

```

#### Load packages ####
library(tidyverse)
library(ggthemes) # Optional - only for testing additional themes

#### Create base plots ####
## scatter plot
point_plot <-
  ggplot(iris, aes(x=jitter(Sepal.Width),
                    y=jitter(Sepal.Length),
                    col=Species)) +
  geom_point() +
  labs(x="Sepal Width (cm)",
       y="Sepal Length (cm)",
       col="Species",
       title="Iris Dataset - Scatter plot")

## bar plot
bar_plot <-
  iris %>%
  group_by(Species) %>%
  summarise(Sepal.Width = mean(Sepal.Width)) %>%
  ggplot(aes(x=Species, y=Sepal.Width, fill=Species)) +
  geom_col() +
  labs(x="Species",
       y="Mean Sepal Width (cm)",
       fill="Species",
       title="Iris Dataset - Bar plot")

## box plot
box_plot <- ggplot(iris,
                   aes(x=Species,
                       y=Sepal.Width,
                       fill=Species)) +
  geom_boxplot() +
  labs(x="Species",
       y="Sepal Width (cm)",
       fill="Species",
       title="Iris Dataset - Box plot")

## density plot
density_plot <-
  iris %>%
  ggplot(aes(x = Sepal.Length, fill = Species)) +
  geom_density() +
  facet_wrap(~Species) +
  labs(x="Sepal Length (cm)",
       y="Density",
       fill="Species",
       title="Iris Dataset - Density plot")

#### Create iteration table ####

```

```

## Put all base plots in a list
plot_list <-
  list("bar plot" = bar_plot,
       "box plot" = box_plot,
       "scatter plot" = point_plot,
       "density plot" = density_plot)

## Convert list into a tibble
plot_base <-
  tibble(plot = plot_list,
         plot_names = names(plot_list))

## Put all themes to test in a named list
## names will be fed into subtitles
theme_list <-
  list("ggplot2::theme_minimal()" = theme_minimal(),
       "ggplot2::theme_classic()" = theme_classic(),
       "ggplot2::theme_bw()" = theme_bw(),
       "ggplot2::theme_gray()" = theme_gray(),
       "ggplot2::theme_linedraw()" = theme_linedraw(),
       "ggplot2::theme_light()" = theme_light(),
       "ggplot2::theme_dark()" = theme_dark(),
       "ggthemes::theme_economist()" = ggthemes::theme_economist(),
       "ggthemes::theme_economist_white()" = ggthemes::theme_economist_white(),
       "ggthemes::theme_calc()" = ggthemes::theme_calc(),
       "ggthemes::theme_clean()" = ggthemes::theme_clean(),
       "ggthemes::theme_excel()" = ggthemes::theme_excel(),
       "ggthemes::theme_excel_new()" = ggthemes::theme_excel_new(),
       "ggthemes::theme_few()" = ggthemes::theme_few(),
       "ggthemes::theme_fivethirtyeight()" = ggthemes::theme_fivethirtyeight(),
       "ggthemes::theme_foundation()" = ggthemes::theme_foundation(),
       "ggthemes::theme_gdocs()" = ggthemes::theme_gdocs(),
       "ggthemes::theme_hc()" = ggthemes::theme_hc(),
       "ggthemes::theme_igray()" = ggthemes::theme_igray(),
       "ggthemes::theme_solarized()" = ggthemes::theme_solarized(),
       "ggthemes::theme_solarized_2()" = ggthemes::theme_solarized_2(),
       "ggthemes::theme_solid()" = ggthemes::theme_solid(),
       "ggthemes::theme_stata()" = ggthemes::theme_stata(),
       "ggthemes::theme_tufte()" = ggthemes::theme_tufte(),
       "ggthemes::theme_wsj()" = ggthemes::theme_wsj())

## Convert list into a tibble
theme_base <-
  tibble(theme = theme_list,
         theme_names = names(theme_list))

plot_base

## # A tibble: 4 x 2
##   plot          plot_names
##   <int>      <character>
## 1         1      bar plot
## 2         2      box plot
## 3         3  scatter plot
## 4         4  density plot

```

```

theme_base

## # A tibble: 25 x 2
##   theme      theme_names
##
## 1      ggplot2::theme_minimal()
## 2      ggplot2::theme_classic()
## 3      ggplot2::theme_bw()
## 4      ggplot2::theme_gray()
## 5      ggplot2::theme_linedraw()
## 6      ggplot2::theme_light()
## 7      ggplot2::theme_dark()
## 8      ggthemes::theme_economist()
## 9      ggthemes::theme_economist_white()
## 10     ggthemes::theme_calc()
## # ... with 15 more rows

```

2. Create an iteration table

The next step is to create what I call an iteration table. Here I use `tidyr::expand_grid()`, which **creates a tibble from all combinations of inputs**. Actually you can use either `tidyr::expand_grid()` or the base function `expand.grid()`, but I like the fact that the former returns a tibble rather than a data frame.

The output is `all_combos`, which is a two column tibble with all combinations of `theme_names` and `plot_names`, as character vectors. I then use `left_join()` twice to bring in the themes and the base plots:

```

## Create an iteration data frame
## Use `expand_grid()` to generate all combinations
## of themes and plots

all_combos <-
  expand_grid(plot_names = plot_base$plot_names,
             theme_names = theme_base$theme_names)

iter_df <-
  all_combos %>%
  left_join(plot_base, by = "plot_names") %>%
  left_join(theme_base, by = "theme_names") %>%
  select(theme_names, theme, plot_names, plot) # Reorder columns

iter_df

## # A tibble: 100 x 4
##   theme_names      theme  plot_names plot
##
## 1 ggplot2::theme_minimal()    bar plot
## 2 ggplot2::theme_classic()    bar plot
## 3 ggplot2::theme_bw()        bar plot
## 4 ggplot2::theme_gray()      bar plot
## 5 ggplot2::theme_linedraw()   bar plot
## 6 ggplot2::theme_light()      bar plot
## 7 ggplot2::theme_dark()       bar plot
## 8 ggthemes::theme_economist()  bar plot
## 9 ggthemes::theme_economist_white() bar plot
## 10 ggthemes::theme_calc()      bar plot
## # ... with 90 more rows

```

3. Run your ggplot gallery!

The final step is to create the ggplot “gallery”.

I used `purrr::pmap()` on `iter_df`, which applies a function to the data frame, using the values in each column as inputs to the arguments of the function. You will see that:

- `iter_label` is ultimately used as the names for the list of plots (`plot_gallery`).
- `label` within the function is used for populating the subtitles of the plots
- `output_plot` is the plot that is created within the function

```
#### Run plots ####
## Use `pmap()` to run all the plots-theme combinations

## Create labels to be used as names for `plot_gallery`
iter_label <-
  paste0("Theme: ",
        iter_df$theme_names,
        "; Plot type: ",
        iter_df$plot_names)

## Create a list of plots
plot_gallery <-
  iter_df %>%
  pmap(function(theme_names, theme, plot_names, plot){

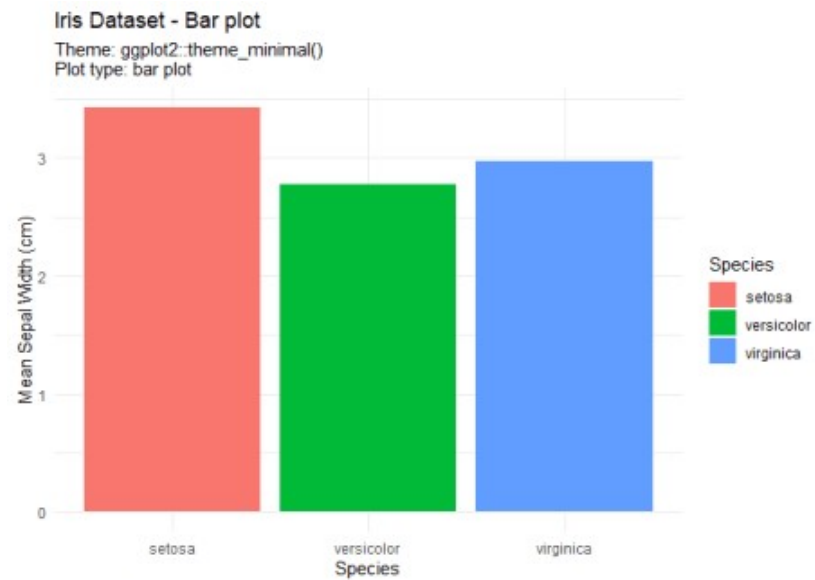
    label <-
      paste0("Theme: ",
            theme_names,
            "\nPlot type: ",
            plot_names)

    output_plot <-
      plot +
      theme +
      labs(subtitle = label)

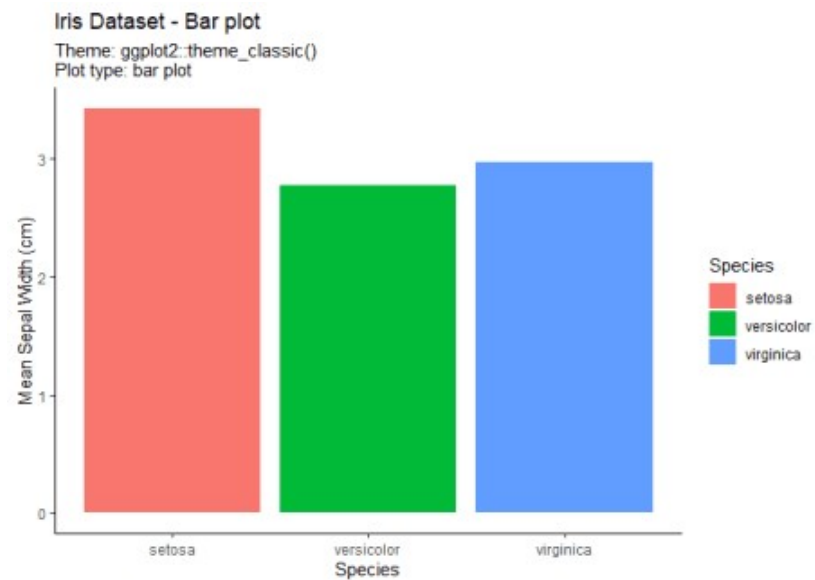
    return(output_plot)
  }) %>%
  set_names(iter_label)

plot_gallery

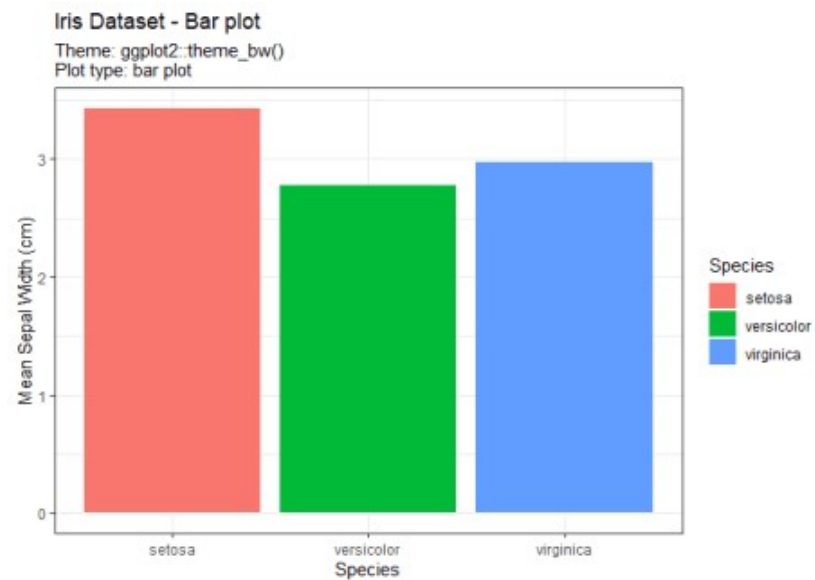
## $`Theme: ggplot2::theme_minimal(); Plot type: bar plot`
```



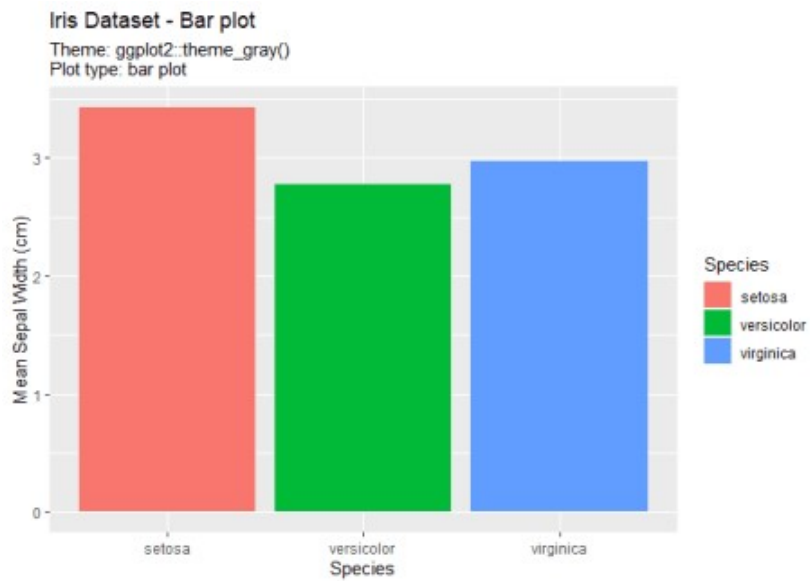
```
##  
## $`Theme: ggplot2::theme_classic(); Plot type: bar plot`
```



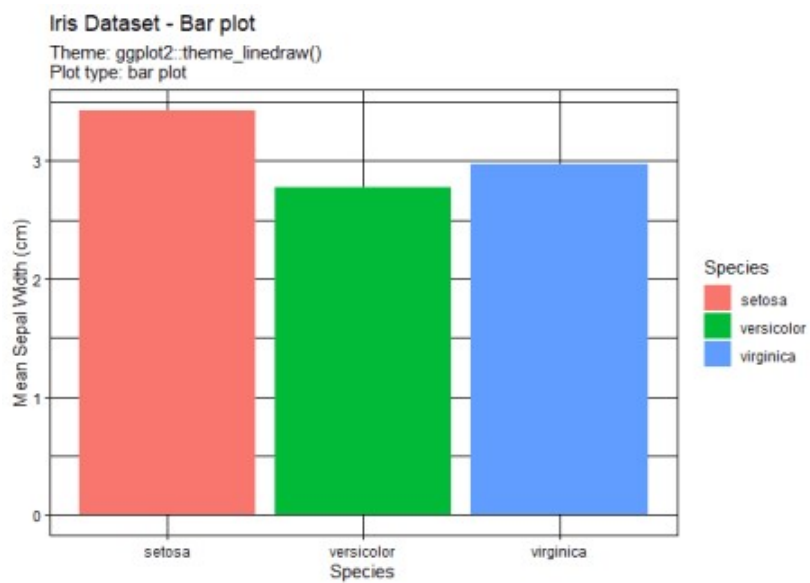
```
##  
## $`Theme: ggplot2::theme_bw(); Plot type: bar plot`
```



```
##
## $`Theme: ggplot2::theme_gray(); Plot type: bar plot`
```



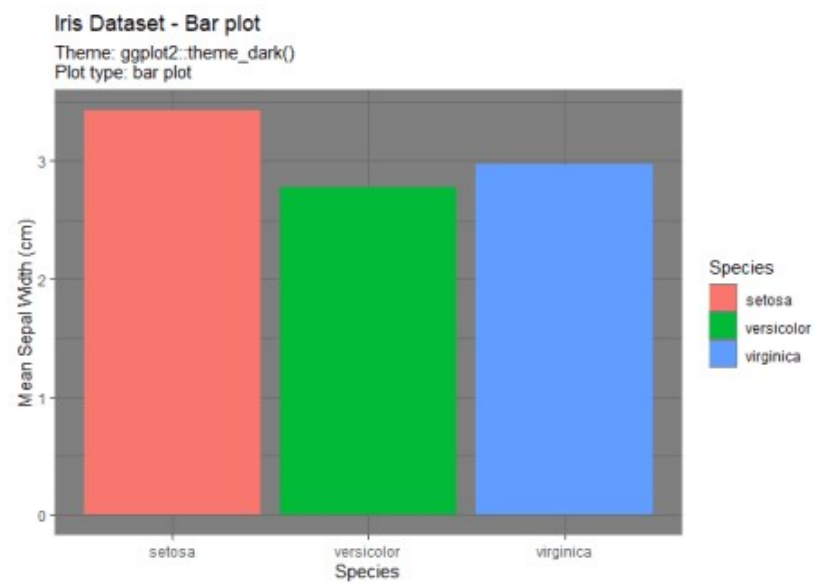
```
##
## $`Theme: ggplot2::theme_linedraw(); Plot type: bar plot`
```



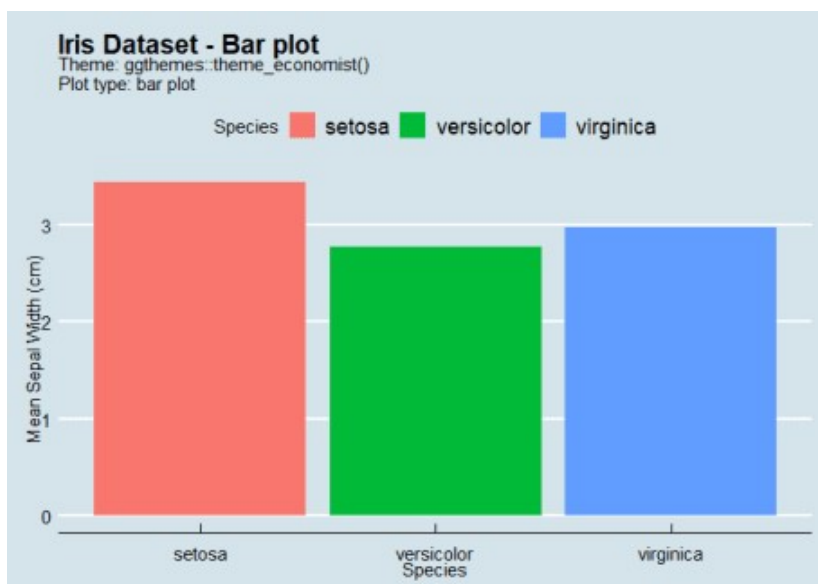
```
##
## $`Theme: ggplot2::theme_light(); Plot type: bar plot`
```



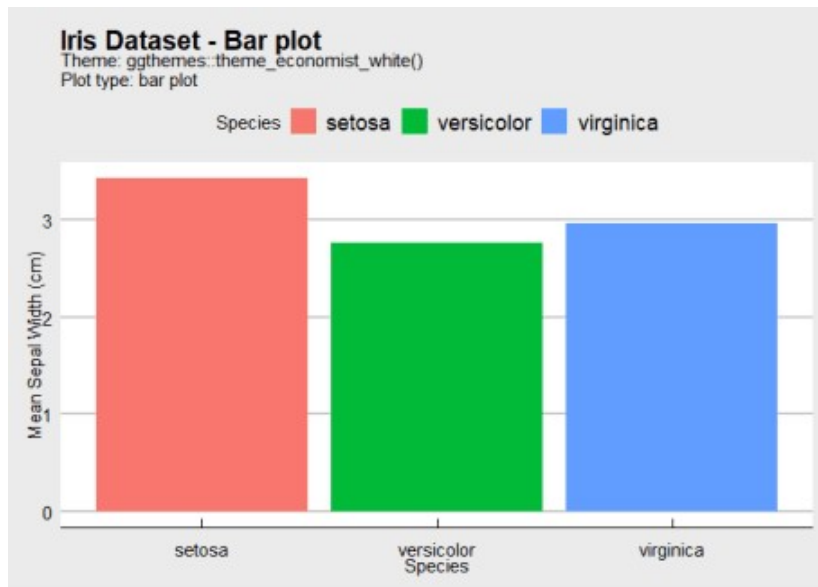
```
##
## $`Theme: ggplot2::theme_dark(); Plot type: bar plot`
```



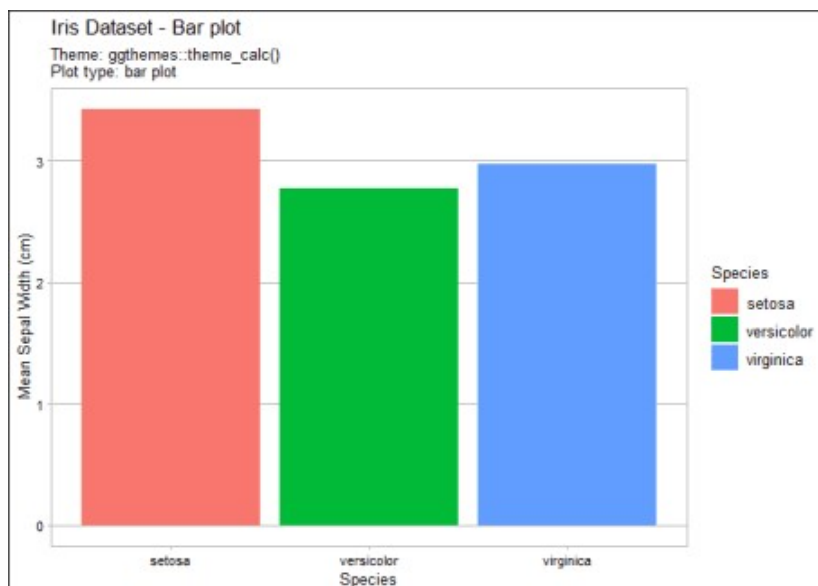
```
##
## $`Theme: ggthemes::theme_economist(); Plot type: bar plot`
```



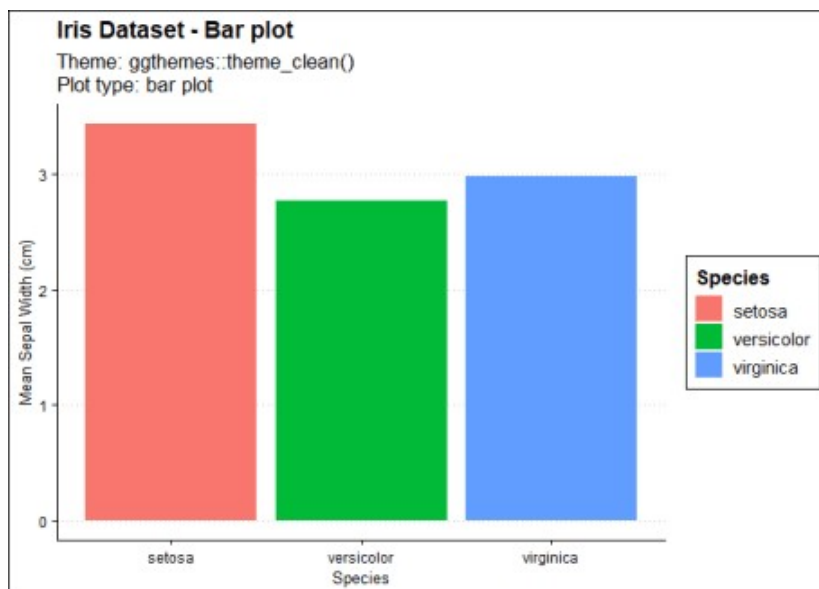
```
##
## $`Theme: ggthemes::theme_economist_white(); Plot type: bar plot`
```



```
##
## $`Theme: ggthemes::theme_calc(); Plot type: bar plot`
```

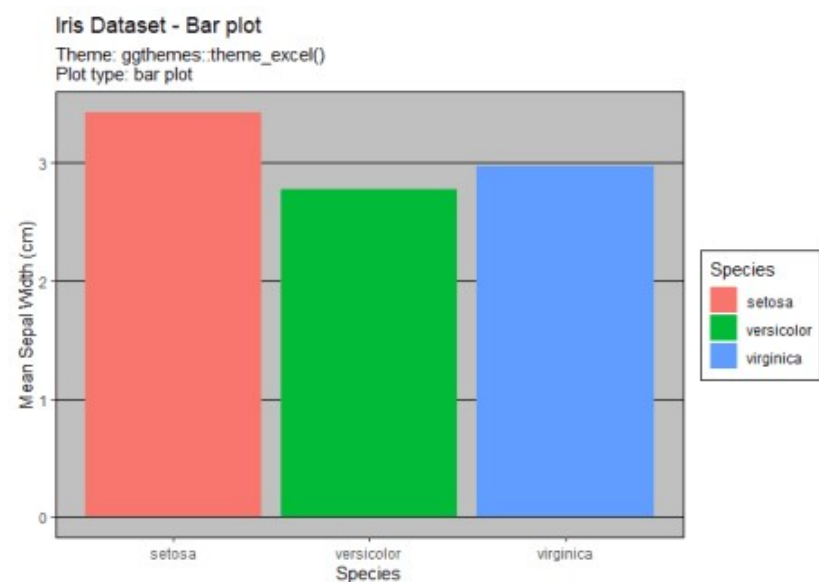


```
##
## $`Theme: ggthemes::theme_clean(); Plot type: bar plot`
```

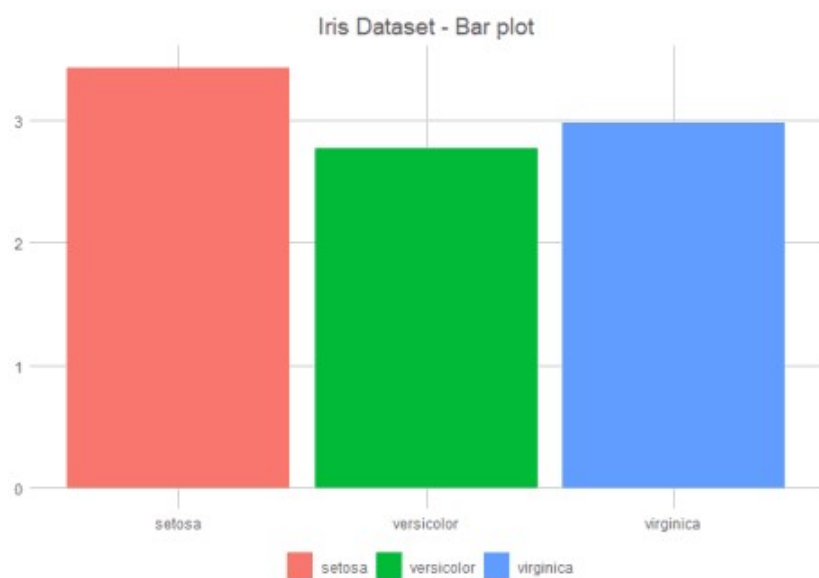
```
##
```

```
## $`Theme: ggthemes::theme_excel(); Plot type: bar plot`
```

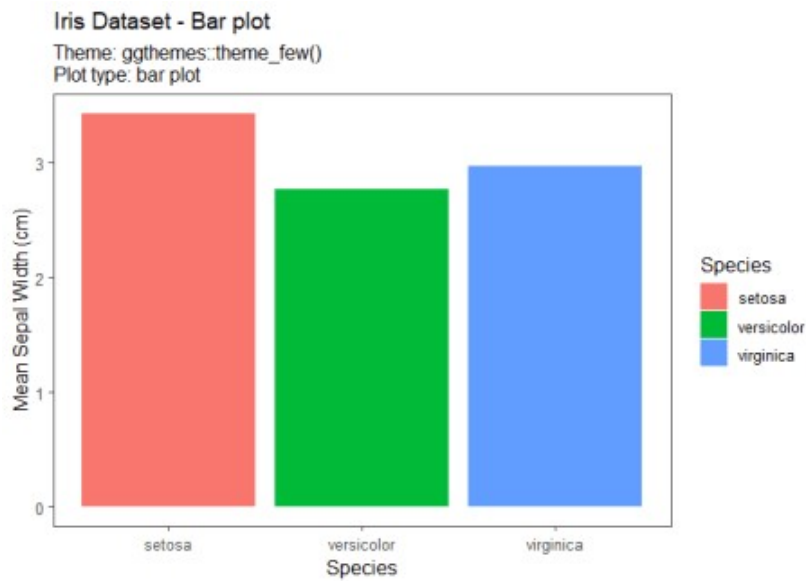


```
##
```

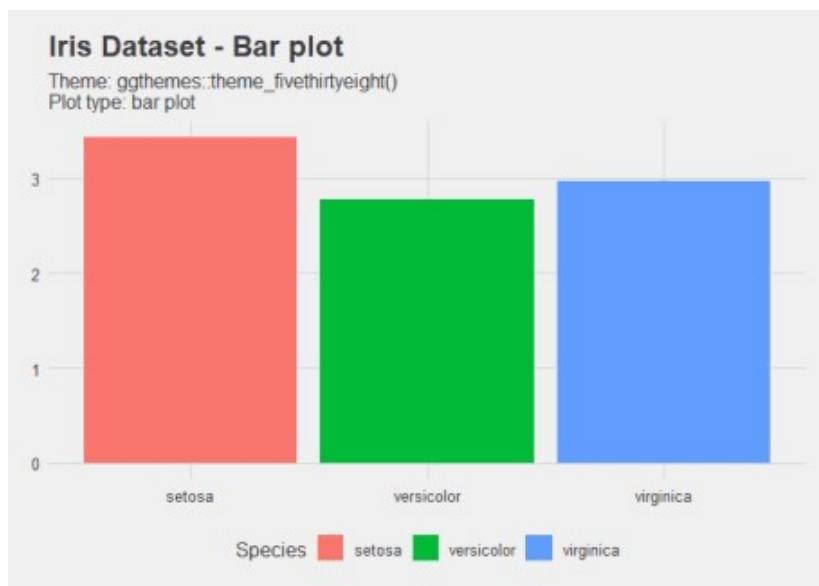
```
## $`Theme: ggthemes::theme_excel_new(); Plot type: bar plot`
```



```
##
## $`Theme: ggthemes::theme_few(); Plot type: bar plot`
```



```
##
## $`Theme: ggthemes::theme_fivethirtyeight(); Plot type: bar plot`
```

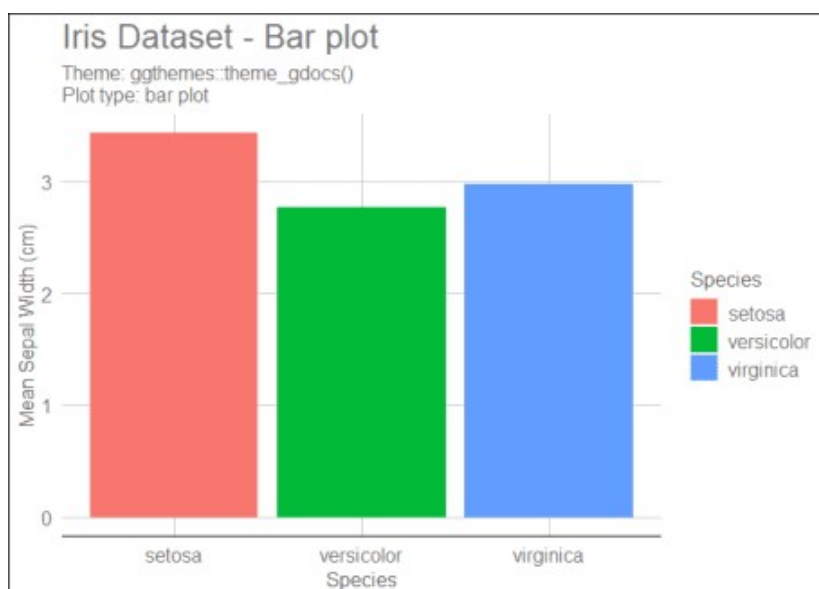


```
##
## $`Theme: ggthemes::theme_foundation(); Plot type: bar plot`
```



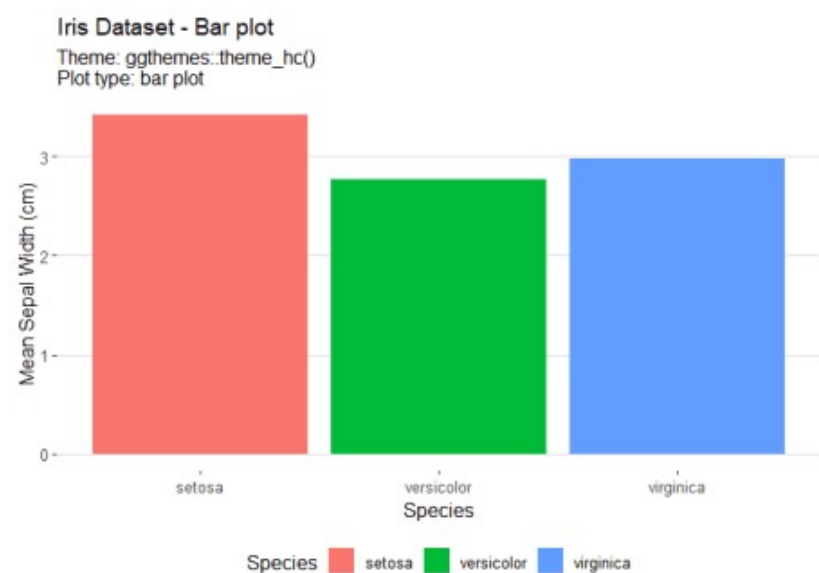
```
##
```

```
## $`Theme: ggthemes::theme_gdocs(); Plot type: bar plot`
```



```
##
```

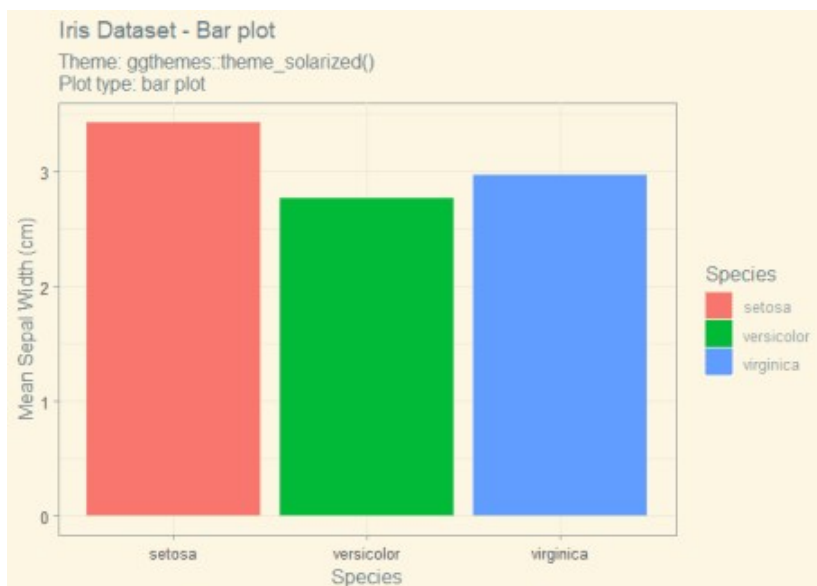
```
## $`Theme: ggthemes::theme_hc(); Plot type: bar plot`
```



```
##  
## $`Theme: ggthemes::theme_igray(); Plot type: bar plot`
```



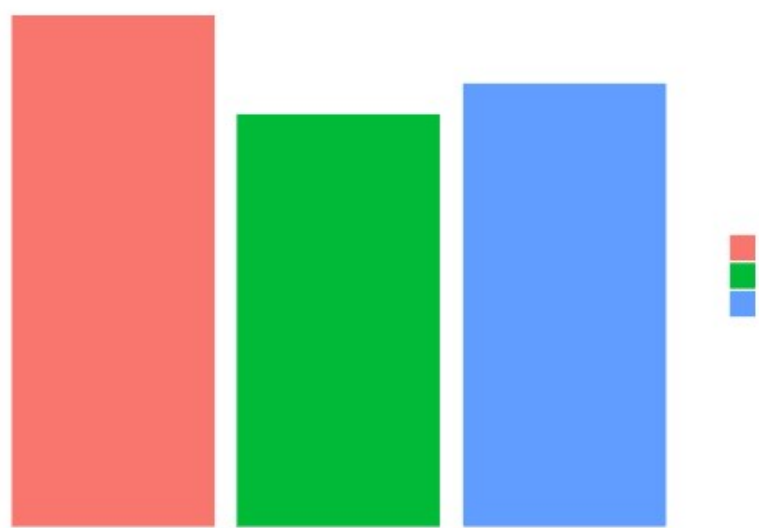
```
##  
## $`Theme: ggthemes::theme_solarized(); Plot type: bar plot`
```



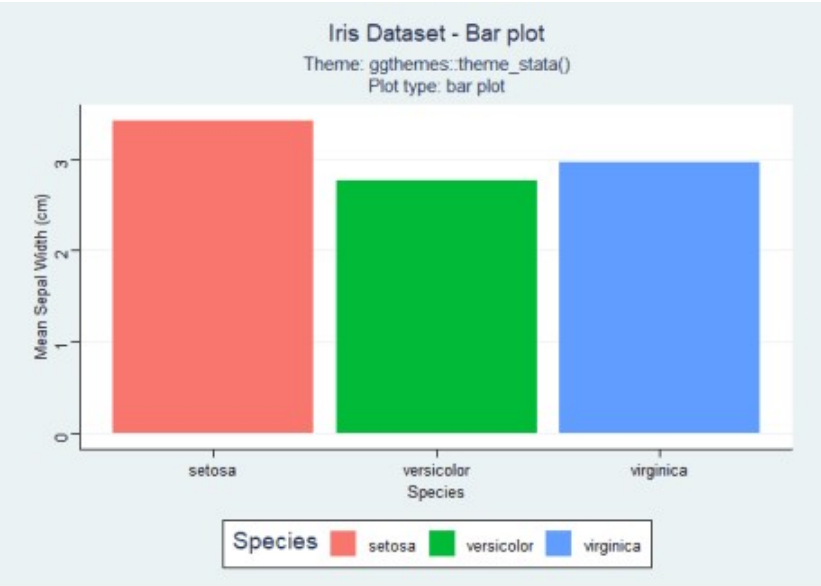
```
##  
## $`Theme: ggthemes::theme_solarized_2(); Plot type: bar plot`
```



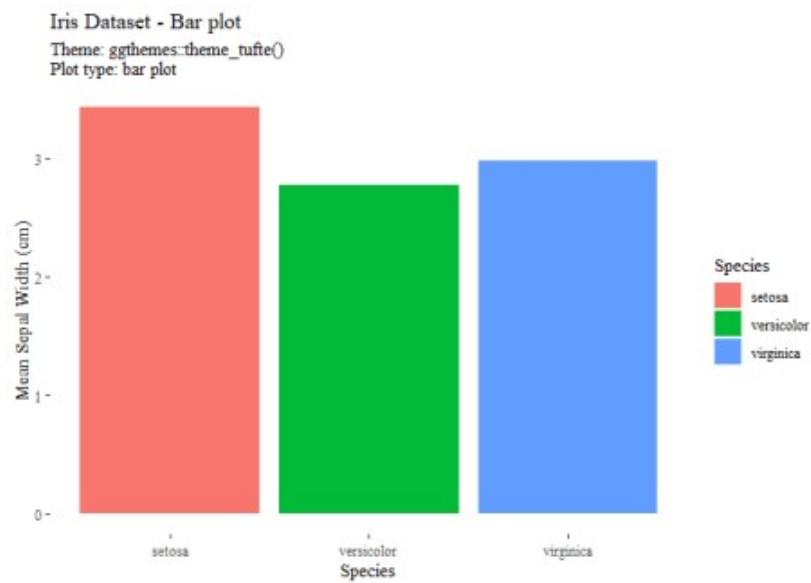
```
##  
## $`Theme: ggthemes::theme_solid(); Plot type: bar plot`
```



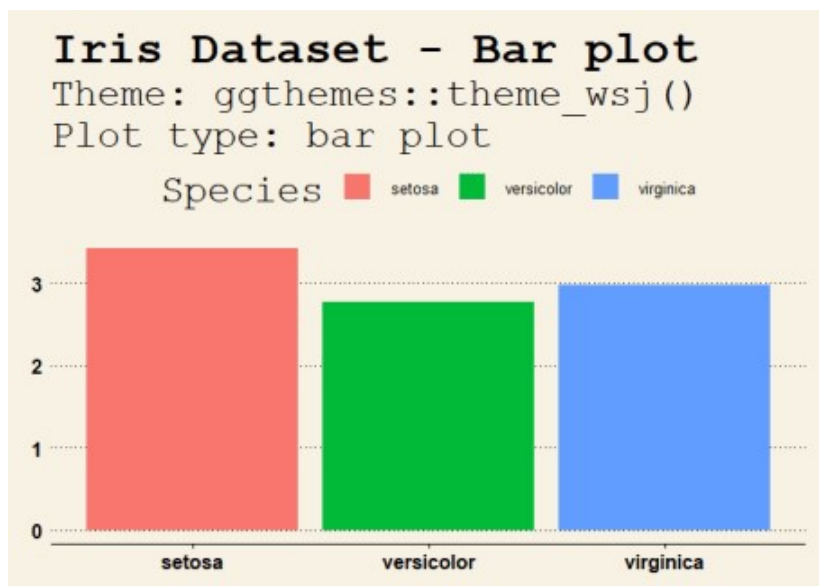
```
##  
## $`Theme: ggthemes::theme_stata(); Plot type: bar plot`
```



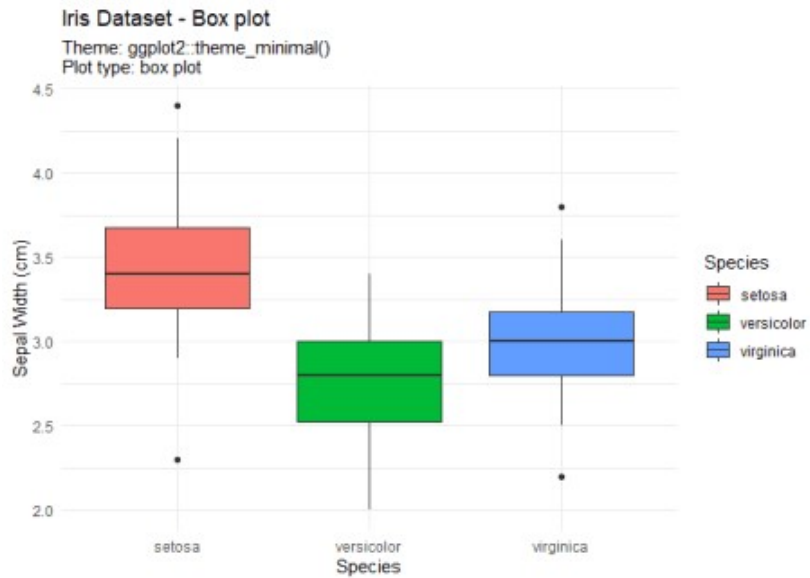
```
##
## $`Theme: ggthemes::theme_tufte(); Plot type: bar plot`
```



```
##
## $`Theme: ggthemes::theme_wsj(); Plot type: bar plot`
```

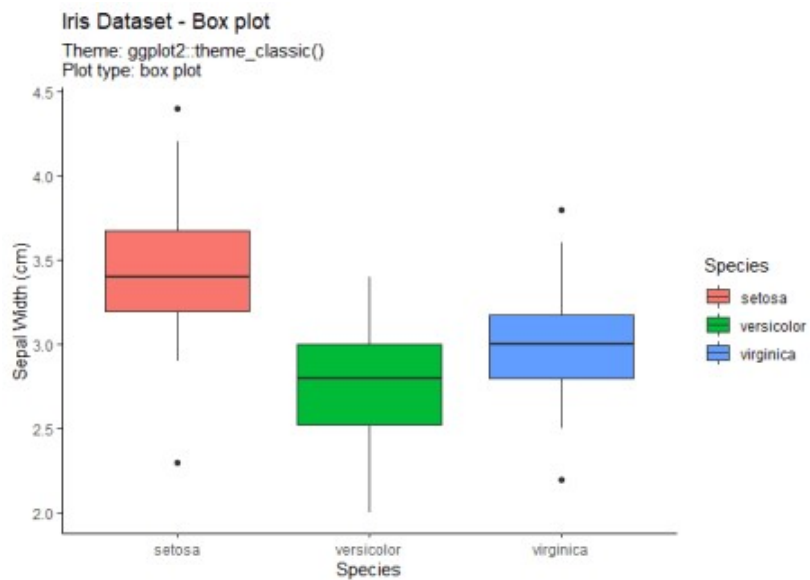


```
##
## $`Theme: ggplot2::theme_minimal(); Plot type: box plot`
```



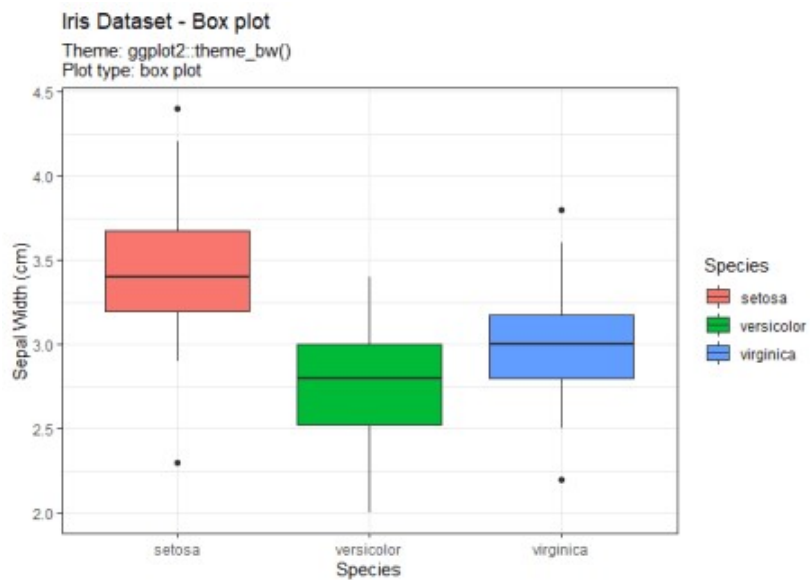
```
##
```

```
## $`Theme: ggplot2::theme_classic(); Plot type: box plot`
```

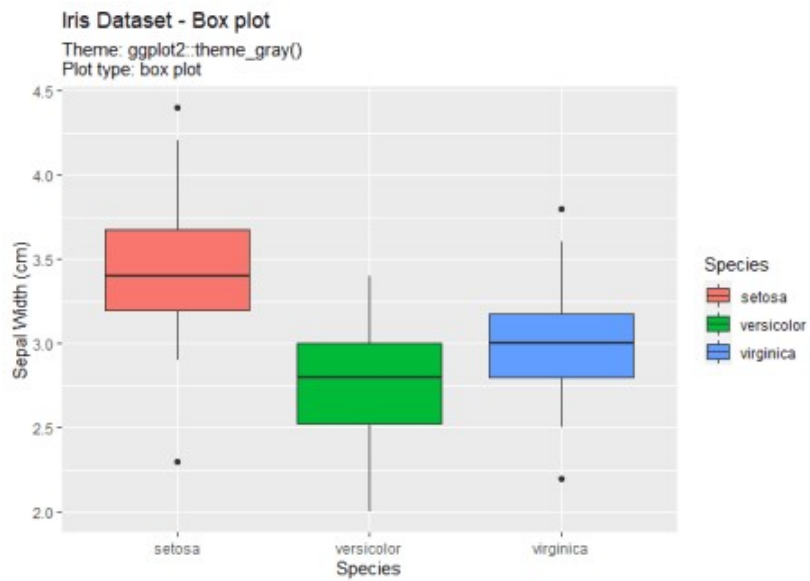


```
##
```

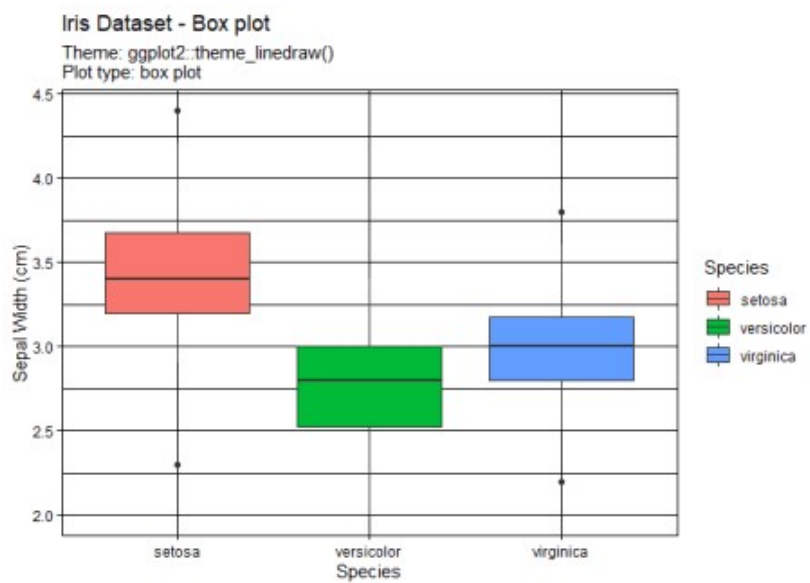
```
## $`Theme: ggplot2::theme_bw(); Plot type: box plot`
```



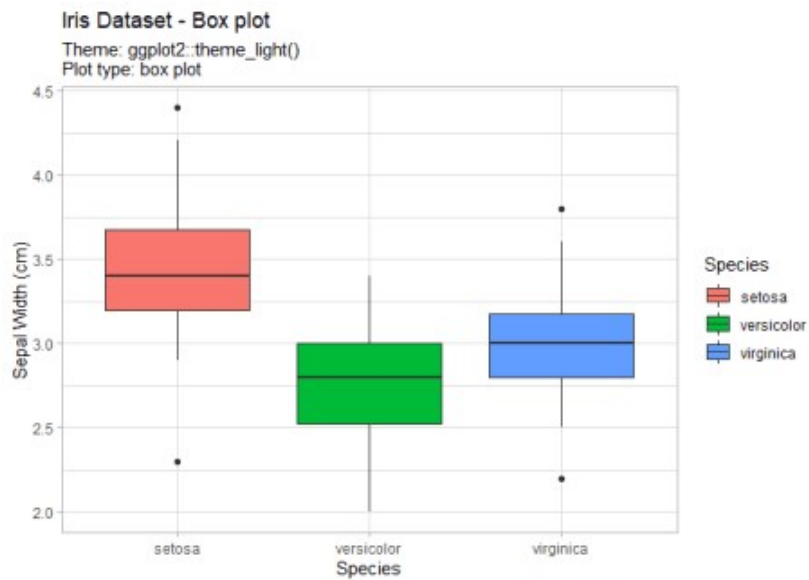
```
##
## $`Theme: ggplot2::theme_gray(); Plot type: box plot`
```



```
##
## $`Theme: ggplot2::theme_linedraw(); Plot type: box plot`
```

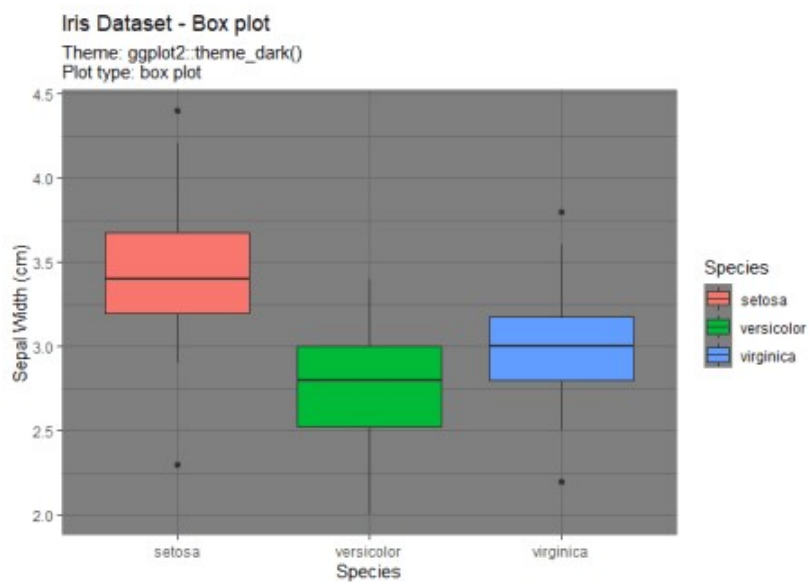


```
##
## $`Theme: ggplot2::theme_light(); Plot type: box plot`
```

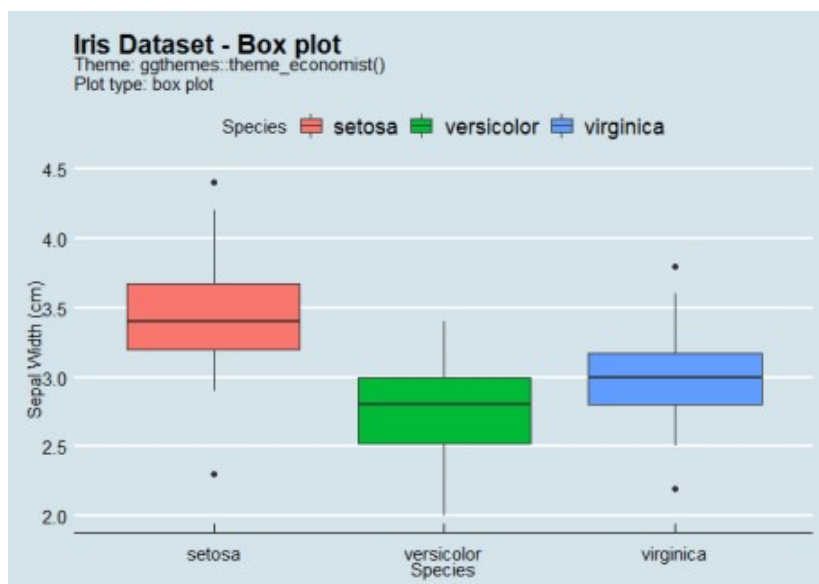
```
##
```

```
## $`Theme: ggplot2::theme_dark(); Plot type: box plot`
```

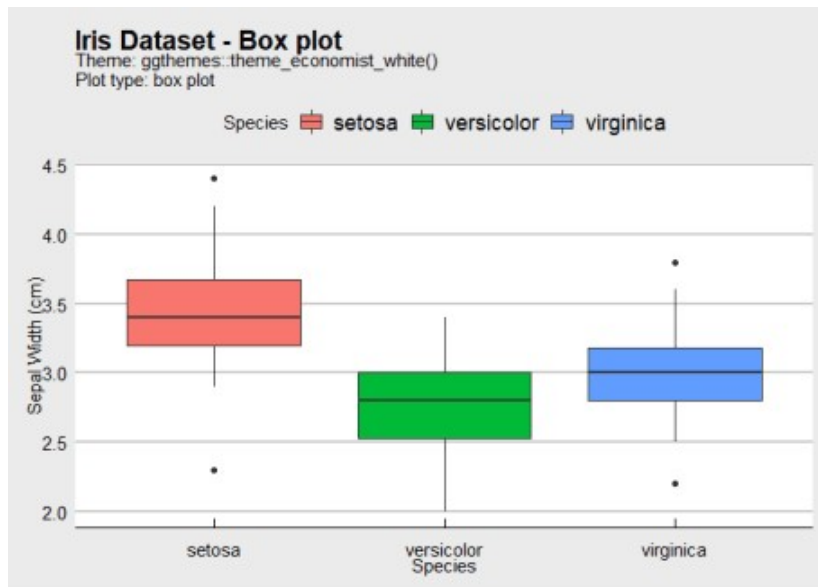


```
##
```

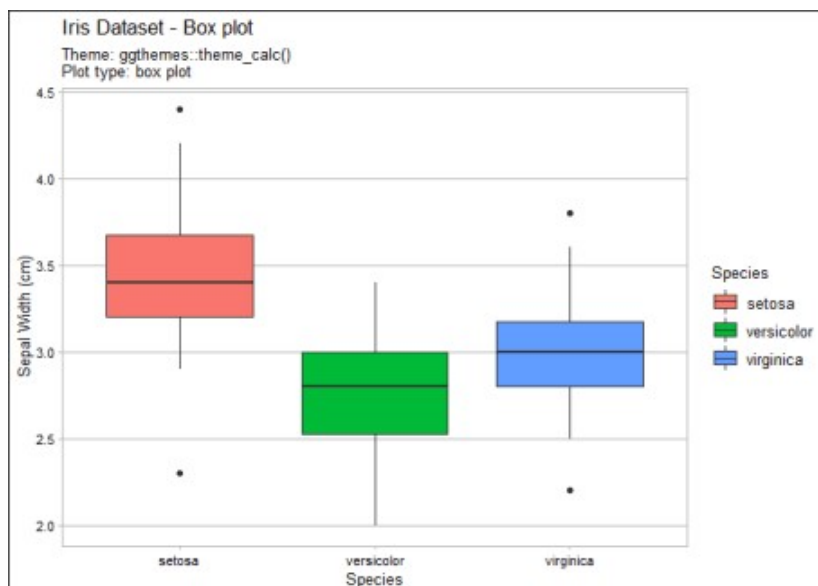
```
## $`Theme: ggthemes::theme_economist(); Plot type: box plot`
```



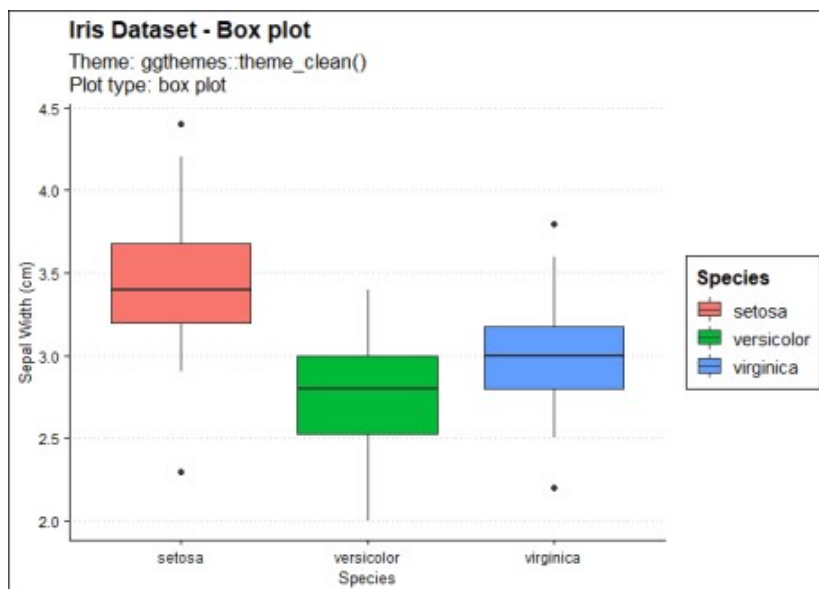
```
##
## $`Theme: ggthemes::theme_economist_white(); Plot type: box plot`
```



```
##
## $`Theme: ggthemes::theme_calc(); Plot type: box plot`
```

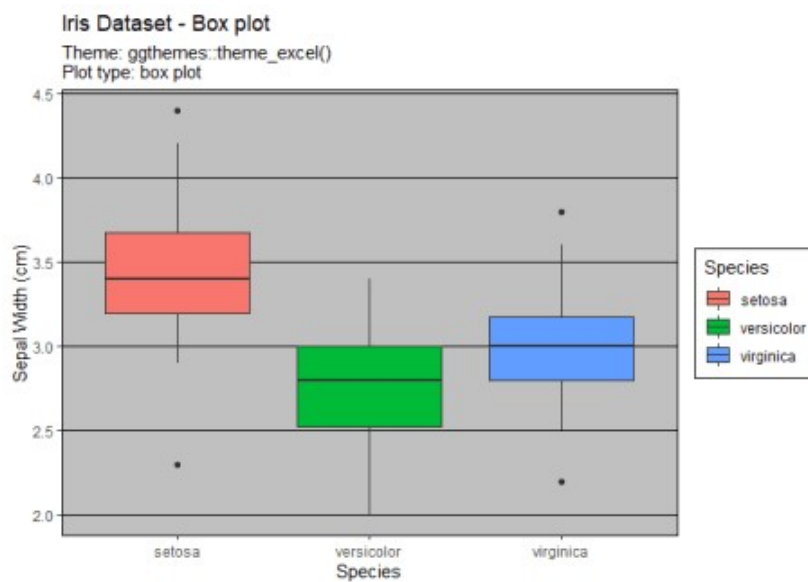


```
##
## $`Theme: ggthemes::theme_clean(); Plot type: box plot`
```



```
##
```

```
## $`Theme: ggthemes::theme_excel(); Plot type: box plot`
```

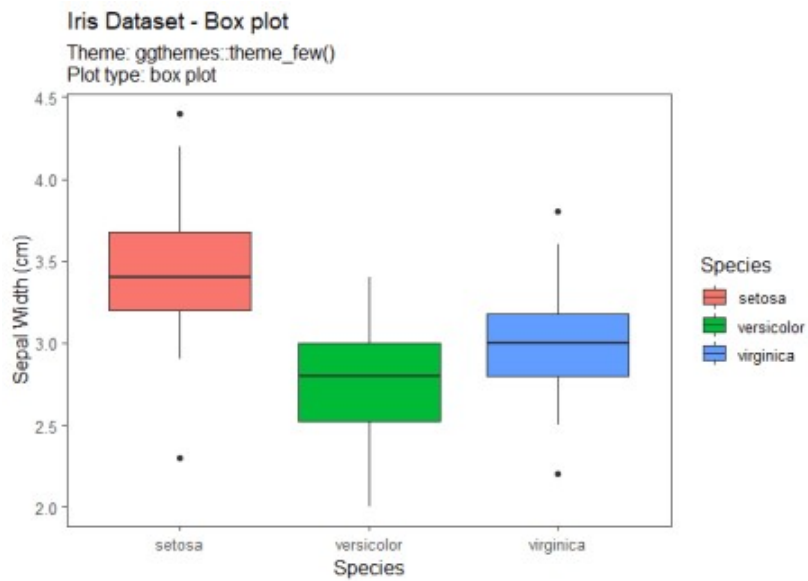


```
##
```

```
## $`Theme: ggthemes::theme_excel_new(); Plot type: box plot`
```



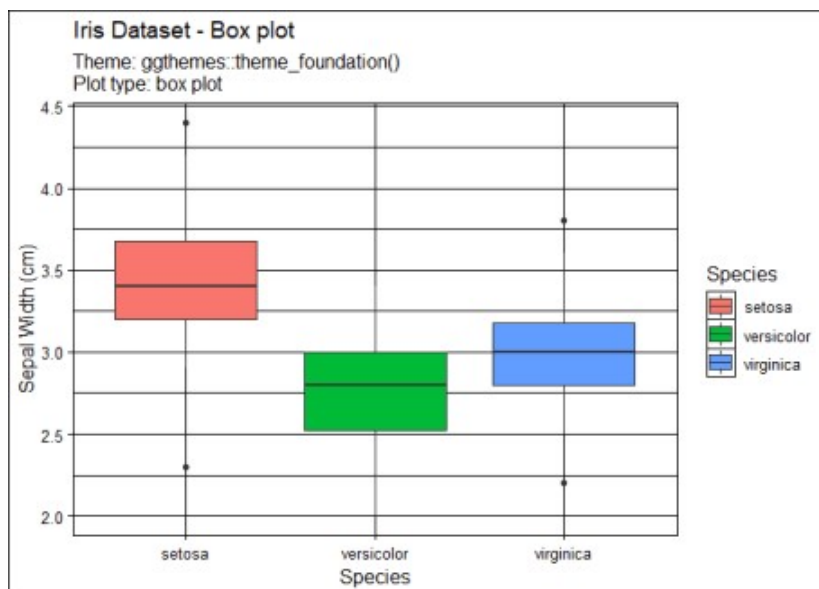
```
##
## $`Theme: ggthemes::theme_few(); Plot type: box plot`
```



```
##
## $`Theme: ggthemes::theme_fivethirtyeight(); Plot type: box plot`
```

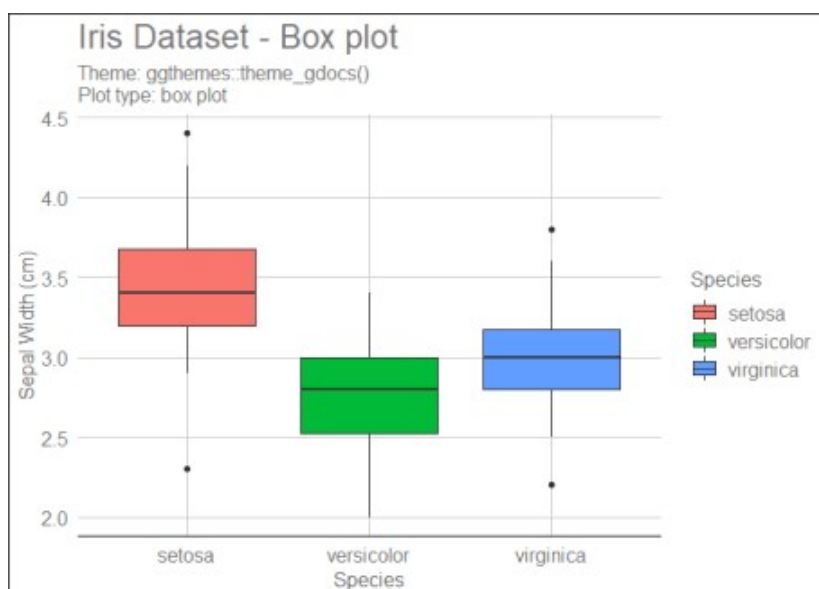


```
##
## $`Theme: ggthemes::theme_foundation(); Plot type: box plot`
```



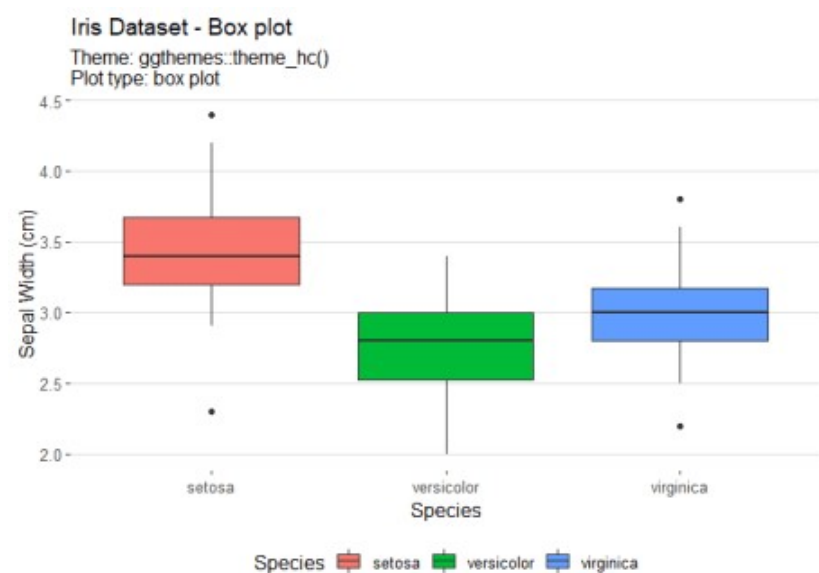
```
##
```

```
## $`Theme: ggthemes::theme_gdocs(); Plot type: box plot`
```

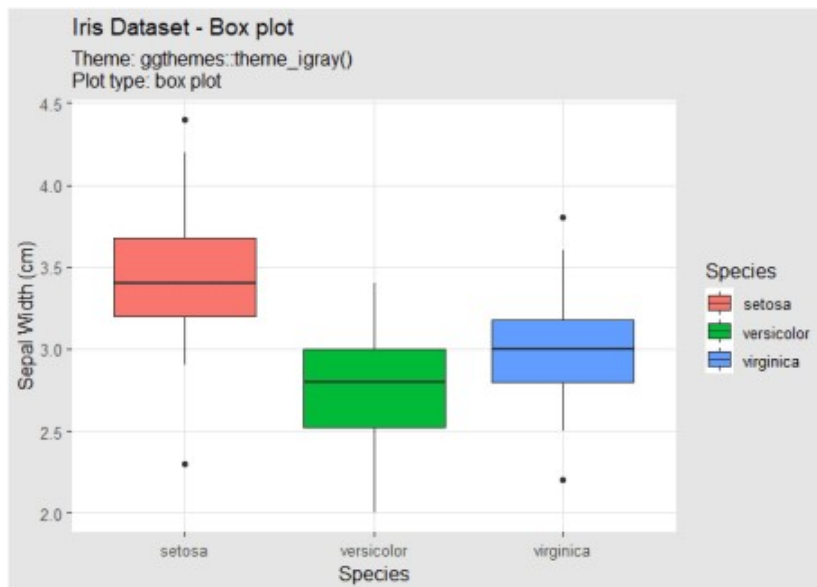


```
##
```

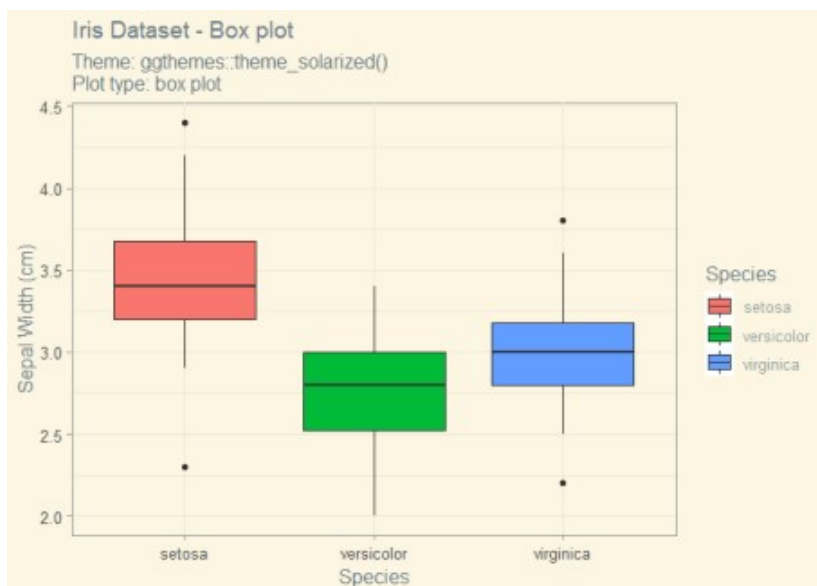
```
## $`Theme: ggthemes::theme_hc(); Plot type: box plot`
```



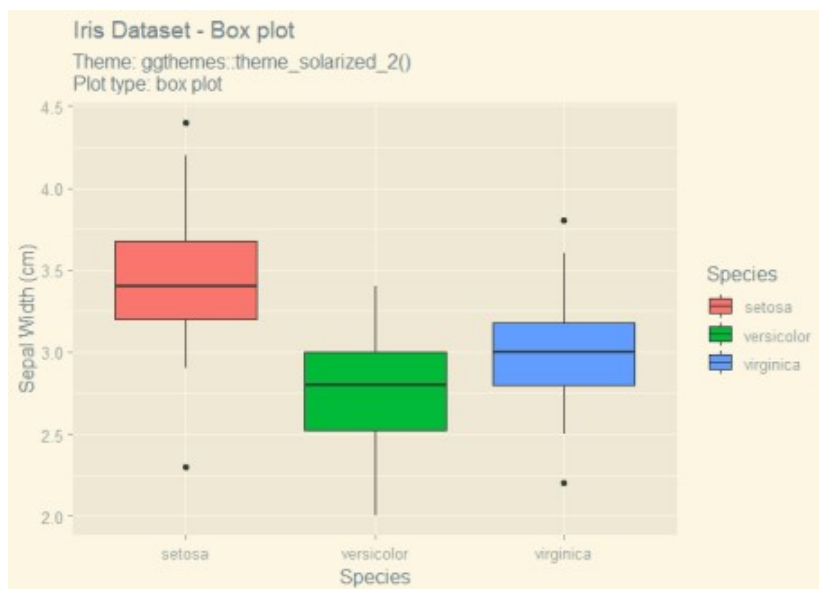
```
##
## $`Theme: ggthemes::theme_igray(); Plot type: box plot`
```



```
##
## $`Theme: ggthemes::theme_solarized(); Plot type: box plot`
```

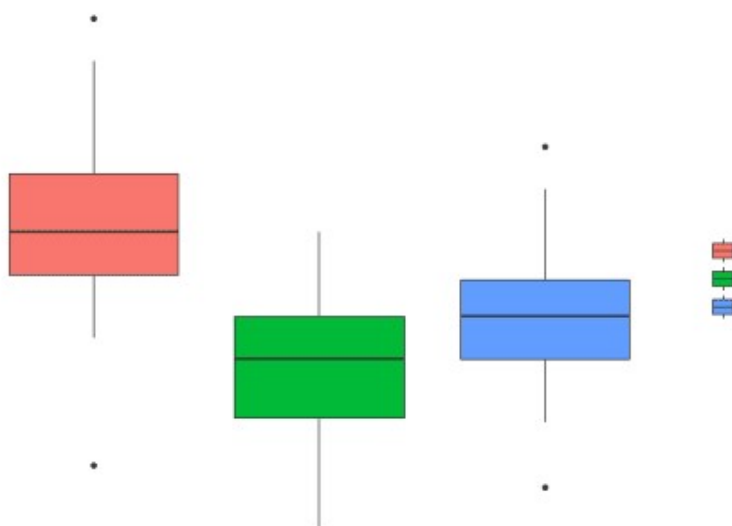


```
##
## $`Theme: ggthemes::theme_solarized_2(); Plot type: box plot`
```



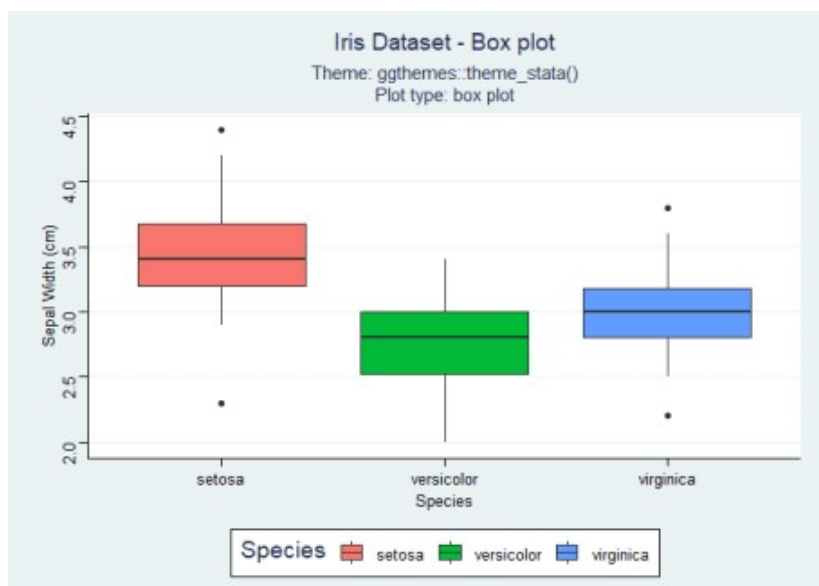
```
##
```

```
## $`Theme: ggthemes::theme_solid(); Plot type: box plot`
```

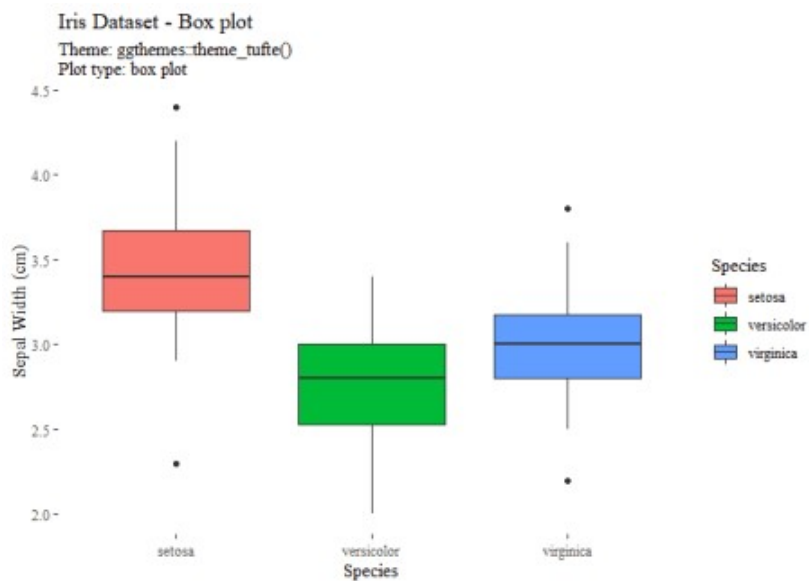


```
##
```

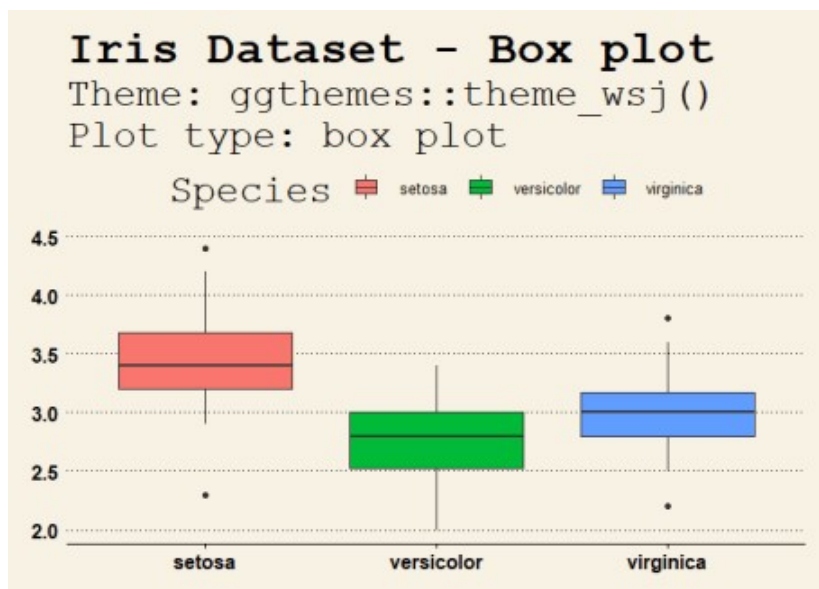
```
## $`Theme: ggthemes::theme_stata(); Plot type: box plot`
```



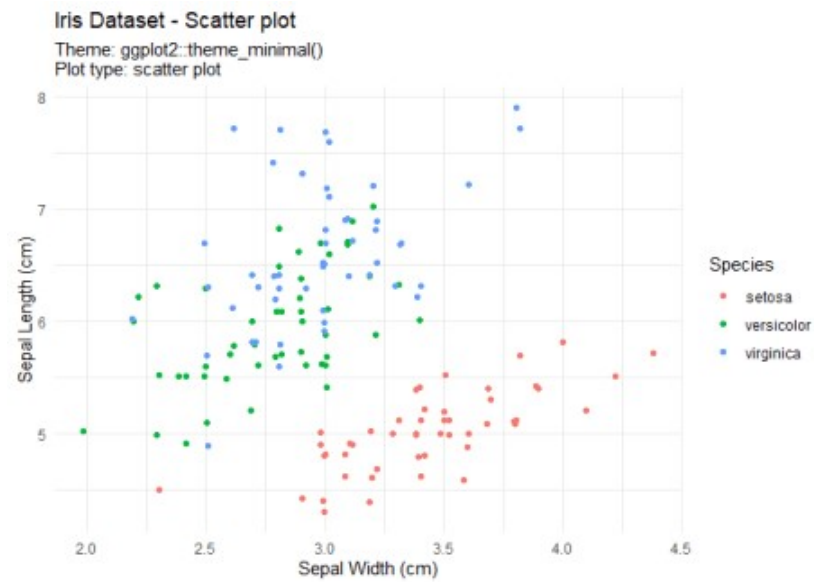
```
##
## $`Theme: ggthemes::theme_tufte(); Plot type: box plot`
```



```
##
## $`Theme: ggthemes::theme_wsj(); Plot type: box plot`
```

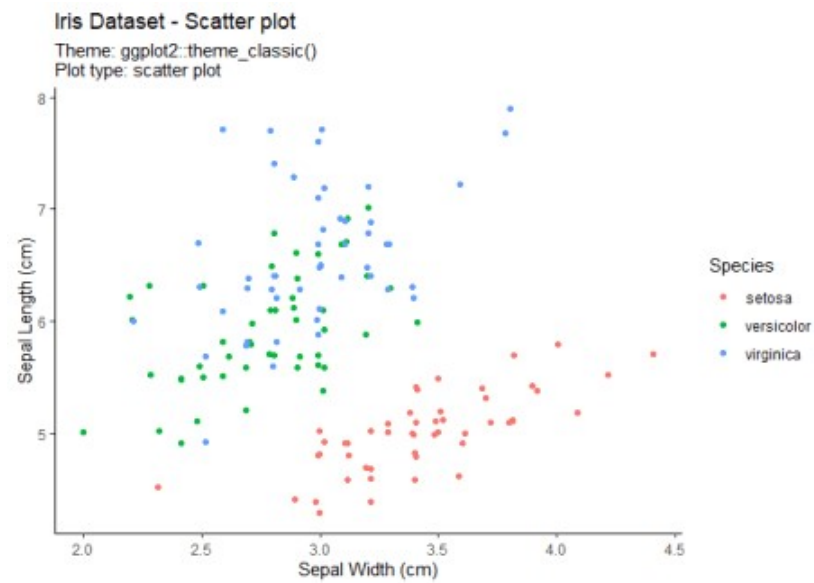


```
##
## $`Theme: ggplot2::theme_minimal(); Plot type: scatter plot`
```

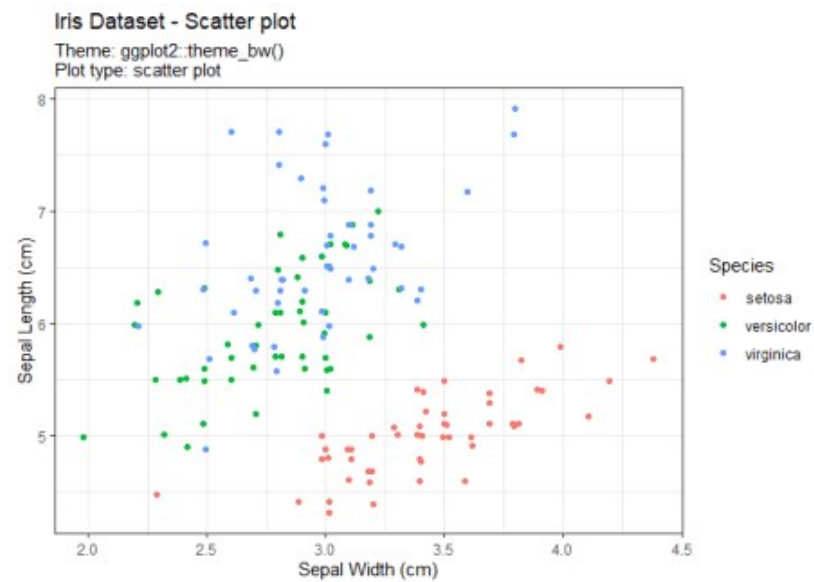
##

\$`Theme: ggplot2::theme_classic(); Plot type: scatter plot`

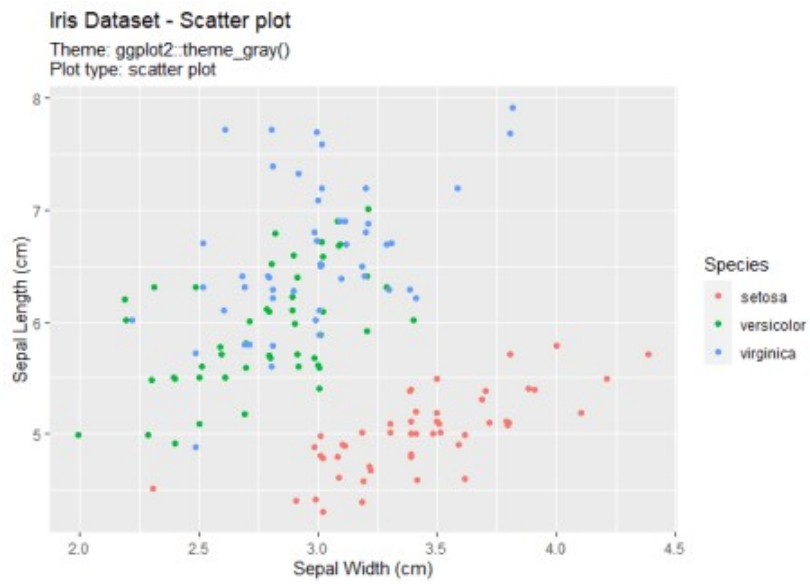


##

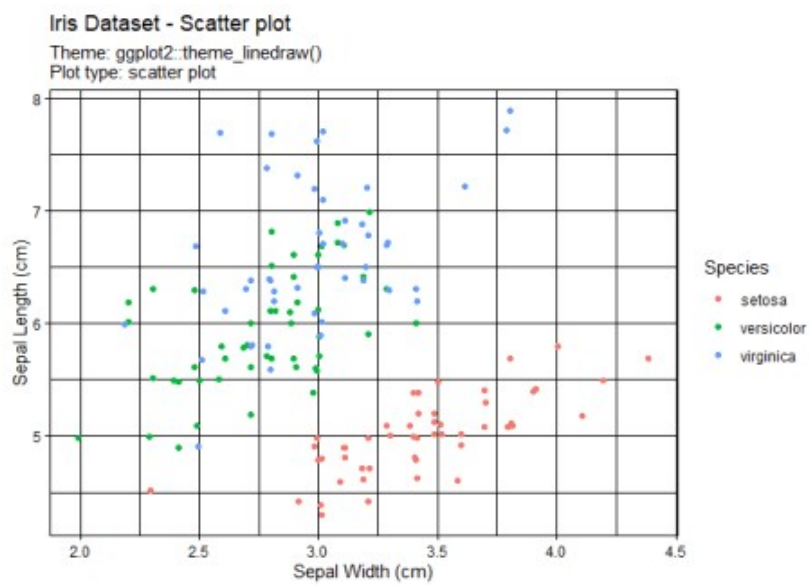
\$`Theme: ggplot2::theme_bw(); Plot type: scatter plot`



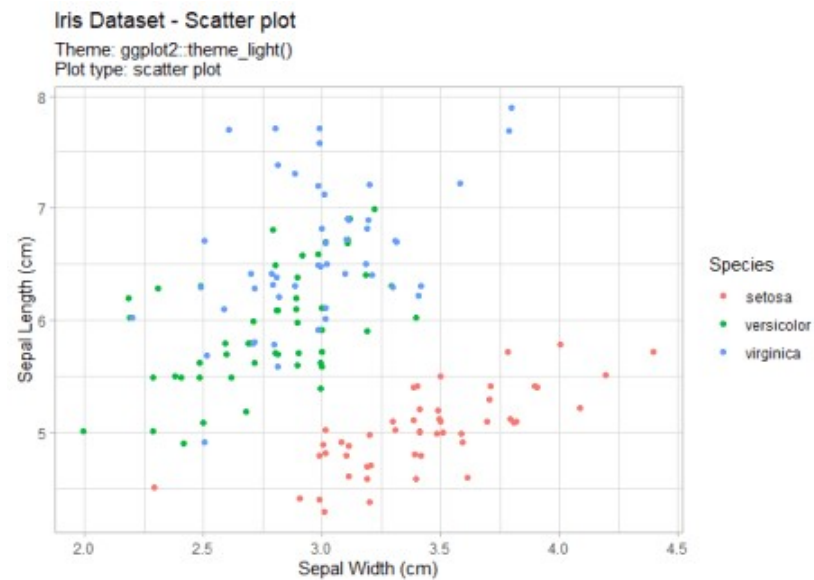
```
##
## $`Theme: ggplot2::theme_gray(); Plot type: scatter plot`
```



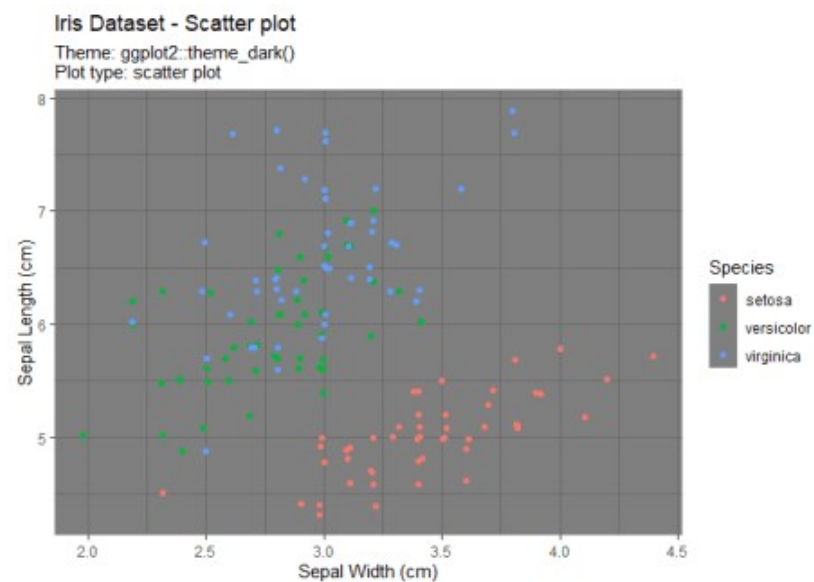
```
##
## $`Theme: ggplot2::theme_linedraw(); Plot type: scatter plot`
```



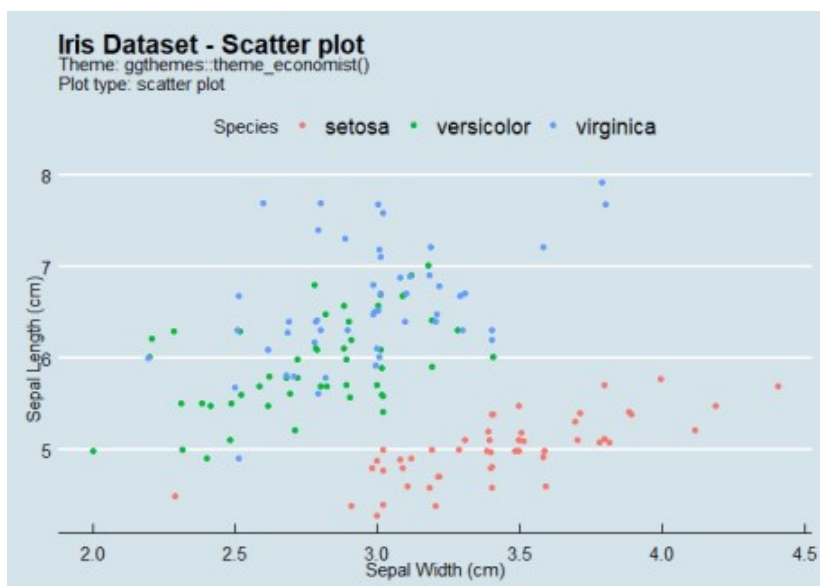
```
##
## $`Theme: ggplot2::theme_light(); Plot type: scatter plot`
```



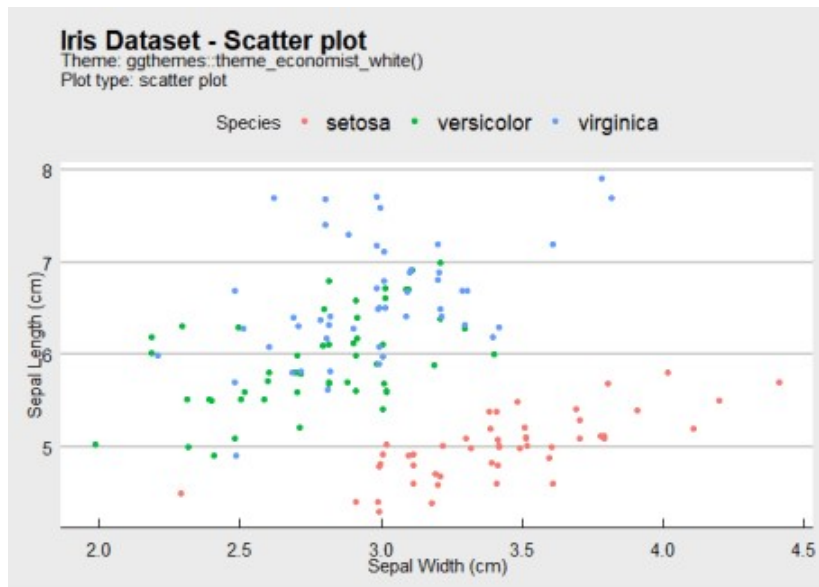
```
##
## $`Theme: ggplot2::theme_dark(); Plot type: scatter plot`
```



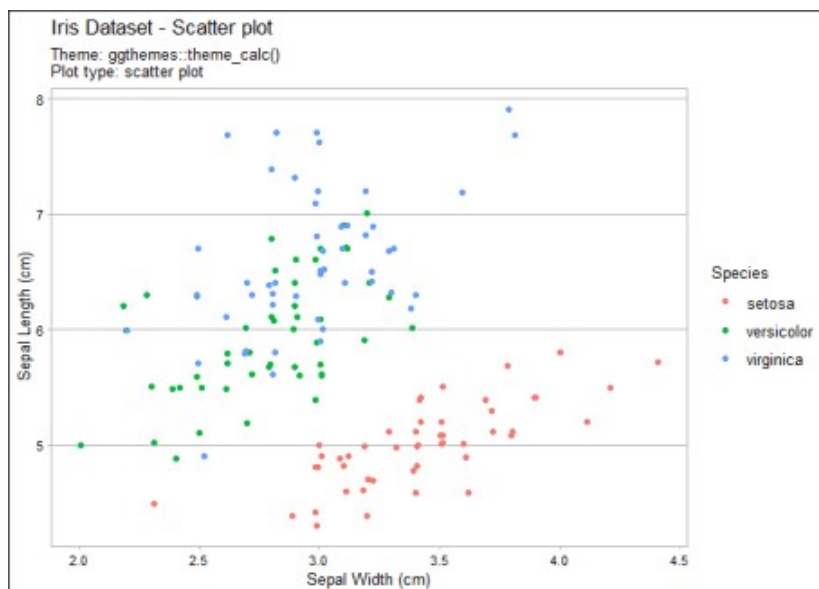
```
##
## $`Theme: ggthemes::theme_economist(); Plot type: scatter plot`
```



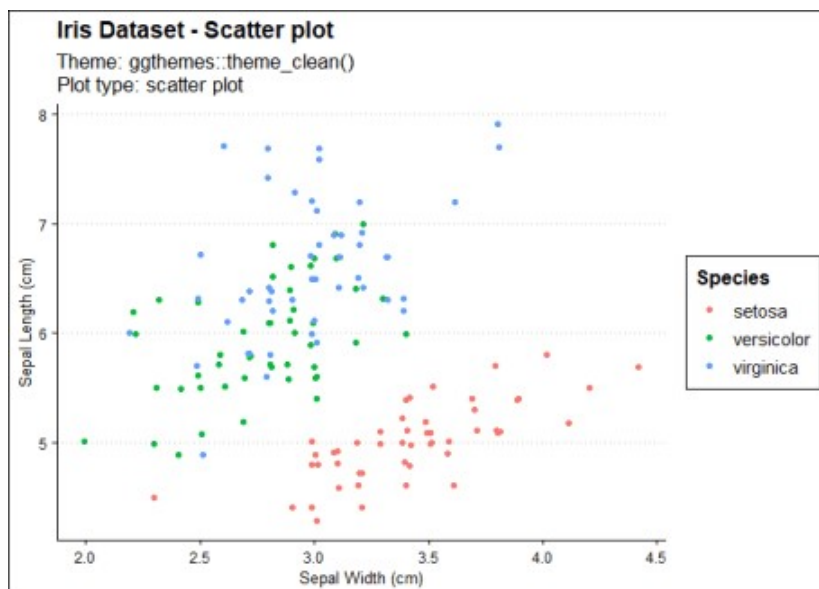
```
##
## $`Theme: ggthemes::theme_economist_white(); Plot type: scatter plot`
```



```
##
## $`Theme: ggthemes::theme_calc(); Plot type: scatter plot`
```

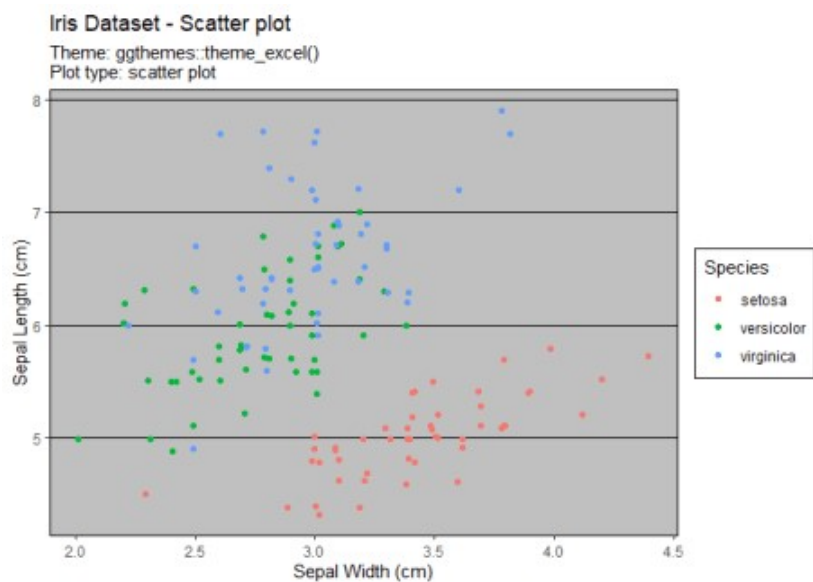


```
##
## $`Theme: ggthemes::theme_clean(); Plot type: scatter plot`
```



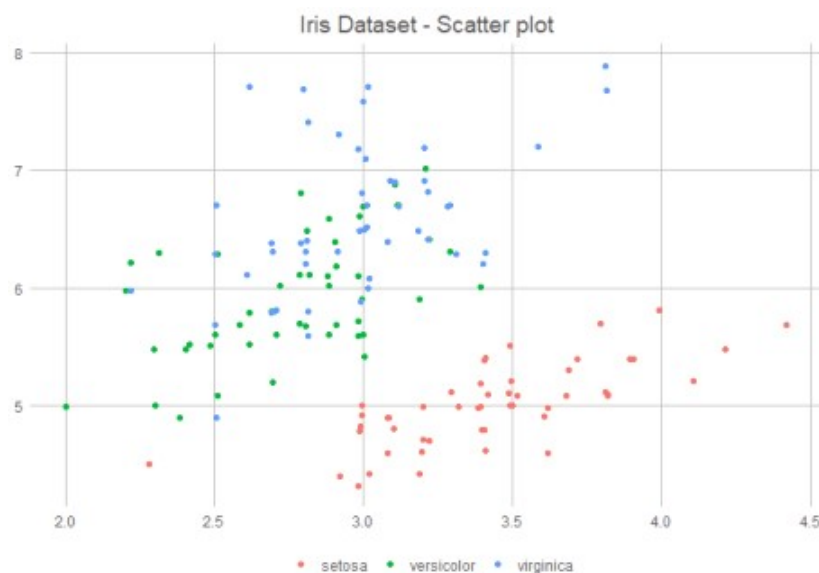
```
##
```

```
## $`Theme: ggthemes::theme_excel(); Plot type: scatter plot`
```

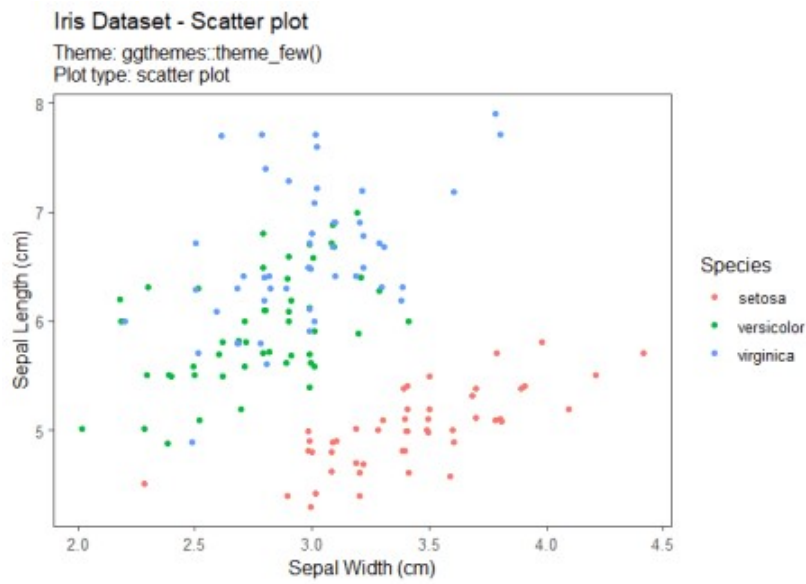


```
##
```

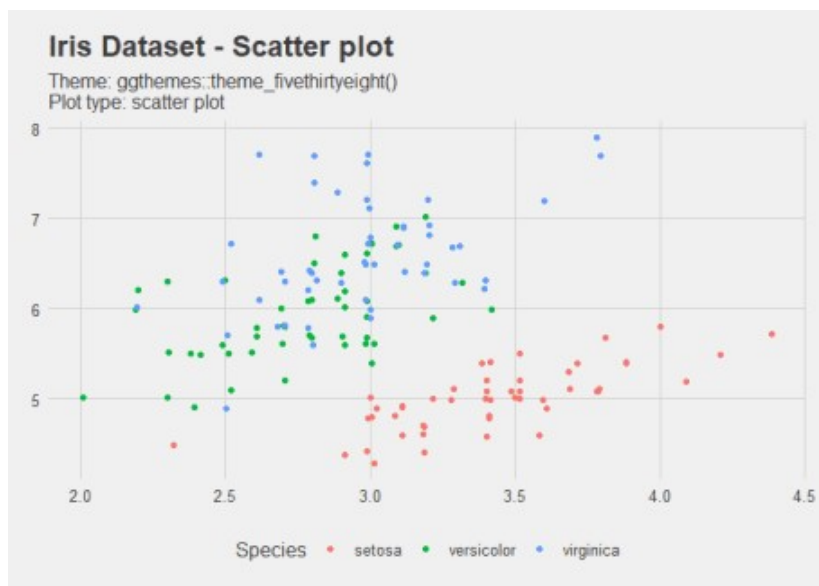
```
## $`Theme: ggthemes::theme_excel_new(); Plot type: scatter plot`
```



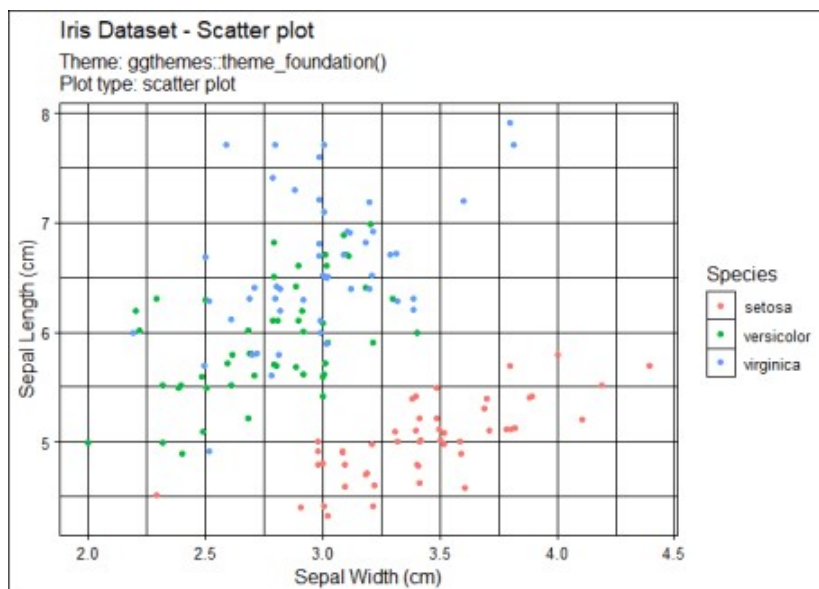
```
##
## $`Theme: ggthemes::theme_few(); Plot type: scatter plot`
```



```
##
## $`Theme: ggthemes::theme_fivethirtyeight(); Plot type: scatter plot`
```

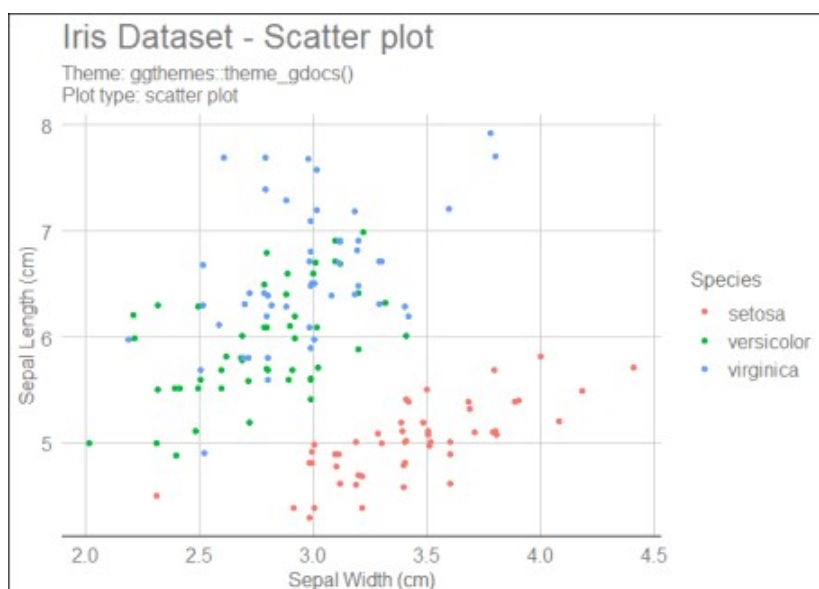


```
##
## $`Theme: ggthemes::theme_foundation(); Plot type: scatter plot`
```



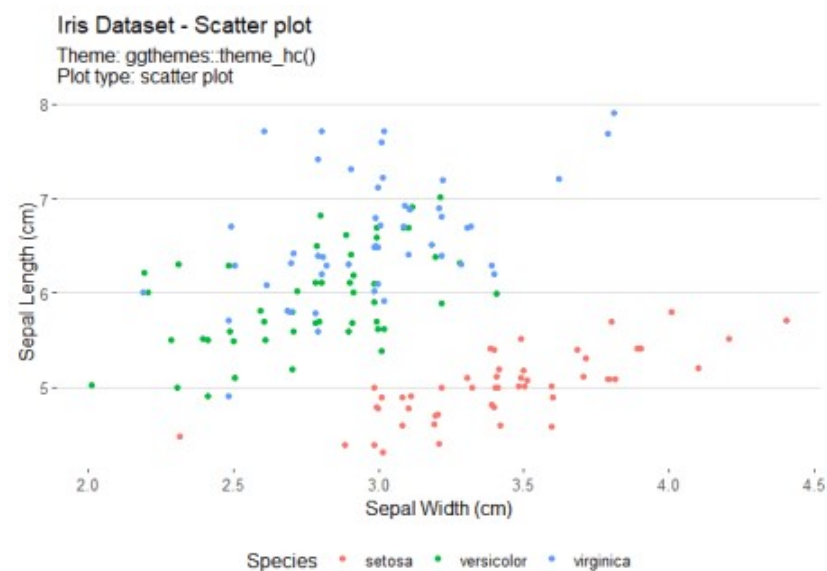
```
##
```

```
## $`Theme: ggthemes::theme_gdocs(); Plot type: scatter plot`
```

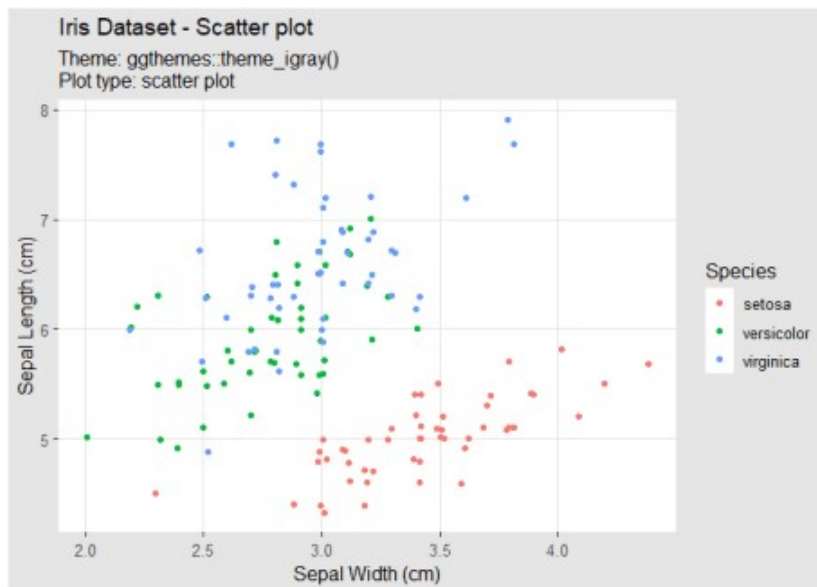


```
##
```

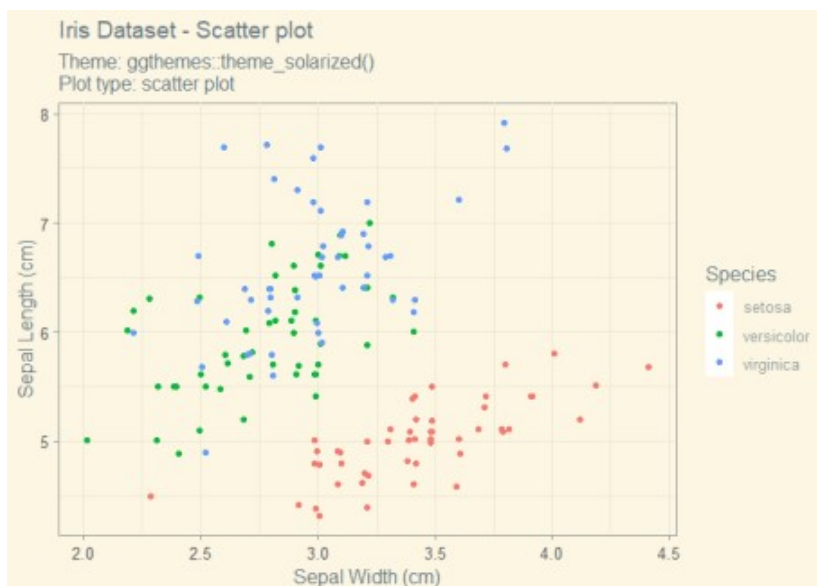
```
## $`Theme: ggthemes::theme_hc(); Plot type: scatter plot`
```




```
##
## $`Theme: ggthemes::theme_igray(); Plot type: scatter plot`
```



```
##
## $`Theme: ggthemes::theme_solarized(); Plot type: scatter plot`
```

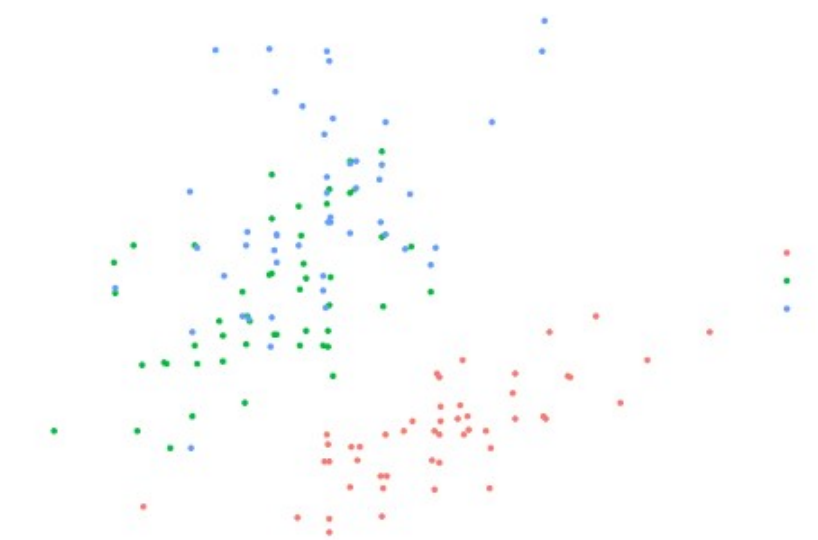


```
##
## $`Theme: ggthemes::theme_solarized_2(); Plot type: scatter plot`
```



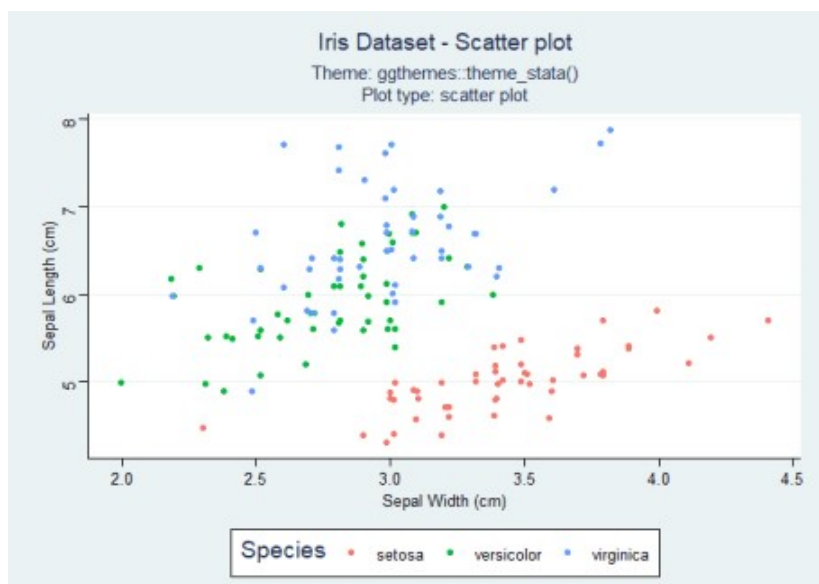

```
##
```

```
## $`Theme: ggthemes::theme_solid(); Plot type: scatter plot`
```

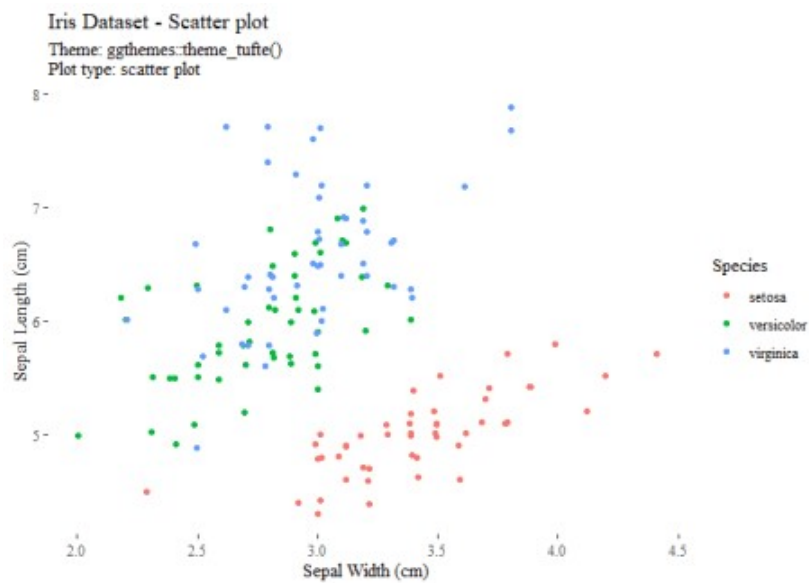


```
##
```

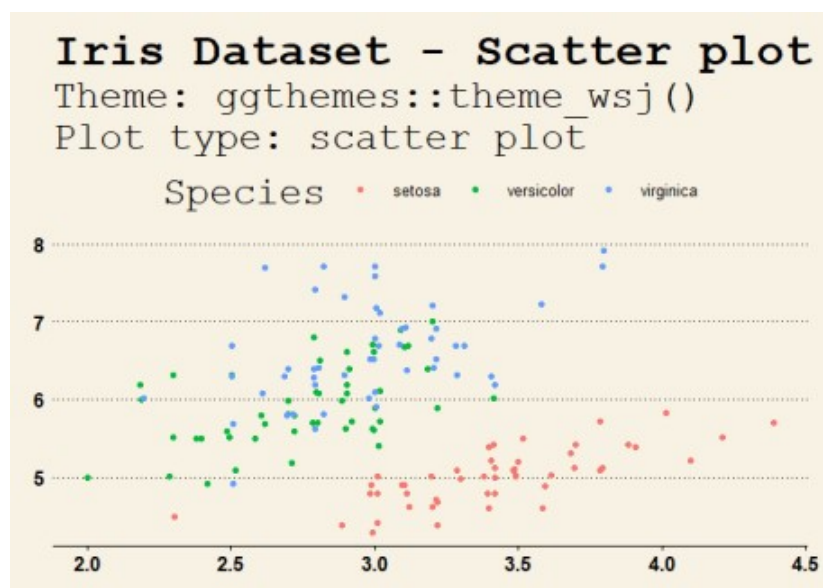
```
## $`Theme: ggthemes::theme_stata(); Plot type: scatter plot`
```



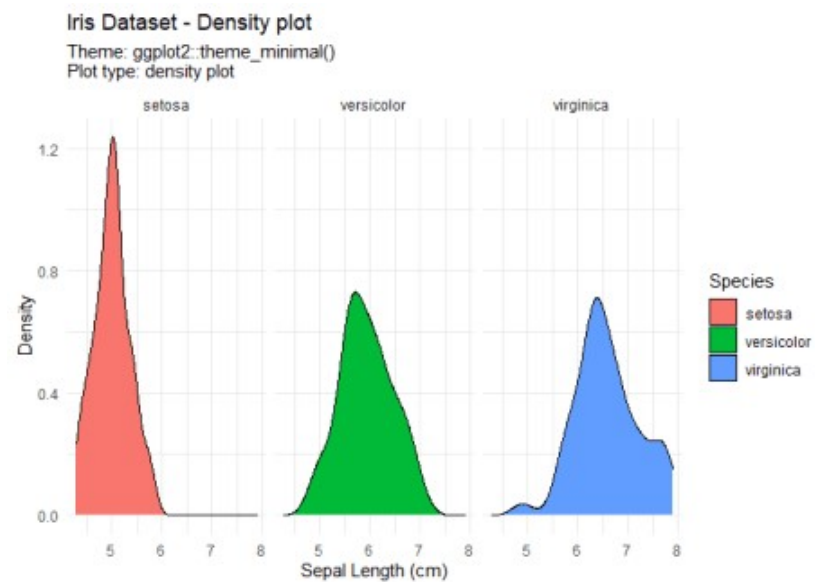
```
##
## $`Theme: ggthemes::theme_tufte(); Plot type: scatter plot`
```



```
##
## $`Theme: ggthemes::theme_wsj(); Plot type: scatter plot`
```

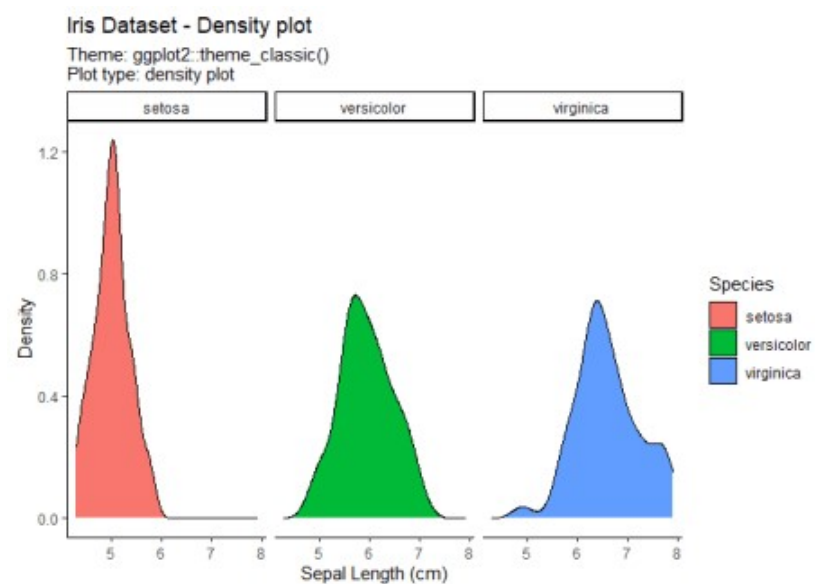


```
##
## $`Theme: ggplot2::theme_minimal(); Plot type: density plot`
```



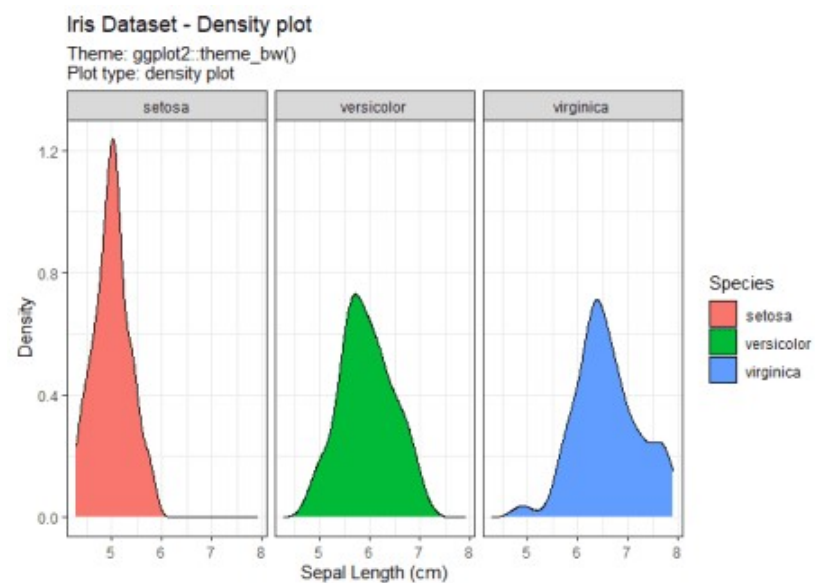
```
##
```

```
## $`Theme: ggplot2::theme_classic(); Plot type: density plot`
```

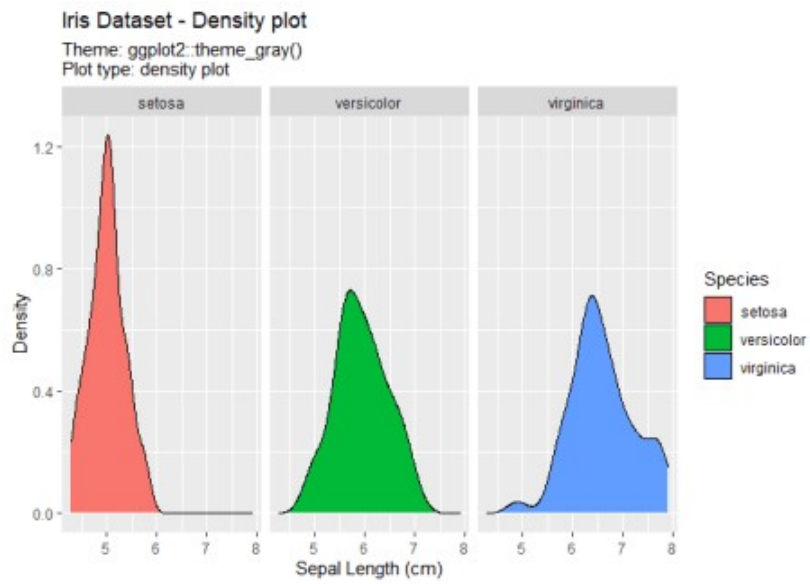


```
##
```

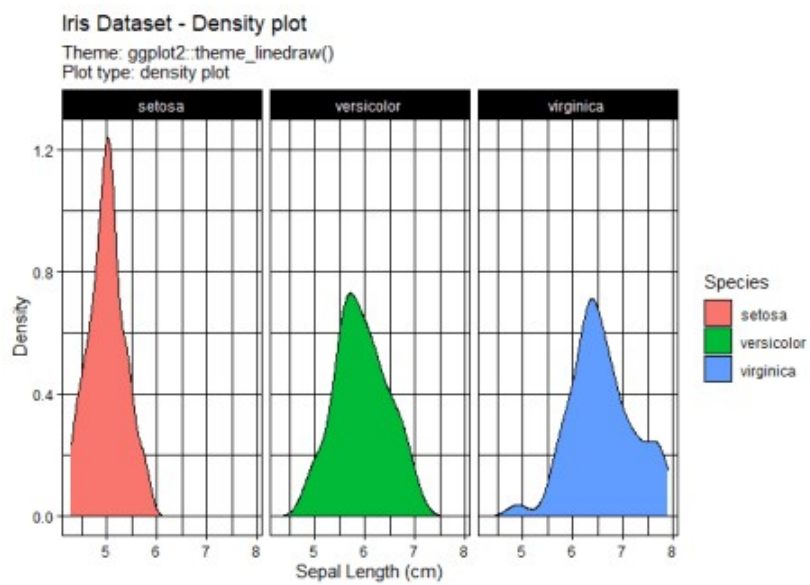
```
## $`Theme: ggplot2::theme_bw(); Plot type: density plot`
```



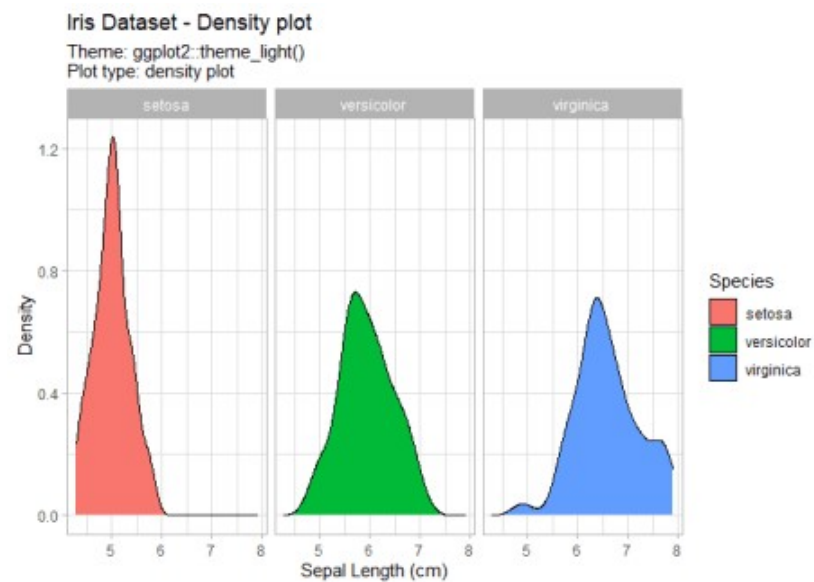
```
##
## $`Theme: ggplot2::theme_gray(); Plot type: density plot`
```



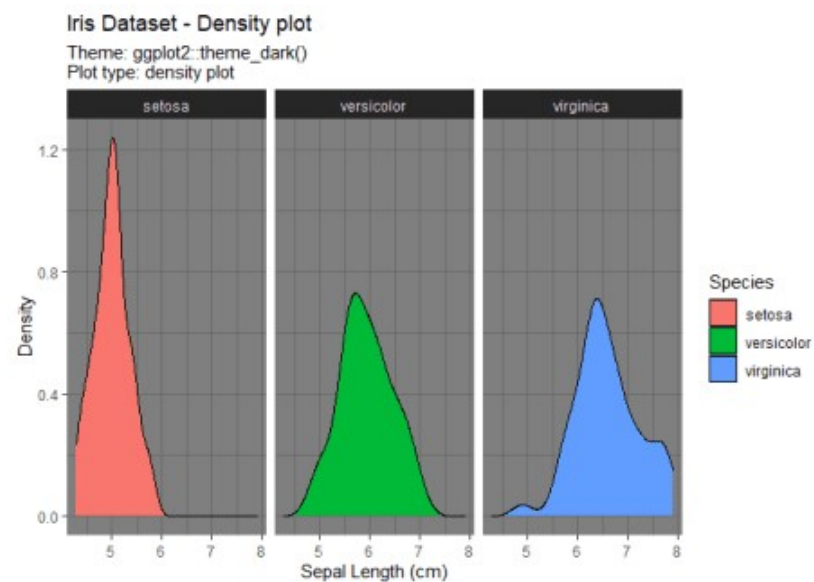
```
##
## $`Theme: ggplot2::theme_linedraw(); Plot type: density plot`
```



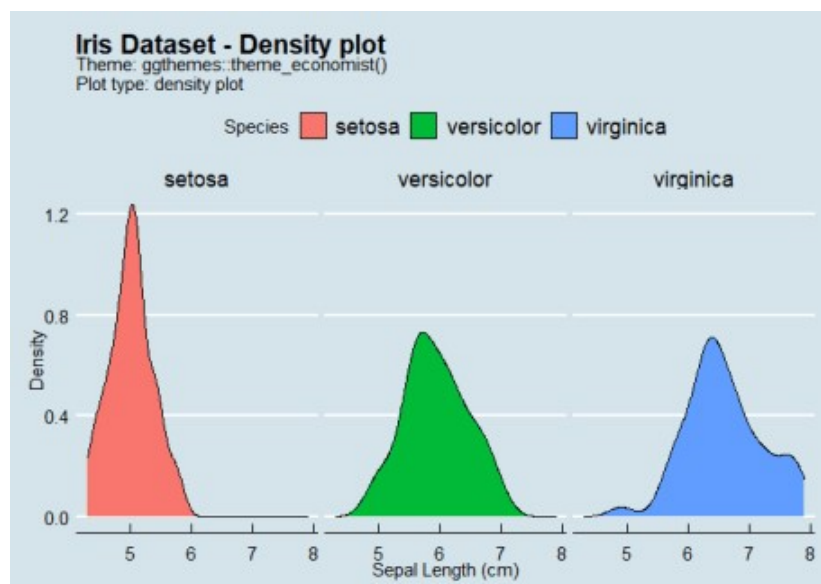
```
##
## $`Theme: ggplot2::theme_light(); Plot type: density plot`
```



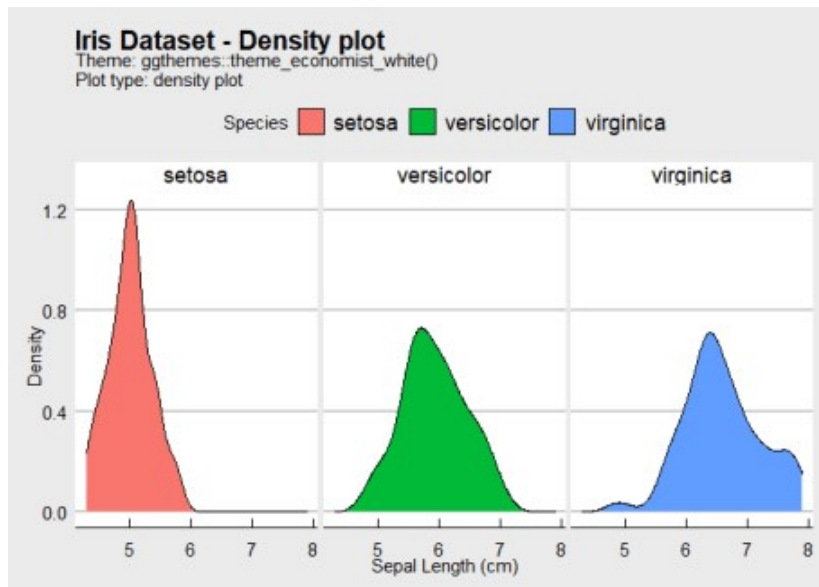
```
##
## $`Theme: ggplot2::theme_dark(); Plot type: density plot`
```



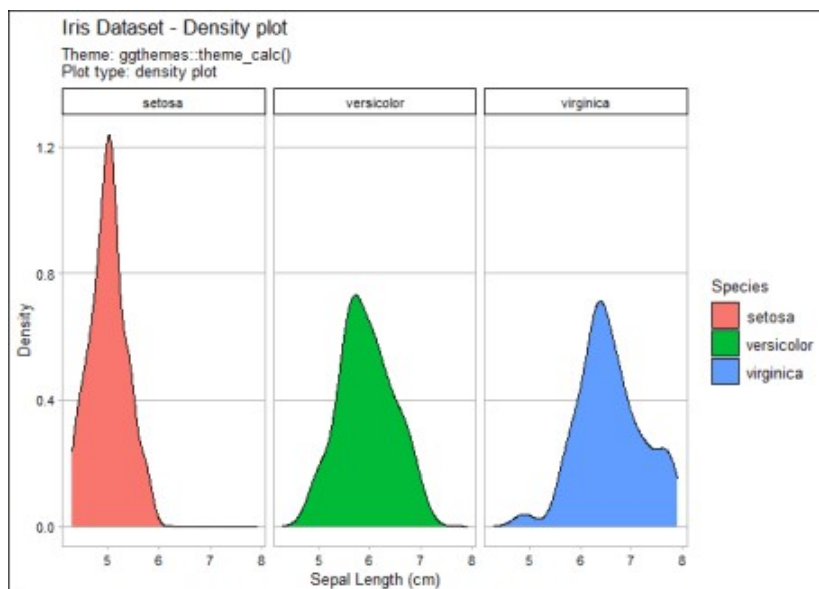
```
##
## $`Theme: ggthemes::theme_economist(); Plot type: density plot`
```



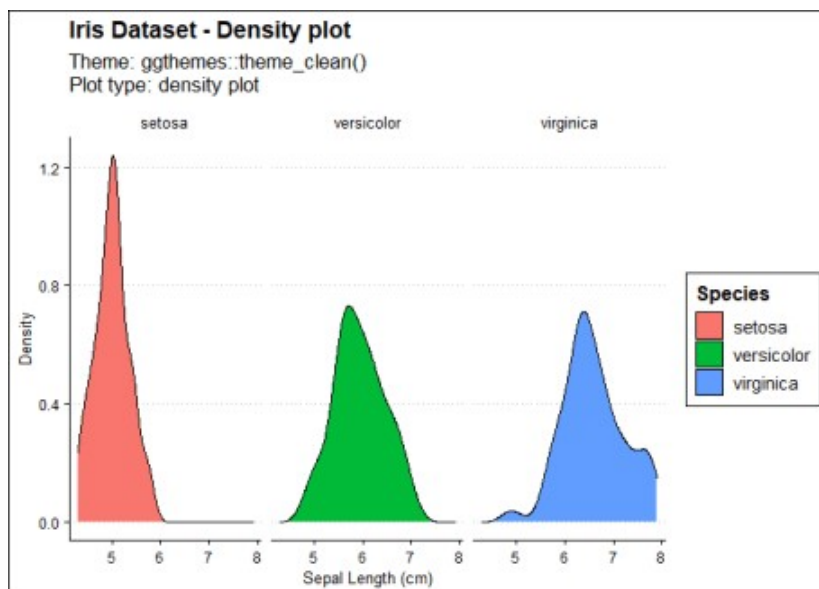
```
##
## $`Theme: ggthemes::theme_economist_white(); Plot type: density plot`
```



```
##
## $`Theme: ggthemes::theme_calc(); Plot type: density plot`
```

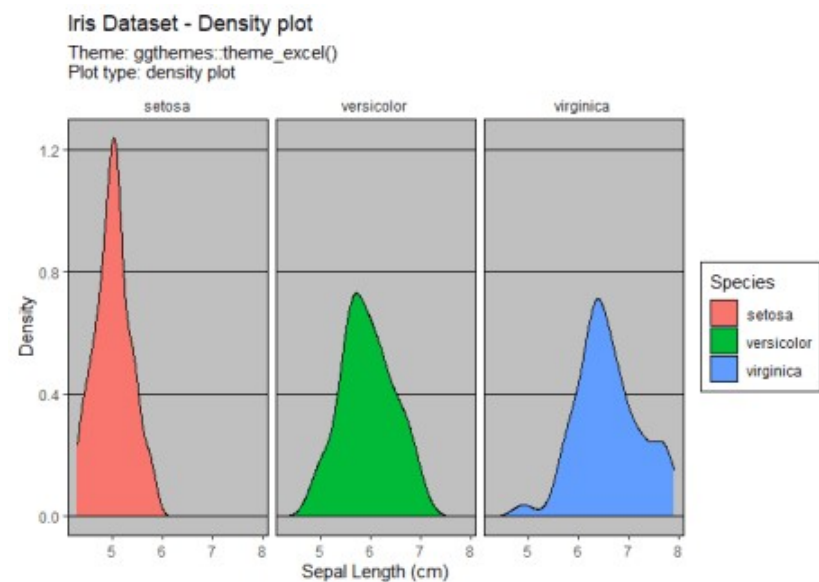


```
##
## $`Theme: ggthemes::theme_clean(); Plot type: density plot`
```



```
##
```

```
## $`Theme: ggthemes::theme_excel(); Plot type: density plot`
```

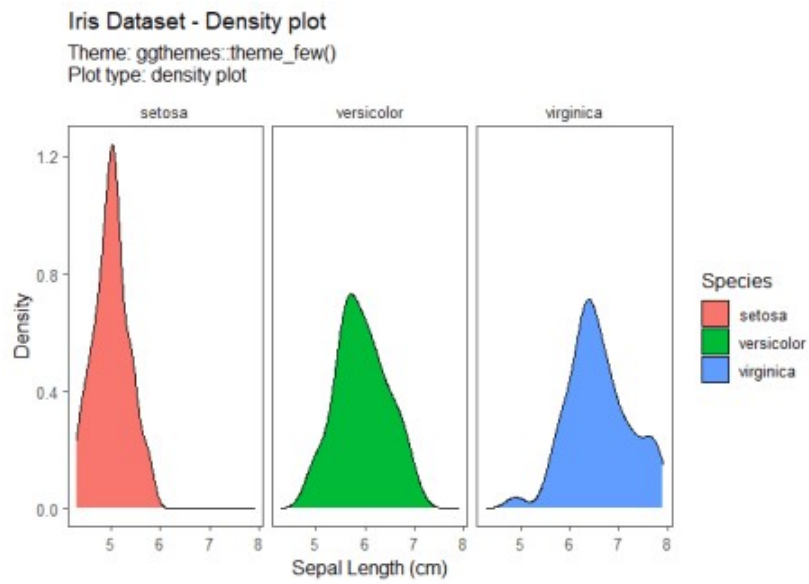


```
##
```

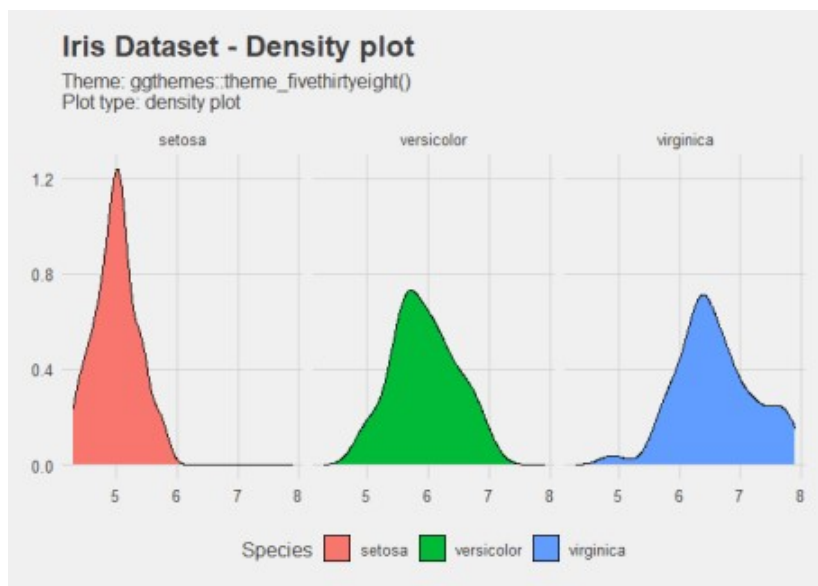
```
## $`Theme: ggthemes::theme_excel_new(); Plot type: density plot`
```



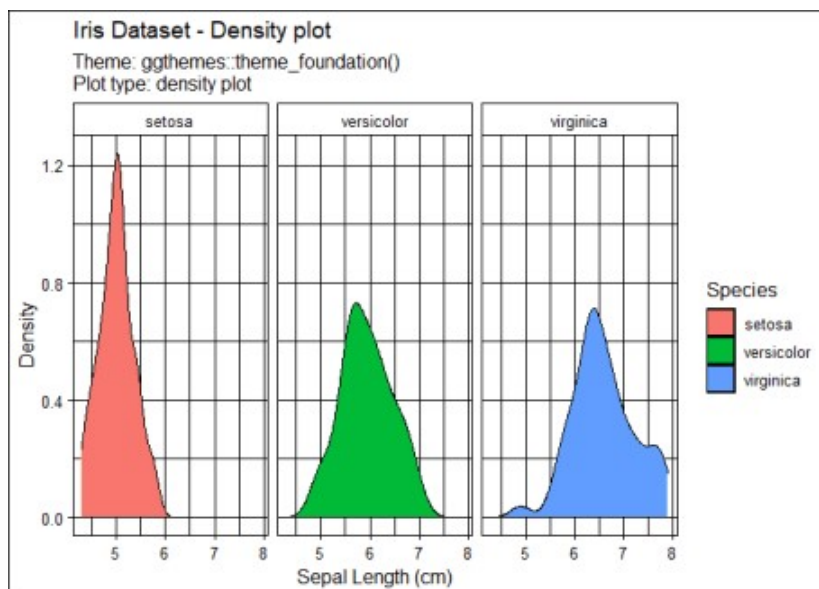
```
##
## $`Theme: ggthemes::theme_few(); Plot type: density plot`
```



```
##
## $`Theme: ggthemes::theme_fivethirtyeight(); Plot type: density plot`
```

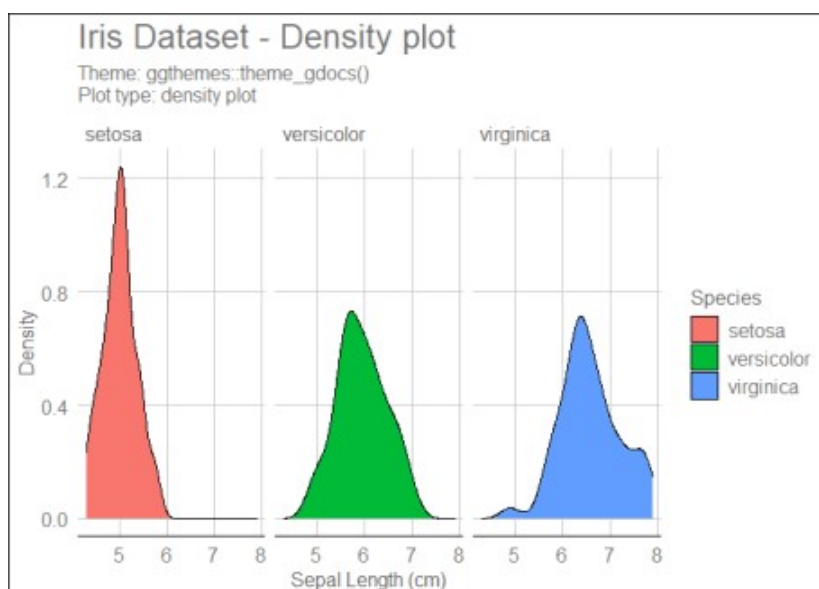


```
##
## $`Theme: ggthemes::theme_foundation(); Plot type: density plot`
```

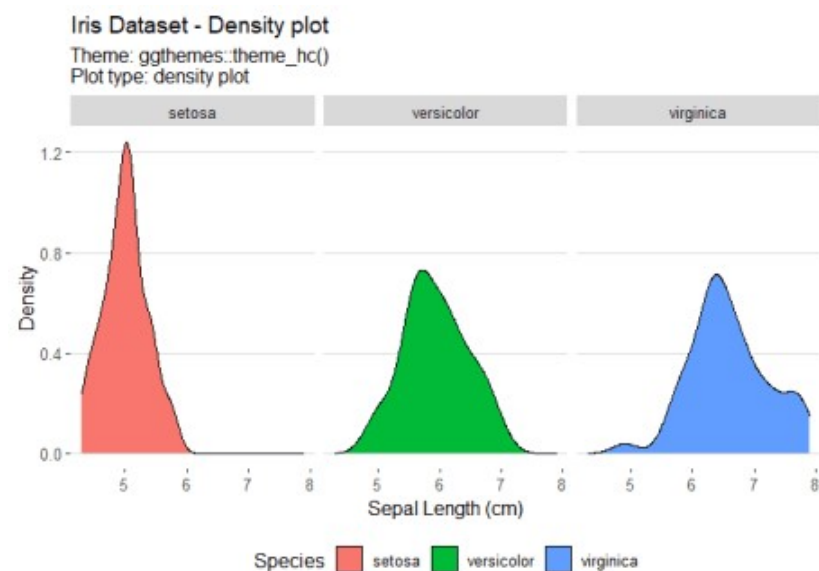
```
##
```

```
## $`Theme: ggthemes::theme_gdocs(); Plot type: density plot`
```



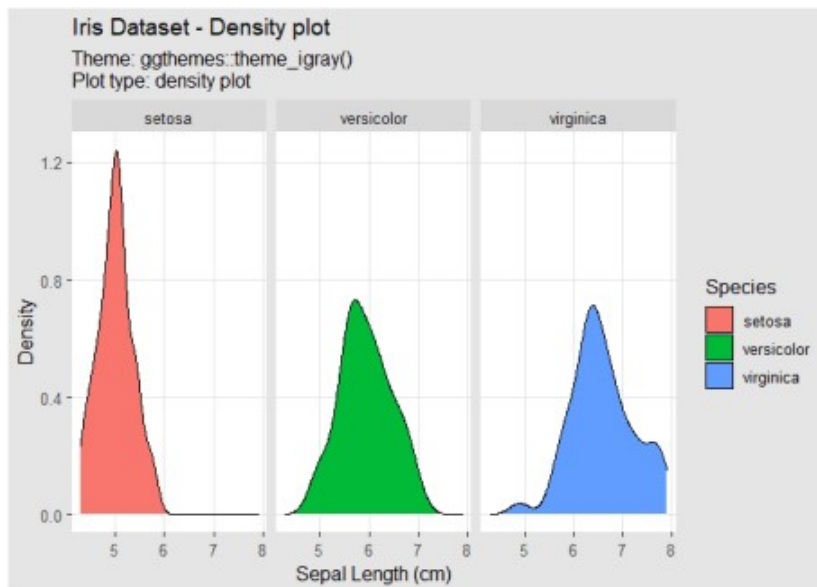
```
##
```

```
## $`Theme: ggthemes::theme_hc(); Plot type: density plot`
```



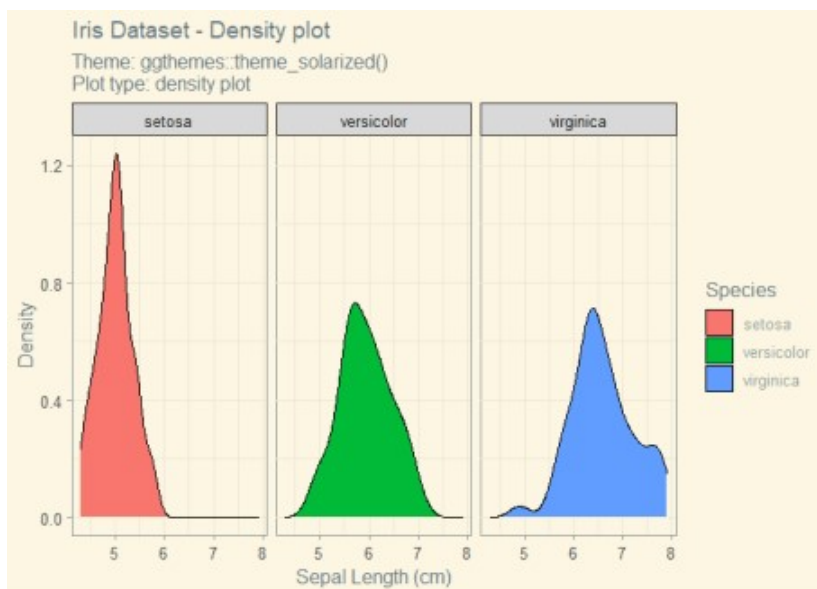
```
##
```

```
## $`Theme: ggthemes::theme_igray(); Plot type: density plot`
```



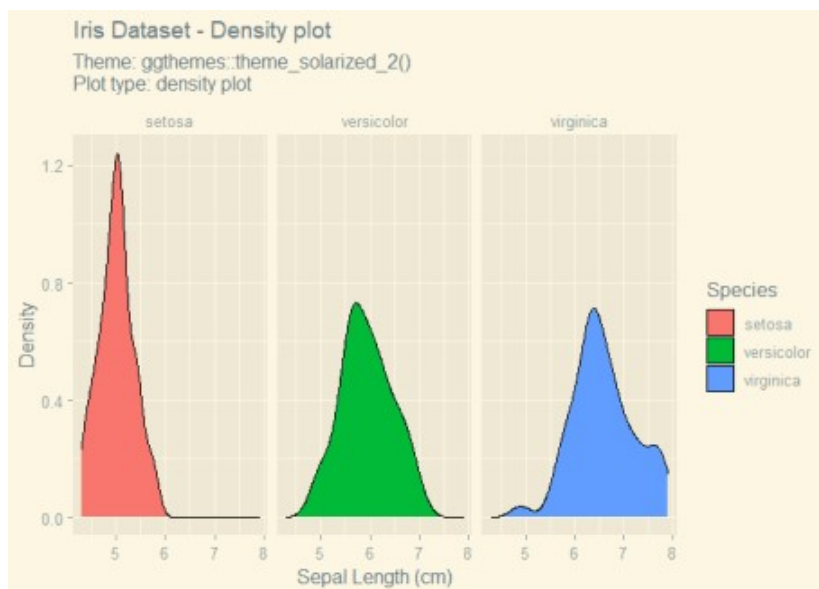
```
##
```

```
## $`Theme: ggthemes::theme_solarized(); Plot type: density plot`
```



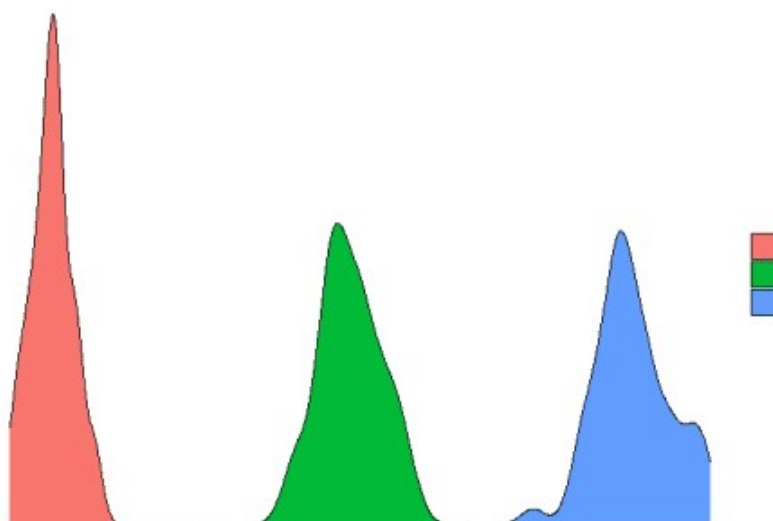
```
##
```

```
## $`Theme: ggthemes::theme_solarized_2(); Plot type: density plot`
```



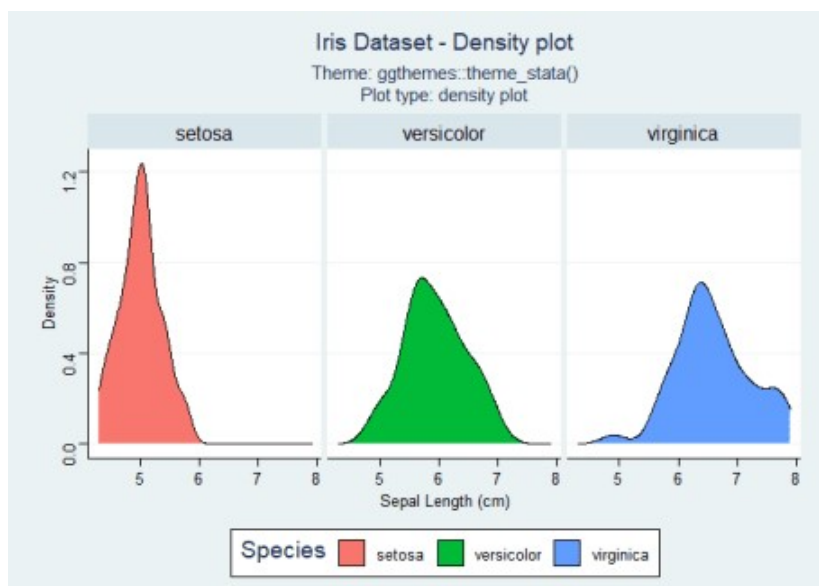
```
##
```

```
## $`Theme: ggthemes::theme_solid(); Plot type: density plot`
```



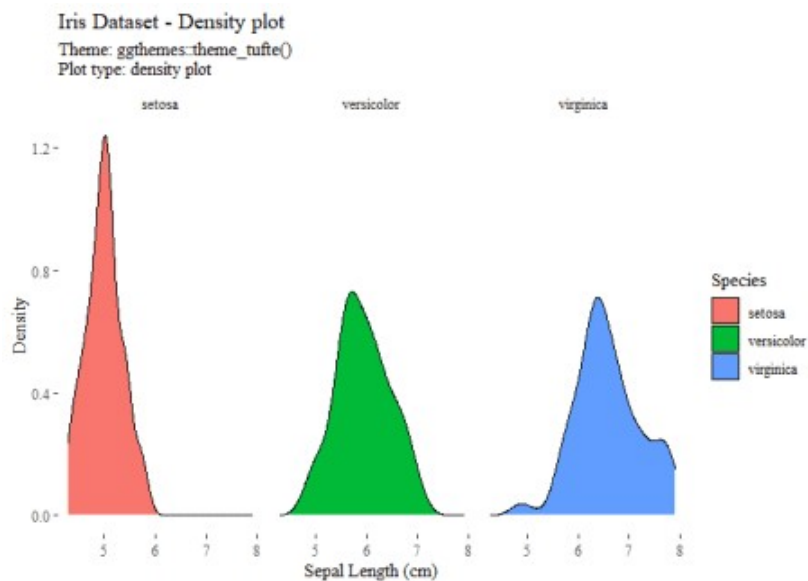
```
##
```

```
## $`Theme: ggthemes::theme_stata(); Plot type: density plot`
```



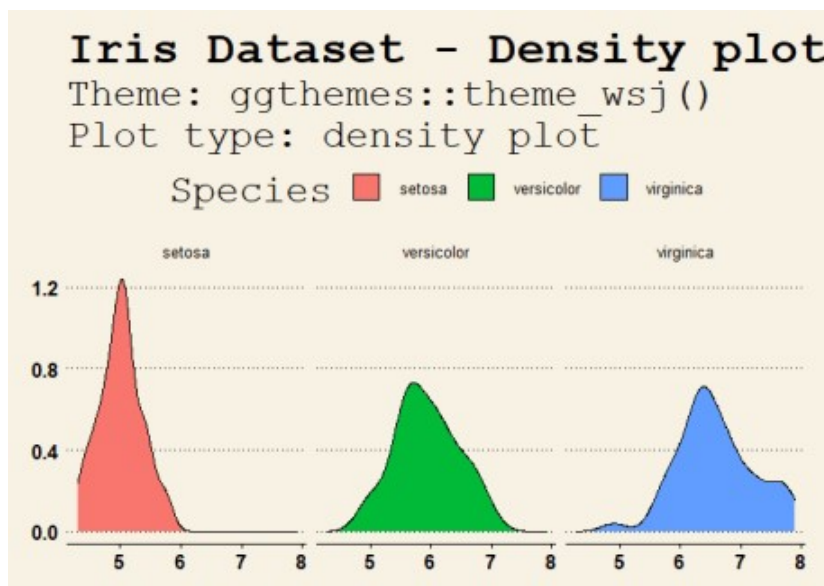
```
##
```

```
## $`Theme: ggthemes::theme_tufte(); Plot type: density plot`
```



```
##
```

```
## $`Theme: ggthemes::theme_wsj(); Plot type: density plot`
```



End Notes

And here it is! That didn't take that many lines of code, but you can already generate a great number of plots with `expand_grid()` and `pmap()`.