

Vignette: Multiple Regression

AEA 2019 Demonstration: Letting yor data speak...

2019-11-14

Load the data

```
> load("D:/Rcmdr_AEA/2019/workshop/4_Association/SelfBlame.RData")
```

Correlation Matrix

```
> library(lattice, pos = 16)
> library(survival, pos = 16)
> library(Formula, pos = 16)
> library(ggplot2, pos = 16)
> library(Hmisc, pos = 16)
> rcorr.adjust(Dataset[, c("beckdepi", "mocscgl", "mohstglt", "mosexglt")],
+             use = "complete")
```

Pearson correlations:

	beckdepi	mocscgl	mohstglt	mosexglt
beckdepi	1.0000	0.0088	0.2005	0.0898
mocscgl	0.0088	1.0000	0.7034	0.7137
mohstglt	0.2005	0.7034	1.0000	0.6693
mosexglt	0.0898	0.7137	0.6693	1.0000

Number of observations: 195

Pairwise two-sided p-values:

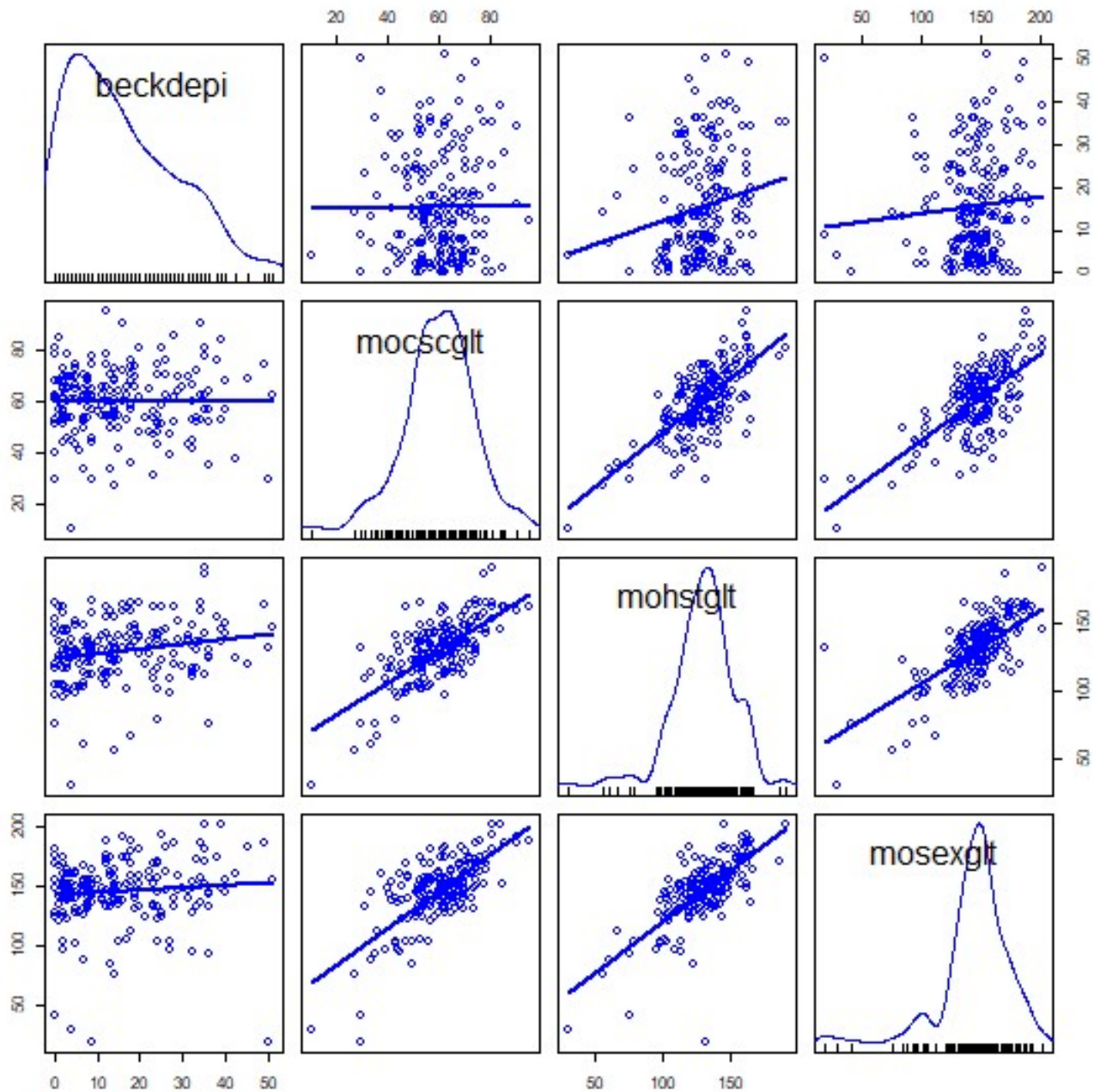
	beckdepi	mocscgl	mohstglt	mosexglt
beckdepi		0.9028	0.0050	0.2119
mocscgl	0.9028		<.0001	<.0001
mohstglt	0.0050	<.0001		<.0001
mosexglt	0.2119	<.0001	<.0001	

Adjusted p-values (Holm's method)

	beckdepi	mocscgl	mohstglt	mosexglt
beckdepi		0.9028	0.0149	0.4238
mocscgl	0.9028		<.0001	<.0001
mohstglt	0.0149	<.0001		<.0001
mosexglt	0.4238	<.0001	<.0001	

Scatterpot matrices

```
> scatterplotMatrix(~beckdepi + mocscglt + mohstglt + mosexglt, regLine = TRUE
+   diagonal = list(method = "density"), data = Dataset)
```



Multiple Regression model

```
> RegModel.1 <- lm(beckdepi ~ mocscglt + mohstglt + mosexglt, data = Dataset)
> summary(RegModel.1)
```

```
call:
lm(formula = beckdepi ~ mocscglt + mohstglt + mosexglt, data = Dataset)

Residuals:
    Min       1Q   Median       3Q      Max
-19.620  -8.989  -1.876   8.417  33.073

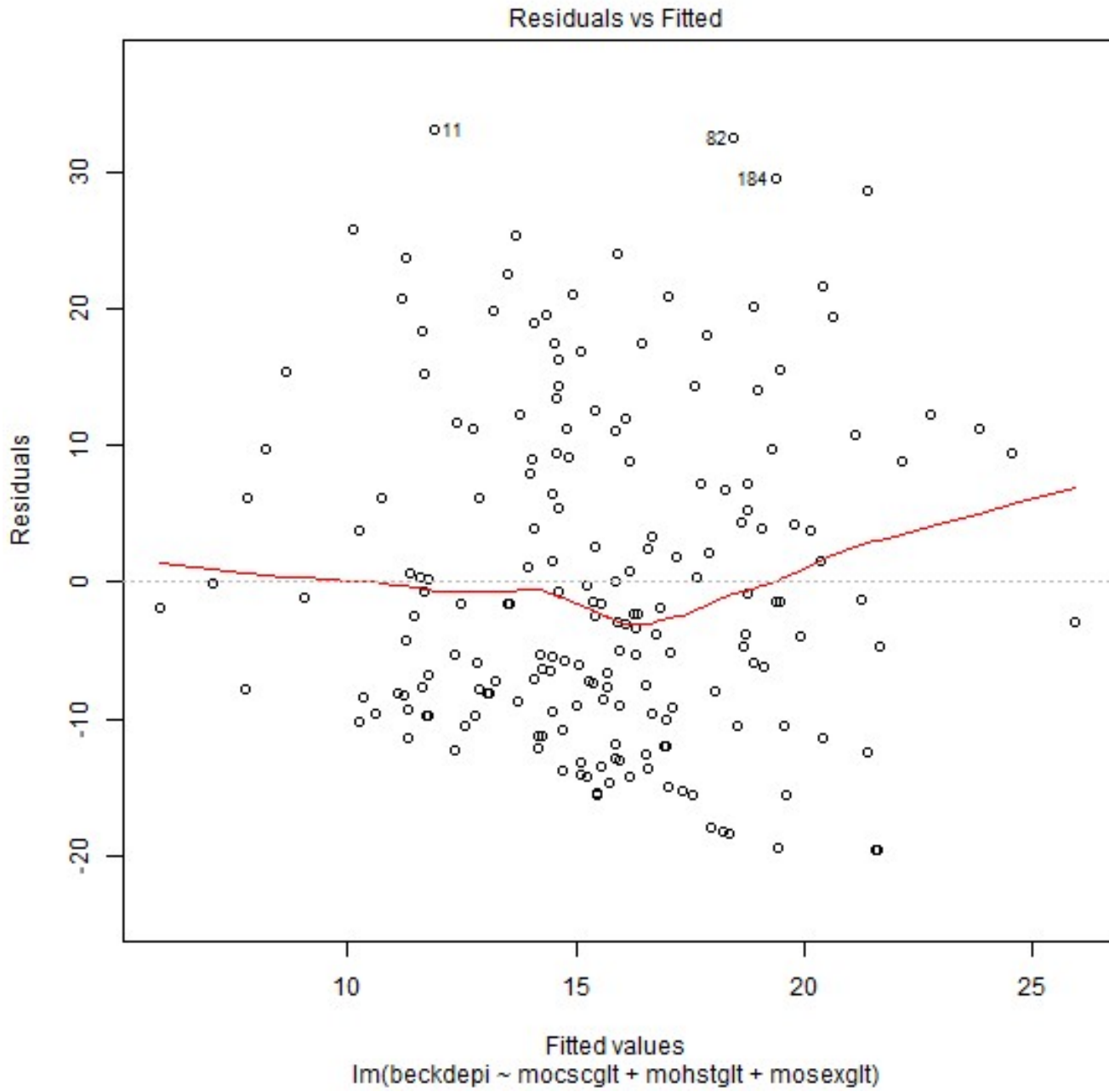
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)   2.03020    5.25894   0.386 0.699892
mocscglt     -0.26103    0.10172  -2.566 0.011050 *
mohstglt      0.20335    0.05712   3.560 0.000468 ***
mosexglt      0.01927    0.04609   0.418 0.676405
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

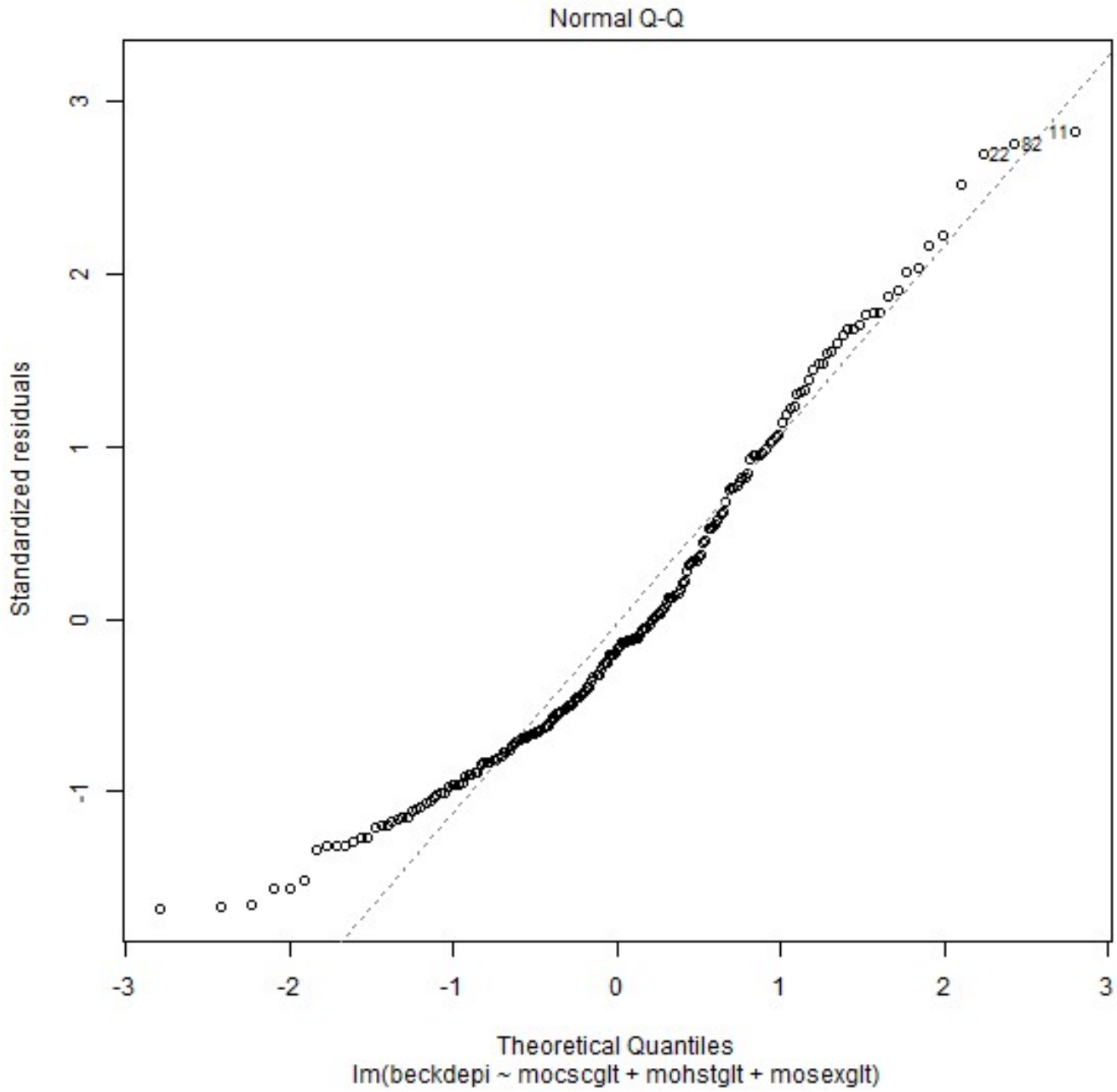
Residual standard error: 11.87 on 191 degrees of freedom
(1 observation deleted due to missingness)
Multiple R-squared:  0.07562,    Adjusted R-squared:  0.0611
F-statistic: 5.209 on 3 and 191 DF,  p-value: 0.001767
```

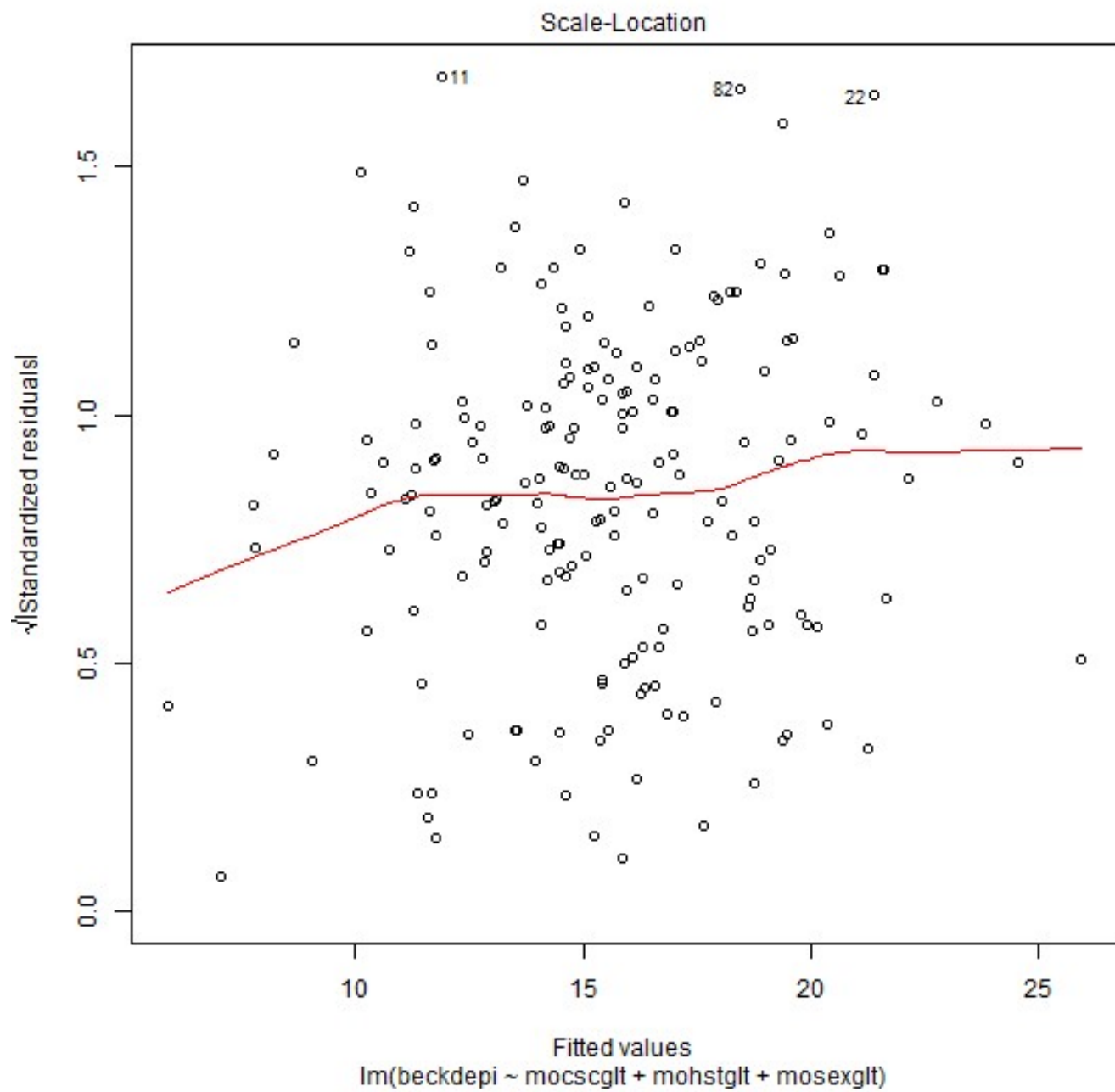
```
> oldpar <- par(oma = c(0, 0, 3, 0), mfrow = c(2, 2))
```

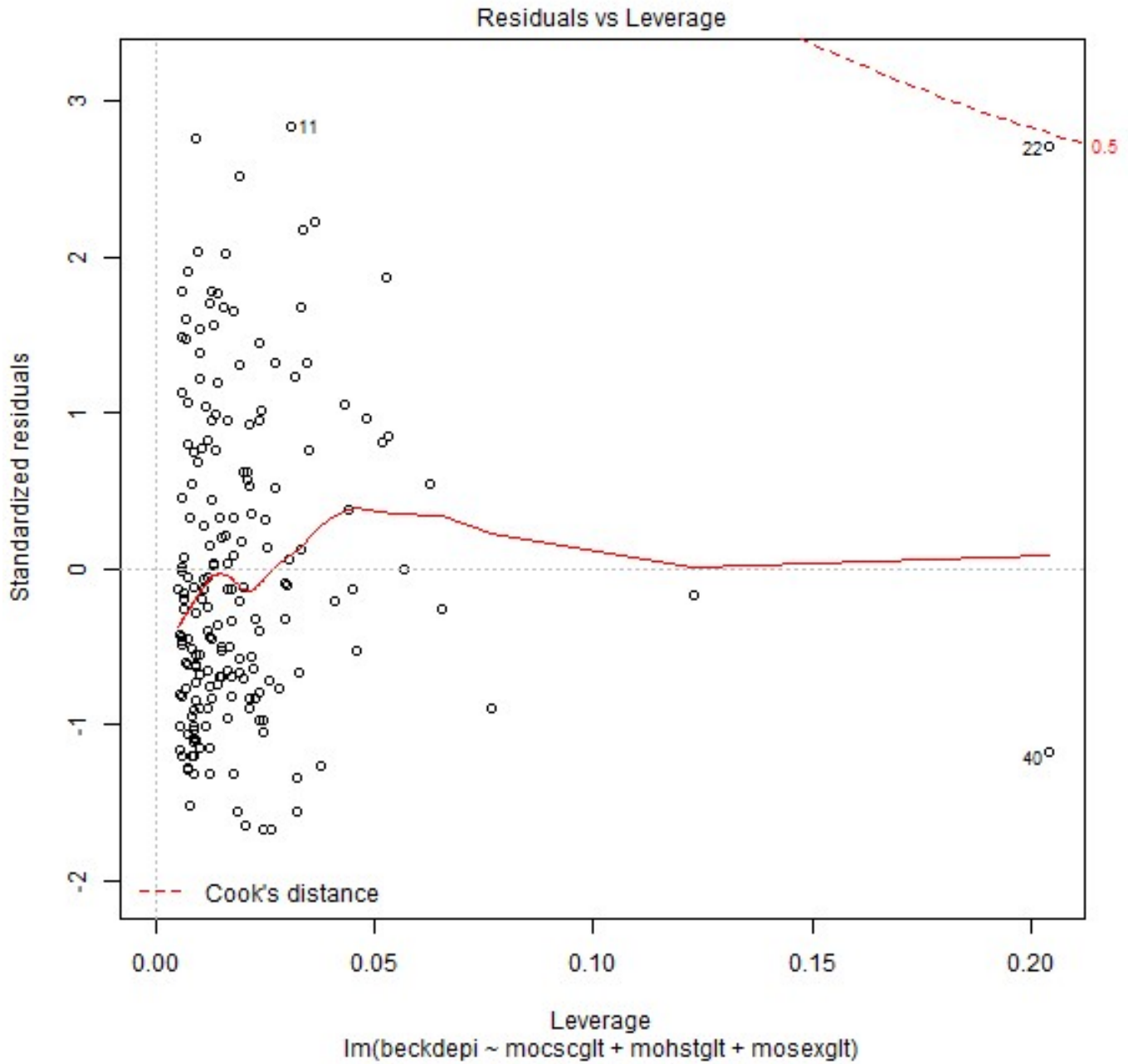
Diagnostic graphs

```
> plot(RegModel.1)
```









```
> par(oldpar)
```