RWorksheet_Soldevilla#4b.Rmd

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#1

```
vectorA <- c(1, 2, 3, 4, 5)
matrixA <- matrix(0, nrow = 5, ncol = 5)

for (i in 1:5) {
  for (j in 1:5) {
    matrixA[i, j] <- abs(vectorA[i] - vectorA[j])
  }
}

matrixA
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    0    1    2    3    4
## [2,]    1    0    1    2    3
## [3,]    2    1    0    1    2
## [4,]    3    2    1    0    1
## [5,]    4    3    2    1    0
```

#2

```
num_rows <- 5

for(i in 1:num_rows){
  for(j in 1:i){
    cat("*")
  }
  cat("\n")
}
```

```
## *
## **
## ***
## ****
## *****
```

#3

```
input.number <- as.numeric(readline("Enter a number to start the Fibonacci sequence: "))
```

```
## Enter a number to start the Fibonacci sequence:
```

```
assume.number <- 0
x <- 0
y <- 1
```

```
repeat {
  if (x > 500) {
    break
  }
  if (x >= assume.number) {
    cat(x, " ")
  }
  temp <- x + y
  x <- y
  y <- temp
}
```

```
## 0  1  1  2  3  5  8  13  21  34  55  89  144  233  377
```

```
cat("\n")
```

#4

```
library(readr)
shoes <- read_csv("/cloud/project/RWorksheet_Soldevilla#4/shoes.csv",
                  show_col_types = FALSE)
shoes
```

```
## # A tibble: 28 x 3
##    `Shoe Size` Height Gender
##          <dbl>  <dbl> <chr>
##  1         6.5   66   F
##  2         9     68   F
##  3         8.5   64.5 F
##  4         8.5   65   F
##  5        10.5   70   M
##  6         7     64   F
##  7         9.5   70   F
##  8         9     71   F
##  9        13     72   M
## 10         7.5   64   F
## # i 18 more rows
```

```
shoes <-  read.csv("shoes.csv")
shoes
```

```
##    Shoe.Size Height Gender
## 1        6.5   66.0      F
## 2        9.0   68.0      F
## 3        8.5   64.5      F
## 4        8.5   65.0      F
## 5       10.5   70.0      M
## 6        7.0   64.0      F
## 7        9.5   70.0      F
## 8        9.0   71.0      F
## 9       13.0   72.0      M
## 10       7.5   64.0      F
## 11      10.5   74.5      M
## 12       8.5   67.0      F
## 13      12.0   71.0      M
## 14      10.5   71.0      M
```

```
## 15      13.0   77.0      M
## 16      11.5   72.0      M
## 17       8.5   59.0      F
## 18       5.0   62.0      F
## 19      10.0   72.0      M
## 20       6.5   66.0      F
## 21       7.5   64.0      F
## 22       8.5   67.0      M
## 23      10.5   73.0      M
## 24       8.5   69.0      F
## 25      10.5   72.0      M
## 26      11.0   70.0      M
## 27       9.0   69.0      M
## 28      13.0   70.0      M
```

```
ssize <- shoes[c(1:6),]
ssize
```

```
##   Shoe.Size Height Gender
## 1       6.5   66.0      F
## 2       9.0   68.0      F
## 3       8.5   64.5      F
## 4       8.5   65.0      F
## 5      10.5   70.0      M
## 6       7.0   64.0      F
```

```
male_subset <- shoes[shoes$Gender == "M", c("Shoe.Size", "Height")]
female_subset <- shoes[shoes$Gender == "F", c("Shoe.Size", "Height")]
male_subset
```

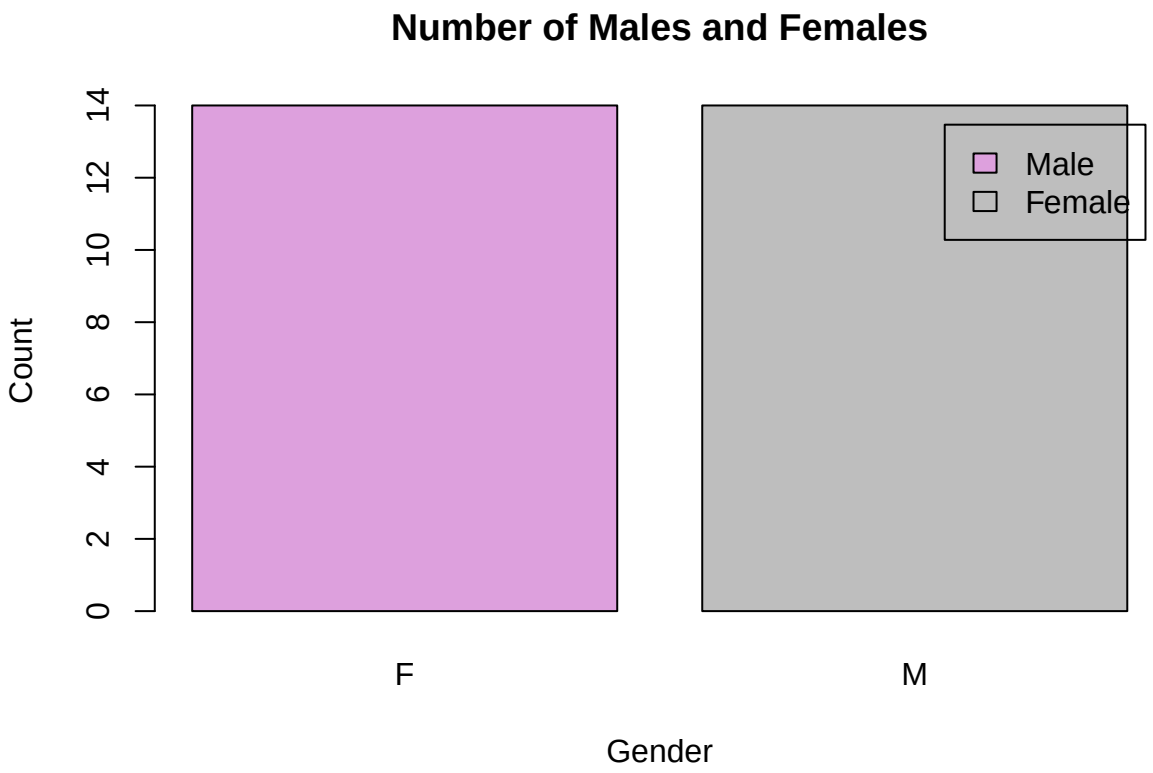
```
##    Shoe.Size Height
## 5       10.5   70.0
## 9       13.0   72.0
## 11      10.5   74.5
## 13      12.0   71.0
## 14      10.5   71.0
## 15      13.0   77.0
## 16      11.5   72.0
## 19      10.0   72.0
## 22       8.5   67.0
## 23      10.5   73.0
## 25      10.5   72.0
## 26      11.0   70.0
## 27       9.0   69.0
## 28      13.0   70.0
```

```
female_subset
```

```
##    Shoe.Size Height
## 1        6.5   66.0
## 2        9.0   68.0
## 3        8.5   64.5
## 4        8.5   65.0
## 6        7.0   64.0
## 7        9.5   70.0
## 8        9.0   71.0
```

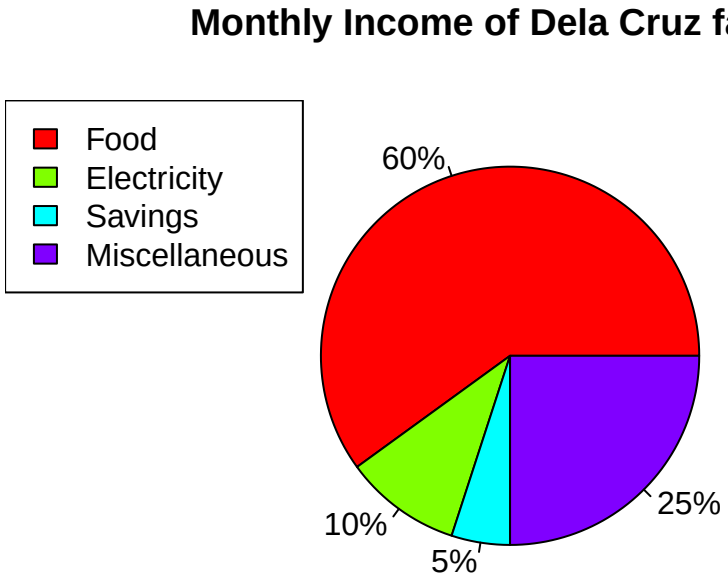
```
## 10       7.5   64.0
## 12       8.5   67.0
## 17       8.5   59.0
## 18       5.0   62.0
## 20       6.5   66.0
## 21       7.5   64.0
## 24       8.5   69.0
```

```r
GraphMF<- table(shoes$Gender)
barplot(GraphMF,
        main = "Number of Males and Females",
        xlab = "Gender",
        ylab = "Count",
        col = c("plum", "gray"),
        legend.text = c("Male", "Female"),
        beside = TRUE
)
```



#5

```r
pie_chart <- c(60, 10, 5, 25)
pie(pie_chart, labels = paste0(pie_chart, "%"),
    main = "Monthly Income of Dela Cruz family ", col = rainbow(length(pie_chart)))

legend("topleft", legend = c("Food", "Electricity", "Savings", "Miscellaneous"),
       fill = rainbow(length(pie_chart)))
```



#6

```
data("iris")
str(iris)
```

```
## 'data.frame':    150 obs. of  5 variables:
##  $ Sepal.Length: num  5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
##  $ Sepal.Width : num  3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
##  $ Petal.Length: num  1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
##  $ Petal.Width : num  0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...
##  $ Species     : Factor w/ 3 levels "setosa","versicolor",..: 1 1 1 1 1 1 1 1 1 1 ...
```

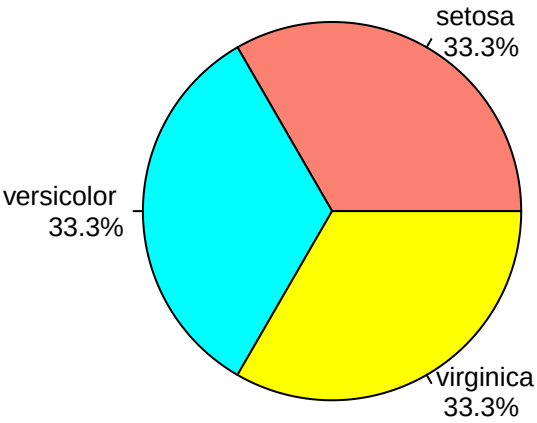
```
#It has 150 observations and 5 variables.
```

```
meanIris<- colMeans(iris[, c("Sepal.Length", "Sepal.Width", "Petal.Length", "Petal.Width")])
print(meanIris)
```

```
## Sepal.Length  Sepal.Width Petal.Length  Petal.Width
##     5.843333     3.057333     3.758000     1.199333
```

```
specs <- table(iris$Species)

clors <- c("salmon", "cyan", "yellow")

pie(specs,
    labels = paste(names(specs), "\n", sprintf("%.1f%%", prop.table(specs) * 100)),
    col = clors,
    main = "Species Distribution",
    cex.main = 1.5,
    cex = 0.8
)
```

Species Distribution




```
SetSub <- subset(iris, Species == "setosa")
VersiSub <- subset(iris, Species == "versicolor")
VirgiSub <- subset(iris, Species == "virginica")

# Display the last six rows of each species
cat("Last six rows of Setosa:")
```

```
## Last six rows of Setosa:
```

```
print(tail(SetSub))
```

```
##    Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 45          5.1         3.8          1.9         0.4  setosa
## 46          4.8         3.0          1.4         0.3  setosa
## 47          5.1         3.8          1.6         0.2  setosa
## 48          4.6         3.2          1.4         0.2  setosa
## 49          5.3         3.7          1.5         0.2  setosa
## 50          5.0         3.3          1.4         0.2  setosa
```

```
cat("Last six rows of Versicolor:")
```

```
## Last six rows of Versicolor:
```

```
print(tail(VersiSub))
```

```
##     Sepal.Length Sepal.Width Petal.Length Petal.Width    Species
## 95           5.6         2.7          4.2         1.3 versicolor
## 96           5.7         3.0          4.2         1.2 versicolor
## 97           5.7         2.9          4.2         1.3 versicolor
## 98           6.2         2.9          4.3         1.3 versicolor
## 99           5.1         2.5          3.0         1.1 versicolor
## 100          5.7         2.8          4.1         1.3 versicolor
```

```
cat("Last six rows of Virginica:")
```

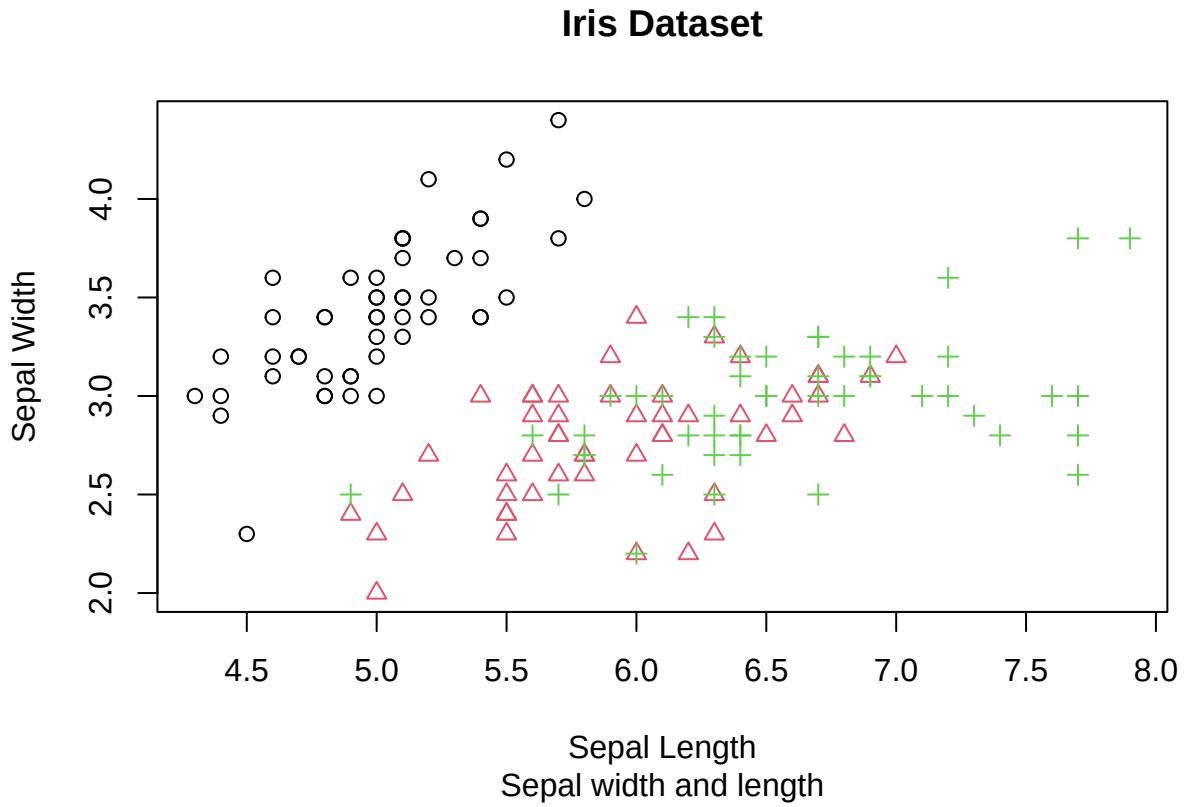
```
## Last six rows of Virginica:
```

```
print(tail(VirgiSub))
```

```
##     Sepal.Length Sepal.Width Petal.Length Petal.Width   Species
```

```
## 145          6.7         3.3          5.7         2.5 virginica
## 146          6.7         3.0          5.2         2.3 virginica
## 147          6.3         2.5          5.0         1.9 virginica
## 148          6.5         3.0          5.2         2.0 virginica
## 149          6.2         3.4          5.4         2.3 virginica
## 150          5.9         3.0          5.1         1.8 virginica
```

```
data(iris)

iris$Species <- as.factor(iris$Species)

plot(iris$Sepal.Length, iris$Sepal.Width,
     pch = as.integer(iris$Species),
     col = iris$Species,
     main = "Iris Dataset",
     sub = "Sepal width and length",
     xlab = "Sepal Length",
     ylab = "Sepal Width"
)
```




```
#The scatterplot shows similarities between the sepal width and length ranging from 5.5 to 7.0.
```

```
library(readxl)
alexa_file <- read_excel("alexa_file.xlsx")
alexa_file
```

```
## # A tibble: 3,150 x 5
##    rating date                variation           verified_reviews      feedback
##     <dbl> <dttm>              <chr>               <chr>                    <dbl>
##  1      5 2018-07-31 00:00:00 Charcoal Fabric     Love my Echo!                1
```

```
##  2      5 2018-07-31 00:00:00 Charcoal Fabric     Loved it!                  1
##  3      4 2018-07-31 00:00:00 Walnut Finish       Sometimes while play~      1
##  4      5 2018-07-31 00:00:00 Charcoal Fabric     I have had a lot of ~      1
##  5      5 2018-07-31 00:00:00 Charcoal Fabric     Music                      1
##  6      5 2018-07-31 00:00:00 Heather Gray Fabric I received the echo ~      1
##  7      3 2018-07-31 00:00:00 Sandstone Fabric    Without having a cel~      1
##  8      5 2018-07-31 00:00:00 Charcoal Fabric     I think this is the ~      1
##  9      5 2018-07-30 00:00:00 Heather Gray Fabric looks great                1
## 10      5 2018-07-30 00:00:00 Heather Gray Fabric Love it! I've listen~      1
## # i 3,140 more rows
```

```
# Remove extra whitespaces in black variants
alexa_file$variation <- gsub("\\s+", " ", alexa_file$variation)
alexa_file$variation <- gsub("Black ", "Black", alexa_file$variation)

# Remove extra whitespaces in white variants
alexa_file$variation <- gsub("\\s+", " ", alexa_file$variation)
alexa_file$variation <- gsub("White ", "White", alexa_file$variation)
```

```
# Install and load the dplyr package
if (!require(dplyr)) {
  install.packages("dplyr")
}
```

```
## Loading required package: dplyr
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

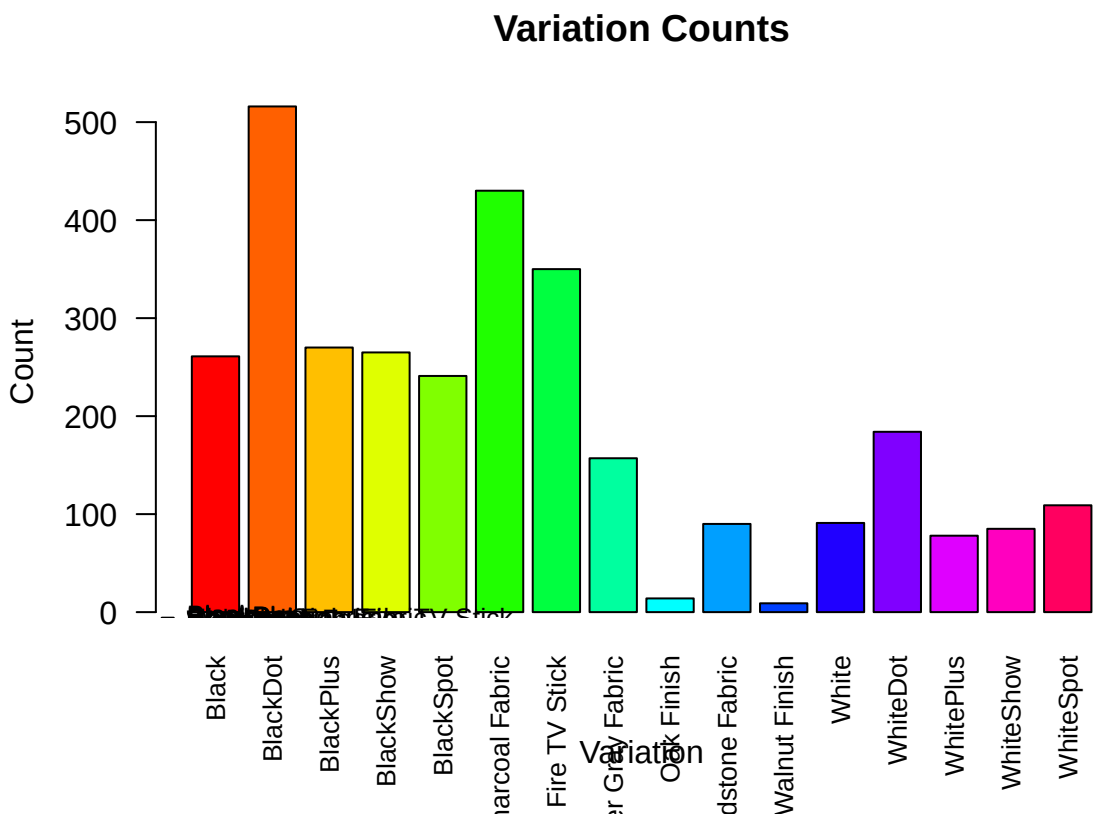
```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(dplyr)



# Group by Variation and calculate the total count
variation_counts <- alexa_file %>%
  group_by(variation) %>%
  summarise(Count = n())

# Save the object as variations.RData
save(variation_counts, file = "variations.RData")


variation_counts
```

```
## # A tibble: 16 x 2
##    variation                    Count
##    <chr>                        <int>
##  1 Black                          261
##  2 BlackDot                       516
```

```
##  3 BlackPlus                      270
##  4 BlackShow                      265
##  5 BlackSpot                      241
##  6 Charcoal Fabric                430
##  7 Configuration: Fire TV Stick   350
##  8 Heather Gray Fabric            157
##  9 Oak Finish                      14
## 10 Sandstone Fabric                90
## 11 Walnut Finish                    9
## 12 White                           91
## 13 WhiteDot                       184
## 14 WhitePlus                       78
## 15 WhiteShow                       85
## 16 WhiteSpot                      109
```

```r
# Load the variations.RData file
load("variations.RData")

# Increase the size of the plot
par(mar = c(5, 5, 4, 2) + 0.1)  # Adjust the margins

# Create a barplot with rotated x-axis labels
barplot(variation_counts$Count,
        names.arg = variation_counts$variation,
        col = rainbow(length(variation_counts$variation)),
        main = "Variation Counts",
        xlab = "Variation",
        ylab = "Count",
        las = 2,      # Rotate x-axis labels 90 degrees
        cex.names = 0.8,  # Adjust the size of the x-axis labels
        width = 0.8)  # Adjust the width of the bars

# Manually add legend in topright
legend_labels <- variation_counts$variation
legend_colors <- rainbow(length(legend_labels))

for (i in seq_along(legend_labels)) {
  rect(max(par("usr")[1]) + 0.1,
       max(par("usr")[3]) - i * 0.5,
       max(par("usr")[1]) + 0.3,
       max(par("usr")[3]) - (i + 1) * 0.5,
       col = legend_colors[i])

  text(max(par("usr")[1]) + 0.4,
       max(par("usr")[3]) - i * 0.5,
       labels = legend_labels[i],
       pos = 4,
       offset = 0.2,
       cex = 0.8)
}
```




```r
# Load the variations.RData file
load("variations.RData")

# Extract data for black and white variations
black_variations <- variation_counts[variation_counts$variation %in% c("Black", "BlackDot", "BlackPlus"
white_variations <- variation_counts[variation_counts$variation %in% c("White", "WhiteDot", "WhitePlus"

# Set up the plotting area
par(mfrow = c(1, 2))  # 1 row, 2 columns

# Barplot for black variations
barplot(black_variations$Count,
        names.arg = black_variations$variation,
        col = rainbow(length(black_variations$variation)),
        main = "Black Variations",
        xlab = "Variation",
        ylab = "Count",
        las = 2,
        cex.names = 0.8,
        width = 0.8)

# Barplot for white variations
barplot(white_variations$Count,
        names.arg = white_variations$variation,
        col = rainbow(length(white_variations$variation)),
        main = "White Variations",
        xlab = "Variation",
        ylab = "Count",
```

```
        las = 2,
        cex.names = 0.8,
        width = 0.8)
```