

Correlation

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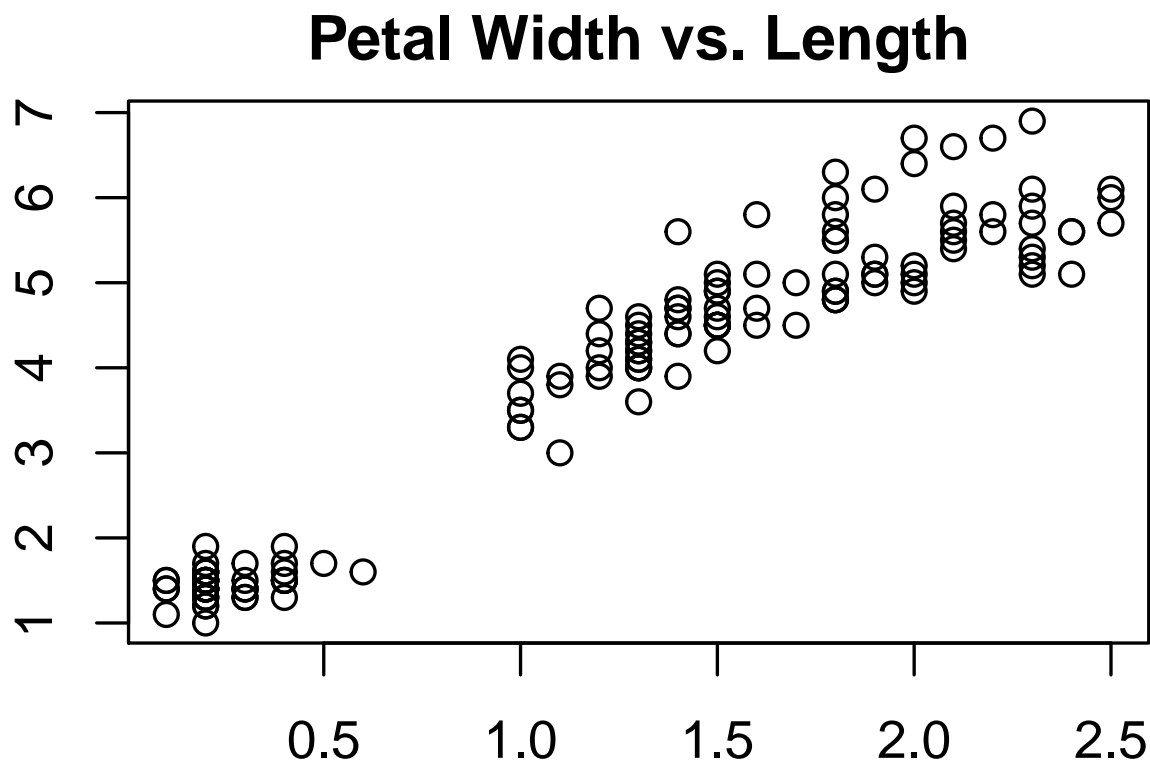
Correlation 1

Correlation

We will use the iris data to look at the relationship between petal length and width. (The iris dataset is part of the base R installation and can be referenced directly, as shown in the sample code for this section.)

First, we can look at the relationship on a graph.

```
par(mar = (c(2, 2, 2, 2)))  
plot(iris$Petal.Width, iris$Petal.Length, main = "Petal Width vs. Length",  
      xlab = "Petal Width", ylab = "Petal Length")
```



The plot shows that there is a positive, linear relationship between petal length and width.

If we want to know if the relationship is significant, we can calculate the correlation between the two variables.

```
cor.test(iris$Petal.Width, iris$Petal.Length)

##
## Pearson's product-moment correlation
##
## data: iris$Petal.Width and iris$Petal.Length
## t = 43.387, df = 148, p-value < 2.2e-16
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.9490525 0.9729853
## sample estimates:
##      cor
## 0.9628654
```

Since the p-value is less than 0.05 there is a significant correlation between these two variables. The variables are 96% correlated.