

How can we assign colors by factor in ggplot2?

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The process of assigning colors by factor in ggplot2 involves mapping a categorical variable, known as a factor, to corresponding colors in a plot. This can be achieved by using the `scale_color_manual` function in the ggplot2 package, which allows for the manual assignment of colors to each level of the factor. This enables the differentiation of data points based on their factor level, making it easier to analyze and interpret the data. By assigning colors by factor in ggplot2, the visual representation of the data can be enhanced, providing a more comprehensive understanding of the underlying patterns and relationships within the data.

Assign Colors by Factor in ggplot2 (With Examples)

Often you may want to assign colors to points in a ggplot2 plot based on some categorical variable.

Fortunately this is easy to do using the following syntax:

```
ggplot(df, aes(x=x_variable, y=y_variable, color=color_variable)) +  
geom_point()
```

This tutorial provides several examples of how to use this syntax in practice using the built-in R dataset titled `iris`:

```
#view first six rows of iris dataset  
head(iris)
```

```
Sepal.Length Sepal.Width Petal.Length Petal.Width
```

Species

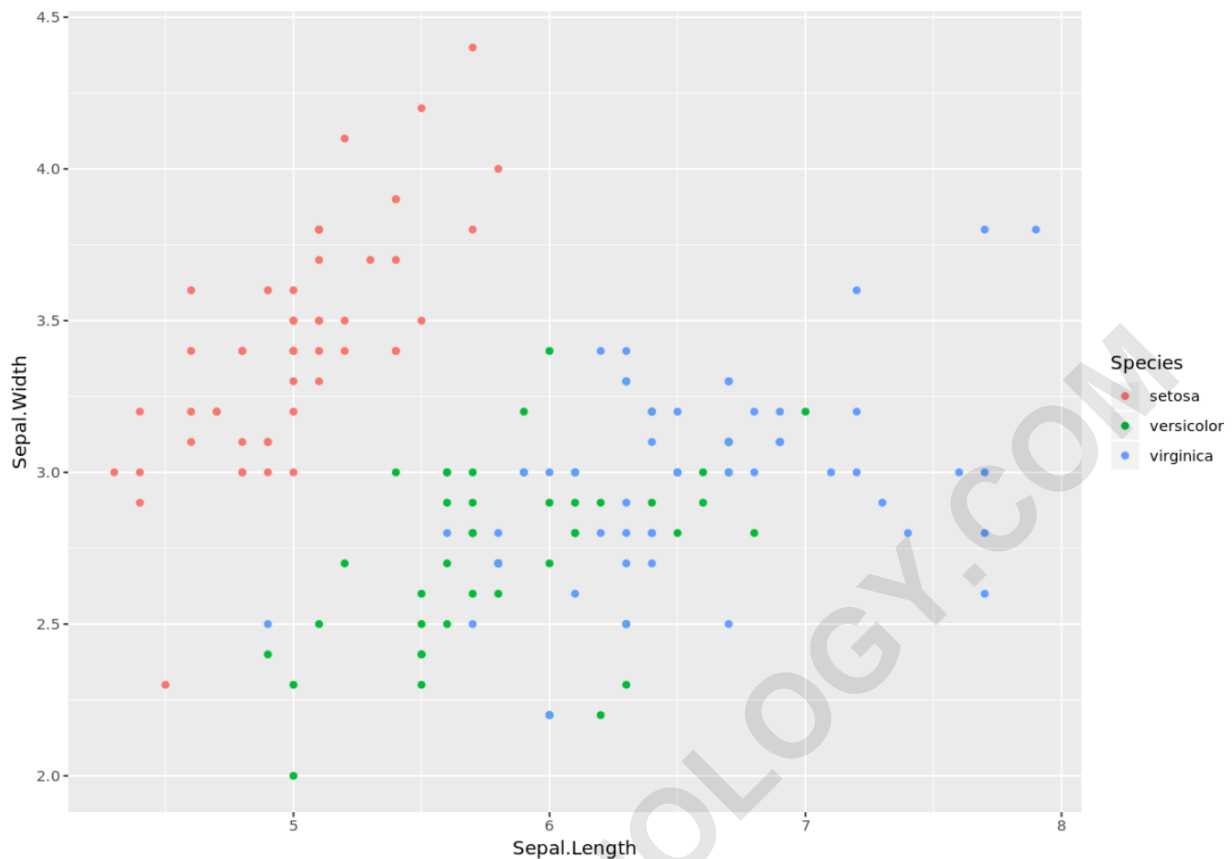
```
1 5.1 3.5 1.4 0.2 setosa
2 4.9 3.0 1.4 0.2 setosa
3 4.7 3.2 1.3 0.2 setosa
4 4.6 3.1 1.5 0.2 setosa
5 5.0 3.6 1.4 0.2 setosa
6 5.4 3.9 1.7 0.4 setosa
```

Example 1: Use Default Colors

The following code shows how to assign default colors to the points in a ggplot2 plot based on the factor variable *Species*:

```
library(ggplot2)
```

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



Since we didn't specify a color scale or a list of custom colors, ggplot2 simply assigned a list of default red, green, and blue colors to the points.

Example 2: Use Custom Colors

The following code shows how to assign custom colors to the points in a ggplot2 plot by using `scale_color_manual()`:

```
library(ggplot2)
```

```
ggplot(iris, aes(x=Sepal.Length, y=Sepal.Width,  
color=Species)) +  
geom_point() +  
scale_color_manual(values = c("setosa" = "purple",  
"versicolor"="orange",  
"virginica"="steelblue"))
```



Note that we could have used hex color codes as well to specify the colors.

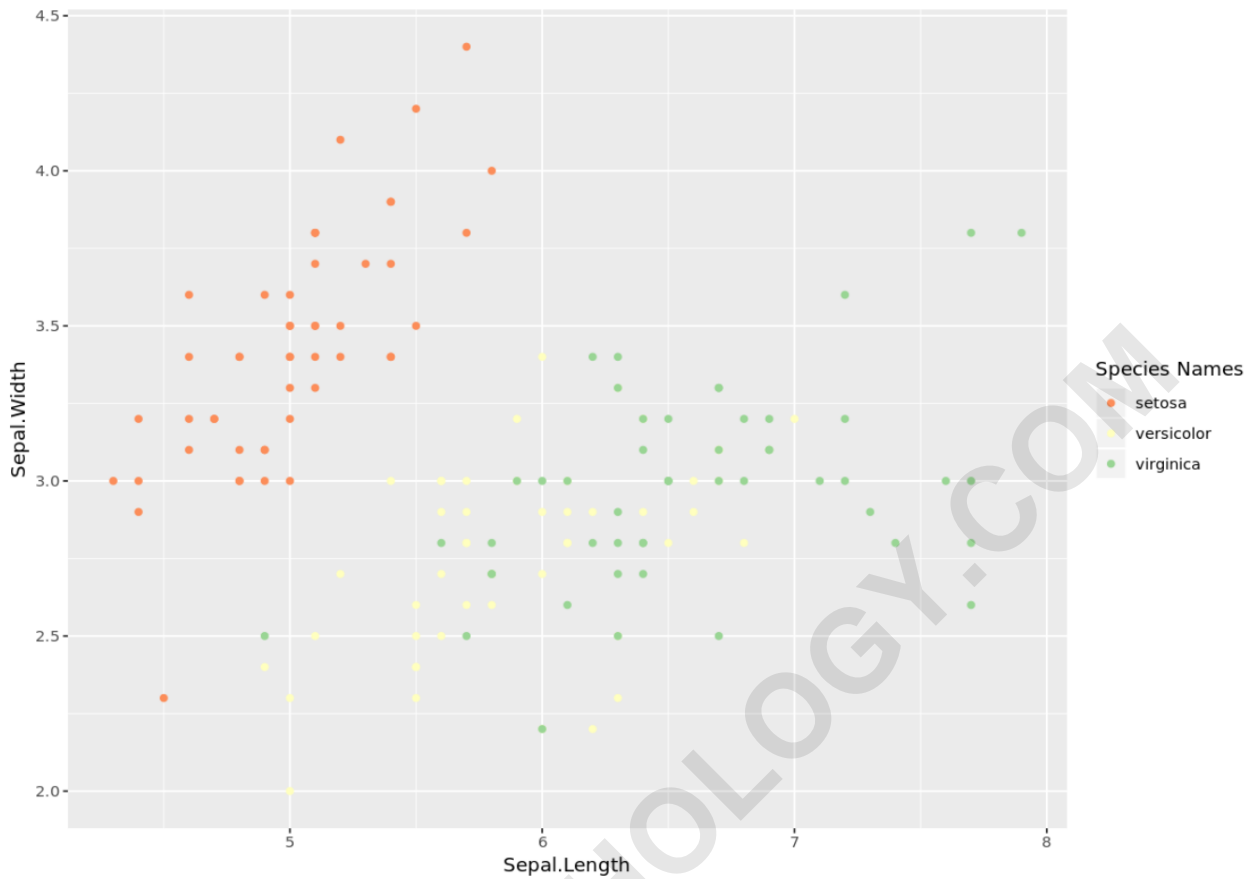
Example 3: Use a Custom Color Scale

The following code shows how to assign custom colors to the points in a ggplot2 plot by using a custom color scale from the RColorBrewer package:

```
library(ggplot2)
library(RColorBrewer)

#define custom color scale
myColors <- brewer.pal(3, "Spectral")
names(myColors) <- levels(iris$Species)
custom_colors <- scale_colour_manual(name =
"Species Names", values = myColors)

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



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