

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
```

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

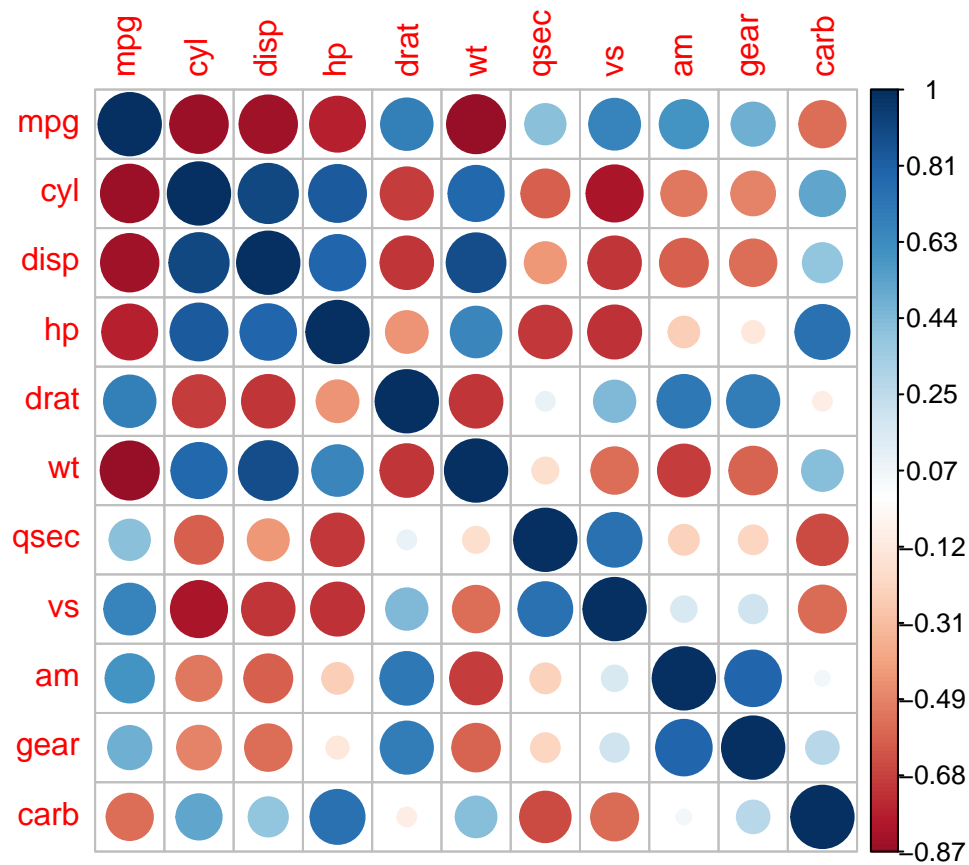
```
##          mpg  cyl  disp  hp drat   wt  qsec vs am gear carb
## Mazda RX4      21.0   6 160.0 110 3.90 2.620 16.46 0  1   4    4
## Mazda RX4 Wag  21.0   6 160.0 110 3.90 2.875 17.02 0  1   4    4
## Datsun 710      22.8   4 108.0  93 3.85 2.320 18.61 1  1   4    1
## Hornet 4 Drive  21.4   6 258.0 110 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
```

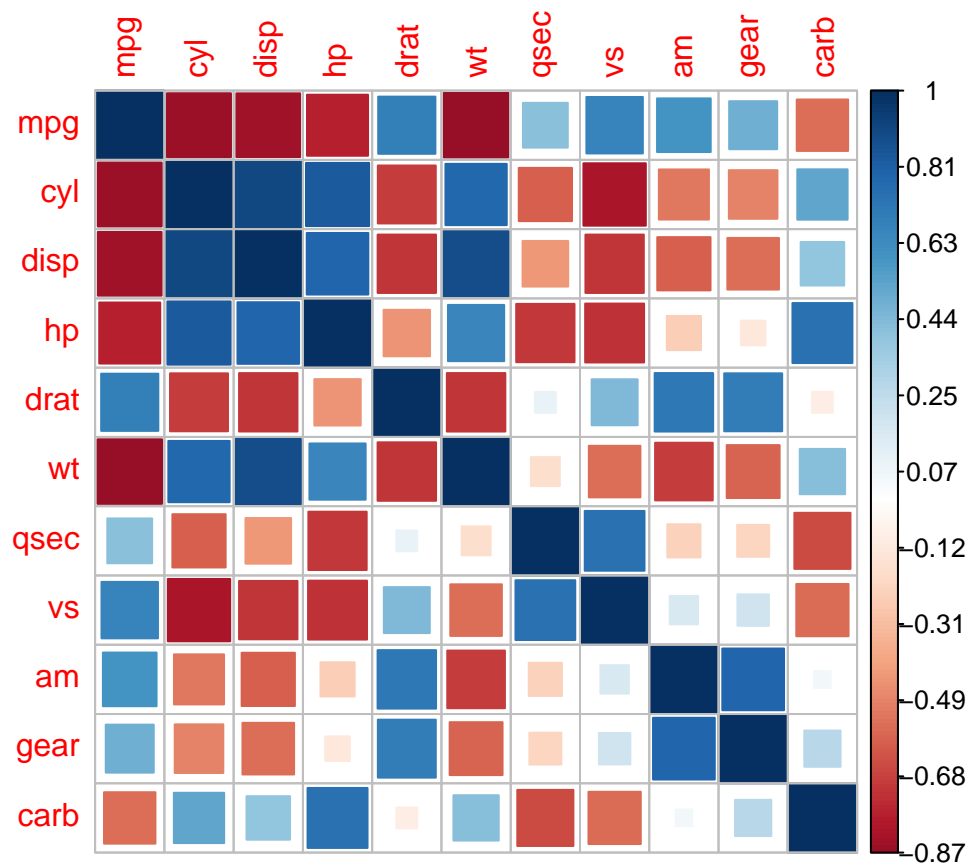
```
# Matriz de correlação (circle)
```

```
corrplot::corrplot(cortable, method = c("circle"), is.corr = FALSE)
```

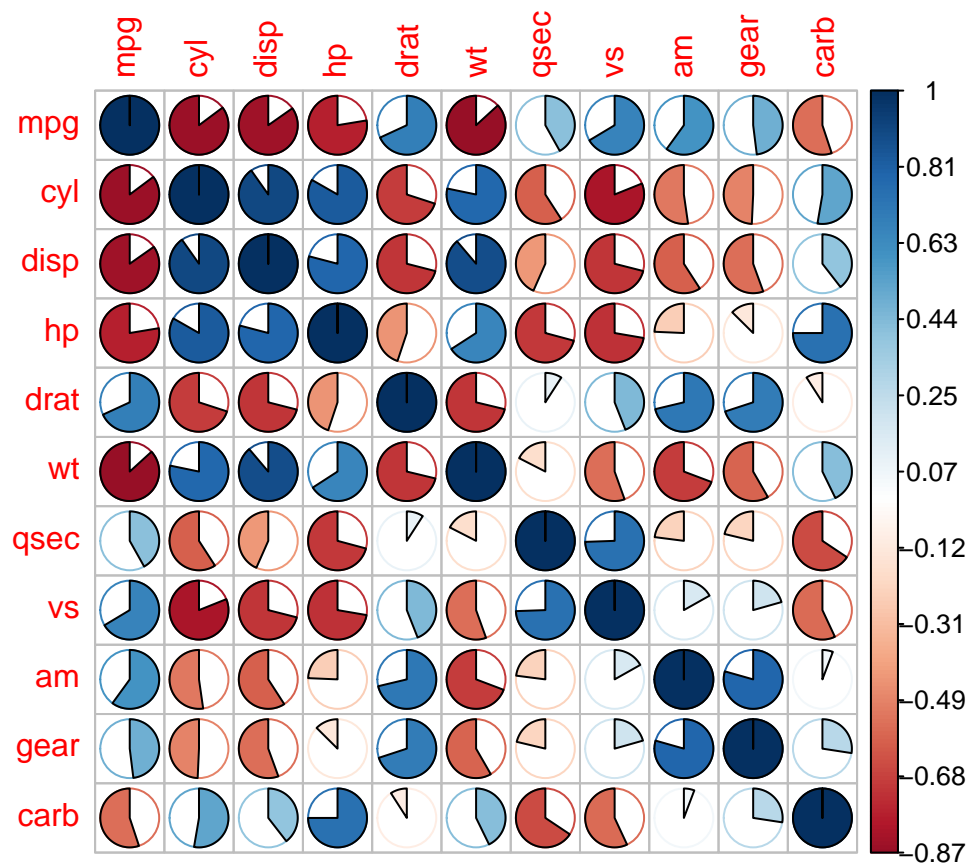


```
# Matriz de correlação (square)
```

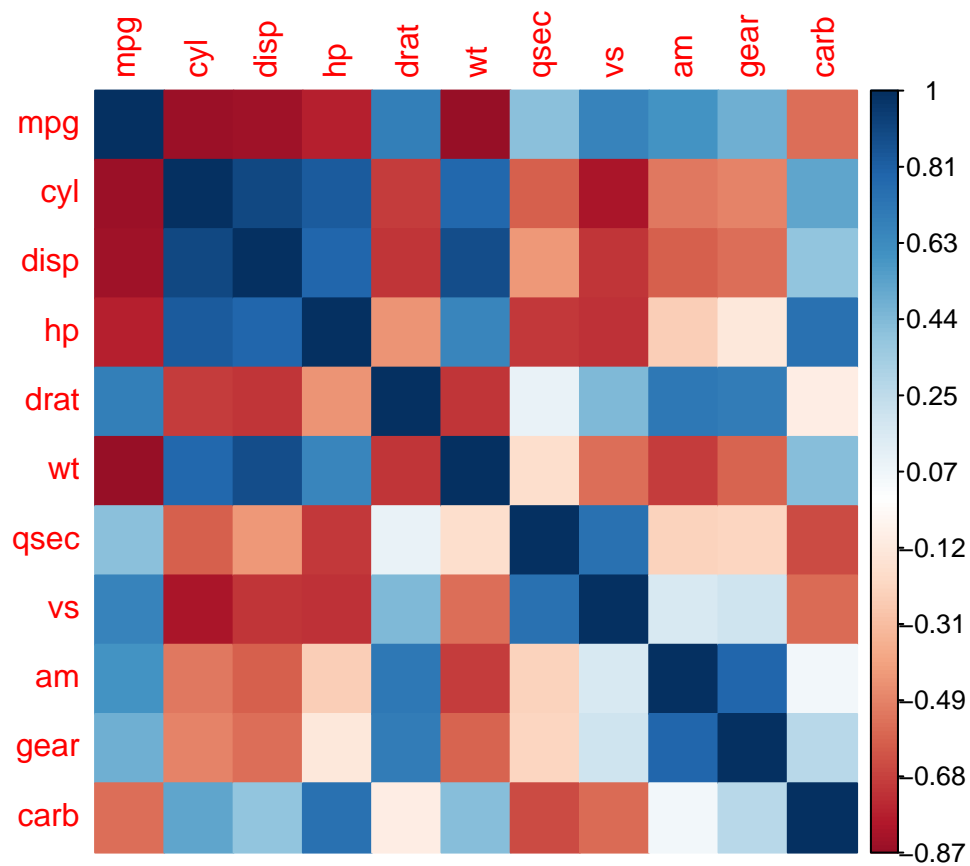
```
corrplot::corrplot(cortable, method = c("square"), is.corr = FALSE)
```



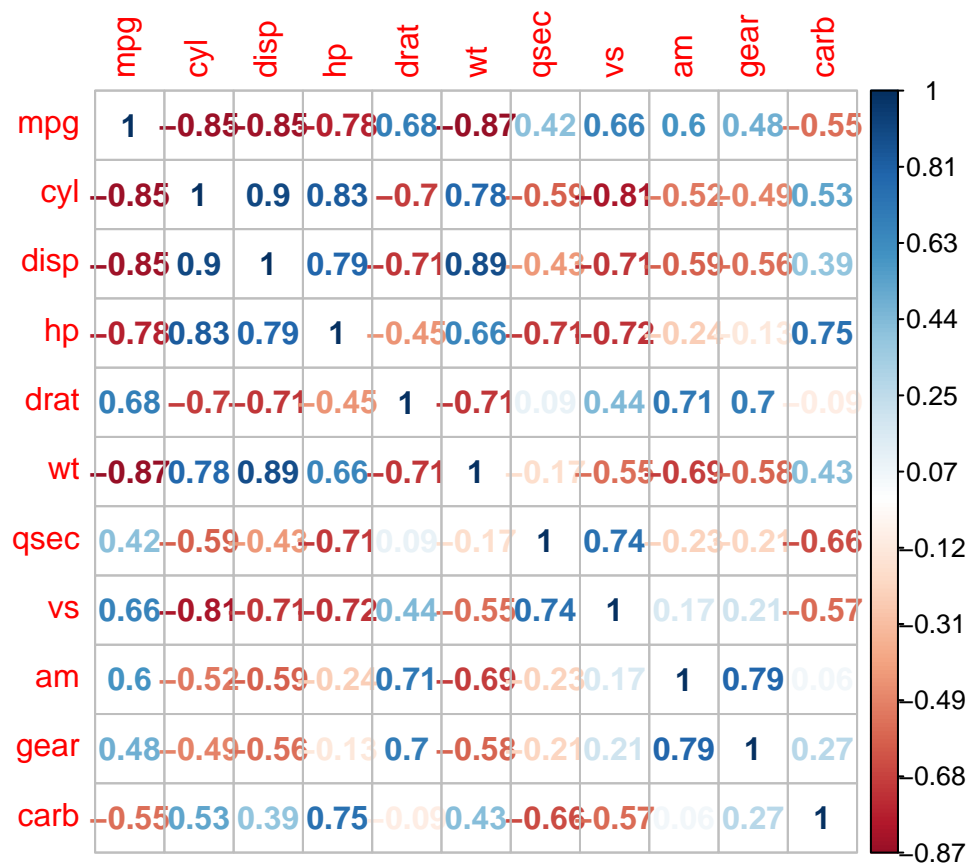
```
# Matriz de correlação (pie)
corrplot::corrplot(cortable, method = c("pie"), is.corr = FALSE)
```



```
# 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)
```