GGplot introduction

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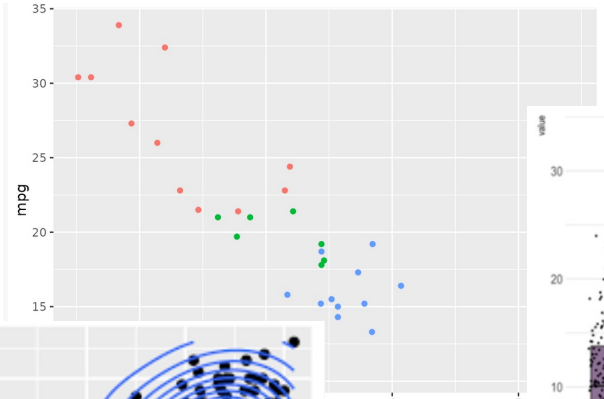
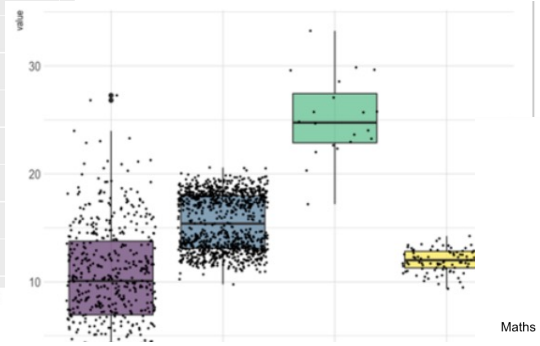
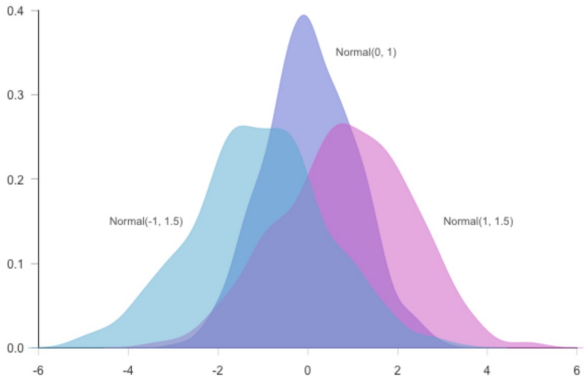
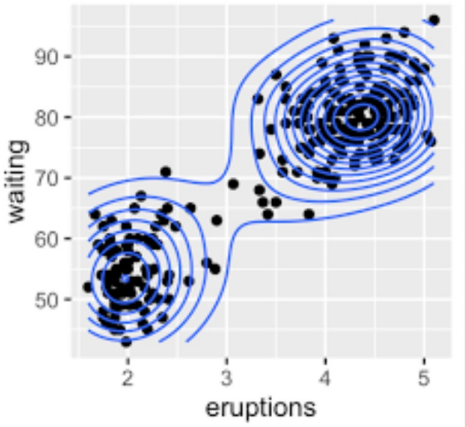
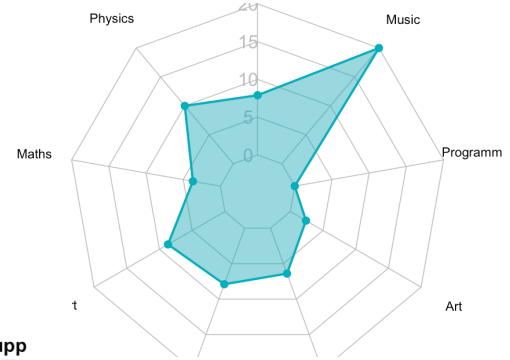
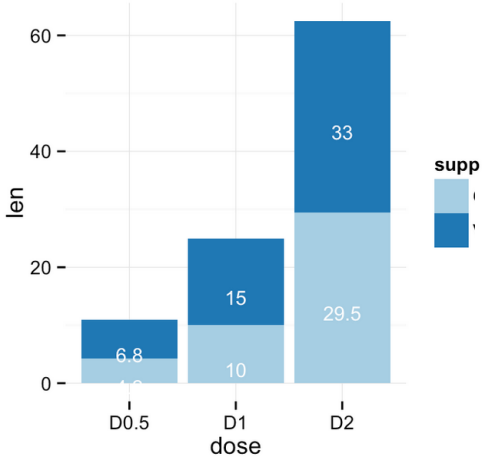

mpg



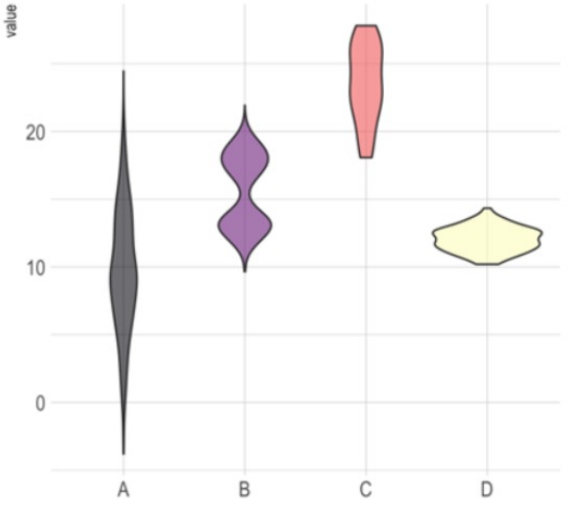

Normal(0, 1)
Normal(-1, 1.5)
Normal(1, 1.5)


waiting
eruptions


Physics
Music
Programm
Art
Maths


len
dose
D0.5
D1
D2
6.8
15
33
29.5
10

price
carat


value
A
B
C
D

Ggplot() : DEFINITION

ggplot2 provides beautiful, hassle-free plots that take care of fiddly details like drawing legends

ggplot2 is designed to work **iteratively**.

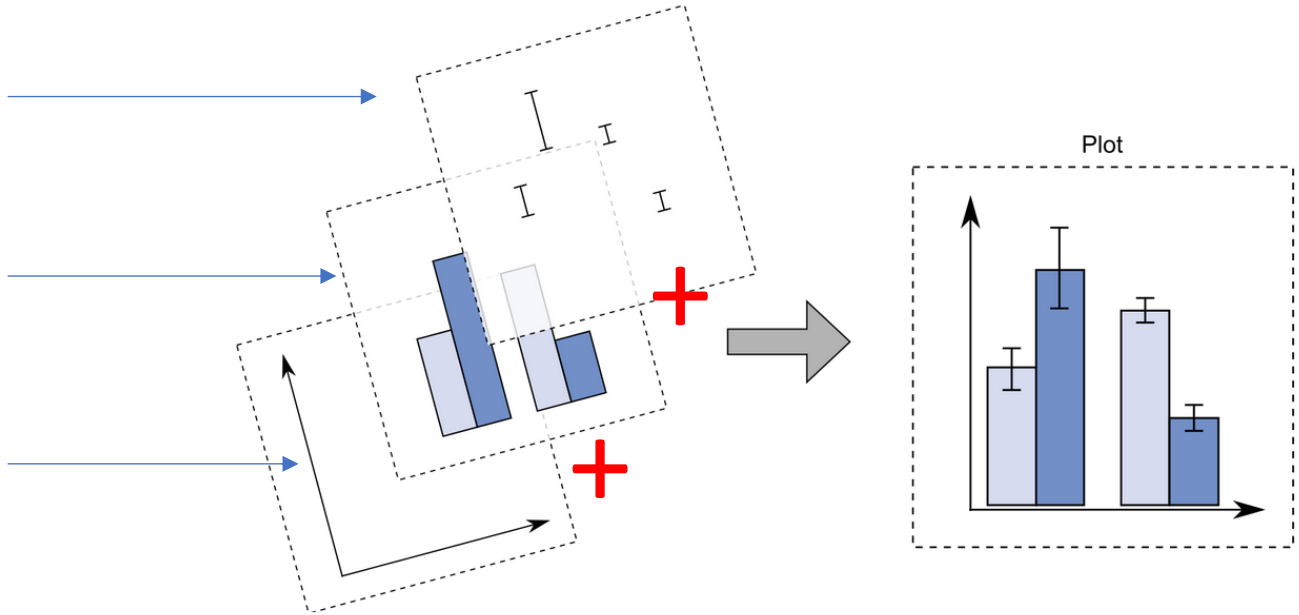
1) You start with a layer that shows the raw data => content
2) Then you add layers of annotations and statistical summaries. => form

Ggplot() : DEFINITION

Options

Type of graph

Variable displayed



Additional layers added using symbol +

Ggplot() : Concept

The content : main layer

Calque supplémentaire

```
ggplot(data.name, aes(variables)) + geom_xxx(...,aes()) + ...
```

Data.frame

The variables displayed + asthetic

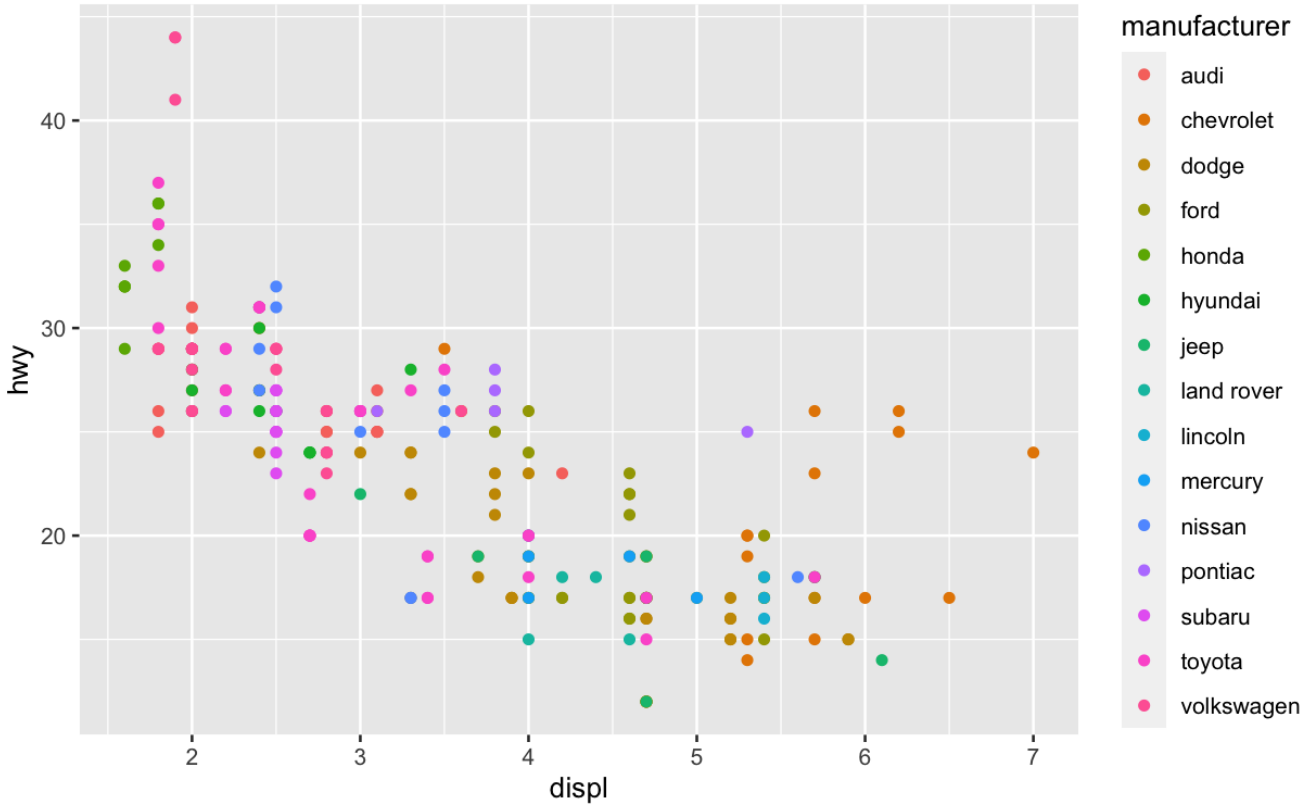
The type of graph for data set =goemetry (boxplot, points etc)

In the code the best way is : go to the nest line after +

```
ggplot(data.name, aes(...)) +
geom_<xxx>(...)+
... +
```

Ggplot() : Concept

```
library(ggplot2)
data(mpg)
ggplot(data = mpg,mapping = aes(x = displ, y = hwy)) +
  geom_point(aes(color=manufacturer))
```



Ggplot() : Concept

- **data** : in ggplot2, data must be stored as an R data frame

- **geoms** : describe type of geometric objects that represent data for example, points, lines, polygons, ...

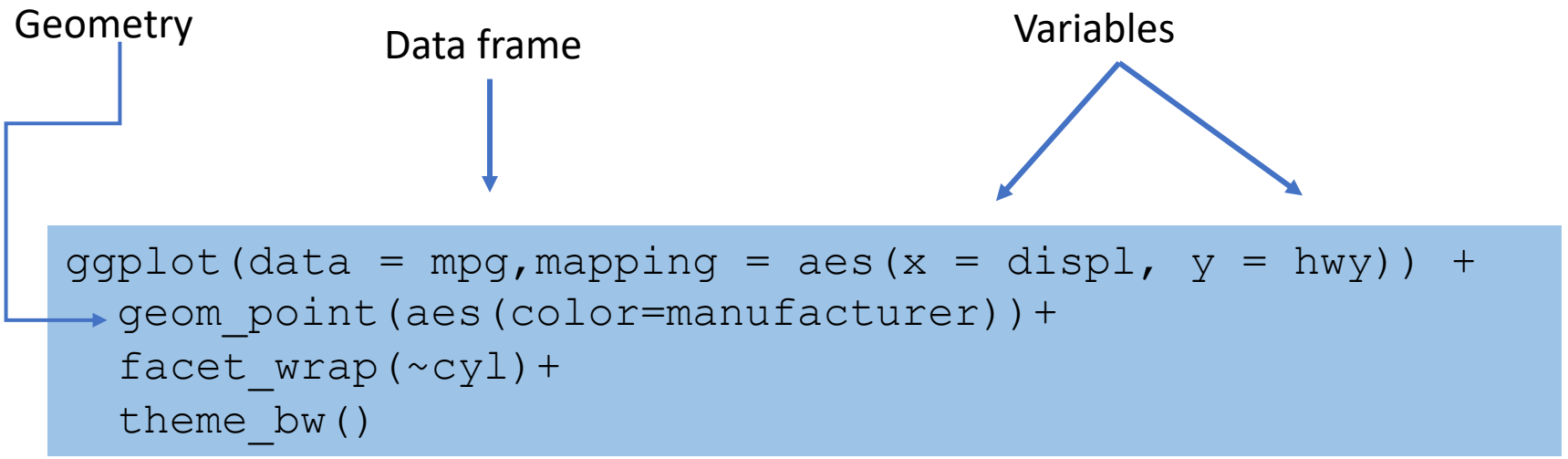
- **aesthetics** : describe visual characteristics that represent data for example, position, size, color, shape, transparency, fill

- **geometry** : corresponds to the type of graph (histogram, box plot, line plot, …..)

- **Scales** : for each aesthetic, describe how visual characteristic is converted to display values for example, log scales, color scales, size scales, shape scales, ...

- **Facets** : describe how data is split into subsets and displayed as multiple small graphs

Ggplot() : Example




```
ggplot(data = mpg,mapping = aes(x = displ, y = hwy)) +
  geom_point(aes(color=manufacturer))+
  facet_wrap(~cyl)+
  theme_bw()
```

Geometry = depend of the data set ; asthtetic can be adapted

Ggplot() : Example