ggplot2 facet : split a plot into a matrix of panels

The **facet** approach partitions a plot into a matrix of panels. Each panel shows a different subset of the data. This **R tutorial** describes how to split a graph using **ggplot2** package.

There are two main functions for faceting :

- facet_grid()
- facet_wrap()

Data

ToothGrowth data is used in the following examples.

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

```
##    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 using the above R script.

Basic box plot

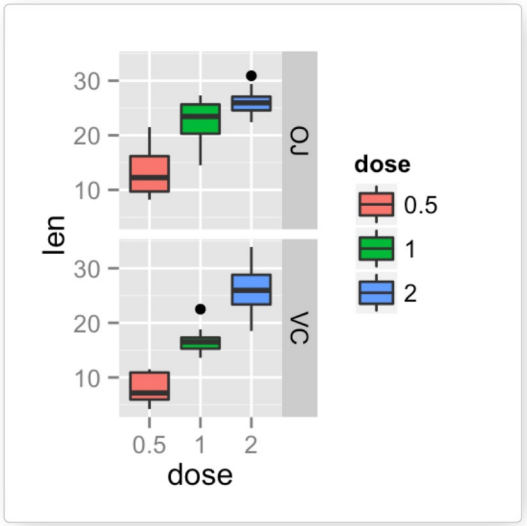
Create a basic box plot filled by groups :

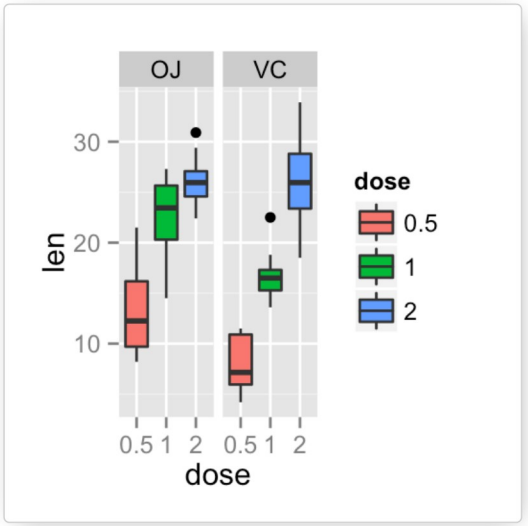
```
library(ggplot2)
bp <- ggplot(df, aes(x=dose, y=len, group=dose)) +
  geom_boxplot(aes(fill=dose))
bp
```

Facet with one variable

The graph is partitioned in multiple panels by levels of the group “supp”:

```
# Split in vertical direction
bp + facet_grid(supp ~ .)
# Split in horizontal direction
bp + facet_grid(. ~ supp)
```

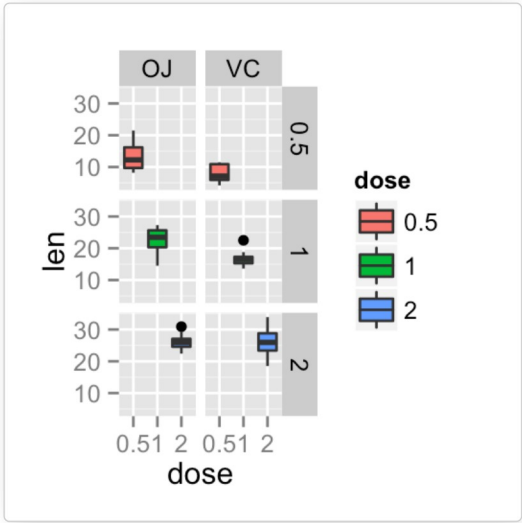


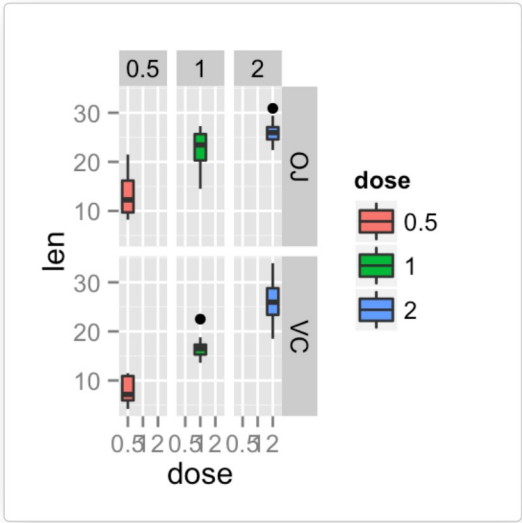


Facet with two variables

The graph is partitioned by the levels of the groups “dose” and “supp” :

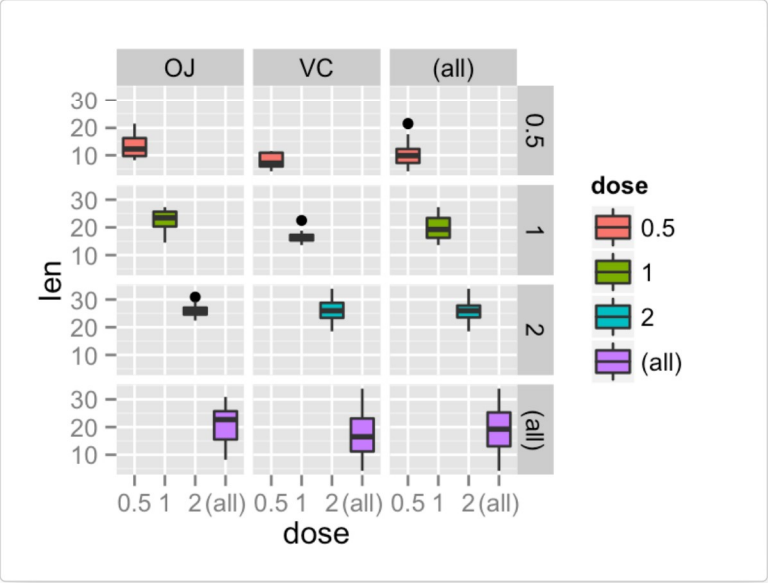
```
# Facet by two variables: dose and supp.
# Rows are dose and columns are supp
bp + facet_grid(dose ~ supp)
# Facet by two variables: reverse the order of the 2 variables
# Rows are supp and columns are dose
bp + facet_grid(supp ~ dose)
```





Note that, you can use the argument *margins* to add additional facets which contain all the data for each of the possible values of the faceting variables

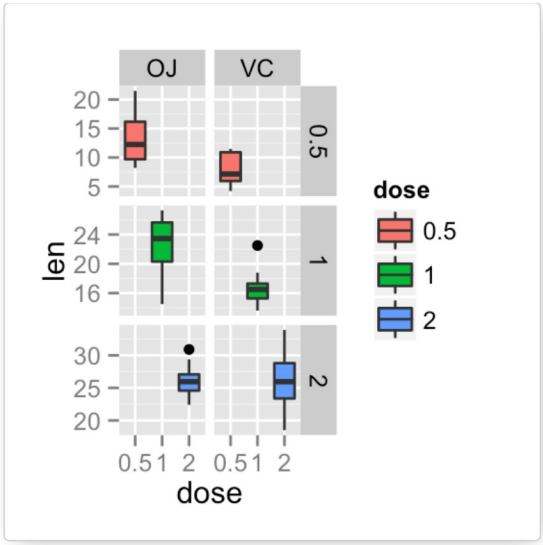
```
bp + facet_grid(dose ~ supp, margins=TRUE)
```



Facet scales

By default, all the panels have the same scales (`scales="fixed"`). They can be made independent, by setting scales to `free`, `free_x`, or `free_y`.

```
bp + facet_grid(dose ~ supp, scales='free')
```

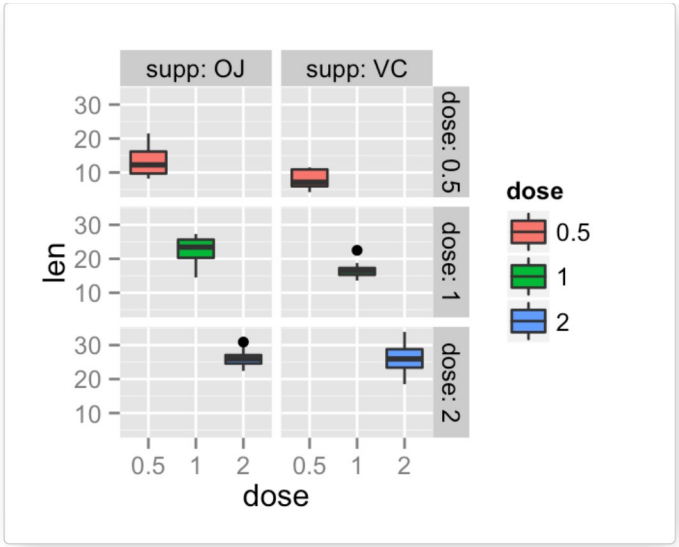


As you can see in the above plot, y axis have different scales in the different panels.

Facet labels

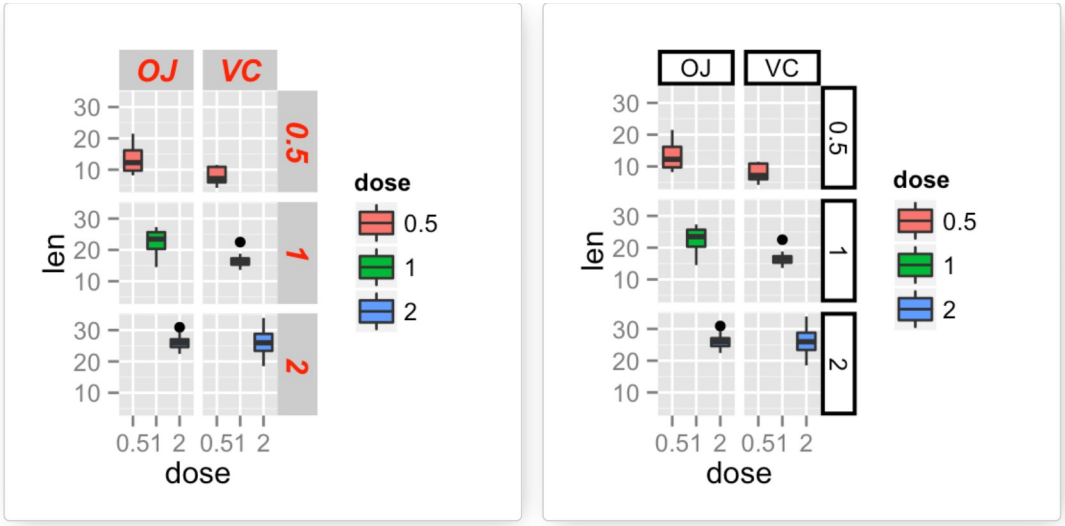
The argument *labeller* can be used to control the labels of the panels :

```
bp + facet_grid(dose ~ supp, labeller=label_both)
```



The appearance of facet labels can be modified as follow :

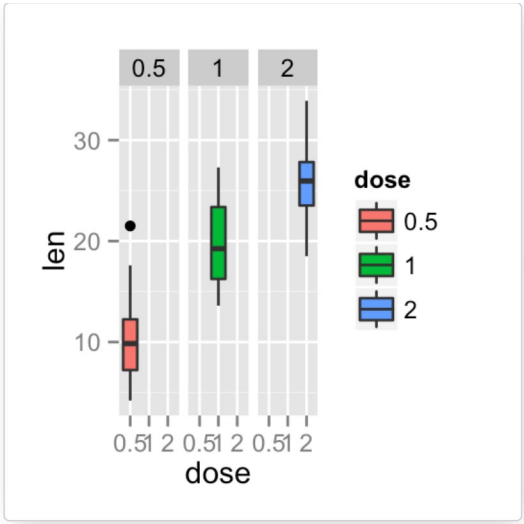
```
# Change facet text font. Possible values for the font style:
  #'plain', 'italic', 'bold', 'bold.italic'.
bp + facet_grid(dose ~ supp)+
    theme(strip.text.x = element_text(size=12, color="red",
                                      face="bold.italic"),
          strip.text.y = element_text(size=12, color="red",
                                      face="bold.italic"))
# Change the apperance of the rectangle around facet label
bp + facet_grid(dose ~ supp)+
 theme(strip.background = element_rect(colour="black", fill="white",
                                       size=1.5, linetype="solid"))
```

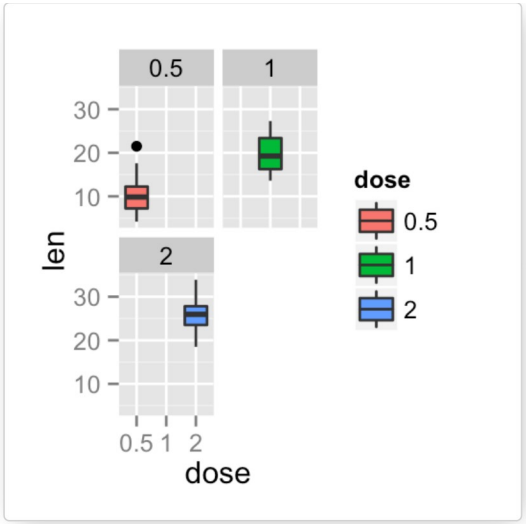


facet_wrap

Facets can be placed side by side using the function **facet_wrap()** as follow :

```
bp + facet_wrap(~ dose)
bp + facet_wrap(~ dose, ncol=2)
```





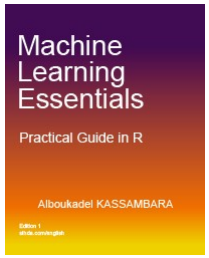
Infos

This analysis has been performed using **R software** (ver. 3.1.2) and **ggplot2** (ver. 1.0.0)

Enjoyed this article? I'd be very grateful if you'd help it spread by emailing it to a friend, or sharing it on Twitter, Facebook or Linked In.

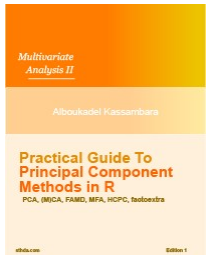
Show me some love with the like buttons below... Thank you and please don't forget to share and comment below!!

Recommended for You!

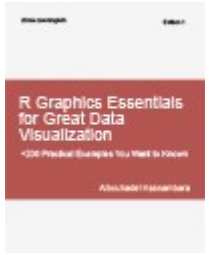


Machine Learning Essentials: Practical Guide in R

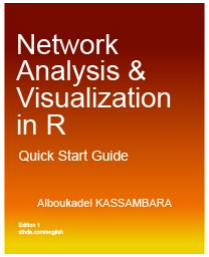
Practical Guide to Cluster Analysis in R



Practical Guide to Principal Component Methods in R



R Graphics Essentials for Great Data Visualization



Network Analysis and Visualization in R

More books on R and data science

Recommended for you

This section contains best data science and self-development resources to help you on your path.

Coursera - Online Courses and Specialization

Data science

- Course: Machine Learning: Master the Fundamentals by Standford
- Specialization: Data Science by Johns Hopkins University
- Specialization: Python for Everybody by University of Michigan
- Courses: Build Skills for a Top Job in any Industry by Coursera
- Specialization: Master Machine Learning Fundamentals by University of Washington
- Specialization: Statistics with R by Duke University
- Specialization: Software Development in R by Johns Hopkins University
- Specialization: Genomic Data Science by Johns Hopkins University

Popular Courses Launched in 2020

- Google IT Automation with Python by Google
- AI for Medicine by deeplearning.ai
- Epidemiology in Public Health Practice by Johns Hopkins University
- AWS Fundamentals by Amazon Web Services

Trending Courses

- The Science of Well-Being by Yale University
- Google IT Support Professional by Google
- Python for Everybody by University of Michigan
- IBM Data Science Professional Certificate by IBM
- Business Foundations by University of Pennsylvania
- Introduction to Psychology by Yale University
- Excel Skills for Business by Macquarie University
- Psychological First Aid by Johns Hopkins University
- Graphic Design by Cal Arts

Books - Data Science

Newsletter Email

Our Books

- Practical Guide to Cluster Analysis in R by A. Kassambara (Datanovia)
- Practical Guide To Principal Component Methods in R by A. Kassambara (Datanovia)

- Machine Learning Essentials: Practical Guide in R by A. Kassambara (Datanovia)
- R Graphics Essentials for Great Data Visualization by A. Kassambara (Datanovia)
- GGPlot2 Essentials for Great Data Visualization in R by A. Kassambara (Datanovia)
- Network Analysis and Visualization in R by A. Kassambara (Datanovia)
- Practical Statistics in R for Comparing Groups: Numerical Variables by A. Kassambara (Datanovia)
- Inter-Rater Reliability Essentials: Practical Guide in R by A. Kassambara (Datanovia)

Others

- R for Data Science: Import, Tidy, Transform, Visualize, and Model Data by Hadley Wickham & Garrett Grolemund
- Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems by Aurelien Géron
- Practical Statistics for Data Scientists: 50 Essential Concepts by Peter Bruce & Andrew Bruce
- Hands-On Programming with R: Write Your Own Functions And Simulations by Garrett Grolemund & Hadley Wickham
- An Introduction to Statistical Learning: with Applications in R by Gareth James et al.
- Deep Learning with R by François Chollet & J.J. Allaire
- Deep Learning with Python by François Chollet