One-Way ANOVA with R

- http://rtutorialseries.blogspot.de/
- One-Way Omnibus ANOVA:

```
> anova(lm(Values ~ Group, dataOneWay))
Analysis of Variance Table

Response: Values
          Df Sum Sq Mean Sq F value    Pr(>F)
Group      1     60  60.000  64.444 5.503e-11 ***
Residuals 58     54   0.931
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```


R: Two-Way ANOVA

- Two-Way Omnibus ANOVA:
  - anova(lm(Values ~ Group * Gender, dataTwoWay))

```
> anova(lm(Values ~ Group * Gender, dataTwoWay))
Analysis of Variance Table

Response: Values
             Df Sum Sq Mean Sq F value  Pr(>F)
Group         1 60.000  60.000 67.9245 3.1e-11 ***
Gender        1  0.267   0.267  0.3019 0.58489
Group:Gender  1  4.267   4.267  4.8302 0.03212 *
Residuals    56 49.467   0.883
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

R: t-Test

```
> shapiro.test(rt)

 Shapiro-Wilk normality test

data:  rt
W = 0.9472, p-value = 0.5559
```

```
> input <- read.csv("G:/work/lehre/EMCS/rt.csv", sep=";", dec=",")
> rt <- input['time']
> rt1 <- subset(input,group==1)['time']
> rt2 <- subset(input,group==2)['time']
> t.test(rt1, rt2)

 Welch Two Sample t-test

data:  rt1 and rt2
t = 1.5222, df = 10.566, p-value = 0.1573
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -5.095727 27.583584
sample estimates:
mean of x mean of y
 50.74243  39.49850
```


R: Mann-Whitney-U Test

```
> wilcox.test(rt1,rt2,paired=FALSE)

 Wilcoxon rank sum test

data:  rt1 and rt2
W = 31, p-value = 0.1807
alternative hypothesis: true location shift is not equal to 0
```

R: Chi^2

- http://ww2.coastal.edu/kingw/statistics/R-tutorials/independ.html

```
> row1 = c(91,90,51)                    # or col1 = c(91,150,109)
> row2 = c(150,200,155)                 # and col2 = c(90,200,198)
> row3 = c(109,198,172)                 # and col3 = c(51,155,172)
> data.table = rbind(row1,row2,row3)    # and data.table = cbind(col1,col2,col3)
> data.table
     [,1] [,2] [,3]
row1   91   90   51
row2  150  200  155
row3  109  198  172
> chisq.test(data.table)

        Pearson's Chi-squared test

data:  data.table
X-squared = 25.086, df = 4, p-value = 4.835e-05
```


R: Correlation

```
> cor.test(rt,rtTask2, method="pearson")

 Pearson's product-moment correlation

data:  rt and rtTask2
t = 4.6652, df = 11, p-value = 0.0006878
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.4792664 0.9426838
sample estimates:
      cor
0.8150282
```

R: Correlation

```
> cor.test(rt,rtTask2, method="spearman")

 Spearman's rank correlation rho

data:  rt and rtTask2
S = 102.9219, p-value = 0.005786
alternative hypothesis: true rho is not equal to 0
sample estimates:
      rho
0.7172475

Warning message:
In cor.test.default(rt, rtTask2, method = "spearman") :
  Kann exakten p-Wert bei Bindungen nicht berechnen
>
```

	A	B	C	D	E
1	probCode	group	time	time2	
2	ATM	1	42,744	52	
3	BQV	1	60,1	42	
4	cno	1	30,139	40	
5	ikx	1	77,047	90	
6	KQR	1	58,231	50	
7	LOF	1	48,54	48	
8	OLCAA	1	38,396	45	
9	BTM	2	48,438	42	
10	mdp	2	48,245	55	
11	RPR	2	26,052	30	
12	TZX	2	50,436	55	
13	VND	2	30,077	40	
14	vtd	2	33,743	35	
15					