LIBRERIA GGPLOT

Existen dos motores gráficos en R.

- librería básica de R: utiliza funciones de alto nivel que invocan a funciones de bajo nivel. Ejemplo plot, hist, barplot, boxplot, etc
- motor gráfico alternativo: ej. lattice, ggplot2. Tiene una gramática. Es muy flexible. Es posible crear gráficos visualmente atractivos. Los datos tienen que estar siempre en dataframes

Instalar paquete *install.packages("ggplot2")*

Cargar paquete

```
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 3.5.3
```

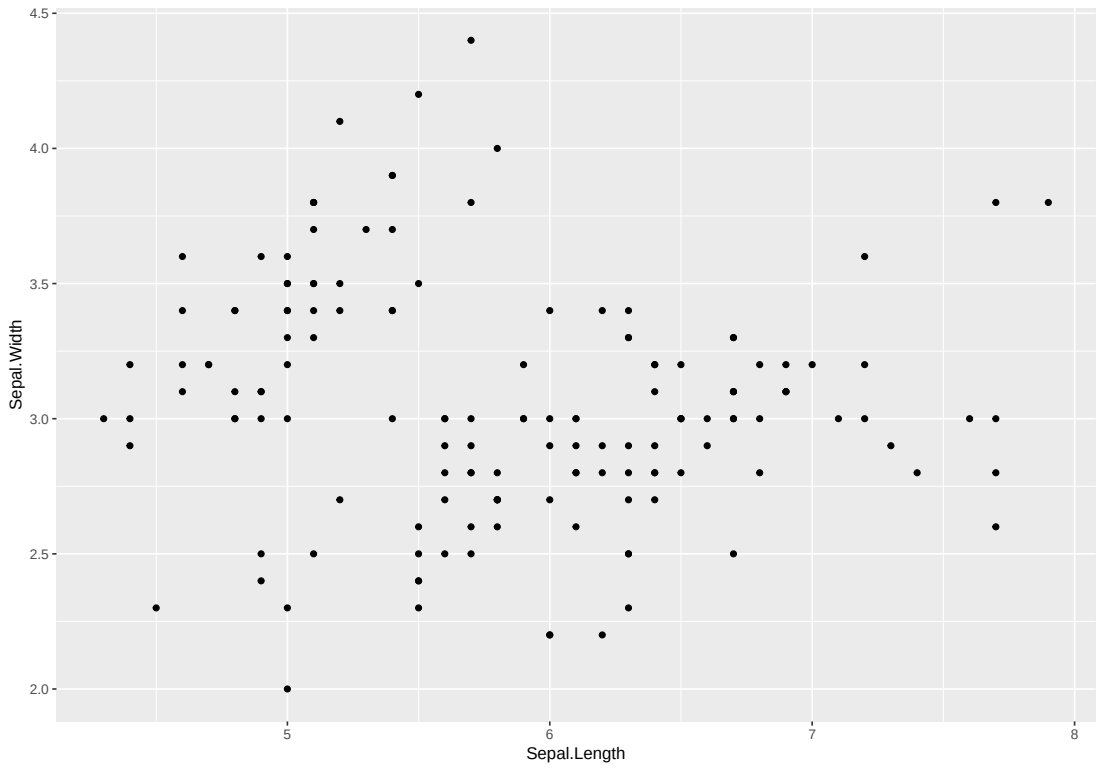
LIBRERIA GGPLOT

Los componentes de ggplot2

- data: Datos para graficar
- aesthetic mapping: Características estéticas
- geom: Objetos geométricos (puntos, líneas, polígonos, áreas.)
- stat: Transformaciones estadísticas
- scale: Escalas
- coord: El sistema de coordenadas
- faceting: Condicionamiento

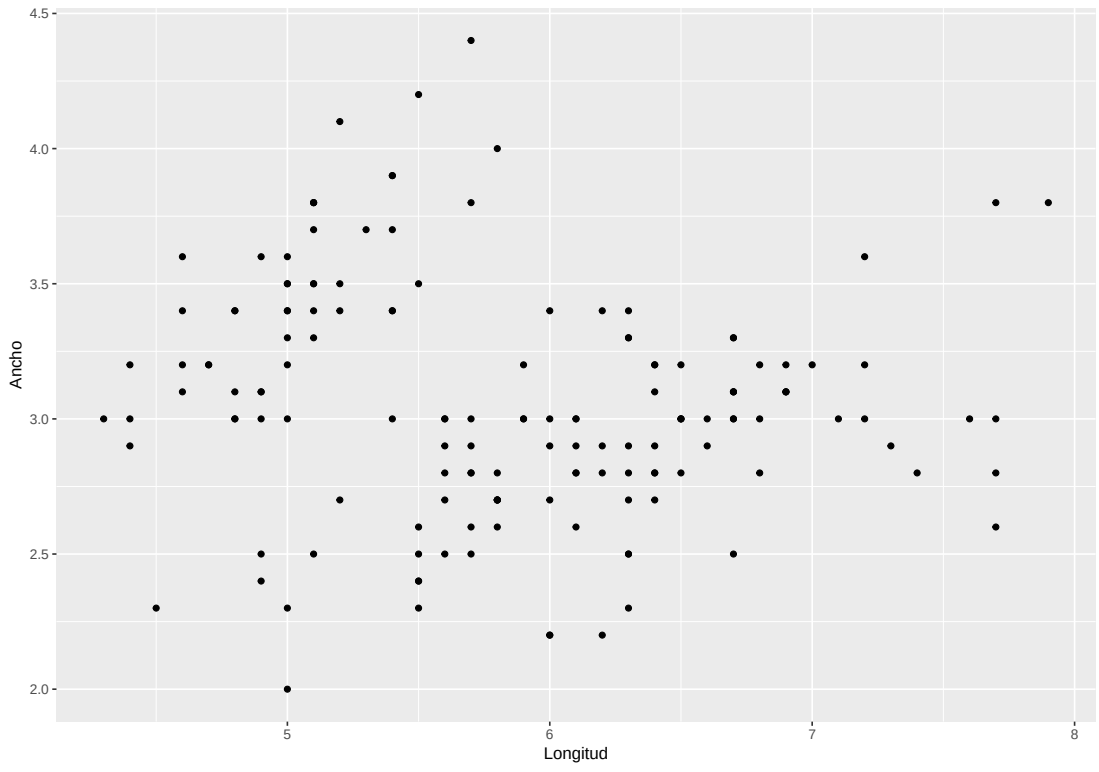
GGPLOT: Para pares de variables

```
ggplot(data=iris, aes(x=Sepal.Length,y=Sepal.Width ))+
  geom_point()
```



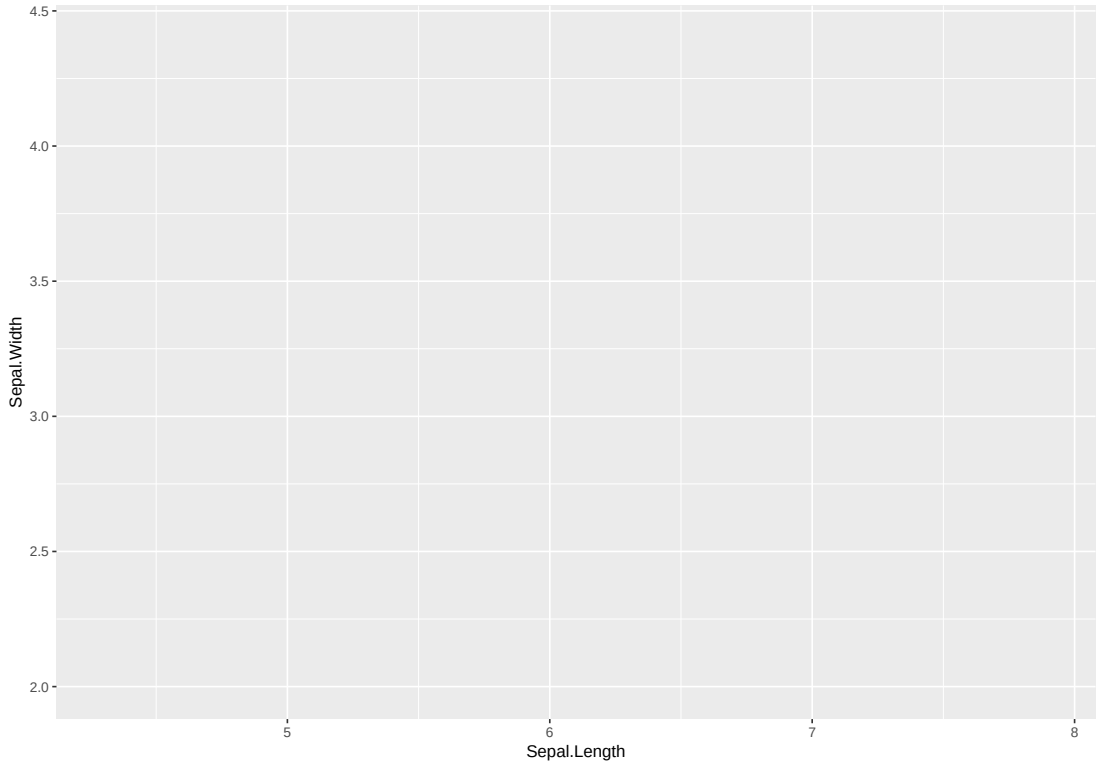
GGPLOT: agregamos labels en los ejes

```
ggplot(data=iris, aes(x=Sepal.Length,y=Sepal.Width ))+
  geom_point()+xlab("Longitud")+ylab("Ancho")
```



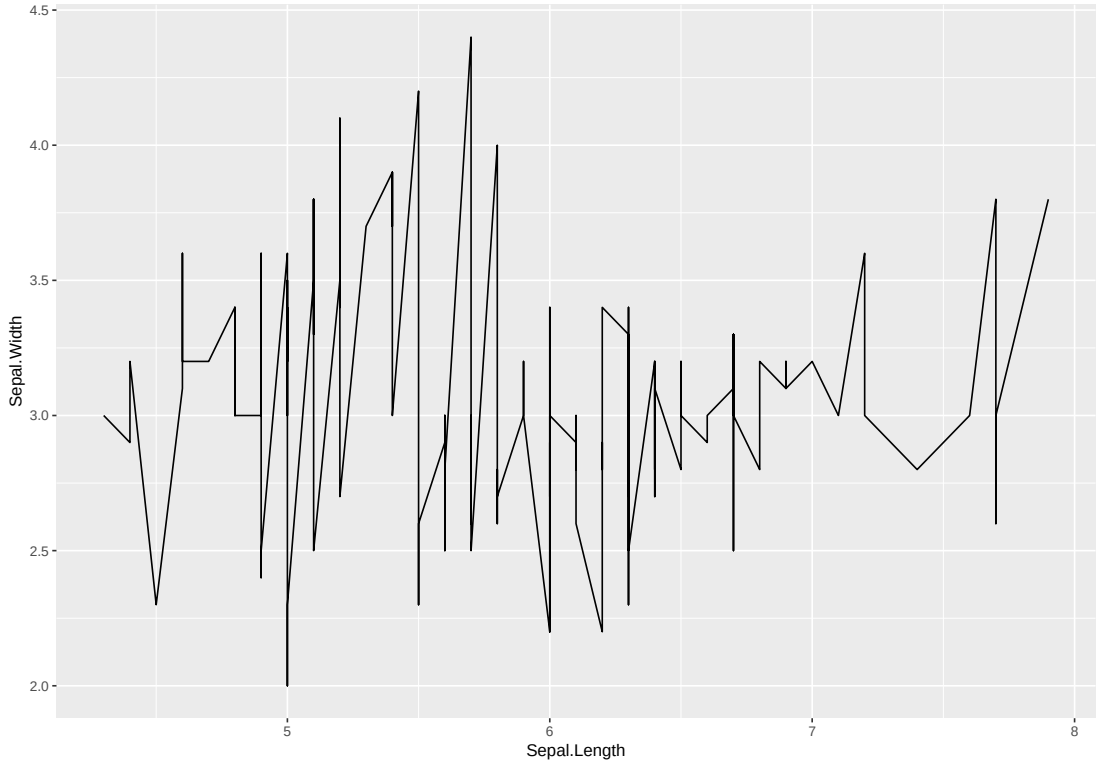
GGPLOT: ¿y si no ponemos geom_point?

```
ggplot(data=iris, aes(x=Sepal.Length,y=Sepal.Width ))
```



GGPLOT: geom.line()

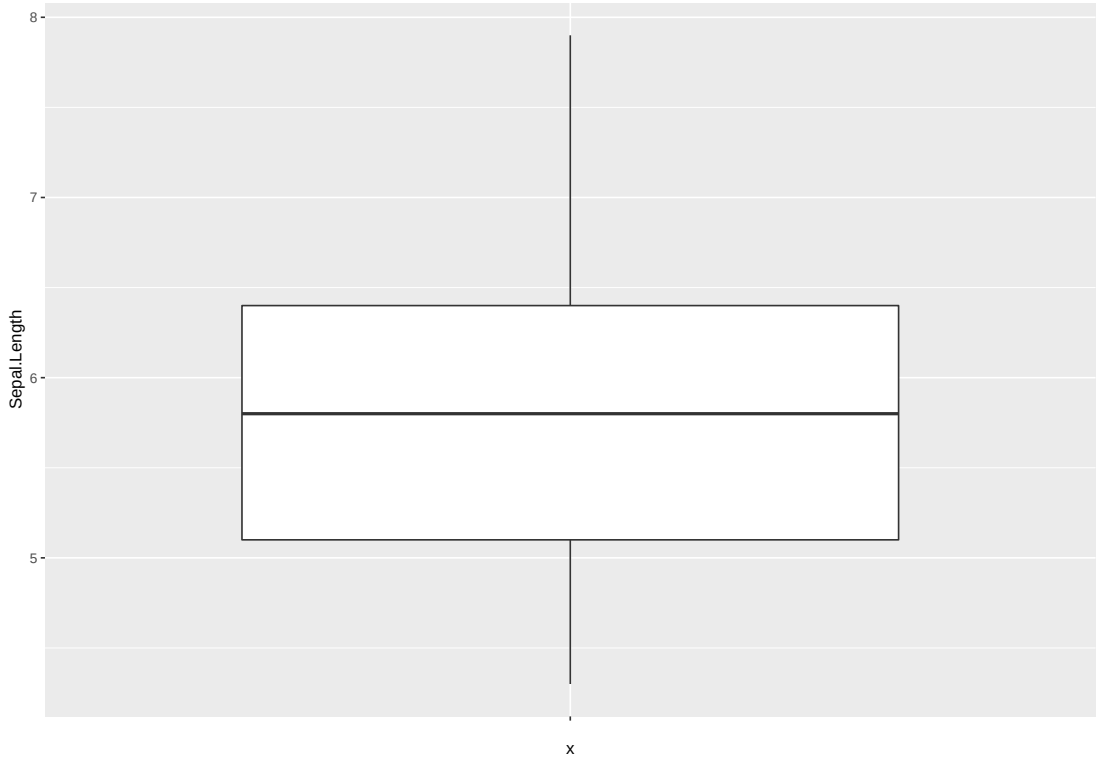
```
ggplot(data=iris, aes(x=Sepal.Length,y=Sepal.Width ))+
geom_line()
```




```
#No resulta útil en este ejemplo, solo para ilustrar
```

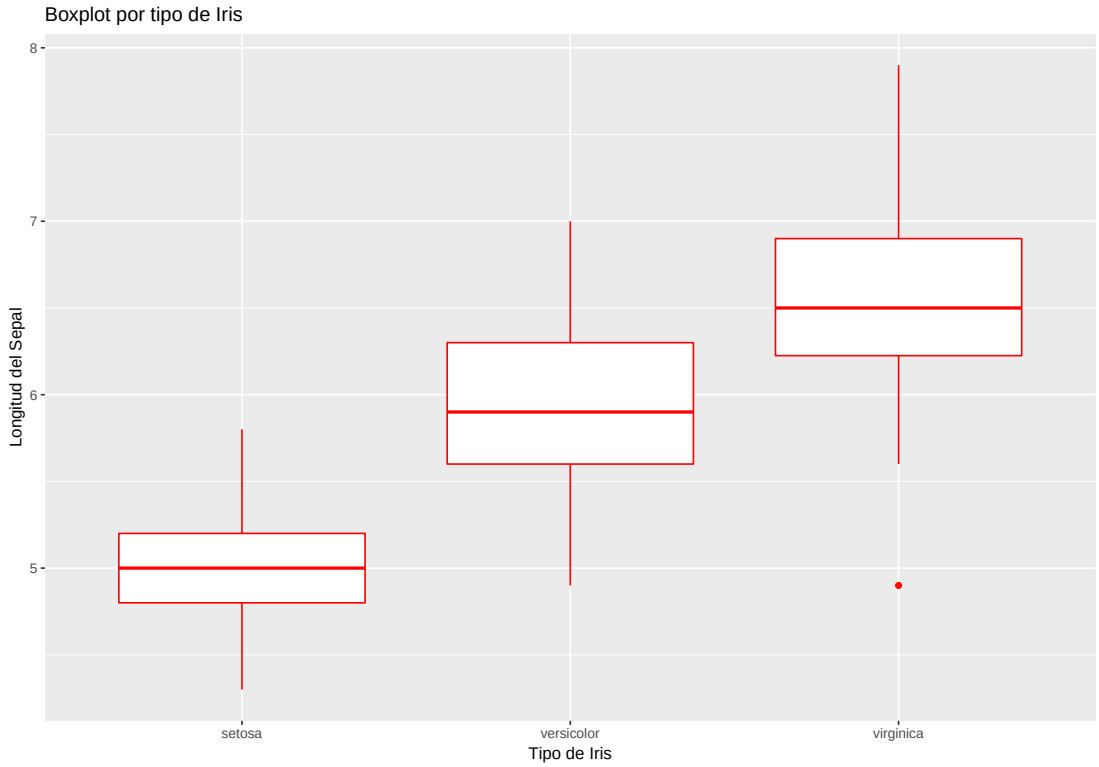
GGPLOT: Existen otras geoms

```
ggplot(data=iris, aes(x="",y=Sepal.Length))+
  geom_boxplot()
```



GGPLOT: Boxplot

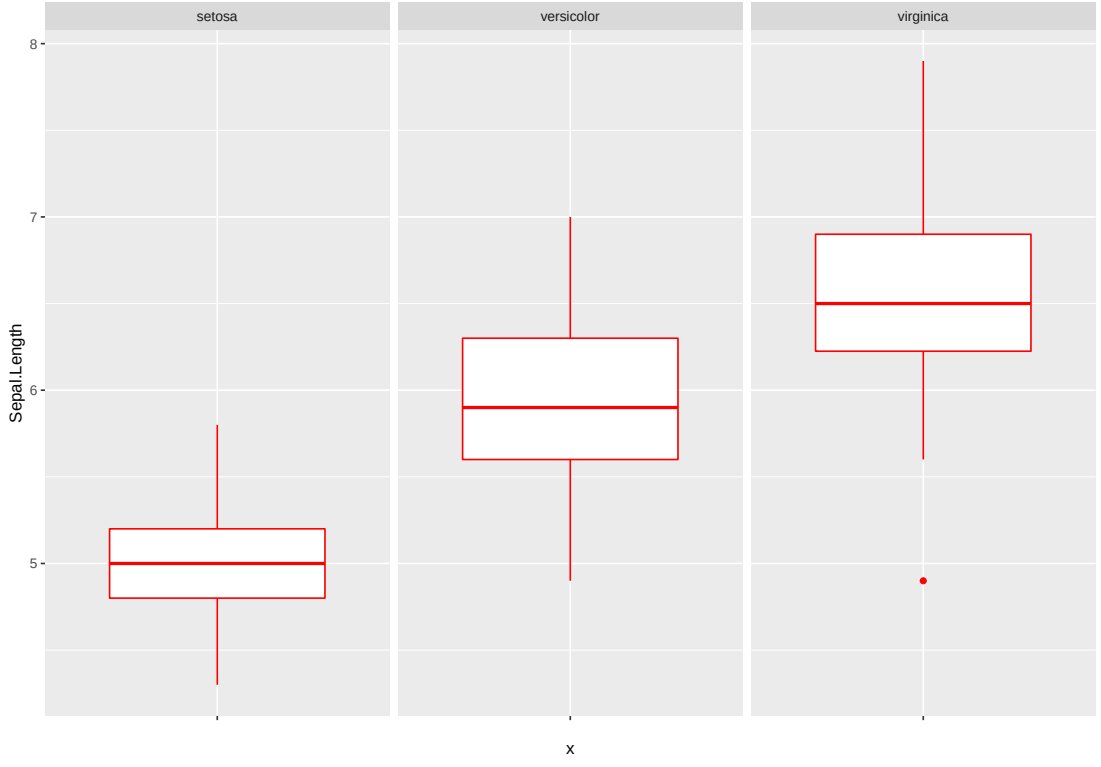
```
ggplot(data=iris, aes(x=Species,y=Sepal.Length))+
  geom_boxplot( col="red")+
  ylab("Longitud del Sepal")+xlab("Tipo de Iris")+
  ggtitle("Boxplot por tipo de Iris")
```



GGPLOT: Boxplot

O bien

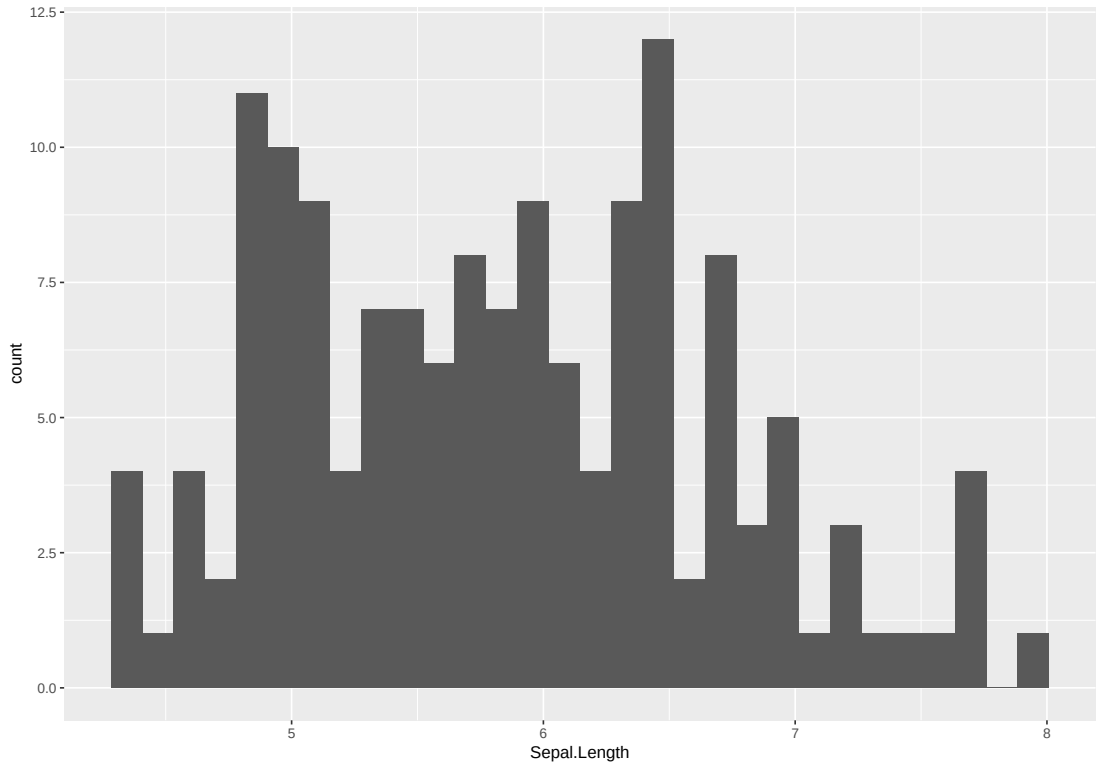
```
ggplot(data=iris, aes(x="",y=Sepal.Length))+
  geom_boxplot( col="red")+facet_grid(. ~ Species)
```



GGPLOT: Histograma

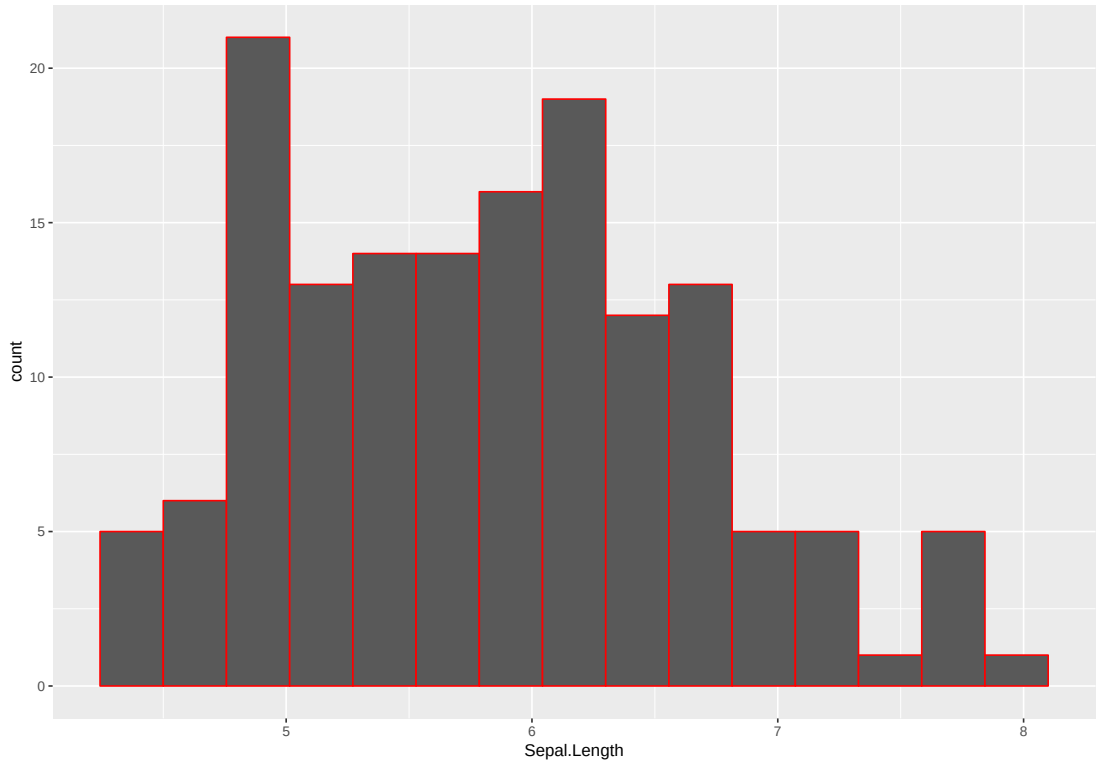
```
ggplot(data = iris,aes(x=Sepal.Length))+geom_histogram()
```

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



GGPLOT: Histograma

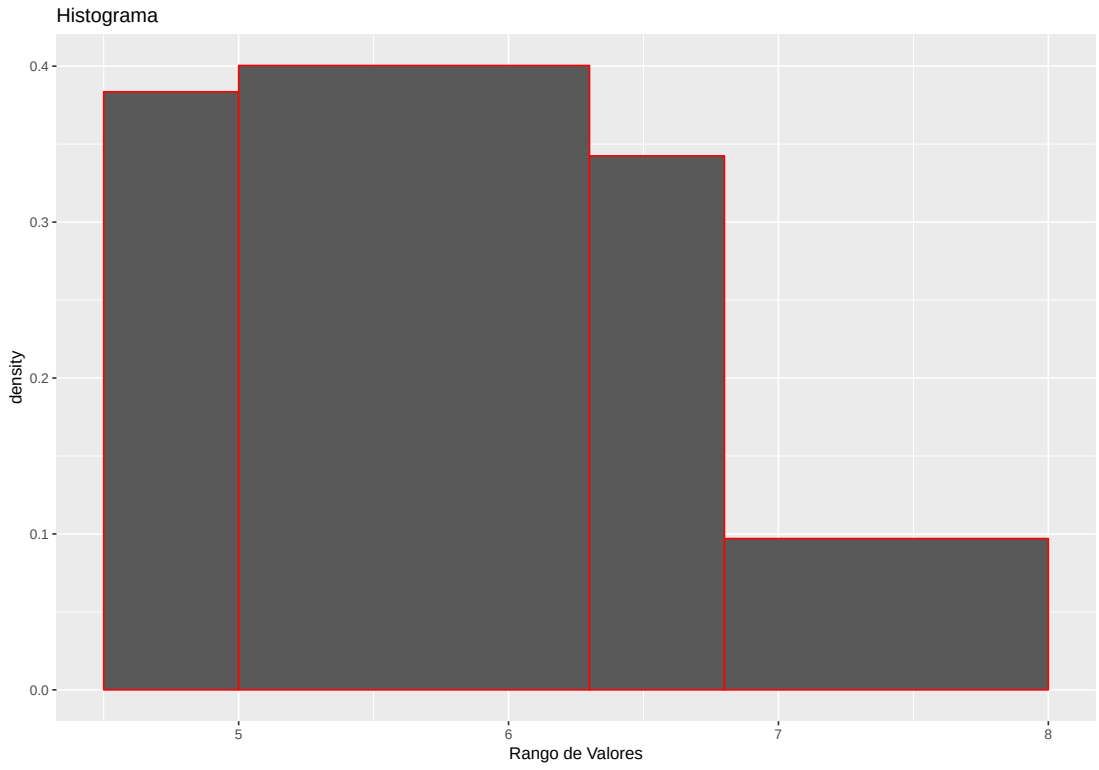
```
ggplot(data = iris,aes(x=Sepal.Length))+
  geom_histogram(bins = 15,  col="red")
```



GGPLOT: Histograma

Para generar el histograma con la medición de la densidad

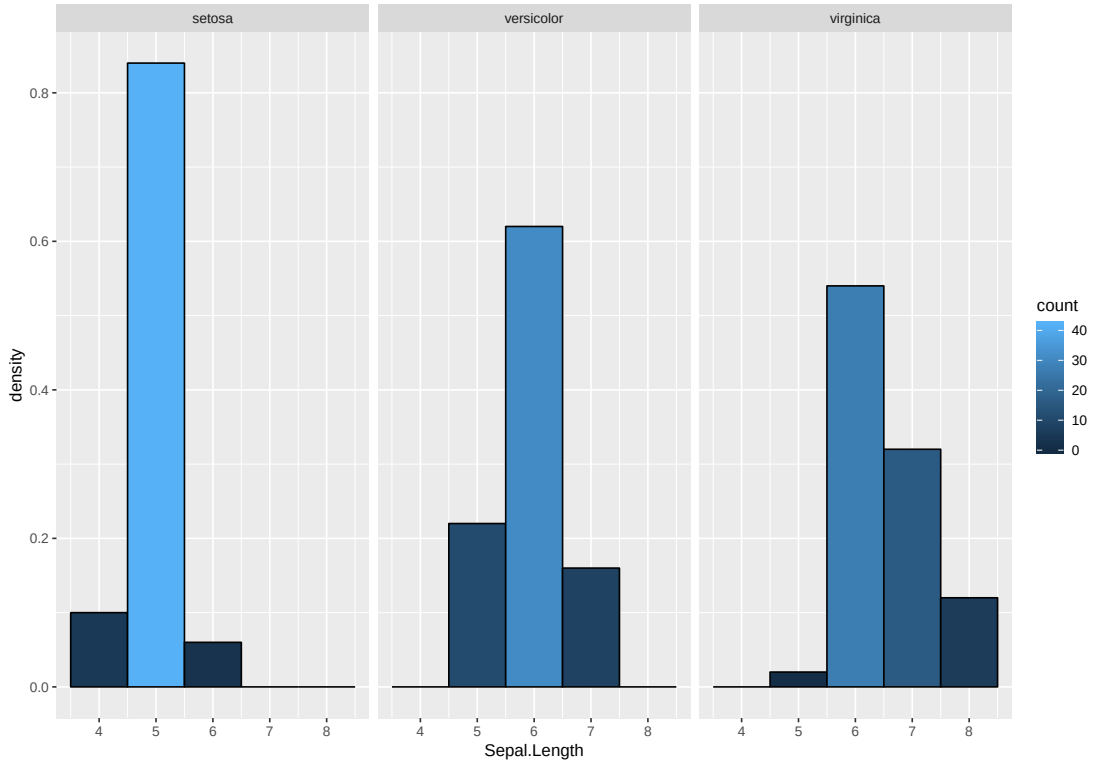
```
ggplot(data=iris, aes(x=iris$Sepal.Length))+
  geom_histogram(aes(y=..density..),breaks =
c(4.5,5,6.3,6.8,8) , col="red")+
  xlab("Rango de Valores")+ggtitle("Histograma")
```



GGPLOT: Histograma

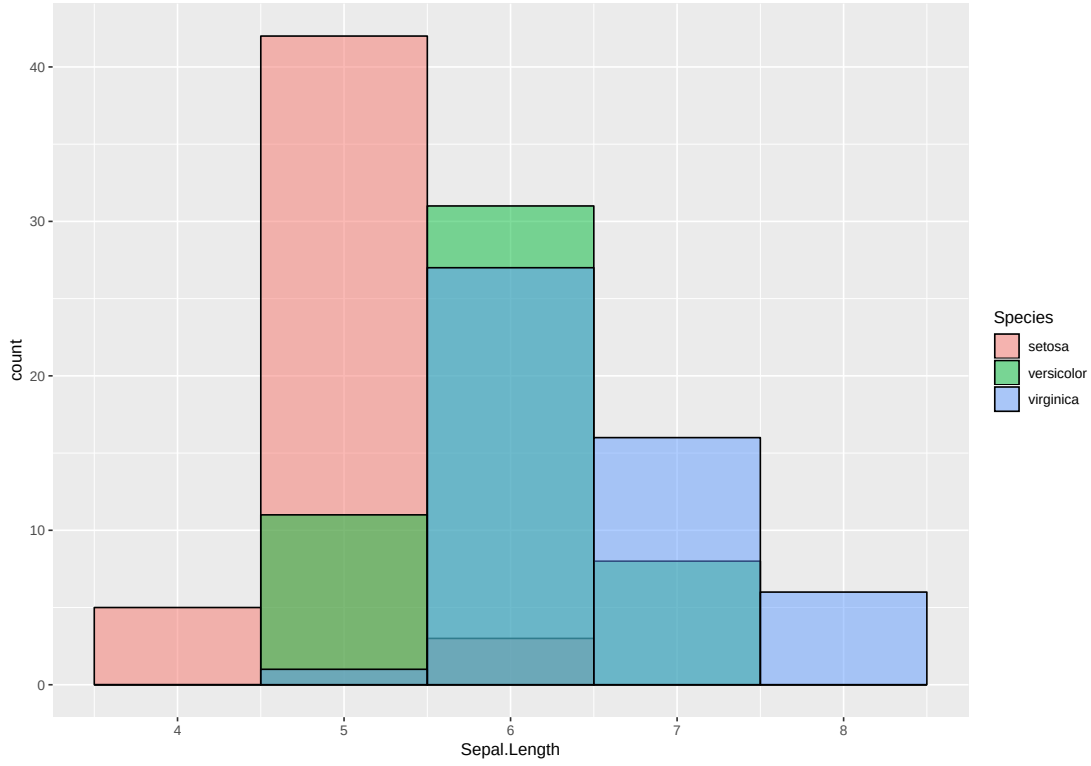
Varios histogramas según condición

```
ggplot(data=iris, aes(x=Sepal.Length))+
  geom_histogram(binwidth=1,color="black",aes(
    y=..density..,fill=..count..))+
  facet_grid(. ~ Species)
```



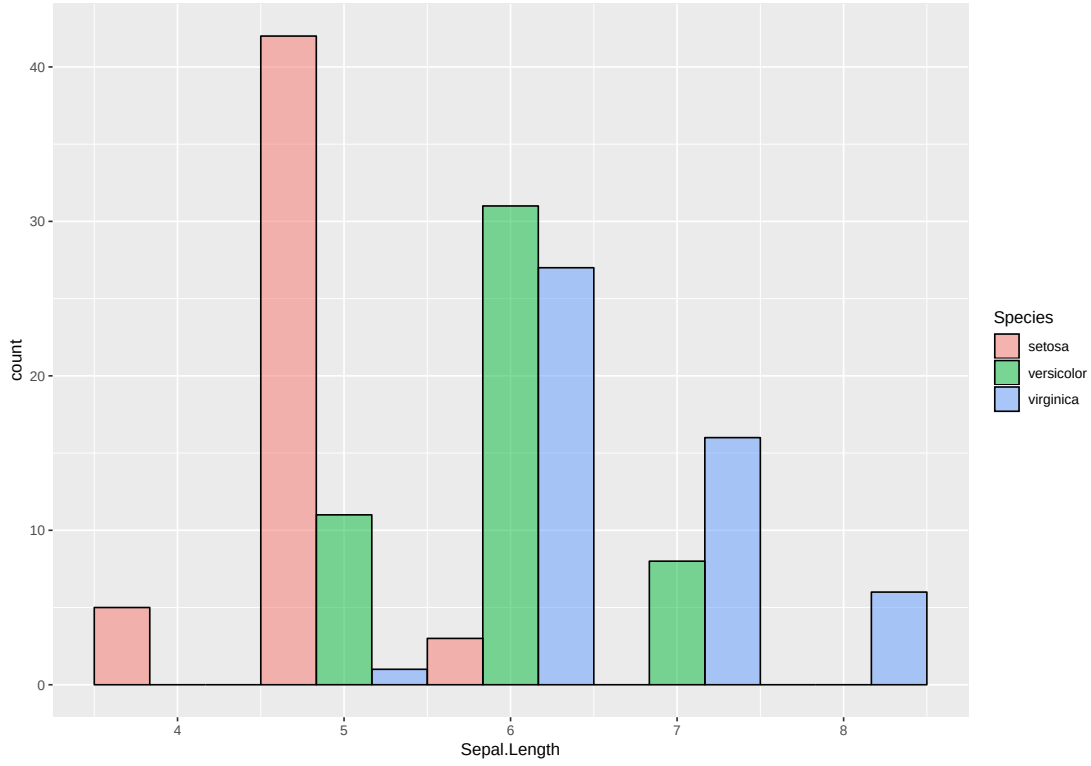
GGPLOT: Histograma

```
ggplot(data=iris, aes(x=Sepal.Length, fill=Species)) +
  geom_histogram(binwidth=1,color="black",  alpha=.5,
                 position="identity")
```



GGPLOT: Histograma

```
ggplot(data=iris, aes(x=Sepal.Length, fill=Species)) +
  geom_histogram(binwidth=1,color="black",alpha=.5,
                 position="dodge")
```



GGPLOT: Histograma

Histograma con la curva de densidad normal superpuesta

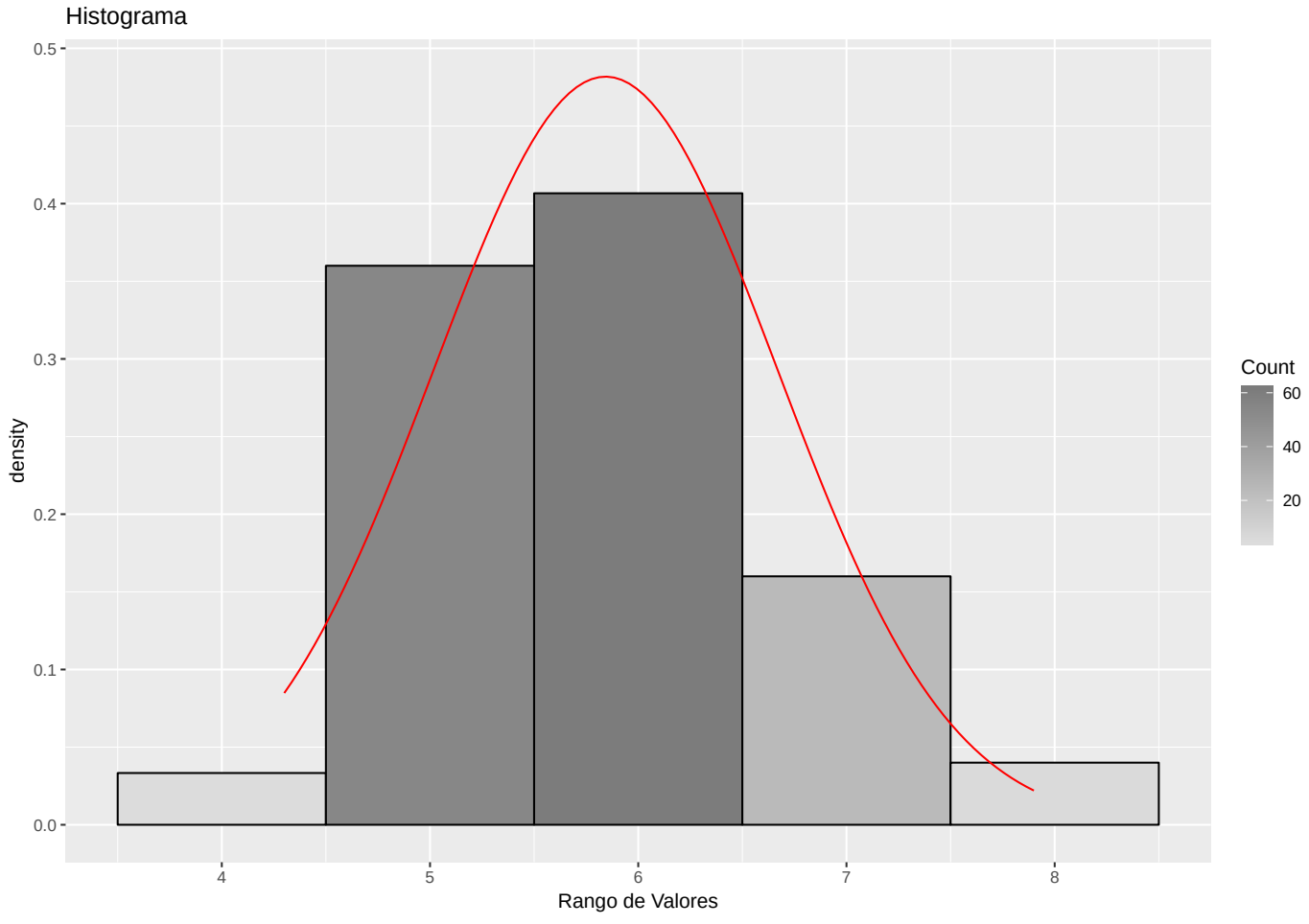
```
media<-mean(Sepal.Length)
desvio<-sd(Sepal.Length)

gg<-ggplot(data=iris, aes(x=Sepal.Length))
gg<-gg+geom_histogram(binwidth=1,color="black",
                      aes(y=..density..,fill=..count..))
gg<-gg+scale_fill_gradient("Count", low="#DCDCDC",
                           high="#7C7C7C")
```

ahora superpongo

```
gg<-gg + stat_function(fun = dnorm,color="red",
                       args=list(mean=media, sd=desvio))
gg+xlab("Rango de Valores")+ggtitle("Histograma")
```

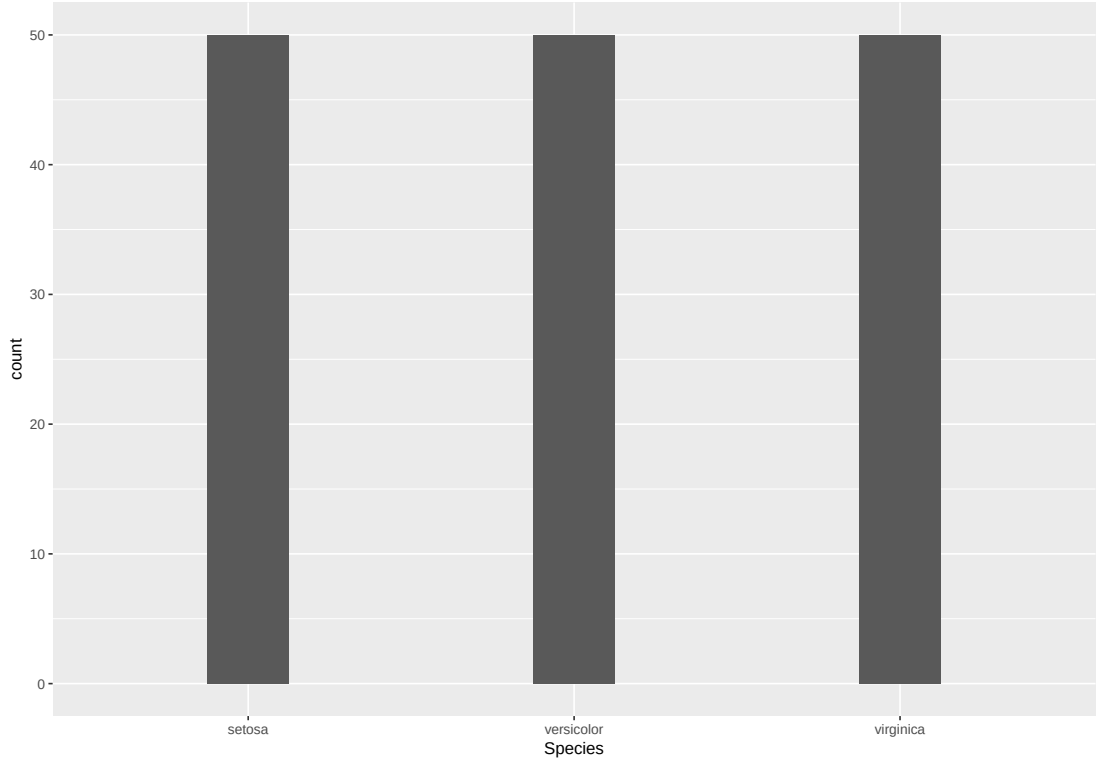
GGPLOT: Histograma

Histograma con la curva de densidad normal superpuesta



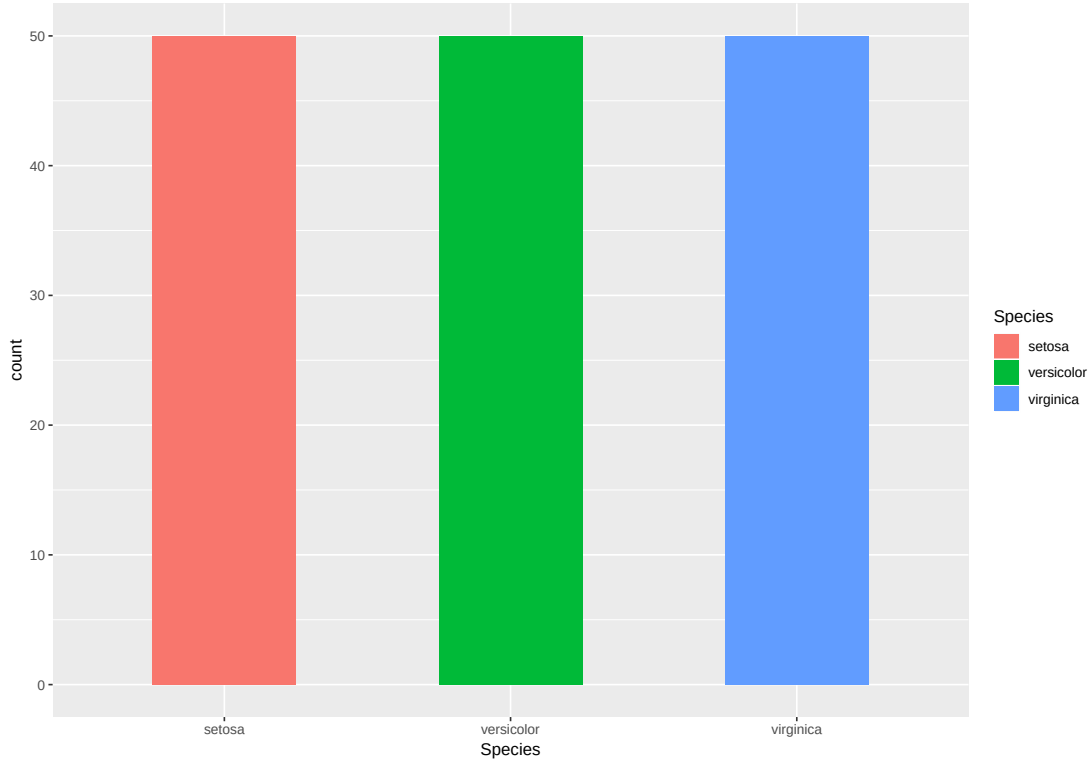
GGPLOT: Gráficos de barra para variables categóricas

```
ggplot(data=iris, aes(x=Species))+geom_bar(width=0.25)
```



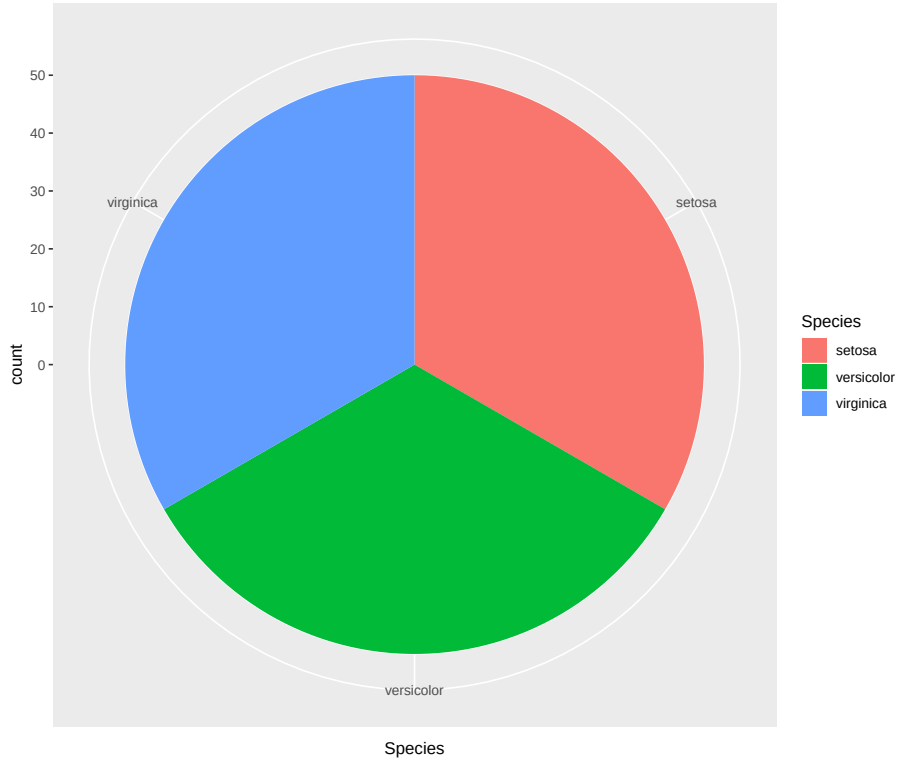
GGPLOT: Gráficos de barra para variables categóricas

```
ggplot(data=iris, aes(x=Species))+geom_bar(aes(fill=Species),
       width=0.5)
```



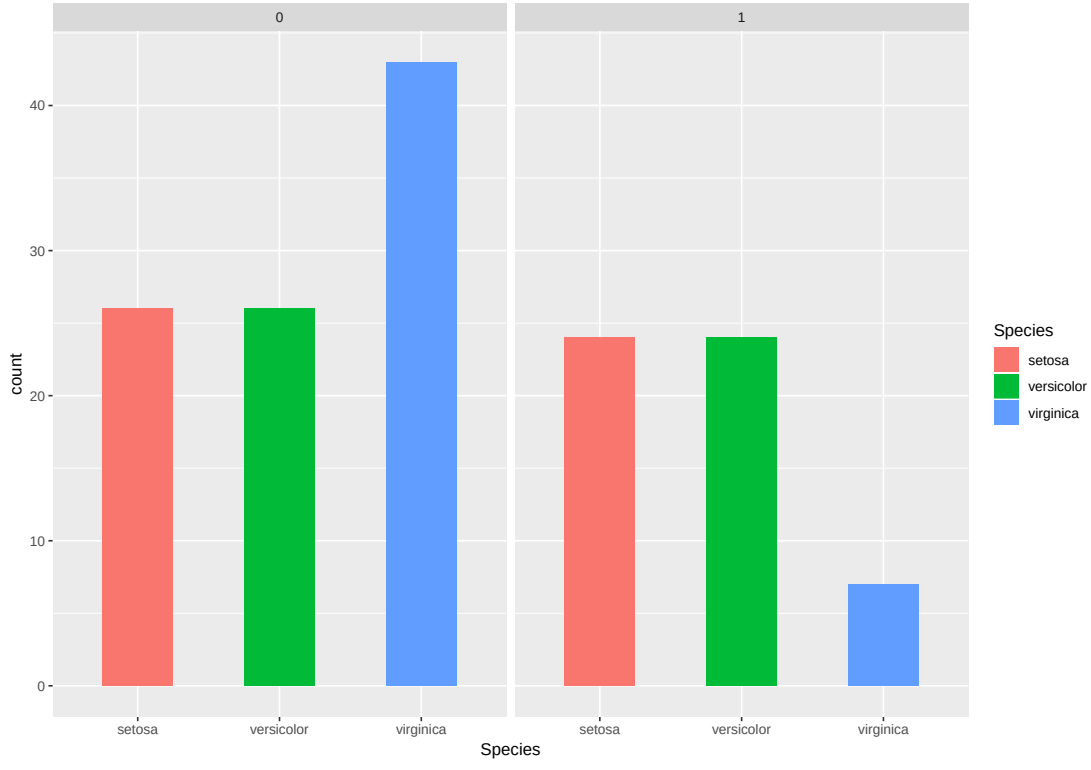
GGPLOT: Gráficos de torta para variables categóricas

```
ggplot(data=iris, aes(x=Species,fill=Species))+
  geom_bar(width=1)+coord_polar()
```



GGPLOT: más de una variables categóricas

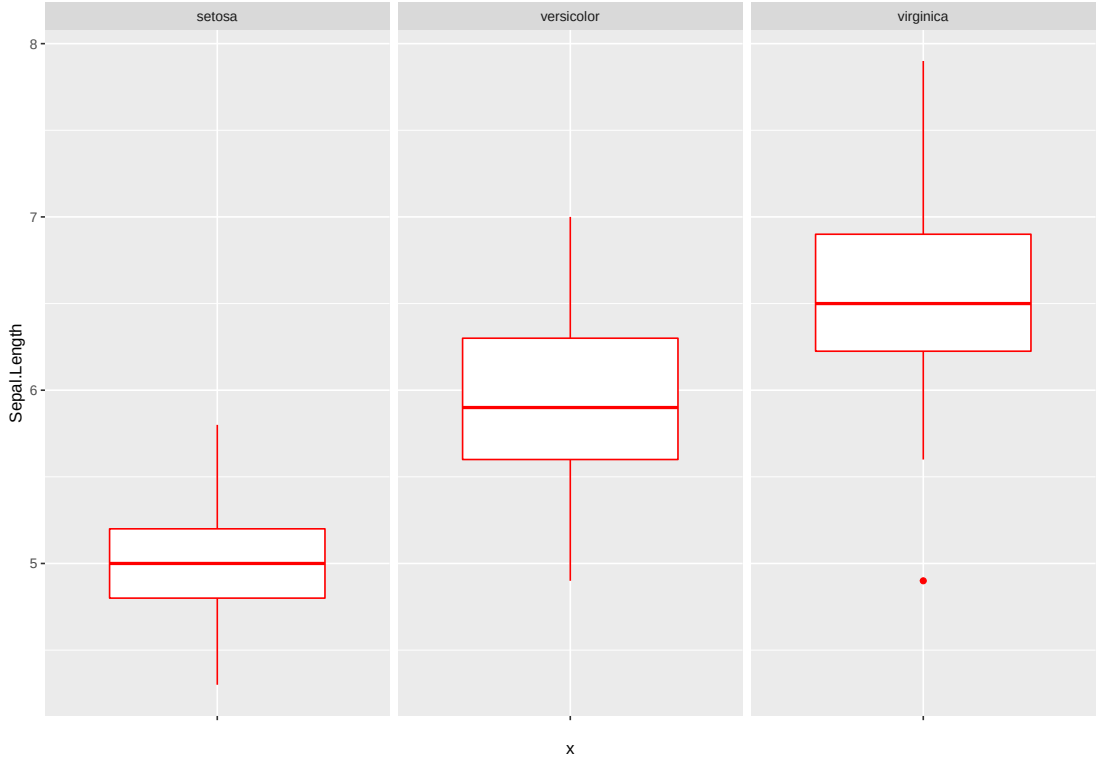
```
iris2<-data.frame(cbind(iris,fuma))
ggplot(data=iris2, aes(x=Species))+geom_bar(aes(fill=Species),
       width=0.5)+ facet_grid(. ~ fuma)
```



GGPLOT: Boxplot

O bien

```
ggplot(data=iris, aes(x="",y=Sepal.Length))+
  geom_boxplot( col="red")+facet_grid(. ~ Species)
```



GGPLOT: Guardado

Para guardar simplemente

```
ggsave("mi_grafico.png")
```

```
## Saving 10 x 7 in image
```