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🔊 ggplot2 legend : Easy steps to change the position and the appearance of a graph legend in R software

☰

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R Packages

📋 **factoextra**

📋 **survminer**

📋 **ggpubr**

📋 **ggcorrplot**

📋 **fastqcr**

The goal of this **R tutorial** is to describe how to change the **legend** of a graph generated using **ggplot2** package.

Data

ToothGrowth data is used in the examples below :

```
# Convert the variable dose from numeric to factor variable
ToothGrowth$dose <- as.factor(ToothGrowth$dose)
head(ToothGrowth)
```

```
##    len supp dose
## 1  4.2   VC  0.5
## 2 11.5   VC  0.5
## 3  7.3   VC  0.5
## 4  5.8   VC  0.5
## 5  6.4   VC  0.5
## 6 10.0   VC  0.5
```

⚠️ Make sure that the variable *dose* is converted as a factor variable using the above R script.
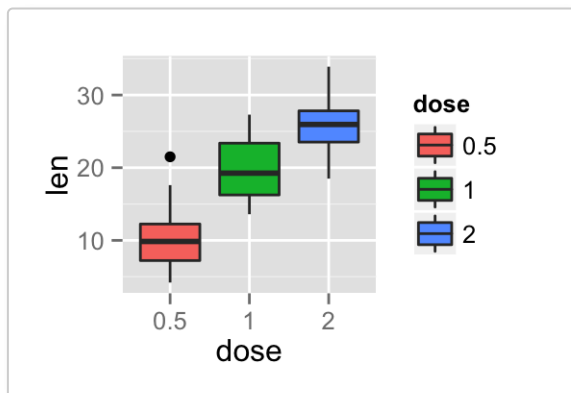
Example of plot

```
library(ggplot2)
p <- ggplot(ToothGrowth, aes(x=dose, y=len, fill=dose)) +
```
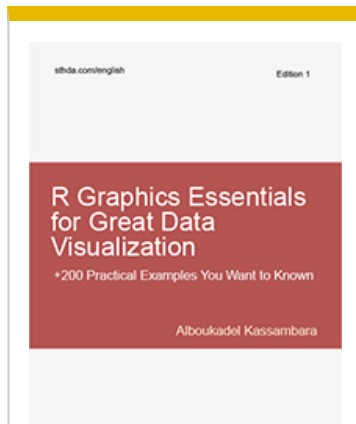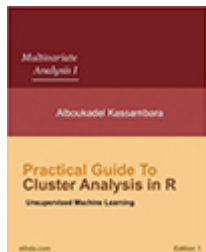
```
  geom_boxplot()
p
```


Change the legend position

The position of the legend can be changed using the function theme() as follow :

```
p + theme(legend.position="top")
p + theme(legend.position="bottom")
```
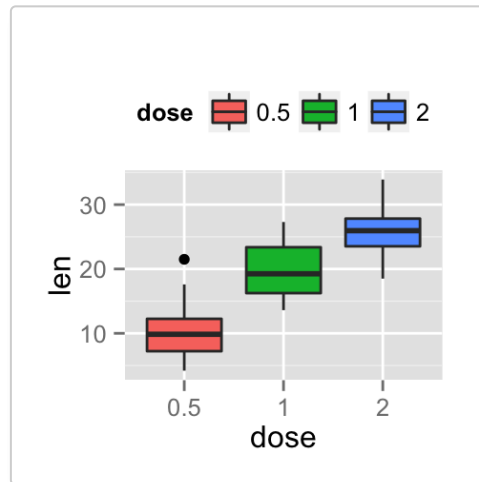
✔ The allowed values for the arguments **legend.position** are : "left","top", "right", "bottom".

Note that, the argument **legend.position** can be also a numeric vector c(x,y). In this case it is possible to position the legend inside the plotting area. x and y are the coordinates of the legend box. Their values should be between 0 and 1. c(0,0) corresponds to the "bottom left" and c(1,1) corresponds to the "top right" position.
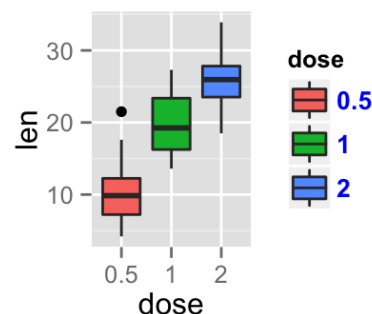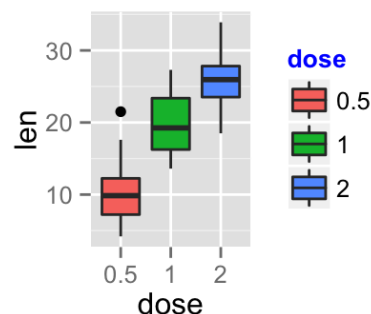
```
p + theme(legend.position = c(0.8, 0.2))
```
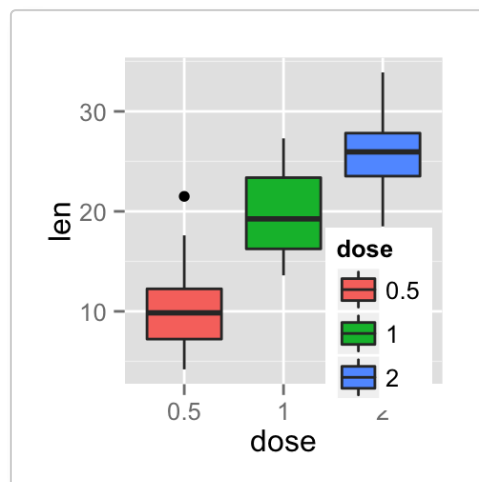
Change the legend title and text font styles

```r
# legend title
p + theme(legend.title = element_text(colour="blue", size=10,
                                      face="bold"))
# legend labels
p + theme(legend.text = element_text(colour="blue", size=10,
                                     face="bold"))
```
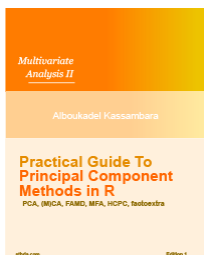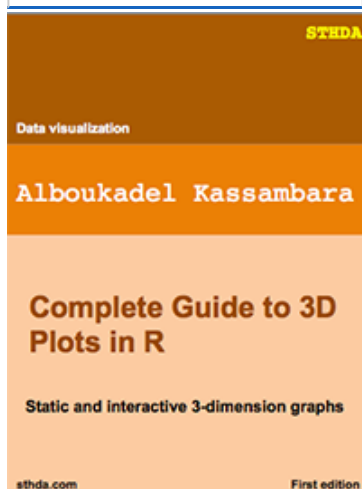

Change the background color of the legend box

```r
# legend box background color
p + theme(legend.background = element_rect(fill="lightblue",
                                           size=0.5, linetype="solid"))
p + theme(legend.background = element_rect(fill="lightblue",
                                           size=0.5, linetype="solid",
                                           colour ="darkblue"))
```
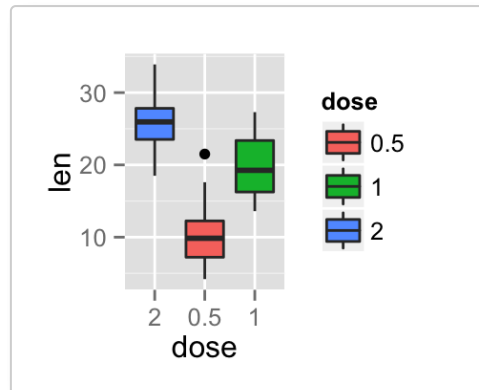
Change the order of legend items

To change the order of items to "2", "0.5", "1" :

```
p + scale_x_discrete(limits=c("2", "0.5", "1"))
```


Remove the plot legend

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```r
# Remove only the legend title
p + theme(legend.title = element_blank())
# Remove the plot legend
p + theme(legend.position='none')
```
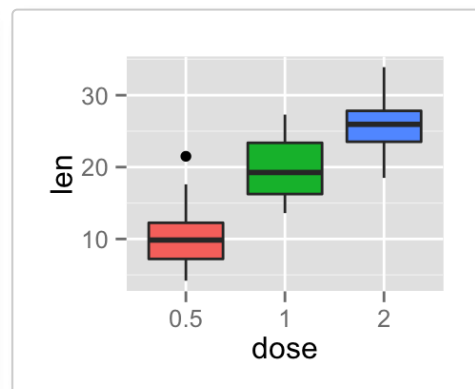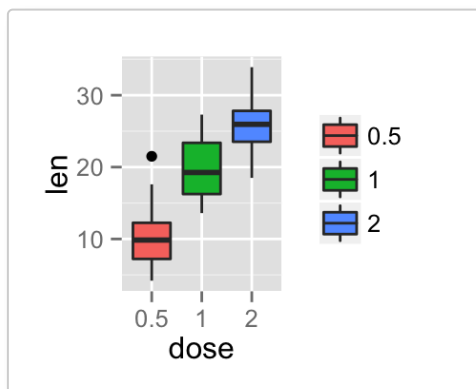

Remove slashes in the legend of a bar plot

```r
# Default plot
ggplot(data=ToothGrowth, aes(x=dose, fill=dose)) + geom_bar()
# Change bar plot border color,
# but slashes are added in the legend
ggplot(data=ToothGrowth, aes(x=dose, fill=dose)) +
  geom_bar(colour="black")
# Hide the slashes:
  #1. plot the bars with no border color,
  #2. plot the bars again with border color, but with a blank legend.
ggplot(data=ToothGrowth, aes(x=dose, fill=dose))+
  geom_bar() +
  geom_bar(colour="black", show_guide=FALSE)
```
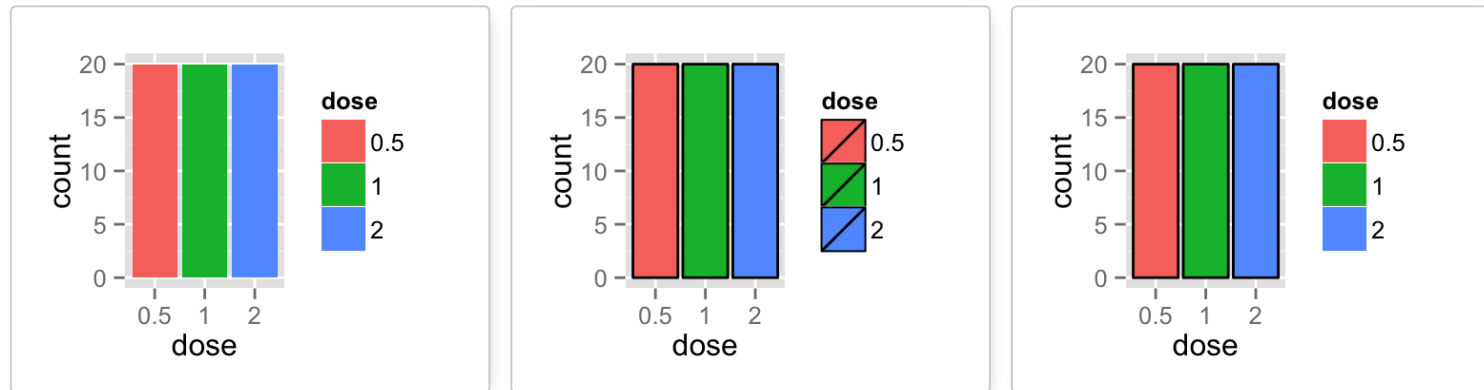
guides() : set or remove the legend for a specific aesthetic

It's possible to use the function **guides()** to set or remove the legend of a particular aesthetic(fill, color, size, shape, etc).

mtcars data sets are used :

```
# Prepare the data : convert cyl and gear to factor variables
mtcars$cyl<-as.factor(mtcars$cyl)
mtcars$gear <- as.factor(mtcars$gear)
head(mtcars)
```

```
##                     mpg cyl disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4          21.0   6  160 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag      21.0   6  160 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710         22.8   4  108  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive     21.4   6  258 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout  18.7   8  360 175 3.15 3.440 17.02  0  0    3    2
## Valiant            18.1   6  225 105 2.76 3.460 20.22  1  0    3    1
```
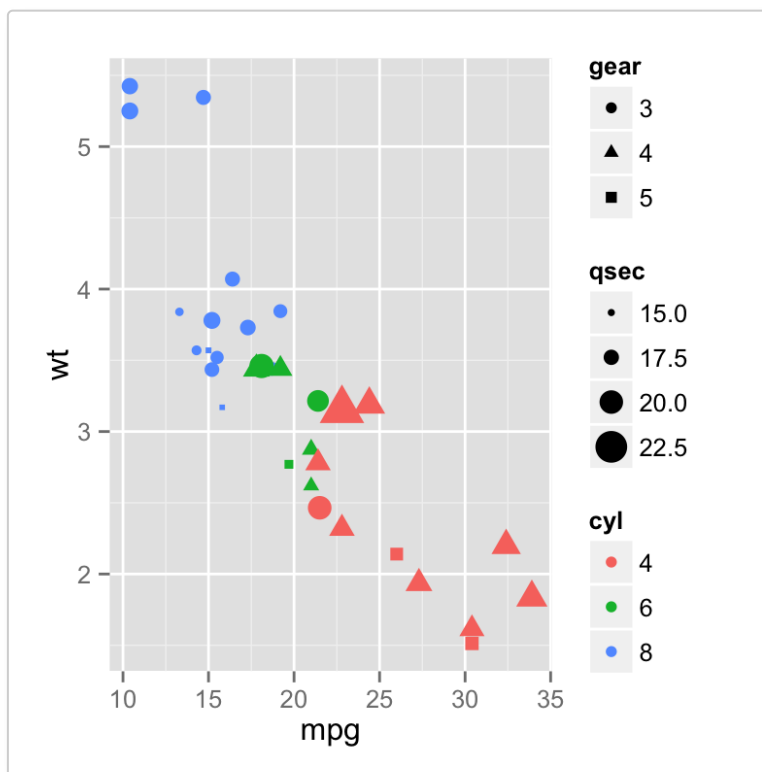
Default plot without guide specification

The R code below creates a scatter plot. The color and the shape of the points are determined by the factor variables c
gear, respectively. The size of the points are controlled by the variable qsec.
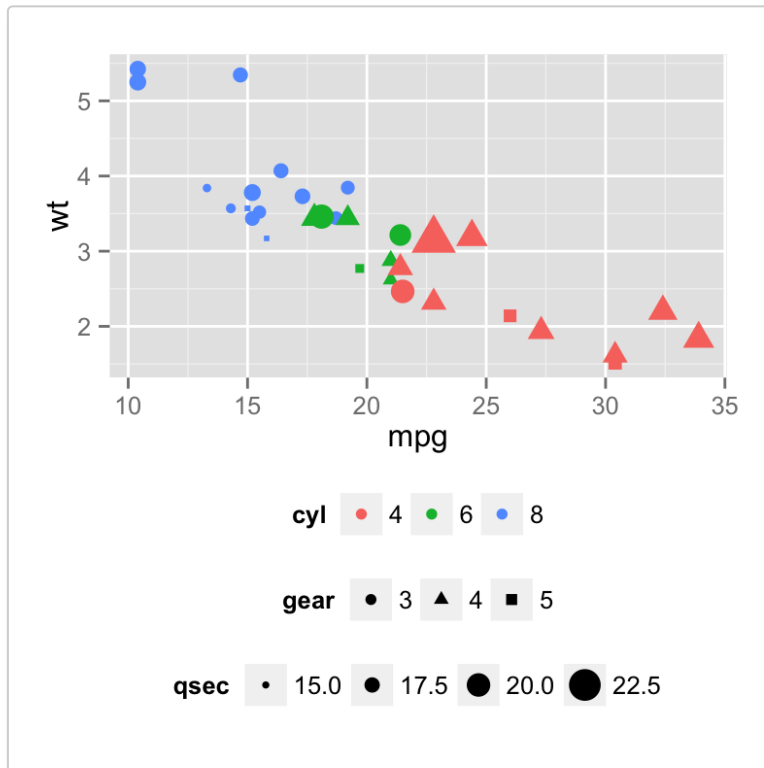
```
p <- ggplot(data = mtcars,
    aes(x=mpg, y=wt, color=cyl, size=qsec, shape=gear))+
    geom_point()
# Print the plot without guide specification
p
```


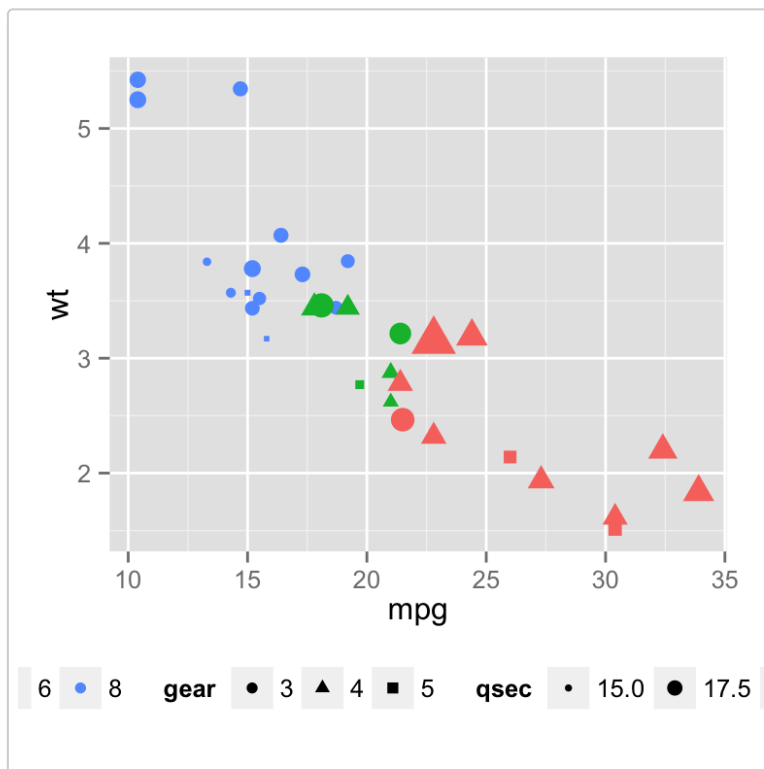## Change the legend position for multiple guides

```
# Change the legend position
p +theme(legend.position="bottom")
```

```r
# Horizontal legend box
p +theme(legend.position="bottom", legend.box = "horizontal")
```
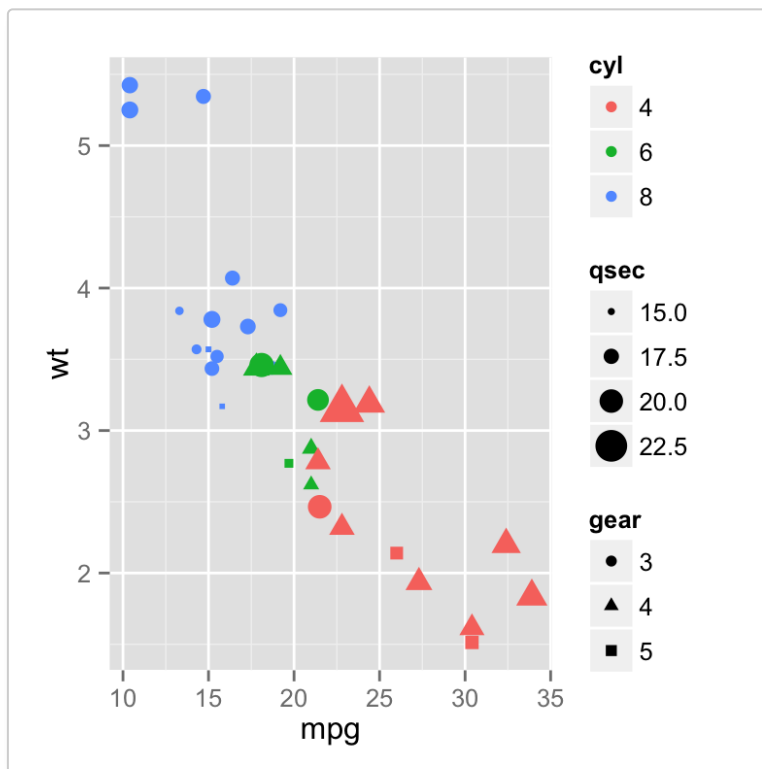
Change the order for multiple guides

The function **guide_legend()** is used :

```
p+guides(color = guide_legend(order=1),
         size = guide_legend(order=2),
         shape = guide_legend(order=3))
```
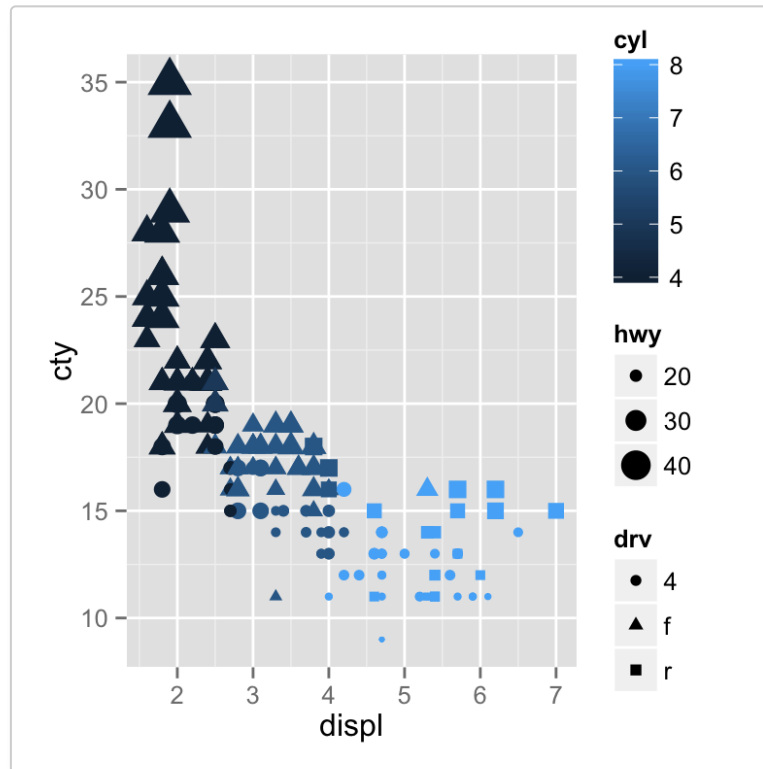
If a *continuous color* is used, the order of the *color guide* can be changed using the function *guide_colourbar()* :

```
qplot(data = mpg, x = displ, y = cty, size = hwy,
      colour = cyl, shape = drv) +
  guides(colour = guide_colourbar(order = 1),
         alpha = guide_legend(order = 2),
         size = guide_legend(order = 3))
```
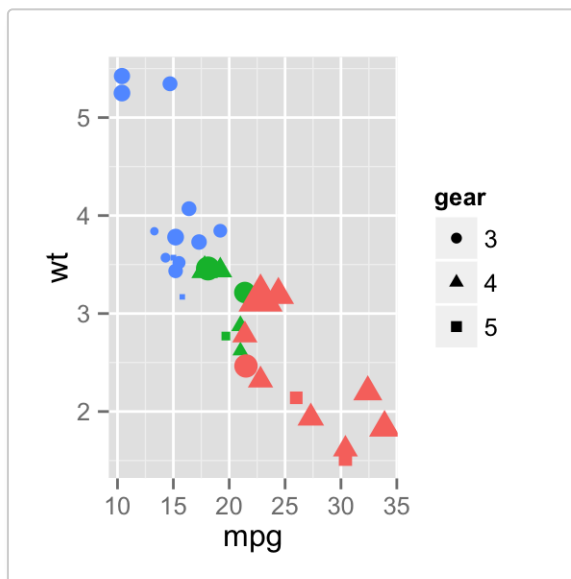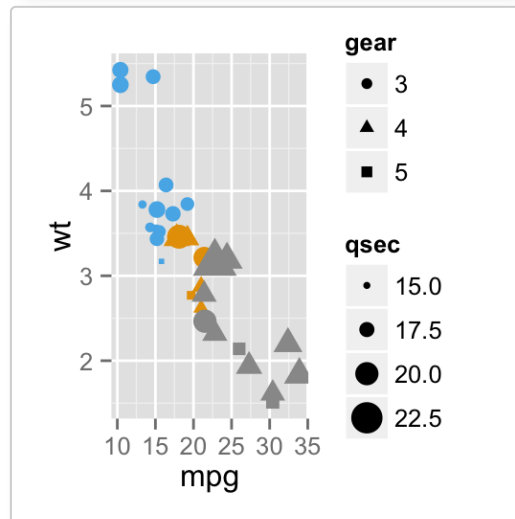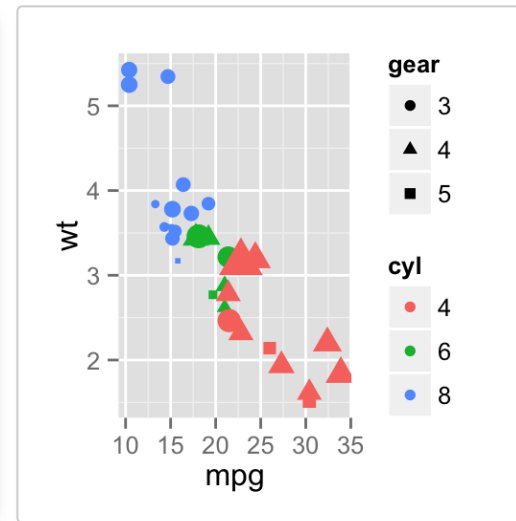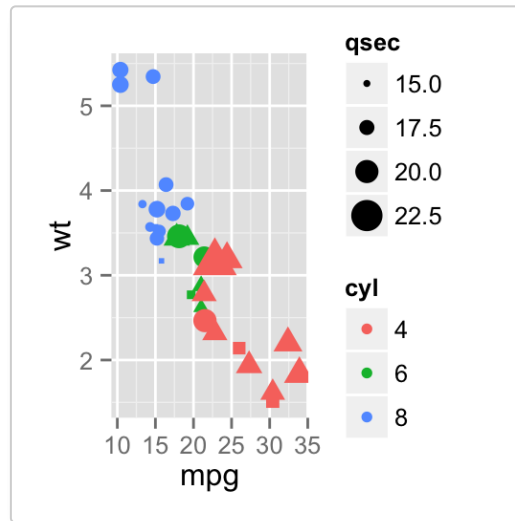
Remove a legend for a particular aesthetic

The R code below removes the legend for the aesthetics color and size :

```
p+guides(color = FALSE, size = FALSE)
```

Removing a particular legend can be done also when using the functions *scale_xx*. In this case the argument *guide* is used as follow :

```
# Remove legend for the point shape
p+scale_shape(guide=FALSE)
# Remove legend for size
p +scale_size(guide=FALSE)
# Remove legend for color
p + scale_color_manual(values=c('#999999','#E69F00','#56B4E9'),
                       guide=FALSE)
```

Infos

⚠ This analysis has been performed using **R software** (ver. 3.1.0) and **ggplot2** (ver. 1.0.0)

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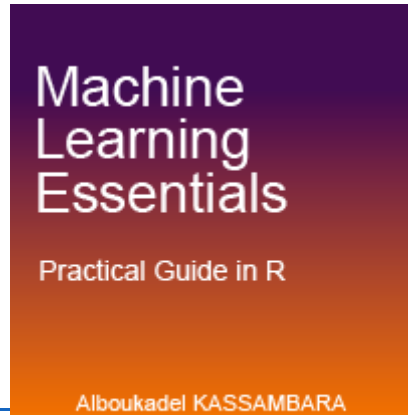
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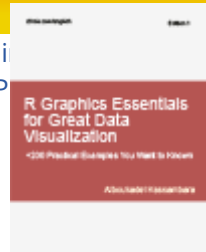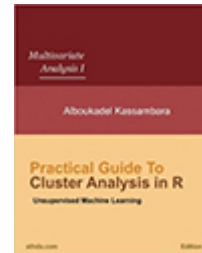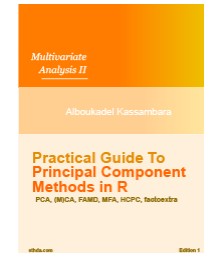Share 17   Like 17   Tweet   Share   Save   Share   **58**

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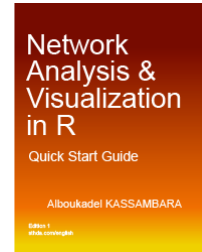
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