cont_democ

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(psych)
d <- read.csv('/Users/aydin/Desktop/stat_pro/Gruppe A/Aufgabe4/combined_set.csv')
```

```
#head(d, 15)
```

```
#describe(d)
```

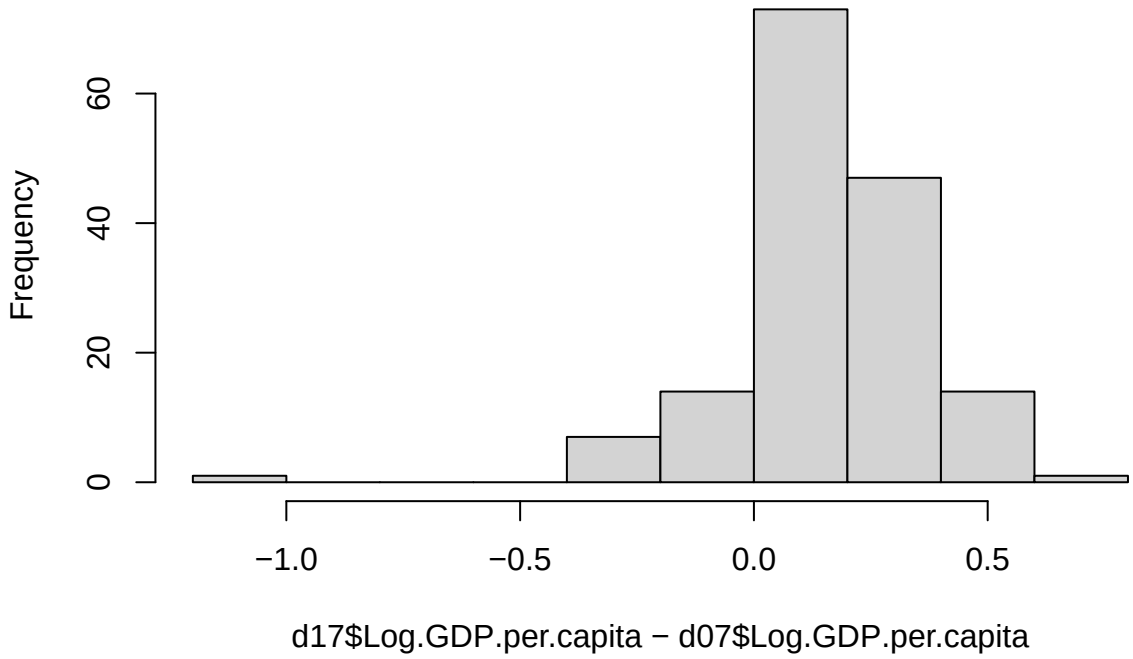
```
d$Gapminder.Population <- log(d$Gapminder.Population)
```

```
#describe(d)
```

```
d17 <-  subset.data.frame(d, subset = d$Year == 2017 )
#d17
```

```
d07 <-  subset.data.frame(d, subset = d$Year == 2007 )
#d07
```

```
hist(d17$Log.GDP.per.capita - d07$Log.GDP.per.capita)
```




```
#qqPlot(d17$Log.GDP.per.capita - d07$Log.GDP.per.capita)
```

```
cor.test(d17$Log.GDP.per.capita , d07$Log.GDP.per.capita)
```

```
##
##  Pearson's product-moment correlation
##
## data:  d17$Log.GDP.per.capita and d07$Log.GDP.per.capita
## t = 74.499, df = 155, p-value < 2.2e-16
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.9812887 0.9900082
## sample estimates:
##      cor
## 0.986322
```

```
testVER<- t.test(d17$Log.GDP.per.capita, d07$Log.GDP.per.capita,alternative = "two.sided", paired = TRU
testVER
```

```
##
##  Paired t-test
##
## data:  d17$Log.GDP.per.capita and d07$Log.GDP.per.capita
## t = 9.1354, df = 156, p-value = 3.256e-16
```

```
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  0.1182411 0.1834803
## sample estimates:
## mean of the differences
##               0.1508607
```

```
diff <- testVER$estimate

sed <- sd(d17$Log.GDP.per.capita - d07$Log.GDP.per.capita, na.rm = T)

g <- diff/sed

sprintf("Effektstärke: %.4f",g)
```

```
## [1] "Effektstärke: 0.7291"
```

```
eff1 <- sqrt(testVER$statistic^2 / (testVER$statistic^2 + testVER$parameter))

sprintf("Effektstärke: %.4f",eff1)
```

```
## [1] "Effektstärke: 0.5904"
```

```
d_col <- colnames(d)
```

```
#for (i in d_col[5:length(d_col)]){
#  a = d17 %>% pull (i)
#  hist(a, xlab = i, main =i)

#}
#hist(d17[5:length(colnames(d17))])
```

```
#for (i in d_col[5:length(d_col)]){
#  a = d17 %>% pull (i)
#  b = d07 %>% pull (i)
#  hist(a-b,xlab = i, main = i)
#}
#hist(d07[5:length(colnames(d07))])
```

```
for (i in d_col[5:length(d_col)]){
  a = d17 %>% pull (i)
  b = d07 %>% pull (i)
   testVER<- t.test(a,b,alternative = "two.sided", paired = TRUE, conf.level = .95)
   eff1 <- sqrt(testVER$statistic^2 / (testVER$statistic^2 + testVER$parameter))
   diff <- testVER$estimate
  sed <- sd(a -b, na.rm = T)
  g <- diff/sed
   a = sprintf("the t test for %s is t=%.4f, and p value is p=%.4f, and mean of the differences is e=%.4
   print(a)
}
```

```
## [1] "the t test for Life.Ladder is t=-0.0133, and p value is p=0.9894, and mean of the differences is
## [1] "the t test for Log.GDP.per.capita is t=9.1354, and p value is p=0.0000, and mean of the differer
## [1] "the t test for Social.support is t=-0.0979, and p value is p=0.9221, and mean of the differences
## [1] "the t test for Healthy.life.expectancy.at.birth is t=13.8427, and p value is p=0.0000, and mean
## [1] "the t test for Freedom.to.make.life.choices is t=6.7749, and p value is p=0.0000, and mean of th
## [1] "the t test for Generosity is t=-2.9982, and p value is p=0.0032, and mean of the differences is
## [1] "the t test for Perceptions.of.corruption is t=-6.3895, and p value is p=0.0000, and mean of the
## [1] "the t test for Positive.affect is t=-0.4102, and p value is p=0.6822, and mean of the differenc
## [1] "the t test for Negative.affect is t=6.7459, and p value is p=0.0000, and mean of the differences
## [1] "the t test for Confidence.in.national.government is t=1.4718, and p value is p=0.1432, and mean
## [1] "the t test for Democratic.Quality is t=-0.6634, and p value is p=0.5080, and mean of the differ
## [1] "the t test for Delivery.Quality is t=0.6742, and p value is p=0.5012, and mean of the differenc
## [1] "the t test for Gapminder.Life.Expectancy is t=14.0060, and p value is p=0.0000, and mean of the
## [1] "the t test for Gapminder.Population is t=13.3288, and p value is p=0.0000, and mean of the diff
```

As it is seen, the results are quite interesting. Although there are many improvements in many areas, there are not any significant changes in Democratic Quality, Government Quality, and Confidence in Government and Social Support. Moreover, the sign of corruption perception is negative even though it is significant.