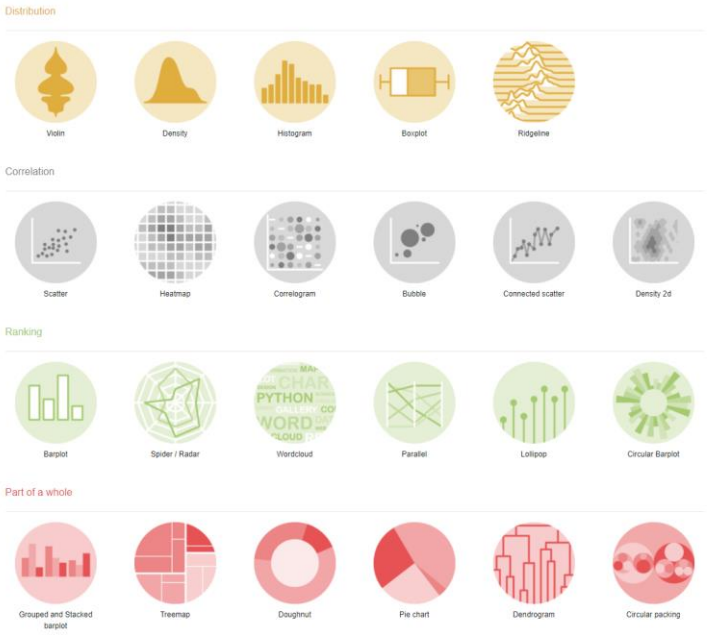

R Graph Basics Part 2

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R Graph Basic 4: plot( ) function

- plot( ) function
  - ✓ Type of graphs that we can draw with plot( ) function

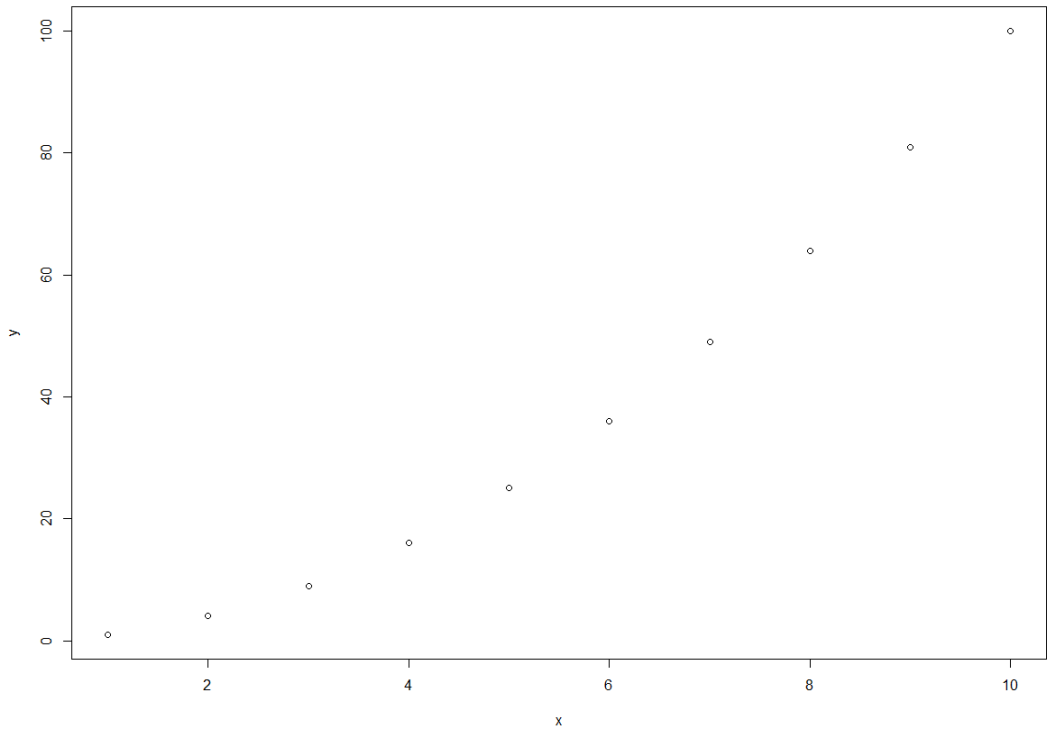
```
> methods("plot")
 [1] plot.acf*           plot.data.frame*    plot.decomposed.ts* plot.default
 [5] plot.dendrogram*    plot.density*       plot.ecdf           plot.factor*
 [9] plot.formula*       plot.function       plot.hclust*        plot.histogram*
[13] plot.HoltWinters*   plot.isoreg*       plot.lm*            plot.medpolish*
[17] plot.mlm*           plot.ppr*           plot.prcomp*        plot.princomp*
[21] plot.profile.nls*   plot.raster*        plot.spec*          plot.stepfun
[25] plot.stl*           plot.table*         plot.ts             plot.tskernel*
[29] plot.TukeyHSD*
```

- (Note) The contents for plot( ) function are mainly taken from the following blog post: https://rstatistics.tistory.com/3

R Graph Basic 4: plot( ) function

- plot( ) function Example 1

```r
# Scatter plot
x <- 1:10
y <- x^2
plot(x,y)
```



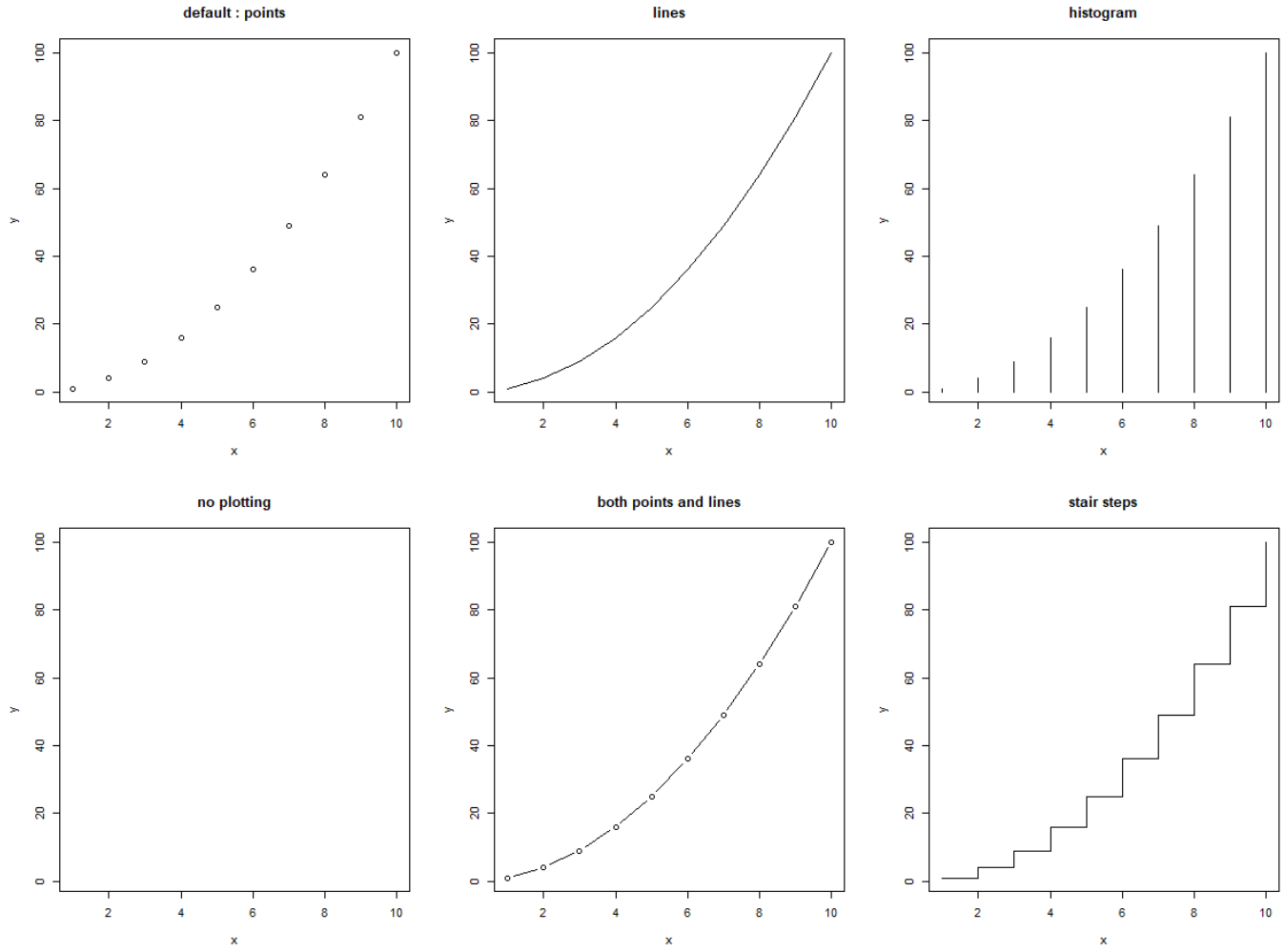
R Graph Basic 4: plot( ) function

- plot( ) function Example 2: Graph types

```
# Different type of graph
par(mfrow = c(2,3))
plot(x, y, main = "default : points")
plot(x, y, type = "l", main = "lines")
plot(x, y, type = "h", main = "histogram")
plot(x, y, type = "n", main = "no plotting")
plot(x, y, type = "b", main = "both points and lines")
plot(x, y, type = "s", main = "stair steps")
dev.off()
```

R Graph Basic 4: plot( ) function

- plot( ) function Example 2: Graph types



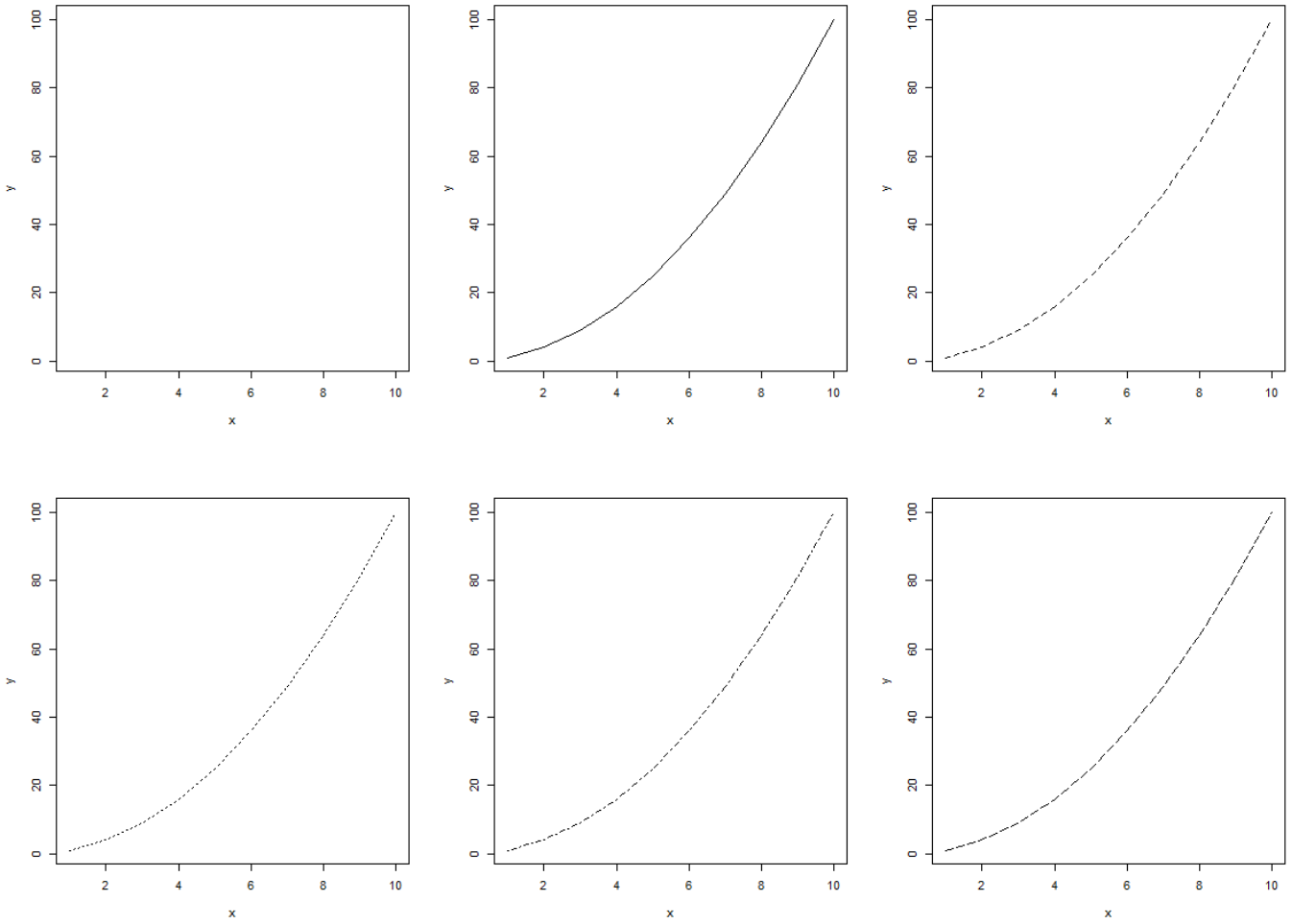
R Graph Basic 4: plot( ) function

- plot( ) function Example 3: Line types

```
# Different type of line
par(mfrow = c(2, 3))
plot(x, y, type = "l", lty = 0)
plot(x, y, type = "l", lty = 1)
plot(x, y, type = "l", lty = 2)
plot(x, y, type = "l", lty = 3)
plot(x, y, type = "l", lty = 4)
plot(x, y, type = "l", lty = 5)
dev.off()
```

R Graph Basic 4: plot( ) function

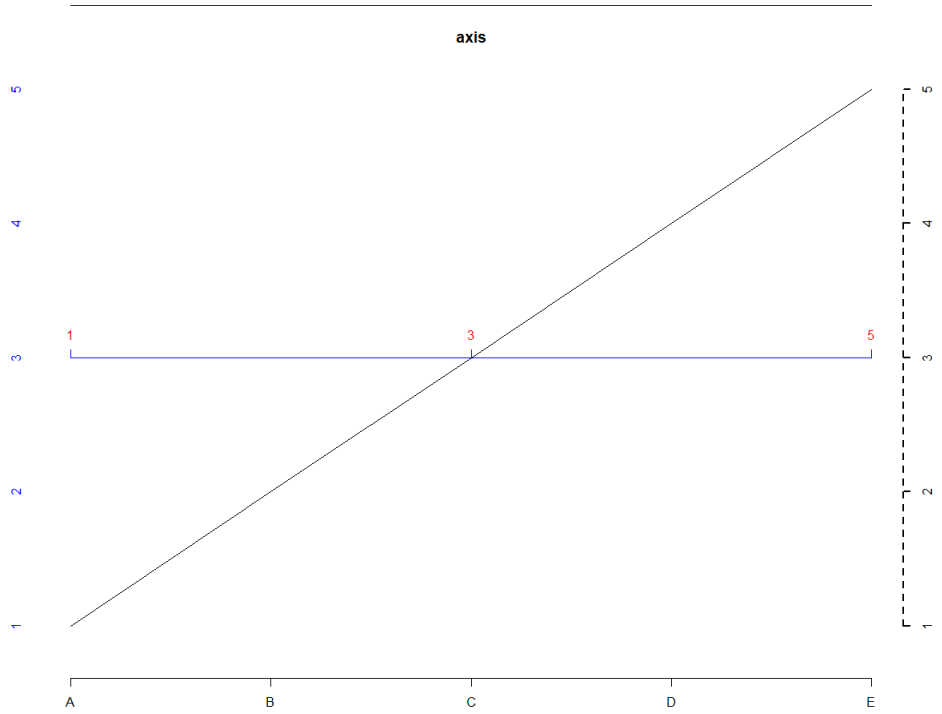
- plot( ) function Example 3: Line types



R Graph Basic 4: plot( ) function

- plot( ) function Example 4: Axis setting

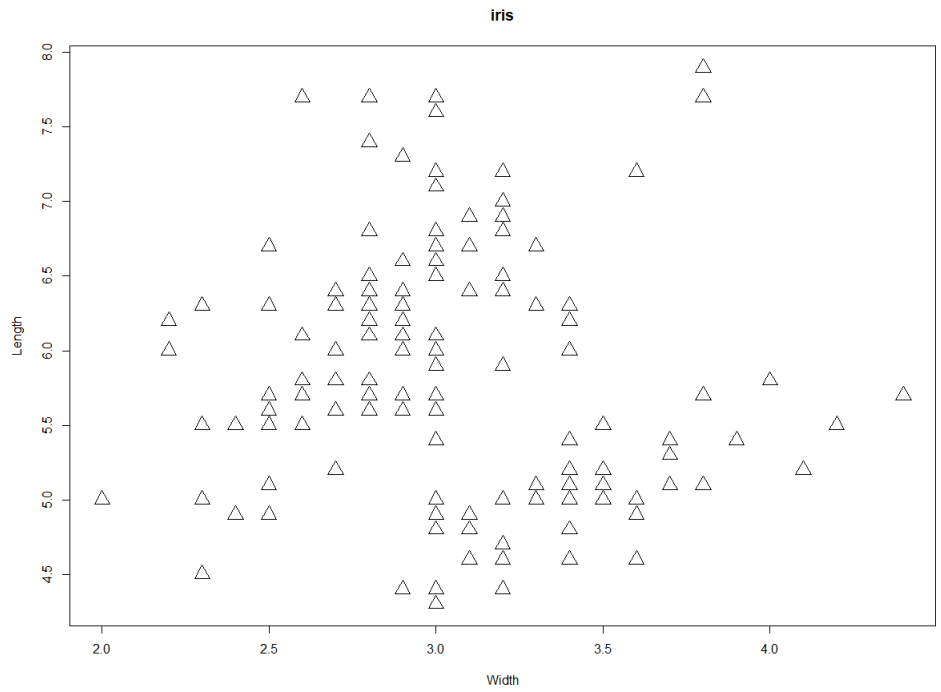
```
# Axis setting
plot(1:5, type = "l", main = "axis", axes = FALSE, xlab = "", ylab = "")
axis(side = 1, at = 1:5, labels = LETTERS[1:5], line = 2)
axis(side = 2, tick = FALSE, col.axis = "blue")
axis(side = 3, outer = TRUE)
axis(side = 3, at = c(1, 3, 5), pos = 3, col = "blue", col.axis = "red")
axis(side = 4, lty = 2, lwd = 2)
```

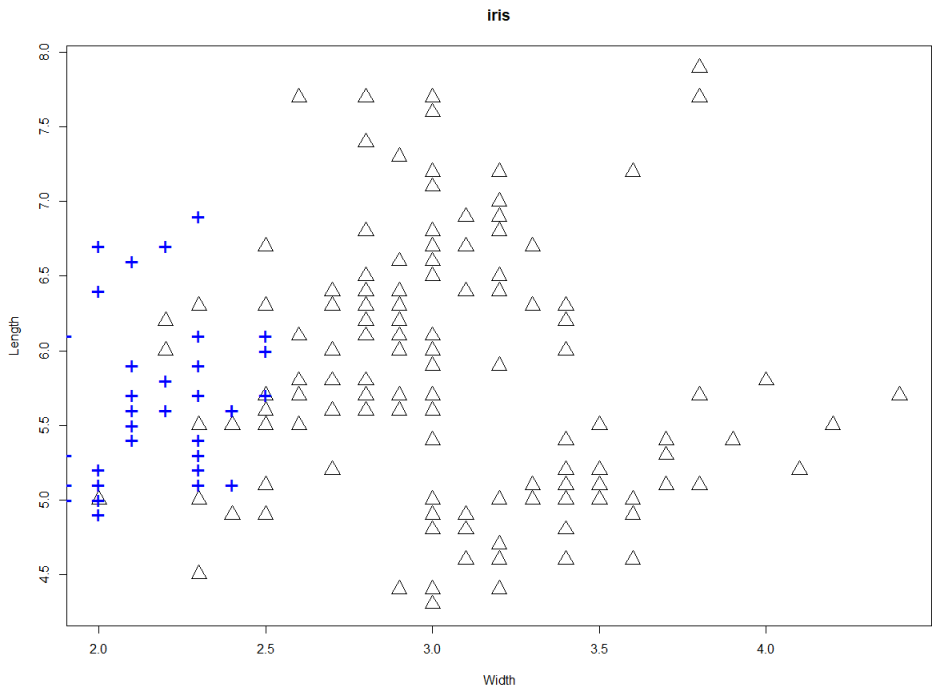


R Graph Basic 4: plot( ) function

- plot( ) function Example 5: Add points in the plot

```
# Points
plot(iris$Sepal.Width, iris$Sepal.Length, cex = 2, pch = 2,
         xlab = "Width", ylab = "Length", main = "iris")
points(iris$Petal.Width, iris$Petal.Length, cex = 2, pch = "+", col = "blue")
```

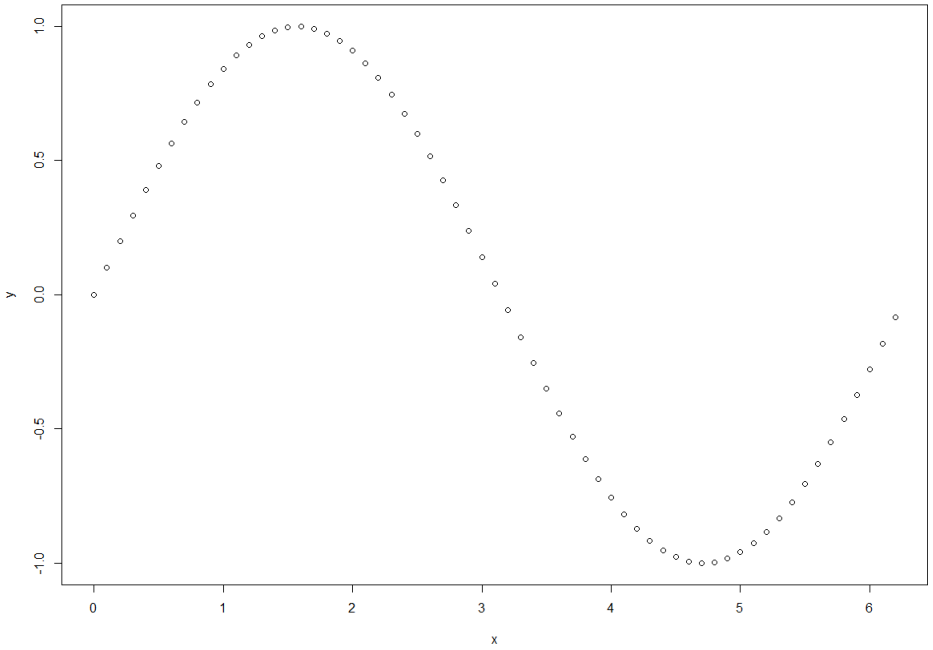


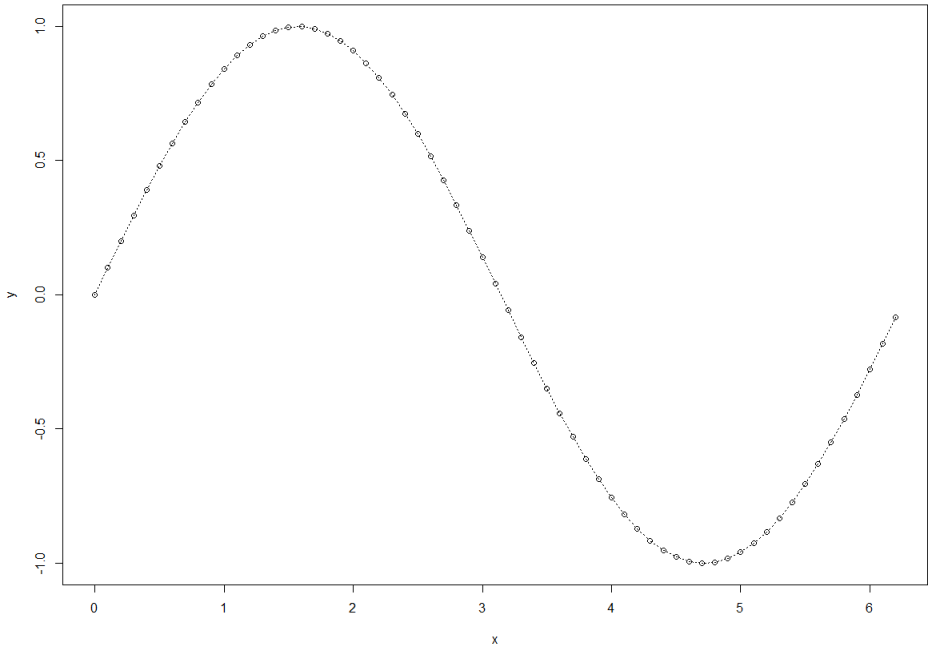


R Graph Basic 4: plot( ) function

- plot( ) function Example 6: Draw lines in the plot

```
# Lines
x <- seq(from = 0, to = 2*pi, by = 0.1)
y <- sin(x)
plot(x, y)
lines(x, y, lty = 3)
```

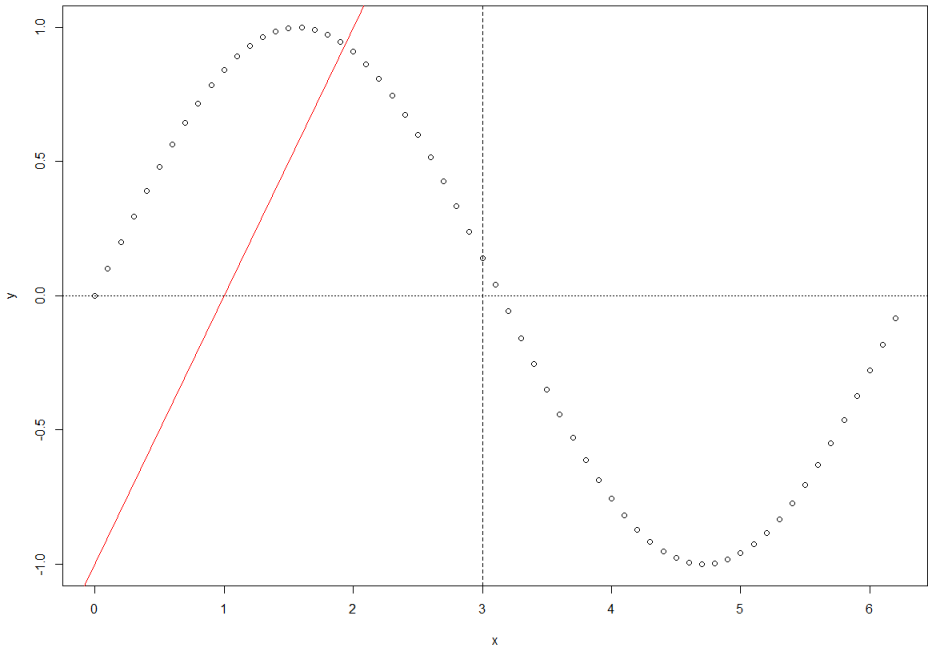




R Graph Basic 4: plot( ) function

- plot( ) function Example 7: Draw straight lines in the plot

```
# ablines()
plot(x, y)
abline(v = 3, lty = 2)
# vertical
abline(h = 0, lty = 3)
# horizontal
abline(a = -1, b = 1, col = "red") # y = -1 + x
```



R Graph Basic 5: Strip Chart

- Strip Chart
  - ✓ 1-dimensional scatterplot
  - ✓ Can be used as an alternative to a box plot when there are only a small number of data points

- Strip Chart: Example 1
  - ✓ "airquality" dataset: Daily air quality measurements in New York, May to September 1973.

	Ozone	Solar.R	Wind	Temp	Month	Day
1	41	190	7.4	67	5	1
2	36	118	8.0	72	5	2
3	12	149	12.6	74	5	3
4	18	313	11.5	62	5	4
5	NA	NA	14.3	56	5	5
6	28	NA	14.9	66	5	6
7	23	299	8.6	65	5	7
8	19	99	13.8	59	5	8
9	8	19	20.1	61	5	9
10	NA	194	8.6	69	5	10

R Graph Basic 5: Strip Chart

- Strip Chart: Usage

stripchart {graphics} R Documentation

1-D Scatter Plots

Description

`stripchart` produces one dimensional scatter plots (or dot plots) of the given data. These plots are a good alternative to `boxplot`s when sample sizes are small.

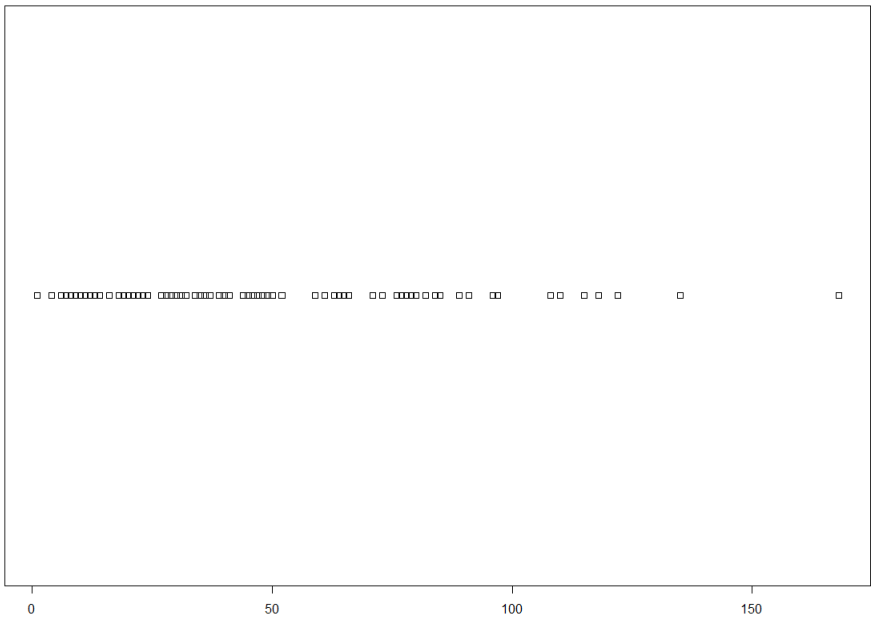
Usage

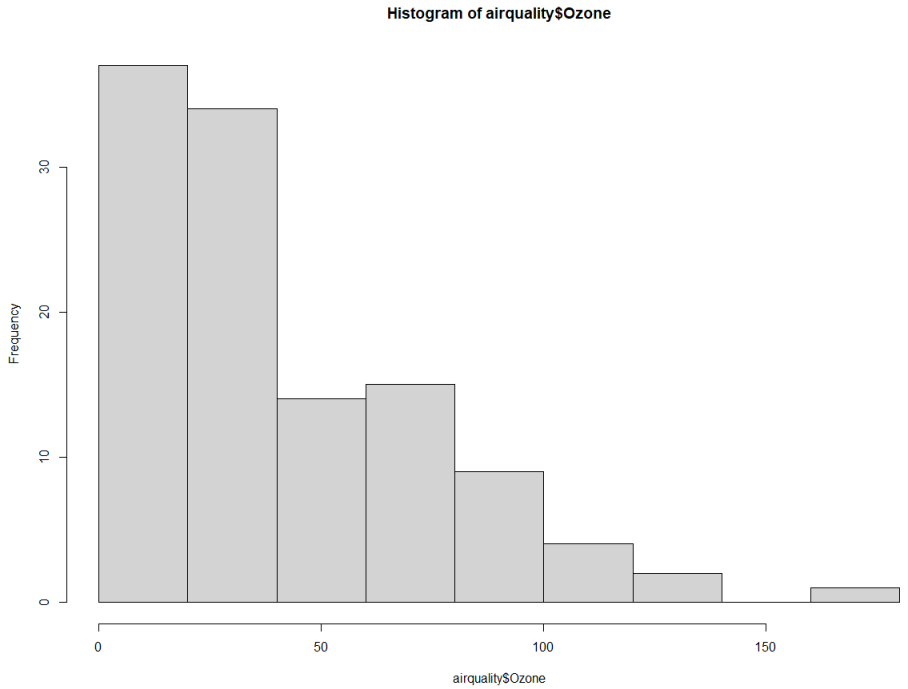
```
stripchart(x, ...)

## S3 method for class 'formula'
stripchart(x, data = NULL, dlab = NULL, ...,
           subset, na.action = NULL)


## Default S3 method:
stripchart(x, method = "overplot", jitter = 0.1, offset = 1/3,
           vertical = FALSE, group.names, add = FALSE,
           at = NULL, xlim = NULL, ylim = NULL,
           ylab = NULL, xlab = NULL, dlab = "", glab = "",
           log = "", pch = 0, col = par("fg"), cex = par("cex"),
           axes = TRUE, frame.plot = axes, ...)
```

R Graph Basic 5: Strip Chart

- Strip Chart: Example 1

```
# Basic Strip Chart
stripchart(airquality$Ozone)
# Compare with histogram hist(airquality$Ozone)
```

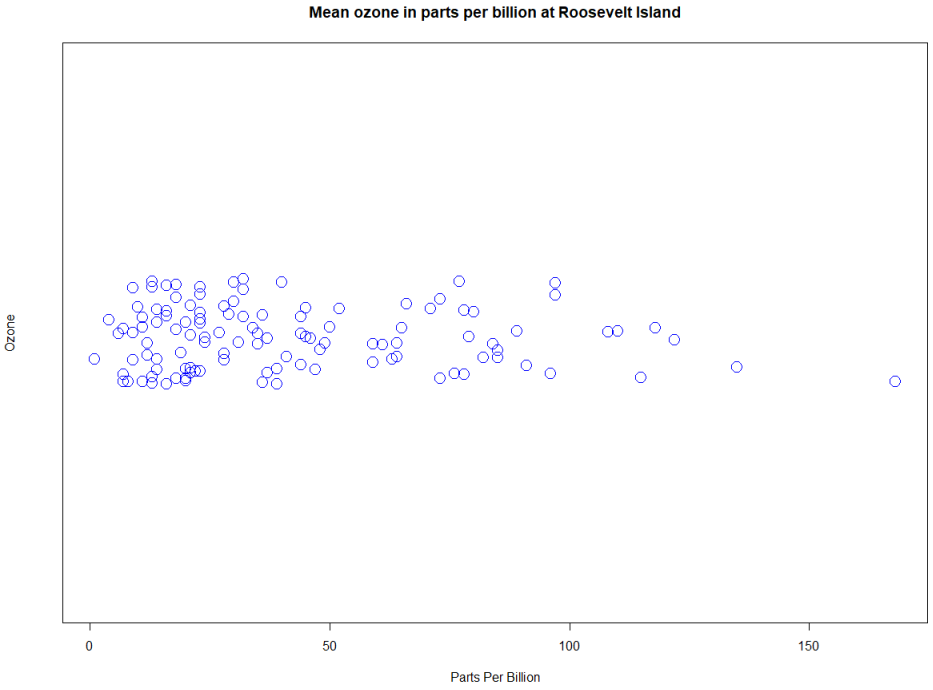


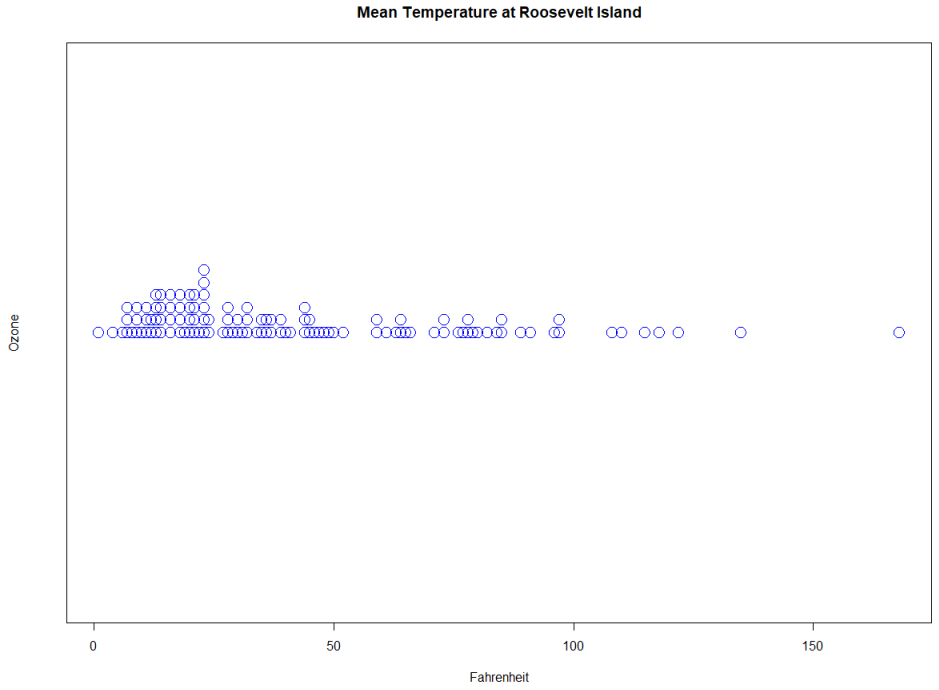


R Graph Basic 5: Strip Chart

- Strip Chart: Example 2

```
# Strip chart for better looking
stripchart(airquality$Ozone,
        main="Mean ozone in parts per billion at Roosevelt Island",
        xlab="Parts Per Billion", ylab="Ozone",
        method="jitter" or "stack", col="blue", cex = 2, pch=1)
```

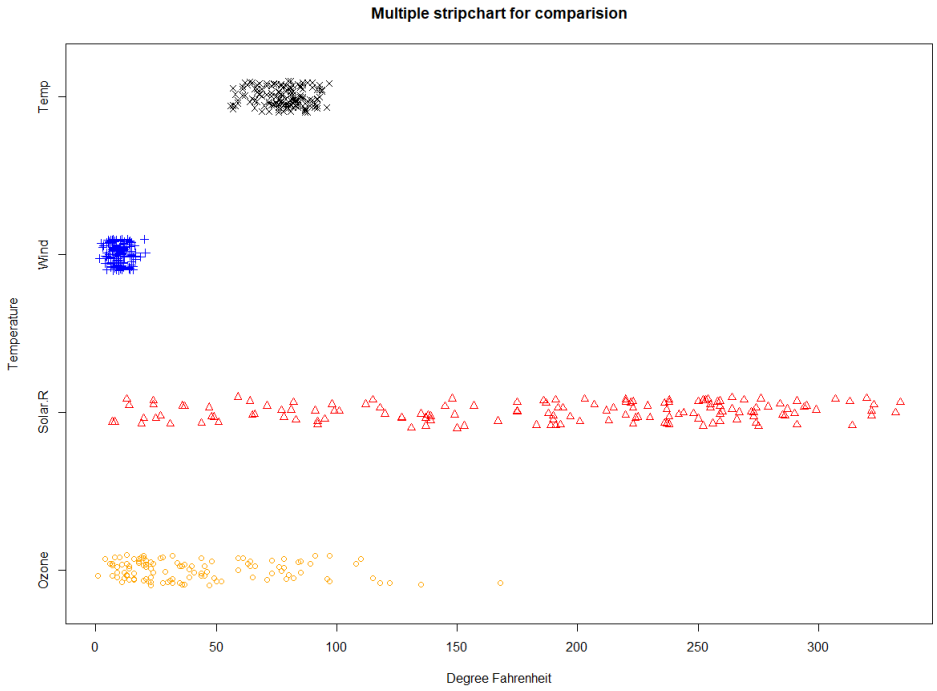




R Graph Basic 5: Strip Chart

- Strip Chart: Example 3

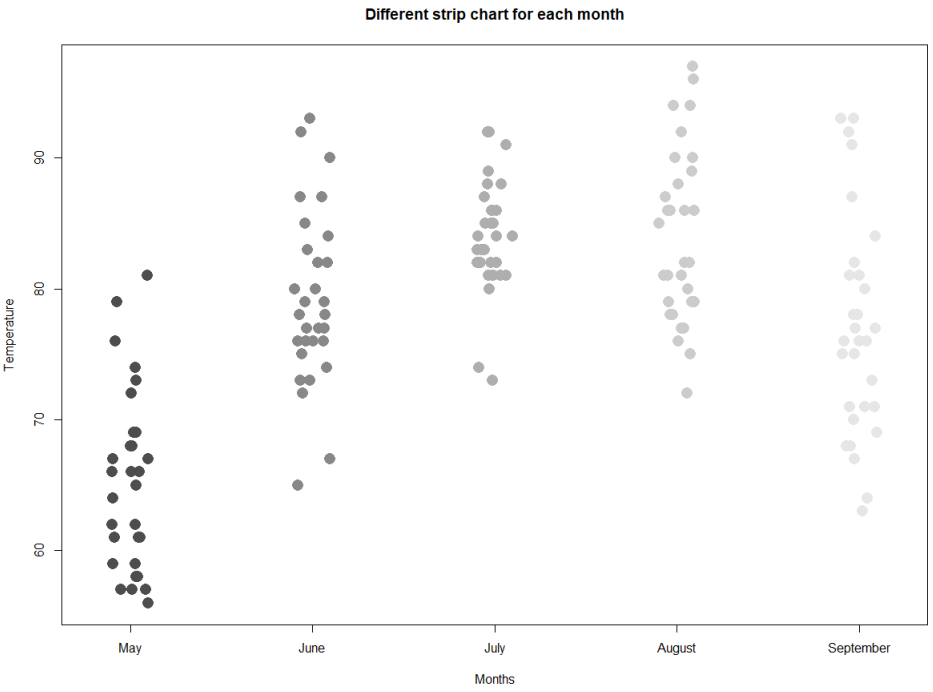
```
# Multiple strip chart in a single graph
stripchart(airquality[,c(1:4)],
        main="Multiple stripchart for comparision",
        xlab="value", ylab="variable", method="jitter",
        col=c("orange","red","blue","black"), pch=c(1,2,3,4))
```

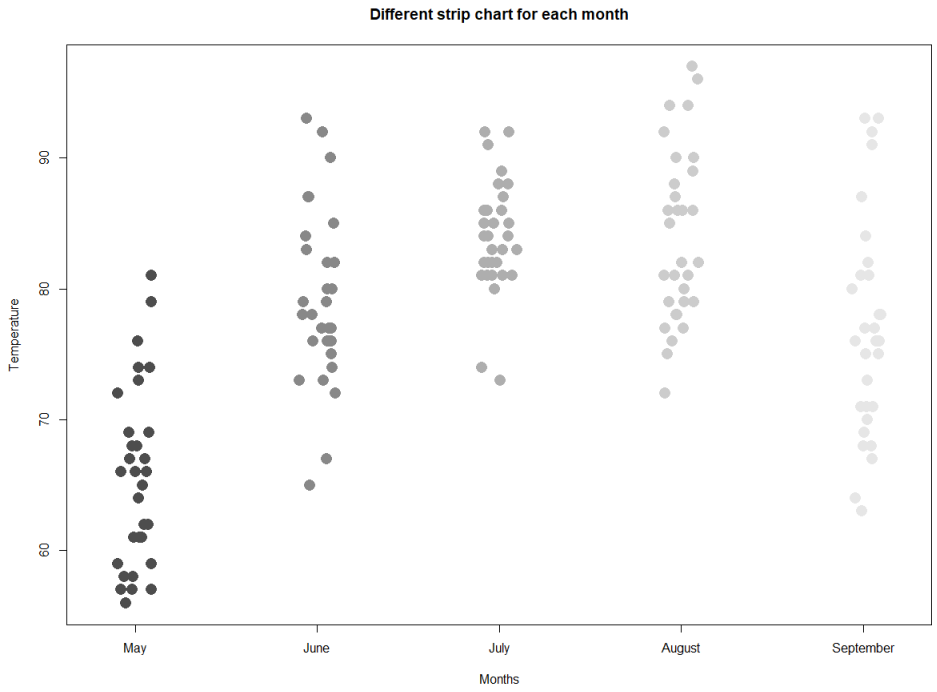


R Graph Basic 5: Strip Chart

- Strip Chart: Example 4

```
# Strip chart from formula
stripchart(Temp ~ Month, data=airquality,
        main="Different strip chart for each month",
        xlab="Months", ylab="Temperature", col= grey.colors(16),
        group.names=c("May","June","July","August","September"),
        vertical=TRUE, pch=16, method="jitter", cex = 2)
```





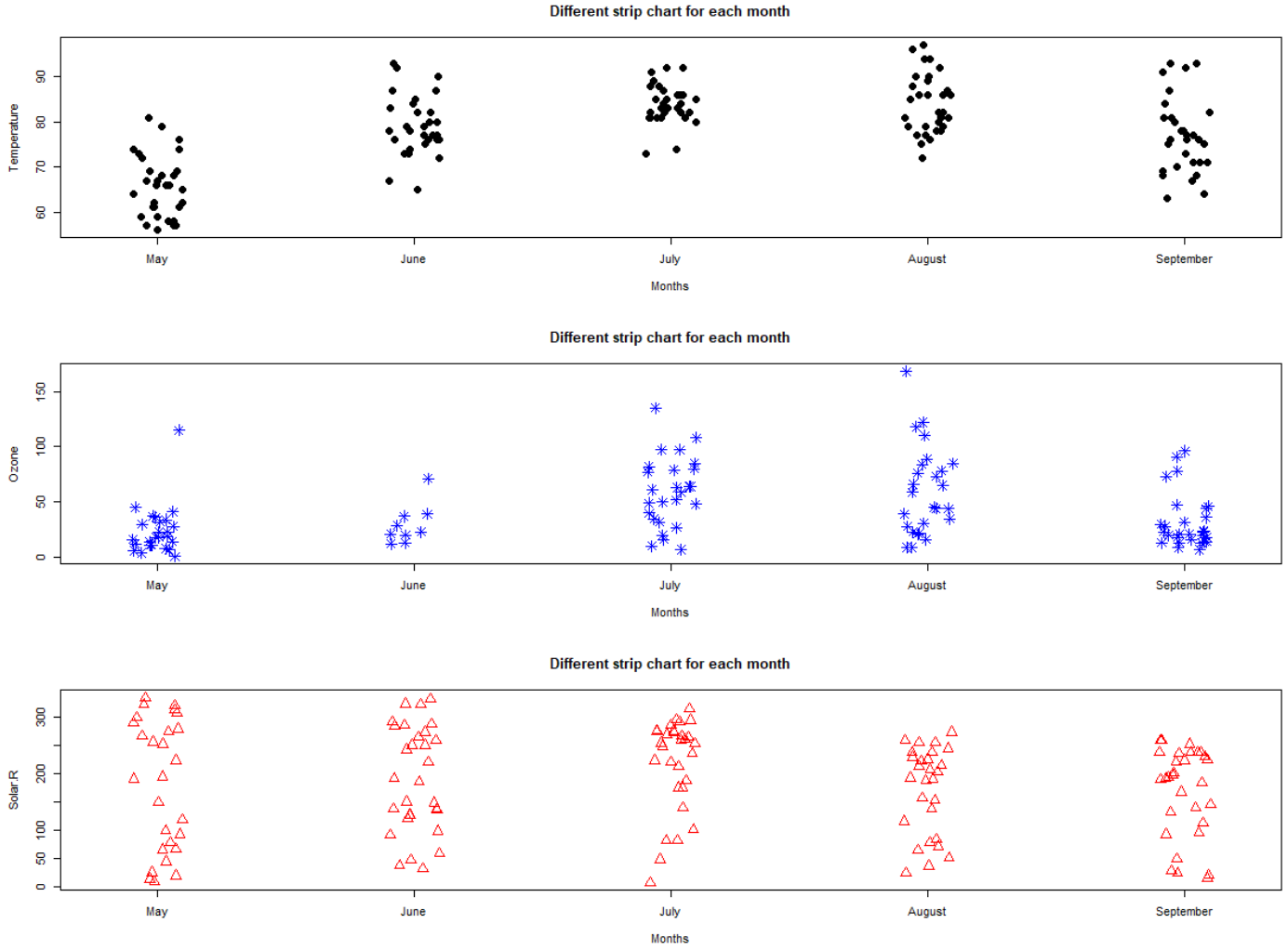
R Graph Basic 5: Strip Chart

- Strip Chart: Example 5

```
# Multiple strip charts in different graphs
par(mfcol = c(3,1))

# Temperature
stripchart(Temp ~ Month, data=airquality,
         main="Different strip chart for each month",
         xlab="Months", ylab="Temperature", col="black",
         group.names=c("May","June","July","August","September"),
         vertical=TRUE, pch=16, method="jitter", cex = 1.5)
# Ozone
stripchart(Ozone ~ Month, data=airquality,
         main="Different strip chart for each month",
         xlab="Months", ylab="Ozone", col="blue",
         group.names=c("May","June","July","August","September"),
         vertical=TRUE, pch=8, method="jitter", cex = 1.5)
# Solar.R
stripchart(Solar.R ~ Month, data=airquality, \
         main="Different strip chart for each month",
         xlab="Months", ylab="Solar.R", col="red",
         group.names=c("May","June","July","August","September"),
         vertical=TRUE, pch=2, method="jitter", cex = 1.5)
```

R Graph Basic 5: Strip Chart

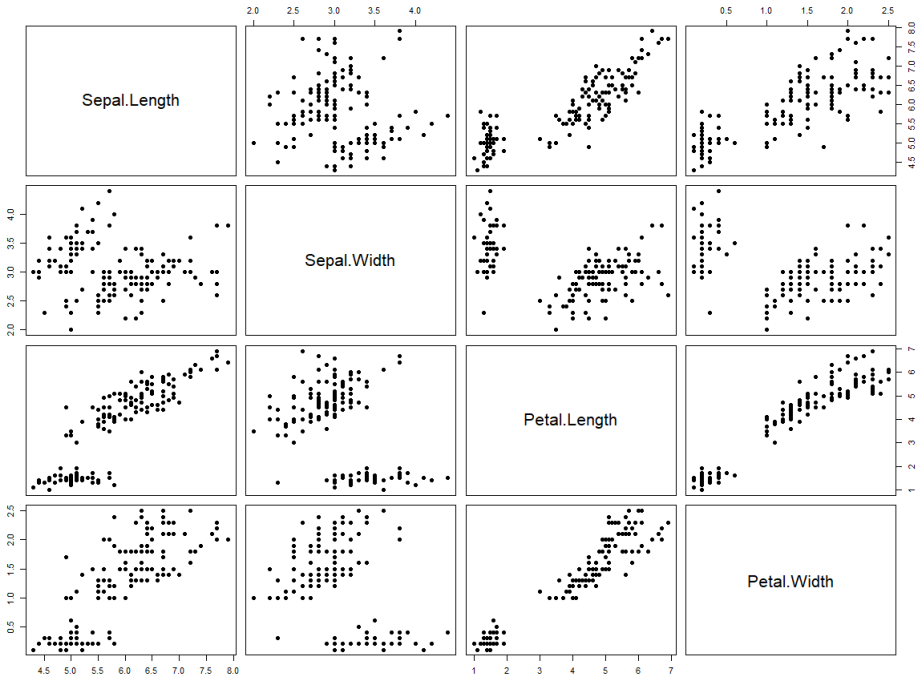
- Strip Chart: Example 5

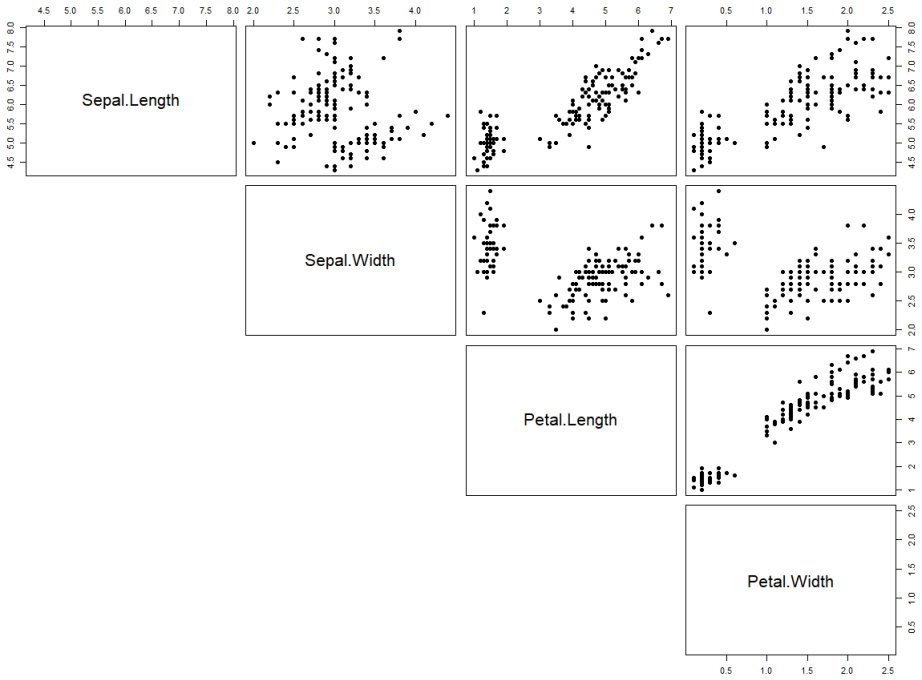


R Graph Basic 6: pairs( )

- Pairs( )
  - ✓ Produces a matrix of scatter plots
  - ✓ Useful to visualize correlation of small datasets

```
# Basic plot 6: pairs
pairs(iris[,1:4], pch = 19)
pairs(iris[,1:4], pch = 19, lower.panel = NULL)
```

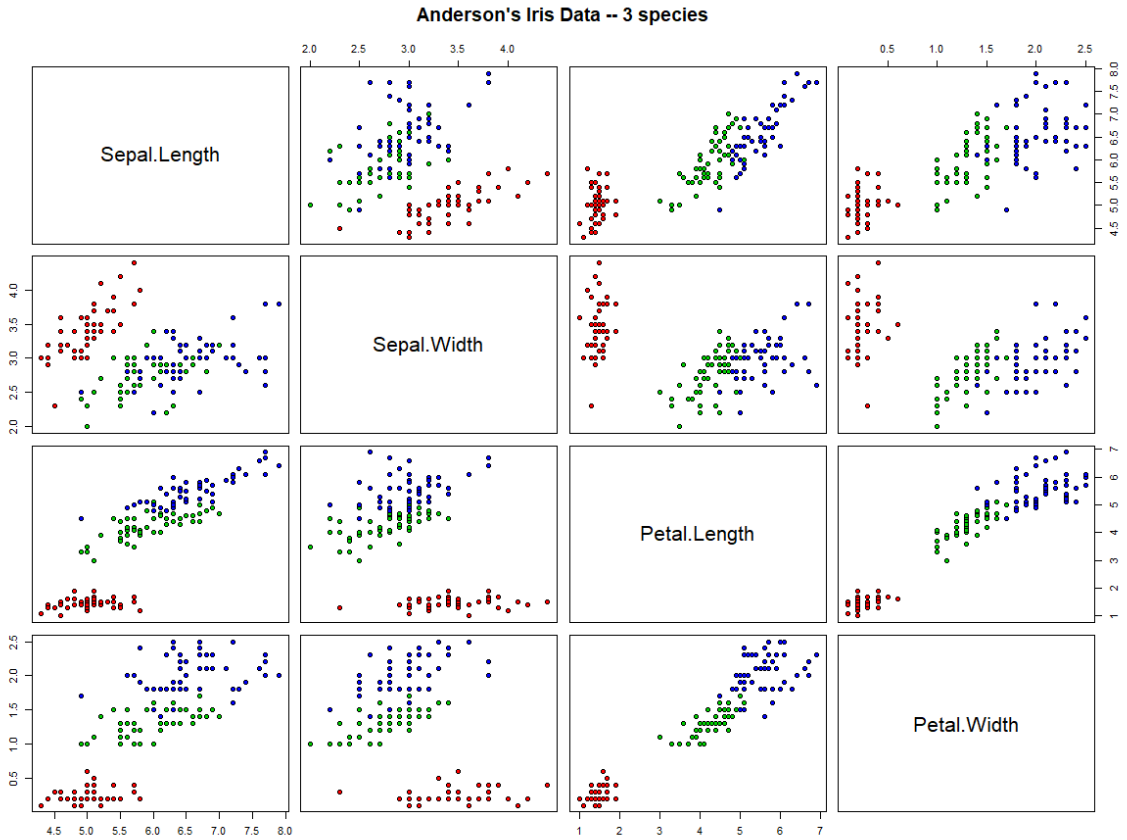




R Graph Basic 6: pairs( )

- Pairs( ) Example 2

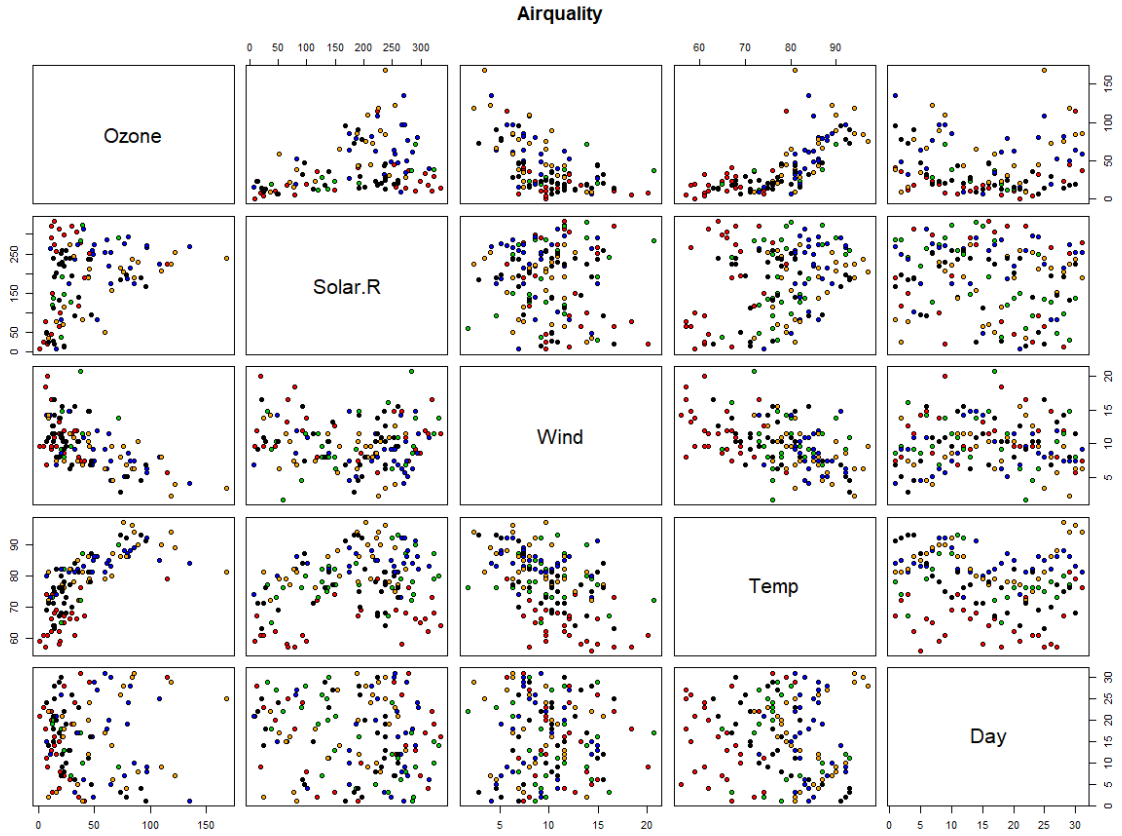
```
# Coloring scatterplots
pairs(iris[,1:4], main = "Anderson's Iris Data -- 3 species", pch = 21,
        bg = c("red", "green3", "blue")[unclass(iris$Species)])
```



R Graph Basic 6: pairs( )

- Pairs( ) Example 2

```
# Coloring scatterplots 2
pairs(airquality[,c(1:4,6)], main = "Airquality", pch = 21,
    bg = c("red", "green3", "blue", "orange", "black")[airquality$Month-4])
```




ANY
questions ?