

IrisData

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Background Creating standard plots with RStudio's built-in datasets.

Loading Data / Basic Plotting Tutorial

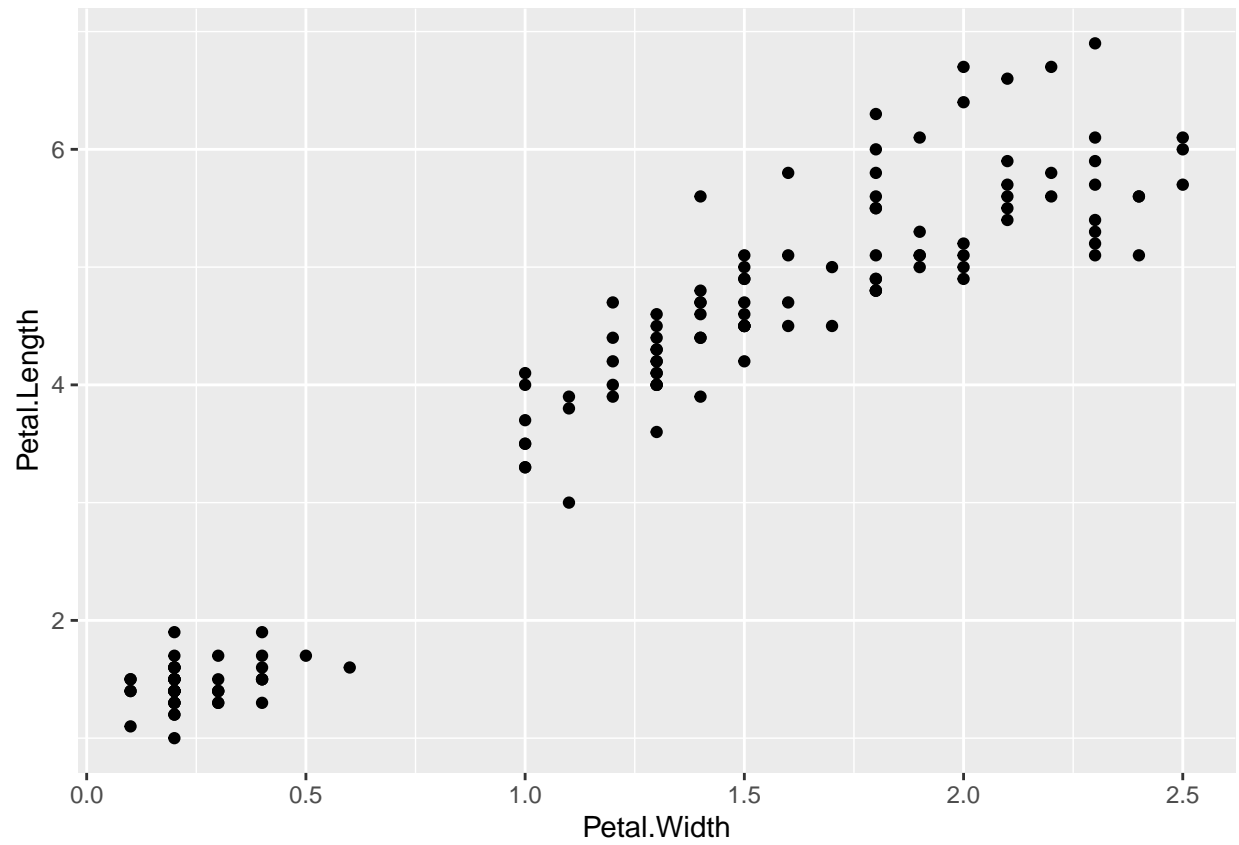
```
library(ggplot2) #qplot (basic scatterplot)
library(datasets)
library(tidyverse)
library(ggthemes)
library(tinytex)
```

```
?datasets library(help = "datasets") ?iris
```

```
iris head(iris)
```

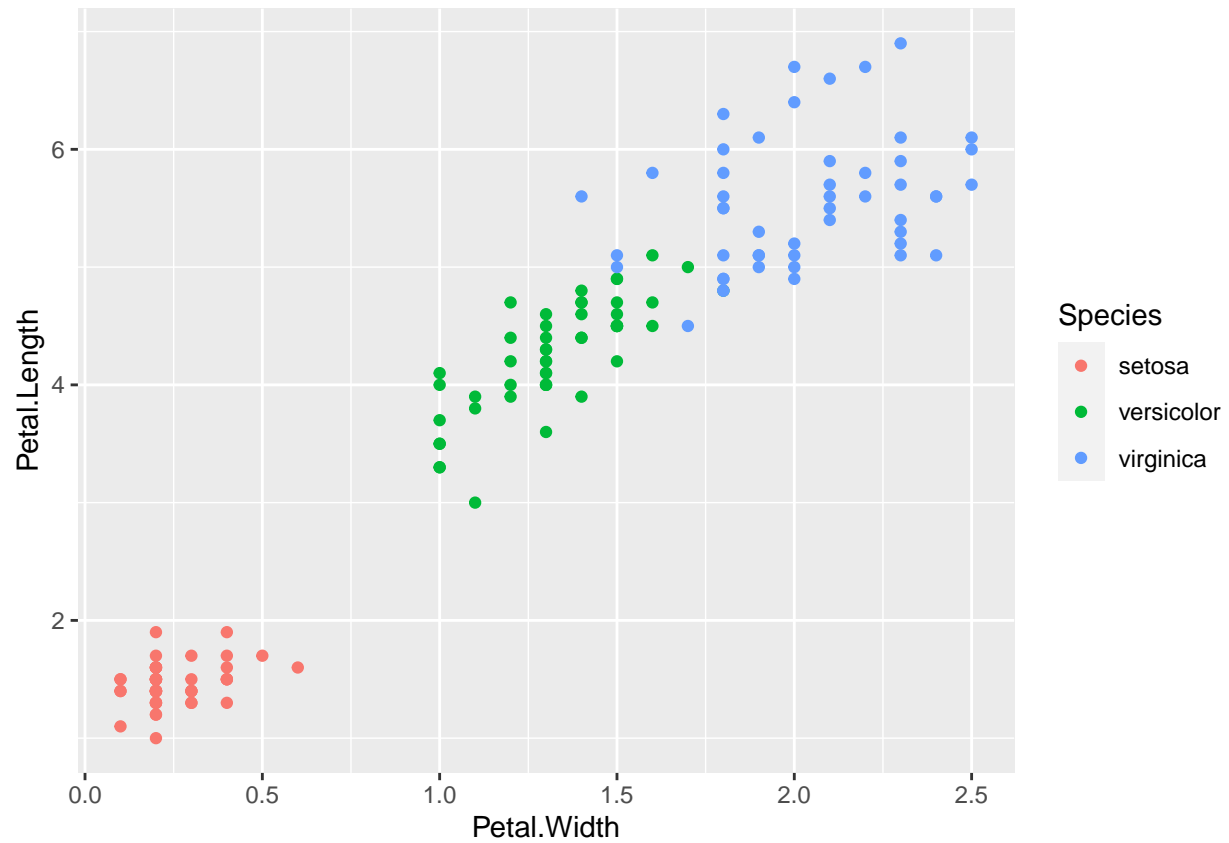
```
#basic scatterplot
```

```
qplot(Petal.Width, Petal.Length, data=iris)
```



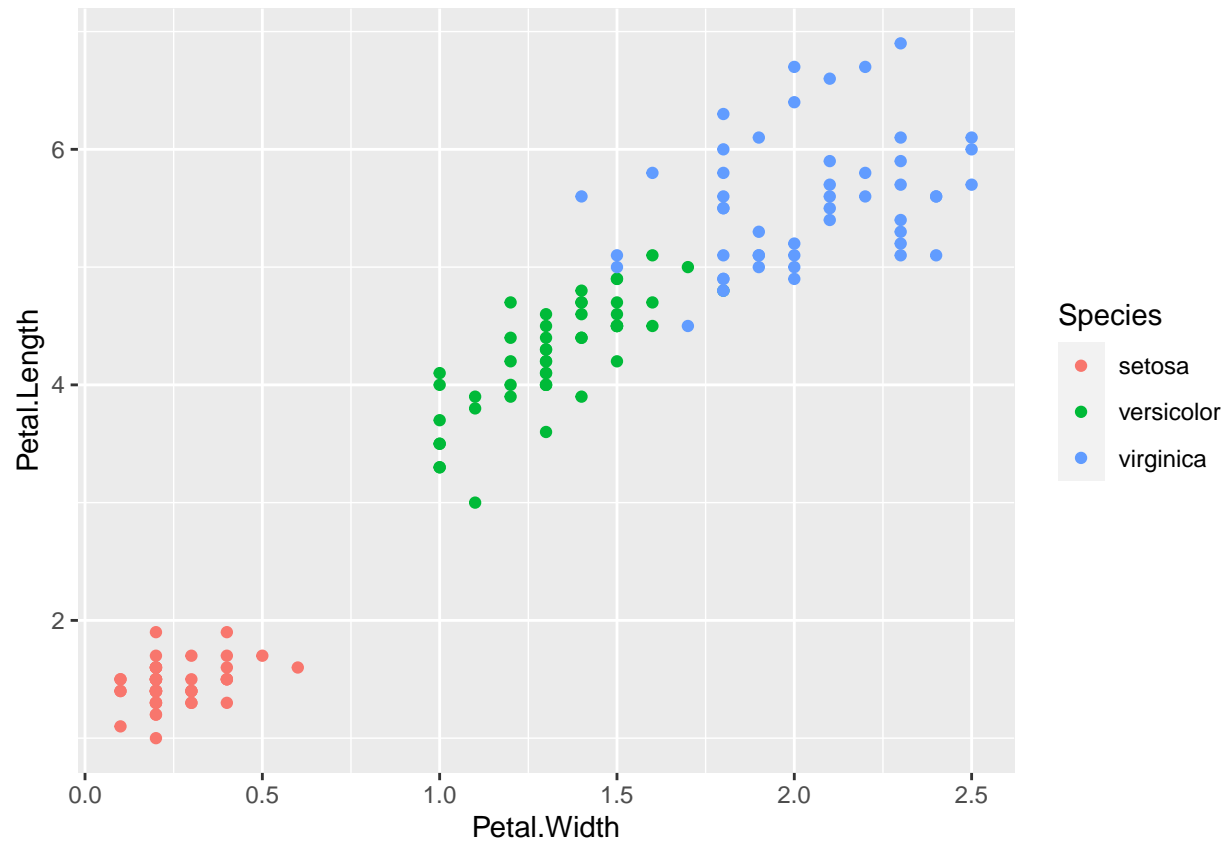
#basic scatterplot w/ species colored

```
qplot(Petal.Width, Petal.Length, color=Species, data=iris)
```



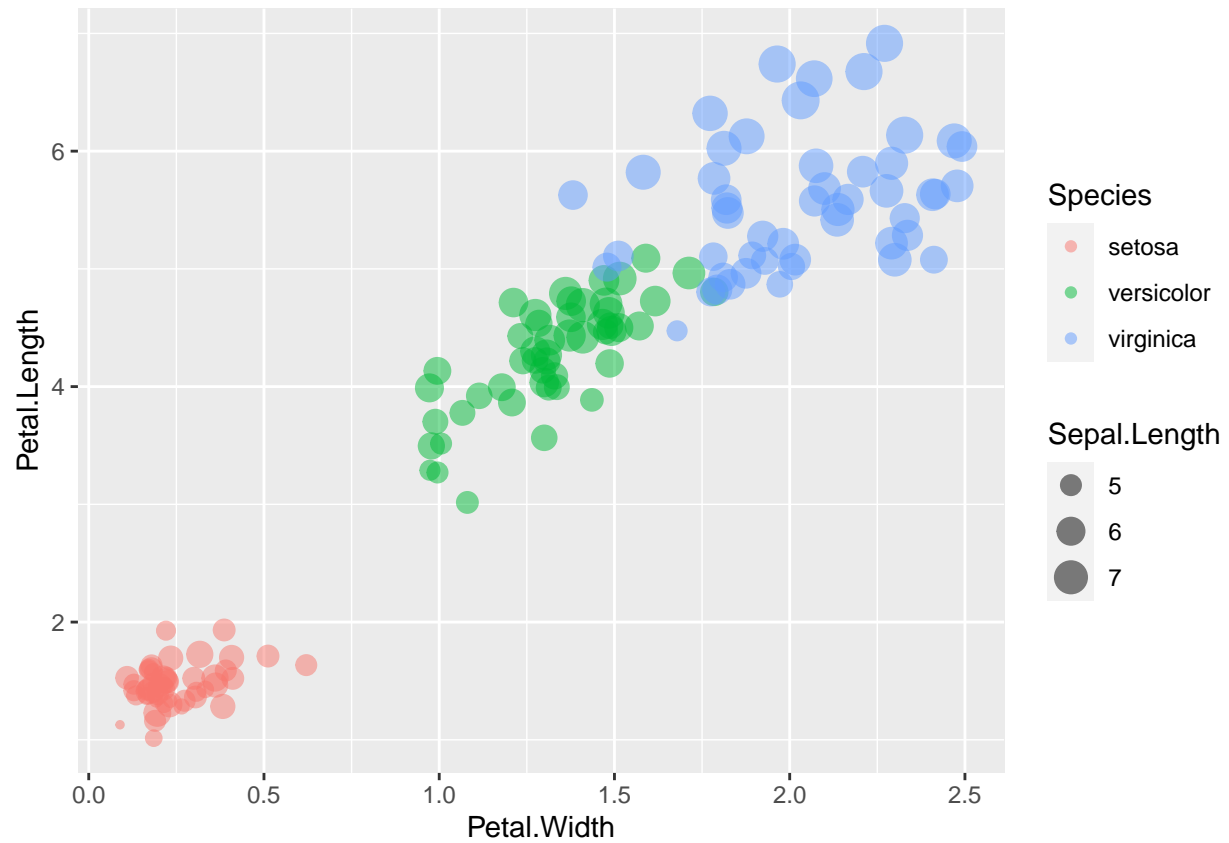
#same thing as above, but strictly ggplot2

```
ggplot(iris, aes(Petal.Width, Petal.Length, color=Species))+  
  geom_point()
```



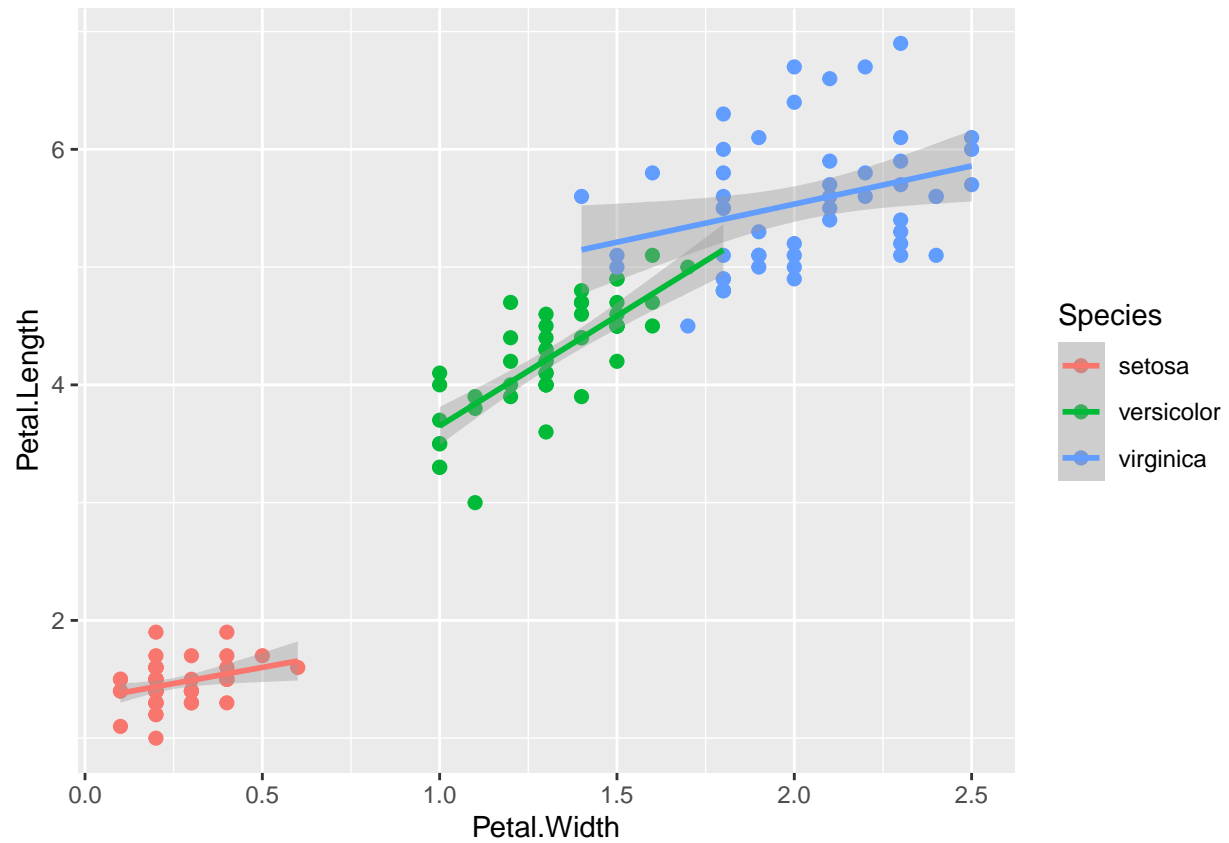
#size matches sepal length. jitter separates dots slightly for viewing. alpha makes dots more transparent

```
ggplot(iris, aes(Petal.Width, Petal.Length, color=Species, size=Sepal.Length))+  
  geom_jitter(alpha=0.5)
```



#size matches sepal length. jitter separates dots slightly for viewing. alpha makes dots more transparent.
geom_smooth makes regression line with std. error

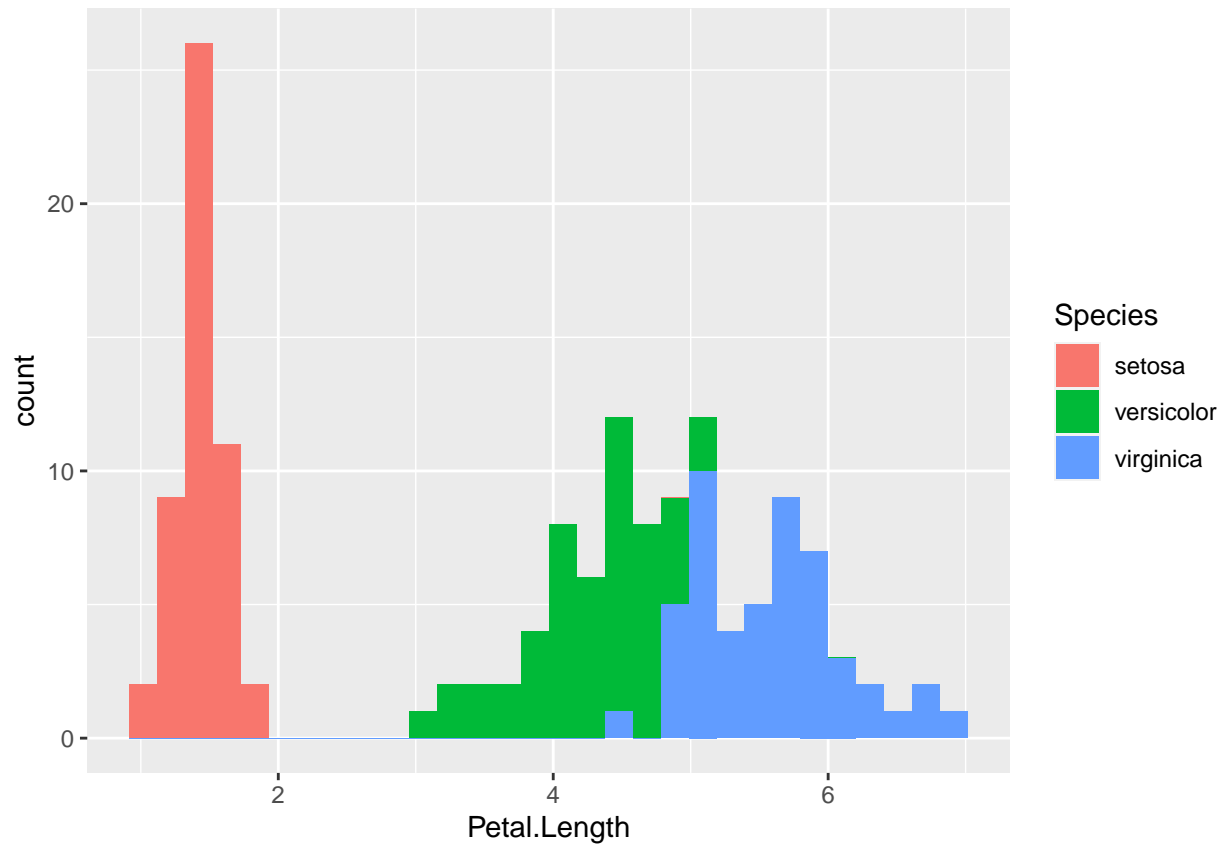
```
ggplot(iris, aes(Petal.Width, Petal.Length, color=Species, size=Sepal.Length))+  
  geom_point(size=2)+  
  geom_smooth(method=lm)+  
  theme(legend.position = "right")
```



#/histogram

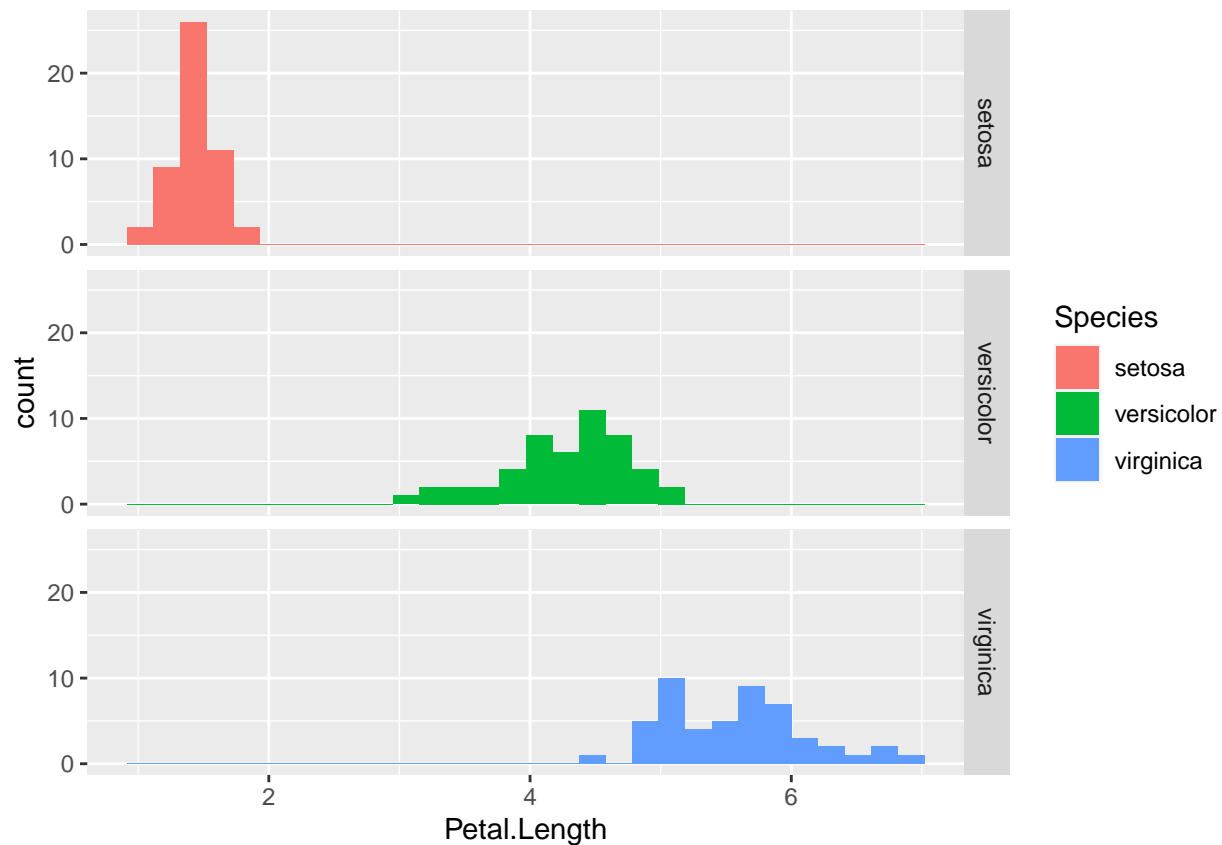
```
ggplot(iris, aes(Petal.Length, fill=Species))+
  geom_histogram()+
  theme(legend.position = "right")
```

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



#histogram w/ indiv. plots for species w/ facet_grid

```
ggplot(iris, aes(Petal.Length, fill=Species))+  
  geom_histogram()+  
  facet_grid(Species ~ .)
```

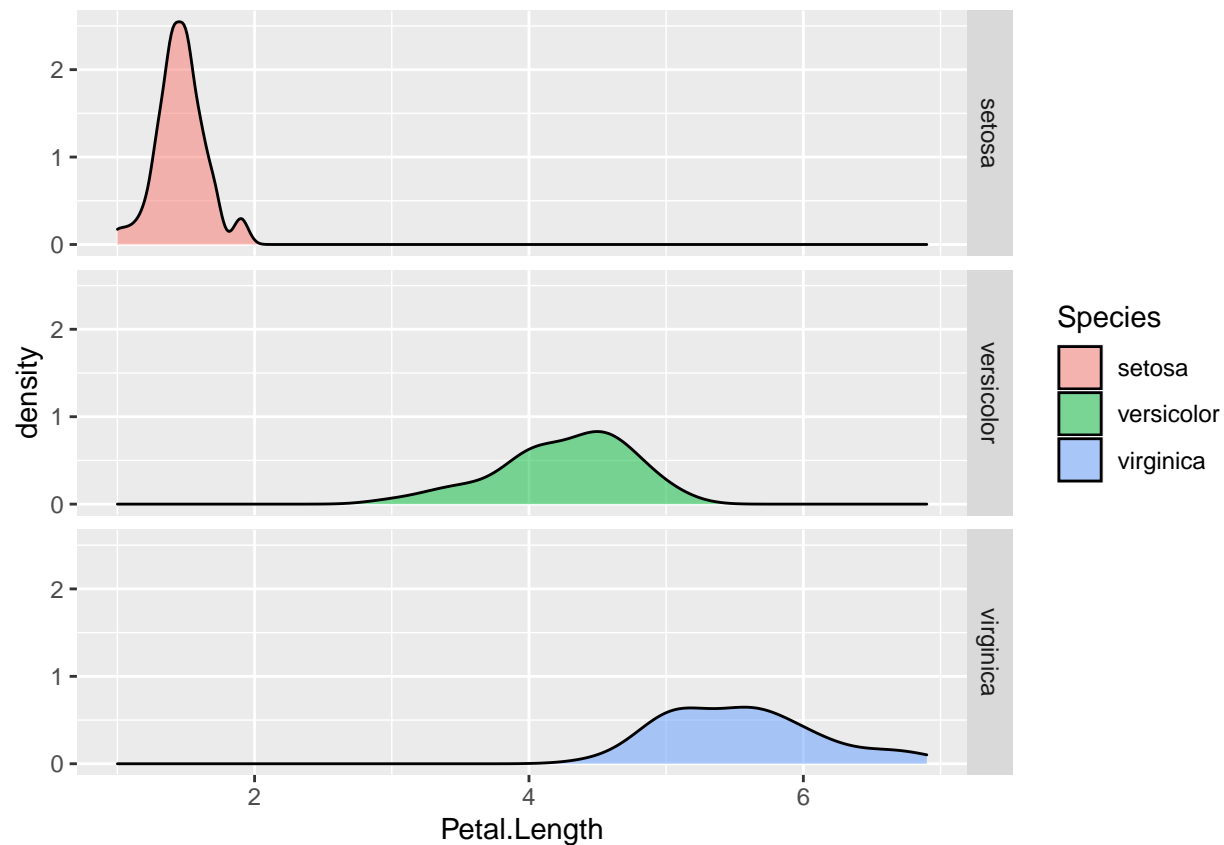


```
theme(legend.position = "none")
```

```
## List of 1
## $ legend.position: chr "none"
## - attr(*, "class")= chr [1:2] "theme" "gg"
## - attr(*, "complete")= logi FALSE
## - attr(*, "validate")= logi TRUE
```

```
#histogram w/ indiv. plots for species w/ facet_grid (geom_density is cleaner, less blocky)
```

```
ggplot(iris, aes(Petal.Length, fill=Species))+
  geom_density(alpha=0.5)+
  facet_grid(Species ~ .)
```

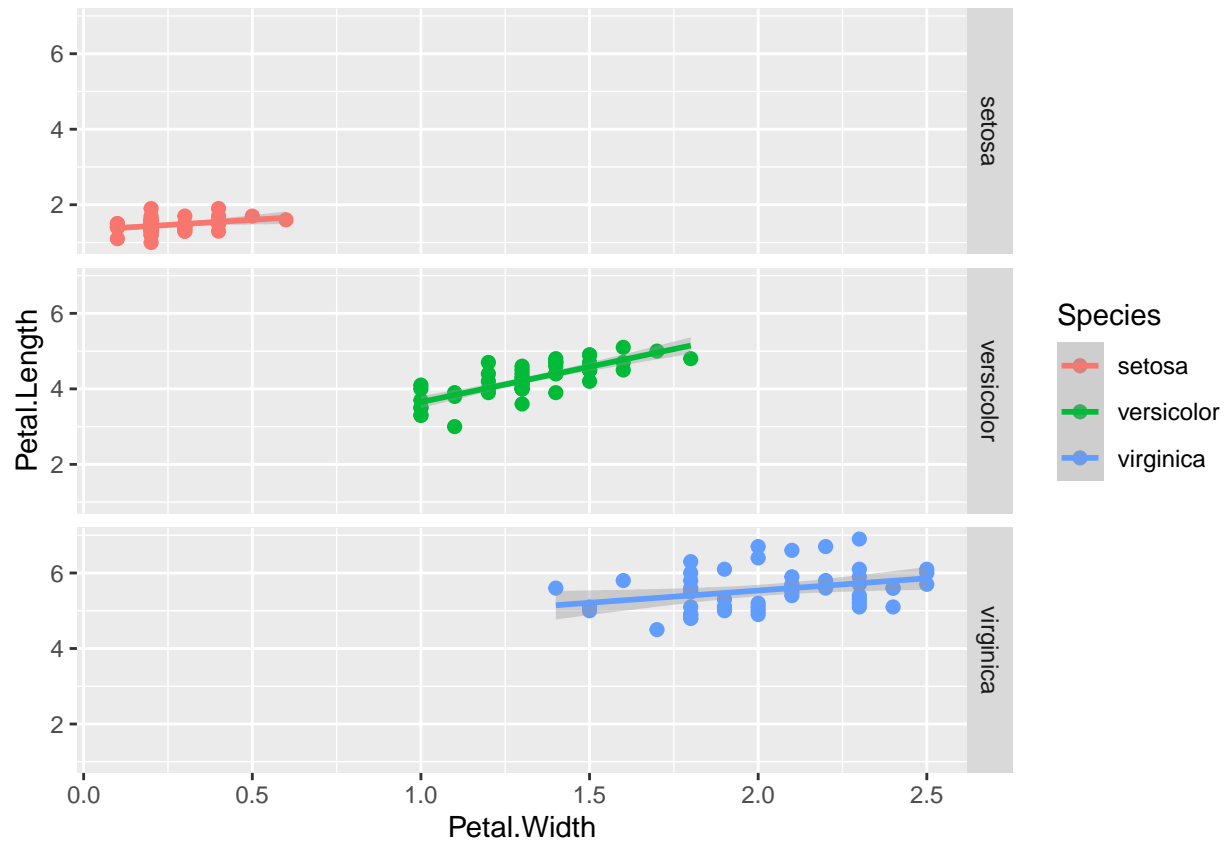



```
theme(legend.position = "none")
```

```
## List of 1
## $ legend.position: chr "none"
## - attr(*, "class")= chr [1:2] "theme" "gg"
## - attr(*, "complete")= logi FALSE
## - attr(*, "validate")= logi TRUE
```

#facet_grid with previous scatterplots

```
ggplot(iris, aes(Petal.Width, Petal.Length, color=Species, size=Sepal.Length))+
  geom_point(size=2)+
  geom_smooth(method=lm)+
  facet_grid(Species ~ .)
```



```
theme(legend.position = "right")
```

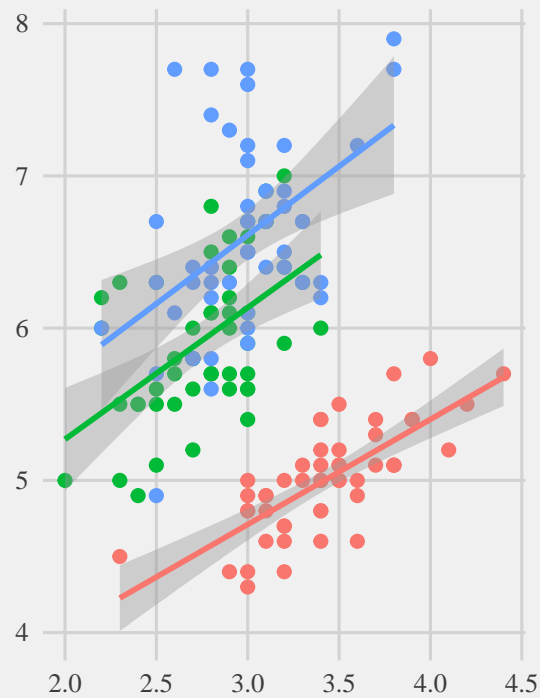
```
## List of 1
## $ legend.position: chr "right"
## - attr(*, "class")= chr [1:2] "theme" "gg"
## - attr(*, "complete")= logi FALSE
## - attr(*, "validate")= logi TRUE
```

Key Figures

```
windowsFonts(Times = windowsFont("Times New Roman")) library(ggthemes)
```

```
ggplot(iris, aes(Sepal.Width, Sepal.Length, color=Species, size=Sepal.Length))+
  geom_point(size=2)+
  geom_smooth(method=lm)+
  theme_fivethirtyeight(base_size = 12, base_family = "Times")+
  labs(title="Correlation Between Sepal Width and Sepal Length of Iris Species",
       caption="Data were collected by Anderson, Edgar (1935).")+
  labs(x = "Sepal Width")+
  labs(y = "Sepal Length")+
  theme(legend.position = "right")
```

Correlation Between Sepal Width and Sepal Length of Iris

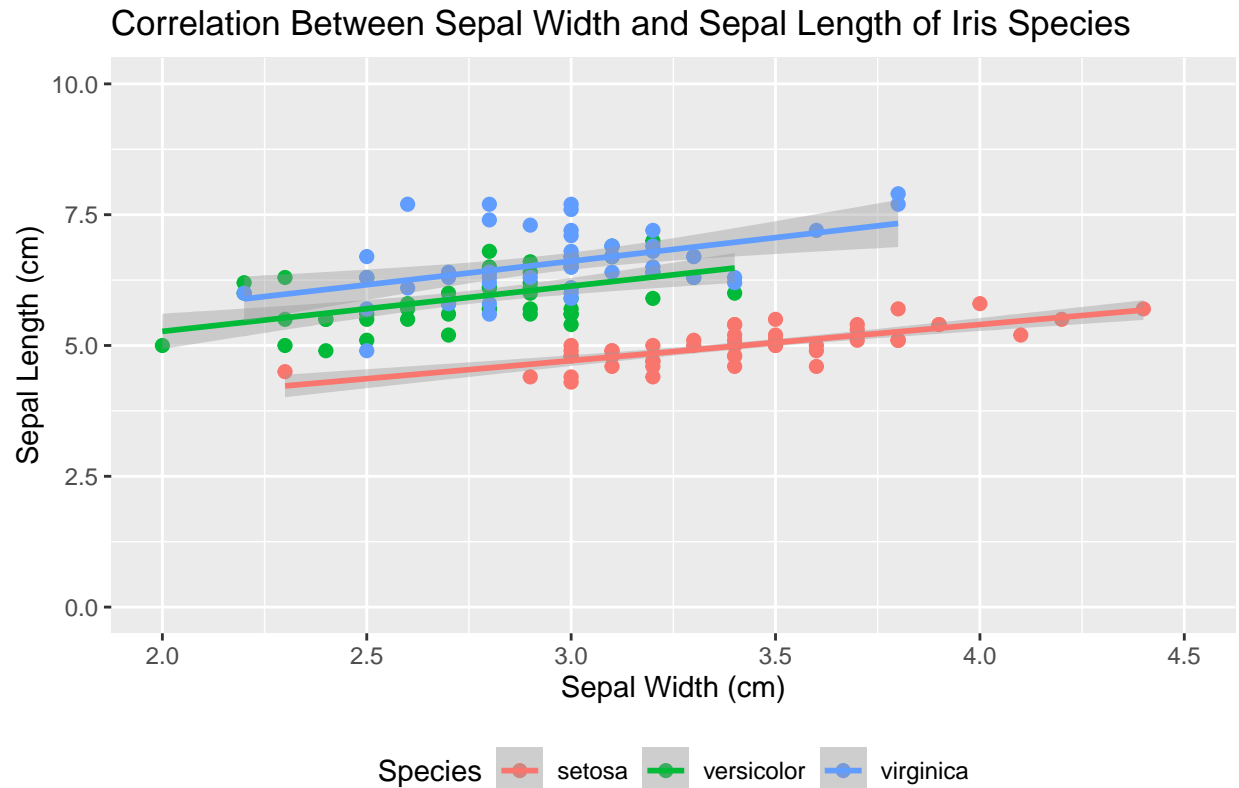


Species ● setosa ● versicolor ● virginica

Data were collected by Anderson, Edgar (1935).

#SEPAL WIDTH VS. SEPAL LENGTH w/out theme

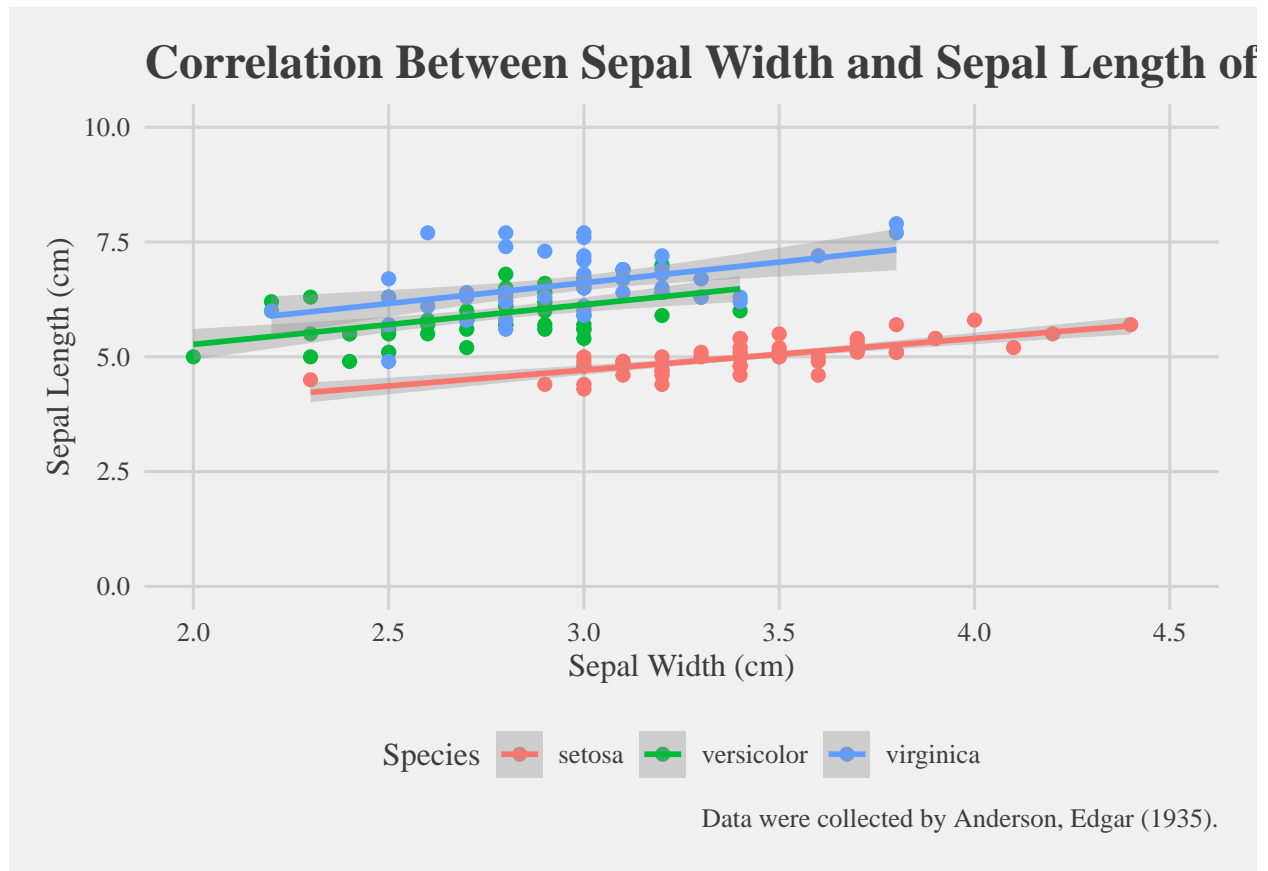
```
ggplot(iris, aes(Sepal.Width, Sepal.Length, color=Species, size=Sepal.Length))+
  geom_point(size=2)+
  geom_smooth(method=lm)+
  labs(title="Correlation Between Sepal Width and Sepal Length of Iris Species",
        caption="Data were collected by Anderson, Edgar (1935).")+
  labs(x = "Sepal Width (cm)")+
  labs(y = "Sepal Length (cm)")+
  xlim(2.0, 4.5)+
  ylim(0.0, 10.0)+
  theme(legend.position = "bottom")
```



Data were collected by Anderson, Edgar (1935).

#SEPAL WIDTH VS. SEPAL LENGTH w/ theme

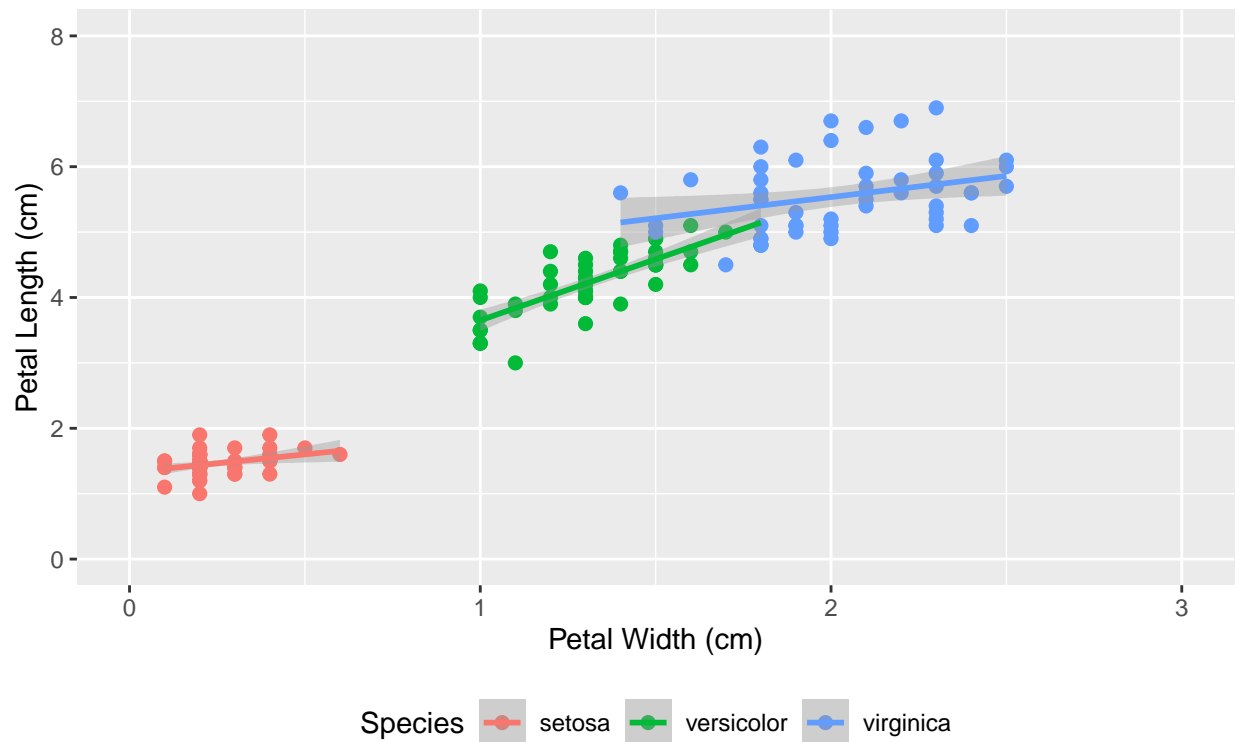
```
ggplot(iris, aes(Sepal.Width, Sepal.Length, color=Species, size=Sepal.Length))+
  geom_point(size=2)+
  geom_smooth(method=lm)+
  theme_fivethirtyeight(base_size = 12, base_family = "Times")+
  labs(title="Correlation Between Sepal Width and Sepal Length of Iris Species",
       caption="Data were collected by Anderson, Edgar (1935).")+
  theme(axis.title = element_text()) + ylab('Sepal Length (cm)') + xlab('Sepal Width (cm)')+
  xlim(2.0, 4.5)+
  ylim(0.0, 10.0)+
  theme(legend.position = "bottom")
```



#PETAL WIDTH VS. PETAL LENGTH w/out theme

```
ggplot(iris, aes(Petal.Width, Petal.Length, color=Species, size=Petal.Length))+
  geom_point(size=2)+
  geom_smooth(method=lm)+
  labs(title="Correlation Between Petal Width and Petal Length of Iris Species",
        caption="Data were collected by Anderson, Edgar (1935).")+
  labs(x = "Petal Width (cm)")+
  labs(y = "Petal Length (cm)")+
  xlim(0.0, 3.0)+
  ylim(0.0, 8.0)+
  theme(legend.position = "bottom")
```

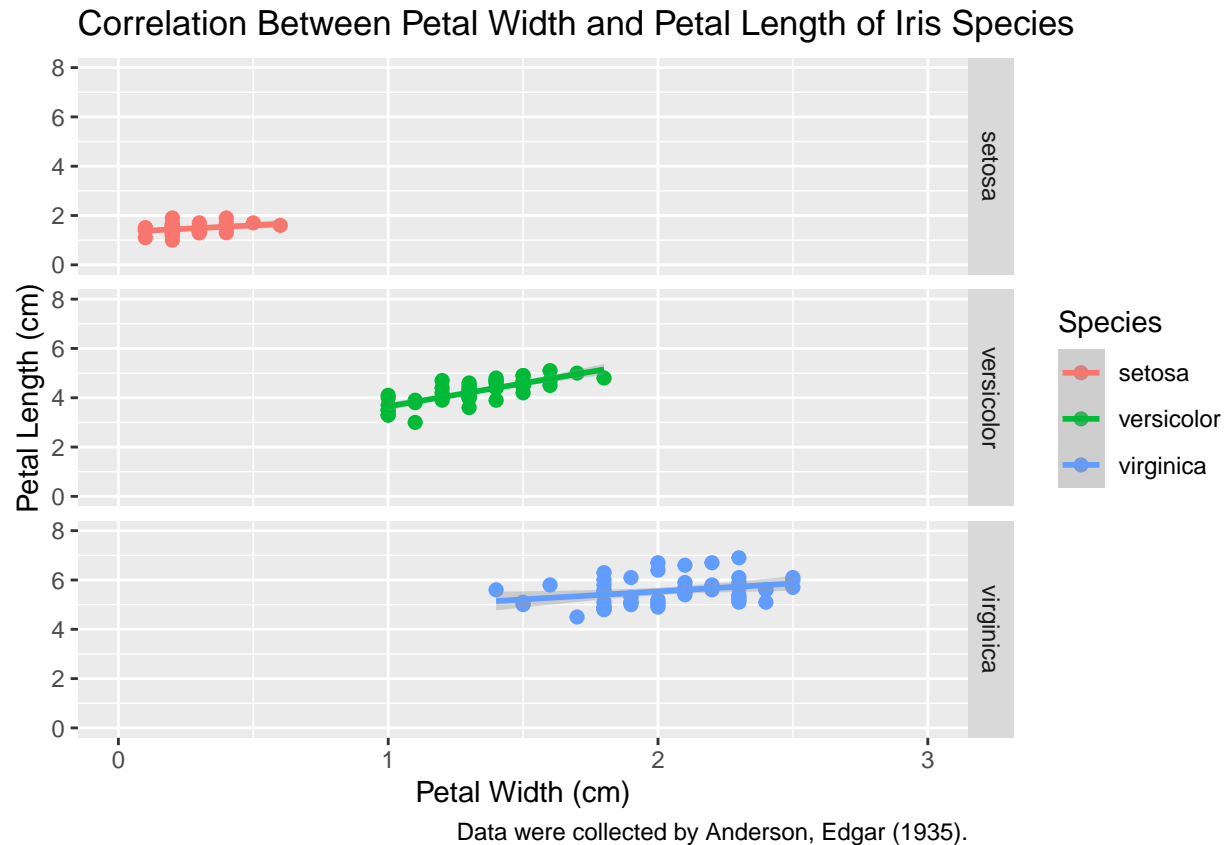
Correlation Between Petal Width and Petal Length of Iris Species



Data were collected by Anderson, Edgar (1935).

#PETAL WIDTH VS. PETAL LENGTH w/ theme & facet

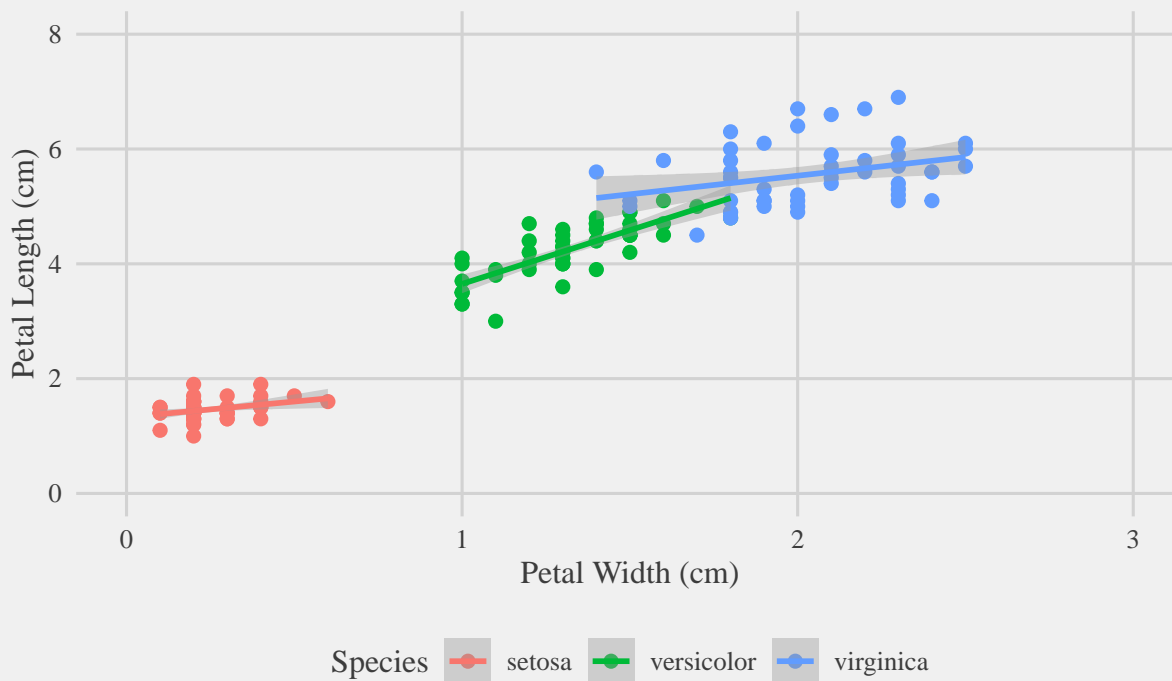
```
ggplot(iris, aes(Petal.Width, Petal.Length, color=Species, size=Petal.Length))+  
  geom_point(size=2)+  
  geom_smooth(method=lm)+  
  labs(title="Correlation Between Petal Width and Petal Length of Iris Species",  
        caption="Data were collected by Anderson, Edgar (1935).")+  
  labs(x = "Petal Width (cm)")+  
  labs(y = "Petal Length (cm)")+  
  xlim(0.0, 3.0)+  
  ylim(0.0, 8.0)+  
  facet_grid(Species ~ .)+  
  theme(legend.position = "right")
```



#PETAL WIDTH VS. PETAL LENGTH w/ theme

```
ggplot(iris, aes(Petal.Width, Petal.Length, color=Species, size=Petal.Length))+
  geom_point(size=2)+
  geom_smooth(method=lm)+
  theme_fivethirtyeight(base_size = 12, base_family = "Times")+
  labs(title="Correlation Between Petal Width and Petal Length of Iris Species",
        caption="Data were collected by Anderson, Edgar (1935).")+
  theme(axis.title = element_text()) + ylab('Petal Length (cm)') + xlab('Petal Width (cm)')+
  xlim(0.0, 3.0)+
  ylim(0.0, 8.0)+
  theme(legend.position = "bottom")
```

Correlation Between Petal Width and Petal Length of Ir

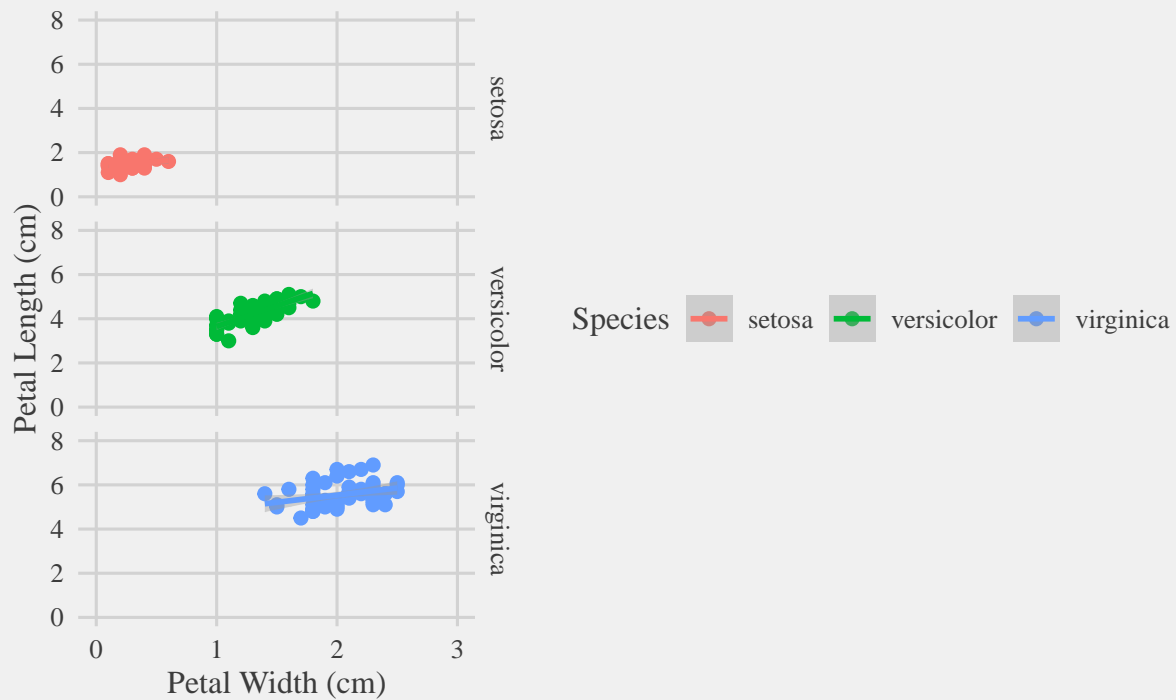


Data were collected by Anderson, Edgar (1935).

#PETAL WIDTH VS. PETAL LENGTH w/ theme & facet

```
ggplot(iris, aes(Petal.Width, Petal.Length, color=Species, size=Petal.Length))+
  geom_point(size=2)+
  geom_smooth(method=lm)+
  theme_fivethirtyeight(base_size = 12, base_family = "Times")+
  labs(title="Correlation Between Petal Width and Petal Length of Iris Species",
       caption="Data were collected by Anderson, Edgar (1935).")+
  theme(axis.title = element_text()) + ylab('Petal Length (cm)') + xlab('Petal Width (cm)')+
  xlim(0.0, 3.0)+
  ylim(0.0, 8.0)+
  facet_grid(Species ~ .)+
  theme(legend.position = "right")
```

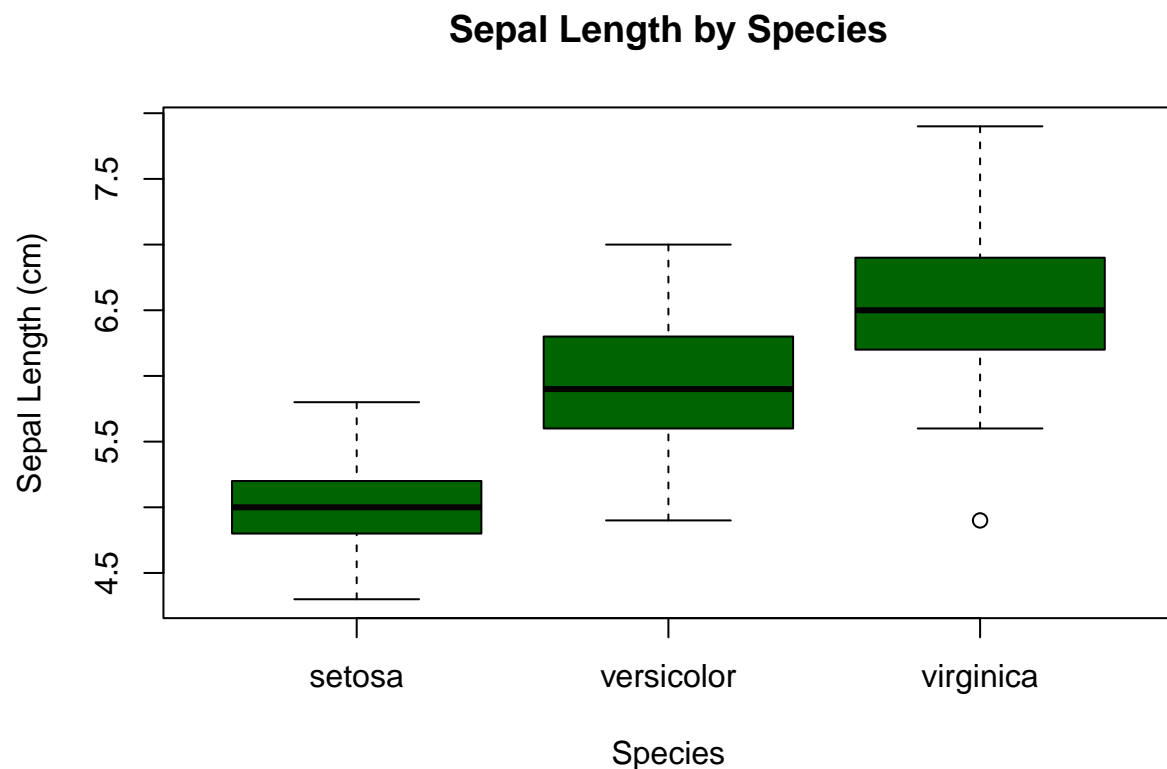

Correlation Between Petal Width and Petal Length of Ir



Data were collected by Anderson, Edgar (1935).

#Boxplot NO ggplot2 Sepal Length

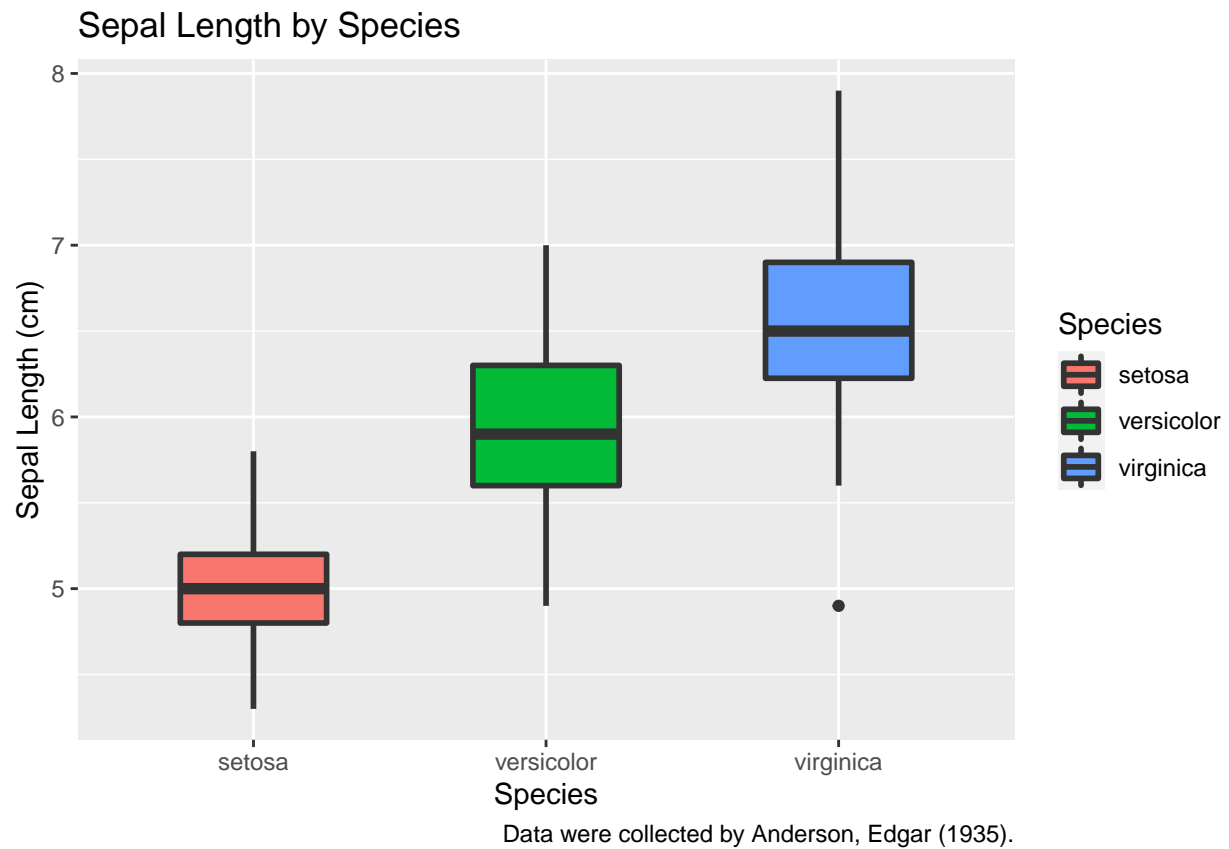
```
boxplot(Sepal.Length~Species,  
        data=iris,  
        main='Sepal Length by Species',  
        sub='Data were collected by Anderson, Edgar (1935).',  
        xlab='Species',  
        ylab='Sepal Length (cm)',  
        col='darkgreen',  
        border='black')
```



Data were collected by Anderson, Edgar (1935).

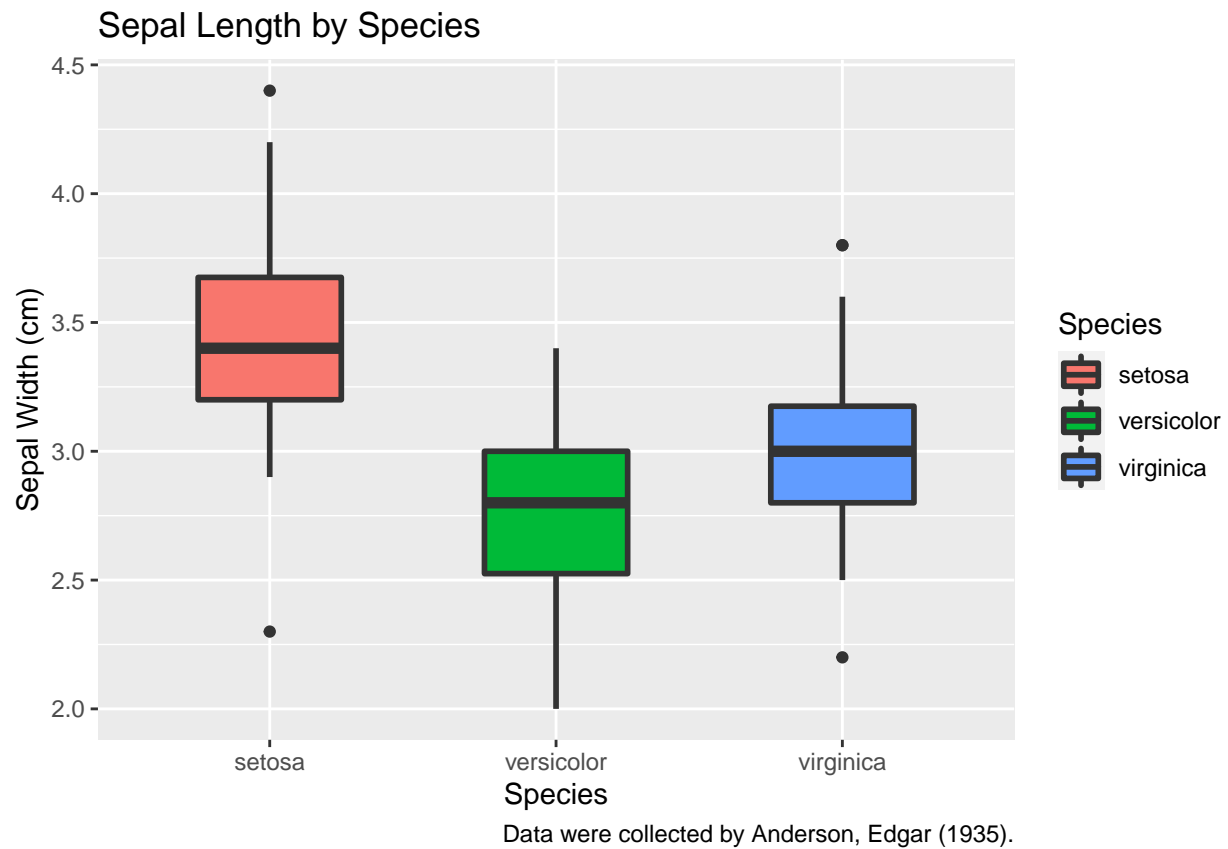
#Boxplot w/ ggplot2 Sepal Length

```
ggplot(iris, aes(x=Species, y=Sepal.Length, fill=Species)) +  
  geom_boxplot(width=0.5, lwd=1)+  
  labs(title="Sepal Length by Species", x = "Species", y = "Sepal Length (cm)",  
        caption="Data were collected by Anderson, Edgar (1935).")
```



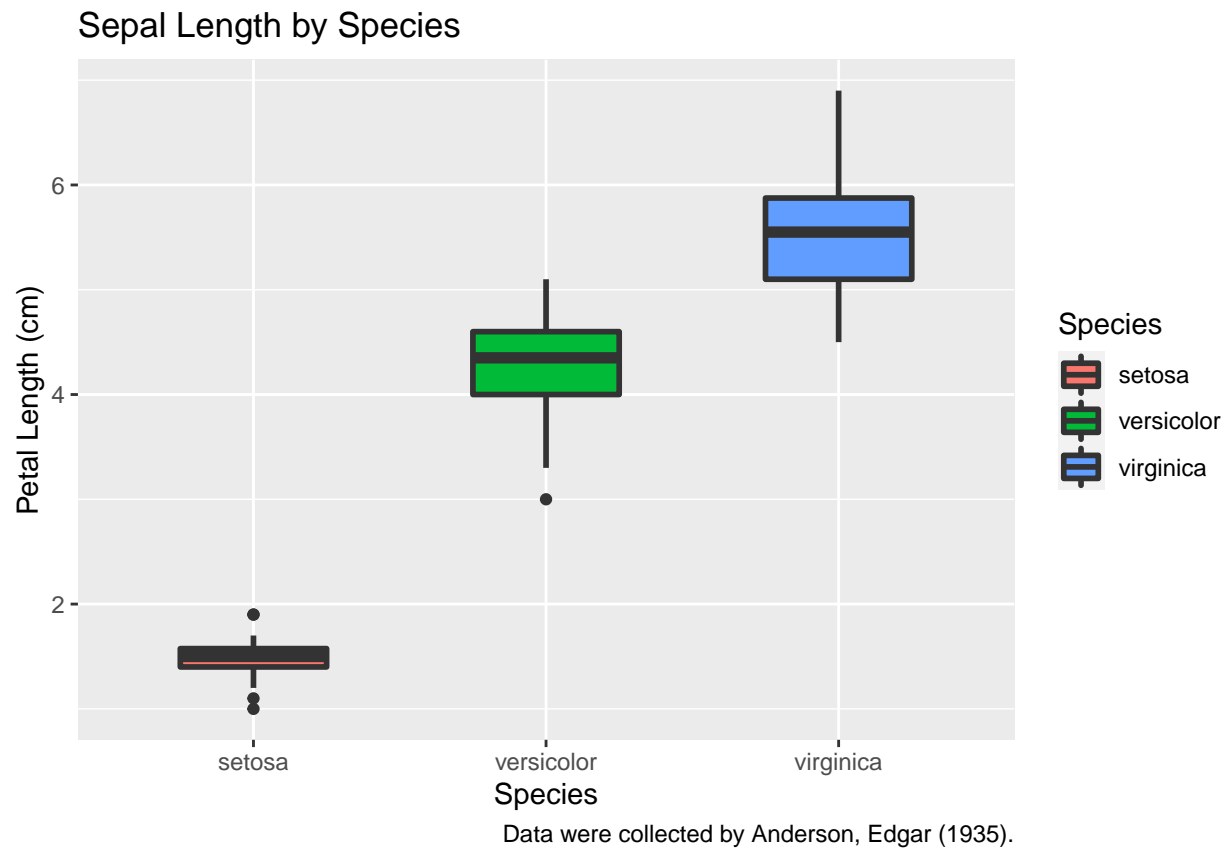
#Boxplot w/ ggplot2 Sepal Width

```
ggplot(iris, aes(x=Species, y=Sepal.Width, fill=Species)) +  
  geom_boxplot(width=0.5, lwd=1) +  
  labs(title="Sepal Length by Species", x = "Species", y = "Sepal Width (cm)",  
        caption="Data were collected by Anderson, Edgar (1935).")
```



#Boxplot w/ ggplot2 Petal Length

```
ggplot(iris, aes(x=Species, y=Petal.Length, fill=Species)) +  
  geom_boxplot(width=0.5, lwd=1)+  
  labs(title="Sepal Length by Species", x = "Species", y = "Petal Length (cm)",  
        caption="Data were collected by Anderson, Edgar (1935).")
```



#Boxplot w/ ggplot2 Petal Width

```
ggplot(iris, aes(x=Species, y=Petal.Width, fill=Species)) +  
  geom_boxplot(width=0.5, lwd=1)+  
  labs(title="Sepal Length by Species", x = "Species", y = "Petal Width (cm)",  
        caption="Data were collected by Anderson, Edgar (1935).")
```

