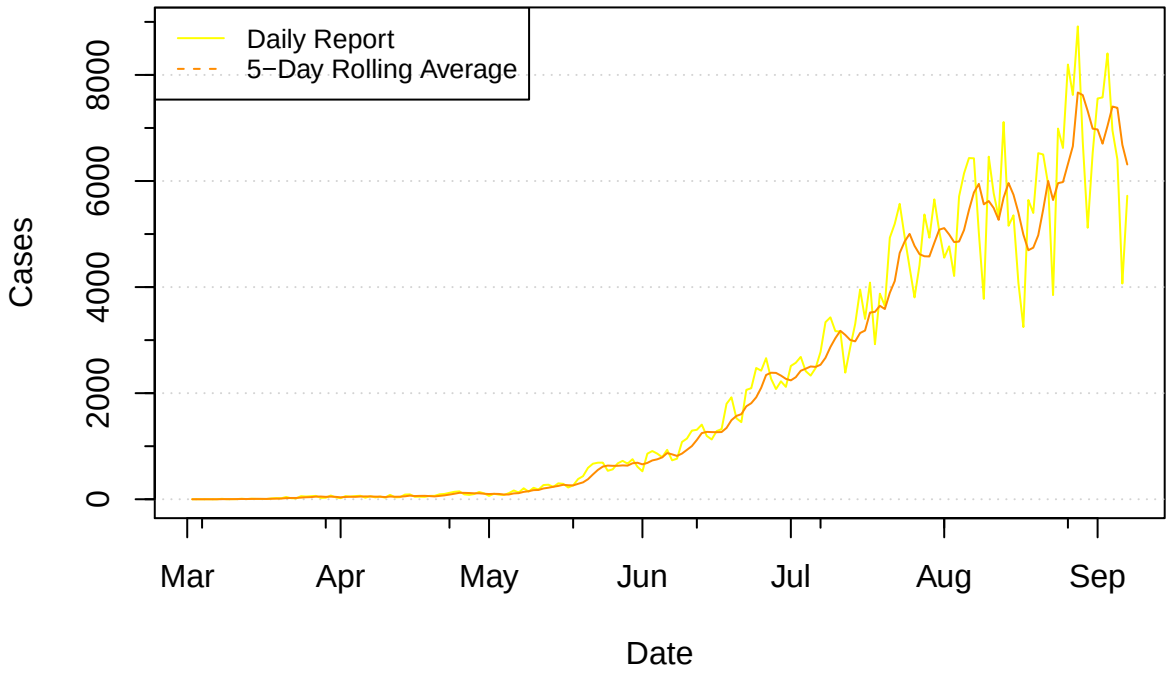
New Cases

The following graphs show the overall epidemiological curves in the localities based on simple "new cases per day" as reported. Note that date of case report DOES NOT equal date of first symptoms or diagnosis, necessarily. Rather, this data is the change in cases from the previous day's report:




Daily new cases, CABA
Daily Report
5−Day Rolling Average
Cases
0
500
1000
1500
Mar
Apr
May
Jun
Jul
Aug
Sep
Date


Daily new cases, Conurbano
Daily Report
5−Day Rolling Average
Cases
0
2000
4000
6000
Mar
Apr
May
Jun
Jul
Aug
Sep
Date

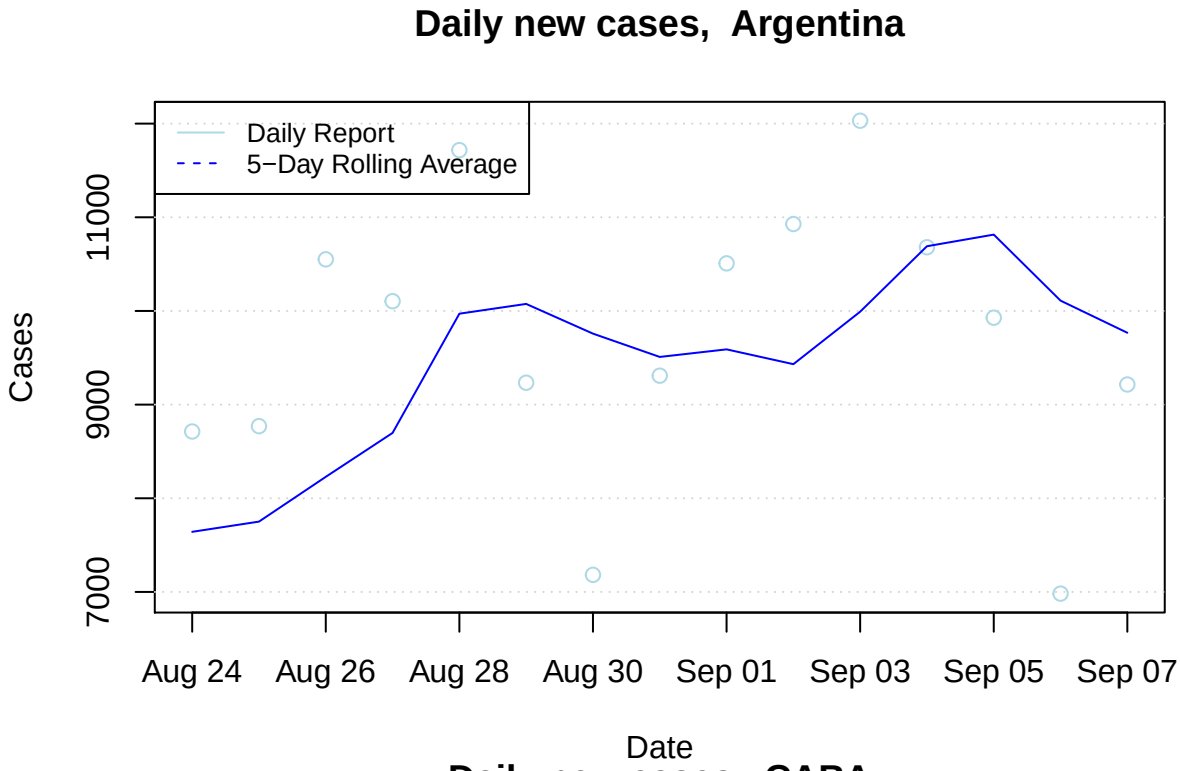


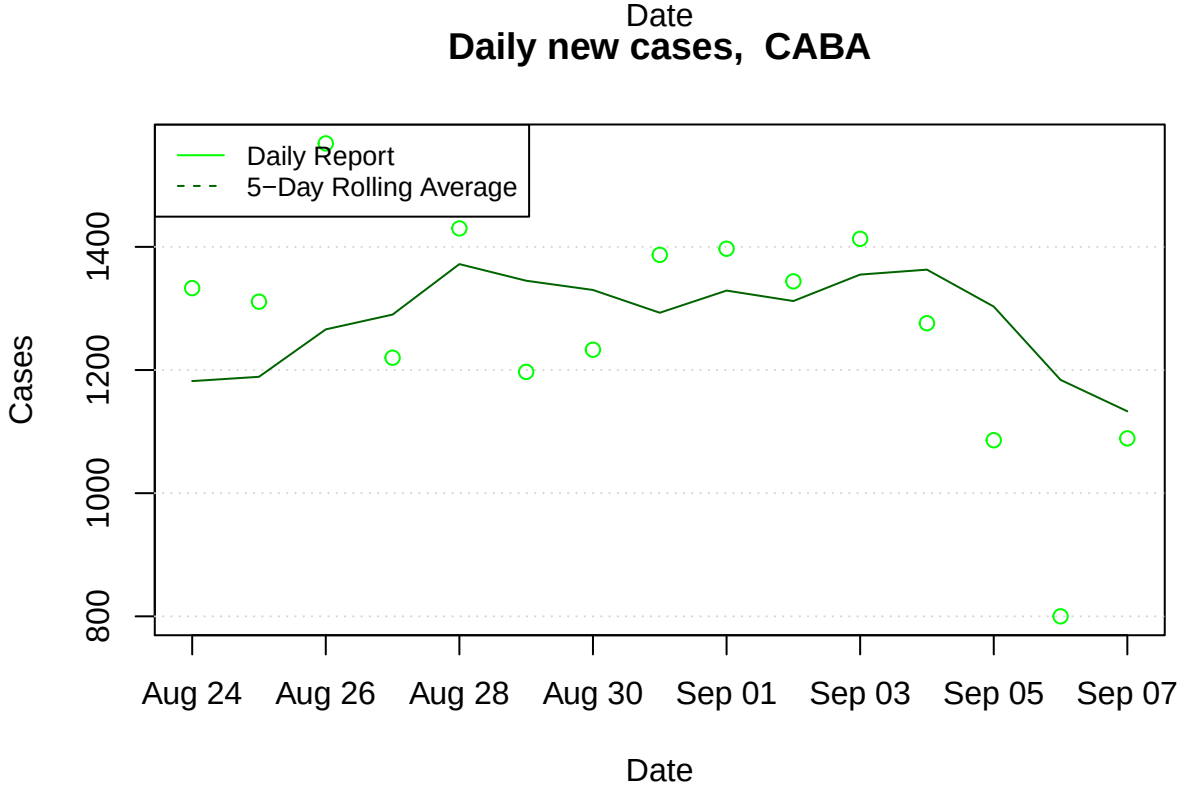

```
##           Date TotalCasesNational NewCasesNational AvgCasesNational
## 176 2020-08-24             350863             8713             7642
## 177 2020-08-25             359633             8770             7751
## 178 2020-08-26             370184            10551             8229
## 179 2020-08-27             380288            10104             8698
## 180 2020-08-28             392005            11717             9971
## 181 2020-08-29             401239             9234            10075
## 182 2020-08-30             408422             7183             9758
## 183 2020-08-31             417731             9309             9509
## 184 2020-09-01             428239            10508             9590
## 185 2020-09-02             439167            10928             9432
## 186 2020-09-03             451198            12031             9992
## 187 2020-09-04             461878            10680            10691
## 188 2020-09-05             471806             9928            10815
## 189 2020-09-06             478788             6982            10110
## 190 2020-09-07             488003             9215             9767
##     TotalCasesCABA NewCasesCABA AvgCasesCABA TotalCasesPBA NewCasesPBA
## 176          86256          1333         1182         218390        5656
## 177          87567          1311         1189         223702        5312
## 178          89135          1568         1266         230330        6628
## 179          90355          1220         1290         236732        6402
## 180          91785          1430         1372         244218        7486
## 181          92982          1197         1345         249765        5547
## 182          94215          1233         1330         253650        3885
## 183          95602          1387         1293         258791        5141
## 184          96999          1397         1329         264950        6159
## 185          98343          1344         1312         271182        6232
## 186          99756          1413         1355         278175        6993
## 187         101032          1276         1363         283855        5680
## 188         102118          1086         1303         289177        5322
```

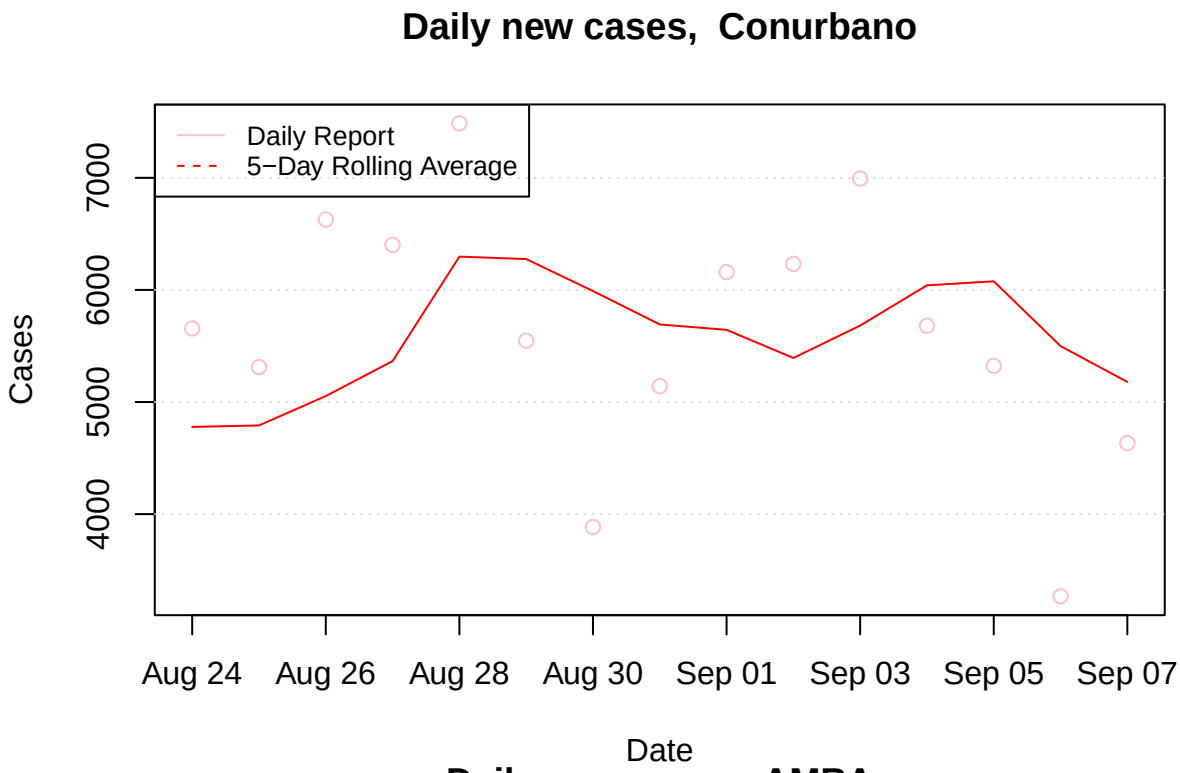
```
## 189         102918          800         1184        292444        3267
## 190         104007         1089         1133        297077        4633
##     AvgCasesPBA TotalCasesAMBA NewCasesAMBA AvgCasesAMBA
## 176        4778         304646         6989         5960
## 177        4791         311269         6623         5980
## 178        5053         319465         8196         6319
## 179        5365         327087         7622         6656
## 180        6297         336003         8916         7669
## 181        6275         342747         6744         7620
## 182        5990         347865         5118         7319
## 183        5692         354393         6528         6986
## 184        5644         361949         7556         6972
## 185        5393         369525         7576         6704
## 186        5682         377931         8406         7037
## 187        6041         384887         6956         7404
## 188        6077         391295         6408         7380
## 189        5499         395362         4067         6683
## 190        5179         401084         5722         6312
```

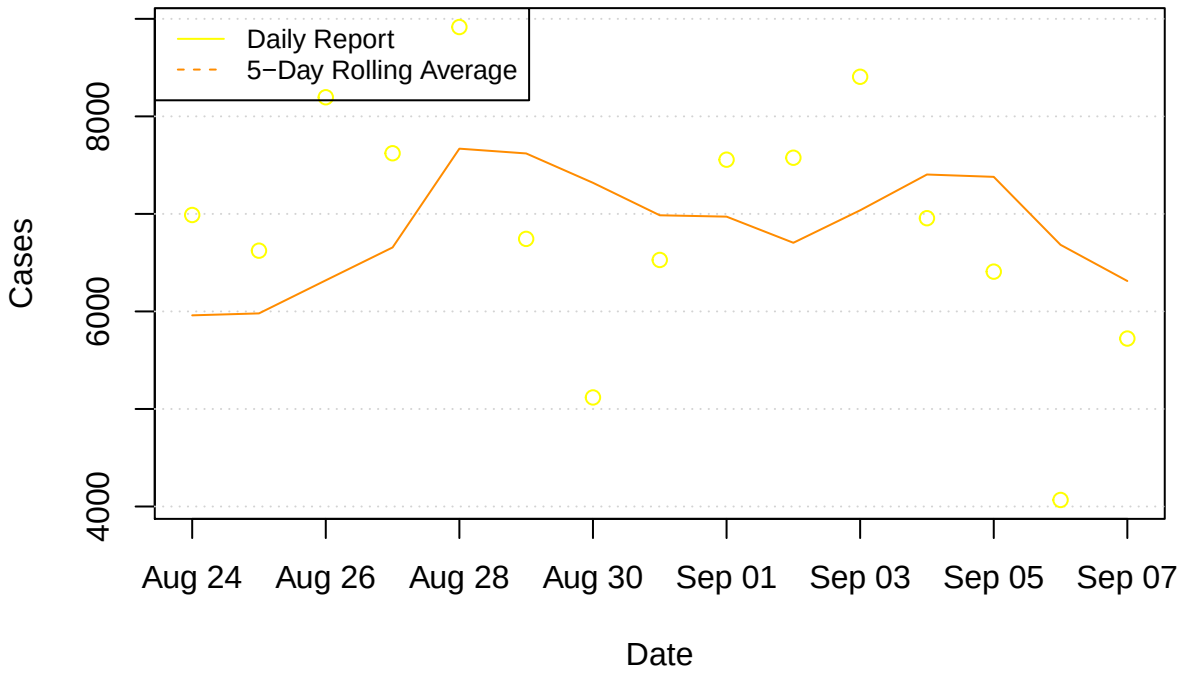
14-day trend

Zooming in on the 14-day trend lines:






Daily new cases, Conurbano
Daily Report
5−Day Rolling Average
Cases
4000
5000
6000
7000
Aug 24
Aug 26
Aug 28
Aug 30
Sep 01
Sep 03
Sep 05
Sep 07
Date


Daily new cases, AMBA
Daily Report
5−Day Rolling Average
Cases
4000
6000
8000
Aug 24
Aug 26
Aug 28
Aug 30
Sep 01
Sep 03
Sep 05
Sep 07
Date

Log graphs

The following graphs are generated by:

$$x = Number\ of\ Days\ since\ March\ 3$$

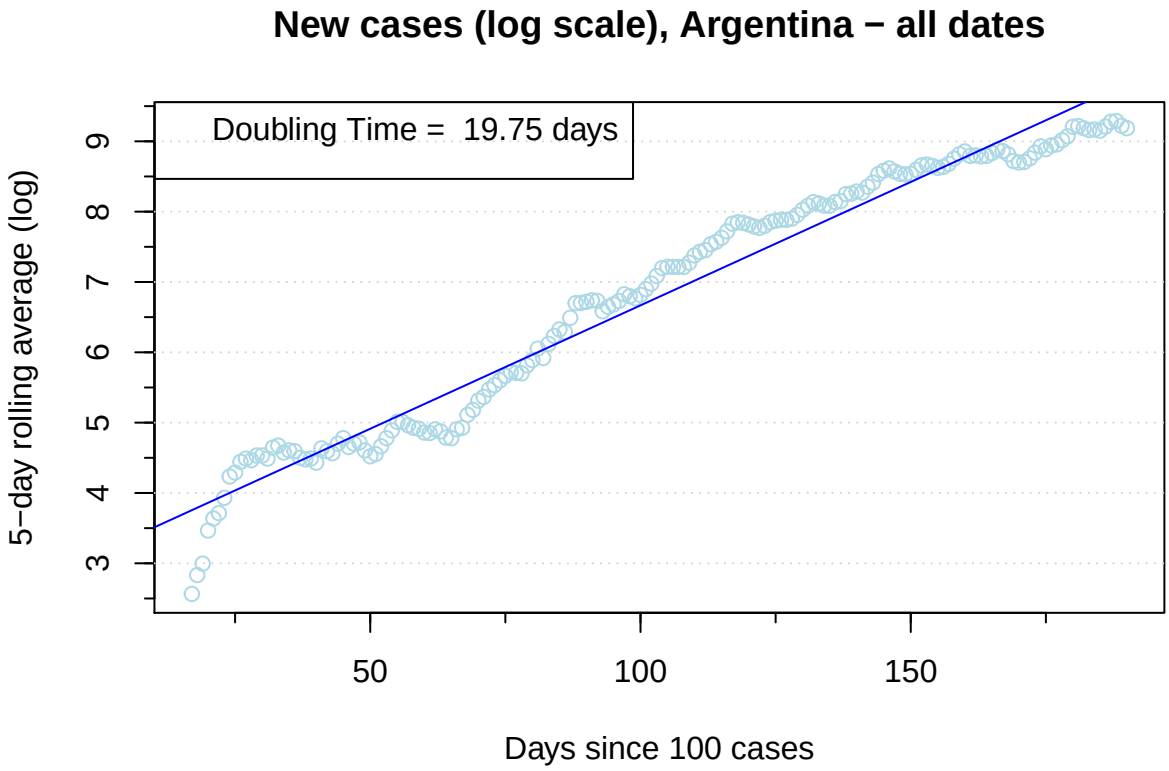
$$y = log(Number\ of\ New\ Cases\ this\ day)$$

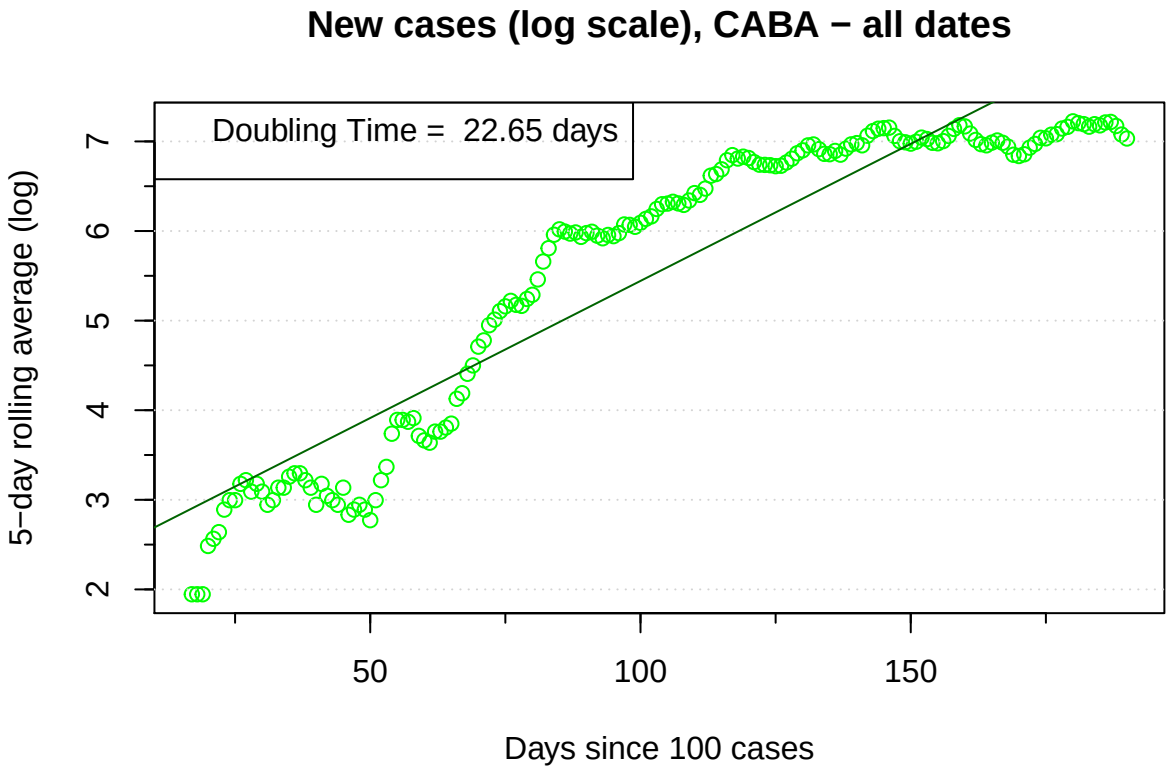
The regression line is drawn using the R "lm()" function over the x values.

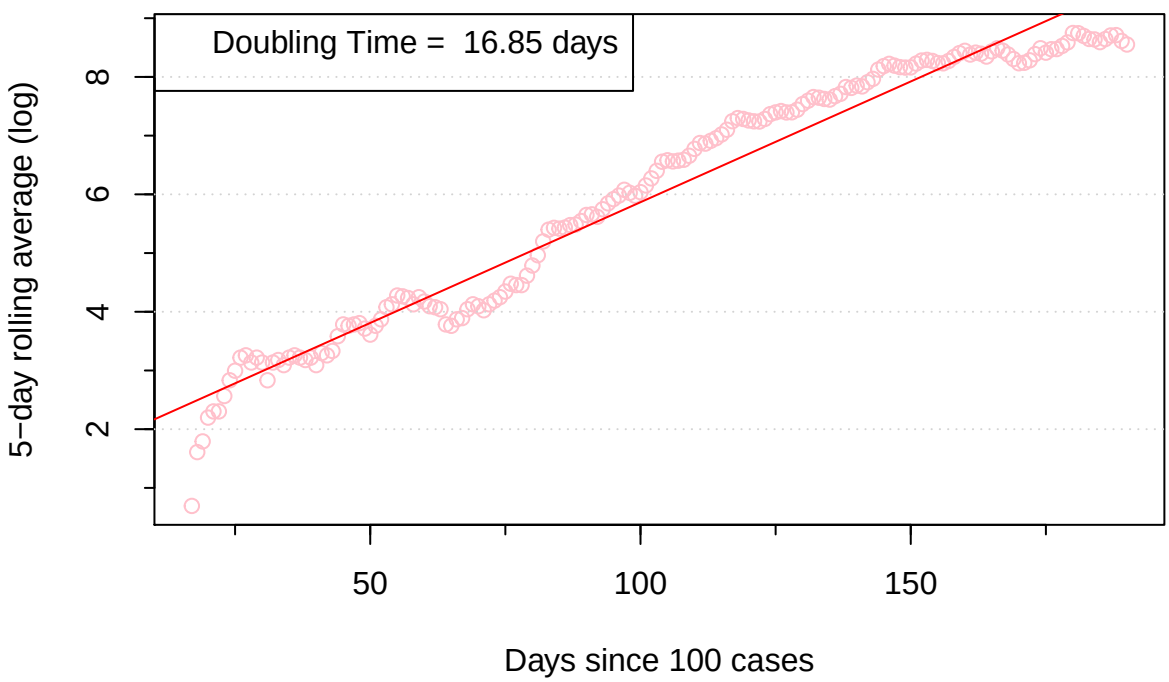
R0 is estimated from the slope of the regression line:

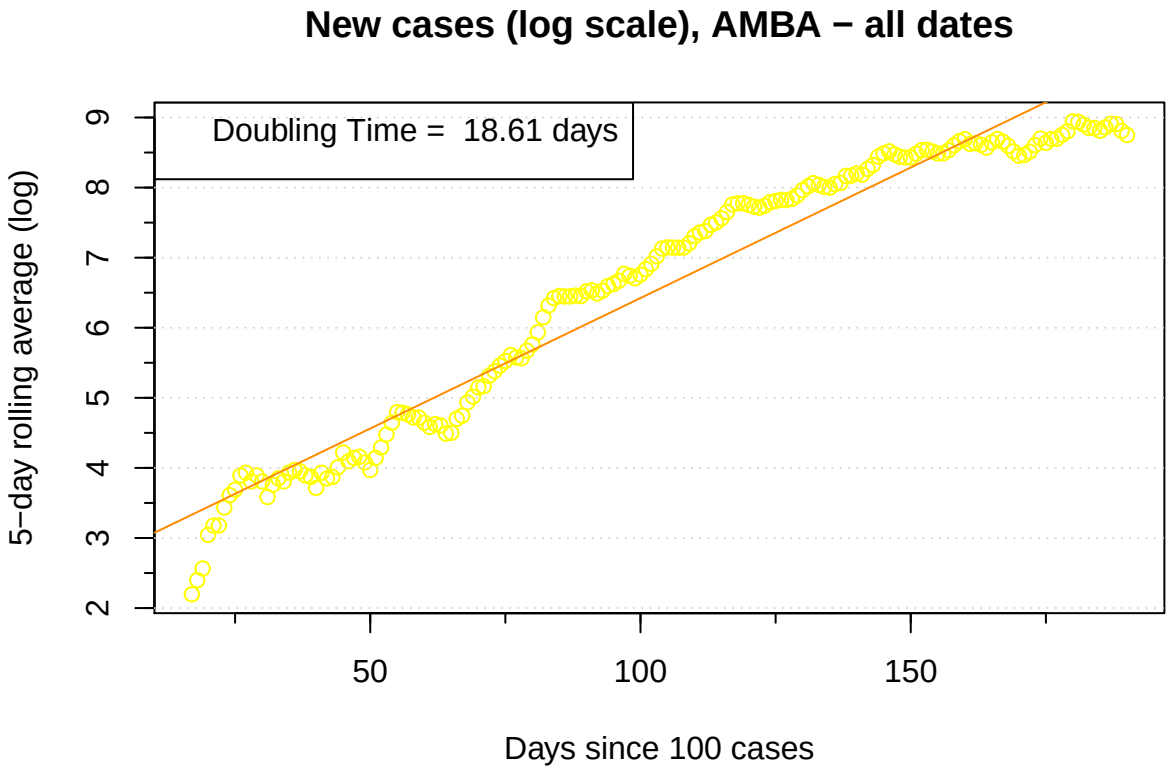
$$y = a + bx$$

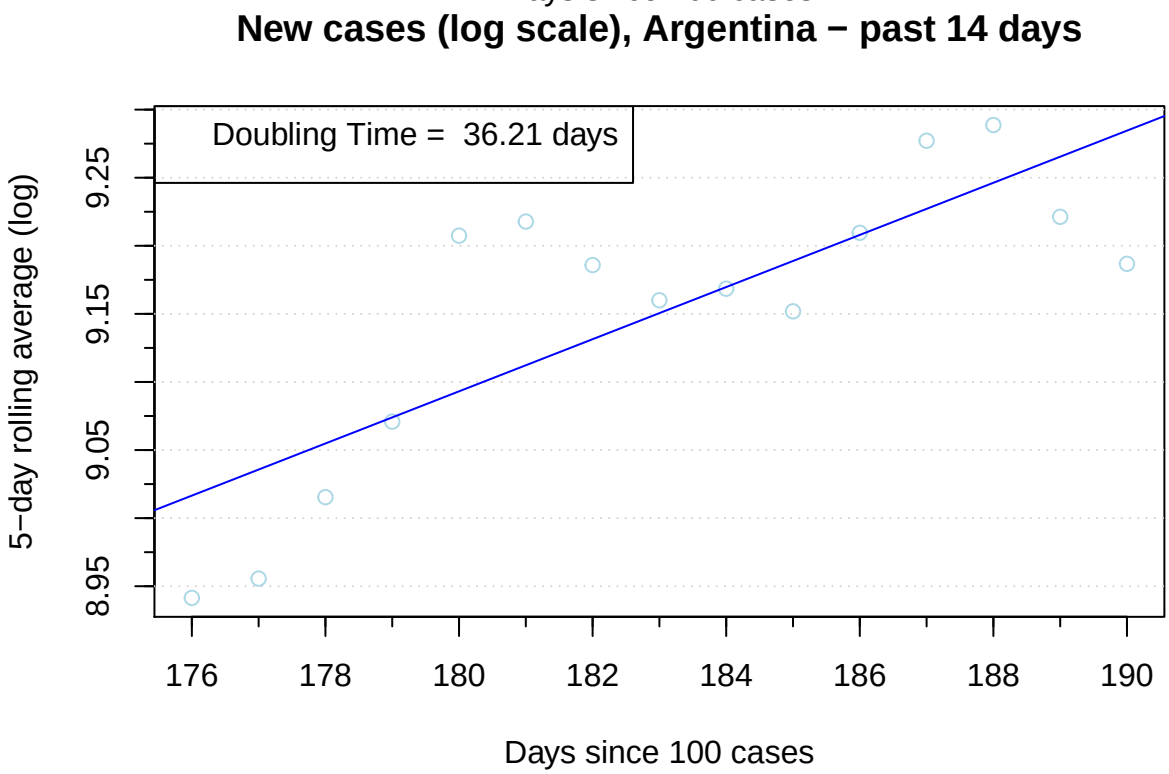
$$dt = log(2)/b$$

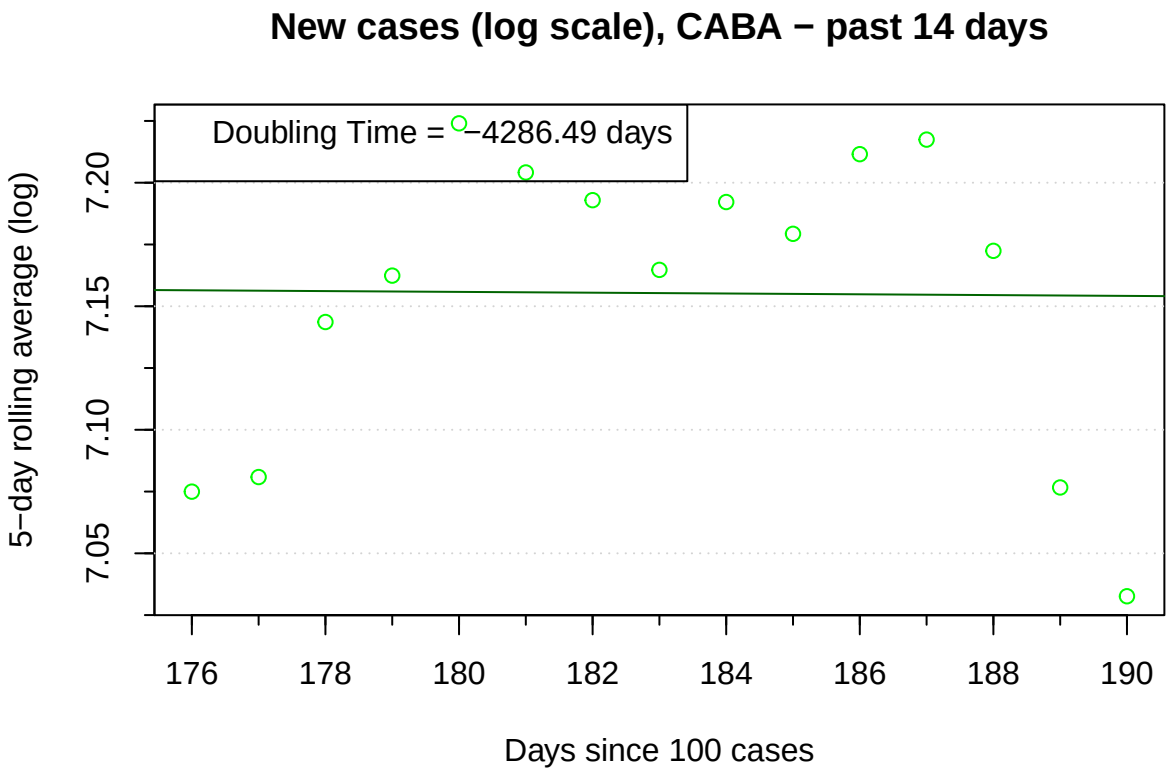


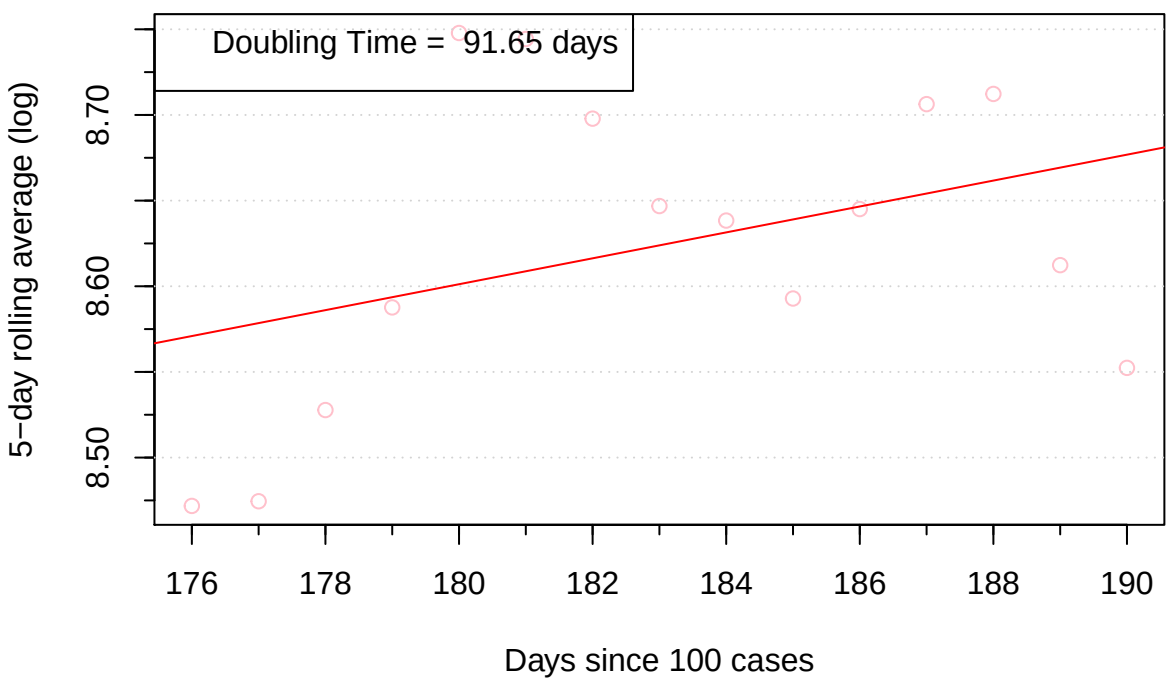

New cases (log scale), CABA − all dates
Doubling Time = 22.65 days
5−day rolling average (log)
2
3
4
5
6
7
50
100
150
Days since 100 cases

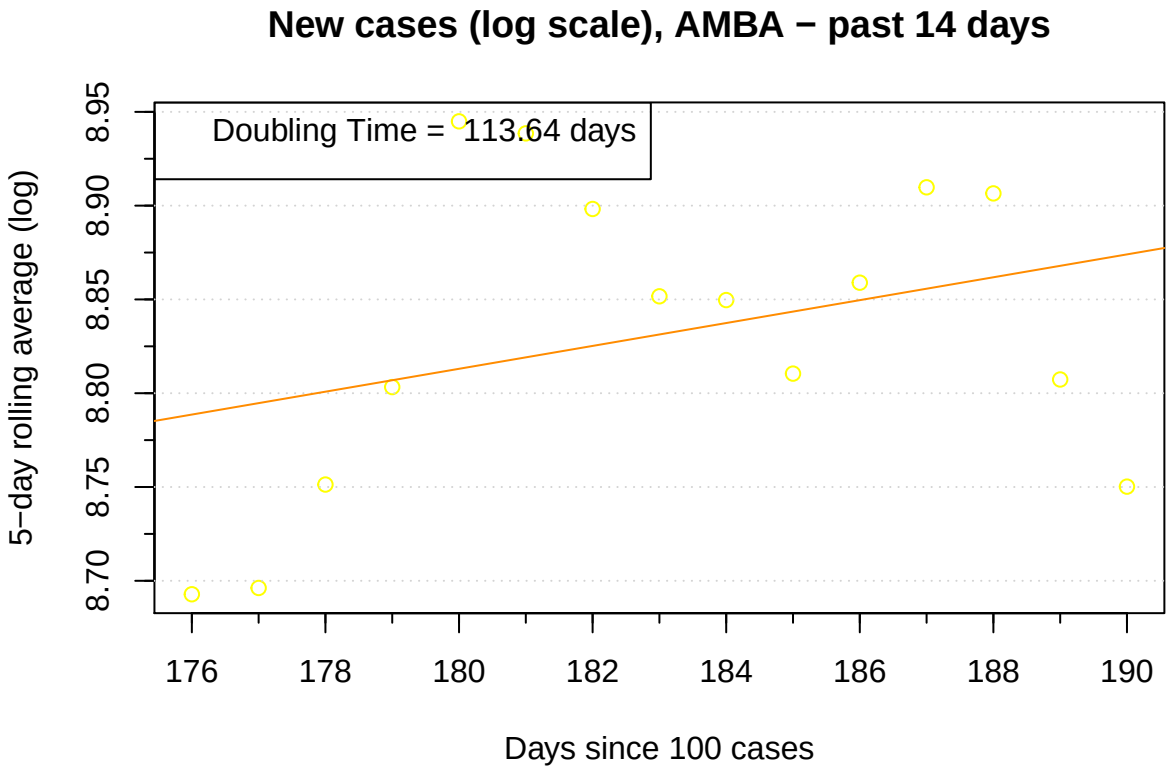

New cases (log scale), Conurbano − all dates
Doubling Time = 16.85 days
5−day rolling average (log)
2
4
6
8
50
100
150
Days since 100 cases

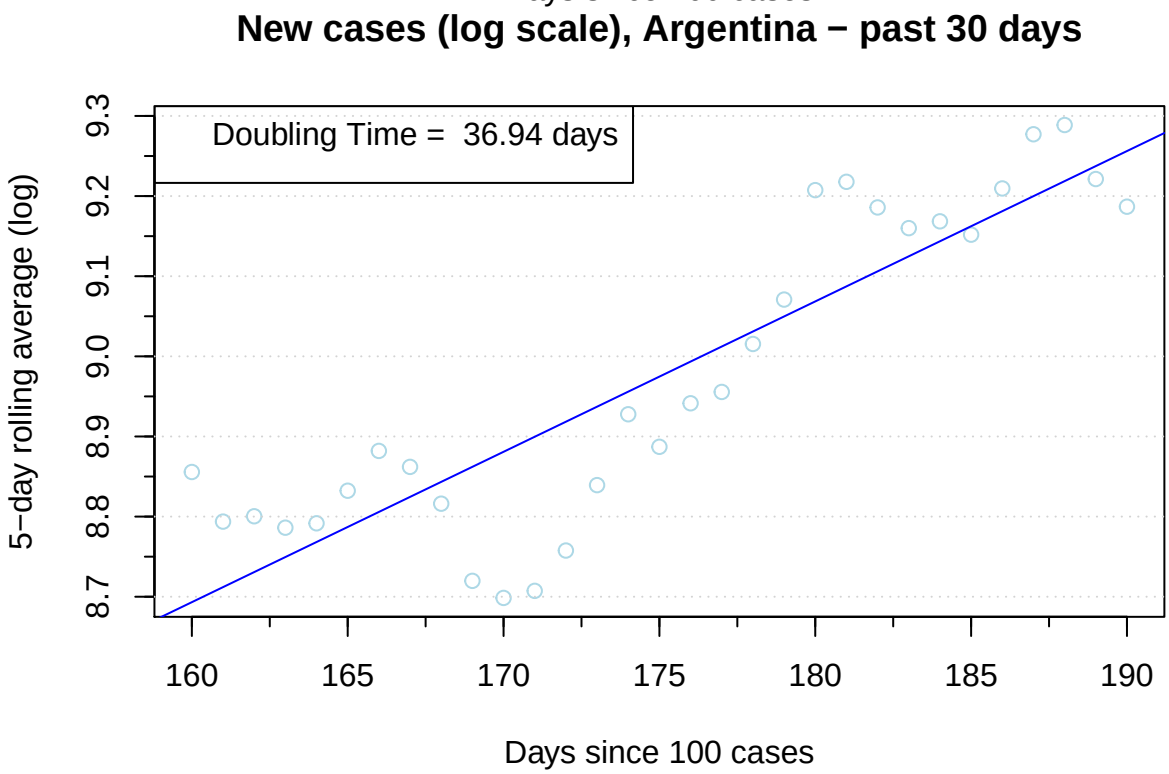

New cases (log scale), AMBA − all dates
Doubling Time = 18.61 days
5−day rolling average (log)
2
3
4
5
6
7
8
9
50
100
150
Days since 100 cases

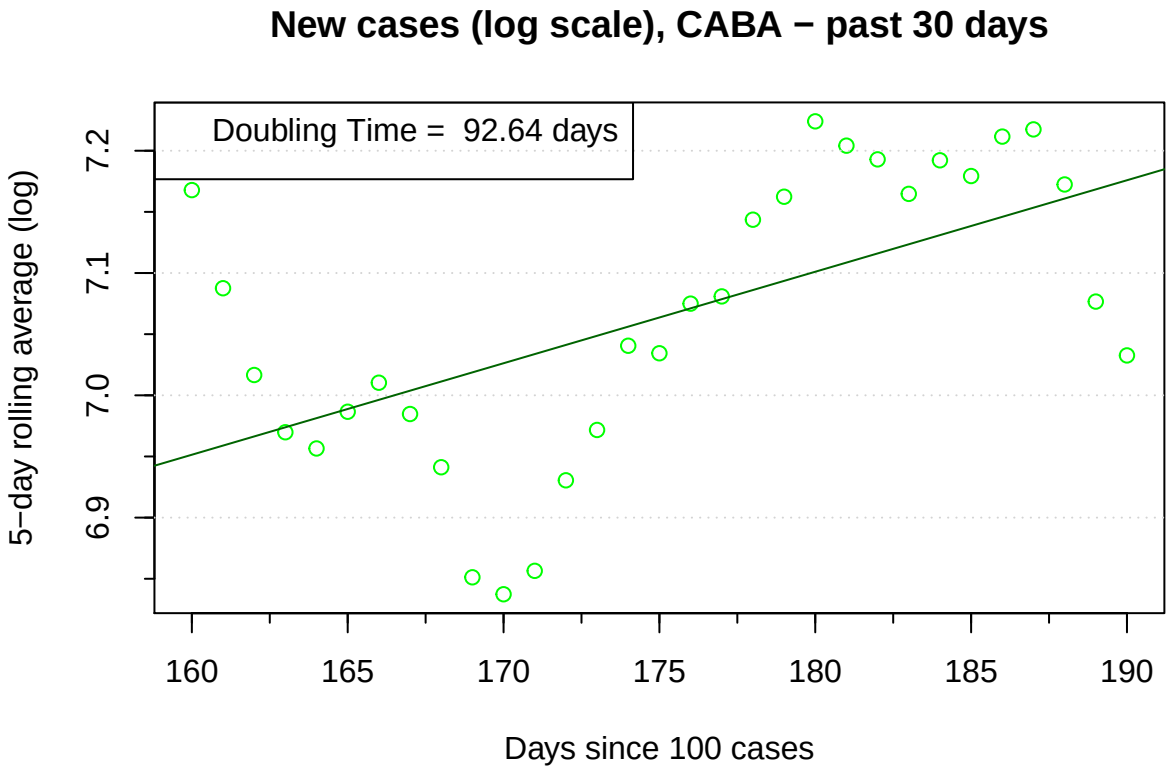

New cases (log scale), Argentina − past 14 days
Doubling Time = 36.21 days
5−day rolling average (log)
8.95
9.05
9.15
9.25
176
178
180
182
184
186
188
190
Days since 100 cases

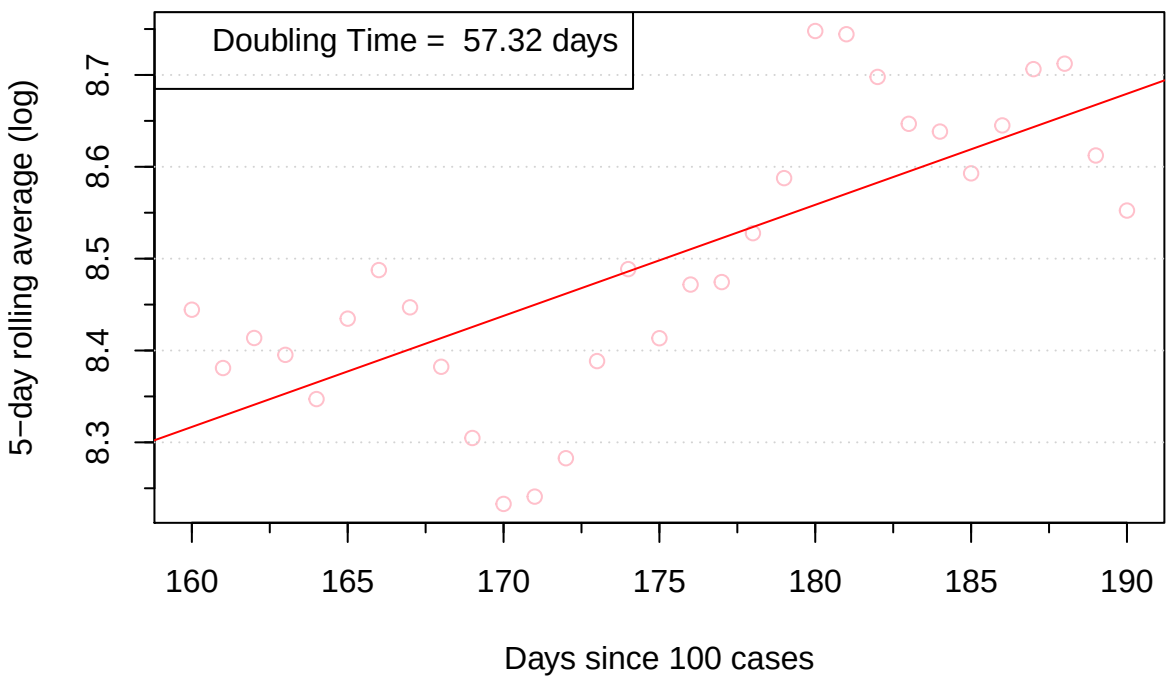

New cases (log scale), CABA − past 14 days
Doubling Time = −4286.49 days
5−day rolling average (log)
7.05
7.10
7.15
7.20
176
178
180
182
184
186
188
190
Days since 100 cases

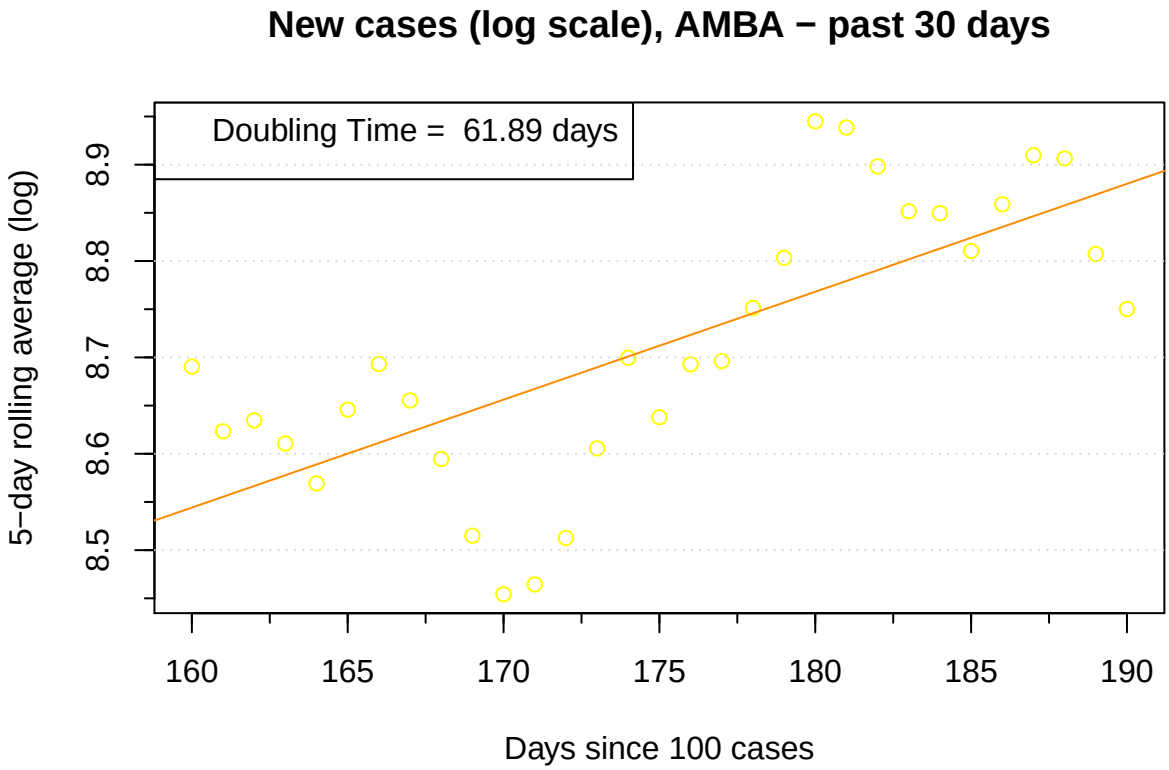

New cases (log scale), Conurbano − past 14 days
Doubling Time = 91.65 days
5−day rolling average (log)
8.50
8.60
8.70
176
178
180
182
184
186
188
190
Days since 100 cases

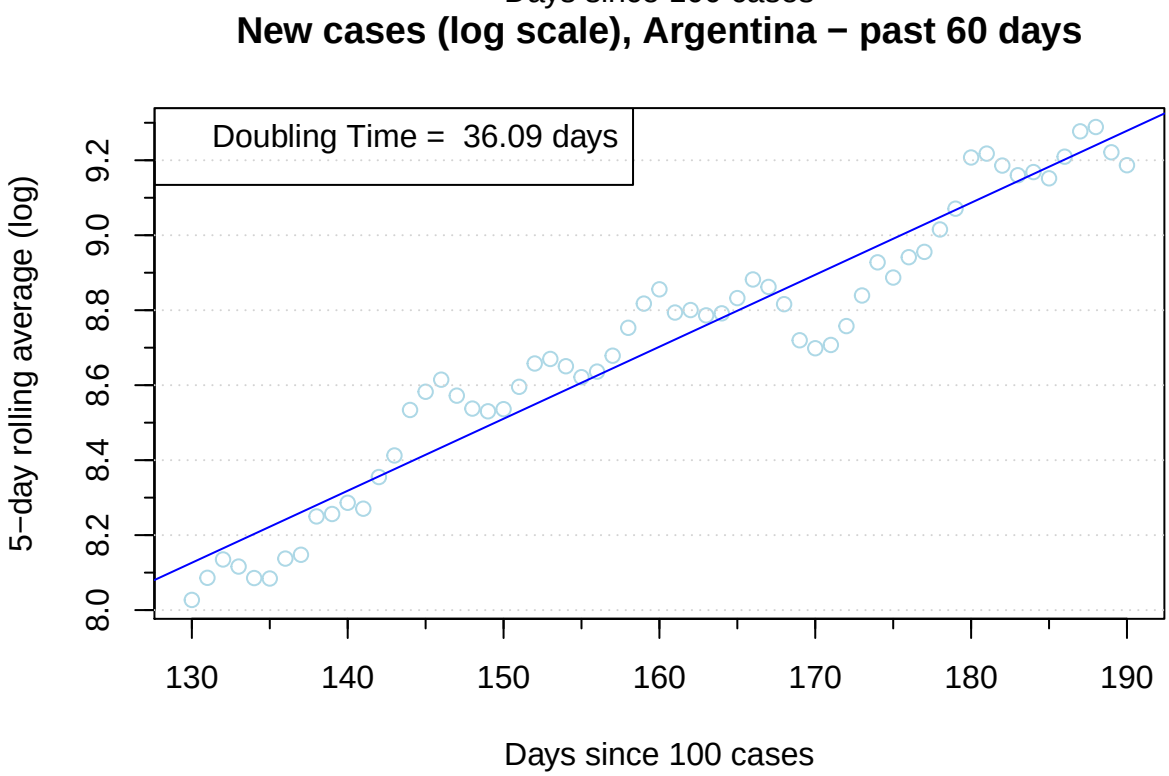

New cases (log scale), AMBA − past 14 days
Doubling Time = 113.64 days
5−day rolling average (log)
8.70
8.75
8.80
8.85
8.90
8.95
176
178
180
182
184
186
188
190
Days since 100 cases

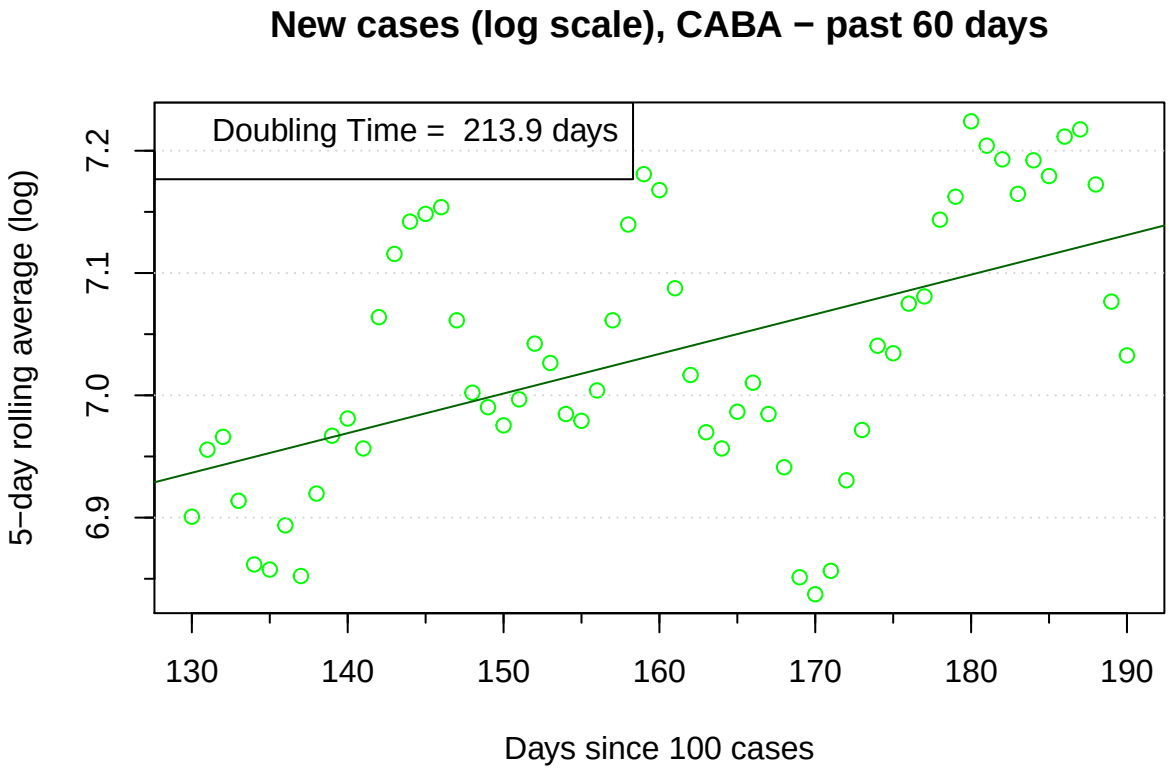

New cases (log scale), Argentina − past 30 days
Doubling Time = 36.94 days
5−day rolling average (log)
8.7
8.8
8.9
9.0
9.1
9.2
9.3
160
165
170
175
180
185
190
Days since 100 cases

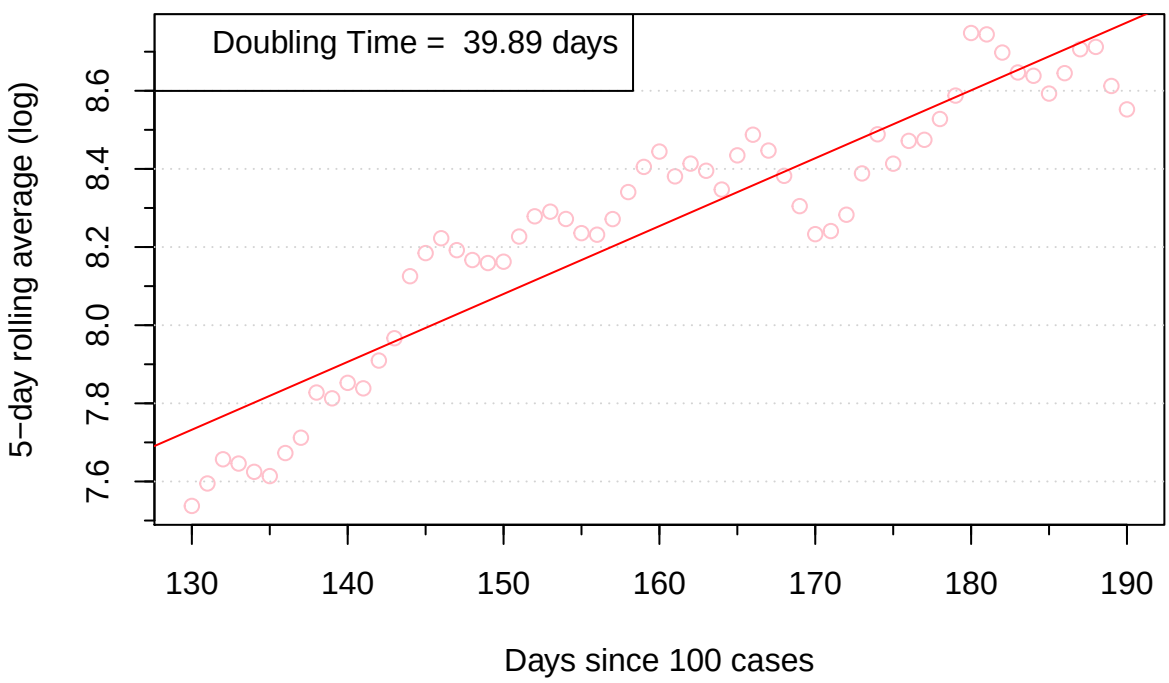

New cases (log scale), CABA − past 30 days
Doubling Time = 92.64 days
5−day rolling average (log)
6.9
7.0
7.1
7.2
160
165
170
175
180
185
190
Days since 100 cases

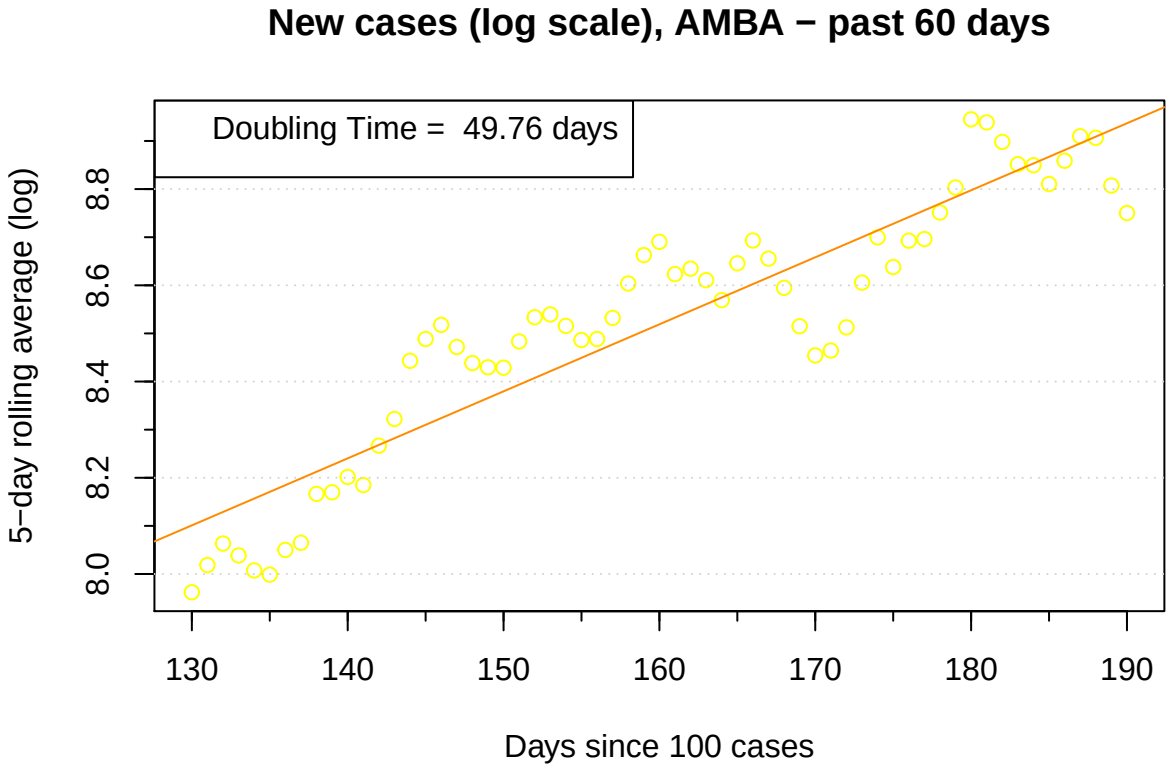

New cases (log scale), Conurbano − past 30 days
Doubling Time = 57.32 days
5−day rolling average (log)
8.3
8.4
8.5
8.6
8.7
160
165
170
175
180
185
190
Days since 100 cases

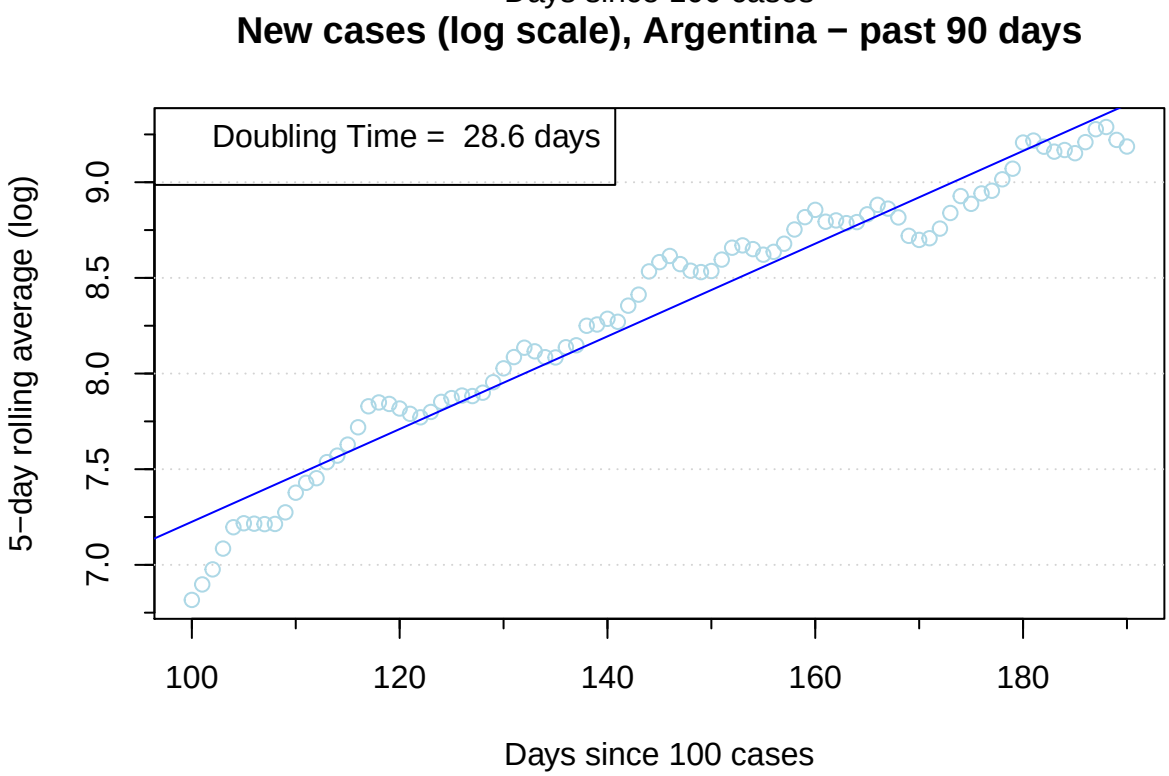

New cases (log scale), AMBA − past 30 days
Doubling Time = 61.89 days
5−day rolling average (log)
8.5
8.6
8.7
8.8
8.9
160
165
170
175
180
185
190
Days since 100 cases

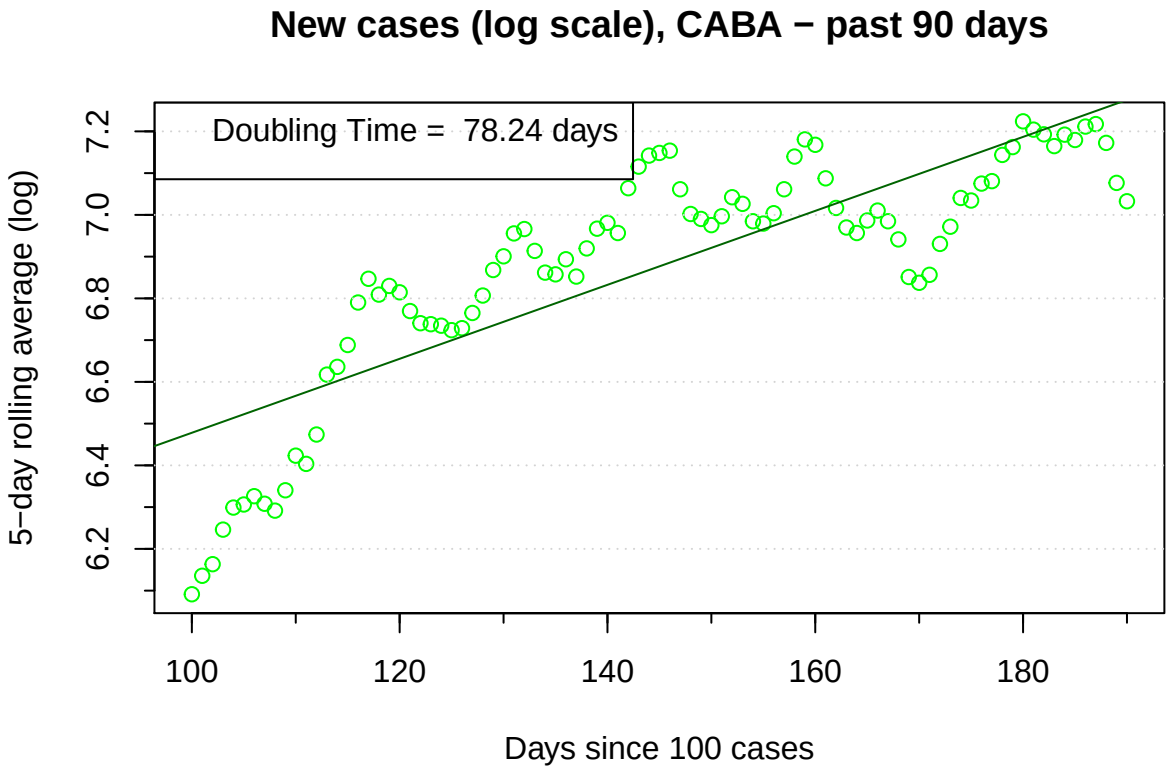

New cases (log scale), Argentina − past 60 days
Doubling Time = 36.09 days
5−day rolling average (log)
8.0
8.2
8.4
8.6
8.8
9.0
9.2
130
140
150
160
170
180
190
Days since 100 cases

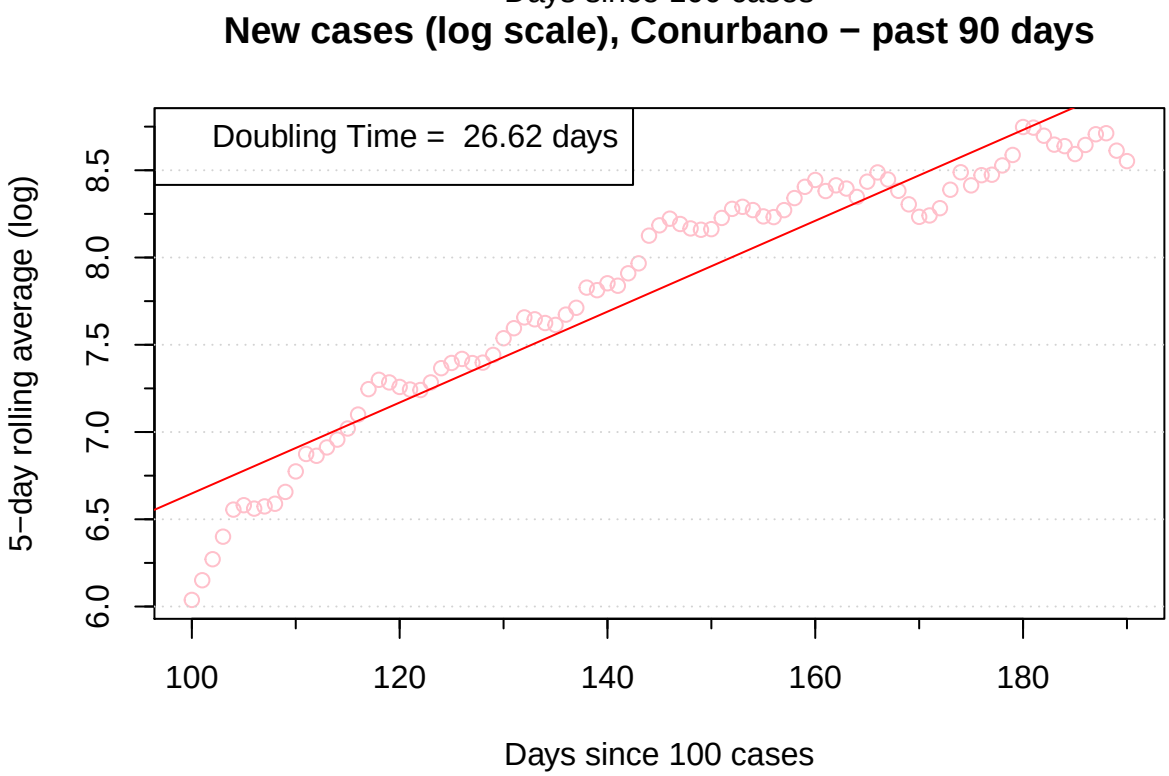

New cases (log scale), CABA − past 60 days
Doubling Time = 213.9 days
5−day rolling average (log)
6.9
7.0
7.1
7.2
130
140
150
160
170
180
190
Days since 100 cases

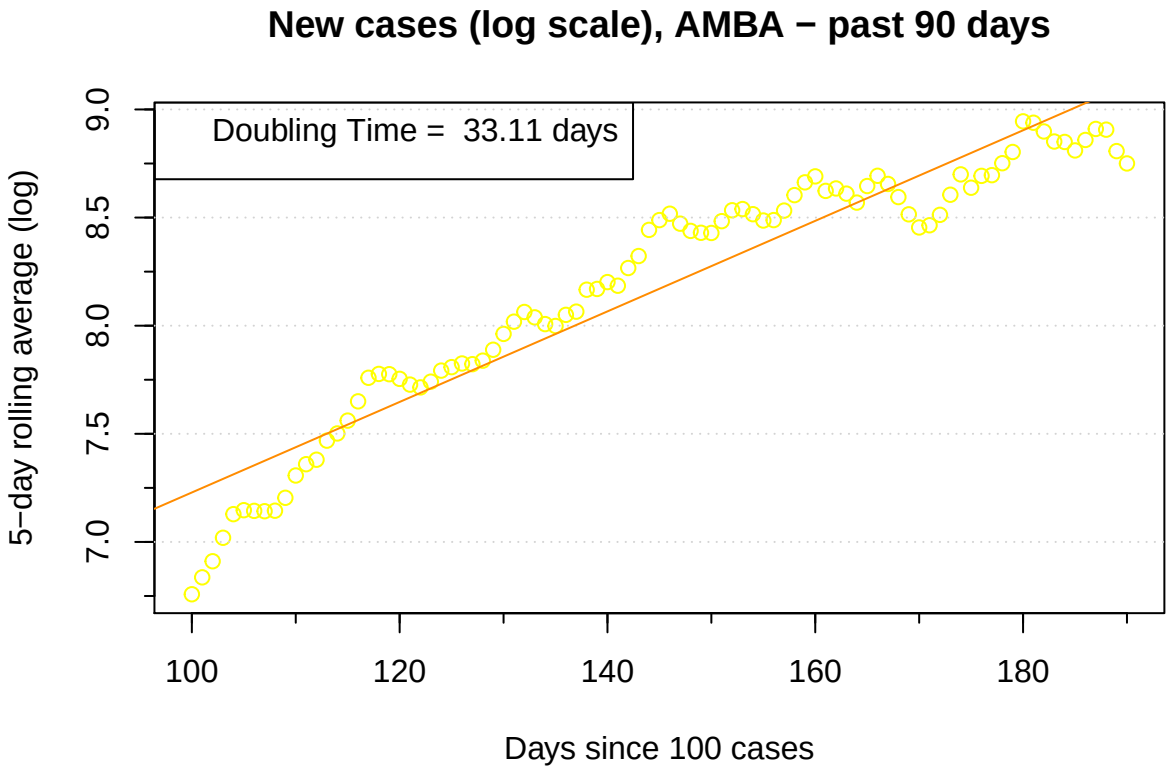

New cases (log scale), Conurbano − past 60 days
Doubling Time = 39.89 days
5−day rolling average (log)
7.6
7.8
8.0
8.2
8.4
8.6
130
140
150
160
170
180
190
Days since 100 cases


New cases (log scale), AMBA − past 60 days
Doubling Time = 49.76 days
5−day rolling average (log)
8.0
8.2
8.4
8.6
8.8
130
140
150
160
170
180
190
Days since 100 cases


New cases (log scale), Argentina − past 90 days
Doubling Time = 28.6 days
5−day rolling average (log)
7.0
7.5
8.0
8.5
9.0
100
120
140
160
180
Days since 100 cases


New cases (log scale), CABA − past 90 days
Doubling Time = 78.24 days
5−day rolling average (log)
6.2
6.4
6.6
6.8
7.0
7.2
100
120
140
160
180
Days since 100 cases


New cases (log scale), Conurbano − past 90 days
Doubling Time = 26.62 days
5−day rolling average (log)
6.0
6.5
7.0
7.5
8.0
8.5
100
120
140
160
180
Days since 100 cases




```
##                Argentina     CABA Conurbano   AMBA
## all dates          19.75    22.65     16.85  18.61
## past 14 days       36.21 -4286.49     91.65 113.64
## past 30 days       36.94    92.64     57.32  61.89
## past 60 days       36.09   213.90     39.89  49.76
## past 90 days       28.60    78.24     26.62  33.11
```

R0 over time (daily cases estimate)

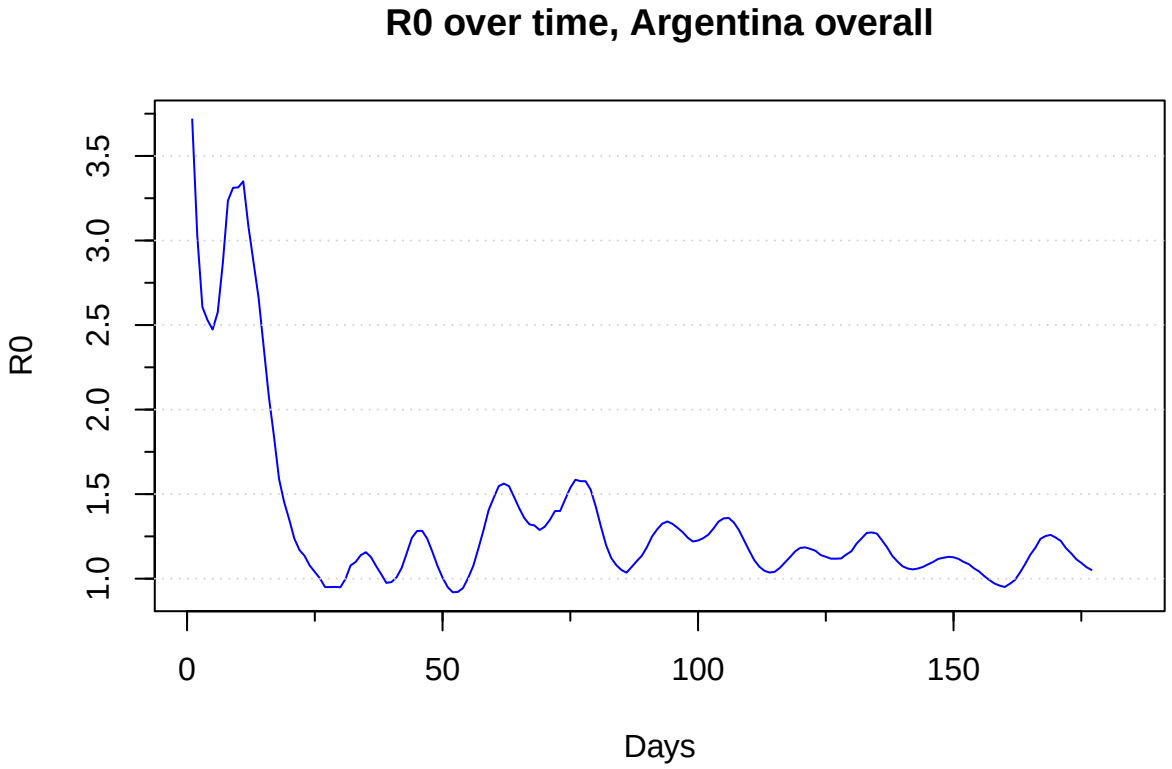
These graphs rely heavily on the Epitrix, EpiEstim, and incidence modules in R. These graphs are rough estimates based on the number of new cases reported each day and not/not the actual date of registry/onset of symptoms, which provide a more-accurate picture of the rate of transmission.

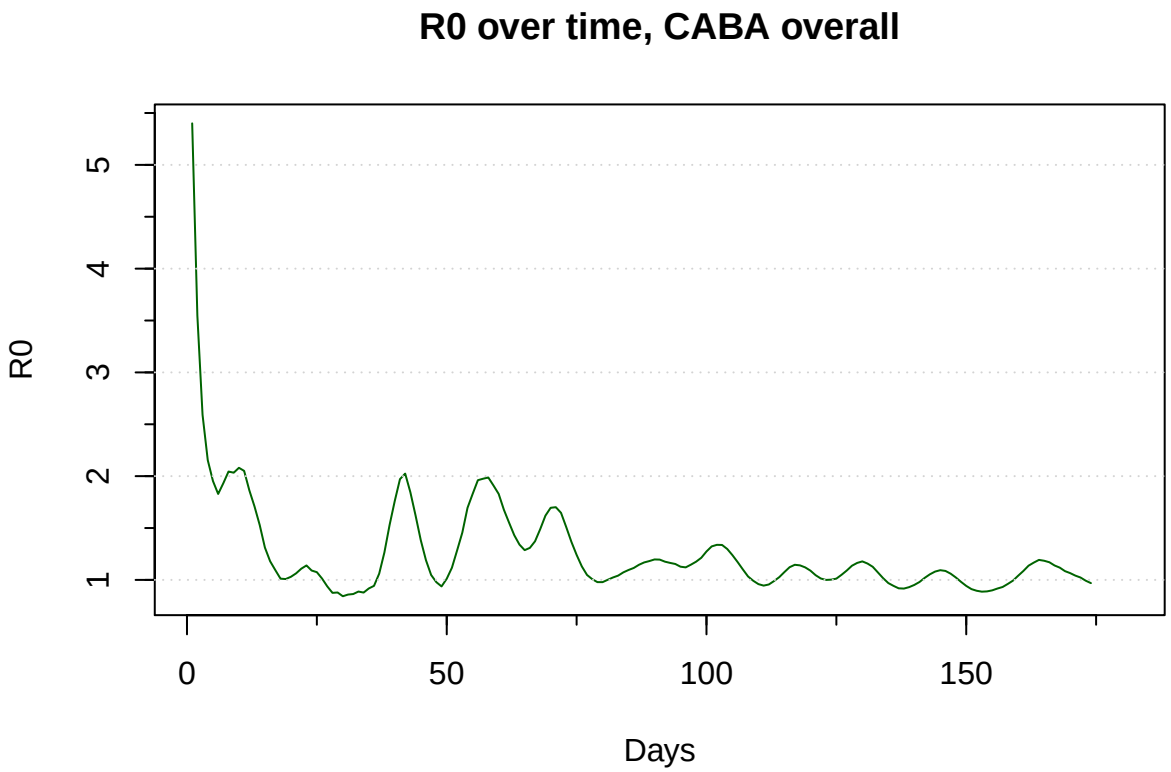
The following data on serial incidence are drawn from a meta analysis of COVID-19: https://doi.org/10.1002/jmv.26041

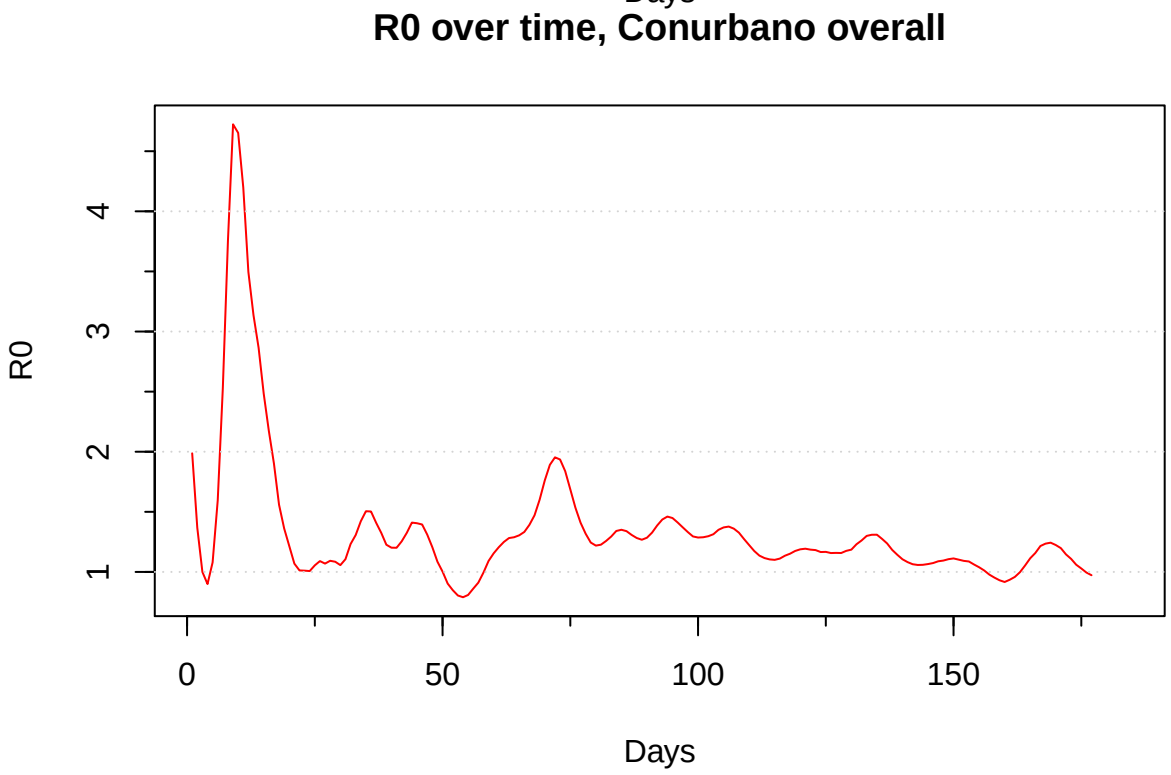
$$\mu = 5.08\ days$$

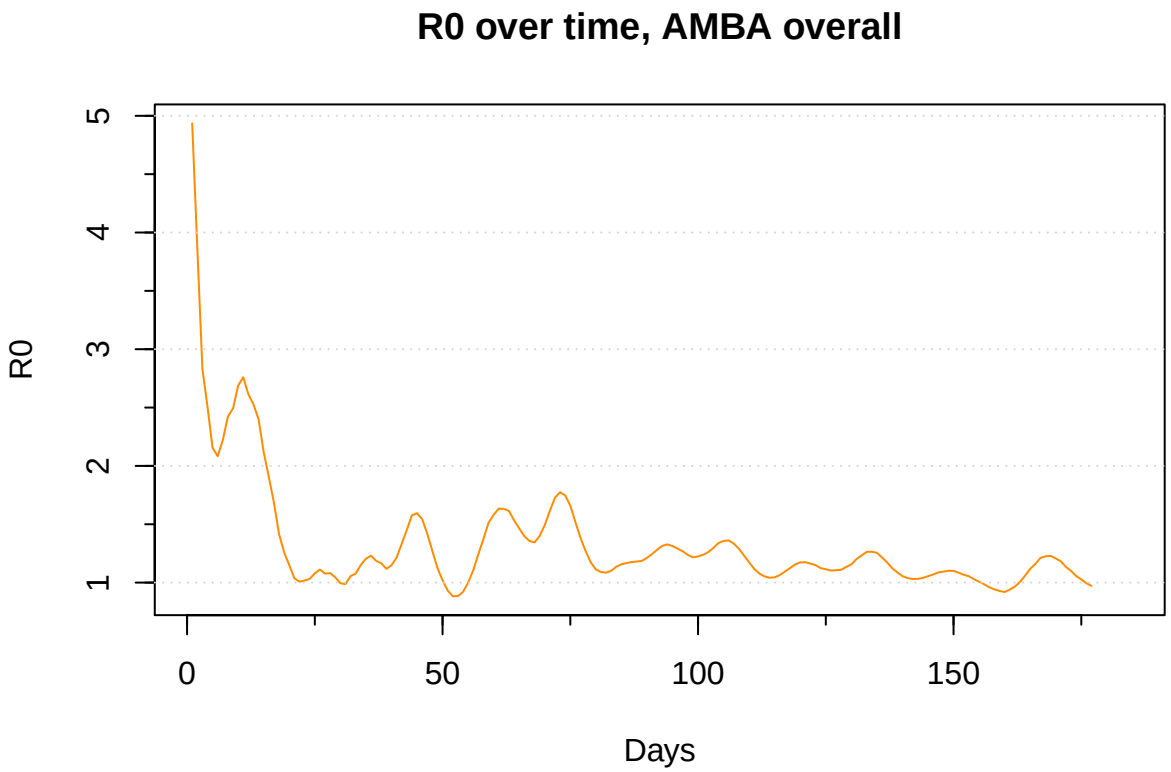
$$\sigma = .18$$

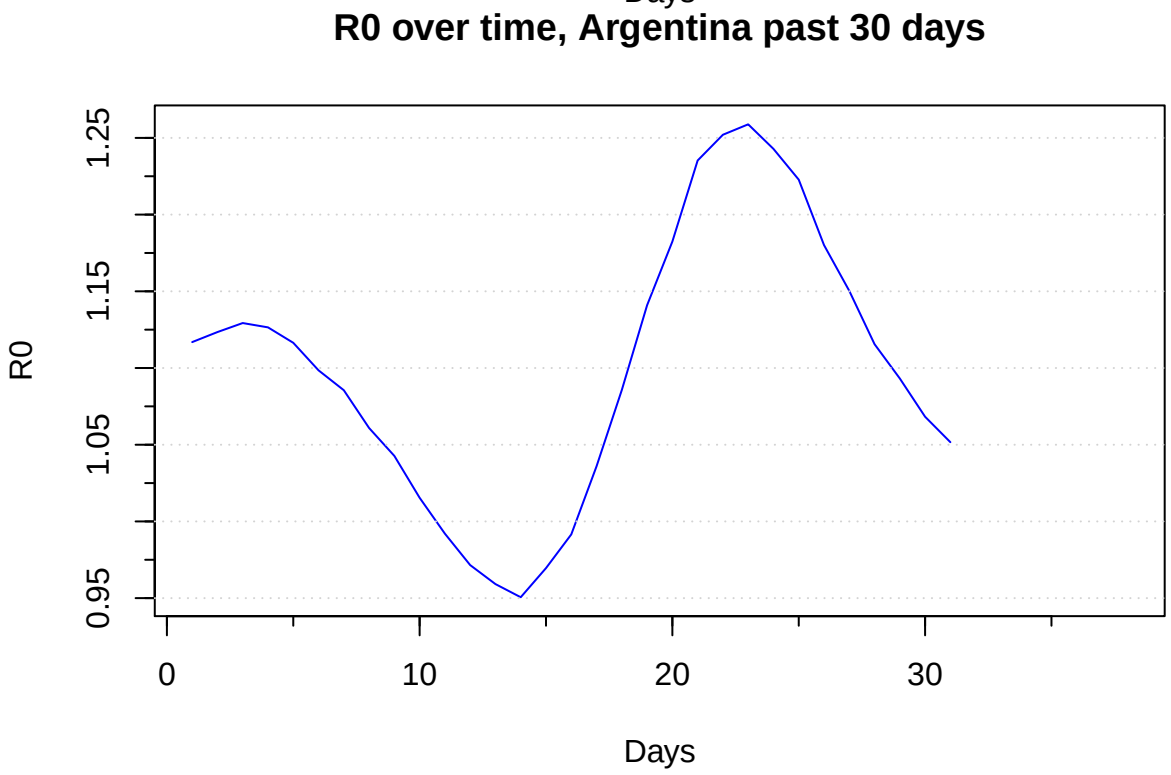
A gamma distribution is created programatically, and the estimate_R function is run against incidence objects containing the new cases reported each day.

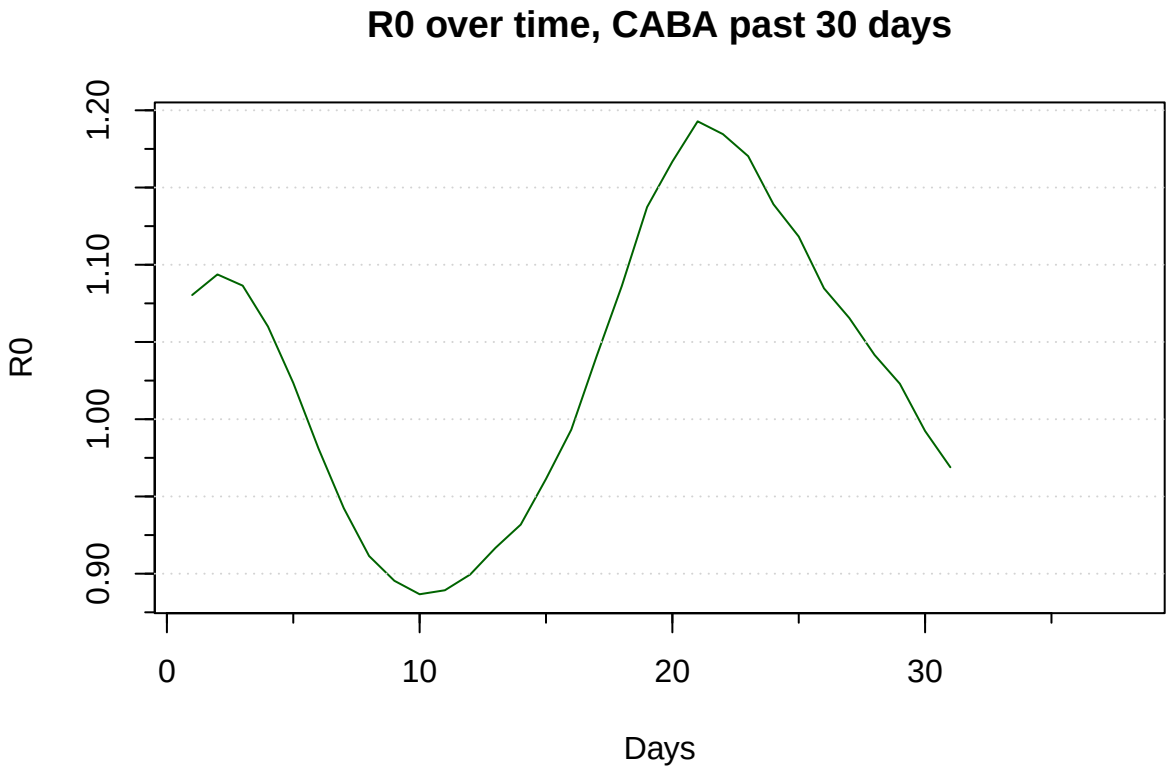


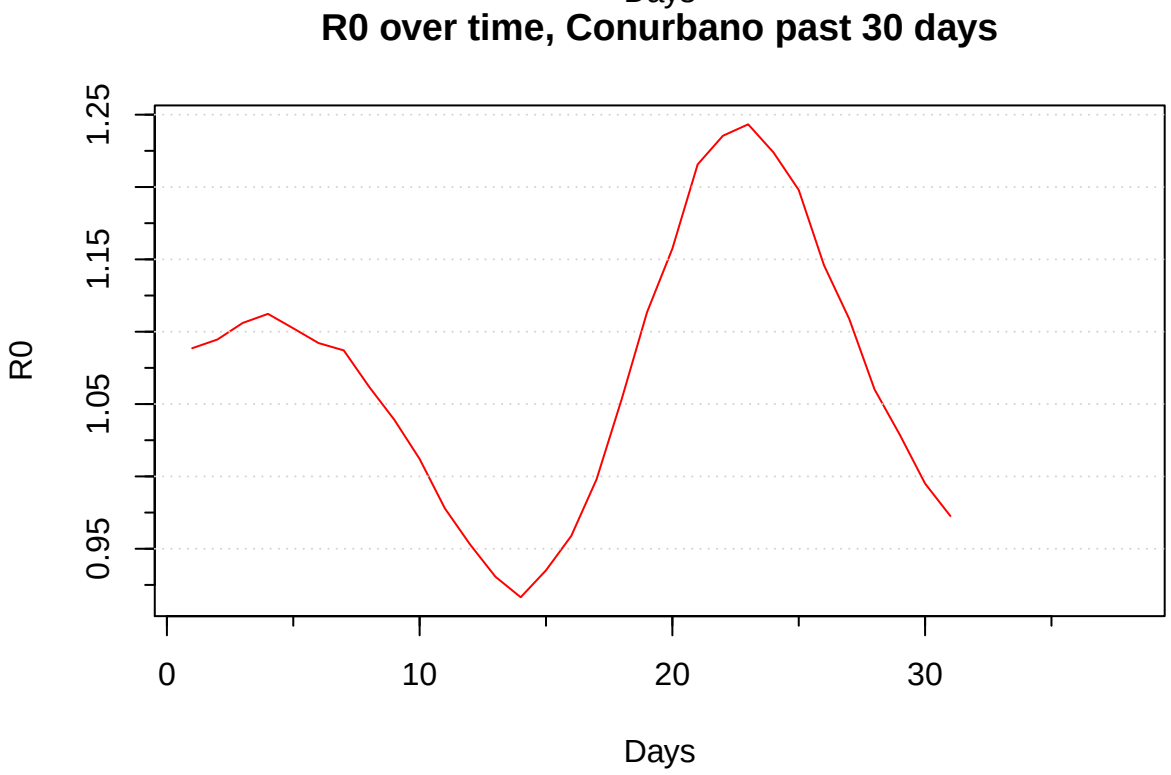

R0 over time, CABA overall
R0
1
2
3
4
5
0
50
100
150
Days

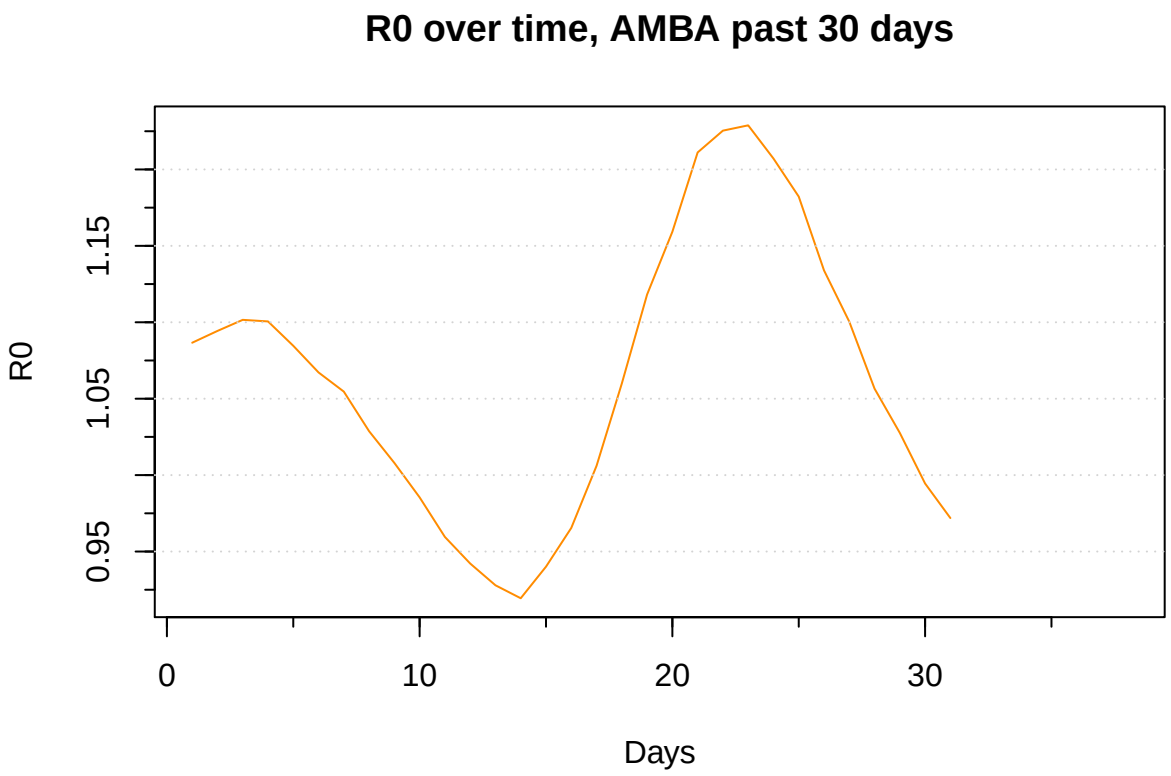

R0 over time, Conurbano overall
R0
1
2
3
4
0
50
100
150
Days


R0 over time, AMBA overall
R0
1
2
3
4
5
0
50
100
150
Days

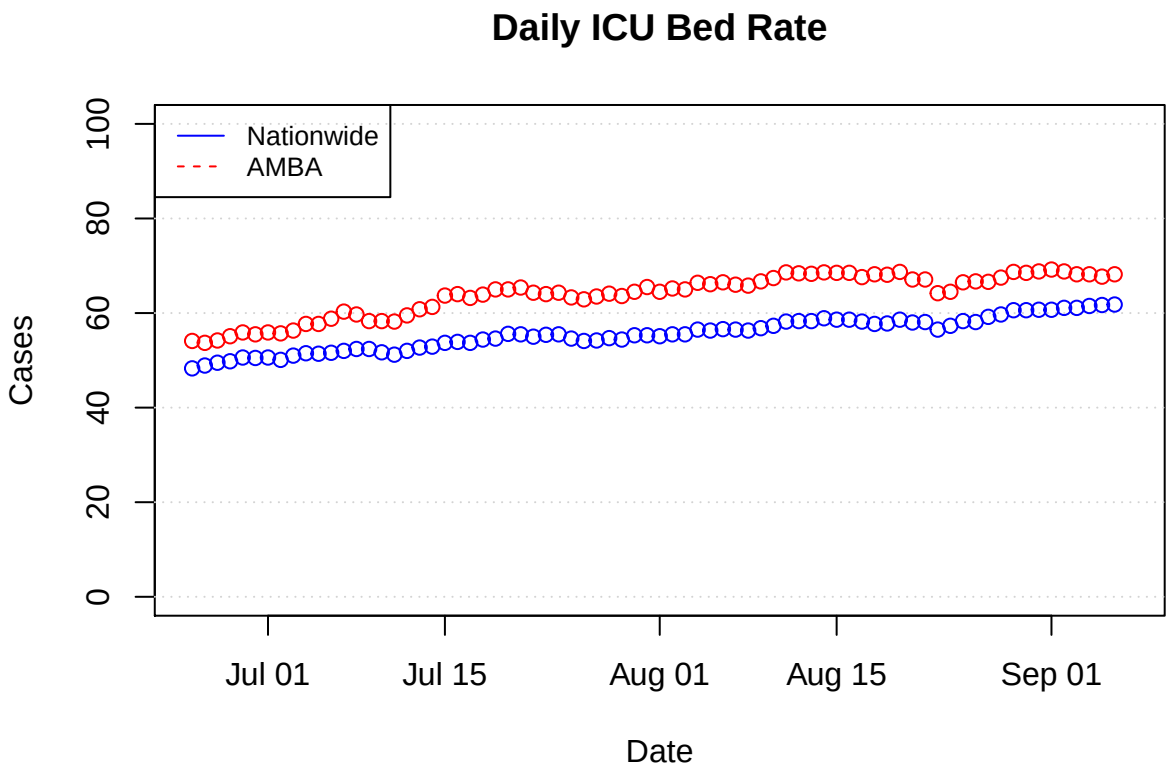

R0 over time, Argentina past 30 days
R0
0.95
1.05
1.15
1.25
0
10
20
30
Days


R0 over time, CABA past 30 days
R0
1.20
1.10
1.00
0.90
0
10
20
30
Days


R0 over time, Conurbano past 30 days
R0
1.25
1.15
1.05
0.95
0
10
20
30
Days


R0 over time, AMBA past 30 days
R0
0.95
1.05
1.15
0
10
20
30
Days

ICU Capacity



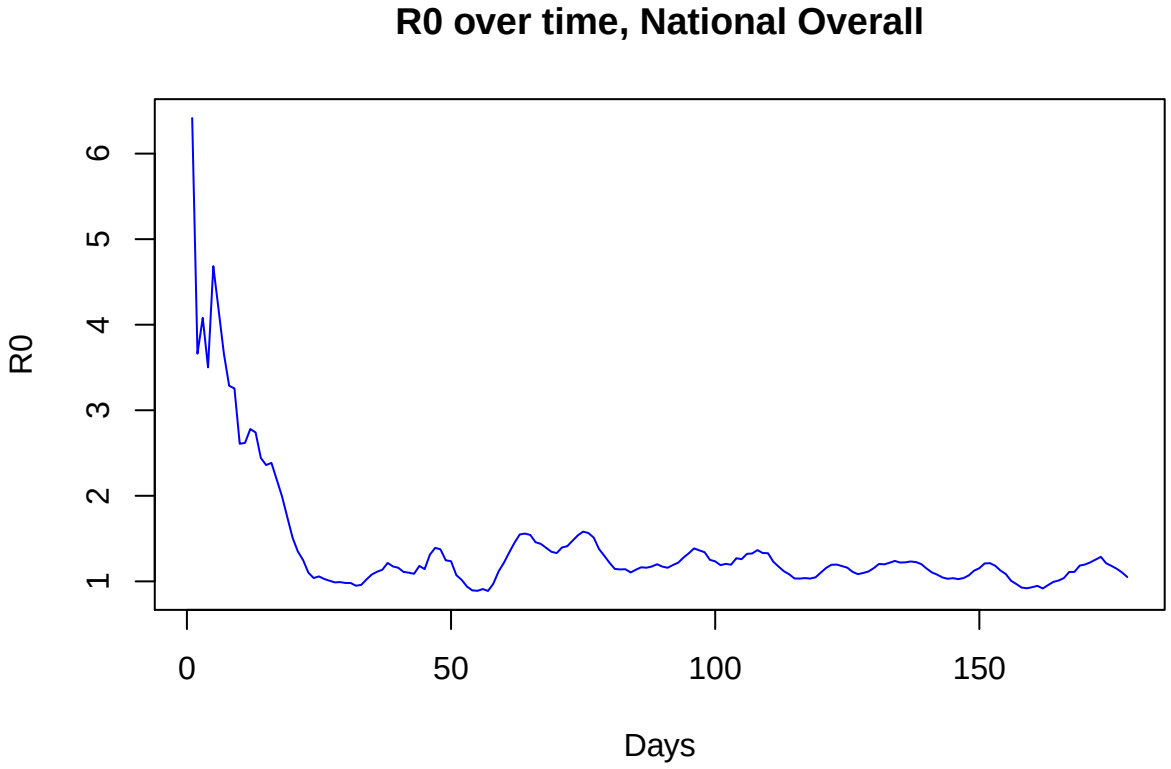

```
##          Date ICUBeds ICUPctNation ICUPctAMBA
## 46 2020-08-09    1565         56.8       66.7
## 47 2020-08-10    1569         57.3       67.4
## 48 2020-08-11    1585         58.2       68.6
## 49 2020-08-12    1662         58.3       68.4
## 50 2020-08-13    1682         58.3       68.3
## 51 2020-08-14    1718         58.9       68.6
## 52 2020-08-15    1716         58.6       68.5
## 53 2020-08-16    1708         58.6       68.5
## 54 2020-08-17    1749         58.2       67.6
## 55 2020-08-18    1799         57.7       68.2
## 56 2020-08-19    1795         57.8       68.1
## 57 2020-08-20    1832         58.6       68.7
## 58 2020-08-21    1853           58       67.1
## 59 2020-08-22    1907         58.1       67.1
## 60 2020-08-23    1922         56.5       64.2
## 61 2020-08-24    1960         57.3       64.5
## 62 2020-08-25    1990         58.3       66.5
## 63 2020-08-26    2022         58.1       66.7
## 64 2020-08-27    2075         59.2       66.6
## 65 2020-08-28    2114         59.7       67.5
## 66 2020-08-29    2192         60.6       68.7
## 67 2020-08-30    2232         60.6       68.5
## 68 2020-08-31    2273         60.7       68.8
## 69 2020-09-01    2314         60.7       69.2
## 70 2020-09-02    2359         61.1       68.8
## 71 2020-09-03    2394         61.1       68.2
## 72 2020-09-04    2425         61.5       68.2
```

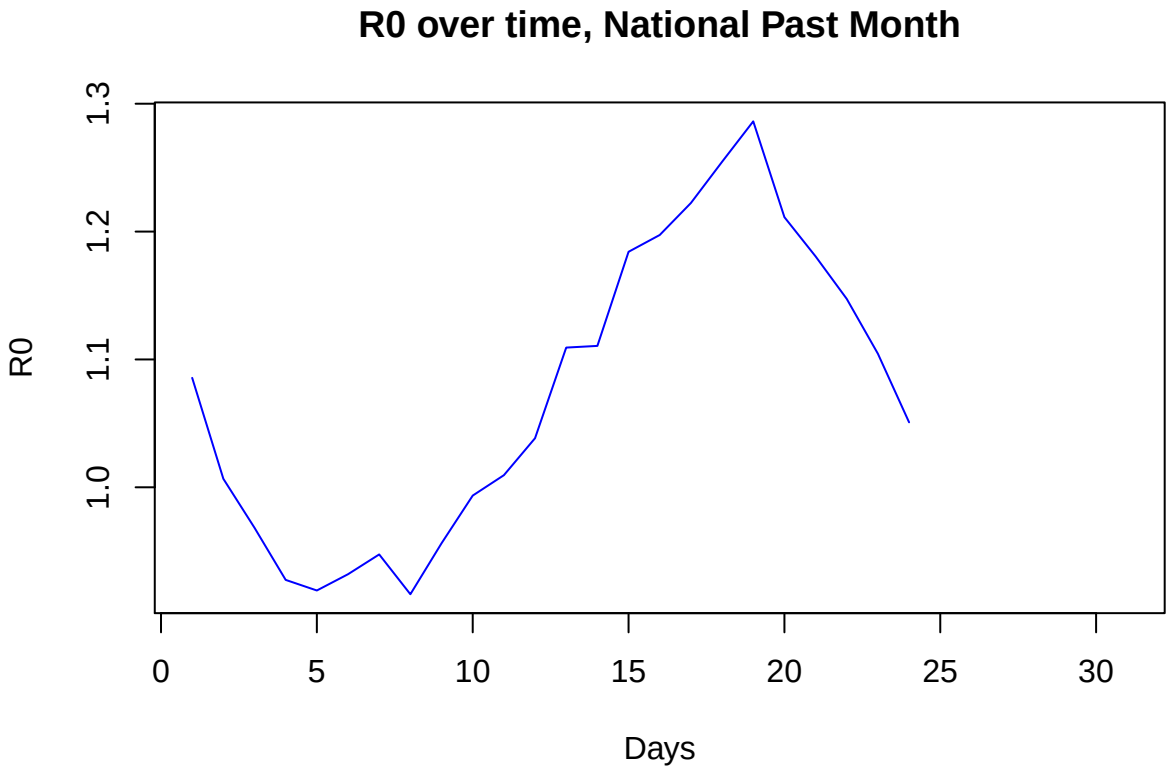
```
## 73 2020-09-05    2456         61.7       67.7
## 74 2020-09-06    2512         61.8       68.2
## 75 2020-09-07      NA         <NA>       <NA>
```

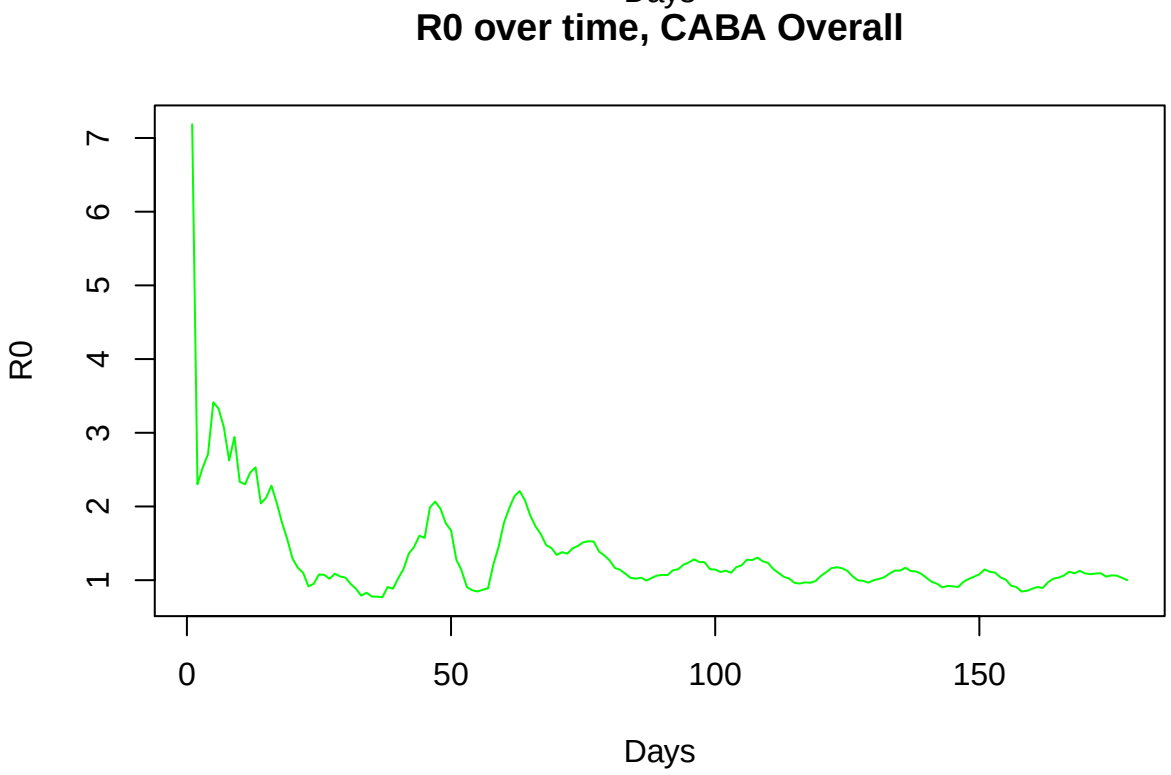
Better R Estimate

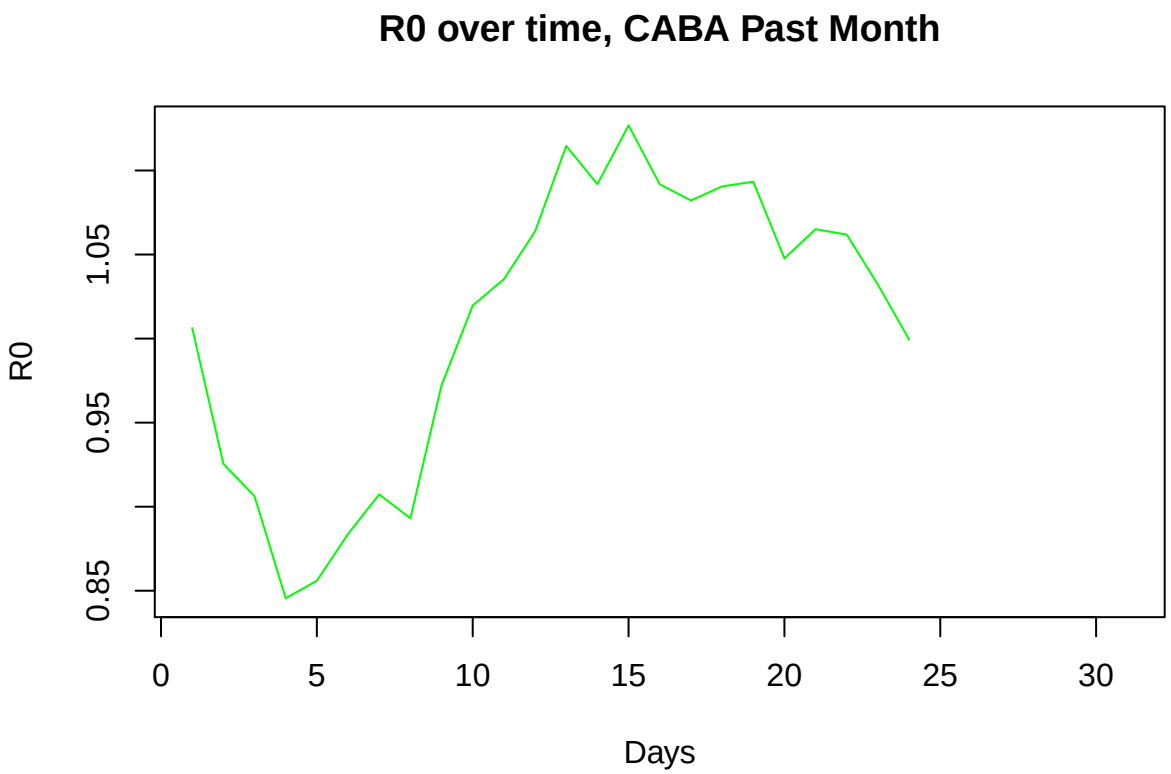
This data is drawn from over 1 million epidemiological records, indexed by the date the case was registered with the Ministry of Health. Cases are often registered prior to a confirmed diagnosis; therefore, this data "lags".

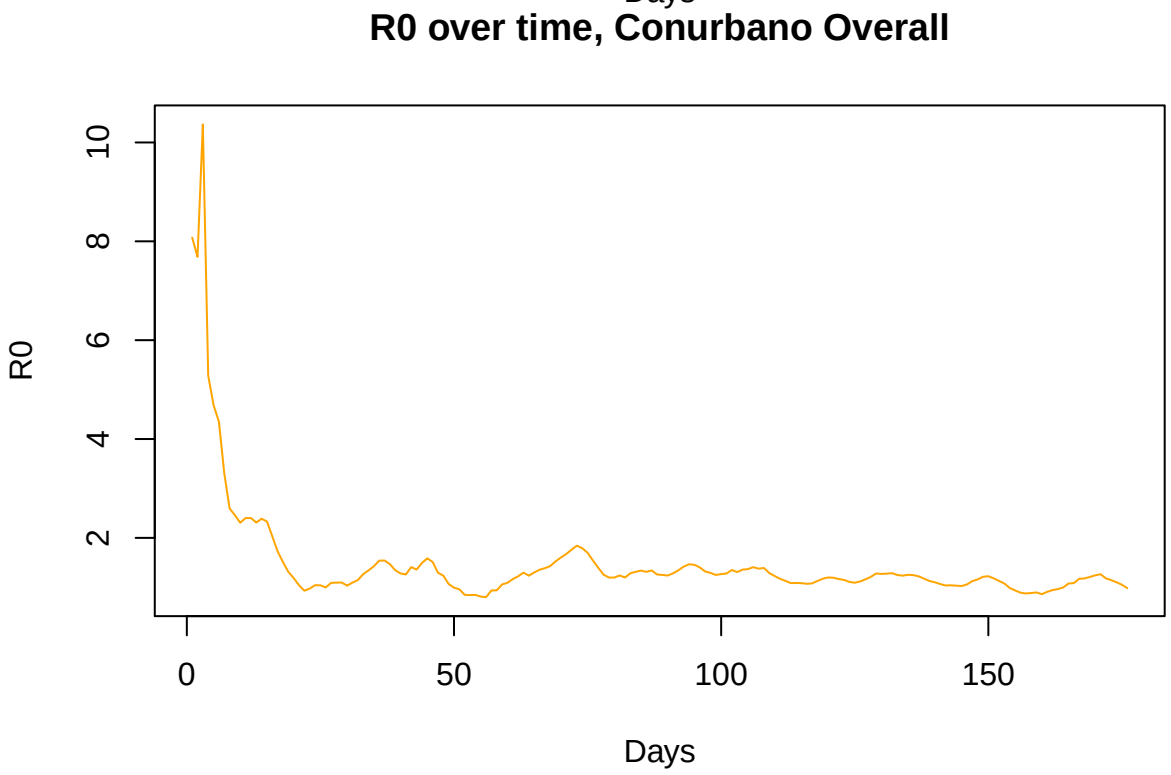
An incidence object is created using all confirmed cases in Argentina. The estimate_R() function from the EpiEstim package is used with the serial interval as described in the R estimate section above. While the estimate_R() function uses a rolling 7-day window, we also force the estimate away from the last five days of data due to the confirmation lag.

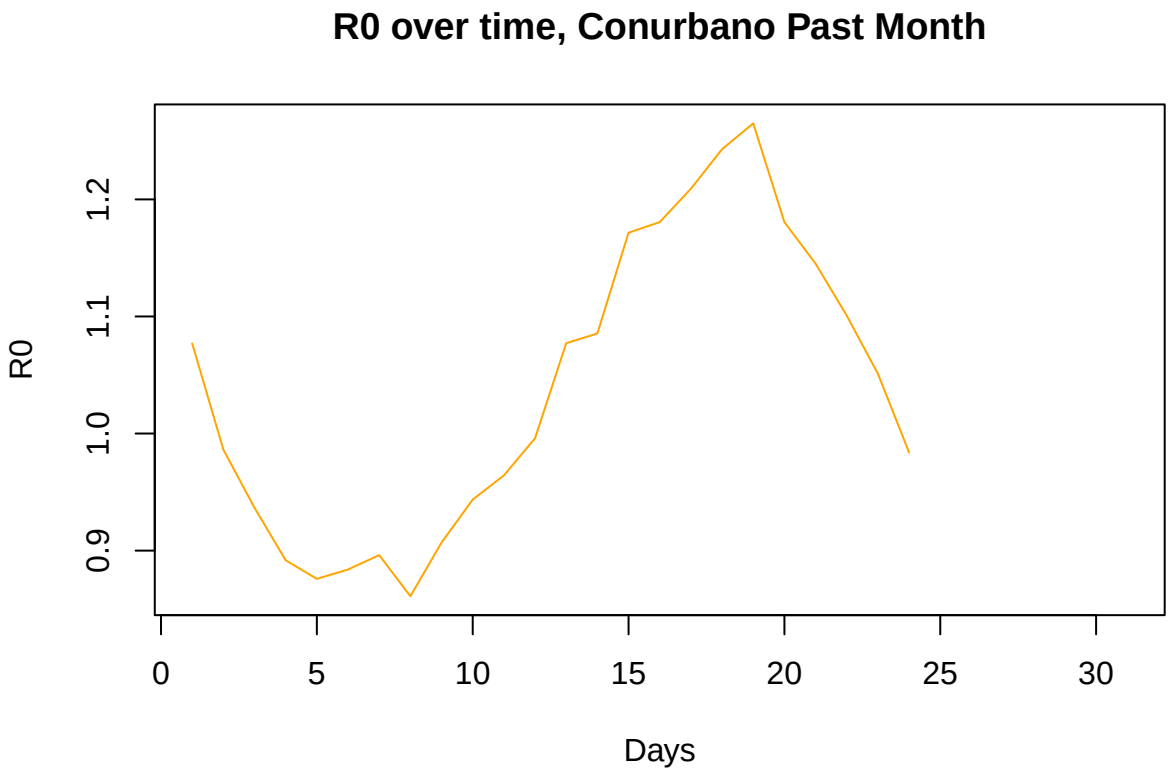


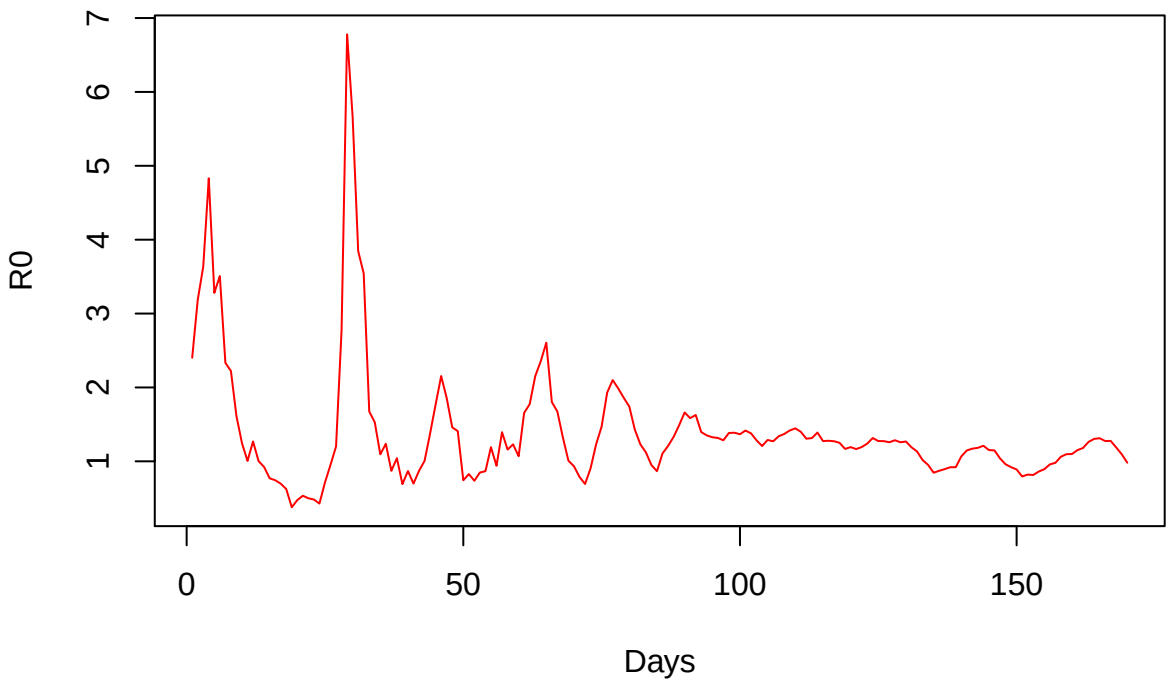

R0 over time, National Past Month
R0
1.0
1.1
1.2
1.3
0
5
10
15
20
25
30
Days

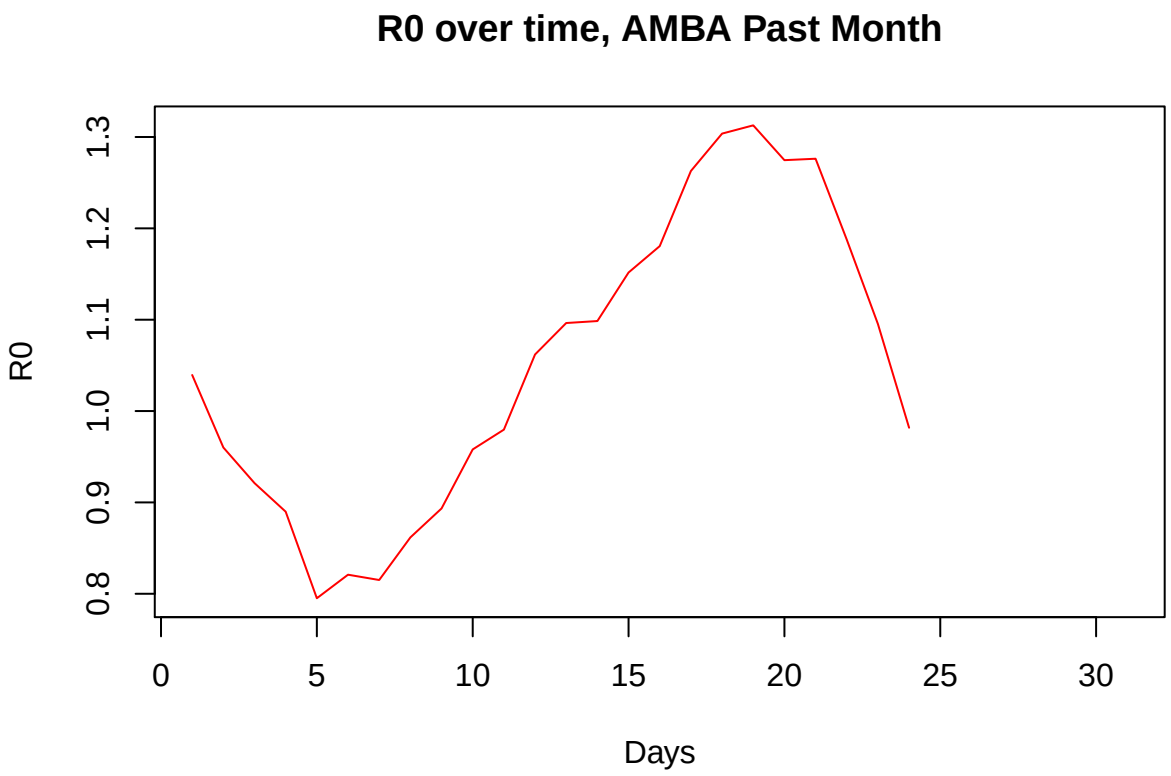

R0 over time, CABA Overall
R0
1
2
3
4
5
6
7
0
50
100
150
Days


R0 over time, CABA Past Month
R0
0.85
0.95
1.05
0
5
10
15
20
25
30
Days


R0 over time, Conurbano Overall
R0
2
4
6
8
10
0
50
100
150
Days


R0 over time, Conurbano Past Month
R0
0.9
1.0
1.1
1.2
0
5
10
15
20
25
30
Days


R0 over time, AMBA Overall
R0
1
2
3
4
5
6
7
0
50
100
150
Days


R0 over time, AMBA Past Month
R0
0.8
0.9
1.0
1.1
1.2
1.3
0
5
10
15
20
25
30
Days