Let's Learn R Markdown

2023-08-31

Hello world.

Hello world.

Hello world.

Hello world.

Hello world.

Hello **world**. ~~Hello world~~.

> Add two spaces at the end of a line.

Hello world.
Hello world.

Creating R chunks

: Keyboard shortcut: command (ctrl) + option + i.

```
# Hello world.
data("mtcars")
```

: R chunk options

Where is it??

Here it is!

```
summary(mtcars)
```

```
##       mpg             cyl             disp             hp
##  Min.   :10.40   Min.   :4.000   Min.   : 71.1   Min.   : 52.0
##  1st Qu.:15.43   1st Qu.:4.000   1st Qu.:120.8   1st Qu.: 96.5
##  Median :19.20   Median :6.000   Median :196.3   Median :123.0
##  Mean   :20.09   Mean   :6.188   Mean   :230.7   Mean   :146.7
##  3rd Qu.:22.80   3rd Qu.:8.000   3rd Qu.:326.0   3rd Qu.:180.0
##  Max.   :33.90   Max.   :8.000   Max.   :472.0   Max.   :335.0
##       drat             wt             qsec             vs
##  Min.   :2.760   Min.   :1.513   Min.   :14.50   Min.   :0.0000
##  1st Qu.:3.080   1st Qu.:2.581   1st Qu.:16.89   1st Qu.:0.0000
##  Median :3.695   Median :3.325   Median :17.71   Median :0.0000
##  Mean   :3.597   Mean   :3.217   Mean   :17.85   Mean   :0.4375
##  3rd Qu.:3.920   3rd Qu.:3.610   3rd Qu.:18.90   3rd Qu.:1.0000
##  Max.   :4.930   Max.   :5.424   Max.   :22.90   Max.   :1.0000
##        am              gear            carb
##  Min.   :0.0000   Min.   :3.000   Min.   :1.000
```

```
##  1st Qu.:0.0000   1st Qu.:3.000   1st Qu.:2.000
##  Median :0.0000   Median :4.000   Median :2.000
##  Mean   :0.4062   Mean   :3.688   Mean   :2.812
##  3rd Qu.:1.0000   3rd Qu.:4.000   3rd Qu.:4.000
##  Max.   :1.0000   Max.   :5.000   Max.   :8.000
```

PLEASE DO NOT DO THIS....EVER

```
mtcars
```

```
##                     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
```

```
mean(mtcars$mpg)
```

```
## [1] 20.09062
```

Or you can write inline code.. The mean mpg for cars in 1974 is 20.09.

```
mean_mpg <- mean(mtcars$mpg)
mean_mpg_1 <- round(mean(mtcars$mpg), 2)
sd_mpg <- sd(mtcars$mpg)

mean_wt <- round( mean(mtcars$wt), 2)
sd_wt <- round( sd(mtcars$wt), 2)
```

```r
table(mtcars$am_f) # WAIT! BE CAREFUL HERE
```

```
## < table of extent 0 >
```

```r
mtcars$am_f <- factor(mtcars$am,
                      labels = c("automatic", "manual"))

summary(mtcars$am_f)
```

```
## automatic    manual
##        19        13
```

```r
addmargins(table(mtcars$am_f))
```

```
##
## automatic    manual       Sum
##        19        13        32
```

```r
mean_mpg <- mean(mtcars$mpg)

mean_mpg_1 <- round(mean(mtcars$mpg), 2)

sd_mpg <- sd(mtcars$mpg)

mean_wt <- round(mean(mtcars$wt), 2)
sd_wt <- round(sd(mtcars$wt), 2)

mtcars$am_f <- factor(mtcars$am,
                              labels = c("automatic", "manual"))
```

```r
table(mtcars$am_f)
```

```
##
## automatic    manual
##        19        13
```

```r
# table(mtcars$am_f) / nrow(mtcars)
# # ## OR
props <- prop.table(table(mtcars$am_f))
props
```

```
##
## automatic    manual
##   0.59375   0.40625
```

```r
# table(mtcars$am_f) / nrow(mtcars)
```

#Making table by hand

Right	Left	Default	Center
12	12	12	12
123	123	123	123
1	1	1	1

Variable	mean (sd) or n (%)
mpg	20.090625 (6.0269481)
weight	3.22 (0.98)
Transmission	
- Automatic	19 (59.375%)
- Manual	13 (40.625%)

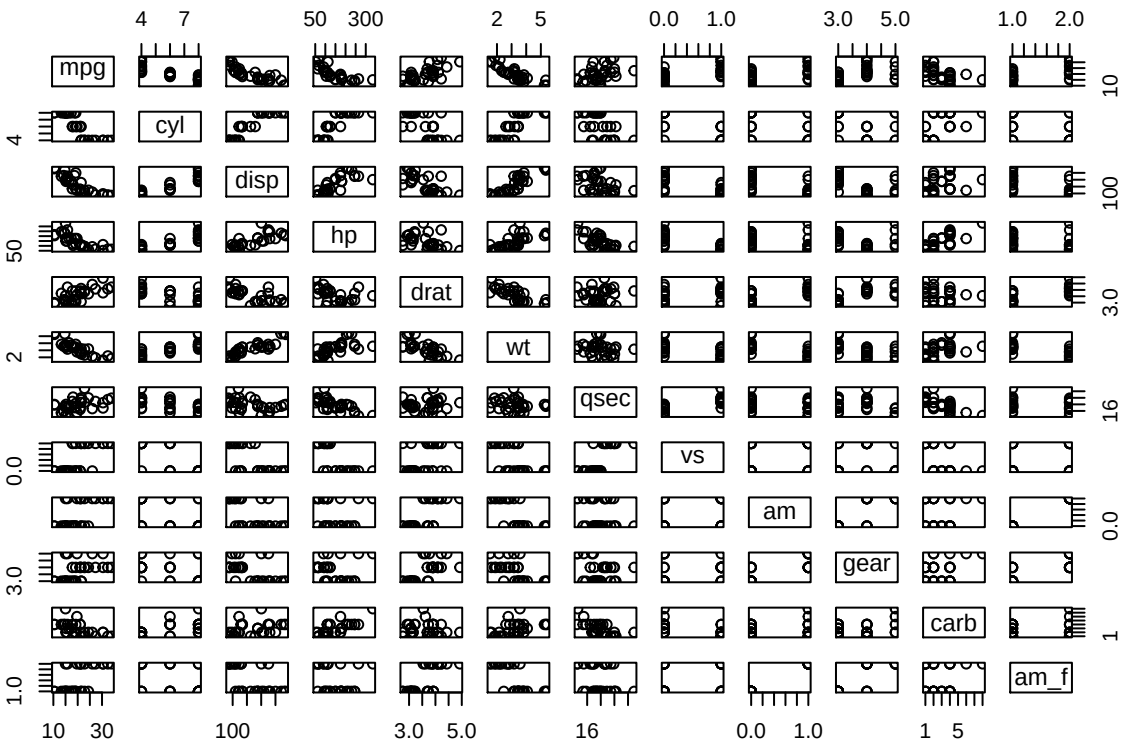
```
# summarizing lots of variables
apply(mtcars[, 1:3], 2, mean)
```

```
##       mpg       cyl      disp
##  20.09062   6.18750 230.72188
```

```
apply(mtcars[,1:5], 2, mean)
```

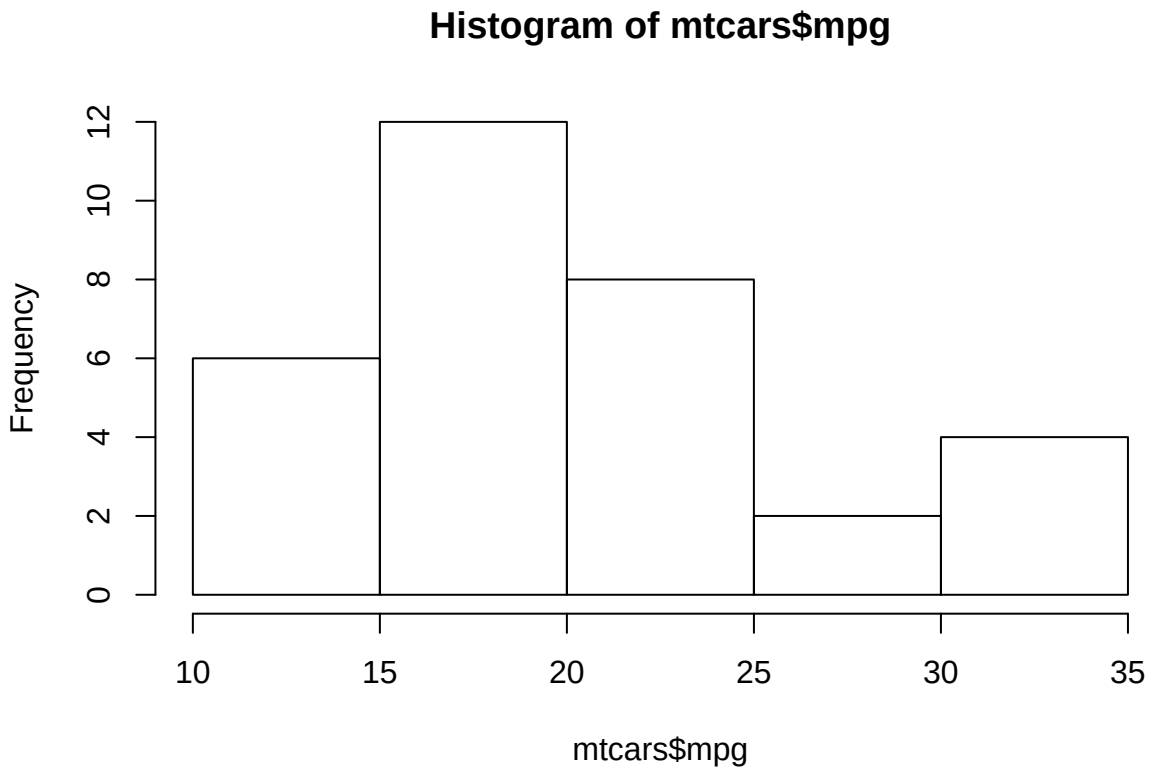
```
##        mpg        cyl       disp         hp       drat
##  20.090625   6.187500 230.721875 146.687500   3.596563
```

```
# ######################################################
# # STOP HERE... BACK TO SLIDES
#
# # Scatterplot matrix (plotting the entire dataset)
plot(mtcars)
```

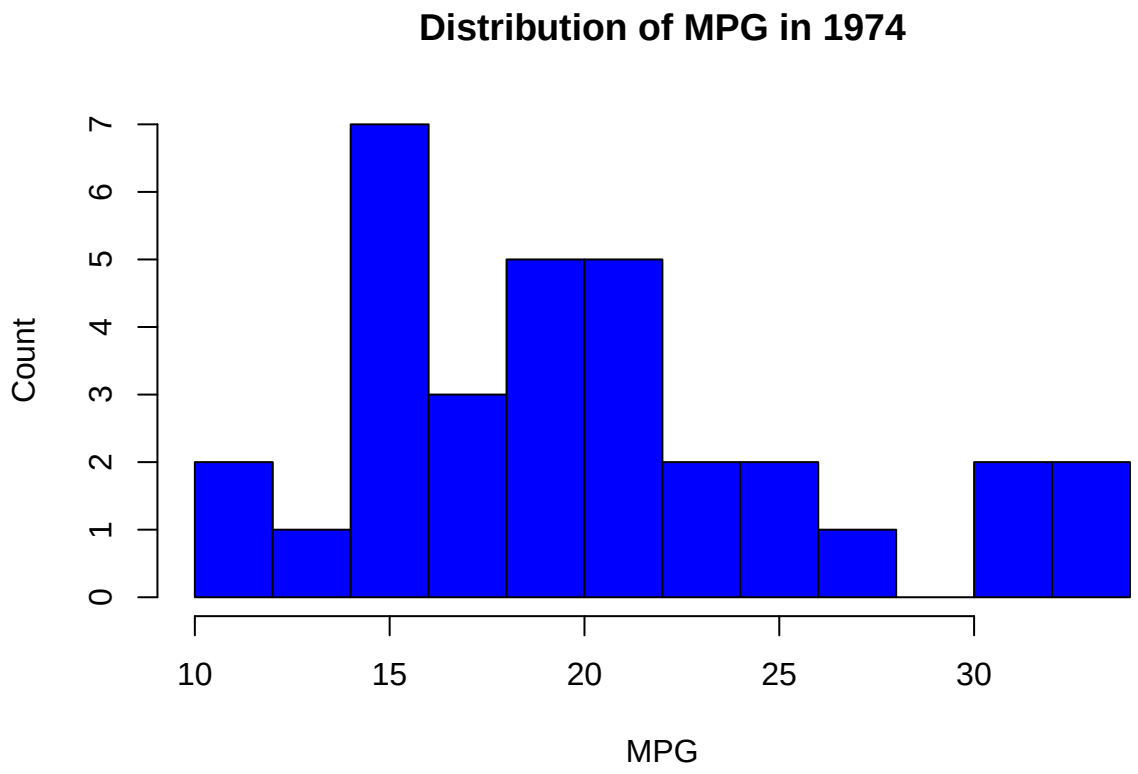



```
#
# # Plotting a quantitative variable
# plot(mtcars$mpg) # hmm... not helpful
```

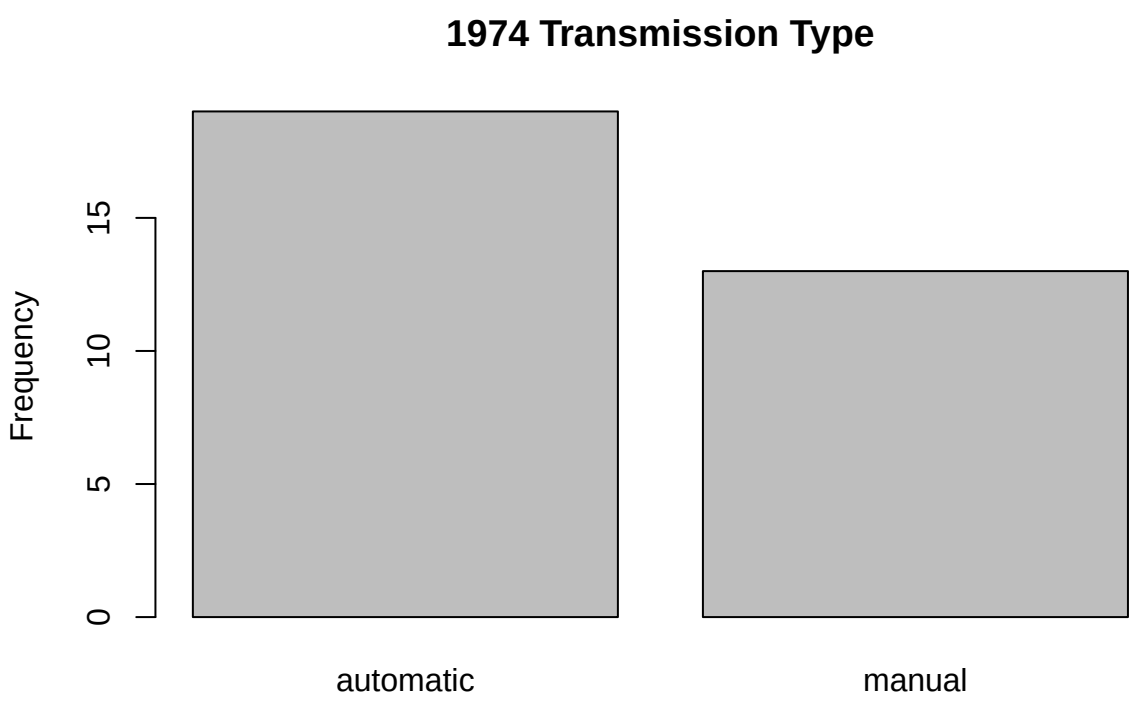
```r
hist(mtcars$mpg) # better, but boring
```



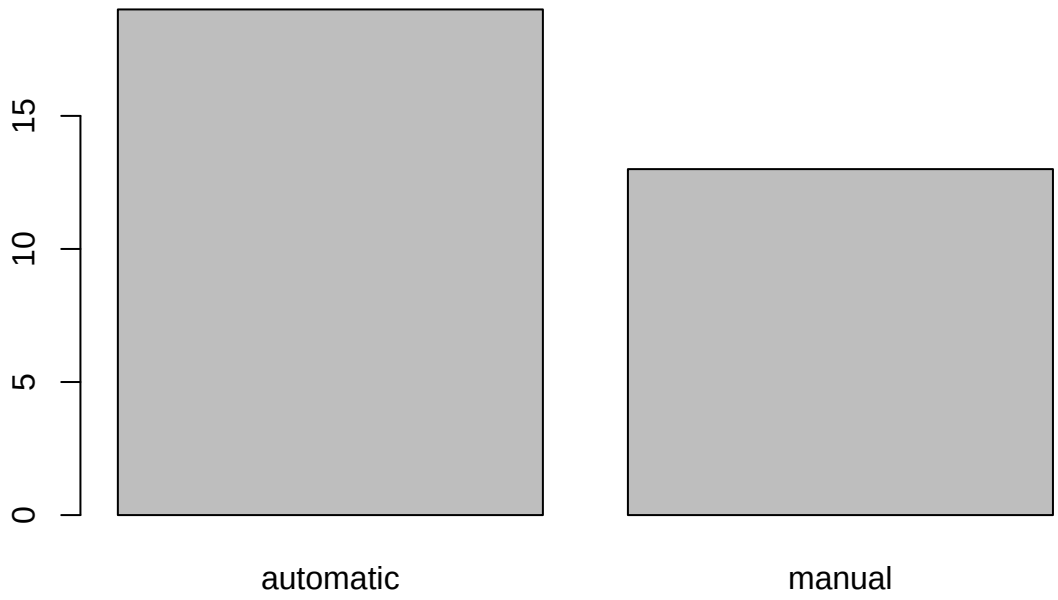

```r
hist(mtcars$mpg,
     main = "Distribution of MPG in 1974", # Add a title
     breaks = 10, # specify number of bars
     xlab = "MPG", # Change x label
     ylab = "Count", # Change y label
     col = "blue") # Change color of bars
```



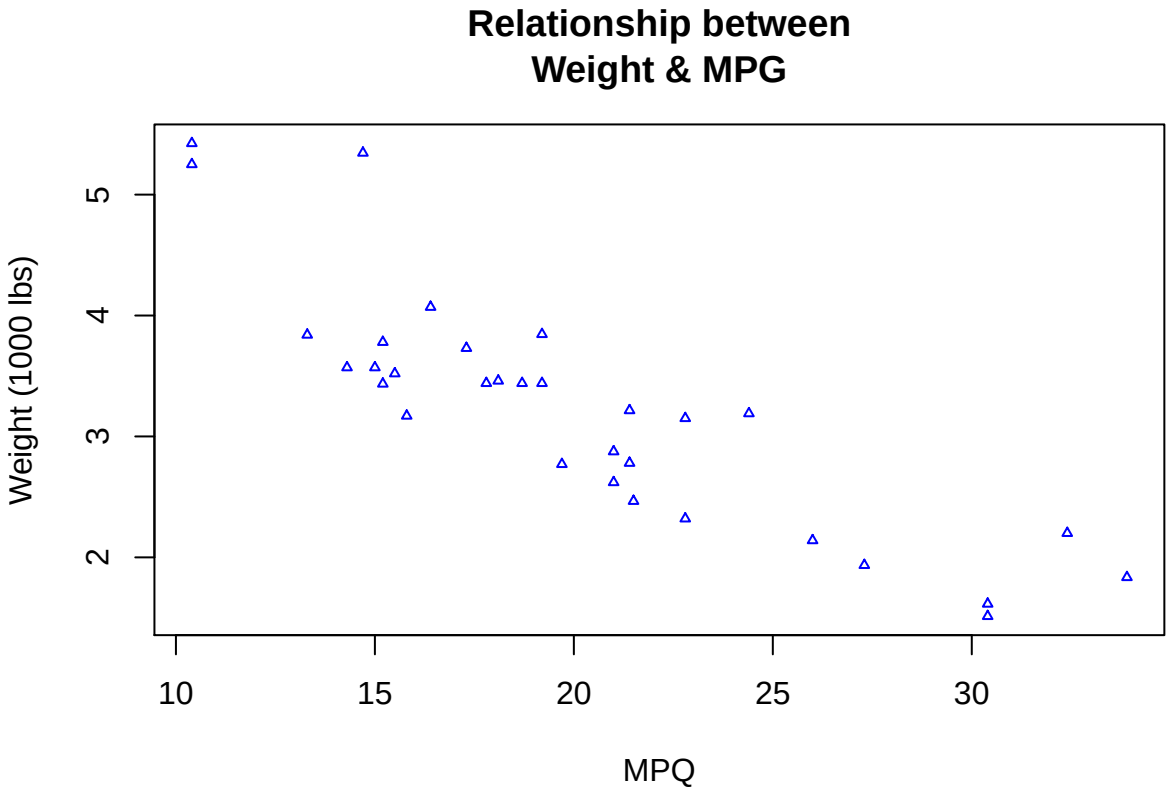

```
#
# Plotting a categorical variable
plot(mtcars$am_f,
     main = "1974 Transmission Type",
     ylab = "Frequency")
```




```
barplot(table(mtcars$am_f),
        main = "transmission type")
```




```
# plot(mtcars$am_f,
#      main = "1974 Transmission Type",
#      ylab = "Frequency")
#
# # Making a scatterplot
# # plot(x, y)
#
# plot(mtcars$mpg, mtcars$wt) # BORING
plot(mtcars$mpg, mtcars$wt,
     main = "Relationship between\nWeight & MPG",
     xlab = "MPQ",
     ylab = "Weight (1000 lbs)",
     type = "p",
     pch = 2,
     col = "blue",
     cex = .5)
```




```
#
#
# # Installing packages
#
# # install.packages("openintro") # Run once and never again!
# library(openintro)
#
# ?openintro
#
# data("babies")
```