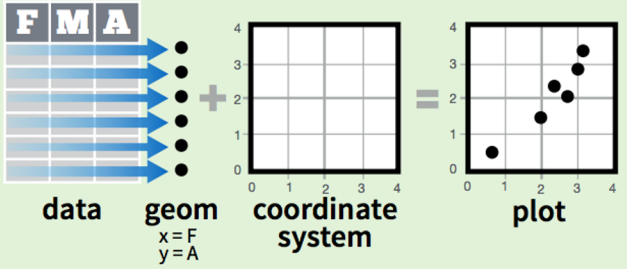
Module 12: Visualizing with ggplot

Module 12: Learning Outcomes

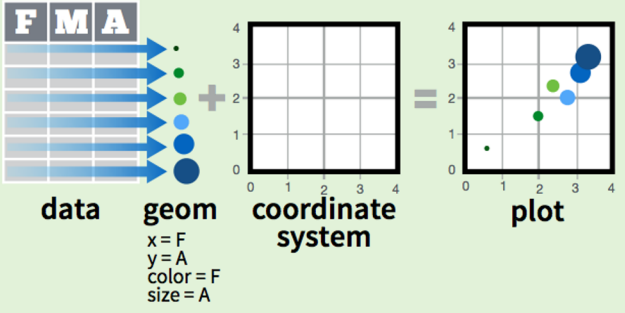
- Understand the basic theory behind the grammar of visualization used by ggplot (plot, aesthetics, geometric objects)
- Be able to use basic ggplot geometric objects (point, line, boxplot, histogram, smooth)
- Be able to adjust aesthetic attributes of geometric objects in ggplot (color, shape, line type) and create multi-panel figures with ‘facet’

Basics

ggplot2 is based on the **grammar of graphics**, the idea that you can build every graph from the same few components: a **data** set, a set of **geoms**—visual marks that represent data points, and a **coordinate system.**



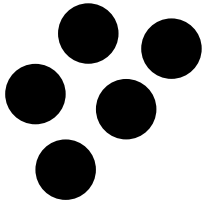
To display data values, map variables in the data set to aesthetic properties of the geom like **size**, **color**, and **x** and **y** locations.



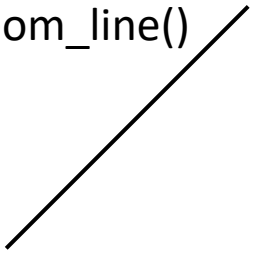
ggplot()

ggplot()

geom_point()

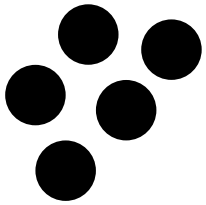


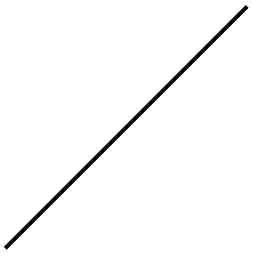
geom_line()



geom_histogram()

ggplot(data = DAT)

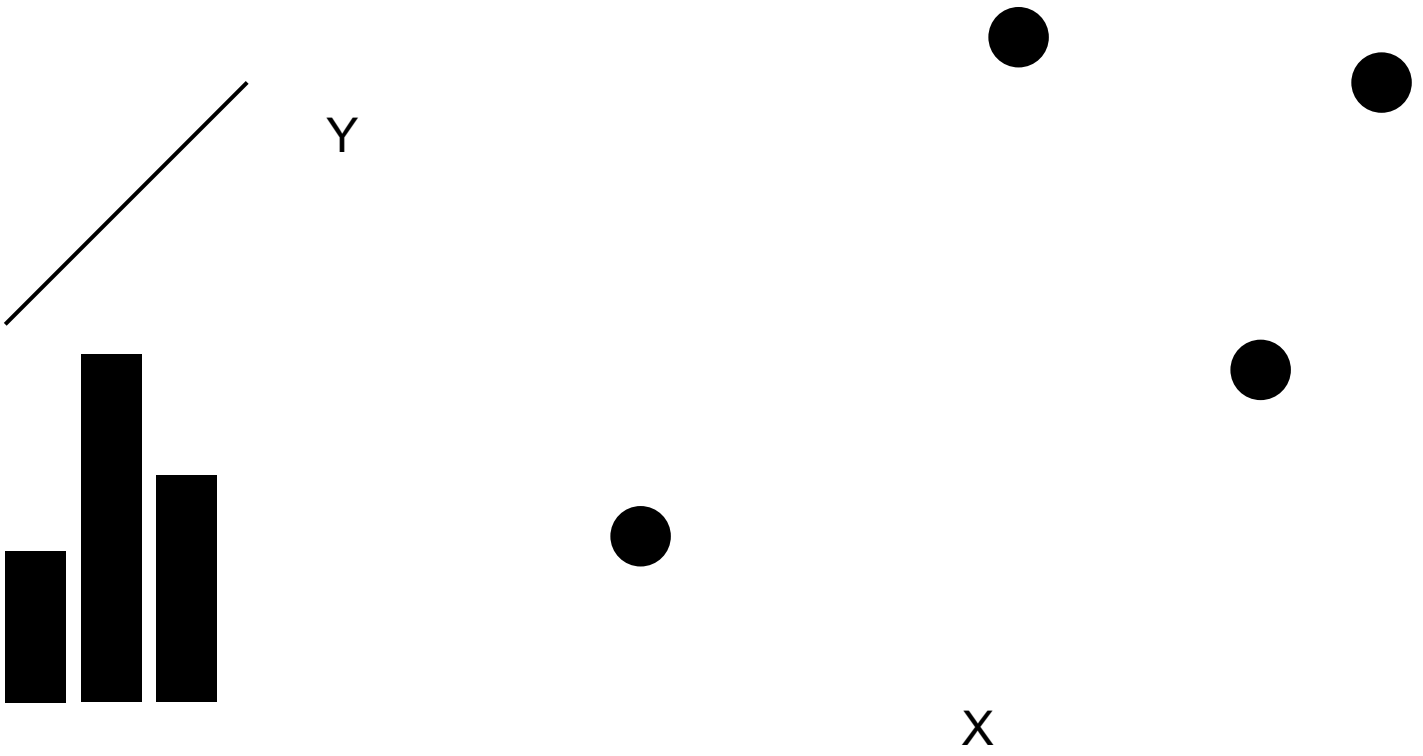




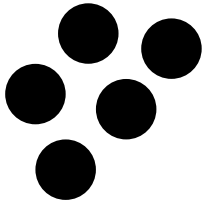
Y

X

```
ggplot(data = DAT) +
geom_point(mapping = aes(x=X, y=Y))
```



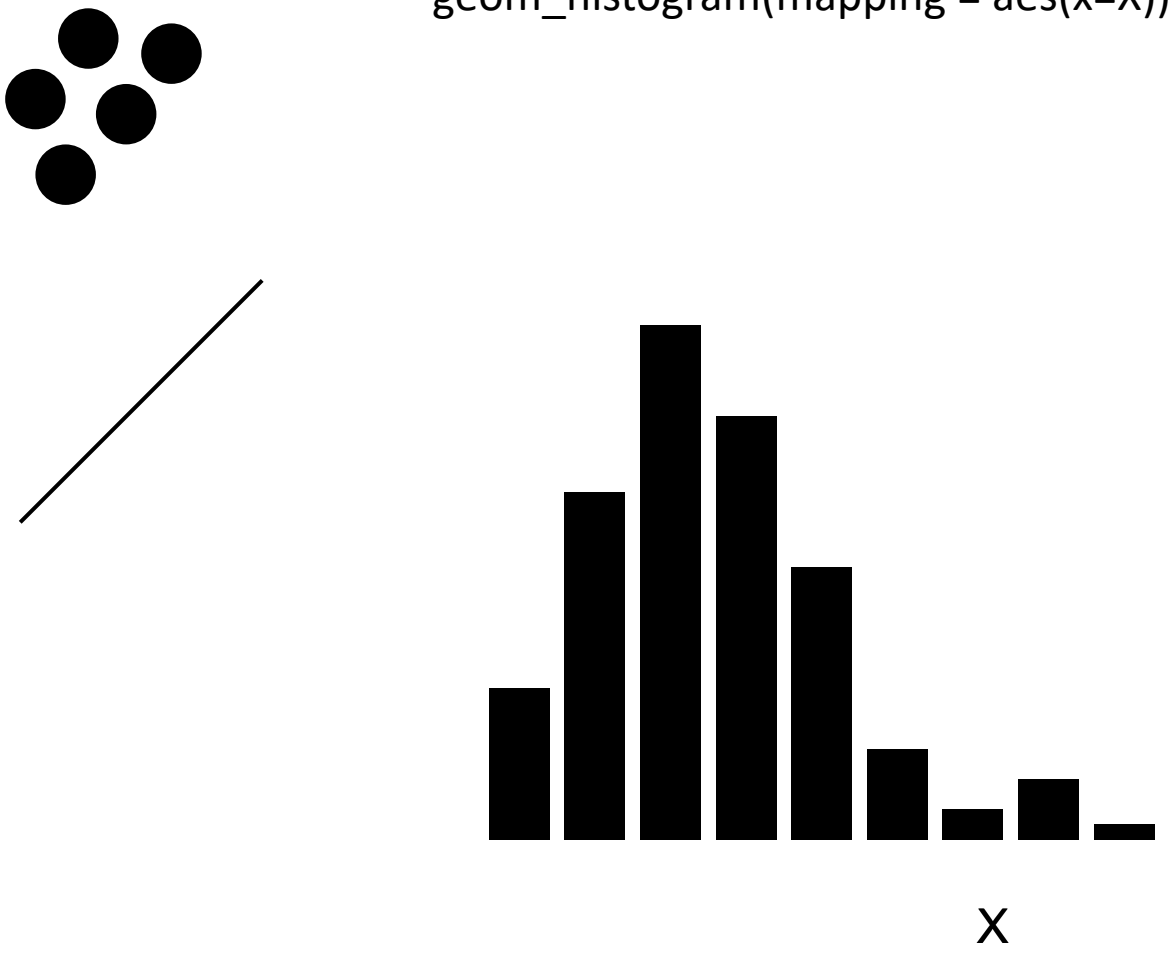
```
ggplot(data = DAT) +
geom_line(mapping = aes(x=X, y=Y))
```



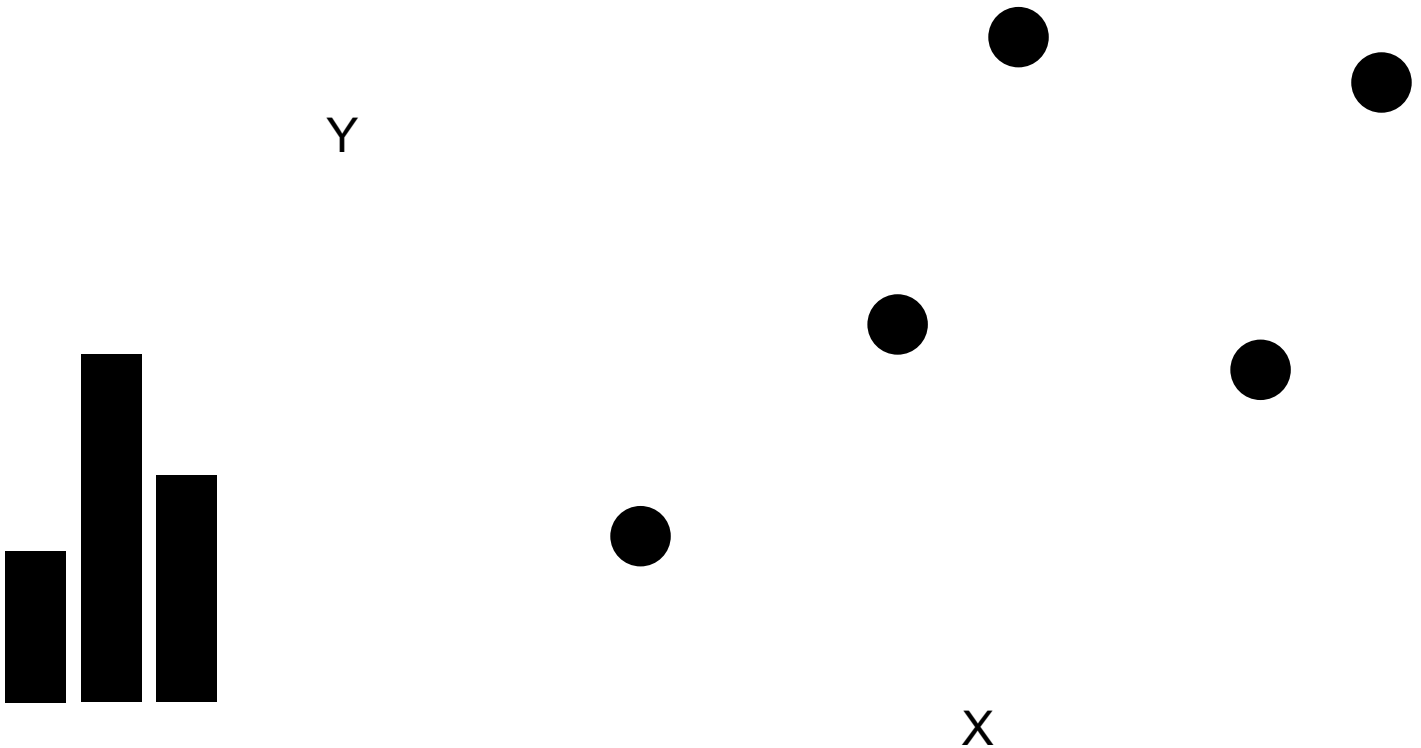
Y

X

```
ggplot(data = DAT) +
geom_histogram(mapping = aes(x=X))
```



```
ggplot(data = DAT
    , mapping = aes(x=X, y=Y)) +
geom_point() +
geom_line()
```



```
ggplot(data = DAT
    , mapping = aes(x=X, y=Y)) +
geom_point(col="red") +
geom_line()
```