LOGISTIC REGRESSION

```
library(datasets)
ir_data<- iris
head(ir_data)
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 2          4.9         3.0          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 4          4.6         3.1          1.5         0.2  setosa
## 5          5.0         3.6          1.4         0.2  setosa
## 6          5.4         3.9          1.7         0.4  setosa
```

```
set.seed(100)
samp<-sample(1:100,80)
ir_test<-ir_data[samp,]
ir_ctrl<-ir_data[-samp,]
#install.packages("GGally")
#install.packages("ggplot2")
library(ggplot2)
library(GGally)
ggpairs(ir_test)
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
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```
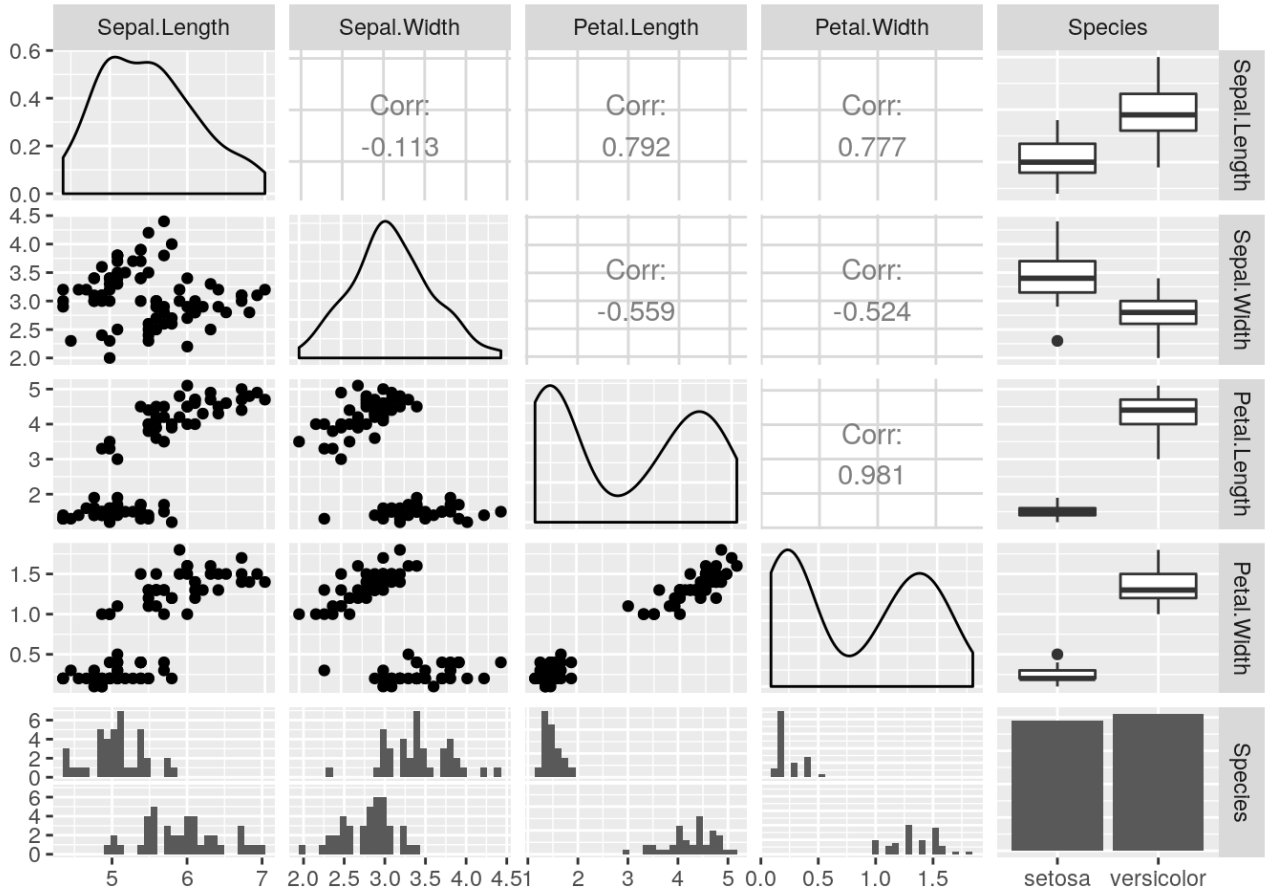
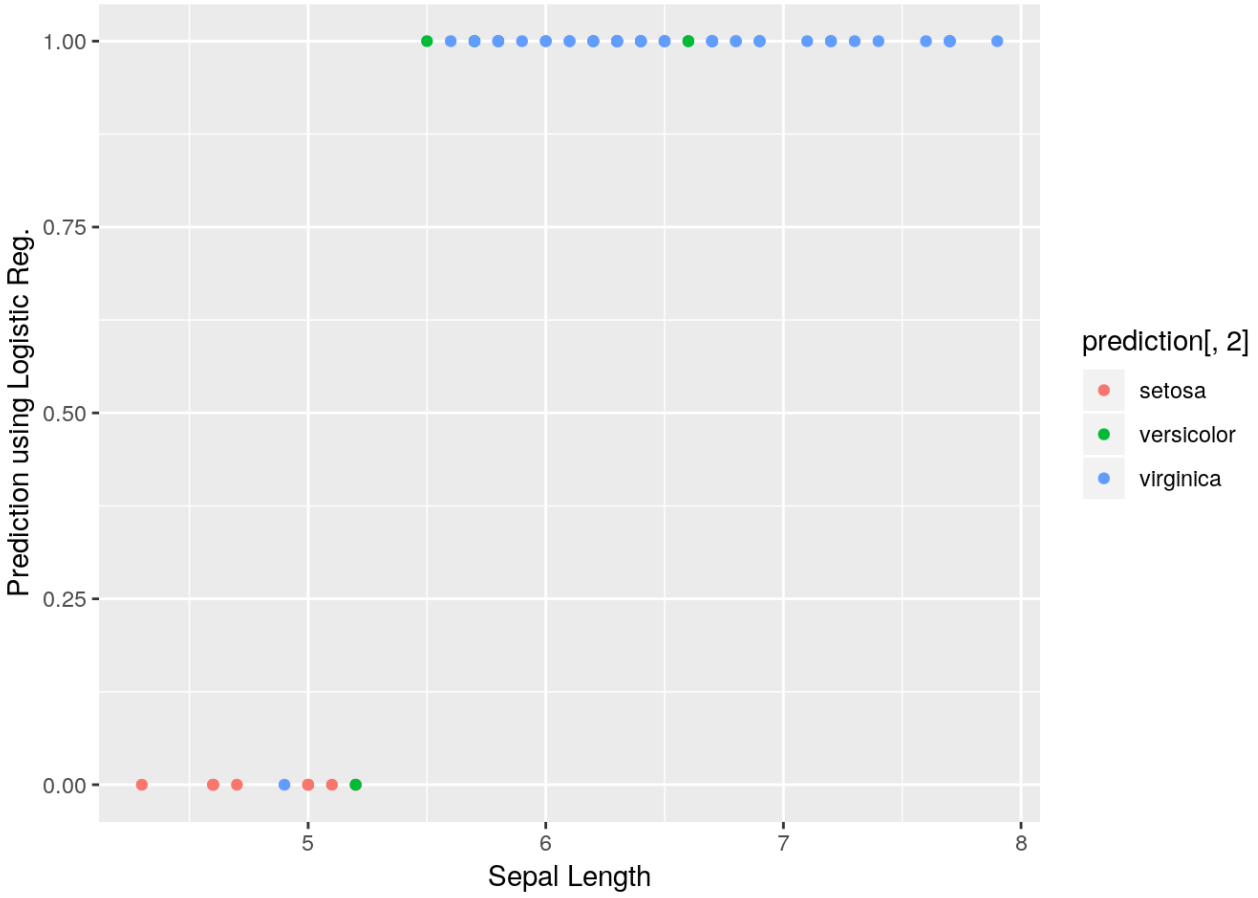




```
y<-ir_test$Species
x<-ir_test$Sepal.Length
glfit<-glm(y~x, family = 'binomial')
newdata<- data.frame(x=ir_ctrl$Sepal.Length)
predicted_val<-predict(glfit, newdata, type="response")
prediction<-data.frame(ir_ctrl$Sepal.Length, ir_ctrl$Species,predicted_val)
prediction
```

```
##    ir_ctrl.Sepal.Length ir_ctrl.Species predicted_val
## 1                   5.1          setosa   0.176005274
## 2                   4.7          setosa   0.031871367
## 3                   4.6          setosa   0.020210042
## 4                   5.0          setosa   0.118037011
## 5                   4.6          setosa   0.020210042
## 6                   4.3          setosa   0.005048194
## 7                   4.6          setosa   0.020210042
## 8                   5.2          setosa   0.254235573
## 9                   5.2          setosa   0.254235573
## 10                  5.0          setosa   0.118037011
## 11                  5.0          setosa   0.118037011
## 12                  6.6      versicolor   0.995801728
## 13                  5.2      versicolor   0.254235573
## 14                  5.8      versicolor   0.849266756
## 15                  6.2      versicolor   0.973373695
## 16                  6.6      versicolor   0.995801728
## 17                  5.5      versicolor   0.580872616
## 18                  6.3      versicolor   0.983149322
## 19                  5.7      versicolor   0.779260130
## 20                  5.7      versicolor   0.779260130
## 21                  6.3       virginica   0.983149322
## 22                  5.8       virginica   0.849266756
## 23                  7.1       virginica   0.999593038
## 24                  6.3       virginica   0.983149322
## 25                  6.5       virginica   0.993316274
## 26                  7.6       virginica   0.999960686
## 27                  4.9       virginica   0.077368260
## 28                  7.3       virginica   0.999840193
## 29                  6.7       virginica   0.997365376
## 30                  7.2       virginica   0.999744973
## 31                  6.5       virginica   0.993316274
## 32                  6.4       virginica   0.989375085
## 33                  6.8       virginica   0.998347610
## 34                  5.7       virginica   0.779260130
## 35                  5.8       virginica   0.849266756
## 36                  6.4       virginica   0.989375085
## 37                  6.5       virginica   0.993316274
## 38                  7.7       virginica   0.999975367
## 39                  7.7       virginica   0.999975367
## 40                  6.0       virginica   0.934860430
## 41                  6.9       virginica   0.998964030
## 42                  5.6       virginica   0.688659177
## 43                  7.7       virginica   0.999975367
## 44                  6.3       virginica   0.983149322
## 45                  6.7       virginica   0.997365376
```

```
## 46                  7.2       virginica   0.999744973
## 47                  6.2       virginica   0.973373695
## 48                  6.1       virginica   0.958168208
## 49                  6.4       virginica   0.989375085
## 50                  7.2       virginica   0.999744973
## 51                  7.4       virginica   0.999899865
## 52                  7.9       virginica   0.999990329
## 53                  6.4       virginica   0.989375085
## 54                  6.3       virginica   0.983149322
## 55                  6.1       virginica   0.958168208
## 56                  7.7       virginica   0.999975367
## 57                  6.3       virginica   0.983149322
## 58                  6.4       virginica   0.989375085
## 59                  6.0       virginica   0.934860430
## 60                  6.9       virginica   0.998964030
## 61                  6.7       virginica   0.997365376
## 62                  6.9       virginica   0.998964030
## 63                  5.8       virginica   0.849266756
## 64                  6.8       virginica   0.998347610
## 65                  6.7       virginica   0.997365376
## 66                  6.7       virginica   0.997365376
## 67                  6.3       virginica   0.983149322
## 68                  6.5       virginica   0.993316274
## 69                  6.2       virginica   0.973373695
## 70                  5.9       virginica   0.899922463
```

```
qplot(prediction[,1], round(prediction[,3]), col=prediction[,2], xlab = 'Sepal
Length', ylab = 'Prediction using Logistic Reg.')
```


Prediction using Logistic Reg.
1.00
0.75
0.50
0.25
0.00
5
6
7
8
Sepal Length
prediction[, 2]
setosa
versicolor
virginica