Quant_II_hwk_03

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目录

1 因子分析 (Factor Analysis)

对 abs.dta 数据中各个机构、个人信任程度的差异进行因子分析进行降维处理。

1.1 建立各个信任变量的描述性统计表格。

```
library(haven)
setwd("E:/SynologyDrive/Github/Quantitative_Analysis_II/hwk03/")
data <- read_dta('./abs.dta')
summary(data)
```

```
##    trustCourt     trustNatGov      trustParty    trustParliament
##  Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.000
##  1st Qu.:3.000   1st Qu.:3.000   1st Qu.:3.000   1st Qu.:3.000
##  Median :3.000   Median :4.000   Median :4.000   Median :4.000
##  Mean   :3.079   Mean   :3.494   Mean   :3.511   Mean   :3.463
##  3rd Qu.:3.000   3rd Qu.:4.000   3rd Qu.:4.000   3rd Qu.:4.000
##  Max.   :4.000   Max.   :4.000   Max.   :4.000   Max.   :4.000
##  NA's   :325     NA's   :136     NA's   :127     NA's   :242
##  trustCivService trustMilitary    trustPolice    trustLocGov    trustNewspaper
##  Min.   :1.000   Min.   :1.000   Min.   :1.00   Min.   :1.000   Min.   :1.000
```

```
##  1st Qu.:2.000   1st Qu.:3.000   1st Qu.:3.00   1st Qu.:3.000   1st Qu.:3.000
##  Median :2.000   Median :4.000   Median :3.00   Median :3.000   Median :3.000
##  Mean   :2.509   Mean   :3.472   Mean   :3.12   Mean   :2.987   Mean   :2.862
##  3rd Qu.:3.000   3rd Qu.:4.000   3rd Qu.:4.00   3rd Qu.:3.000   3rd Qu.:3.000
##  Max.   :4.000   Max.   :4.000   Max.   :4.00   Max.   :4.000   Max.   :4.000
##  NA's   :163     NA's   :152     NA's   :155    NA's   :193     NA's   :419
##     trustTV         trustNGO     trustRelative   trustNeighbor
##  Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.000
##  1st Qu.:3.000   1st Qu.:2.000   1st Qu.:3.000   1st Qu.:3.000
##  Median :3.000   Median :2.000   Median :3.000   Median :3.000
##  Mean   :2.956   Mean   :2.362   Mean   :3.255   Mean   :2.995
##  3rd Qu.:3.000   3rd Qu.:3.000   3rd Qu.:4.000   3rd Qu.:3.000
##  Max.   :4.000   Max.   :4.000   Max.   :4.000   Max.   :4.000
##  NA's   :203     NA's   :750     NA's   :52      NA's   :72
##    trustOther
##  Min.   :1.000
##  1st Qu.:2.000
##  Median :3.000
##  Mean   :2.789
##  3rd Qu.:3.000
##  Max.   :4.000
##  NA's   :204
```

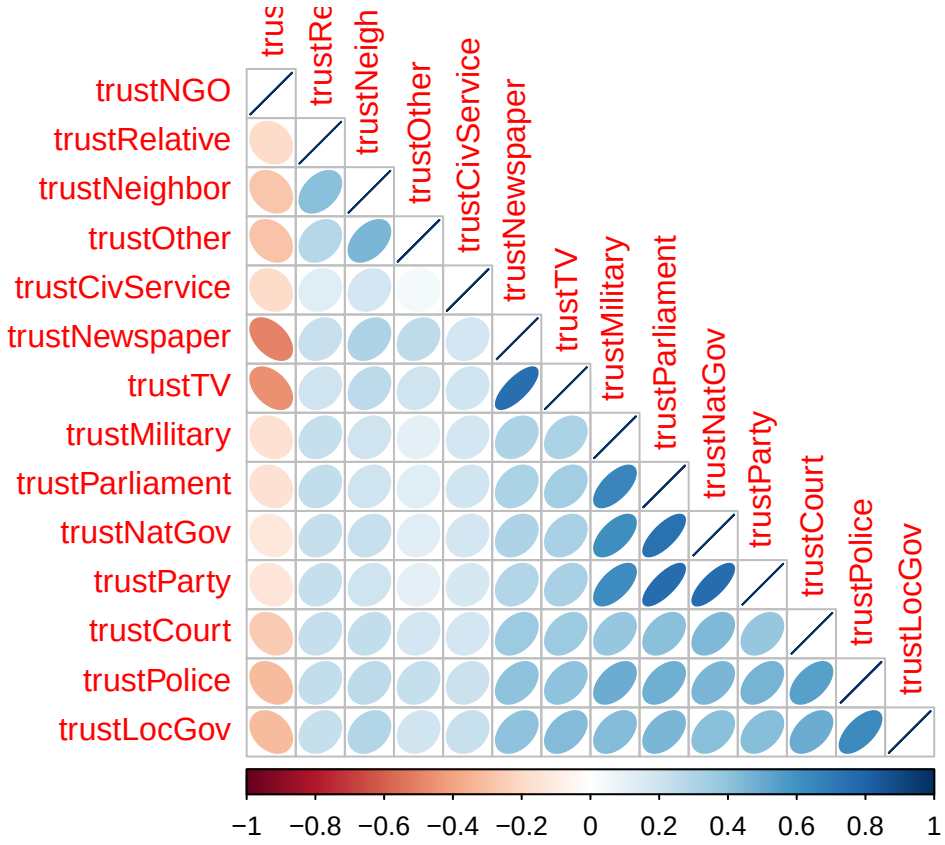
1.2 观察各个信任变量间的相关性矩阵，你是否可以总结出初步的分类？请使用 corrplot()。

```
n <- dim(data)[1]
corMat <- cor(data, use = "pairwise.complete.obs") #correlation matrix
library(corrplot)
```

```
## Warning: package 'corrplot' was built under R version 4.0.3
```

```
## corrplot 0.84 loaded
```

```
res <- cor.mtest(data, conf.level = 0.95)
corrplot(corMat, method = "ellipse", type = "lower", p.mat = res$p, sig.level = 0.05, order = "hcl
```



可以发现：

1. trustNGO 是唯一与其他各项呈现**负相关**的一项，其中与 trustNewspaper、trustTV 的负相关系数最大。
2. trustRelative、trustNeighbor、trustOther、trustCivService 四项**社会信任**的变量相互之间的相关性较小，与其他信任变量的相关性也较小。
3. trustNewspaper 与 trustTV 两项媒体信任的相关性很大
4. trustMilitary、trustParliament、rustNatGov、trustParty、trustPolice、trustCourt、trustLocGov 七项**政府信任**变量之间的相关程度较大。其中可细分为：
   - trustMilitary、trustParliament、rustNatGov、trustParty 四项**党国信任**变量之间的相关程度很高
   - trustCourt **法院信任**与其他各项政府信任之间的相关性较低
   - rustNatGov **当地政府信任**与与其他各项政府信任之间的相关性较低，但与 trustPolice 之间的信任程度较高。