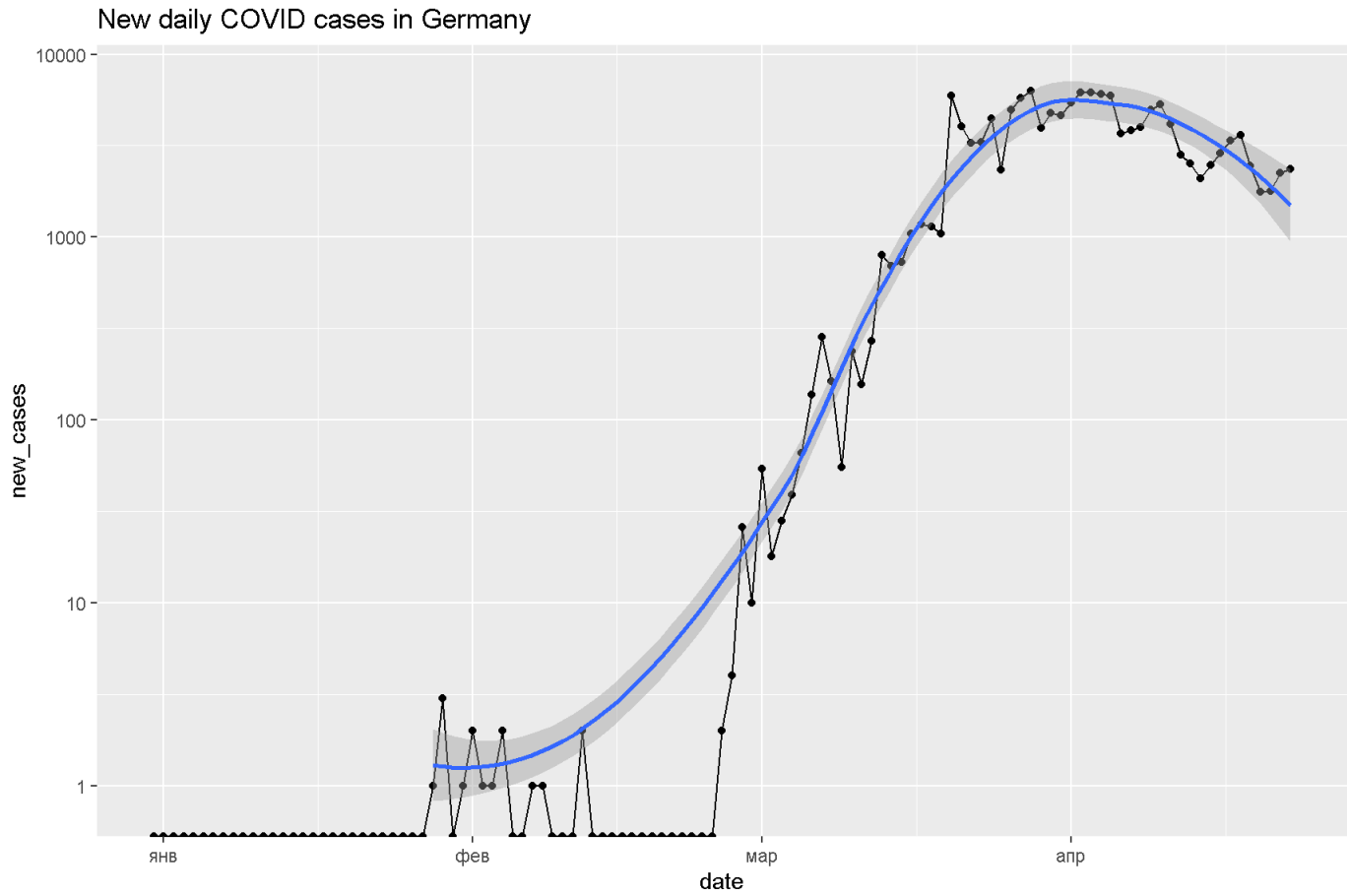
Time to lift lockdown for some EU countres

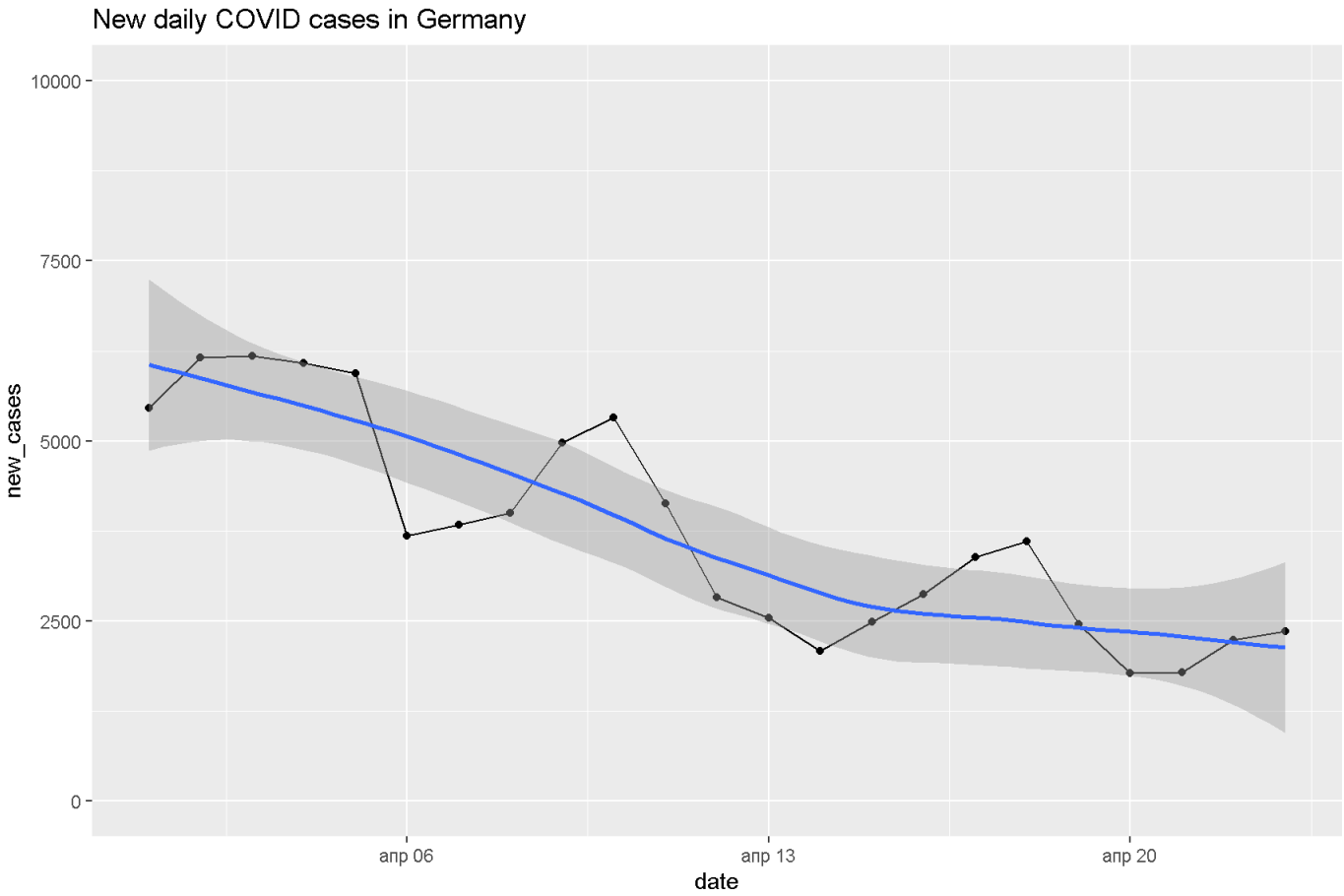
```
knitr::opts_chunk$set(echo = FALSE, message=FALSE, warning=FALSE, fig.width=9, fig.height=6, fig.path = "figures/")
```

Q: Примерно в какие даты страны Европы достигнут того минимума новых заражений, которые позволят им отменить карантинные меры?

Делаем линейные регрессии последних данных.

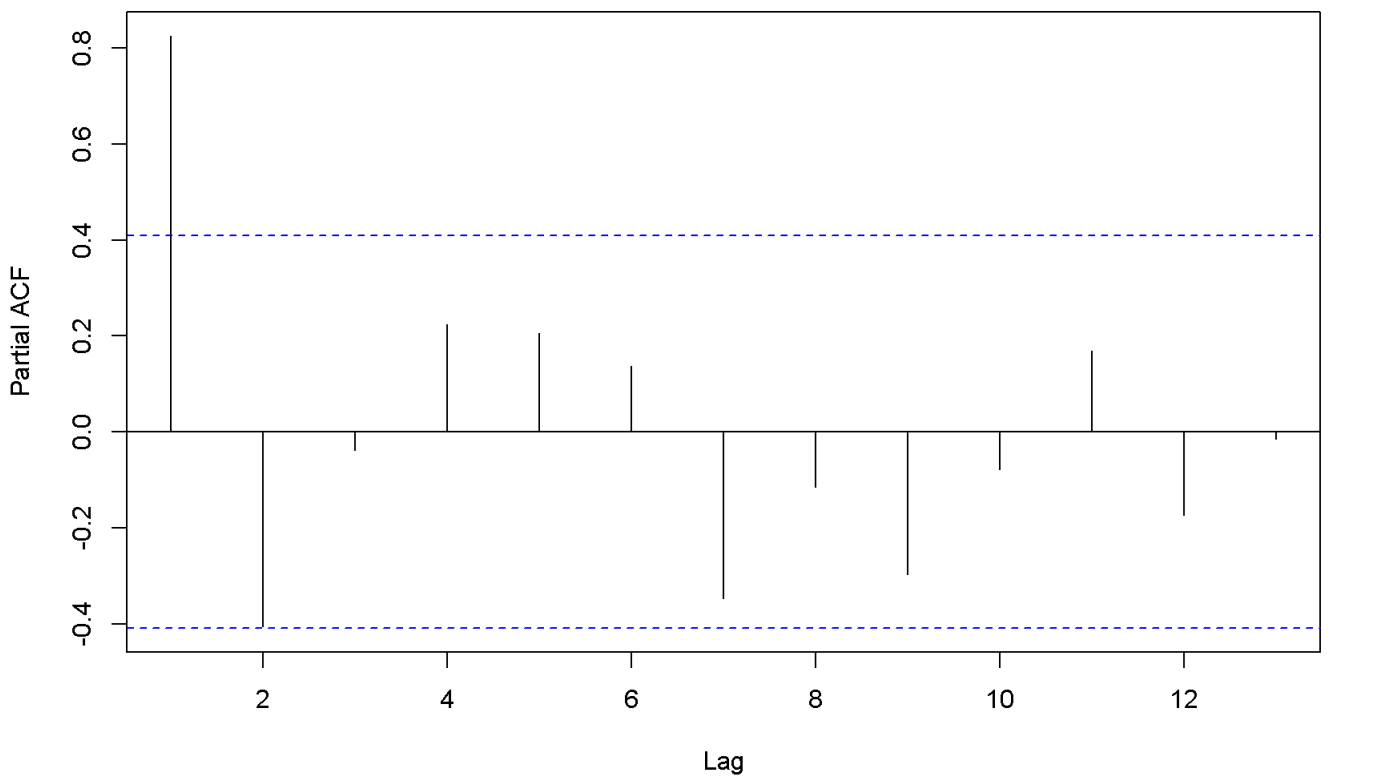
Germany



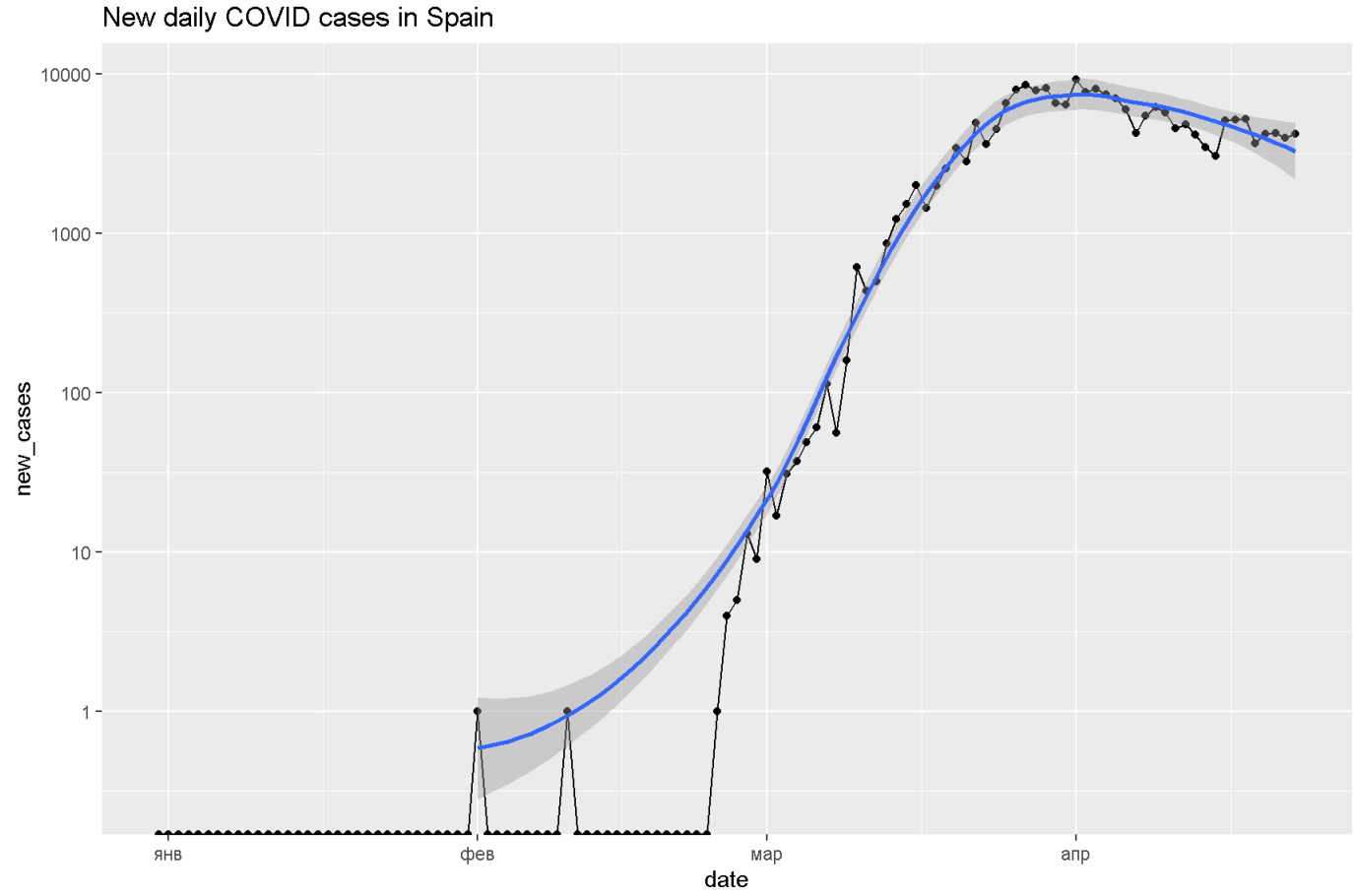


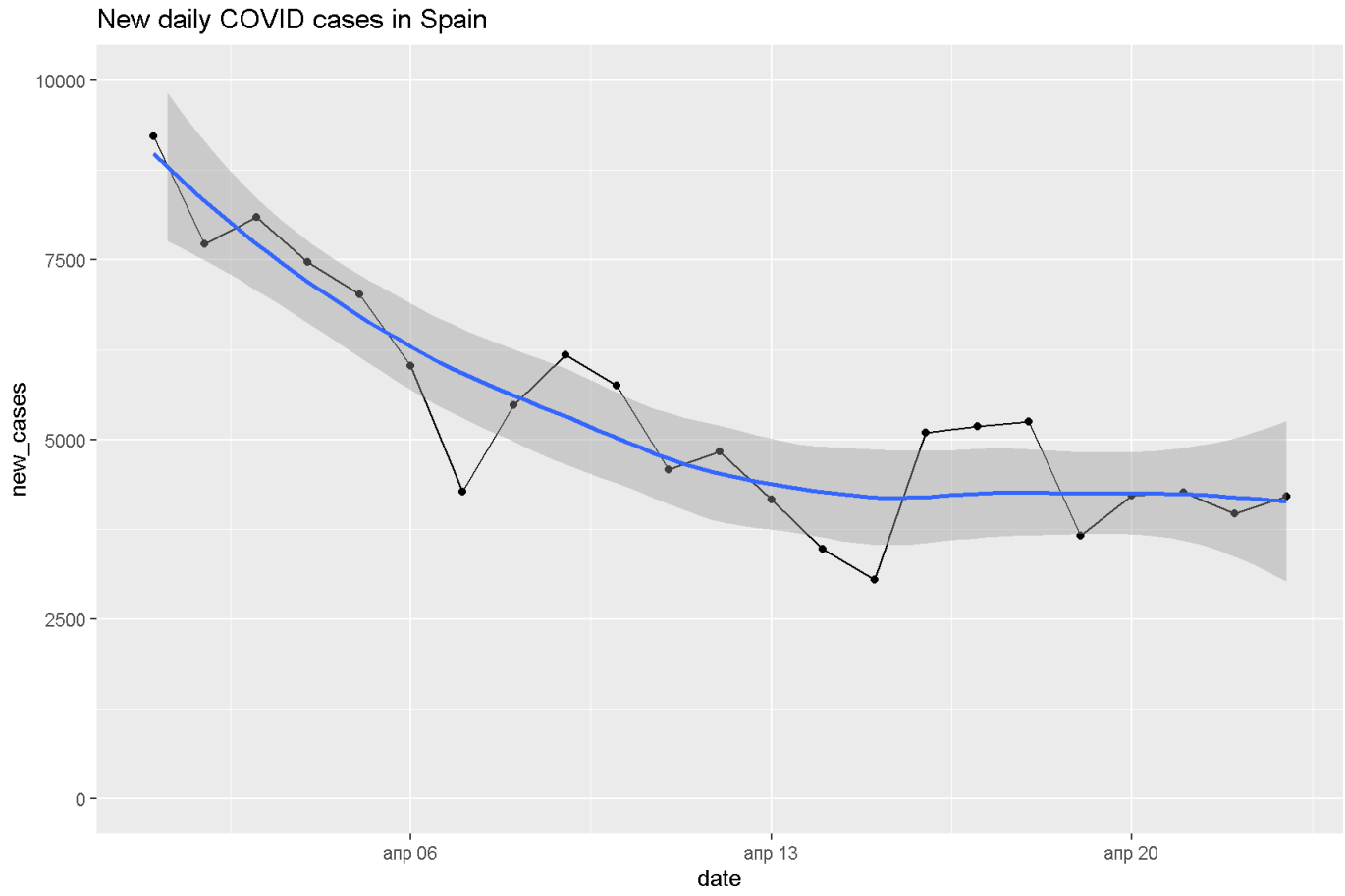

```
##
## Call:
## lm(formula = new_cases ~ I(date - as.Date("2020/04/01")), data = owid_covid_data[location ==
##     "Germany" & date >= as.Date("2020/04/01")])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1278.78  -596.45    57.56   676.68  1193.95
##
## Coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     5857.65     317.35  18.458 1.85e-14 ***
## I(date - as.Date("2020/04/01"))  -192.07      24.71  -7.774 1.30e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 785.9 on 21 degrees of freedom
## Multiple R-squared:  0.7421, Adjusted R-squared:  0.7299
## F-statistic: 60.44 on 1 and 21 DF,  p-value: 1.299e-07
```

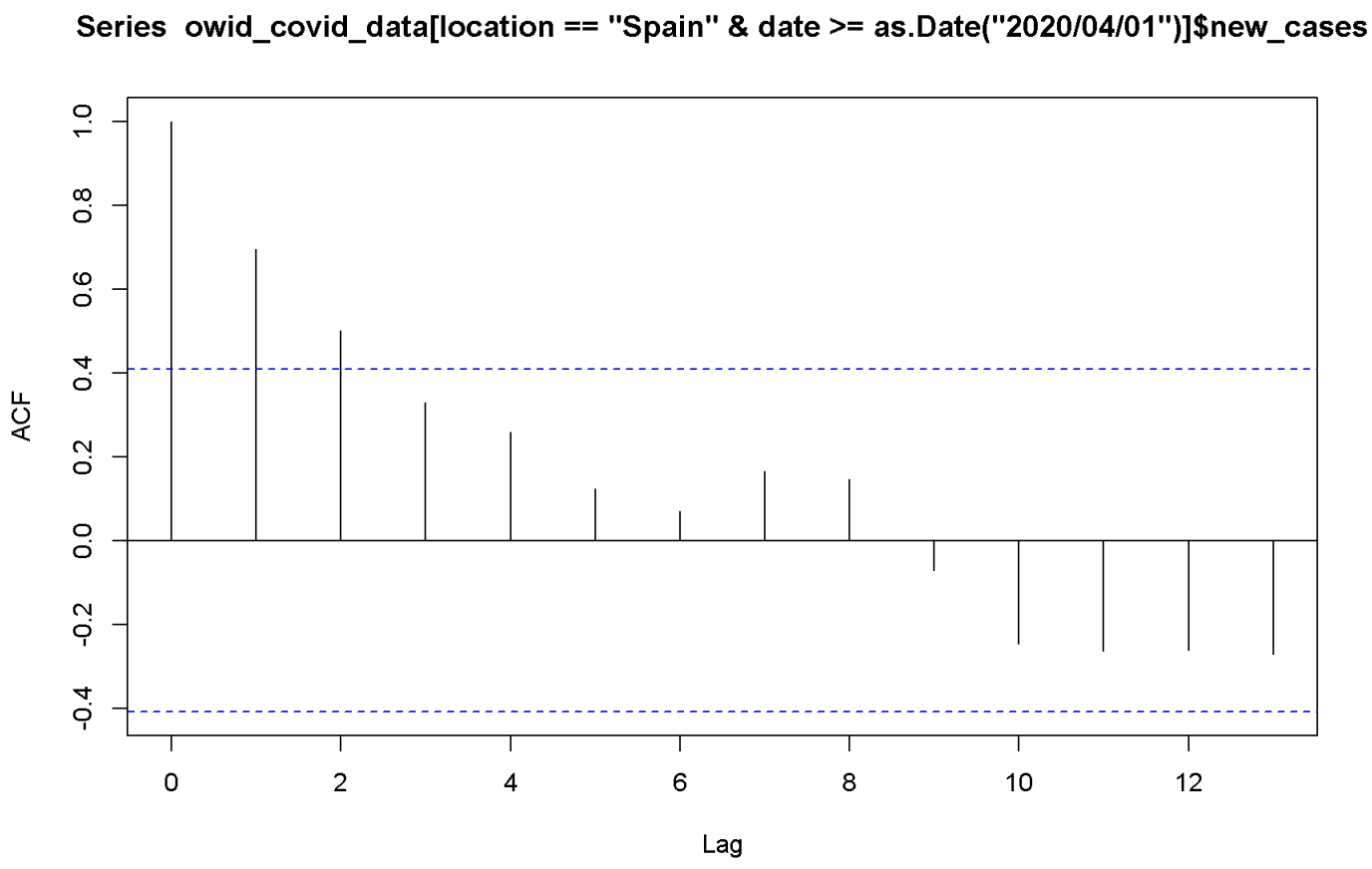
```
## [1] "Days left: -8.49793180087667"
```

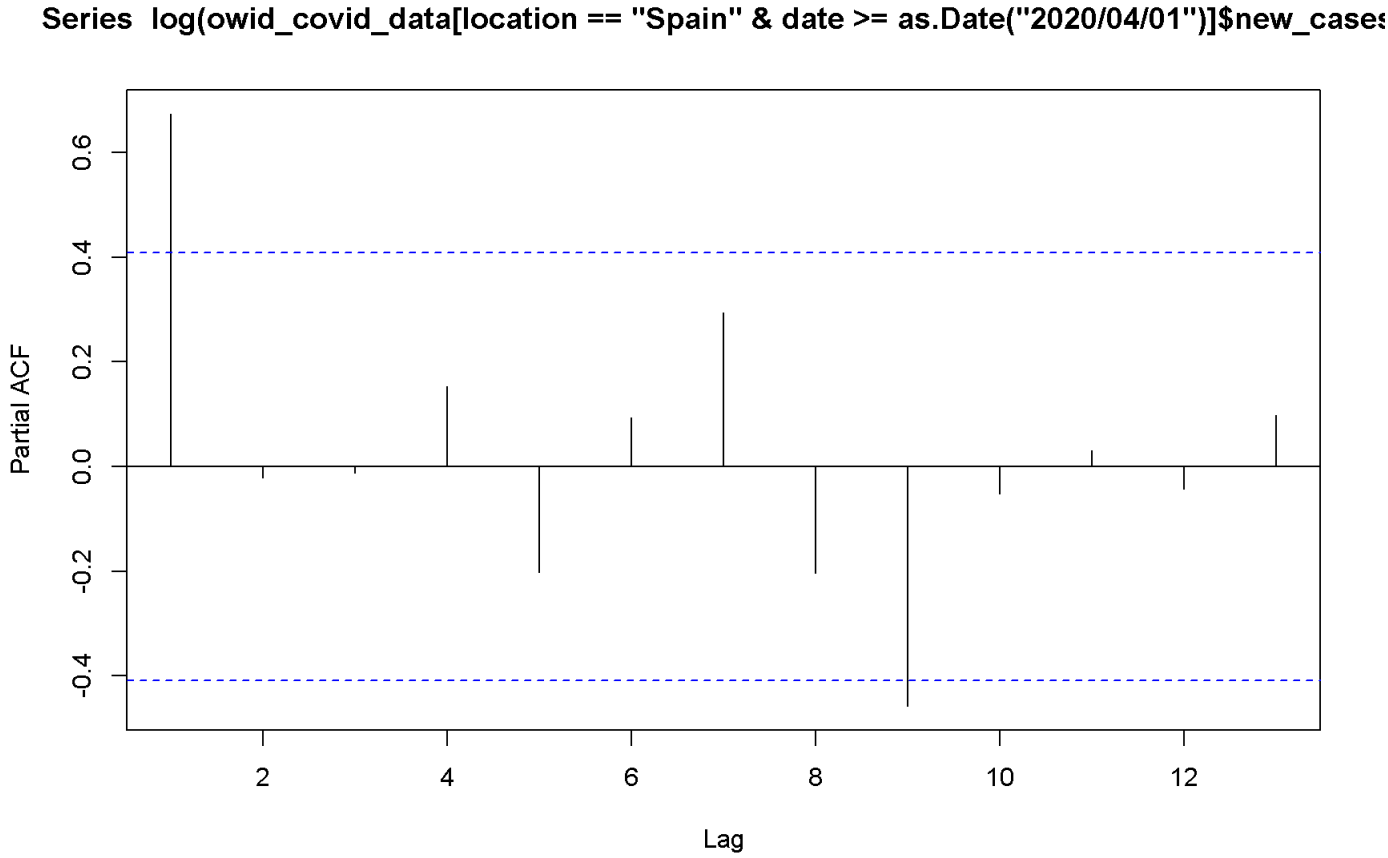

Series log(owid_covid_data[location == "Germany" & date >= as.Date("2020/04/01")]$new_cas
Partial ACF
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
2
4
6
8
10
12
Lag

Spain


New daily COVID cases in Spain
10000
1000
100
10
1
new_cases
янв
фев
мар
апр
date


New daily COVID cases in Spain
10000
7500
5000
2500
0
new_cases
апр 06
апр 13
апр 20
date

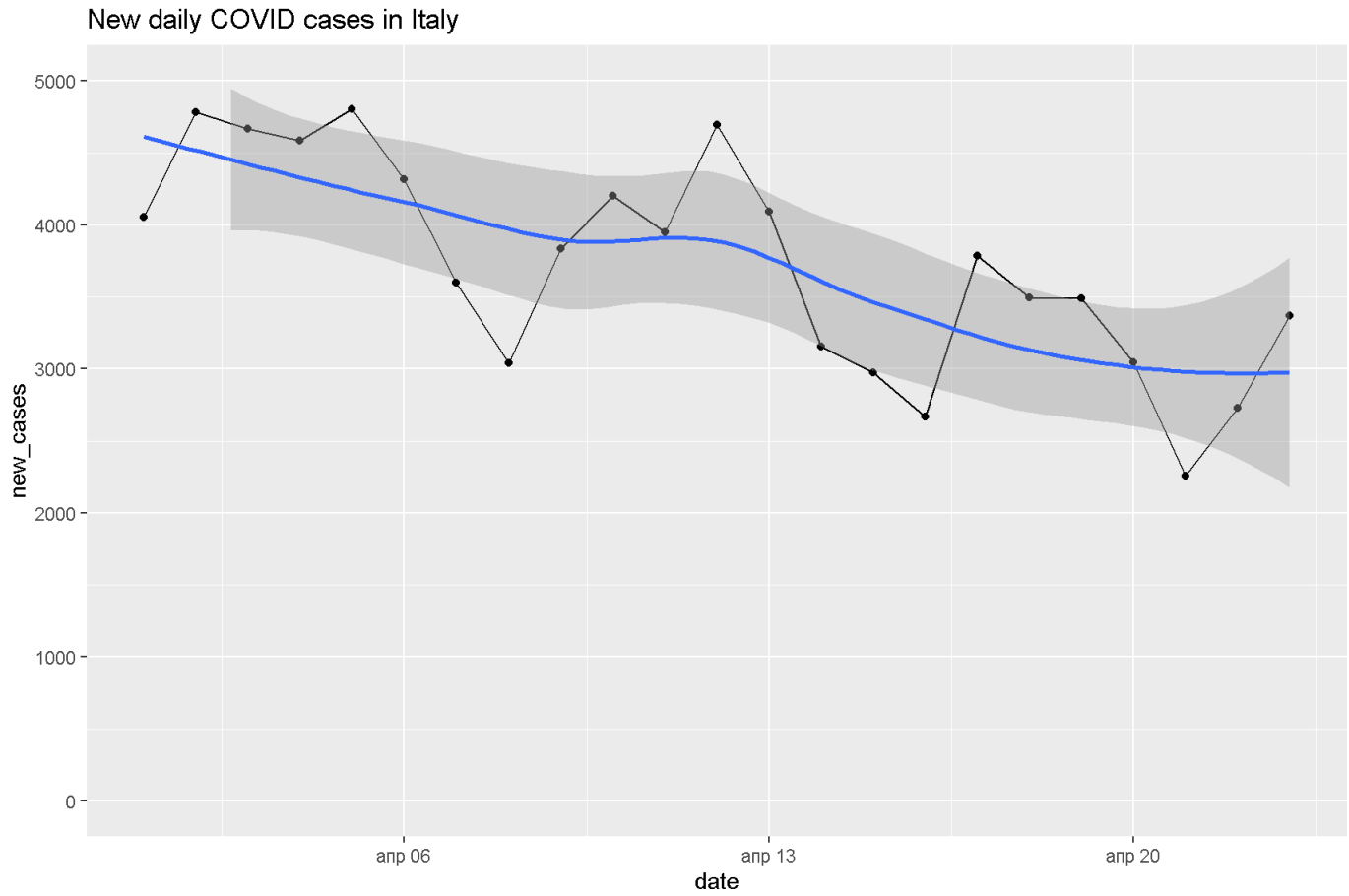

Series owid_covid_data[location == "Spain" & date >= as.Date("2020/04/01")]$new_cases
ACF
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
0
2
4
6
8
10
12
Lag




```
##
## Call:
## lm(formula = new_cases ~ I(date - as.Date("2020/04/01")), data = owid_covid_data[location ==
##     "Spain" & date >= as.Date("2020/04/01")])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2035.6  -583.2   336.4   608.0  1770.6
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    7451.42     403.58  18.463 1.84e-14 ***
## I(date - as.Date("2020/04/01"))  -190.47      31.42  -6.062 5.13e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 999.5 on 21 degrees of freedom
## Multiple R-squared:  0.6364, Adjusted R-squared:  0.6191
## F-statistic: 36.75 on 1 and 21 DF,  p-value: 5.135e-06
```

```
## [1] "Days left: 17.1213768773832"
```

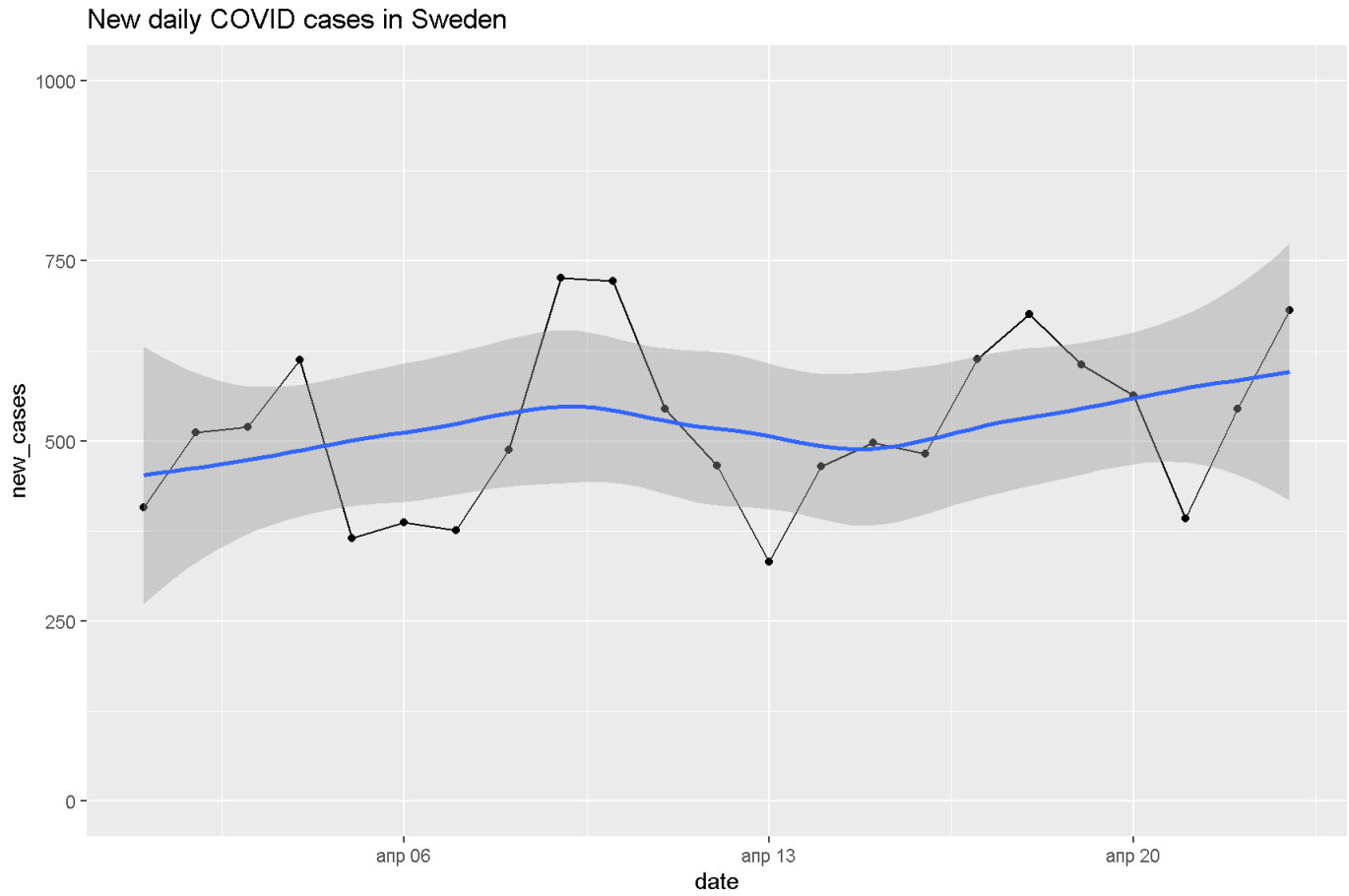
Italy




```
##
## Call:
## lm(formula = new_cases ~ I(date - as.Date("2020/04/01")), data = owid_covid_data[location ==
##     "Italy" & date >= as.Date("2020/04/01")])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1003.5  -457.9   149.4   327.1   972.8
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                    4604.88     207.63   22.18 4.70e-16 ***
## I(date - as.Date("2020/04/01"))   -80.33      16.16   -4.97 6.44e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 514.2 on 21 degrees of freedom
## Multiple R-squared:  0.5405, Adjusted R-squared:  0.5186
## F-statistic:  24.7 on 1 and 21 DF,  p-value: 6.437e-05
```

```
## [1] "Days left: 35.3223981204719"
```

Sweden




```
##
## Call:
## lm(formula = new_cases ~ I(date - as.Date("2020/04/01")), data = owid_covid_data[location ==
##     "Sweden" & date >= as.Date("2020/04/01")])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -193.63  -62.49  -13.96   59.20  220.11
##
## Coefficients:
##                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     466.424     46.018  10.136 1.53e-09 ***
## I(date - as.Date("2020/04/01"))    4.934      3.582   1.377    0.183
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 114 on 21 degrees of freedom
## Multiple R-squared:  0.08284,    Adjusted R-squared:  0.03916
## F-statistic: 1.897 on 1 and 21 DF,  p-value: 0.183
```

```
## [1] "Days left: -116.53655117164"
```