ggplot Part I

Workshop on Plotting in R

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NBIS, SciLifeLab

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Grammar of Graphics

- **Data:** Input data
- **Geom:** A geometry representing data. Points, Lines etc
- **Aesthetics:** Visual characteristics of the geometry. Size, Color, Shape etc
- **Scale:** How visual characteristics are converted to display values
- **Statistics:** Statistical transformations. Counts, Means etc
- **Coordinates:** Numeric system to determine position of geometry. Cartesian, Polar etc
- **Facets:** Split data into subsets

Building a graph

ggplot (data = <DATA>) +
<GEOM_FUNCTION>(mapping = aes(<MAPPINGS>),
stat = <STAT> , position = <POSITION>) +
<COORDINATE_FUNCTION> +
<FACET_FUNCTION> +
<SCALE_FUNCTION> +
<THEME_FUNCTION>

required

Not required, sensible defaults supplied

Build-Demo

```
ggplot(iris)
```

Build-Demo

```
ggplot(iris,aes(x=Sepal.Length,
                y=Sepal.Width))
```
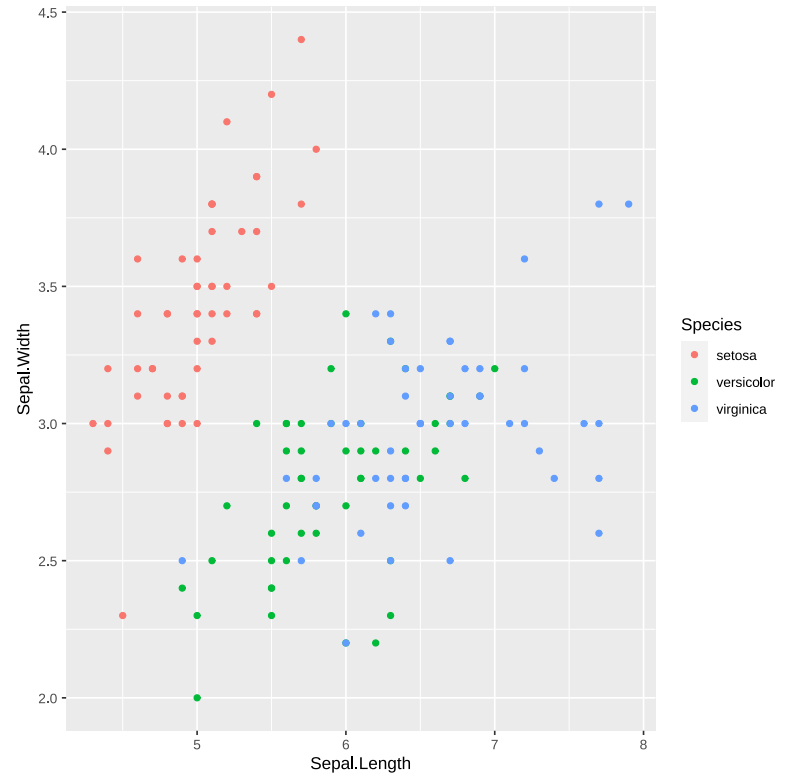
Build-Demo

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

Build-Demo

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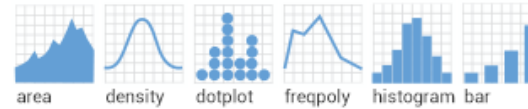
Geoms

Basic

blank · curve · path · polygon · rect · ribbon · *line

One variable

area · density · dotplot · freqpoly · histogram · bar

Two variables

jitter · label · point · quantile · smooth · text · rug · hex · density2d · bin2d · violin · boxplot · dotplot

Error

crossbar · errorbar · linerange · pointrange

Three variables
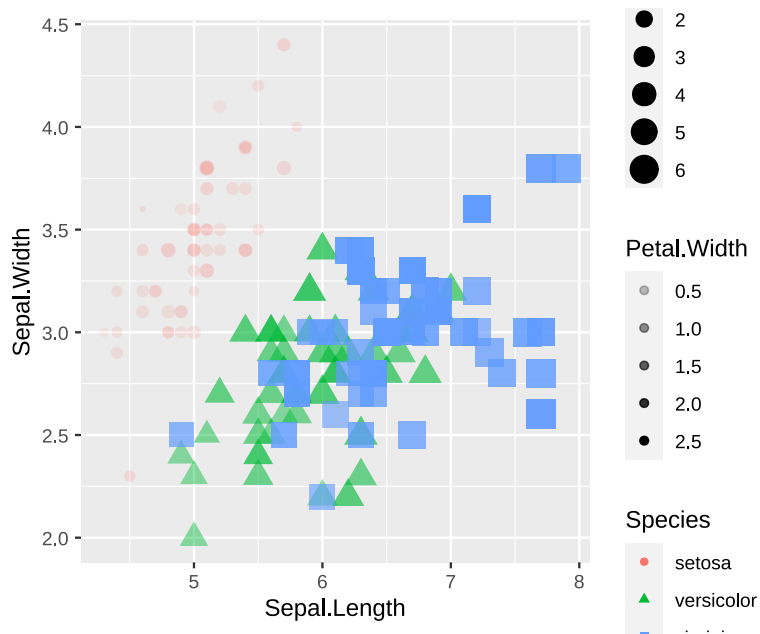
contour · raster · tile

Map

map

```
p <- ggplot(iris)
# scatterplot
p+geom_point(aes(x=Sepal.Length,y=Sepal.Width))
# barplot
p+geom_bar(aes(x=Sepal.Length))
# boxplot
p+geom_boxplot(aes(x=Species,y=Sepal.Width))
# search
help.search("^geom_",package="ggplot2")
```

Aesthetics

- Aesthetic mapping vs aesthetic parameter

Thank you. Questions?

R version 4.1.1 (2021-08-10)

Platform: x86_64-pc-linux-gnu (64-bit)

OS: Ubuntu 18.04.5 LTS