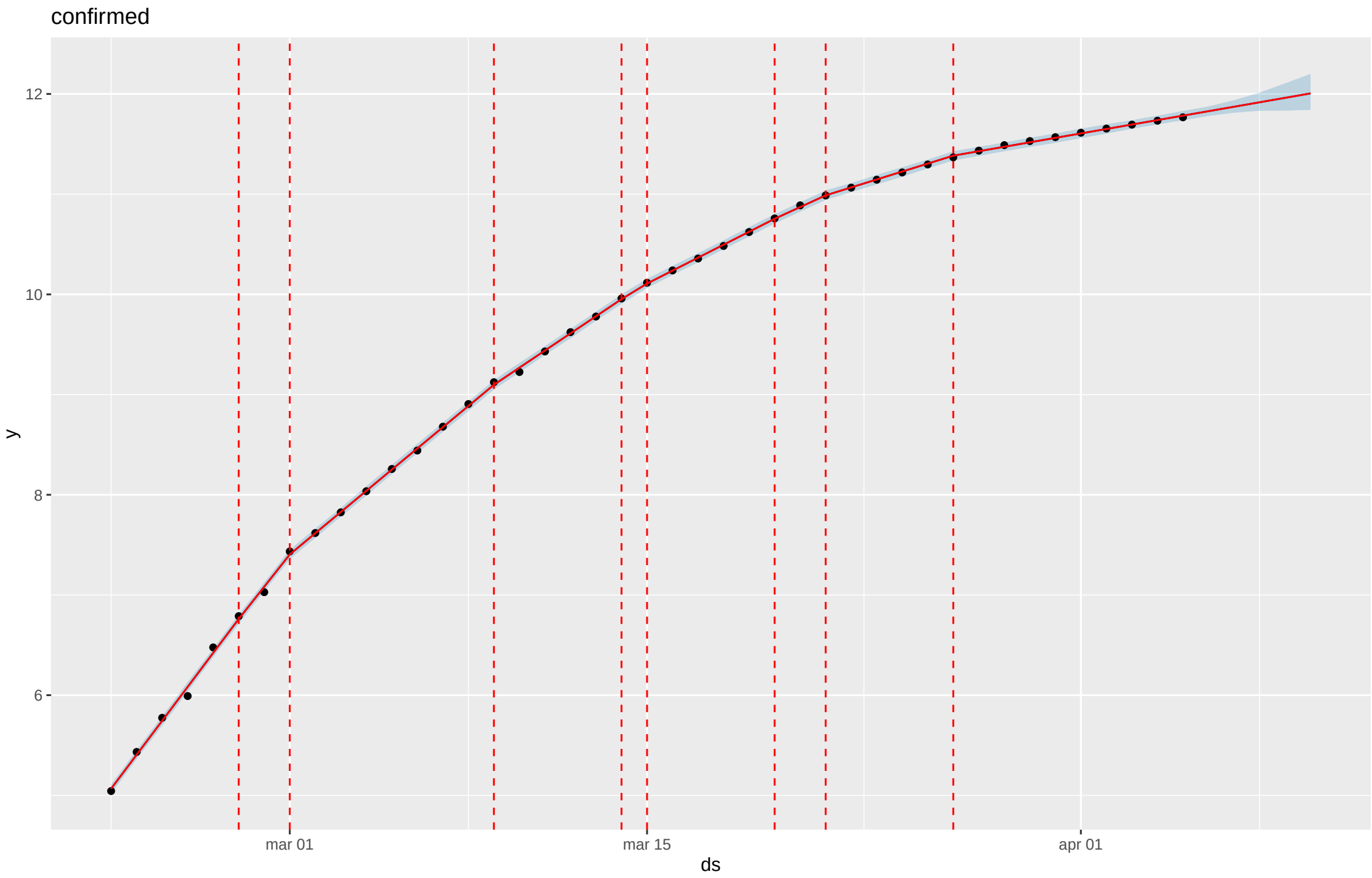
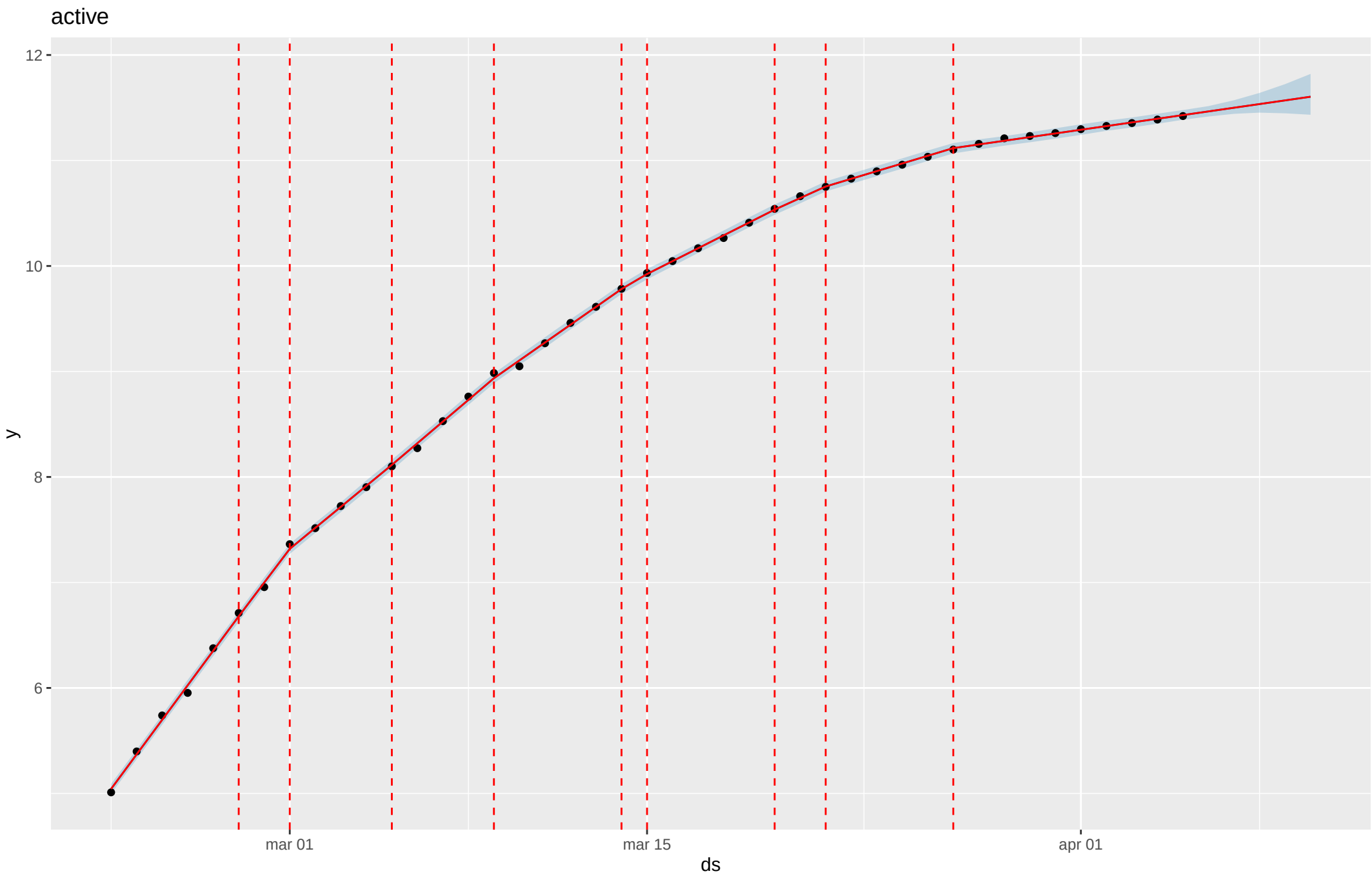
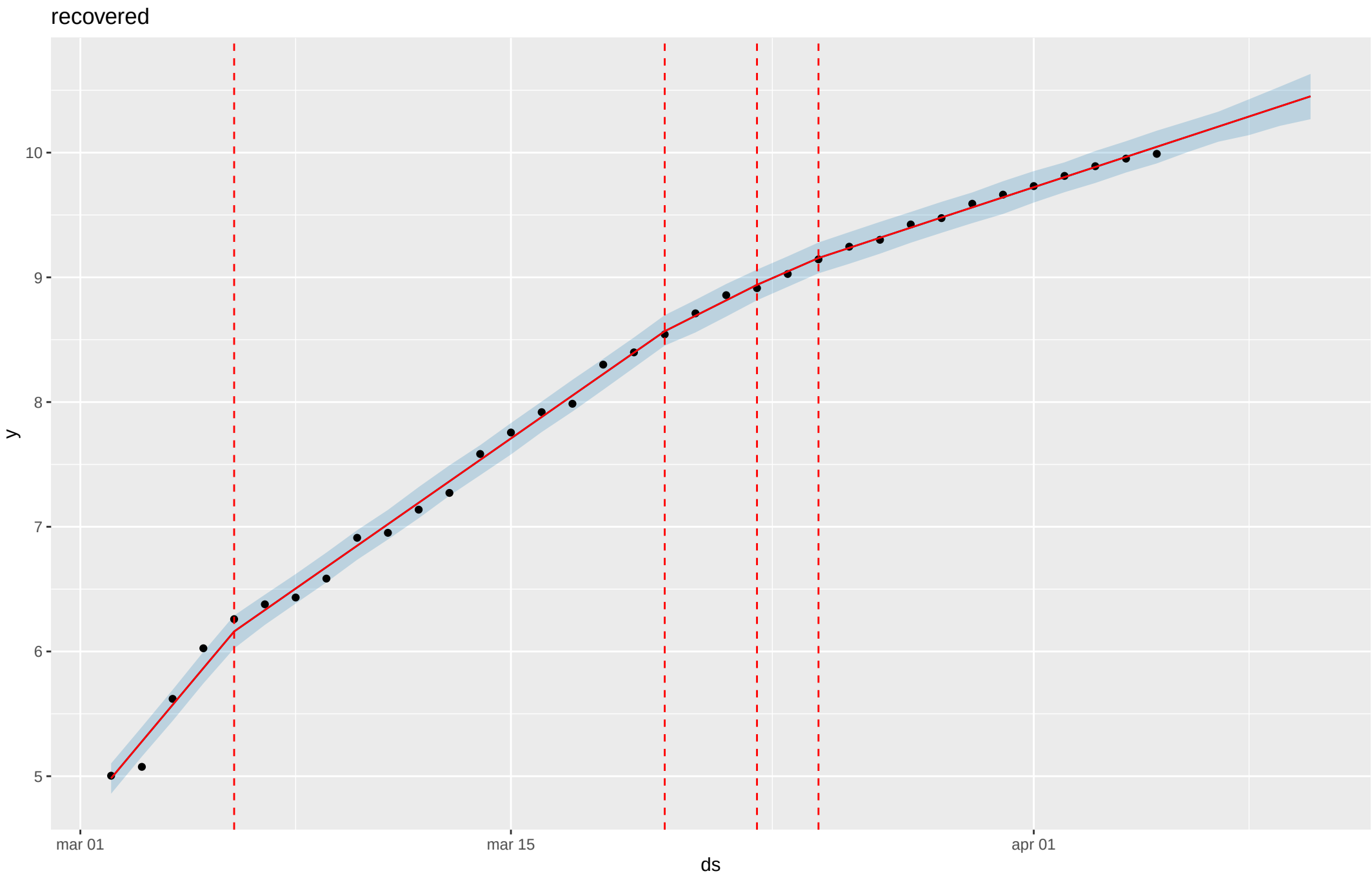
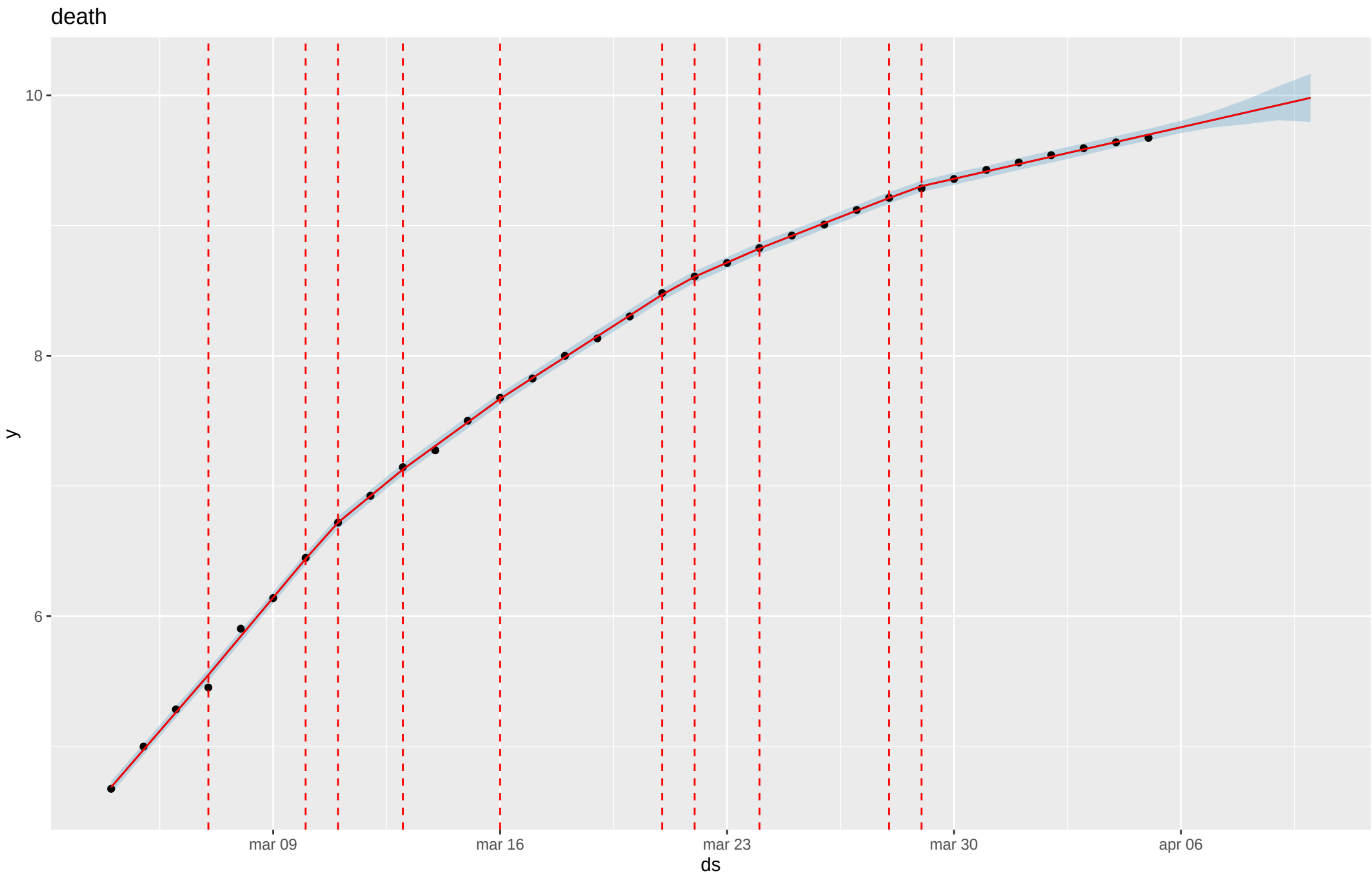
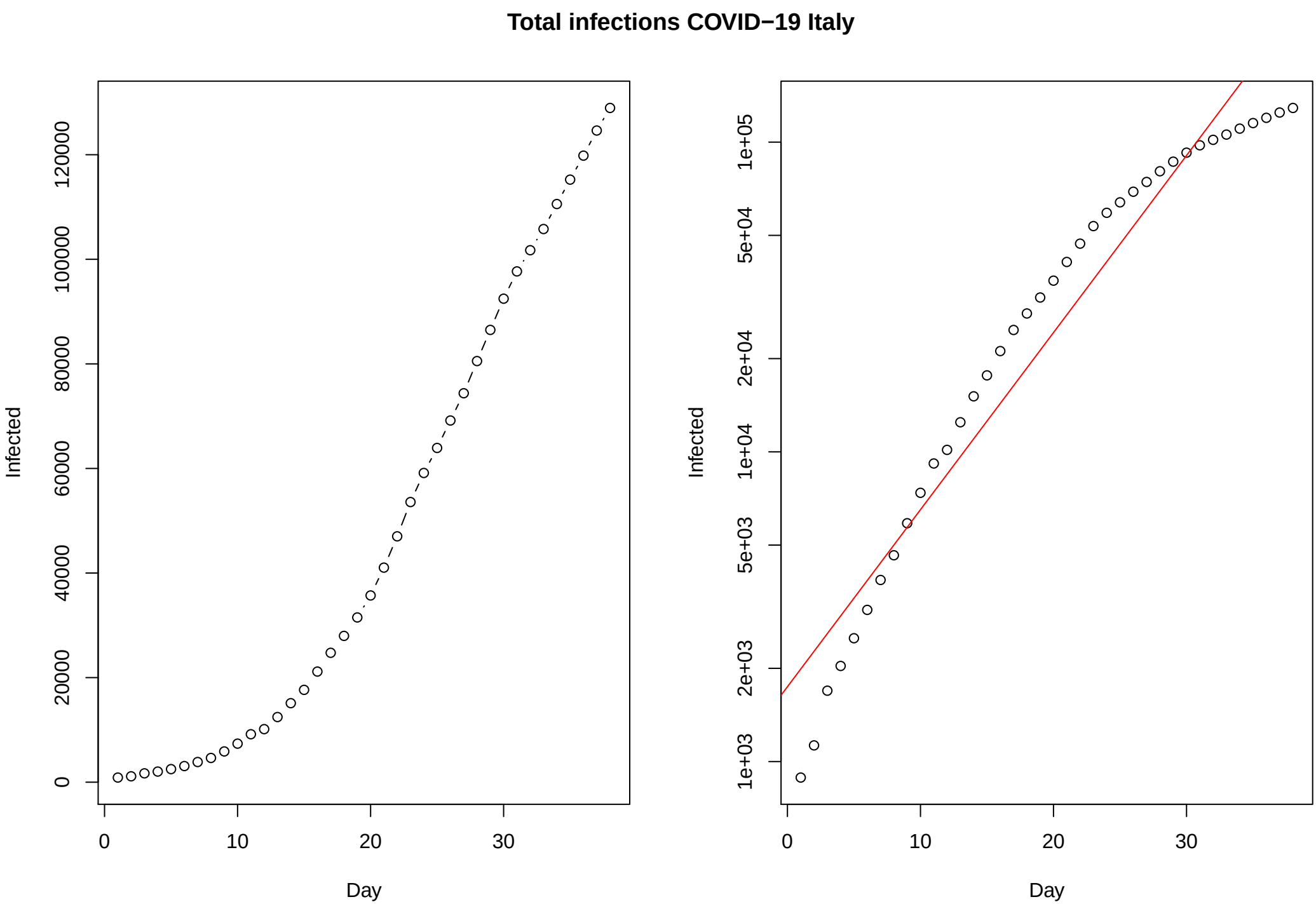
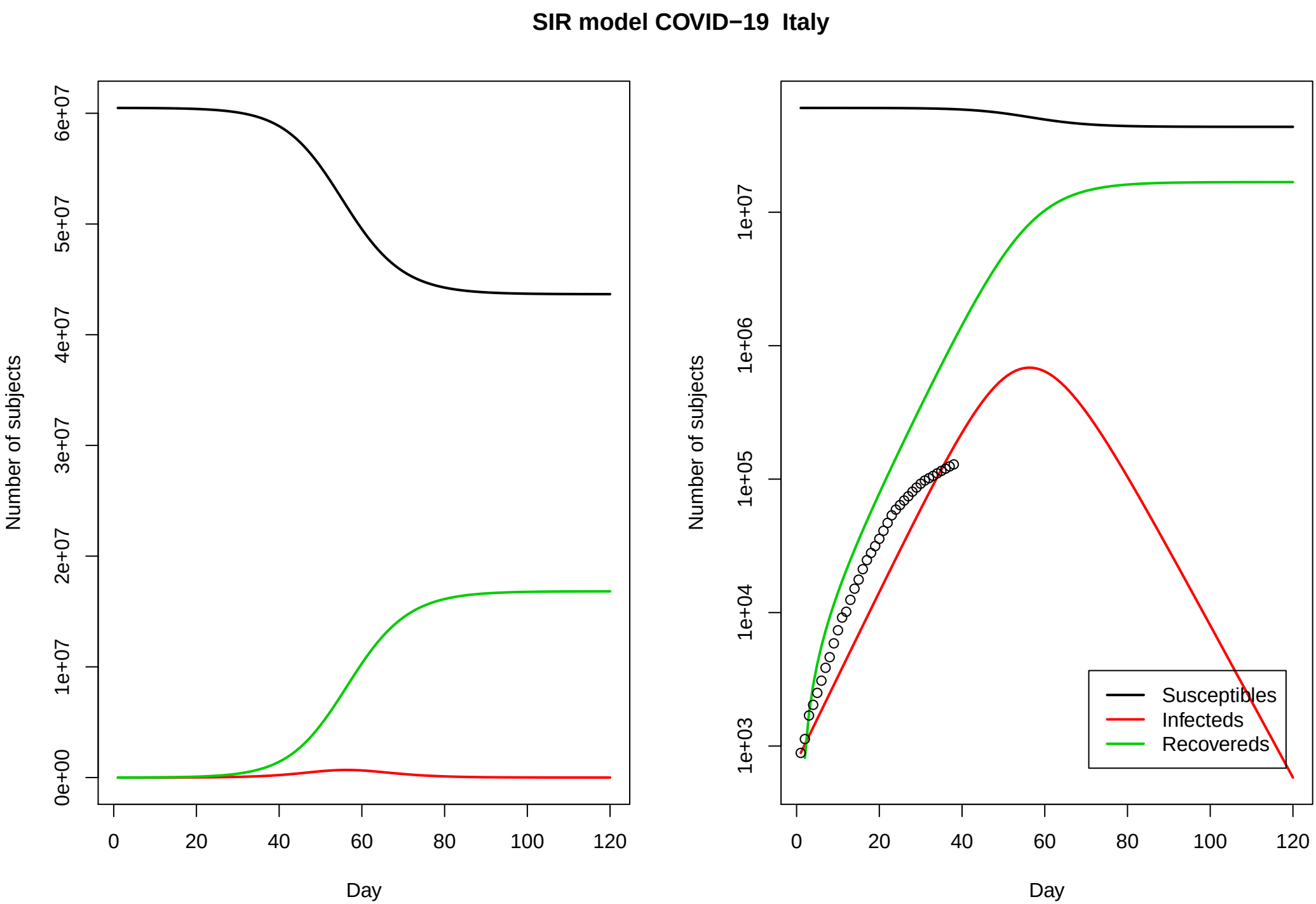

confirmed
12
10
8
6
y
mar 01
mar 15
apr 01
ds

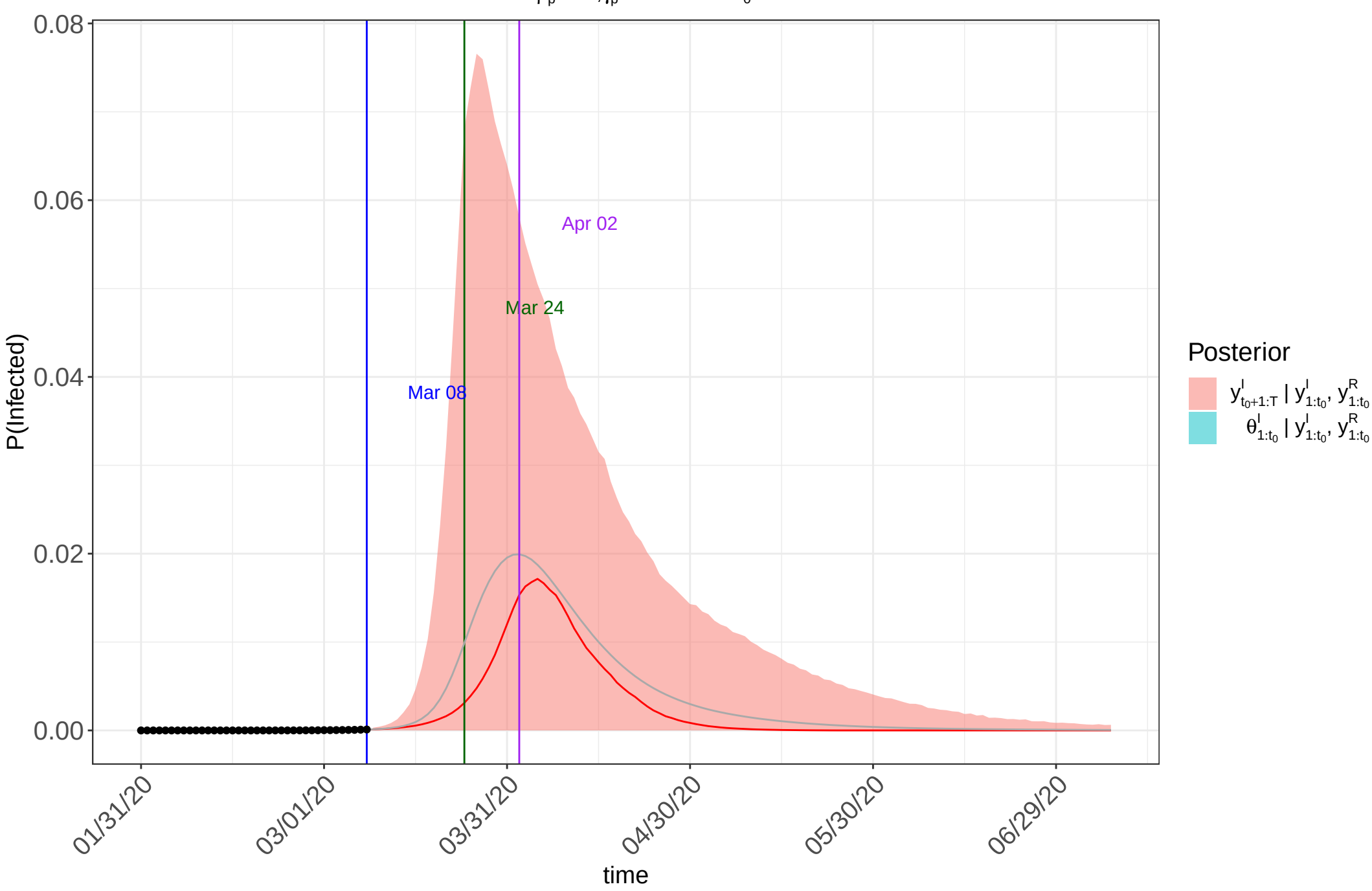

active
12
10
8
6
y
mar 01
mar 15
apr 01
ds

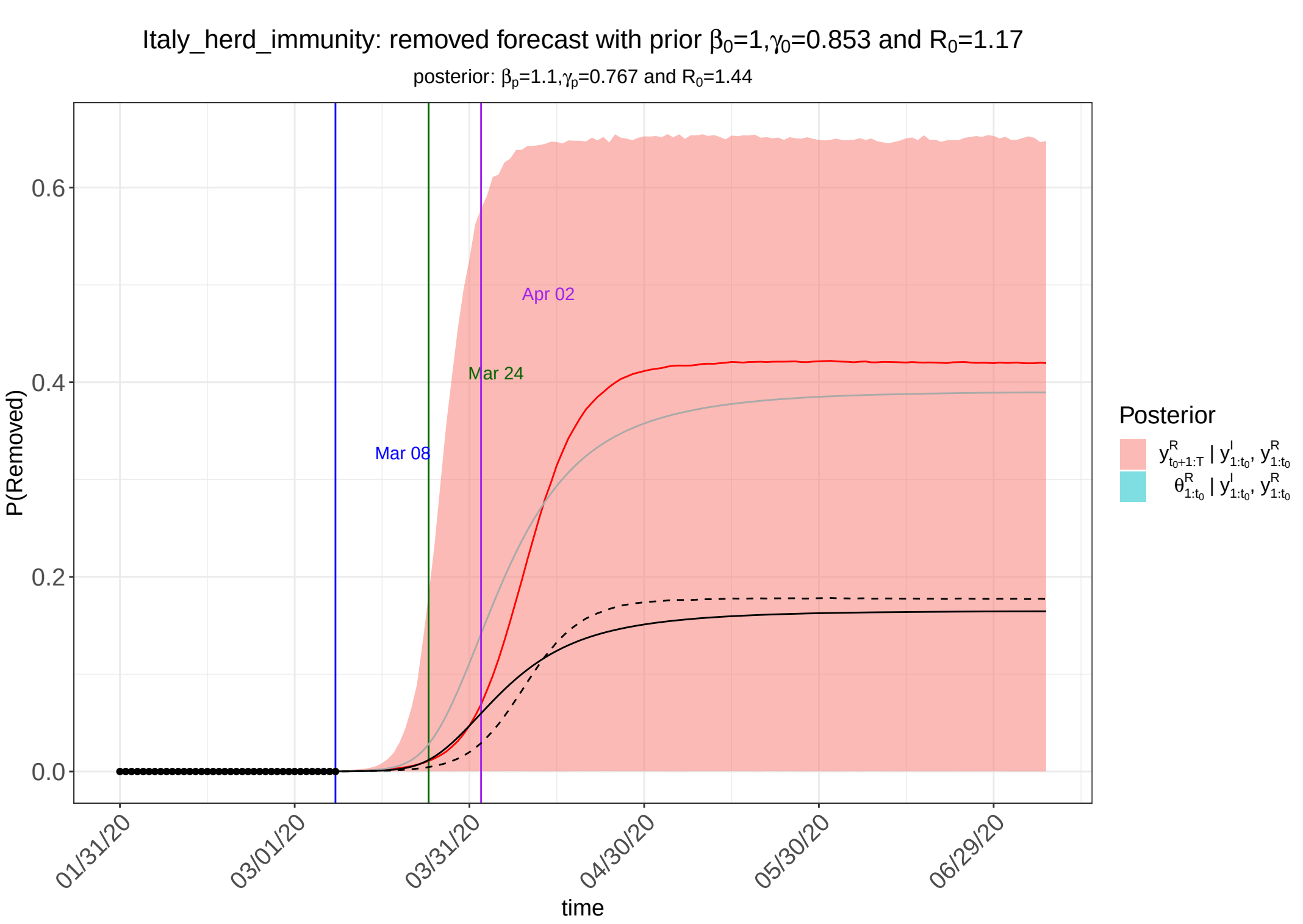

recovered
10
9
8
7
6
5
y
mar 01
mar 15
apr 01
ds

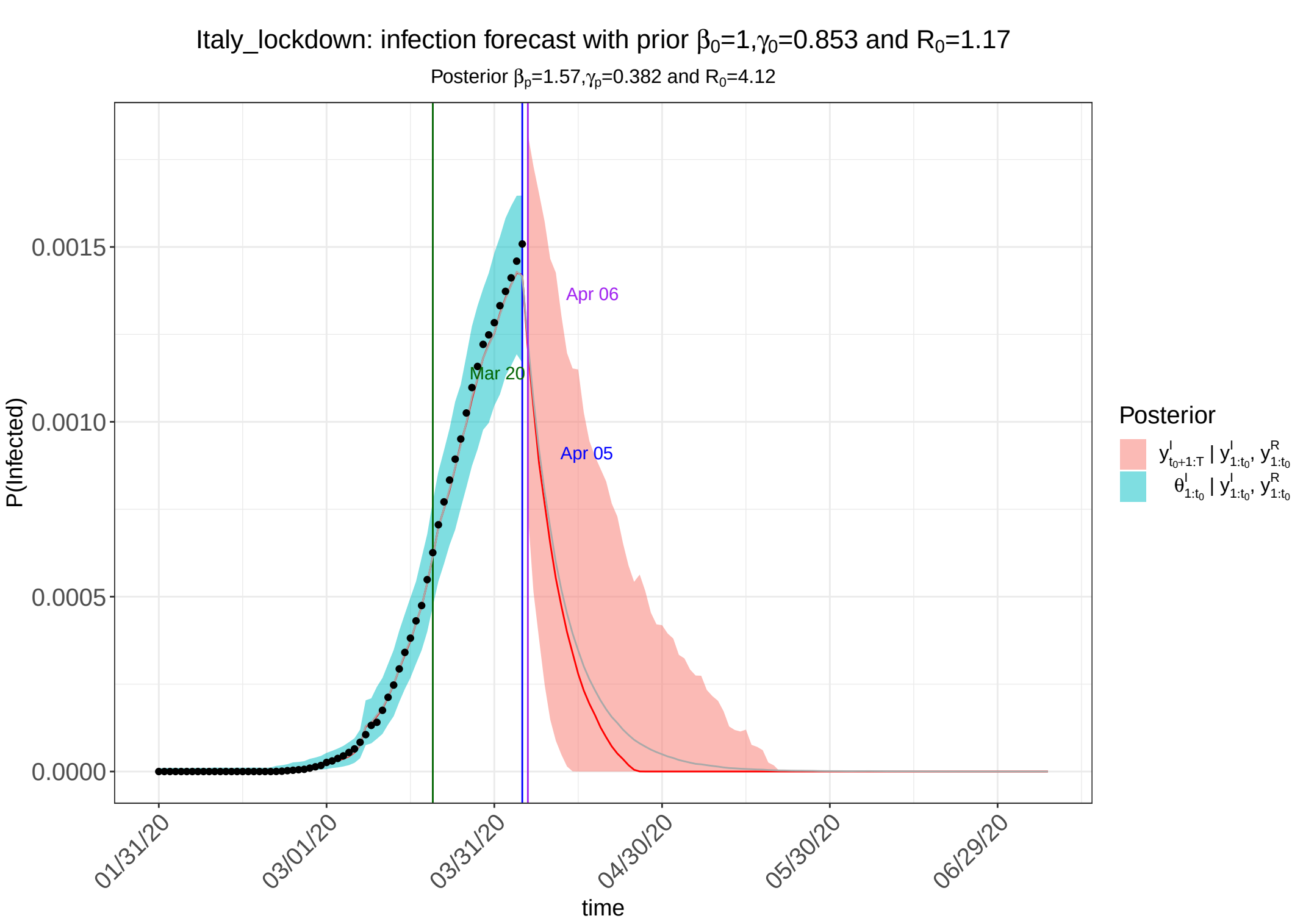

death
10
8
6
y
mar 09
mar 16
mar 23
mar 30
apr 06
ds

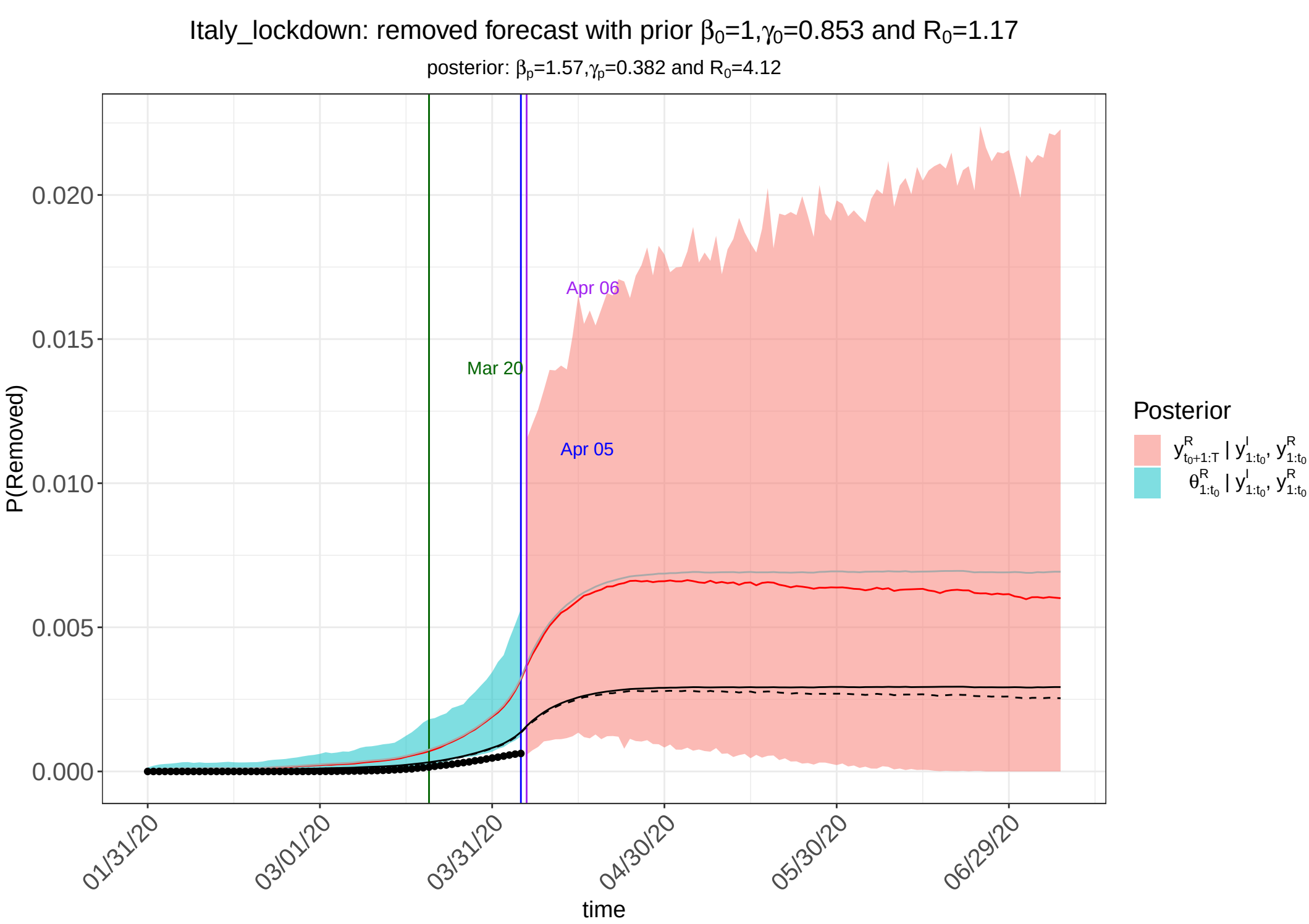

Total infections COVID−19 Italy
Infected
0
20000
40000
60000
80000
100000
120000
0
10
20
30
Day
Infected
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
0
10
20
30
Day

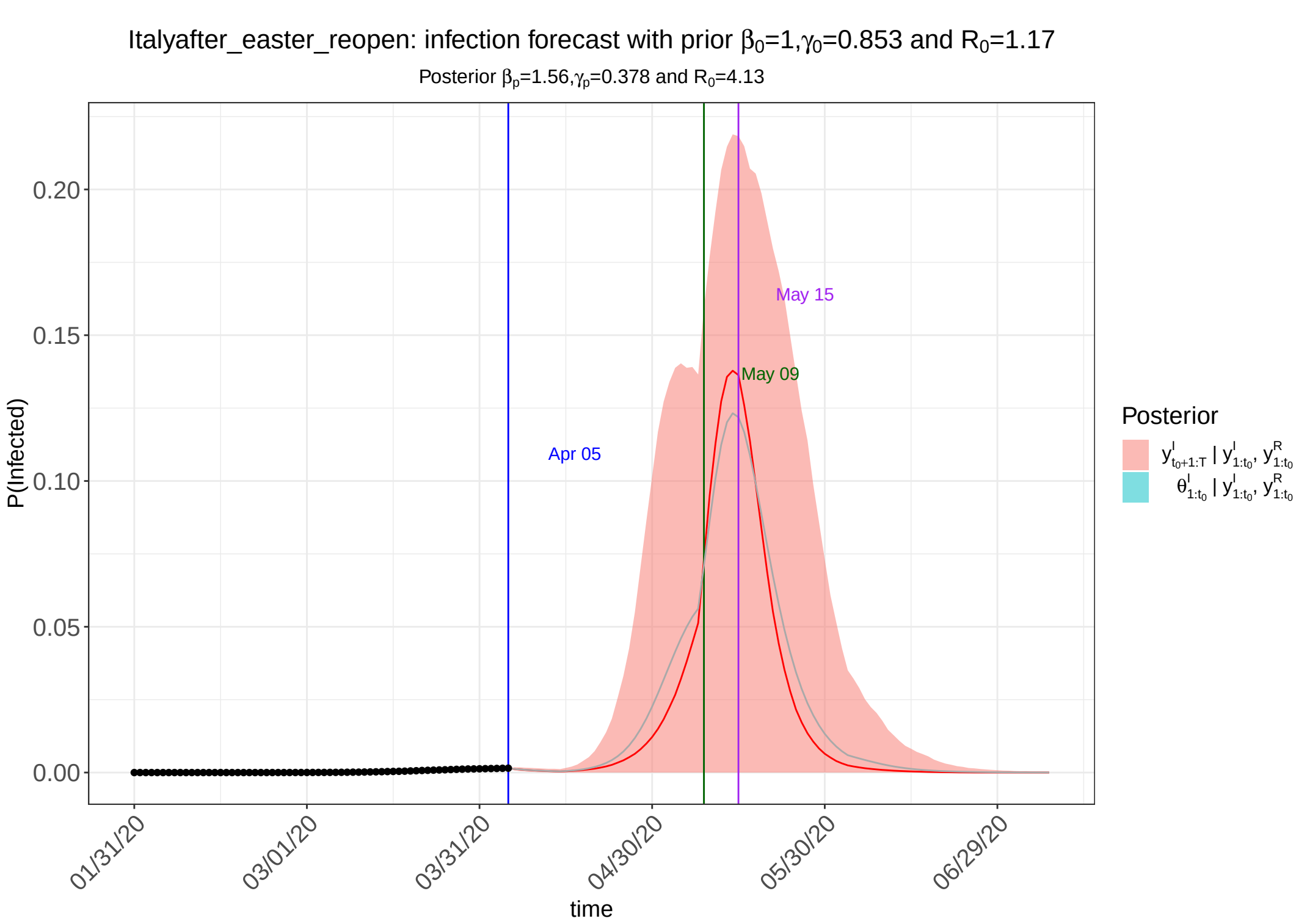

SIR model COVID−19 Italy
Number of subjects
0e+00
1e+07
2e+07
3e+07
4e+07
5e+07
6e+07
0
20
40
60
80
100
120
Day
Number of subjects
1e+03
1e+04
1e+05
1e+06
1e+07
0
20
40
60
80
100
120
Day
Susceptibles
Infecteds
Recovereds

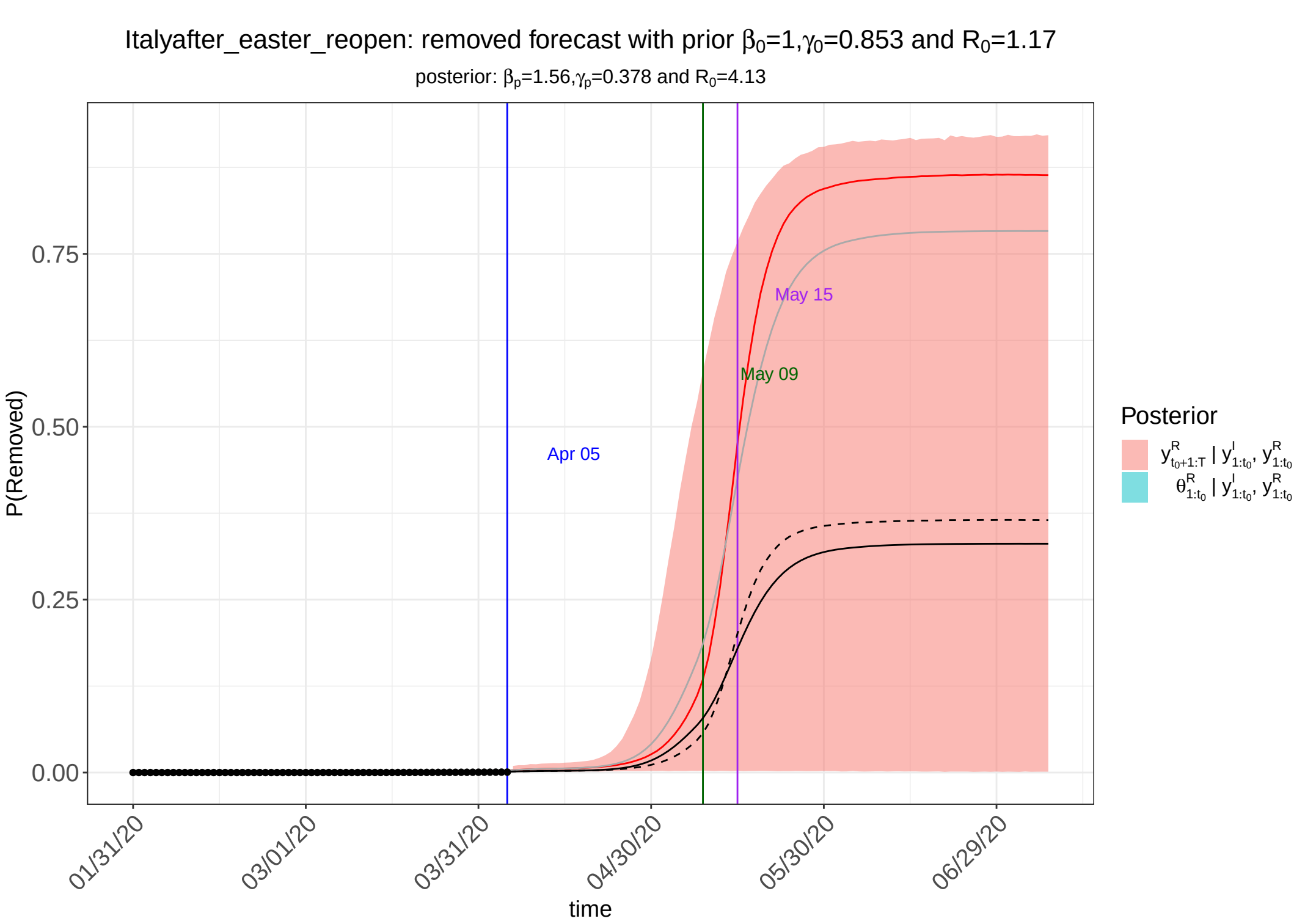

Italy_herd_immunity: infection forecast with prior β_0=1,γ_0=0.853 and R_0=1.17
Posterior β_p=1.1,γ_p=0.767 and R_0=1.44
0.08
0.06
0.04
0.02
0.00
P(Infected)
Apr 02
Mar 24
Mar 08
01/31/20
03/01/20
03/31/20
04/30/20
05/30/20
06/29/20
time
Posterior
$y^I_{t_0+1:T} \mid y^I_{1:t_0}, y^R_{1:t_0}$
$\theta^I_{1:t_0} \mid y^I_{1:t_0}, y^R_{1:t_0}$

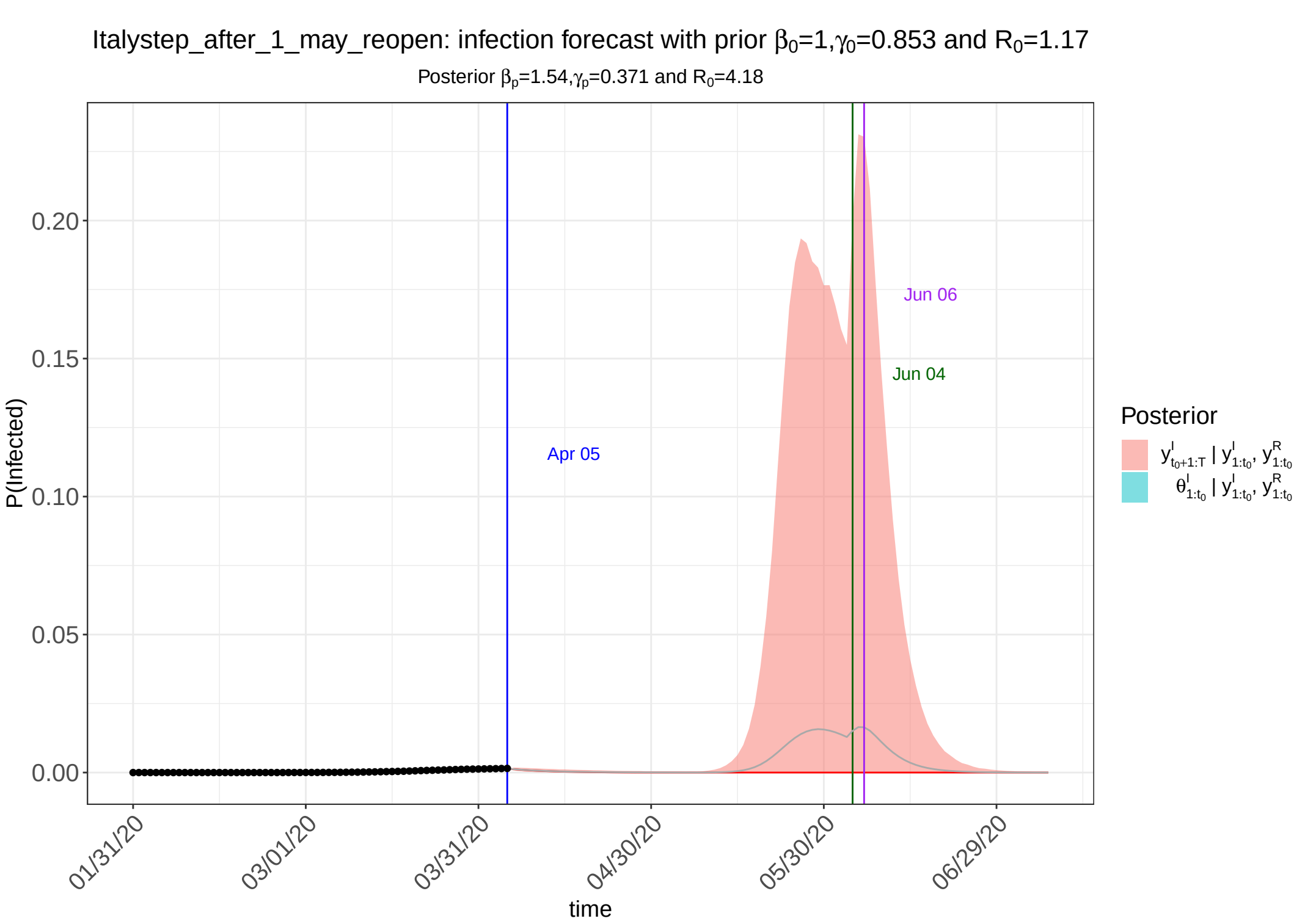

Italy_herd_immunity: removed forecast with prior β_0=1,γ_0=0.853 and R_0=1.17
posterior: β_p=1.1,γ_p=0.767 and R_0=1.44
P(Removed)
0.0
0.2
0.4
0.6
Mar 08
Mar 24
Apr 02
01/31/20
03/01/20
03/31/20
04/30/20
05/30/20
06/29/20
time
Posterior
$y^R_{t_0+1:T} \mid y^I_{1:t_0}, y^R_{1:t_0}$
$\theta^R_{1:t_0} \mid y^I_{1:t_0}, y^R_{1:t_0}$

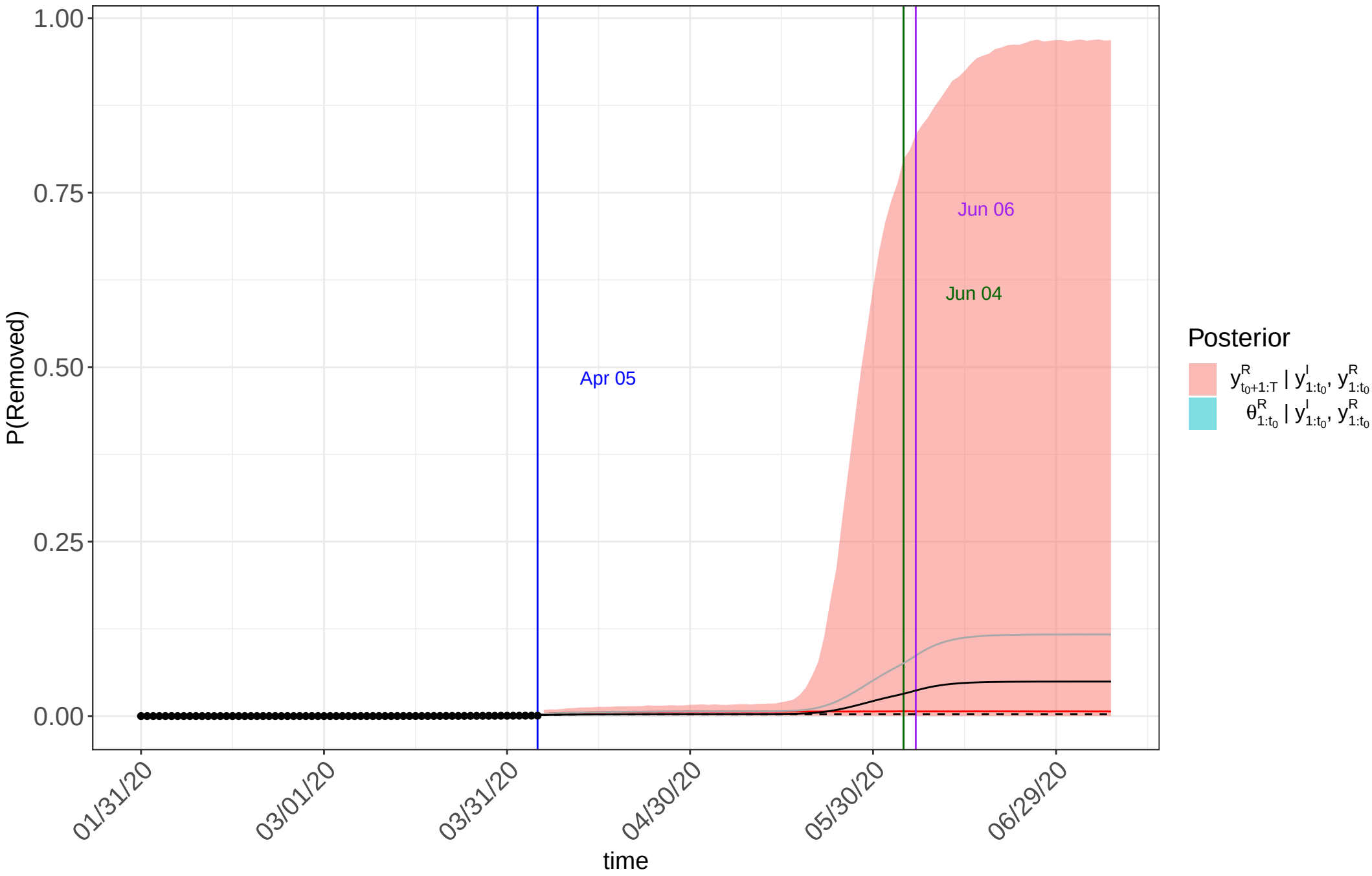

Italy_lockdown: infection forecast with prior β_0=1,γ_0=0.853 and R_0=1.17
Posterior β_p=1.57,γ_p=0.382 and R_0=4.12
P(Infected)
0.0015
0.0010
0.0005
0.0000
Apr 06
Mar 20
Apr 05
01/31/20
03/01/20
03/31/20
04/30/20
05/30/20
06/29/20
time
Posterior
$y^I_{t_0+1:T} \mid y^I_{1:t_0}, y^R_{1:t_0}$
$\theta^I_{1:t_0} \mid y^I_{1:t_0}, y^R_{1:t_0}$

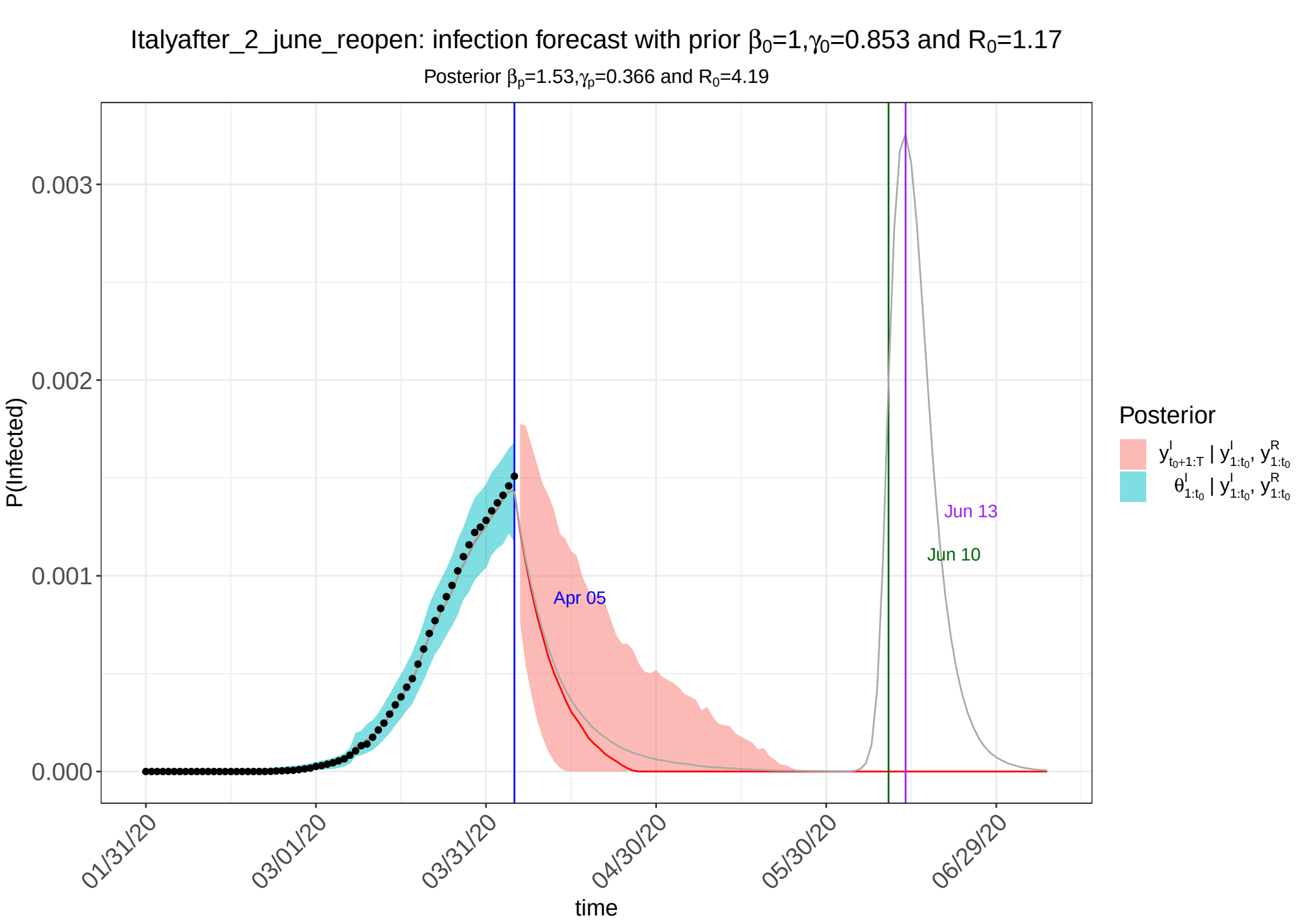

Italy_lockdown: removed forecast with prior β_0=1,γ_0=0.853 and R_0=1.17
posterior: β_p=1.57,γ_p=0.382 and R_0=4.12
P(Removed)
0.020
0.015
0.010
0.005
0.000
Apr 06
Mar 20
Apr 05
01/31/20
03/01/20
03/31/20
04/30/20
05/30/20
06/29/20
time
Posterior
$y^R_{t_0+1:T} \mid y^I_{1:t_0}, y^R_{1:t_0}$
$\theta^R_{1:t_0} \mid y^I_{1:t_0}, y^R_{1:t_0}$

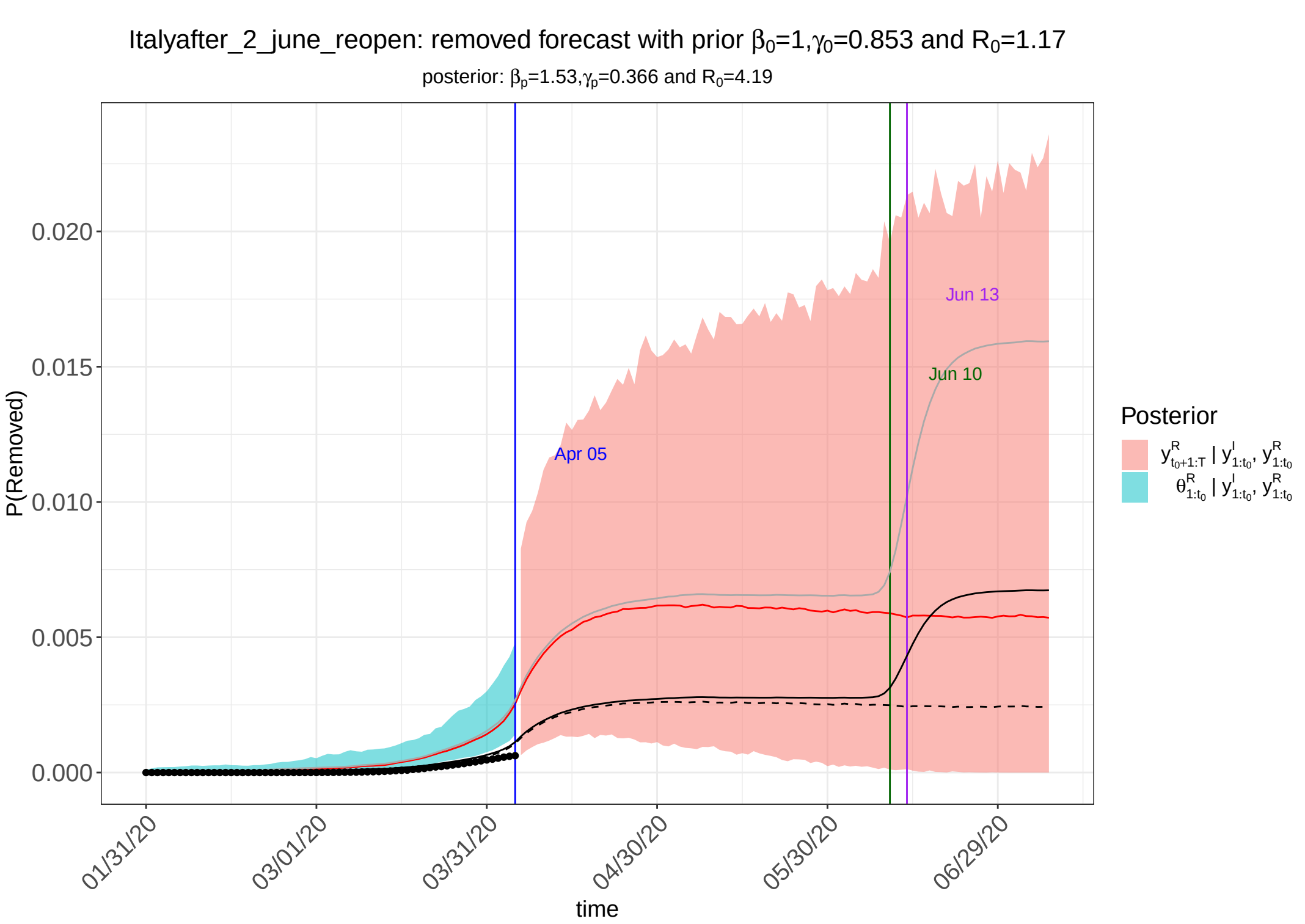

Italyafter_easter_reopen: infection forecast with prior β_0=1,γ_0=0.853 and R_0=1.17
Posterior β_p=1.56,γ_p=0.378 and R_0=4.13
P(Infected)
0.20
0.15
0.10
0.05
0.00
Apr 05
May 09
May 15
01/31/20
03/01/20
03/31/20
04/30/20
05/30/20
06/29/20
time
Posterior
$y^I_{t_0+1:T} \mid y^I_{1:t_0}, y^R_{1:t_0}$
$\theta^I_{1:t_0} \mid y^I_{1:t_0}, y^R_{1:t_0}$


Italyafter_easter_reopen: removed forecast with prior β_0=1,γ_0=0.853 and R_0=1.17
posterior: β_p=1.56,γ_p=0.378 and R_0=4.13
P(Removed)
0.00
0.25
0.50
0.75
Apr 05
May 09
May 15
01/31/20
03/01/20
03/31/20
04/30/20
05/30/20
06/29/20
time
Posterior
$y^R_{t_0+1:T} \mid y^I_{1:t_0}, y^R_{1:t_0}$
$\theta^R_{1:t_0} \mid y^I_{1:t_0}, y^R_{1:t_0}$


Italystep_after_1_may_reopen: infection forecast with prior β_0=1,γ_0=0.853 and R_0=1.17
Posterior β_p=1.54,γ_p=0.371 and R_0=4.18
P(Infected)
0.20
0.15
0.10
0.05
0.00
Apr 05
Jun 04
Jun 06
01/31/20
03/01/20
03/31/20
04/30/20
05/30/20
06/29/20
time
Posterior
$y^I_{t_0+1:T} \mid y^I_{1:t_0}, y^R_{1:t_0}$
$\theta^I_{1:t_0} \mid y^I_{1:t_0}, y^R_{1:t_0}$


Italystep_after_1_may_reopen: removed forecast with prior β_0=1,γ_0=0.853 and R_0=1.17
posterior: β_p=1.54,γ_p=0.371 and R_0=4.18
1.00
0.75
0.50
0.25
0.00
P(Removed)
Apr 05
Jun 04
Jun 06
01/31/20
03/01/20
03/31/20
04/30/20
05/30/20
06/29/20
time
Posterior
$y^R_{t_0+1:T} \mid y^I_{1:t_0}, y^R_{1:t_0}$
$\theta^R_{1:t_0} \mid y^I_{1:t_0}, y^R_{1:t_0}$


Italyafter_2_june_reopen: infection forecast with prior β_0=1,γ_0=0.853 and R_0=1.17
Posterior β_p=1.53,γ_p=0.366 and R_0=4.19
P(Infected)
0.003
0.002
0.001
0.000
01/31/20
03/01/20
03/31/20
04/30/20
05/30/20
06/29/20
time
Apr 05
Jun 10
Jun 13
Posterior
$y^I_{t_0+1:T} \mid y^I_{1:t_0}, y^R_{1:t_0}$
$\theta^I_{1:t_0} \mid y^I_{1:t_0}, y^R_{1:t_0}$


Italyafter_2_june_reopen: removed forecast with prior β_0=1,γ_0=0.853 and R_0=1.17
posterior: β_p=1.53,γ_p=0.366 and R_0=4.19
P(Removed)
0.020
0.015
0.010
0.005
0.000
Apr 05
Jun 13
Jun 10
01/31/20
03/01/20
03/31/20
04/30/20
05/30/20
06/29/20
time
Posterior
$y^R_{t_0+1:T} \mid y^I_{1:t_0}, y^R_{1:t_0}$
$\theta^R_{1:t_0} \mid y^I_{1:t_0}, y^R_{1:t_0}$