

DZ10-Marcec-Lea.r

Lea

2022-01-13

```
data()  
# odabrani skup podataka je iris  
iris <- data.frame(iris)  
iris
```

| ## | 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 |
| ## 7 | 4.6 | 3.4 | 1.4 | 0.3 | setosa |
| ## 8 | 5.0 | 3.4 | 1.5 | 0.2 | setosa |
| ## 9 | 4.4 | 2.9 | 1.4 | 0.2 | setosa |
| ## 10 | 4.9 | 3.1 | 1.5 | 0.1 | setosa |
| ## 11 | 5.4 | 3.7 | 1.5 | 0.2 | setosa |
| ## 12 | 4.8 | 3.4 | 1.6 | 0.2 | setosa |
| ## 13 | 4.8 | 3.0 | 1.4 | 0.1 | setosa |
| ## 14 | 4.3 | 3.0 | 1.1 | 0.1 | setosa |
| ## 15 | 5.8 | 4.0 | 1.2 | 0.2 | setosa |
| ## 16 | 5.7 | 4.4 | 1.5 | 0.4 | setosa |
| ## 17 | 5.4 | 3.9 | 1.3 | 0.4 | setosa |
| ## 18 | 5.1 | 3.5 | 1.4 | 0.3 | setosa |
| ## 19 | 5.7 | 3.8 | 1.7 | 0.3 | setosa |
| ## 20 | 5.1 | 3.8 | 1.5 | 0.3 | setosa |
| ## 21 | 5.4 | 3.4 | 1.7 | 0.2 | setosa |
| ## 22 | 5.1 | 3.7 | 1.5 | 0.4 | setosa |
| ## 23 | 4.6 | 3.6 | 1.0 | 0.2 | setosa |
| ## 24 | 5.1 | 3.3 | 1.7 | 0.5 | setosa |
| ## 25 | 4.8 | 3.4 | 1.9 | 0.2 | setosa |
| ## 26 | 5.0 | 3.0 | 1.6 | 0.2 | setosa |
| ## 27 | 5.0 | 3.4 | 1.6 | 0.4 | setosa |
| ## 28 | 5.2 | 3.5 | 1.5 | 0.2 | setosa |
| ## 29 | 5.2 | 3.4 | 1.4 | 0.2 | setosa |
| ## 30 | 4.7 | 3.2 | 1.6 | 0.2 | setosa |
| ## 31 | 4.8 | 3.1 | 1.6 | 0.2 | setosa |
| ## 32 | 5.4 | 3.4 | 1.5 | 0.4 | setosa |
| ## 33 | 5.2 | 4.1 | 1.5 | 0.1 | setosa |
| ## 34 | 5.5 | 4.2 | 1.4 | 0.2 | setosa |
| ## 35 | 4.9 | 3.1 | 1.5 | 0.2 | setosa |
| ## 36 | 5.0 | 3.2 | 1.2 | 0.2 | setosa |
| ## 37 | 5.5 | 3.5 | 1.3 | 0.2 | setosa |
| ## 38 | 4.9 | 3.6 | 1.4 | 0.1 | setosa |
| ## 39 | 4.4 | 3.0 | 1.3 | 0.2 | setosa |
| ## 40 | 5.1 | 3.4 | 1.5 | 0.2 | setosa |
| ## 41 | 5.0 | 3.5 | 1.3 | 0.3 | setosa |
| ## 42 | 4.5 | 2.3 | 1.3 | 0.3 | setosa |

| | | | | | |
|-------|-----|-----|-----|-----|------------|
| ## 43 | 4.4 | 3.2 | 1.3 | 0.2 | setosa |
| ## 44 | 5.0 | 3.5 | 1.6 | 0.6 | setosa |
| ## 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 |
| ## 51 | 7.0 | 3.2 | 4.7 | 1.4 | versicolor |
| ## 52 | 6.4 | 3.2 | 4.5 | 1.5 | versicolor |
| ## 53 | 6.9 | 3.1 | 4.9 | 1.5 | versicolor |
| ## 54 | 5.5 | 2.3 | 4.0 | 1.3 | versicolor |
| ## 55 | 6.5 | 2.8 | 4.6 | 1.5 | versicolor |
| ## 56 | 5.7 | 2.8 | 4.5 | 1.3 | versicolor |
| ## 57 | 6.3 | 3.3 | 4.7 | 1.6 | versicolor |
| ## 58 | 4.9 | 2.4 | 3.3 | 1.0 | versicolor |
| ## 59 | 6.6 | 2.9 | 4.6 | 1.3 | versicolor |
| ## 60 | 5.2 | 2.7 | 3.9 | 1.4 | versicolor |
| ## 61 | 5.0 | 2.0 | 3.5 | 1.0 | versicolor |
| ## 62 | 5.9 | 3.0 | 4.2 | 1.5 | versicolor |
| ## 63 | 6.0 | 2.2 | 4.0 | 1.0 | versicolor |
| ## 64 | 6.1 | 2.9 | 4.7 | 1.4 | versicolor |
| ## 65 | 5.6 | 2.9 | 3.6 | 1.3 | versicolor |
| ## 66 | 6.7 | 3.1 | 4.4 | 1.4 | versicolor |
| ## 67 | 5.6 | 3.0 | 4.5 | 1.5 | versicolor |
| ## 68 | 5.8 | 2.7 | 4.1 | 1.0 | versicolor |
| ## 69 | 6.2 | 2.2 | 4.5 | 1.5 | versicolor |
| ## 70 | 5.6 | 2.5 | 3.9 | 1.1 | versicolor |
| ## 71 | 5.9 | 3.2 | 4.8 | 1.8 | versicolor |
| ## 72 | 6.1 | 2.8 | 4.0 | 1.3 | versicolor |
| ## 73 | 6.3 | 2.5 | 4.9 | 1.5 | versicolor |
| ## 74 | 6.1 | 2.8 | 4.7 | 1.2 | versicolor |
| ## 75 | 6.4 | 2.9 | 4.3 | 1.3 | versicolor |
| ## 76 | 6.6 | 3.0 | 4.4 | 1.4 | versicolor |
| ## 77 | 6.8 | 2.8 | 4.8 | 1.4 | versicolor |
| ## 78 | 6.7 | 3.0 | 5.0 | 1.7 | versicolor |
| ## 79 | 6.0 | 2.9 | 4.5 | 1.5 | versicolor |
| ## 80 | 5.7 | 2.6 | 3.5 | 1.0 | versicolor |
| ## 81 | 5.5 | 2.4 | 3.8 | 1.1 | versicolor |
| ## 82 | 5.5 | 2.4 | 3.7 | 1.0 | versicolor |
| ## 83 | 5.8 | 2.7 | 3.9 | 1.2 | versicolor |
| ## 84 | 6.0 | 2.7 | 5.1 | 1.6 | versicolor |
| ## 85 | 5.4 | 3.0 | 4.5 | 1.5 | versicolor |
| ## 86 | 6.0 | 3.4 | 4.5 | 1.6 | versicolor |
| ## 87 | 6.7 | 3.1 | 4.7 | 1.5 | versicolor |
| ## 88 | 6.3 | 2.3 | 4.4 | 1.3 | versicolor |
| ## 89 | 5.6 | 3.0 | 4.1 | 1.3 | versicolor |
| ## 90 | 5.5 | 2.5 | 4.0 | 1.3 | versicolor |
| ## 91 | 5.5 | 2.6 | 4.4 | 1.2 | versicolor |
| ## 92 | 6.1 | 3.0 | 4.6 | 1.4 | versicolor |
| ## 93 | 5.8 | 2.6 | 4.0 | 1.2 | versicolor |
| ## 94 | 5.0 | 2.3 | 3.3 | 1.0 | versicolor |
| ## 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 |
| ## 101 | 6.3 | 3.3 | 6.0 | 2.5 | virginica |
| ## 102 | 5.8 | 2.7 | 5.1 | 1.9 | virginica |
| ## 103 | 7.1 | 3.0 | 5.9 | 2.1 | virginica |
| ## 104 | 6.3 | 2.9 | 5.6 | 1.8 | virginica |
| ## 105 | 6.5 | 3.0 | 5.8 | 2.2 | virginica |
| ## 106 | 7.6 | 3.0 | 6.6 | 2.1 | virginica |
| ## 107 | 4.9 | 2.5 | 4.5 | 1.7 | virginica |
| ## 108 | 7.3 | 2.9 | 6.3 | 1.8 | virginica |
| ## 109 | 6.7 | 2.5 | 5.8 | 1.8 | virginica |
| ## 110 | 7.2 | 3.6 | 6.1 | 2.5 | virginica |
| ## 111 | 6.5 | 3.2 | 5.1 | 2.0 | virginica |
| ## 112 | 6.4 | 2.7 | 5.3 | 1.9 | virginica |
| ## 113 | 6.8 | 3.0 | 5.5 | 2.1 | virginica |
| ## 114 | 5.7 | 2.5 | 5.0 | 2.0 | virginica |
| ## 115 | 5.8 | 2.8 | 5.1 | 2.4 | virginica |
| ## 116 | 6.4 | 3.2 | 5.3 | 2.3 | virginica |
| ## 117 | 6.5 | 3.0 | 5.5 | 1.8 | virginica |
| ## 118 | 7.7 | 3.8 | 6.7 | 2.2 | virginica |
| ## 119 | 7.7 | 2.6 | 6.9 | 2.3 | virginica |
| ## 120 | 6.0 | 2.2 | 5.0 | 1.5 | virginica |
| ## 121 | 6.9 | 3.2 | 5.7 | 2.3 | virginica |
| ## 122 | 5.6 | 2.8 | 4.9 | 2.0 | virginica |
| ## 123 | 7.7 | 2.8 | 6.7 | 2.0 | virginica |
| ## 124 | 6.3 | 2.7 | 4.9 | 1.8 | virginica |
| ## 125 | 6.7 | 3.3 | 5.7 | 2.1 | virginica |
| ## 126 | 7.2 | 3.2 | 6.0 | 1.8 | virginica |
| ## 127 | 6.2 | 2.8 | 4.8 | 1.8 | virginica |
| ## 128 | 6.1 | 3.0 | 4.9 | 1.8 | virginica |
| ## 129 | 6.4 | 2.8 | 5.6 | 2.1 | virginica |
| ## 130 | 7.2 | 3.0 | 5.8 | 1.6 | virginica |
| ## 131 | 7.4 | 2.8 | 6.1 | 1.9 | virginica |
| ## 132 | 7.9 | 3.8 | 6.4 | 2.0 | virginica |
| ## 133 | 6.4 | 2.8 | 5.6 | 2.2 | virginica |
| ## 134 | 6.3 | 2.8 | 5.1 | 1.5 | virginica |
| ## 135 | 6.1 | 2.6 | 5.6 | 1.4 | virginica |
| ## 136 | 7.7 | 3.0 | 6.1 | 2.3 | virginica |
| ## 137 | 6.3 | 3.4 | 5.6 | 2.4 | virginica |
| ## 138 | 6.4 | 3.1 | 5.5 | 1.8 | virginica |
| ## 139 | 6.0 | 3.0 | 4.8 | 1.8 | virginica |
| ## 140 | 6.9 | 3.1 | 5.4 | 2.1 | virginica |
| ## 141 | 6.7 | 3.1 | 5.6 | 2.4 | virginica |
| ## 142 | 6.9 | 3.1 | 5.1 | 2.3 | virginica |
| ## 143 | 5.8 | 2.7 | 5.1 | 1.9 | virginica |
| ## 144 | 6.8 | 3.2 | 5.9 | 2.3 | virginica |
| ## 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 |

```
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
1 ...
```

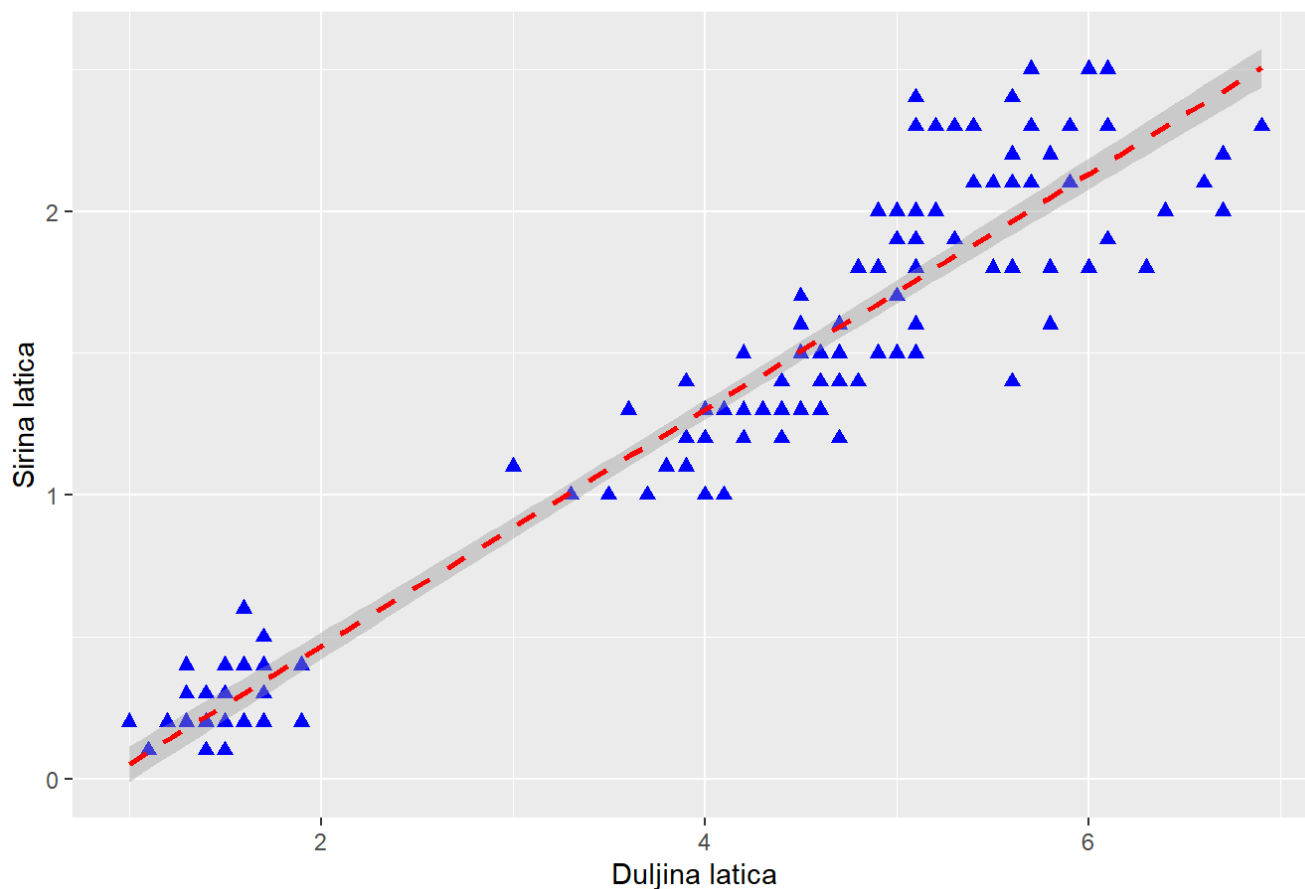
```
# scatterplot
#install.packages("ggplot2")
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 4.1.2
```

```
ggplot(data = iris, aes(x=Petal.Length, y=Petal.Width)) + geom_point(pch=17, color
="blue", size=2) + geom_smooth(method = "lm", color="red", linetype=2) + labs(titl
e = "Podatci o duljini i sirini latica", x="Duljina latica", y="Sirina latica")
```

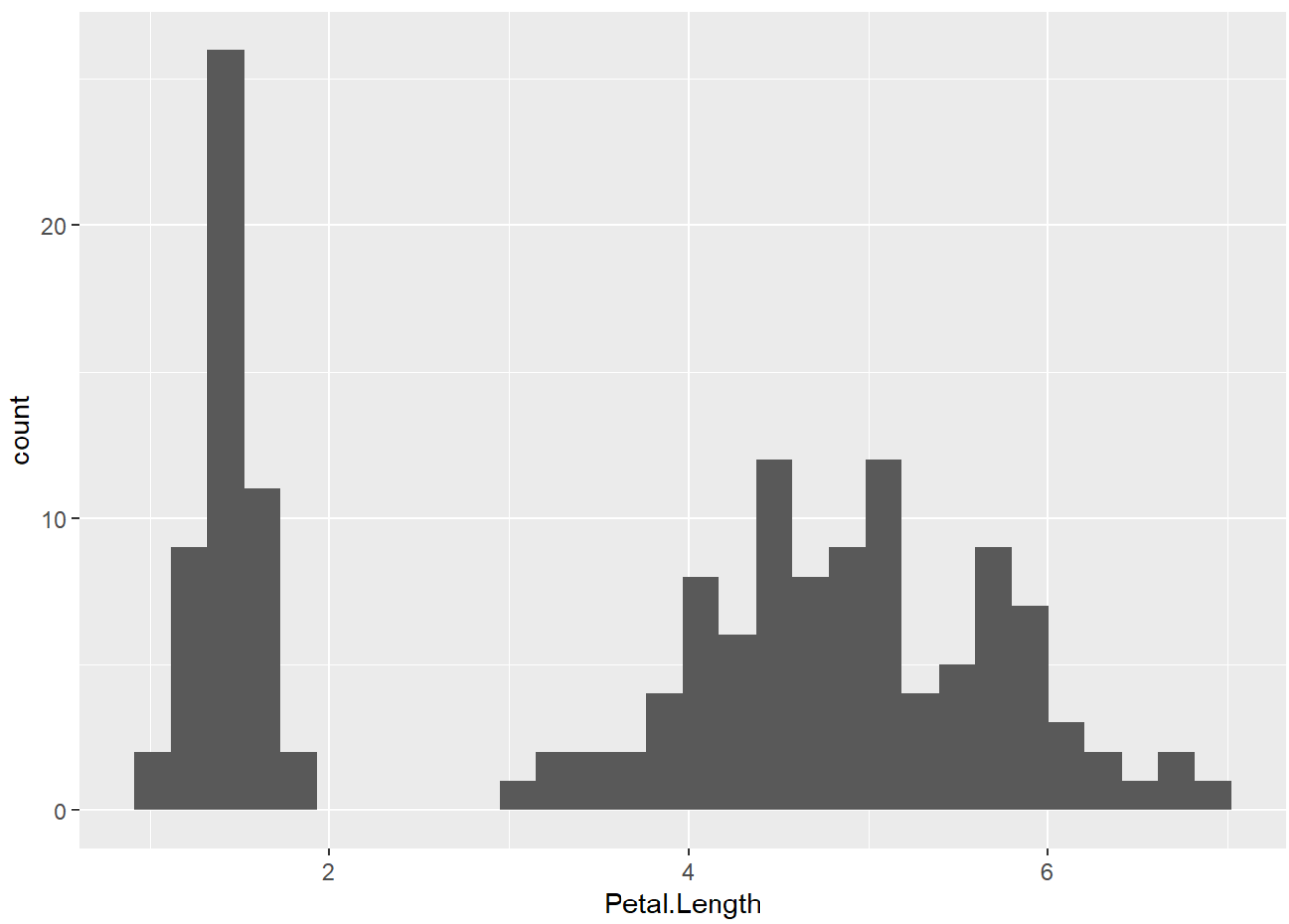
```
## `geom_smooth()` using formula 'y ~ x'
```

Podatci o duljini i sirini latica

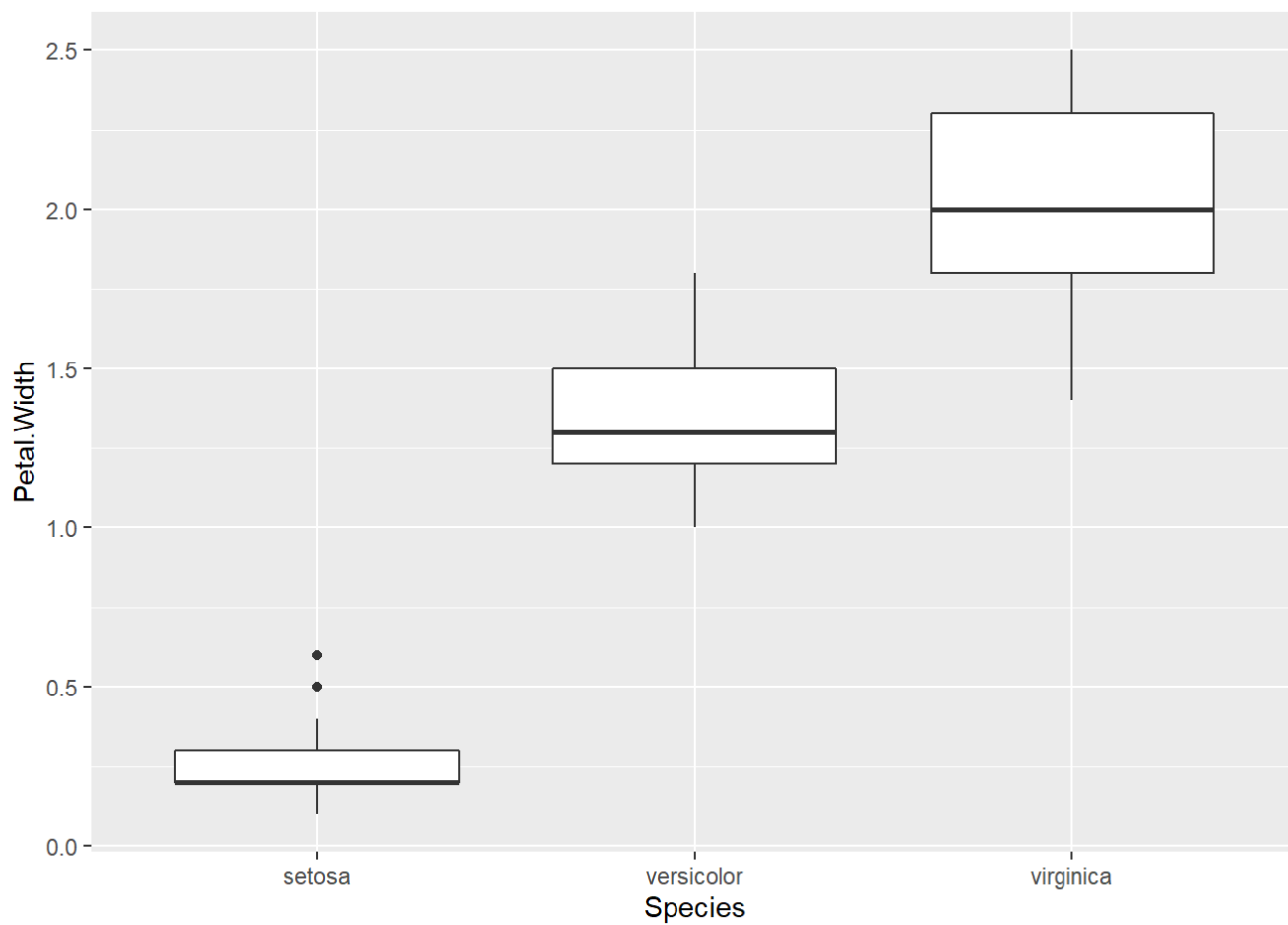


```
# histogram
data(iris)
ggplot(iris, aes(x=Petal.Length)) + geom_histogram()
```

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



```
#kutijasti prikaz  
ggplot(iris, aes(x=Species, y=Petal.Width)) + geom_boxplot()
```

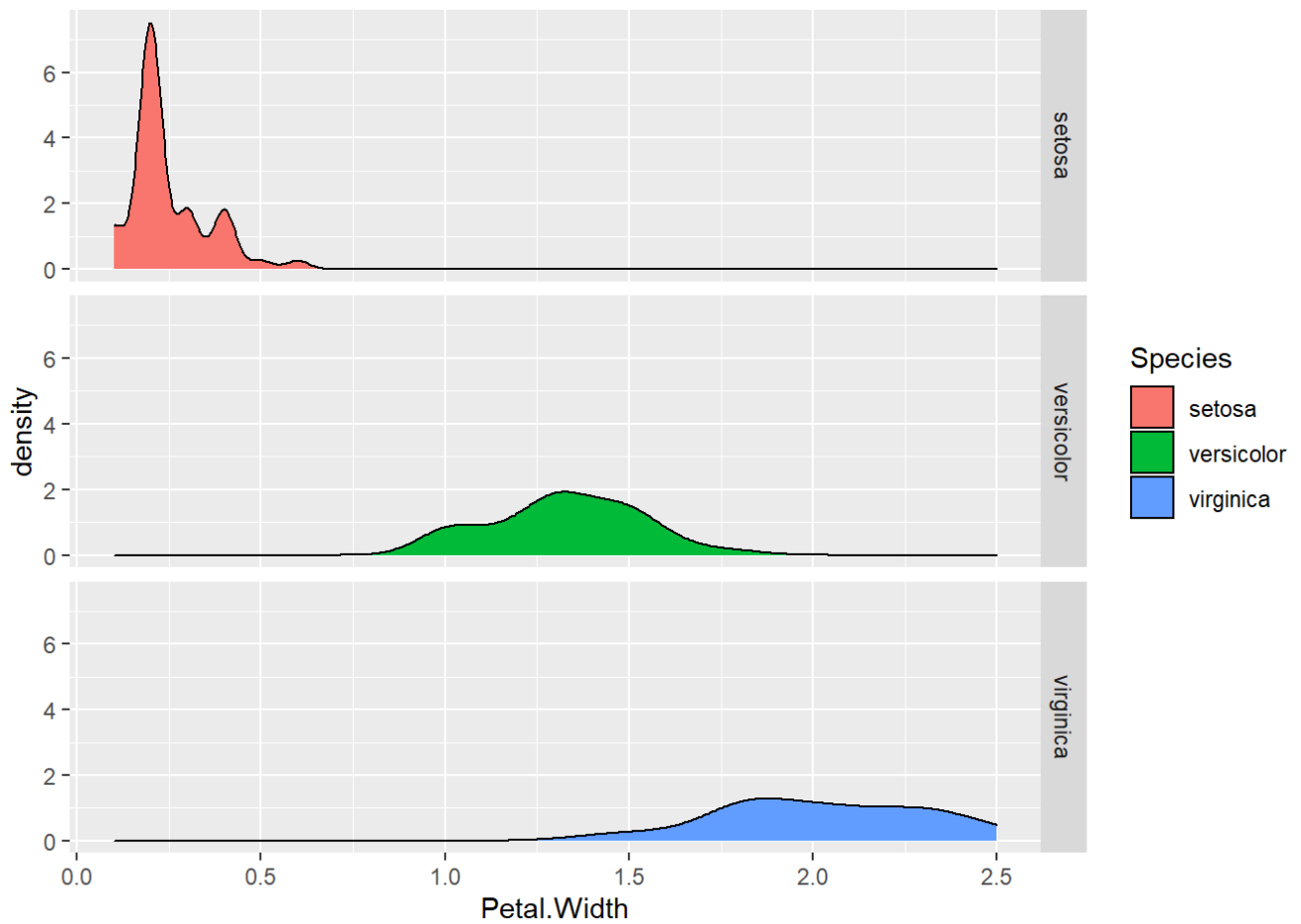


```
# Vrsta virginica ima najsire latice
```

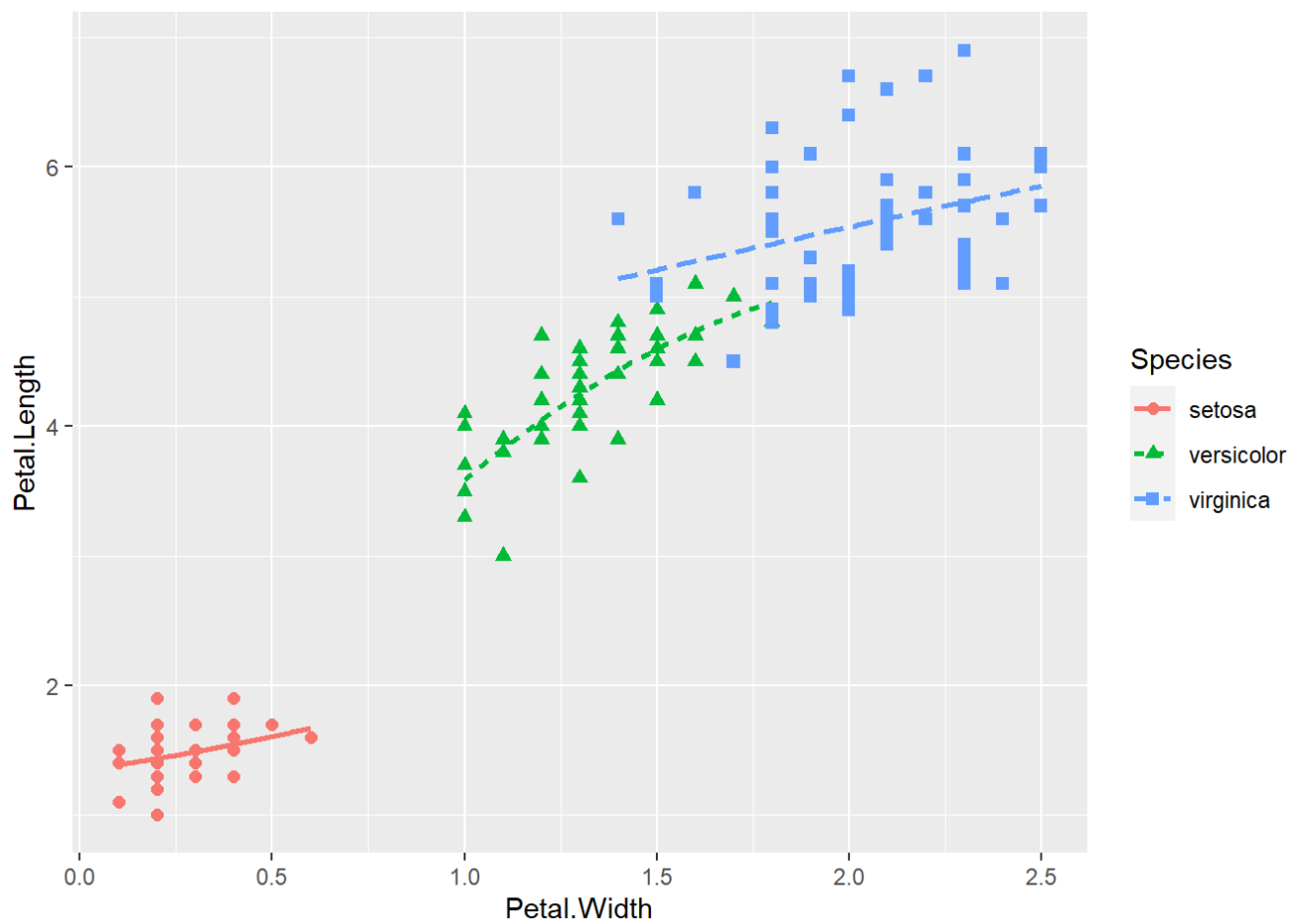
```
# usporedni prikaz distribucija, razdvojenih po vrsti
```

```
data(iris)
```

```
ggplot(data=iris, aes(x=Petal.Width, fill=Species)) + geom_density() + facet_grid  
(Species~.)
```



```
#izgladene krivulje
ggplot(data=iris, aes(x=Petal.Width, y=Petal.Length, linetype=Species, shape=Species, color=Species)) + geom_smooth(method = lm, formula=y~poly(x,2), se=FALSE, size=1) + geom_point(size=2)
```



Vrsta virginica ima najšire latice