

Stručný návod na práci s R portable

- <https://dl.dropbox.com/sh/gjtu7lvgznoter2/dON2cueaiP/R-Portable.exe>
- Volně dostupný statistický balík R s doplňkem RCommander a dalšími moduly
- Příkazy je možné vybírat z menu nebo psát do konzole R nebo RCommanderu

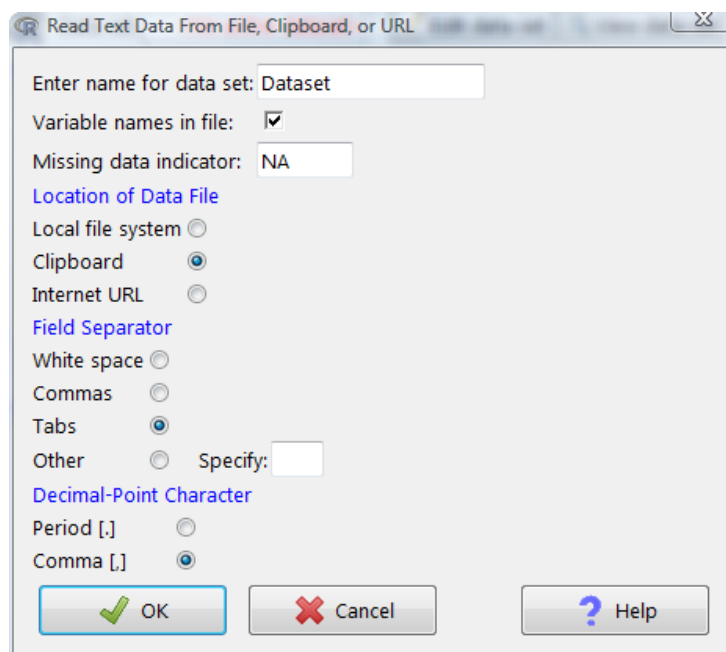
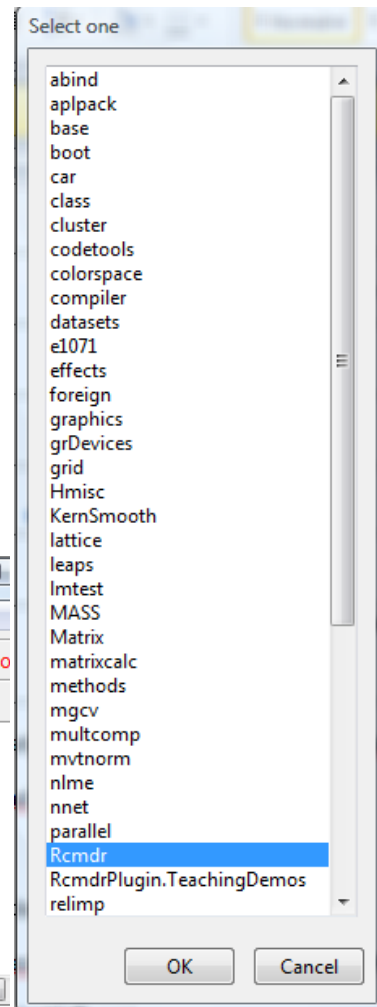
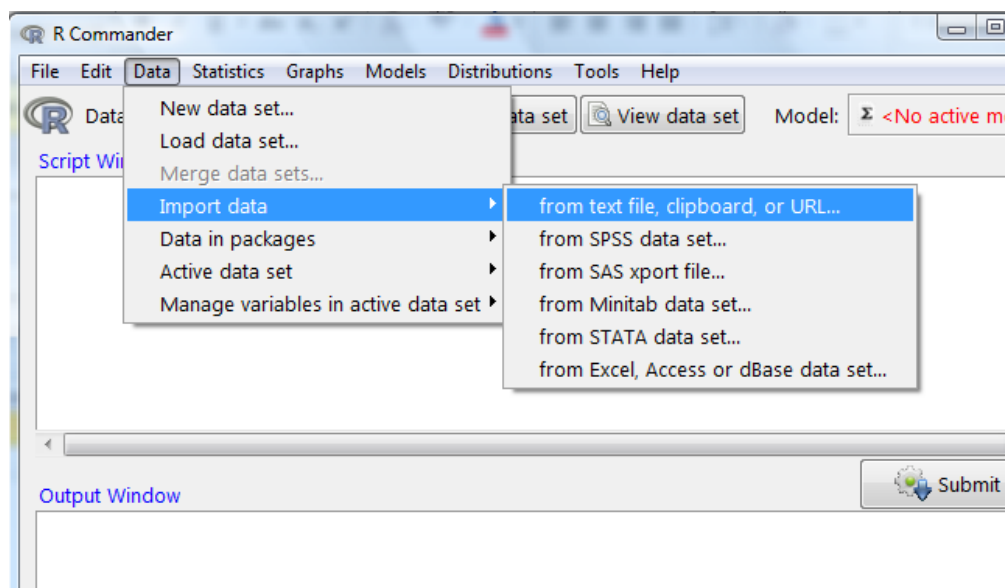
Rozbalit archiv na USB

Spustit R-Portable\R-Portable.exe

`library(Rcmdr)` ENTER nebo Packages/Load package... RCmdr

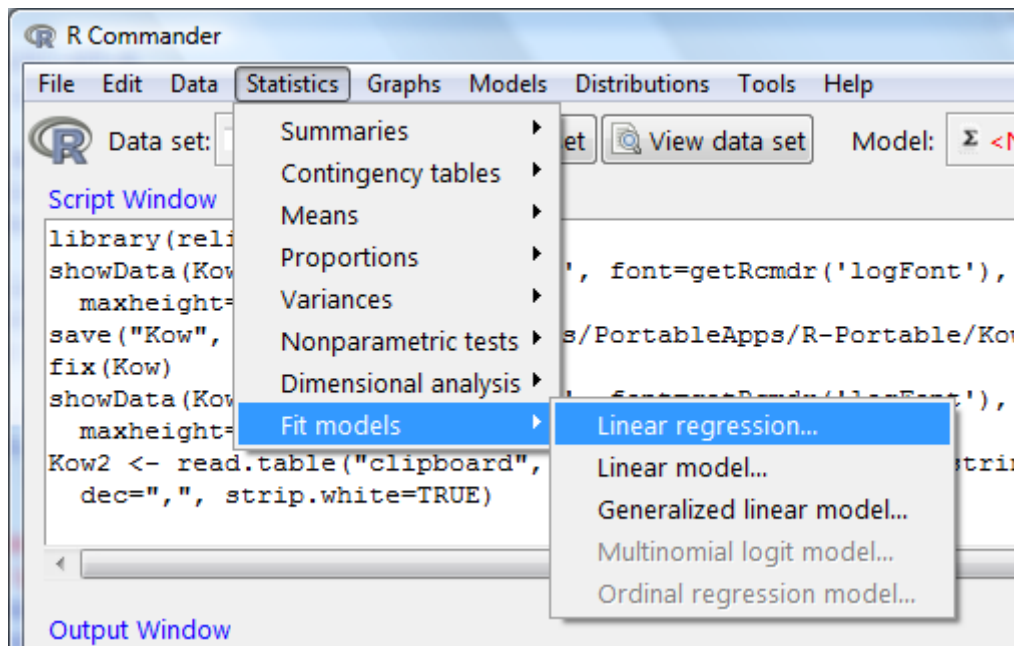
- data např. v Excelu je možné zkopírovat do schránky (CTRL+C)

Data/Import data... From text file, clipboard

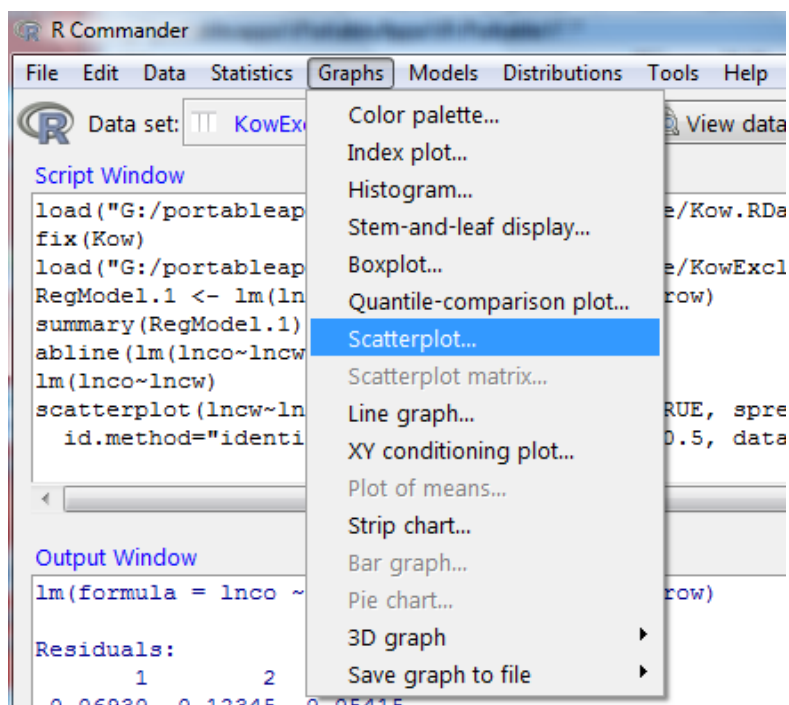


Lineární regrese

Statistics/Fit models – Linear regression...



Graphs/Scatterplot...



Scatterplot

x-variable (pick one)
Inco
Incw

y-variable (pick one)
Inco
Incw

Options

- Identify points
- Jitter x-variable
- Jitter y-variable
- Log x-axis
- Log y-axis
- Marginal boxplots
- Least-squares line
- Smooth line
- Show spread

Plotting Parameters

Plotting characters <auto>

Point size 1.0

Axis text size 1.0

Axis-labels text size 1.0

Span for smooth 50

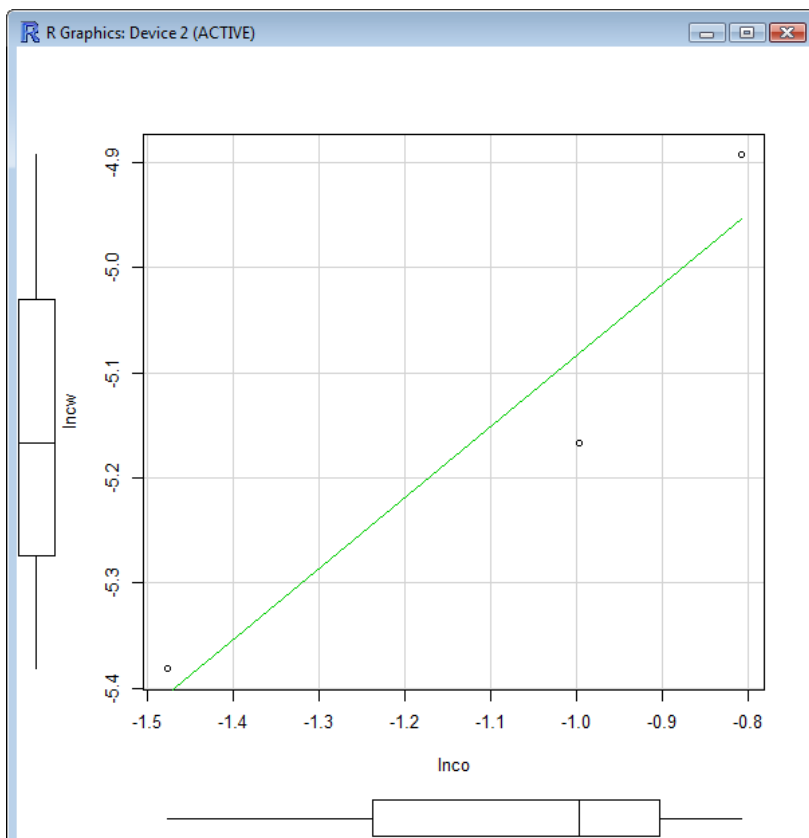
x-axis label <auto>

y-axis label <auto>

Subset expression <all valid cases>

Plot by groups...

OK Cancel Reset Help



Výstupy

Call:

```
lm(formula = lnc0 ~ lncw, data = KowExcludelstRow)
```

Residuals:

1	2	3
-0.06930	0.12345	-0.05415

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	5.7928	2.2531	2.571	0.236
lncw	1.3379	0.4374	3.059	0.201

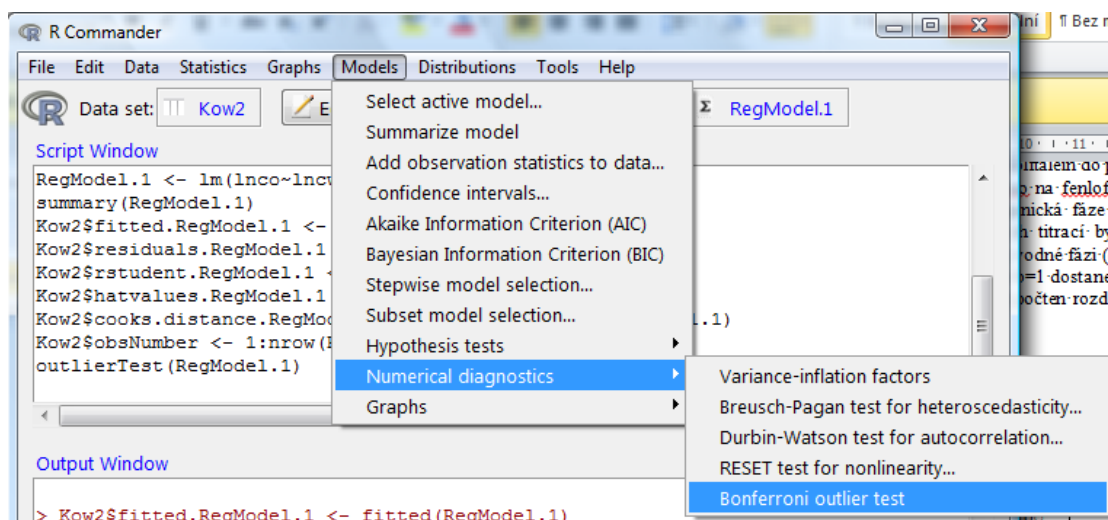
Residual standard error: 0.1516 on 1 degrees of freedom

Multiple R-squared: 0.9034, Adjusted R-squared: 0.8069

F-statistic: 9.356 on 1 and 1 DF, p-value: 0.2012

Odlehlá data

Models/ Numerical diagnostics – Bonferroni outlier test

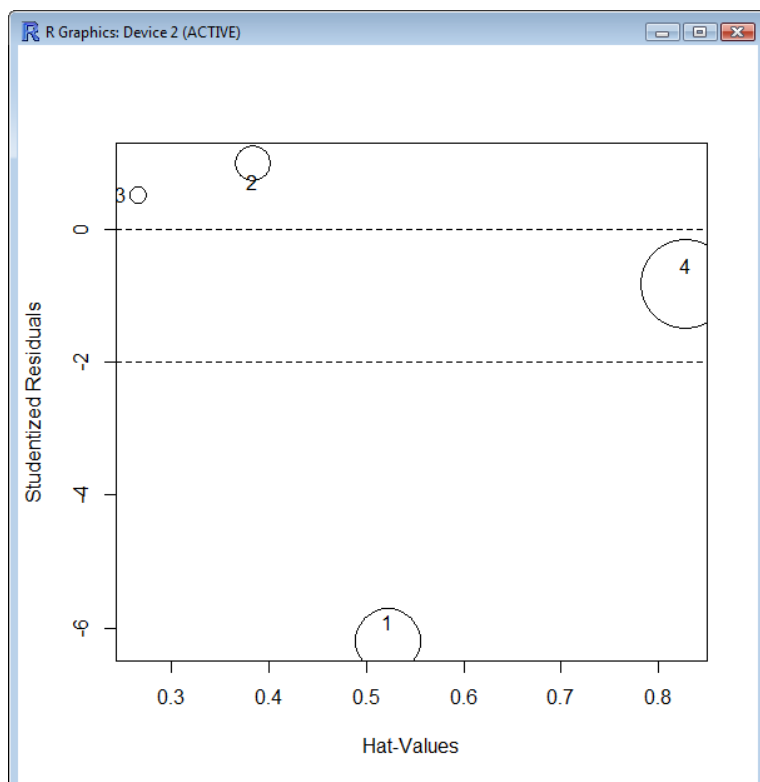


No Studentized residuals with Bonferonni $p < 0.05$

Largest $|rstudent|$:

	$rstudent$	unadjusted p-value	Bonferonni p
1	-6.201336	0.10178	0.40713

Models/Graphs – Influence plot



Diagnostika

R Commander interface showing the 'Models' menu. The menu options are:

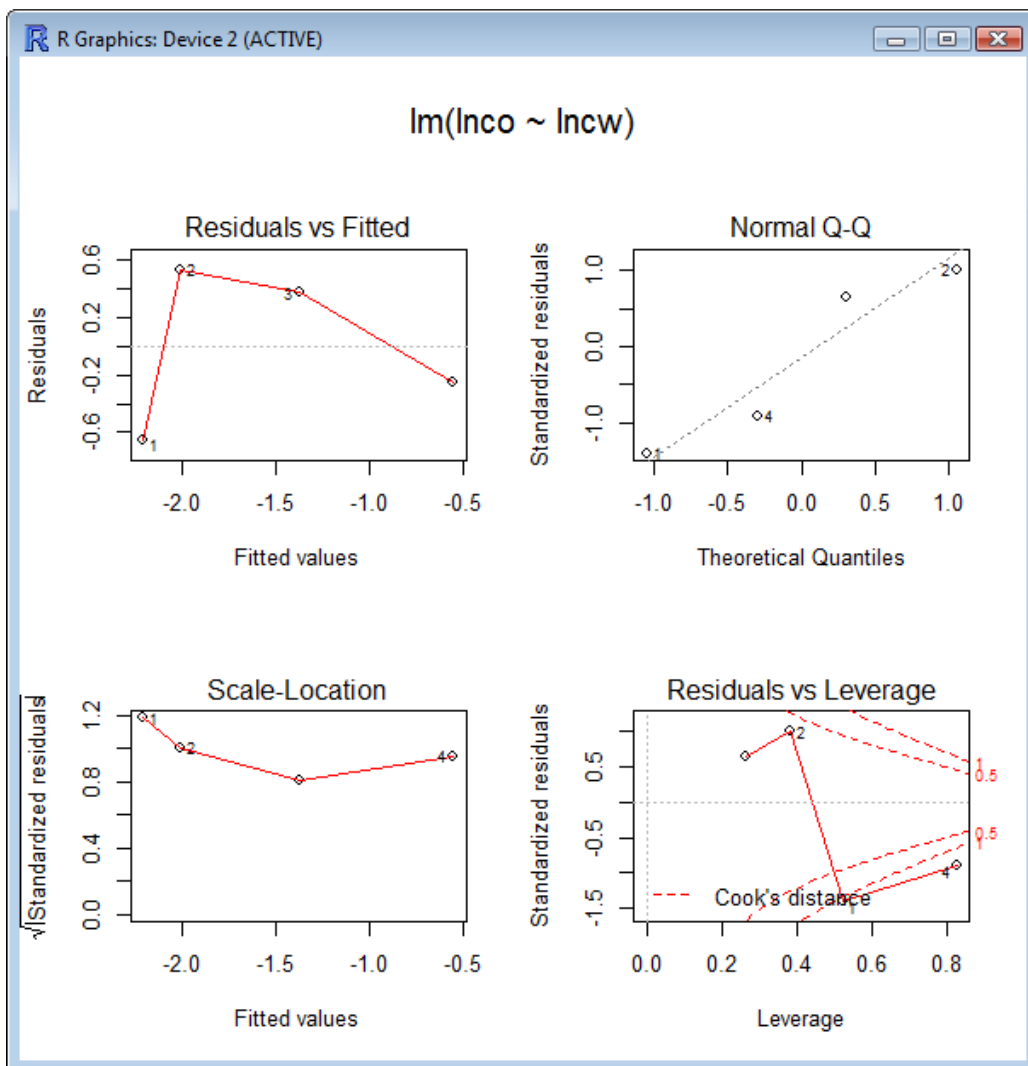
- Select active model...
- Summarize model
- Add observation statistics to data...
- Confidence intervals...
- Akaike Information Criterion (AIC)
- Bayesian Information Criterion (BIC)
- Stepwise model selection...
- Subset model selection...
- Hypothesis tests
- Numerical diagnostics
- Graphs
 - Basic diagnostic plots
 - Residual quantile-comparison plot...
 - Component+residual plots
 - Added-variable plots
 - Influence plot
 - Effect plots

The 'Script Window' contains the following R code:

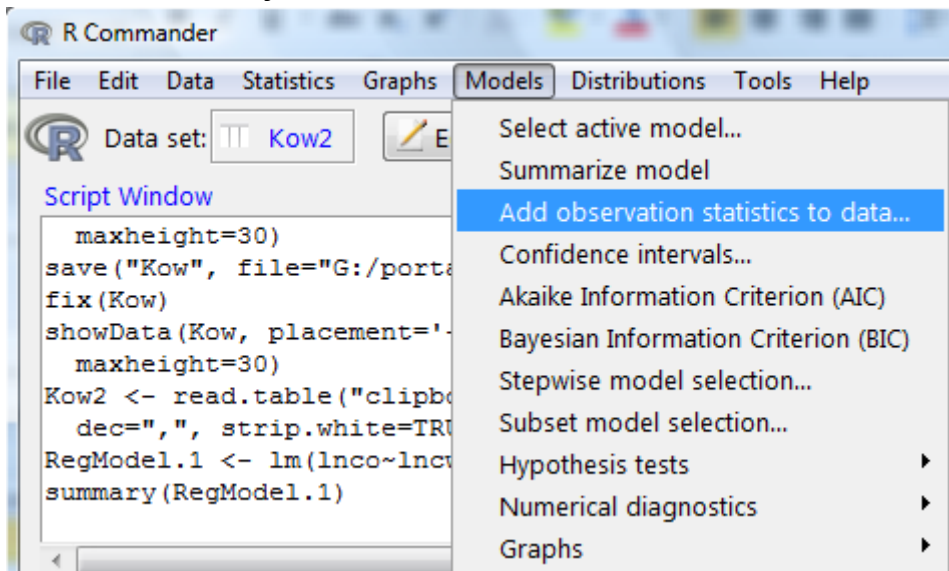
```
RegModel.1 <- lm(lncw~lncw)
summary(RegModel.1)
Kow2$fitted.RegModel.1 <-
Kow2$residuals.RegModel.1
Kow2$rstudent.RegModel.1 <-
Kow2$hatvalues.RegModel.1
Kow2$cooks.distance.RegModel.1
Kow2$obsNumber <- 1:nrow(Kow2)
outlierTest(RegModel.1)
```

The 'Output Window' shows the following R commands:

```
> Kow2$fitted.RegModel.1 <- fitted(RegModel.1)
> Kow2$residuals.RegModel.1 <- residuals(RegModel.1)
```

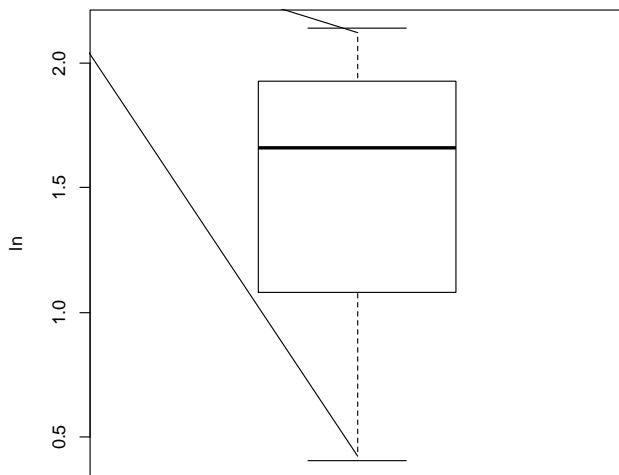


Přidání statistiky k datům



Krabicový graf

Graphs/Boxplot



Uložení všech výpočtů

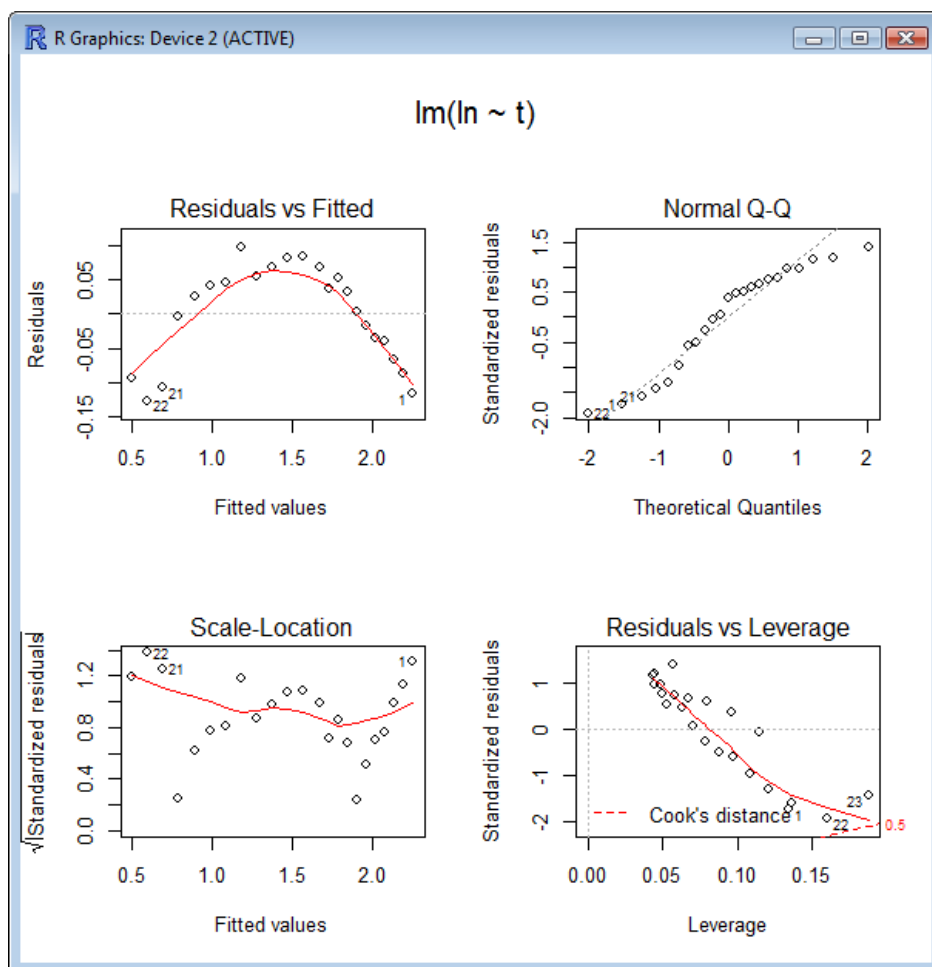
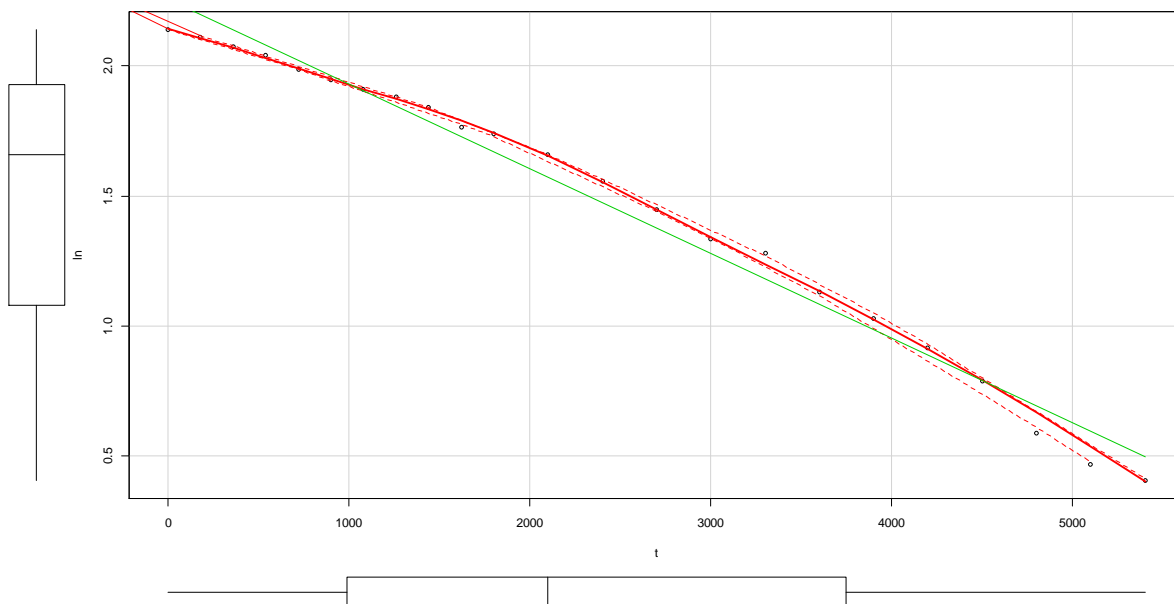
File/Save R workspace as...

Uložení pouze dat

Data/Active data set – Save active data set

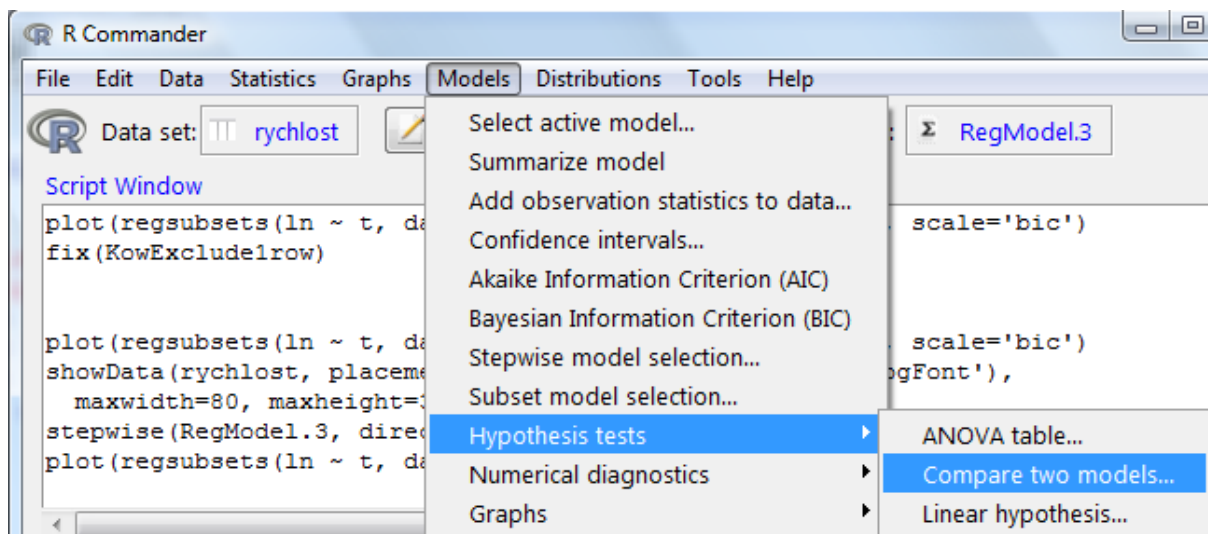
Dívejte se a přemýšlejte

Je závislost opravdu lineární?



Porovnání 2 modelů (metody, kalibrace)

Models/Hypothesis tests – Compare two models



Optimální model (nejmenší AIC)

Models/Akaike information criterion

```
> AIC(RegModel.1)
```

```
[1] -0.1022744
```

Užitečné knihovny

```
library(MethComp)
```

```
library(chemCal)
```

Různé (ještě nevyzkoušené)

```
library(Rcmdr)
```

```
library(MethComp)
```

```
Deming(Incw, Inco)
```

```
plot(Inco, Incw)
```

```
abline(lm(Incw~ Inco))
```

```
ir <- coef(lm(Incw~ Inco))
```

```
abline(-ir[1]/ir[2],1/ir[2])
```

```
abline(Deming(x,y,sdr=2)[1:2],col="red")
```

```
abline(Deming(x,y,sdr=10)[1:2],col="blue")
```

```
# Comparing classical regression and "Deming extreme"
```

```
summary(lm(Incw~ Inco))
```

```
Deming(x,y,vr=1000000)
```

```
library(chemCal)
```

```
calplot(Incw~Inco, xlim = c("auto", "auto"), ylim = c("auto", "auto"),
```

```
xlab = "Concentration", ylab = "Response", alpha=0.05, varfunc = NULL)
```

```
calplot(object, xlim = c("auto", "auto"), ylim = c("auto", "auto"),
```

```
xlab = "Concentration", ylab = "Response", alpha=0.05, varfunc = NULL)
```