

# Tarefa 1 - Análise Multivariada

## *Análise dos lanches da empresa McDonalds*

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true

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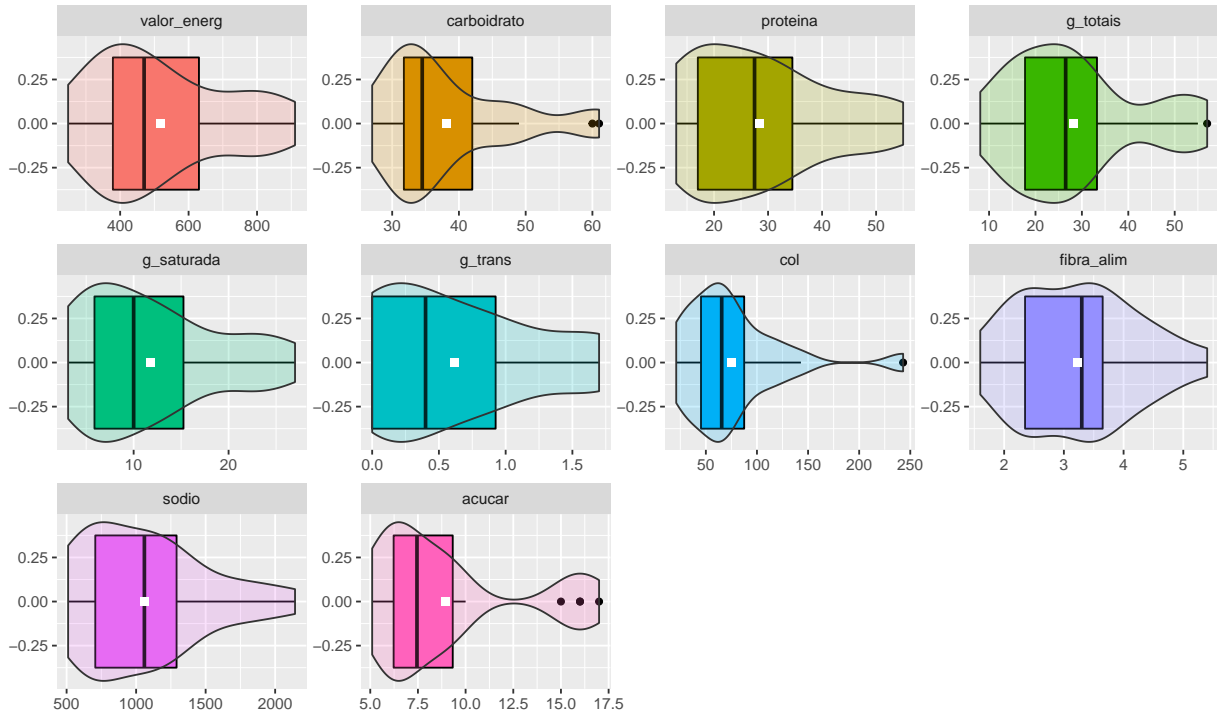
## Dados

```
data_sand <-  
  link_github %>%  
  paste('/first_homework/data_sand.txt', sep = '') %>%  
  url() %>%  
  read.table(header = T, dec = ',')
```

## Análise Gráfica

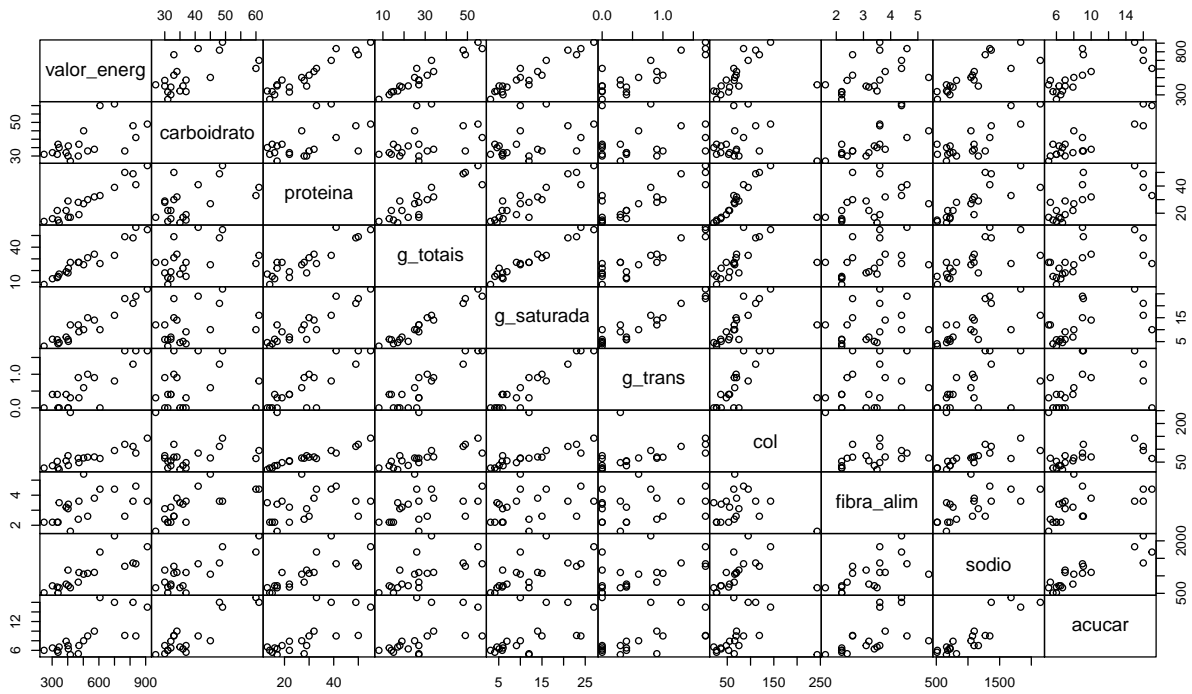
### Unidimensional

```
data_sand %>%  
  melt(id.vars = 'Sandwiches') %>%  
  ggplot(aes(y = value,  
            fill = variable)) +  
  geom_boxplot(col = 'black') +  
  geom_violin(aes(x = 0), alpha = .2) +  
  facet_wrap(facets = 'variable', scales = 'free') +  
  stat_summary(aes(x = 0), fun.y = 'mean', geom = 'point',  
              col = 'white', size = 2, pch = 15) +  
  theme(legend.position = 'none') +  
  xlab('') + ylab('') +  
  coord_flip()
```

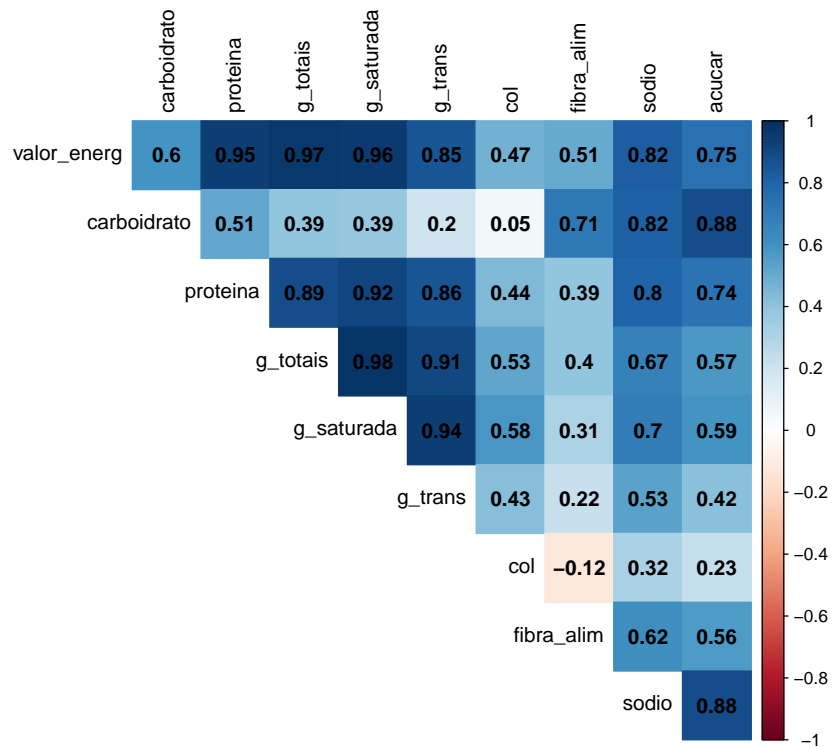


## Bidimensional

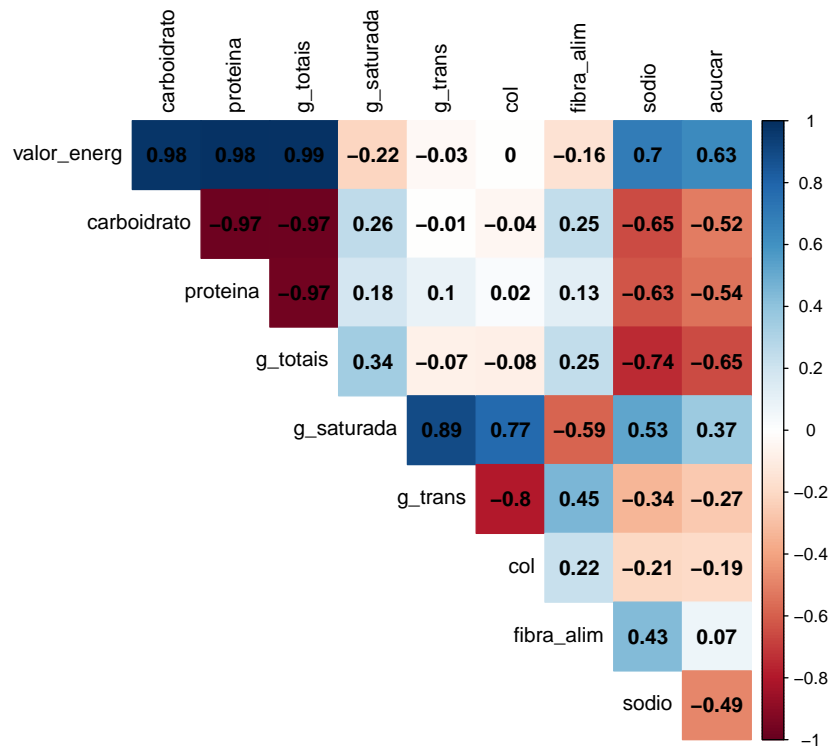
```
pairs(data_sand[, -1], gap = 0)
```



```
cor(data_sand[, -1], method = 'pearson') %>%
  corrrplot::corrplot(method = 'color',
    type = 'upper',
    diag = F,
    addCoef.col = 'black',
    tl.col = 'black')
```

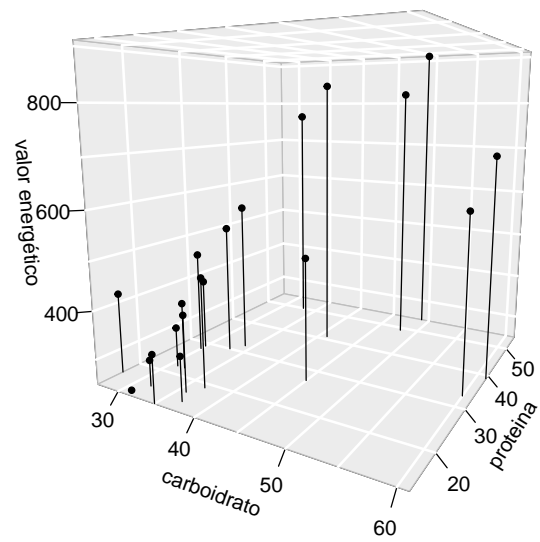


```
ppcor::pcor(data_sand[, -1])$estimate %>%
  corrrplot::corrplot(method = 'color',
    type = 'upper',
    diag = F,
    addCoef.col = 'black',
    tl.col = 'black')
```

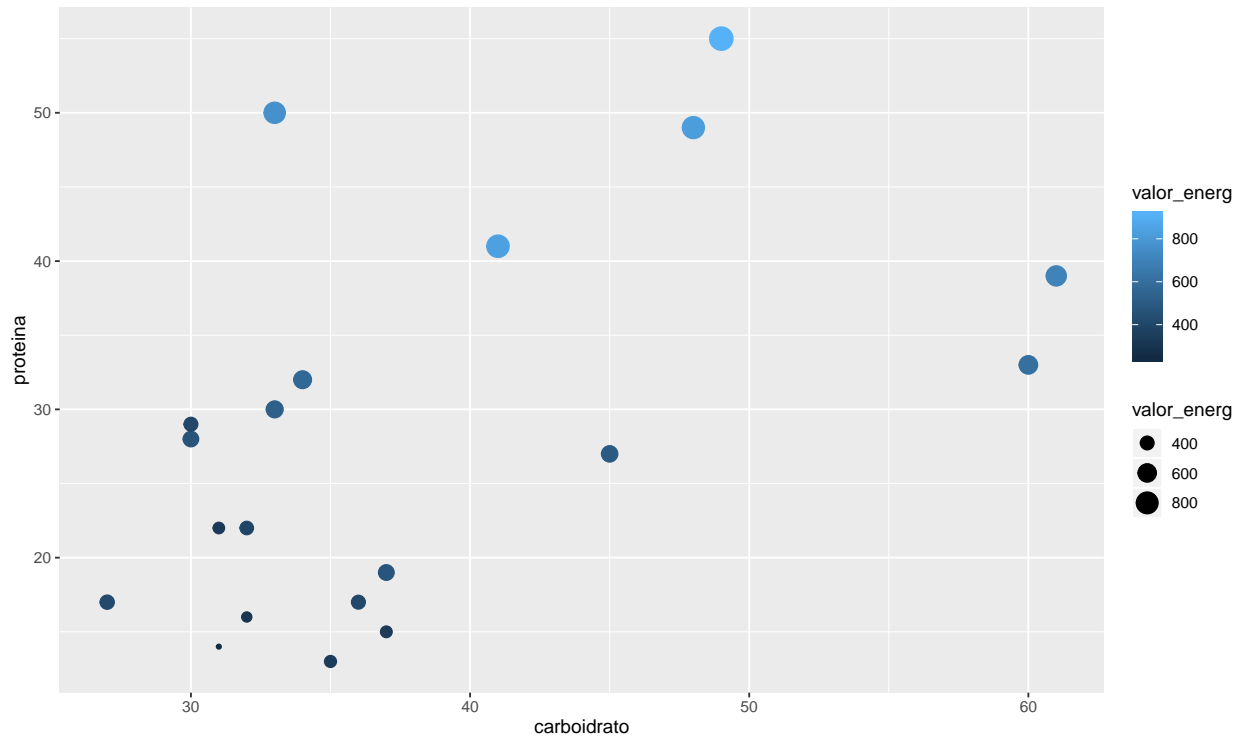


## Tridimensional

```
data_sand %$%
plot3D::scatter3D(x = carboidrato,
  y = proteina,
  z = valor_energ,
  xlab = 'carboidrato',
  ylab = 'proteina',
  zlab = 'valor energético',
  phi = 10,
  theta = 30,
  bty = 'g',
  type = 'h',
  ticktype = 'detailed',
  pch = 20,
  colvar = NULL)
```

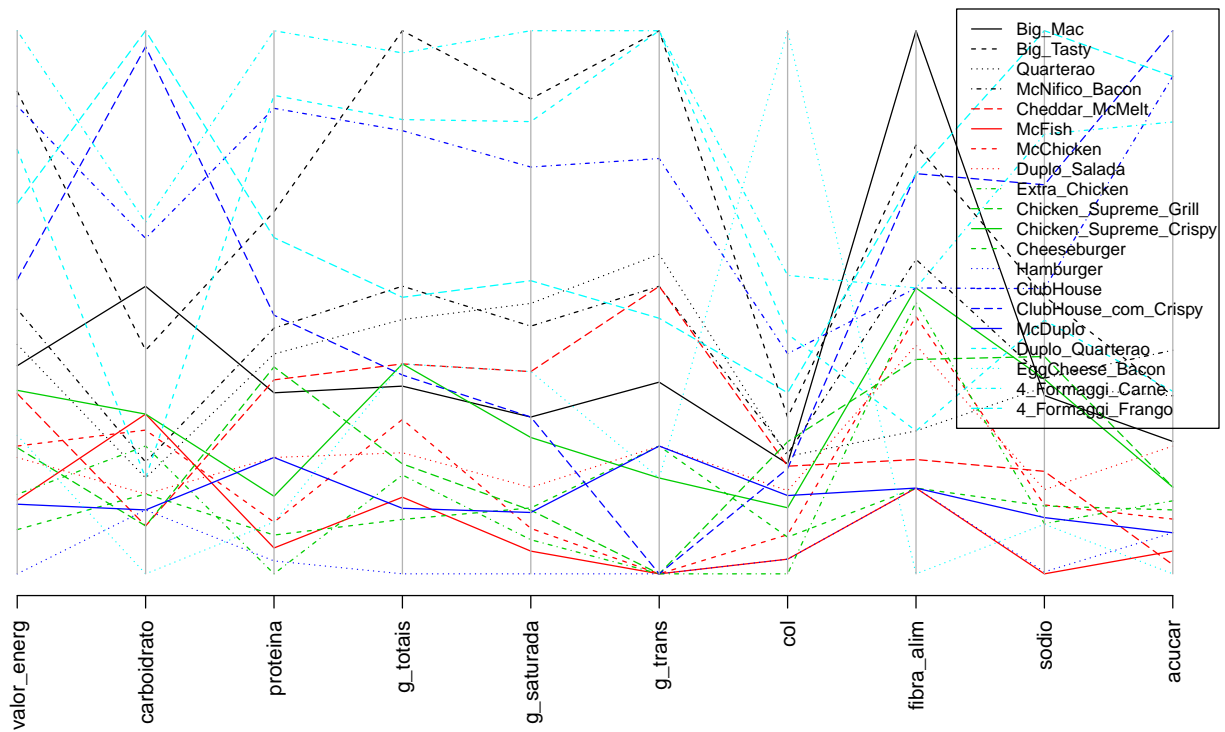


```
data_sand %>%
  ggplot(aes(x = carboidrato,
             y = proteina,
             size = valor_energ)) +
  geom_point(aes(col = valor_energ))
```

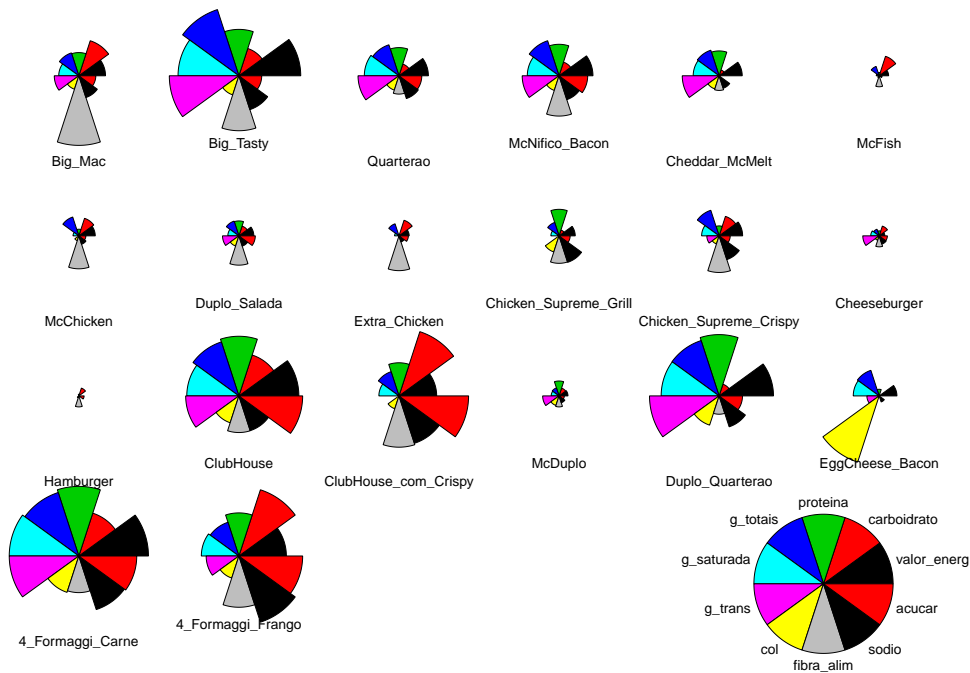


## Mútiplos

```
par(las = 2, mai = c(1.3, 0, 0, 0))
MASS::parcoord(data_sand[, -1],
  col = rep(c(1, 2, 3, 4, 5), each = 4),
  lty = rep(c(1, 2, 3, 4, 5), times = 4))
legend('topright',
  legend = data_sand$Sandwiches,
  cex = .8,
  col = rep(c(1, 2, 3, 4, 5), each = 4),
  lty = rep(c(1, 2, 3, 4, 5), times = 4))
```



```
stars(data_sand[, -1], ncol = 6,
      labels = as.character(data_sand$Sandwiches),
      draw.segments = T,
      col.stars = T,
      cex = .7,
      key.loc = c(13, 1.9))
```



```
data_sand[, -1] %>%
  scale() %>%
  dist(diag = T, upper = T) %>%
  as.matrix() %>%
  melt() %>%
  ggplot(aes(x = Var1,
             y = Var2,
             fill = value)) +
  geom_tile(colour = 'white') +
  scale_fill_gradient(low = "gray", high = "black") +
  xlab('') + ylab('') +
  scale_x_discrete(expand = c(0, 0),
                   limits = seq(1, 20, 1),
                   breaks = seq(1, 20, 1),
                   labels = data_sand$Sandwiches) +
  scale_y_discrete(expand = c(0, 0),
                   limits = seq(1, 20, 1),
                   breaks = seq(1, 20, 1),
                   labels = data_sand$Sandwiches) +
  theme(axis.text.x = element_text(angle = 90, hjust = 1))
```



