Robust

## R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

library(robust)

## Warning: package 'robust' was built under R version 4.0.5

## Loading required package: fit.models

## Warning: package 'fit.models' was built under R version 4.0.5

library(lmtest)

## Warning: package 'lmtest' was built under R version 4.0.5

## Loading required package: zoo

## Warning: package 'zoo' was built under R version 4.0.3

##   
## Attaching package: 'zoo'

## The following objects are masked from 'package:base':  
##   
## as.Date, as.Date.numeric

library(regclass)

## Warning: package 'regclass' was built under R version 4.0.5

## Loading required package: bestglm

## Warning: package 'bestglm' was built under R version 4.0.5

## Loading required package: leaps

## Warning: package 'leaps' was built under R version 4.0.3

## Loading required package: VGAM

## Warning: package 'VGAM' was built under R version 4.0.5

## Loading required package: stats4

## Loading required package: splines

##   
## Attaching package: 'VGAM'

## The following object is masked from 'package:lmtest':  
##   
## lrtest

## Loading required package: rpart

## Warning: package 'rpart' was built under R version 4.0.3

## Loading required package: randomForest

## Warning: package 'randomForest' was built under R version 4.0.3

## randomForest 4.6-14

## Type rfNews() to see new features/changes/bug fixes.

## Important regclass change from 1.3:  
## All functions that had a . in the name now have an \_  
## all.correlations -> all\_correlations, cor.demo -> cor\_demo, etc.

#loading data  
strfile="E:\\xampp\\htdocs\\ANN COVID-19\\ALL\_FINAL.csv"  
data\_covid\_IHSG=read.csv(file = strfile)

RobFM<-Close~.-Date-total\_boosters-positive\_rate-tests\_per\_case-stringency\_index-new\_vaccinations-cumulative\_all\_fully\_vaccinated-cumulative\_all\_effectively\_vaccinated-infection\_fatality-new\_tests

RobModel<-lmRob(RobFM,data = data\_covid\_IHSG)

summary(RobModel)

##   
## Call:  
## lmRob(formula = RobFM, data = data\_covid\_IHSG)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -607.224 -103.400 -2.418 86.628 469.881   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 7.258e+03 1.793e+02 40.483 < 2e-16 \*\*\*  
## new\_cases 3.605e-03 1.107e-03 3.256 0.00121 \*\*   
## new\_deaths 2.755e-01 3.883e-02 7.096 4.68e-12 \*\*\*  
## pneumonia\_mean -2.603e+03 2.180e+02 -11.939 < 2e-16 \*\*\*  
## reproduction\_rate -9.531e+01 3.594e+01 -2.652 0.00828 \*\*   
## mask\_use\_mean 4.842e+02 1.484e+02 3.263 0.00118 \*\*   
## mobility\_mean 1.944e+01 1.471e+00 13.218 < 2e-16 \*\*\*  
## total\_vaccinations -1.143e-06 2.491e-07 -4.588 5.73e-06 \*\*\*  
## cumulative\_all\_vaccinated 6.206e-06 4.281e-07 14.497 < 2e-16 \*\*\*  
## infection\_detection 3.256e+04 2.491e+03 13.073 < 2e-16 \*\*\*  
## infection\_hospitalization 2.983e+04 5.972e+03 4.994 8.29e-07 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 138.1 on 477 degrees of freedom  
## Multiple R-Squared: 0.6434   
##   
## Test for Bias:  
## statistic p-value  
## M-estimate 19.44 5.365e-02  
## LS-estimate 47.45 1.788e-06

RobModel$robust.control

## $tlo  
## [1] 1e-04  
##   
## $tua  
## [1] 1.5e-06  
##   
## $mxr  
## [1] 50  
##   
## $mxf  
## [1] 50  
##   
## $mxs  
## [1] 50  
##   
## $tl  
## [1] 1e-06  
##   
## $estim  
## [1] "final"  
##   
## $initial.alg  
## [1] "random"  
##   
## $final.alg  
## [1] "mm"  
##   
## $seed  
## [1] 1313  
##   
## $level  
## [1] 0.1  
##   
## $efficiency  
## [1] 0.9  
##   
## $weight  
## [1] "optimal" "optimal"  
##   
## $trace  
## [1] TRUE

VIF(RobModel)

## new\_cases new\_deaths pneumonia\_mean   
## 2.969309 3.031380 3.826892   
## reproduction\_rate mask\_use\_mean mobility\_mean   
## 2.263842 5.484075 3.136361   
## total\_vaccinations cumulative\_all\_vaccinated infection\_detection   
## 5.253539 10.636322 7.275772   
## infection\_hospitalization   
## 6.708000

plot(RobModel)

