Exploração de dados - MBA

Bruno

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Objetivo:

Análise do salário inicial de recem formados em MBA

1. Leitura dos dados

```
read.csv2("./dados/mba.csv", stringsAsFactors = FALSE) -> mba

str(mba)
```

```
## 'data.frame':    274 obs. of  13 variables:
##  $ age     : int  23 24 24 24 24 24 25 25 25 25 ...
##  $ sex     : int  2 1 1 1 2 1 1 2 1 1 ...
##  $ gmat_tot: int  620 610 670 570 710 640 610 650 630 680 ...
##  $ gmat_qpc: int  77 90 99 56 93 82 89 88 79 99 ...
##  $ gmat_vpc: int  87 71 78 81 98 89 74 89 91 81 ...
##  $ gmat_tpc: int  87 87 95 75 98 91 87 92 89 96 ...
##  $ s_avg   : num  3.4 3.5 3.3 3.3 3.6 3.9 3.4 3.3 3.3 3.45 ...
##  $ f_avg   : num  3 4 3.25 2.67 3.75 3.75 3.5 3.75 3.25 3.67 ...
##  $ quarter : int  1 1 1 1 1 1 1 1 1 1 ...
##  $ work_yrs: int  2 2 2 1 2 2 2 2 2 2 ...
##  $ frstlang: int  1 1 1 1 1 1 1 1 2 1 ...
##  $ salary  : int  0 0 0 0 999 0 0 0 999 998 ...
##  $ satis   : int  7 6 6 7 5 6 5 6 4 998 ...
```

2. Analise do Salários e limpeza do banco

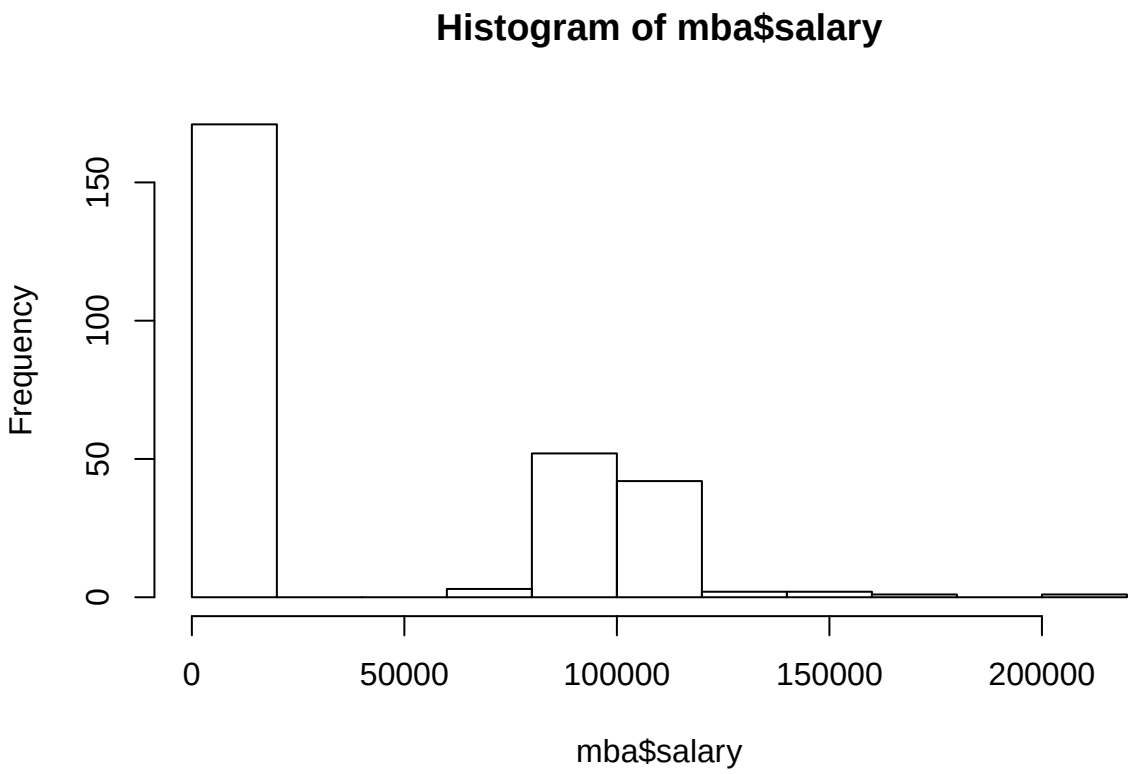
```
mean(mba$salary)
```

```
## [1] 39025.69
```

```
median(mba$salary)
```

```
## [1] 999
```

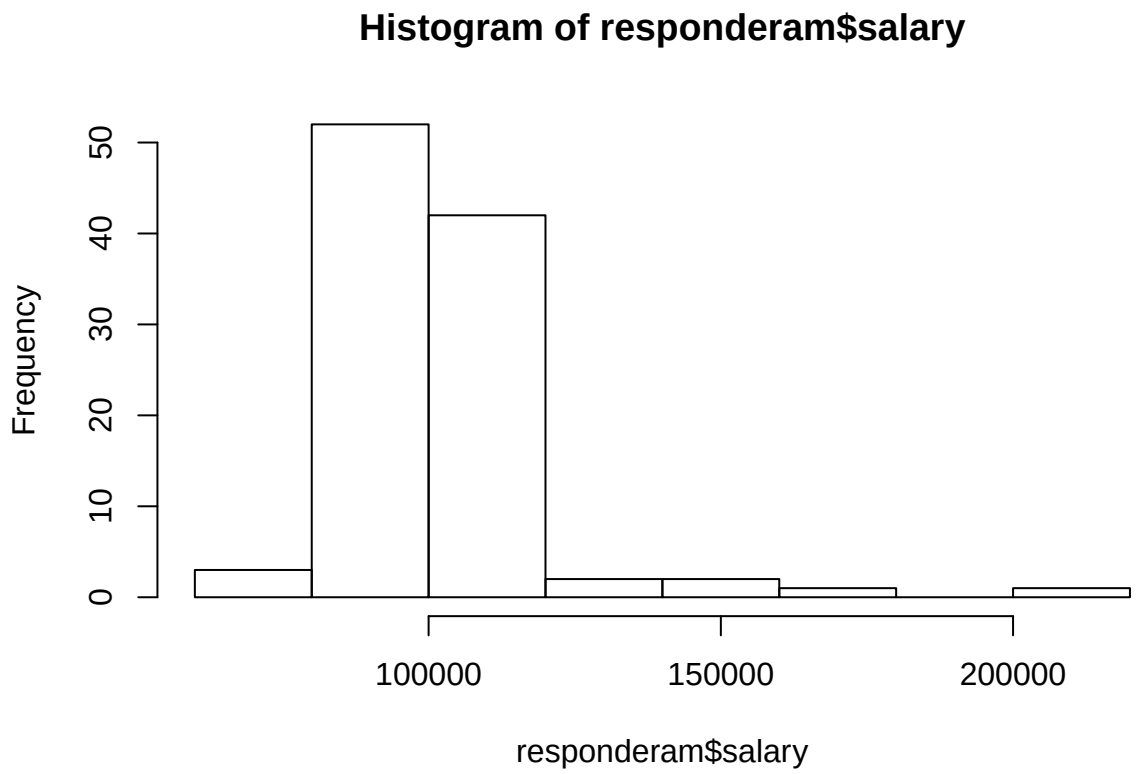
```
hist(mba$salary)
```



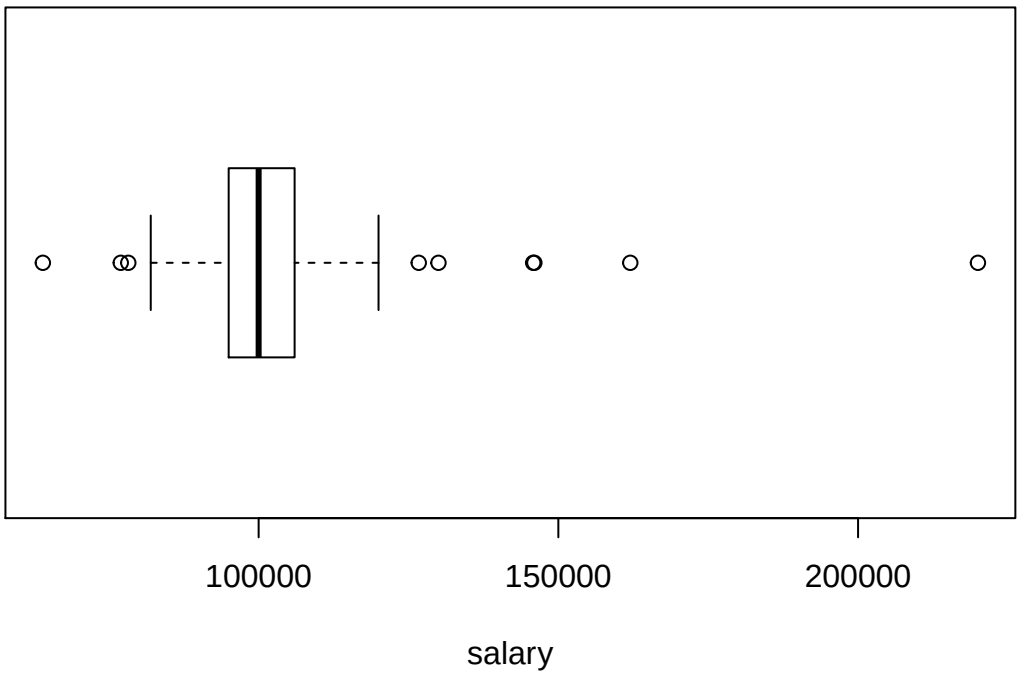

```
# Estudantes que revelaram o seu salario
responderam <- mba[which (mba$salary > 1000)  , ]
dim(responderam)
```

```
## [1] 103  13
```

```
hist(responderam$salary)
```



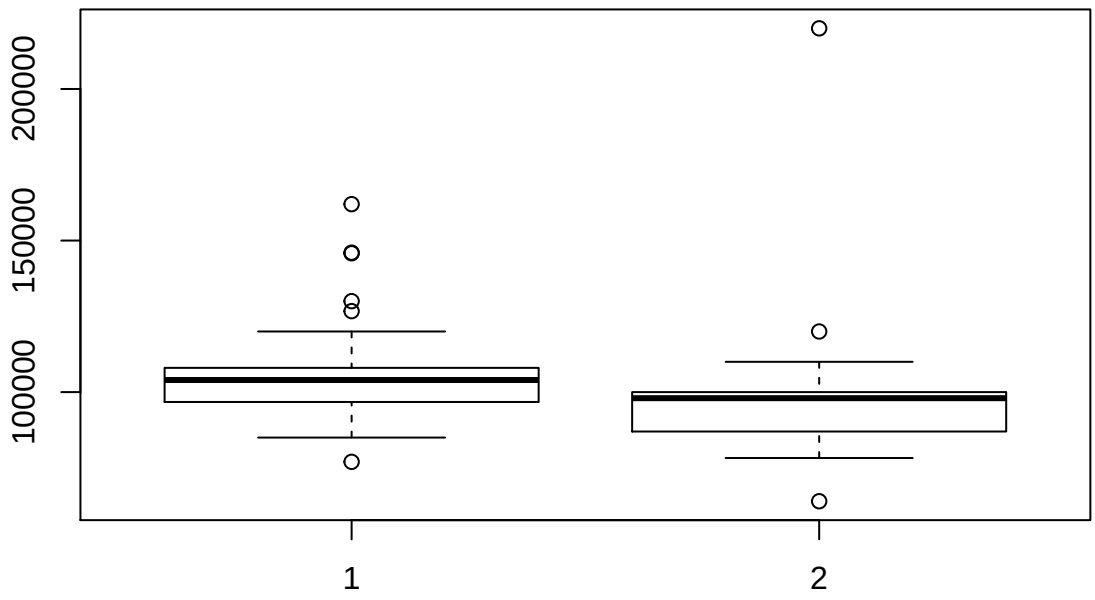

```
#describe(responderam)

boxplot(responderam$salary,
        main= "Boxplot do salario",
            horizontal=TRUE,
            xlab="salary")
```




```r
oneway.test(responderam, formula=salary~sex)
```

```
##
##  One-way analysis of means (not assuming equal variances)
##
## data:  salary and sex
## F = 1.8573, num df = 1.000, denom df = 38.115, p-value = 0.1809
```

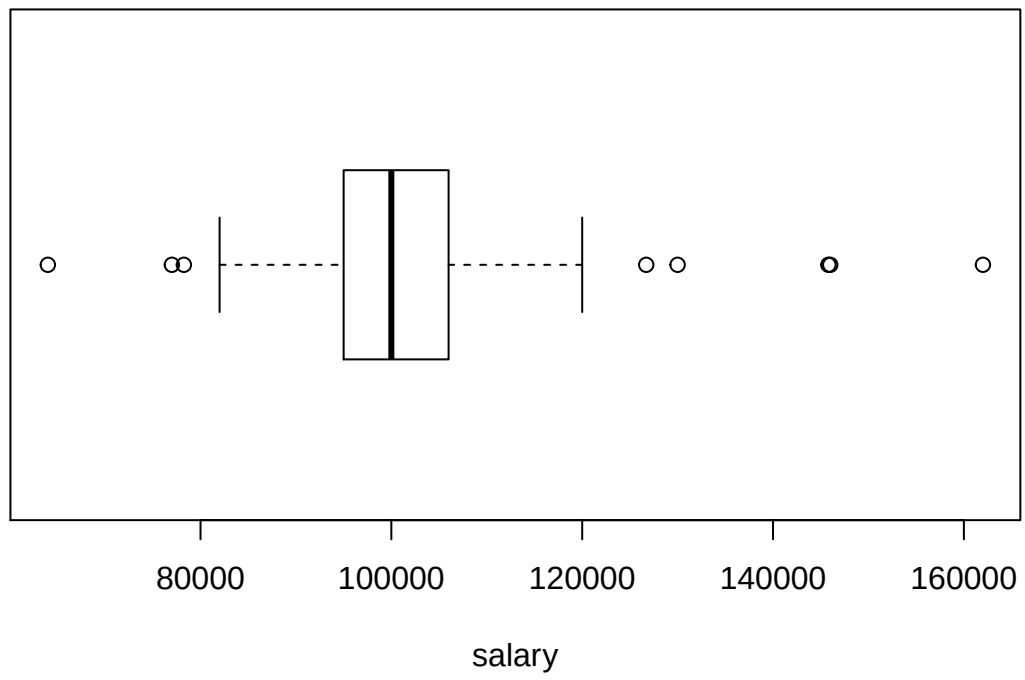
```r
boxplot(responderam$salary ~ responderam$sex)
```




```
#Valor p alto, aceita a Hipotese Nula, os salários de homens e mulheres em média são iguais
```

3. Retirada do Outlier

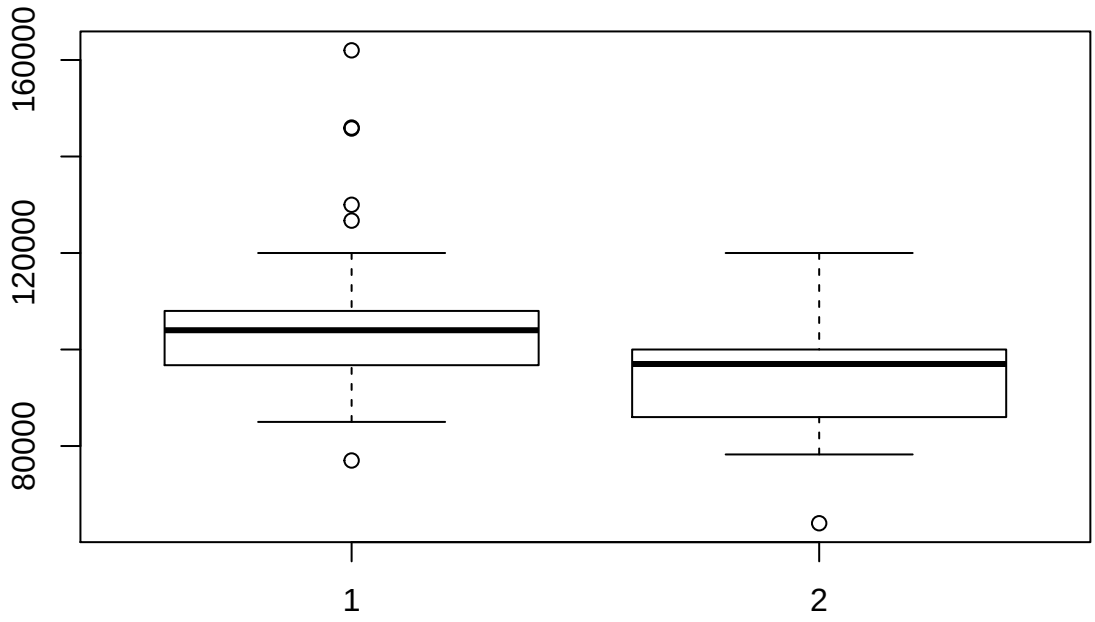
```
responderamsoutlier<- responderam[which (responderam$salary < 200000)  , ]

boxplot(responderamsoutlier$salary,
        main= "Boxplot do salario sem outlier",
            horizontal=TRUE,
            xlab="salary")
```




```r
oneway.test(responderamsoutlier, formula=salary~sex)
```

```
##
##  One-way analysis of means (not assuming equal variances)
##
## data:  salary and sex
## F = 17.729, num df = 1.000, denom df = 70.693, p-value = 7.384e-05
```

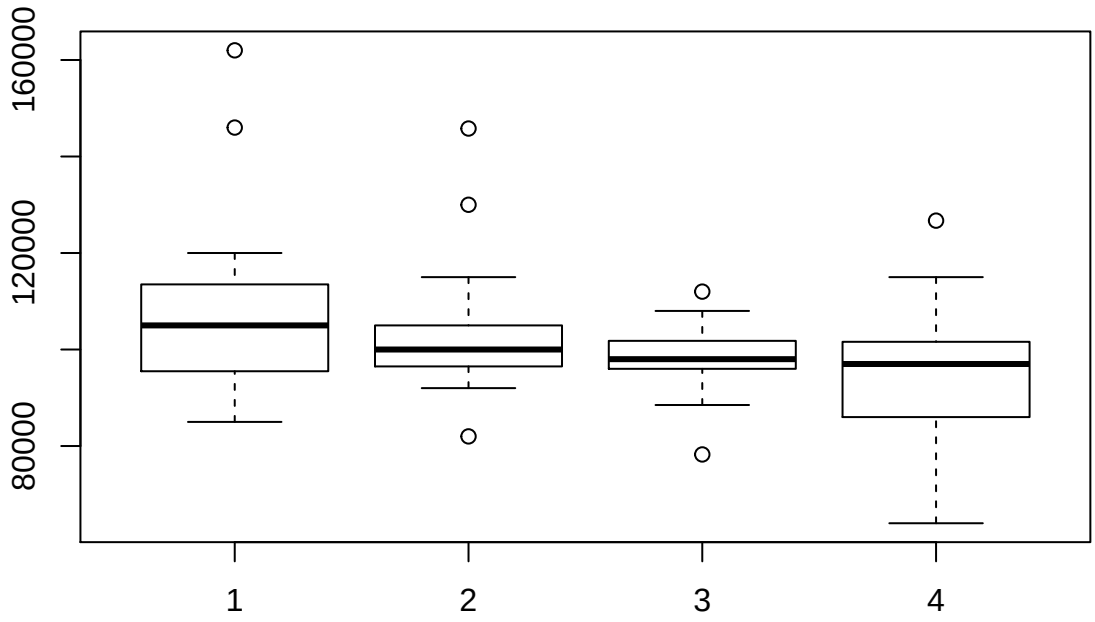
```r
boxplot(responderamsoutlier$salary ~ responderamsoutlier$sex)
```




```
oneway.test(responderamsoutlier$salary ~ responderamsoutlier$quarter)
```

```
##
##  One-way analysis of means (not assuming equal variances)
##
## data:  responderamsoutlier$salary and responderamsoutlier$quarter
## F = 3.4424, num df = 3.000, denom df = 47.963, p-value = 0.02389
```

```
boxplot(responderamsoutlier$salary ~ responderamsoutlier$quarter)
```




```
regressao1<-lm(responderamsoutlier$salary ~ responderamsoutlier$quarter)
regressao1
```

```
##
## Call:
## lm(formula = responderamsoutlier$salary ~ responderamsoutlier$quarter)
##
## Coefficients:
##                  (Intercept)  responderamsoutlier$quarter
##                       110290                        -3744
```

```
#Quem está no primeiro quartil tem salário em média mais alto

#redução do salário anual em -3744 por diminuição do quartil
```

```
regressao2<-lm(responderamsoutlier$salary ~ responderamsoutlier$gmat_tot)
summary (regressao2)
```

```
##
## Call:
## lm(formula = responderamsoutlier$salary ~ responderamsoutlier$gmat_tot)
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -36659  -6410  -1745   4405  58340
##
## Coefficients:
```

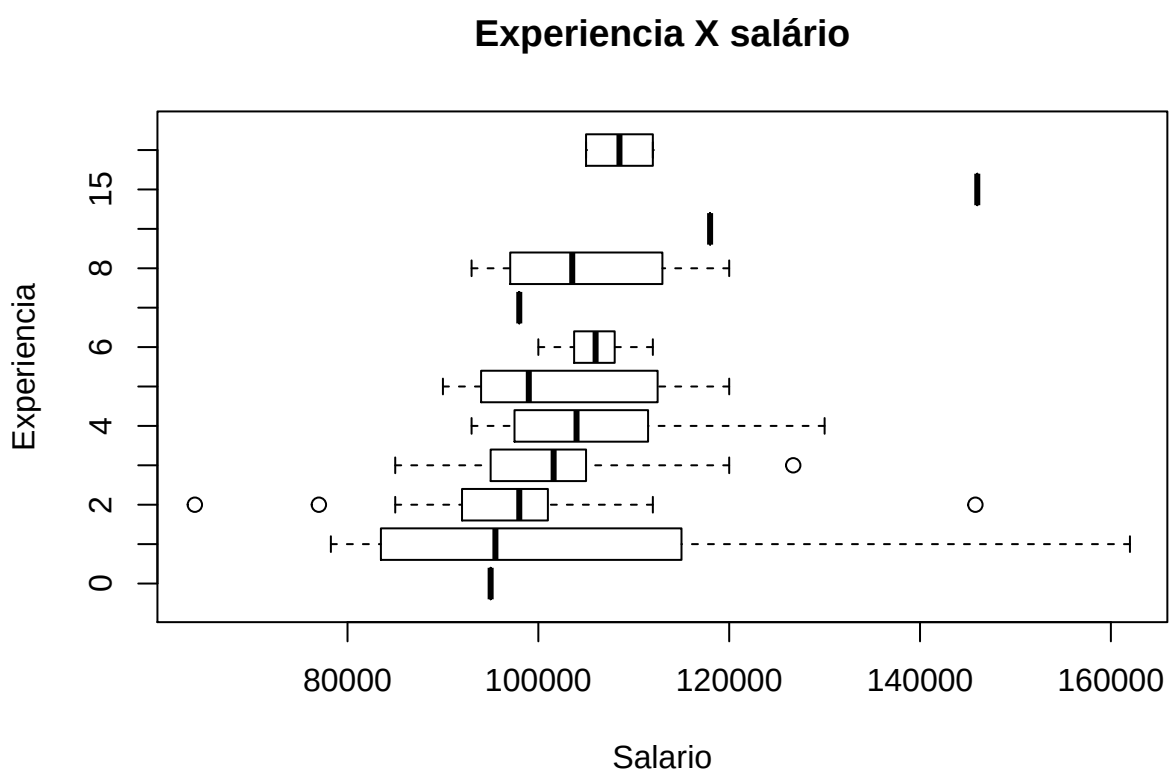
```
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                  88652.78   16956.49   5.228  9.4e-07 ***
## responderamsoutlier$gmat_tot    21.44      27.39   0.783    0.436
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 13650 on 100 degrees of freedom
## Multiple R-squared:  0.00609,    Adjusted R-squared:  -0.003849
## F-statistic: 0.6128 on 1 and 100 DF,  p-value: 0.4356
```

```
regressao3<-lm(responderamsoutlier$salary ~ responderamsoutlier$frstlang)
summary (regressao3)
```

```
##
## Call:
## lm(formula = responderamsoutlier$salary ~ responderamsoutlier$frstlang)
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -37749  -6749  -1749   4001  60251
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      99447       6245   15.92   <2e-16 ***
## responderamsoutlier$frstlang      2301       5758    0.40     0.69
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 13680 on 100 degrees of freedom
## Multiple R-squared:  0.001595,   Adjusted R-squared:  -0.008389
## F-statistic: 0.1598 on 1 and 100 DF,  p-value: 0.6902
```

```
#R2 baixo
```

```
boxplot(salary ~ work_yrs ,data=responderamsoutlier, main="Experiencia X salário", ylab="Experiencia", x
```




```
library(car)
```

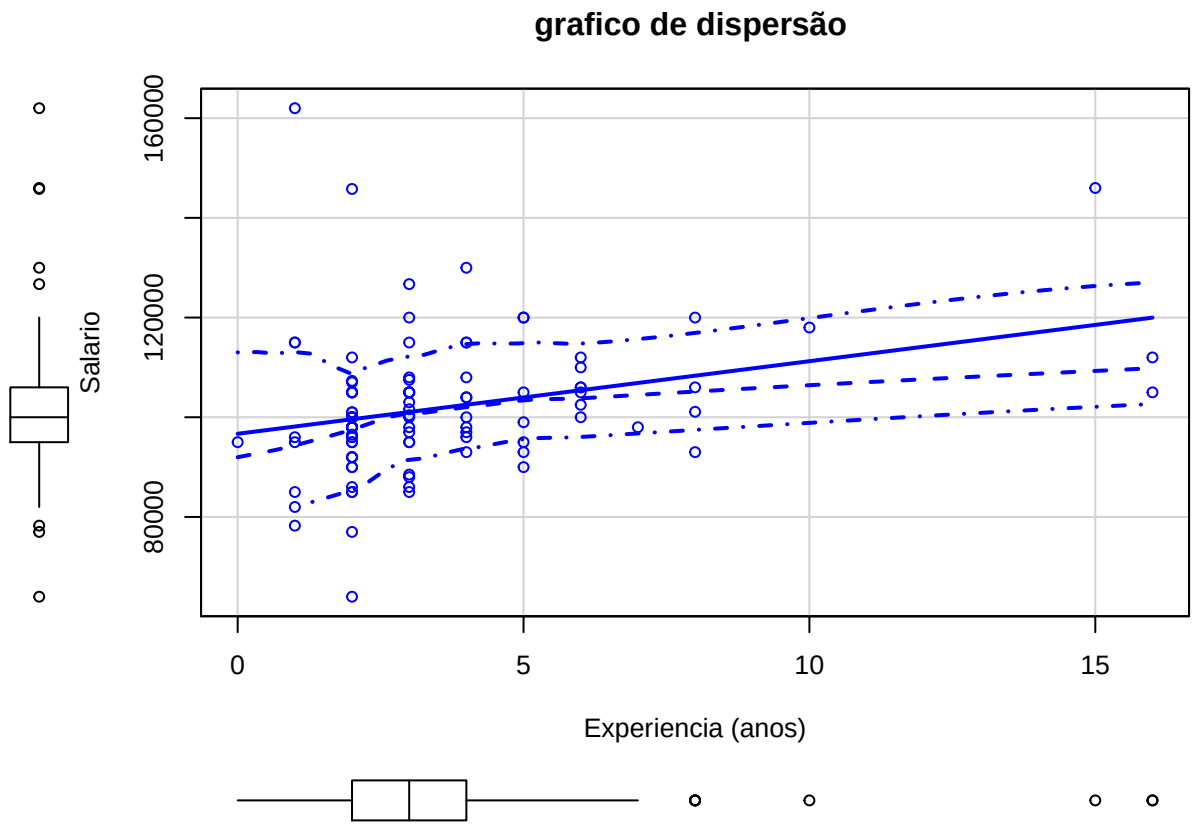
```
## Loading required package: carData
```

```
##
## Attaching package: 'car'
```

```
## The following object is masked from 'package:dplyr':
##
##     recode
```

```
## The following object is masked from 'package:purrr':
##
##     some
```

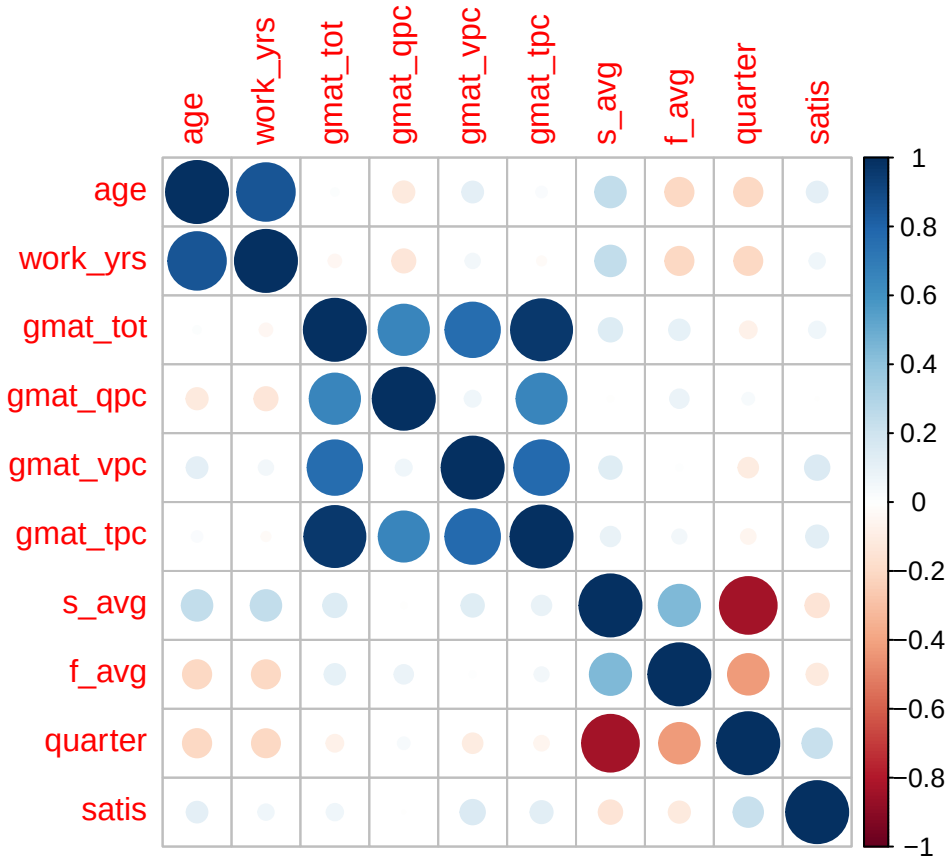
```
scatterplot(salary ~ work_yrs,
            data=responderamsoutlier,
            main="grafico de dispersão ",
            xlab="Experiencia (anos)",
            ylab="Salario")
```




```
#4. Análise de correlação ( achei bem legal)
library(corrplot)
```

```
## corrplot 0.84 loaded
```

```
C <-cor(responderamsoutlier [,
                             c("age",
                               "work_yrs",
                               "gmat_tot",
                               "gmat_qpc",
                               "gmat_vpc",
                               "gmat_tpc",
                               "s_avg",
                               "f_avg",
                               "quarter",
                               "satis")])
corrplot(C, method="circle")
```


age
work_yrs
gmat_tot
gmat_qpc
gmat_vpc
gmat_tpc
s_avg
f_avg
quarter
satis
1
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
−1