20210313-manha-exercicio.R

rstudio-user

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```
# 1 - Usaremos o data.frame "mtcars", que significa "Motor Trend Car Road Tests". Esse
# data.frame tem 32 observações de 11 variáveis numéricas e já está instalado no R.
# Nesse dataframe temos as seguintes variáveis:
#
# • 1- mpg - Miles/(US) gallon
# • 2- cyl - Number of cylinders
# • 3- disp - Displacement (cu.in.)
# • 4- hp - Gross horsepower
# • 5- drat - Rear axle ratio
# • 6- wt - Weight (1000 lbs)
# • 7- qsec - 1/4 mile time
# • 8- vs - Engine (0 = V-shaped, 1 = straight)
# • 9- am - Transmission (0 = automatic, 1 = manual)
# • 10- gear - Number of forward gears
# • 11- carb - Number of carburetors
#
# Use a library(corrplot). Construa a matriz de correlação, verificando se o data.frame é
# numérico, se há valores faltando, construa a tabela de correlação e a matriz de
# correlação, seguindo os passos do exemplo 1.
#
# Em "method" vc pode usar no lugar da palavra "circle" outras palavras para mudar a
# forma de apresentação, como "square", "pie", "color", "number" e "shade".

# Verificando se os dados são numéricos
str(mtcars)
```

```
## 'data.frame':    32 obs. of  11 variables:
##  $ mpg : num  21 21 22.8 21.4 18.7 18.1 14.3 24.4 22.8 19.2 ...
##  $ cyl : num  6 6 4 6 8 6 8 4 4 6 ...
##  $ disp: num  160 160 108 258 360 ...
##  $ hp  : num  110 110 93 110 175 105 245 62 95 123 ...
##  $ drat: num  3.9 3.9 3.85 3.08 3.15 2.76 3.21 3.69 3.92 3.92 ...
##  $ wt  : num  2.62 2.88 2.32 3.21 3.44 ...
##  $ qsec: num  16.5 17 18.6 19.4 17 ...
##  $ vs  : num  0 0 1 1 0 1 0 1 1 1 ...
##  $ am  : num  1 1 1 0 0 0 0 0 0 0 ...
##  $ gear: num  4 4 4 3 3 3 3 4 4 4 ...
##  $ carb: num  4 4 1 1 2 1 4 2 2 4 ...
```

```
# Verifica se há dados faltando
is.na(mtcars)
```

```
##                     mpg   cyl  disp    hp  drat    wt  qsec    vs    am  gear
## Mazda RX4          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
```

```
## Mazda RX4 Wag       FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Datsun 710          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Hornet 4 Drive      FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Hornet Sportabout   FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Valiant             FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Duster 360          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 240D           FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 230            FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 280            FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 280C           FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 450SE          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 450SL          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Merc 450SLC         FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Cadillac Fleetwood  FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Lincoln Continental FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Chrysler Imperial   FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Fiat 128            FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Honda Civic         FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Toyota Corolla      FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Toyota Corona       FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Dodge Challenger    FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## AMC Javelin         FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Camaro Z28          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Pontiac Firebird    FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Fiat X1-9           FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Porsche 914-2       FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Lotus Europa        FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Ford Pantera L      FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Ferrari Dino        FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Maserati Bora       FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
## Volvo 142E          FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
##                      carb
## Mazda RX4           FALSE
## Mazda RX4 Wag       FALSE
## Datsun 710          FALSE
## Hornet 4 Drive      FALSE
## Hornet Sportabout   FALSE
## Valiant             FALSE
## Duster 360          FALSE
## Merc 240D           FALSE
## Merc 230            FALSE
## Merc 280            FALSE
## Merc 280C           FALSE
## Merc 450SE          FALSE
## Merc 450SL          FALSE
## Merc 450SLC         FALSE
## Cadillac Fleetwood  FALSE
## Lincoln Continental FALSE
## Chrysler Imperial   FALSE
## Fiat 128            FALSE
## Honda Civic         FALSE
## Toyota Corolla      FALSE
## Toyota Corona       FALSE
## Dodge Challenger    FALSE
```

```
## AMC Javelin         FALSE
## Camaro Z28          FALSE
## Pontiac Firebird    FALSE
## Fiat X1-9           FALSE
## Porsche 914-2       FALSE
## Lotus Europa        FALSE
## Ford Pantera L      FALSE
## Ferrari Dino        FALSE
## Maserati Bora       FALSE
## Volvo 142E          FALSE
```

```
sum(is.na(mtcars))
```

```
## [1] 0
```

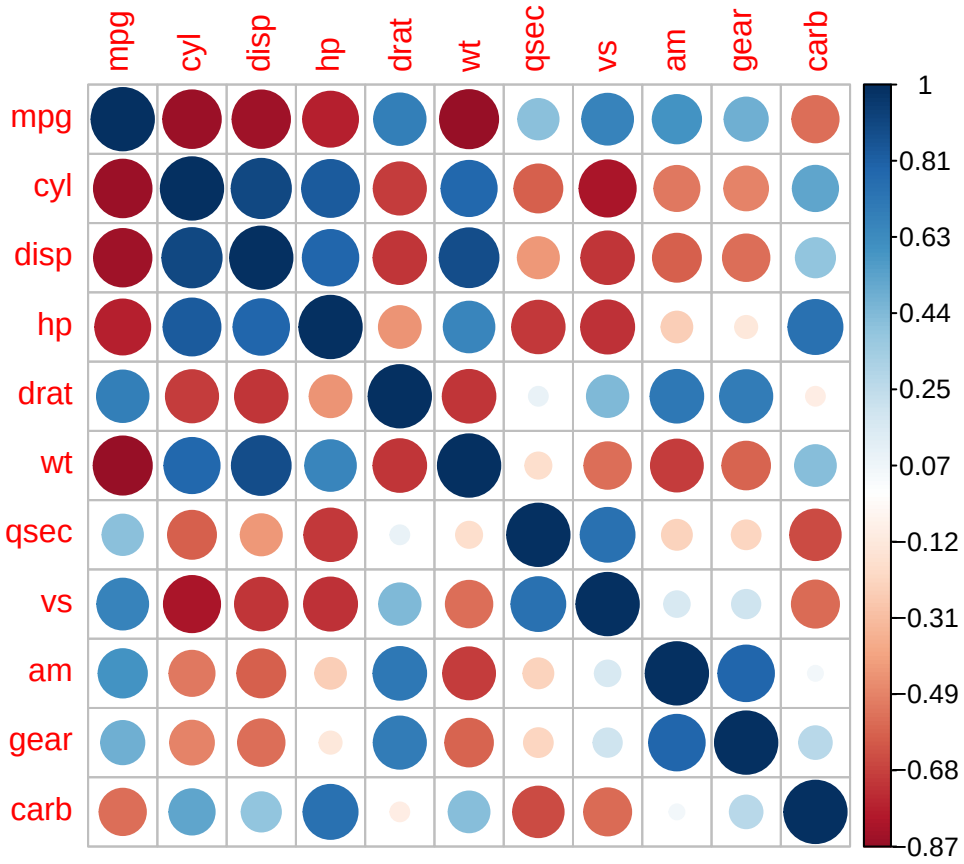
```
# Criando o dataframe
table <- data.frame(mtcars)
table
```

```
##                      mpg cyl  disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4           21.0   6 160.0 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag       21.0   6 160.0 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710          22.8   4 108.0  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive      21.4   6 258.0 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout   18.7   8 360.0 175 3.15 3.440 17.02  0  0    3    2
## Valiant             18.1   6 225.0 105 2.76 3.460 20.22  1  0    3    1
## Duster 360          14.3   8 360.0 245 3.21 3.570 15.84  0  0    3    4
## Merc 240D           24.4   4 146.7  62 3.69 3.190 20.00  1  0    4    2
## Merc 230            22.8   4 140.8  95 3.92 3.150 22.90  1  0    4    2
## Merc 280            19.2   6 167.6 123 3.92 3.440 18.30  1  0    4    4
## Merc 280C           17.8   6 167.6 123 3.92 3.440 18.90  1  0    4    4
## Merc 450SE          16.4   8 275.8 180 3.07 4.070 17.40  0  0    3    3
## Merc 450SL          17.3   8 275.8 180 3.07 3.730 17.60  0  0    3    3
## Merc 450SLC         15.2   8 275.8 180 3.07 3.780 18.00  0  0    3    3
## Cadillac Fleetwood  10.4   8 472.0 205 2.93 5.250 17.98  0  0    3    4
## Lincoln Continental 10.4   8 460.0 215 3.00 5.424 17.82  0  0    3    4
## Chrysler Imperial   14.7   8 440.0 230 3.23 5.345 17.42  0  0    3    4
## Fiat 128            32.4   4  78.7  66 4.08 2.200 19.47  1  1    4    1
## Honda Civic         30.4   4  75.7  52 4.93 1.615 18.52  1  1    4    2
## Toyota Corolla      33.9   4  71.1  65 4.22 1.835 19.90  1  1    4    1
## Toyota Corona       21.5   4 120.1  97 3.70 2.465 20.01  1  0    3    1
## Dodge Challenger    15.5   8 318.0 150 2.76 3.520 16.87  0  0    3    2
## AMC Javelin         15.2   8 304.0 150 3.15 3.435 17.30  0  0    3    2
## Camaro Z28          13.3   8 350.0 245 3.73 3.840 15.41  0  0    3    4
## Pontiac Firebird    19.2   8 400.0 175 3.08 3.845 17.05  0  0    3    2
## Fiat X1-9           27.3   4  79.0  66 4.08 1.935 18.90  1  1    4    1
## Porsche 914-2       26.0   4 120.3  91 4.43 2.140 16.70  0  1    5    2
## Lotus Europa        30.4   4  95.1 113 3.77 1.513 16.90  1  1    5    2
## Ford Pantera L      15.8   8 351.0 264 4.22 3.170 14.50  0  1    5    4
## Ferrari Dino        19.7   6 145.0 175 3.62 2.770 15.50  0  1    5    6
## Maserati Bora       15.0   8 301.0 335 3.54 3.570 14.60  0  1    5    8
## Volvo 142E          21.4   4 121.0 109 4.11 2.780 18.60  1  1    4    2
```

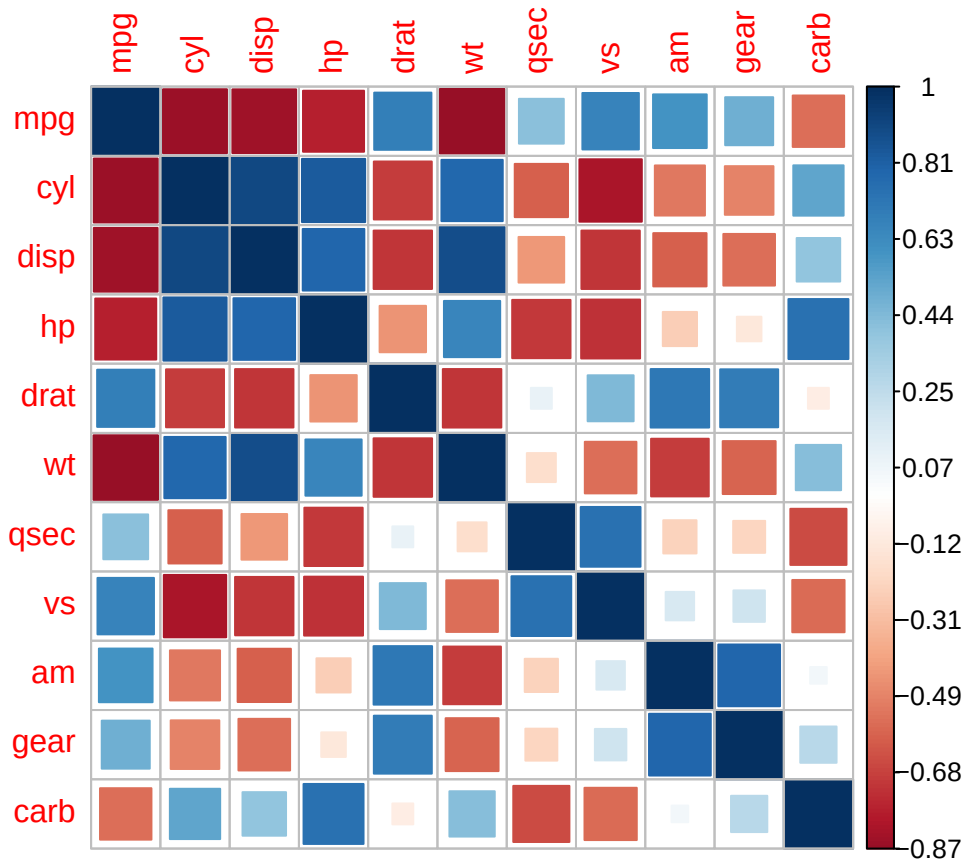
```
# Tabela de correlação
cortable <- cor(table)
round(cortable, 2)
```

```
##        mpg   cyl  disp    hp  drat    wt  qsec    vs    am  gear  carb
## mpg   1.00 -0.85 -0.85 -0.78  0.68 -0.87  0.42  0.66  0.60  0.48 -0.55
## cyl  -0.85  1.00  0.90  0.83 -0.70  0.78 -0.59 -0.81 -0.52 -0.49  0.53
## disp -0.85  0.90  1.00  0.79 -0.71  0.89 -0.43 -0.71 -0.59 -0.56  0.39
## hp   -0.78  0.83  0.79  1.00 -0.45  0.66 -0.71 -0.72 -0.24 -0.13  0.75
## drat  0.68 -0.70 -0.71 -0.45  1.00 -0.71  0.09  0.44  0.71  0.70 -0.09
## wt   -0.87  0.78  0.89  0.66 -0.71  1.00 -0.17 -0.55 -0.69 -0.58  0.43
## qsec  0.42 -0.59 -0.43 -0.71  0.09 -0.17  1.00  0.74 -0.23 -0.21 -0.66
## vs    0.66 -0.81 -0.71 -0.72  0.44 -0.55  0.74  1.00  0.17  0.21 -0.57
## am    0.60 -0.52 -0.59 -0.24  0.71 -0.69 -0.23  0.17  1.00  0.79  0.06
## gear  0.48 -0.49 -0.56 -0.13  0.70 -0.58 -0.21  0.21  0.79  1.00  0.27
## carb -0.55  0.53  0.39  0.75 -0.09  0.43 -0.66 -0.57  0.06  0.27  1.00
```

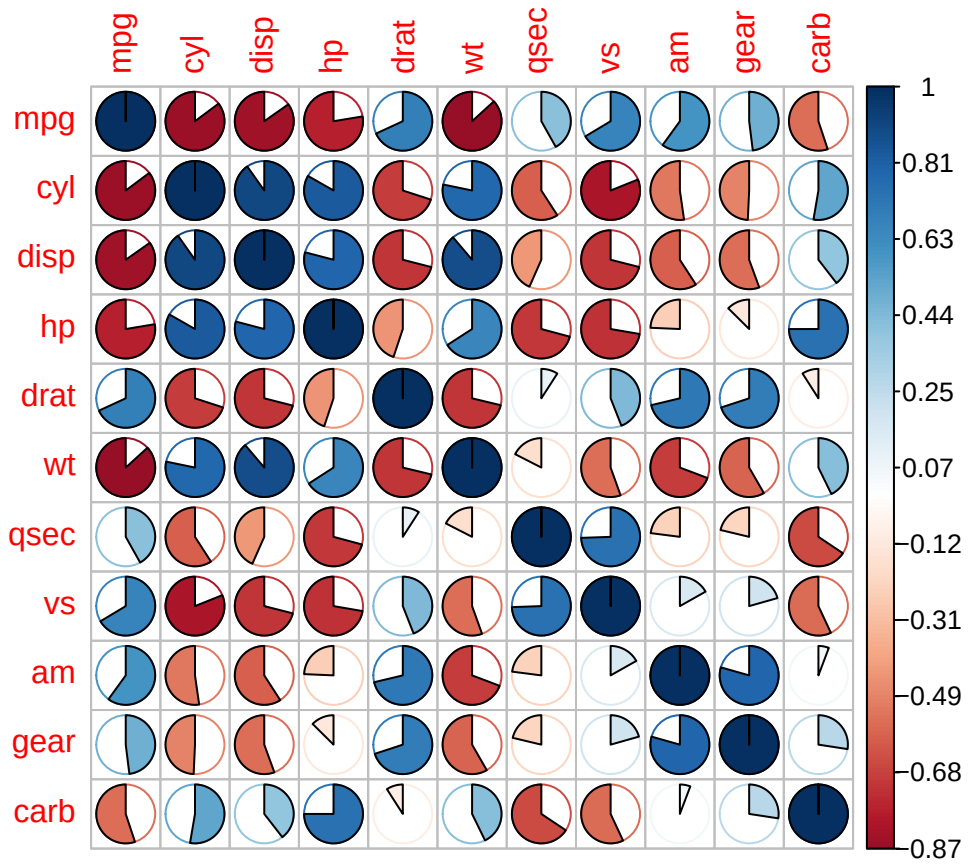
```r
# Matriz de correlação (circle)
corrplot::corrplot(cortable, method = c("circle"), is.corr = FALSE)
```



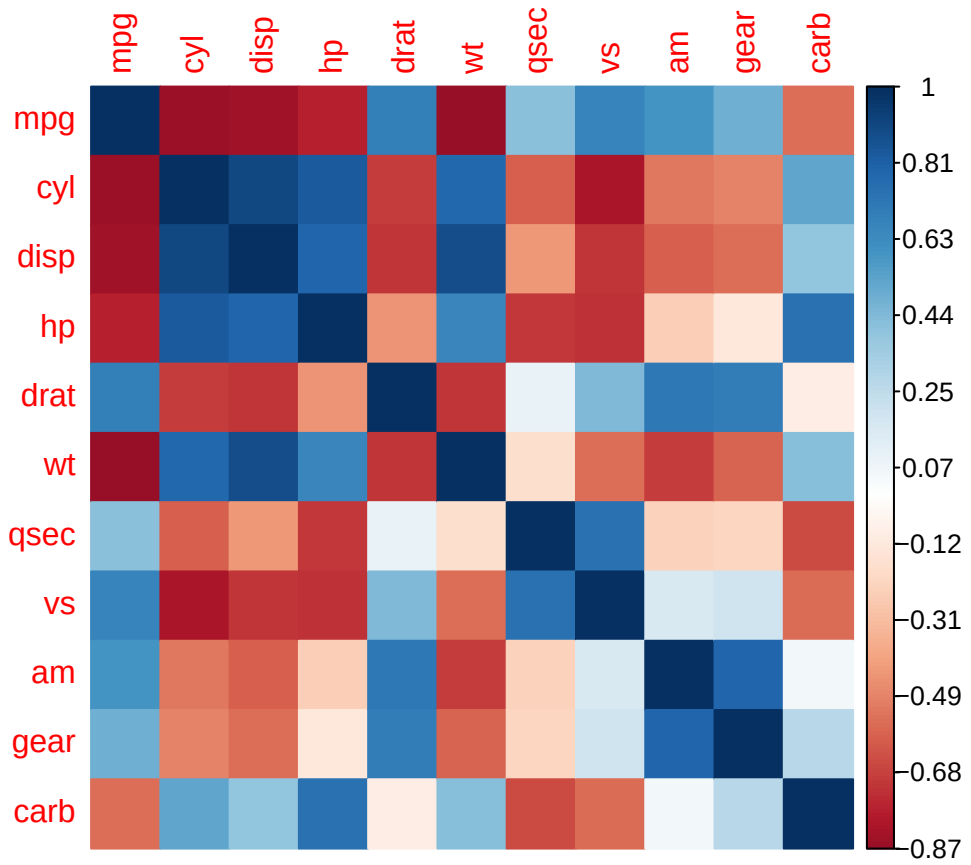

```r
# Matriz de correlação (square)
corrplot::corrplot(cortable, method = c("square"), is.corr = FALSE)
```



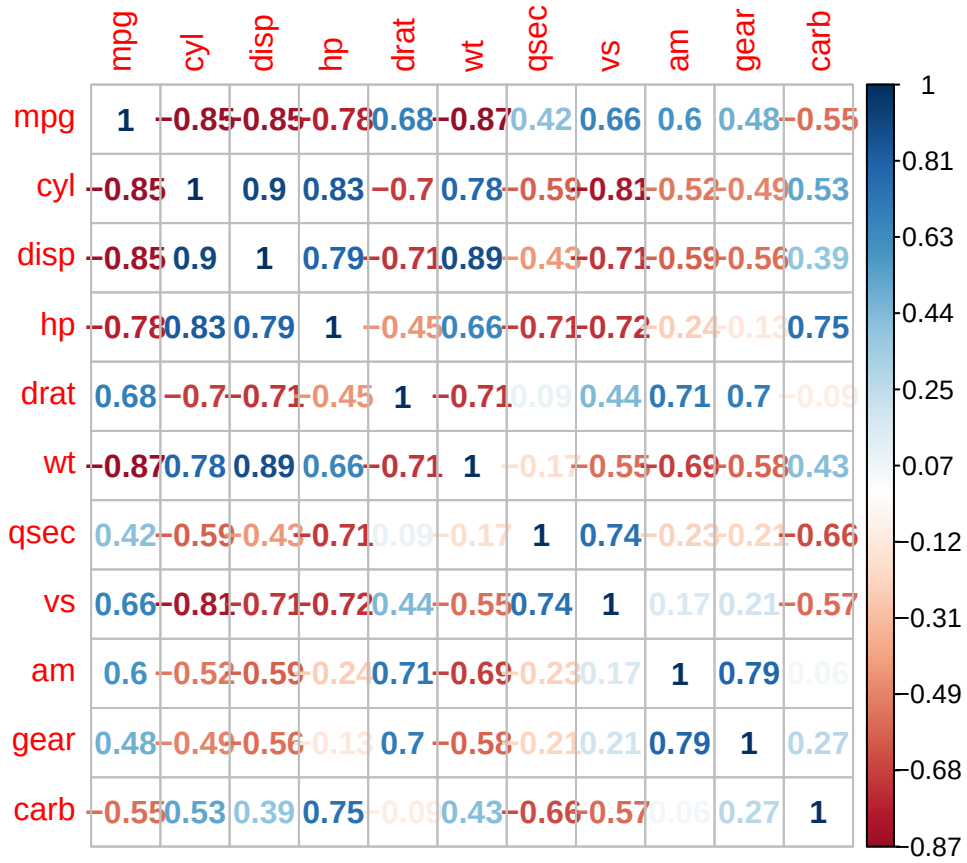

```
# Matriz de correlação (pie)
corrplot::corrplot(cortable, method = c("pie"), is.corr = FALSE)
```



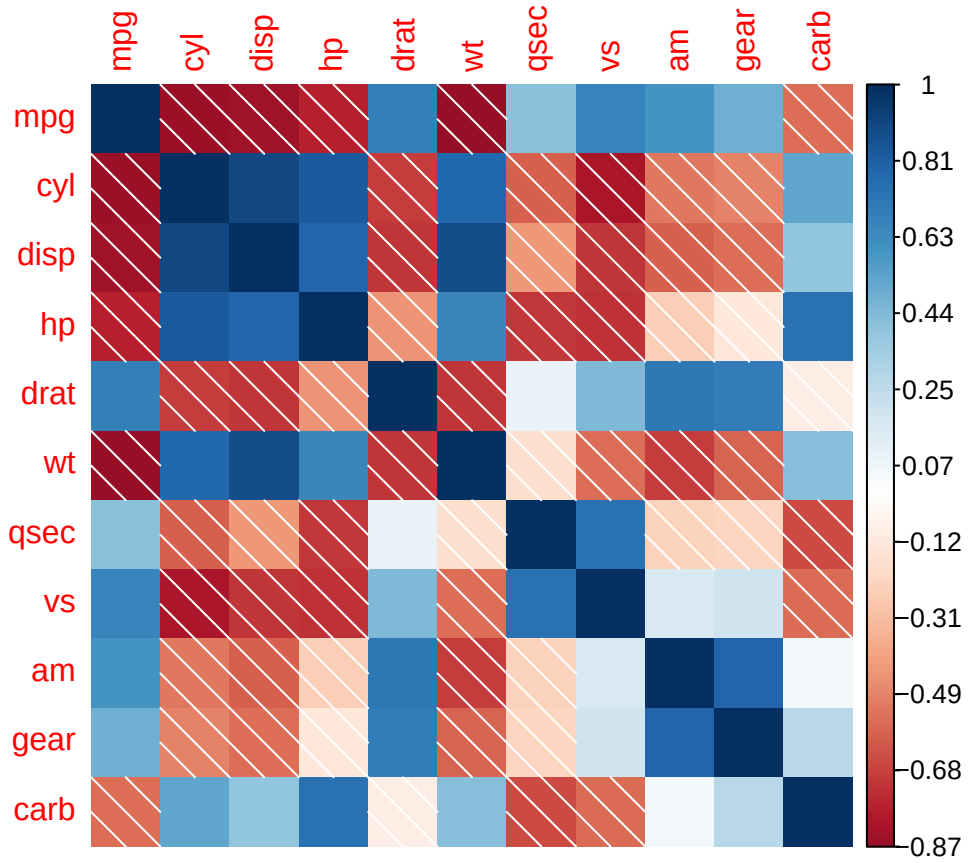

```
# Matriz de correlação (color)
corrplot::corrplot(cortable, method = c("color"), is.corr = FALSE)
```



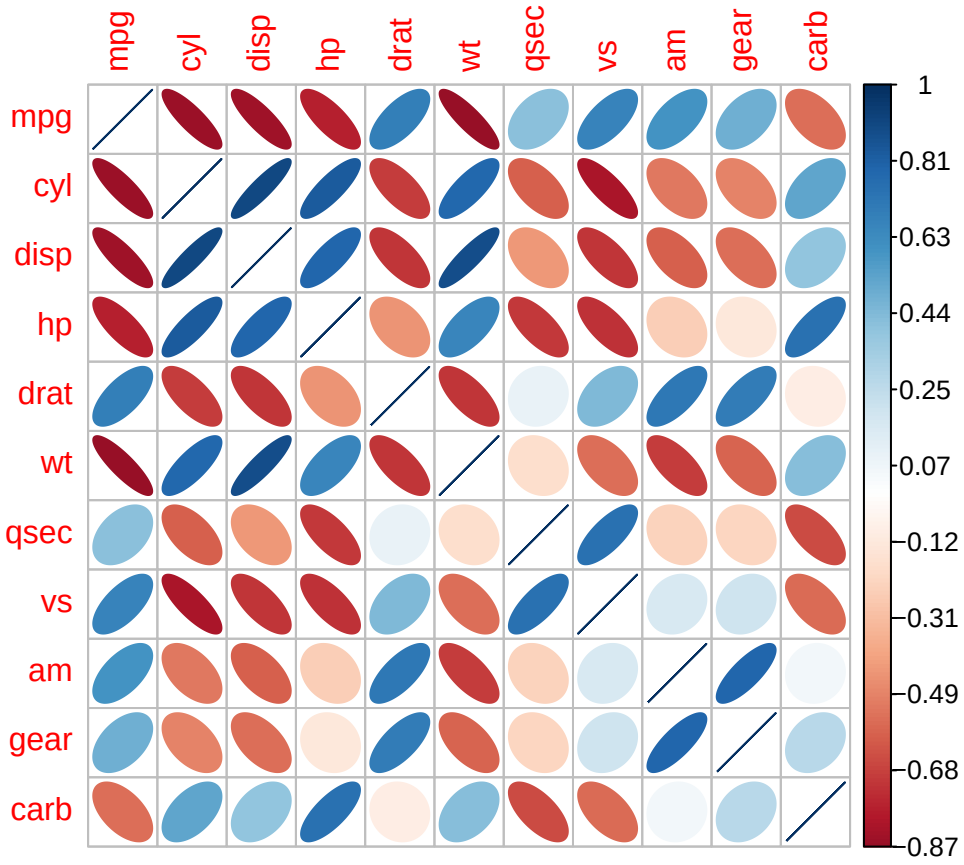

```
# Matriz de correlação (number)
corrplot::corrplot(cortable, method = c("number"), is.corr = FALSE)
```




```
# Matriz de correlação (shade)
corrplot::corrplot(cortable, method = c("shade"), is.corr = FALSE)
```




```
# Matriz de correlação (ellipse)
corrplot::corrplot(cortable, method = c("ellipse"), is.corr = FALSE)
```


mpg
cyl
disp
hp
drat
wt
qsec
vs
am
gear
carb
1
0.81
0.63
0.44
0.25
0.07
0.12
0.31
0.49
0.68
0.87