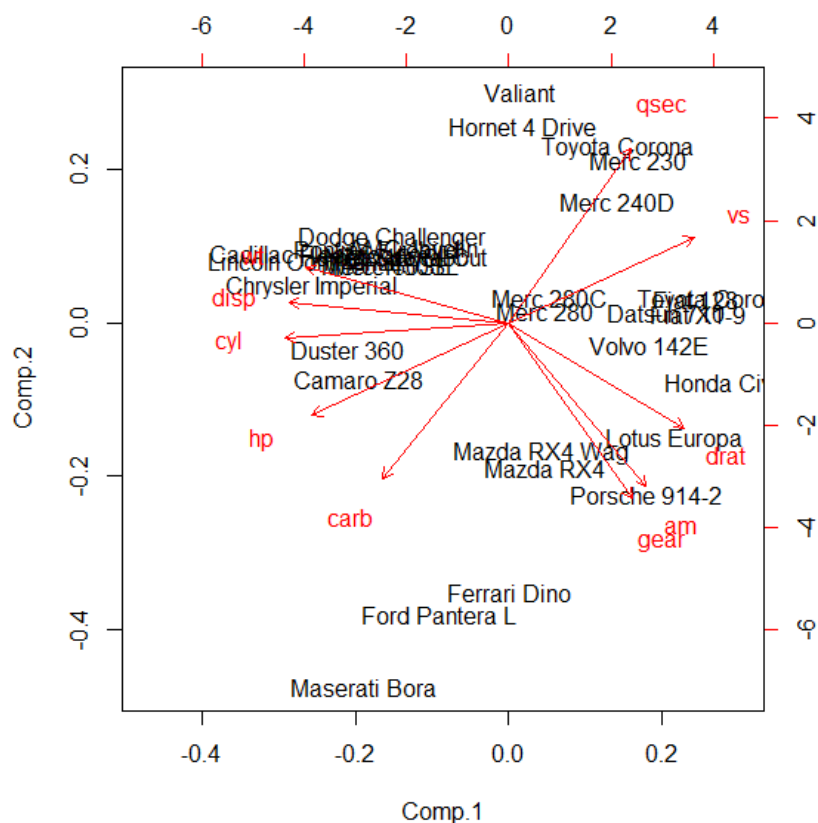
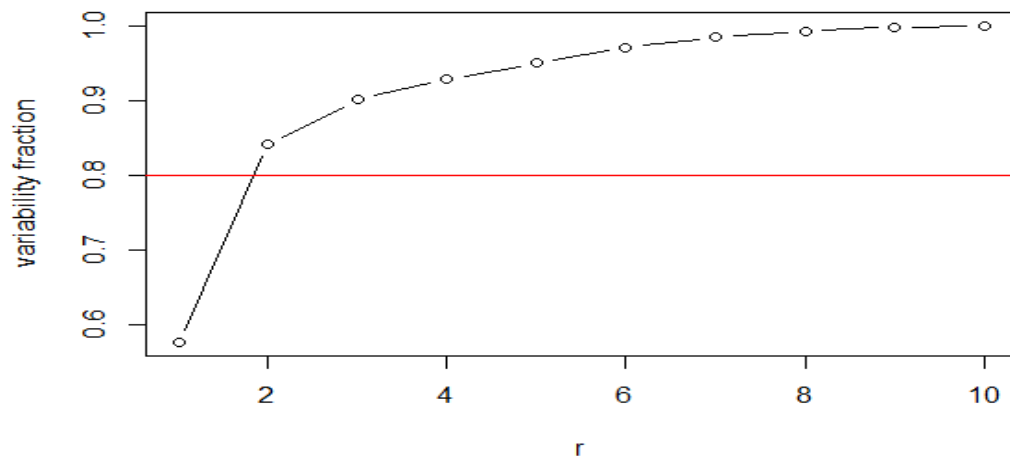


Některé mezivýsledky z 12. cvičení

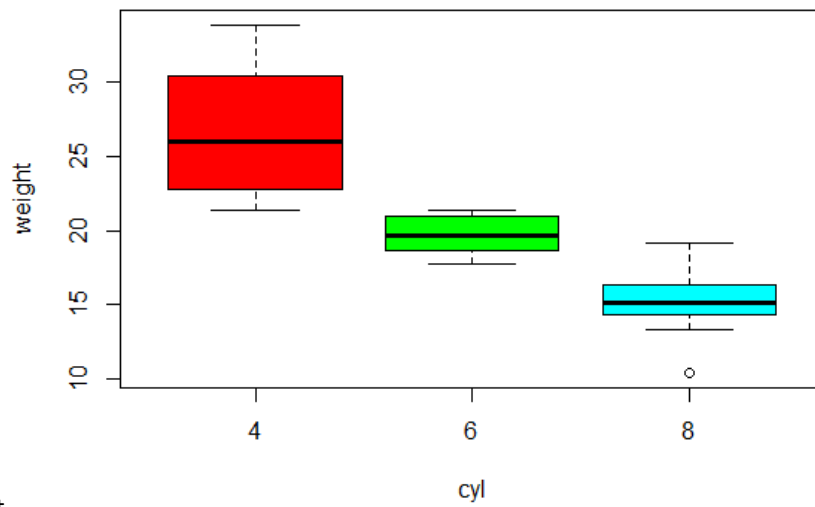
mtcars

mpg	spotřeba paliva osobních automobil (počet mil/galon)
cyl	počet válců
disp	objem válců (kubické palce)
hp	výkon (počet koní)
drat	převodový poměr zadní nápravy
wt	hmotnost vozidla (kilo-libry)
qsec	zrychlení (počet sekund z 0 na 1/4 míle)
vs	uspořádání válců (1 vedle sebe, 0 za sebou)
am	převodovka (0 automat, 1 manuál)
gear	počet převodových stupňů
carb	počet karburátorů





- Výkon na počtu válců



KW-test

```
$statistics
  chisq    p.chisq
25.74616 2.566217e-06
```

`shapiro.test(tabulka$mpg)`

Shapiro-wilk normality test

```
data: tabulka$mpg
w = 0.9476, p-value = 0.1229
```

`shapiro.test(tabulka$disp)`

Shapiro-wilk normality test

```
data: tabulka$disp  
W = 0.92, p-value = 0.02081
```

```
> shapiro.test(tabulka$hp)
```

Shapiro-wilk normality test

```
data: tabulka$hp  
W = 0.9334, p-value = 0.04881
```

```
shapiro.test(tabulka$drat)
```

Shapiro-wilk normality test

```
data: tabulka$drat  
W = 0.9459, p-value = 0.1101
```

```
shapiro.test(tabulka$wt)
```

Shapiro-wilk normality test

```
data: tabulka$wt  
W = 0.9433, p-value = 0.09265
```

```
shapiro.test(tabulka$qsec)
```

Shapiro-wilk normality test

```
data: tabulka$qsec  
W = 0.9733, p-value = 0.5935
```

```
cor.test(tabulka$disp, tabulka$mpg, method="spearman")
```

Spearman's rank correlation rho

```
data: tabulka$disp and tabulka$mpg  
S = 10414.86, p-value = 6.37e-13  
alternative hypothesis: true rho is not equal to 0  
sample estimates:  
rho  
-0.9088824
```

```
cor.test(tabulka$hp, tabulka$mpg, method="spearman")
```

Spearman's rank correlation rho

```
data: tabulka$hp and tabulka$mpg  
S = 10337.29, p-value = 5.086e-12  
alternative hypothesis: true rho is not equal to 0  
sample estimates:  
rho  
-0.8946646
```

```
cor.test(tabulka$hp, tabulka$mpg)
```

Pearson's product-moment correlation

```
data: tabulka$hp and tabulka$mpg  
t = -6.7424, df = 30, p-value = 1.788e-07  
alternative hypothesis: true correlation is not equal to 0  
95 percent confidence interval:  
-0.8852686 -0.5860994  
sample estimates:  
cor  
-0.7761684
```

```
cor.test(tabulka$wt, tabulka$mpg)
```

```
Pearson's product-moment correlation
```

```
data: tabulka$wt and tabulka$mpg
t = -9.559, df = 30, p-value = 1.294e-10
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.9338264 -0.7440872
sample estimates:
      cor
-0.8676594
```

```
cor.test(tabulka$qsec, tabulka$mpg)
```

```
Pearson's product-moment correlation
```

```
data: tabulka$qsec and tabulka$mpg
t = 2.5252, df = 30, p-value = 0.01708
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.08195487 0.66961864
sample estimates:
      cor
0.418684
```

```
t.test(tabulka$mpg[tabulka$vs==0], tabulka$mpg[tabulka$vs==1])
```

```
welch Two Sample t-test
```

```
data: tabulka$mpg[tabulka$vs == 0] and tabulka$mpg[tabulka$vs == 1]
t = -4.6671, df = 22.716, p-value = 0.0001098
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -11.462508 -4.418445
sample estimates:
mean of x mean of y
 16.61667  24.55714
```

```
> shapiro.test(tabulka$mpg[tabulka$vs==0])
```

```
Shapiro-wilk normality test
```

```
data: tabulka$mpg[tabulka$vs == 0]
W = 0.9515, p-value = 0.4491
```

```
> shapiro.test(tabulka$mpg[tabulka$vs==1])
```

```
Shapiro-wilk normality test
```

```
data: tabulka$mpg[tabulka$vs == 1]
W = 0.9117, p-value = 0.1666
```

```
shapiro.test(tabulka$mpg[tabulka$am==1])
```

```
Shapiro-wilk normality test
```

```
data: tabulka$mpg[tabulka$am == 1]
W = 0.9458, p-value = 0.5363
```

```
> shapiro.test(tabulka$mpg[tabulka$am==0])
```

```
Shapiro-wilk normality test
```

```
data: tabulka$mpg[tabulka$am == 0]
w = 0.9768, p-value = 0.8987
```

```
> t.test(tabulka$mpg[tabulka$am==0], tabulka$mpg[tabulka$am==1])
```

```
welch Two Sample t-test
```

```
data: tabulka$mpg[tabulka$am == 0] and tabulka$mpg[tabulka$am == 1]
t = -3.7671, df = 18.332, p-value = 0.001374
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-11.280194 -3.209684
sample estimates:
mean of x mean of y
17.14737 24.39231
```

```
KWTest <- kruskal (tabulka$mpg, tabulka$gear)
```

```
> KWTest
```

```
$statistics
      chisq      p.chisq
14.32335 0.0007757547
```

```
$parameters
  Df ntr t.value
  2   3 2.04523
```

```
$means
  tabulka$mpg      std  r  Min  Max
3  16.10667 3.371618 15 10.4 21.5
4  24.53333 5.276764 12 17.8 33.9
5  21.38000 6.658979  5 15.0 30.4
```

```
$rankMeans
  tabulka$gear  tabulka$mpg  r
1             3    10.13333 15
2             4    23.79167 12
3             5    18.10000  5
```

```
$comparison
NULL
```

```
$groups
  trt  means M
1   4 23.79167 a
2   5 18.10000 a
3   3 10.13333 b
```

```
KWTest <- kruskal (tabulka$mpg, tabulka$carb)
```

```
> KWTest
```

```
$statistics
      chisq      p.chisq
15.94149 0.007013126
```

```
$parameters
  Df ntr t.value
  5   6 2.055529
```

```
$means
  tabulka$mpg      std  r  Min  Max
1  25.34286 6.001349  7 18.1 33.9
2  22.40000 5.472152 10 15.2 30.4
3  16.30000 1.053565  3 15.2 17.3
4  15.79000 3.911081 10 10.4 21.0
6  19.70000      NA  1 19.7 19.7
8  15.00000      NA  1 15.0 15.0
```

```
$rankMeans
```

	tabulka\$carb	tabulka\$mpg	r
1	1	24.85714	7
2	2	20.60000	10
3	3	10.16667	3
4	4	9.35000	10
5	6	18.00000	1
6	8	6.00000	1

\$comparison

NULL

\$groups

	trt	means	M
1	1	24.85714	a
2	2	20.60000	a
3	6	18.00000	ab
4	3	10.16667	b
5	4	9.35000	b
6	8	6.00000	b