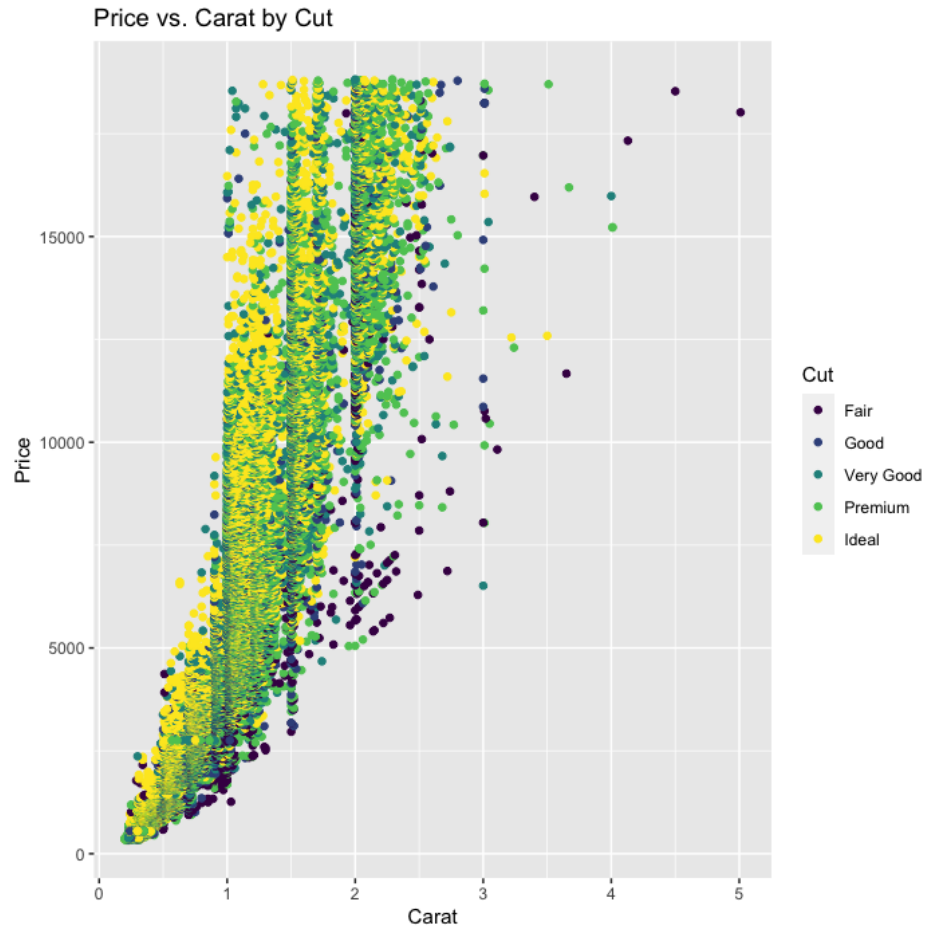
Visualizing data with ggplot2

Maria Tackett

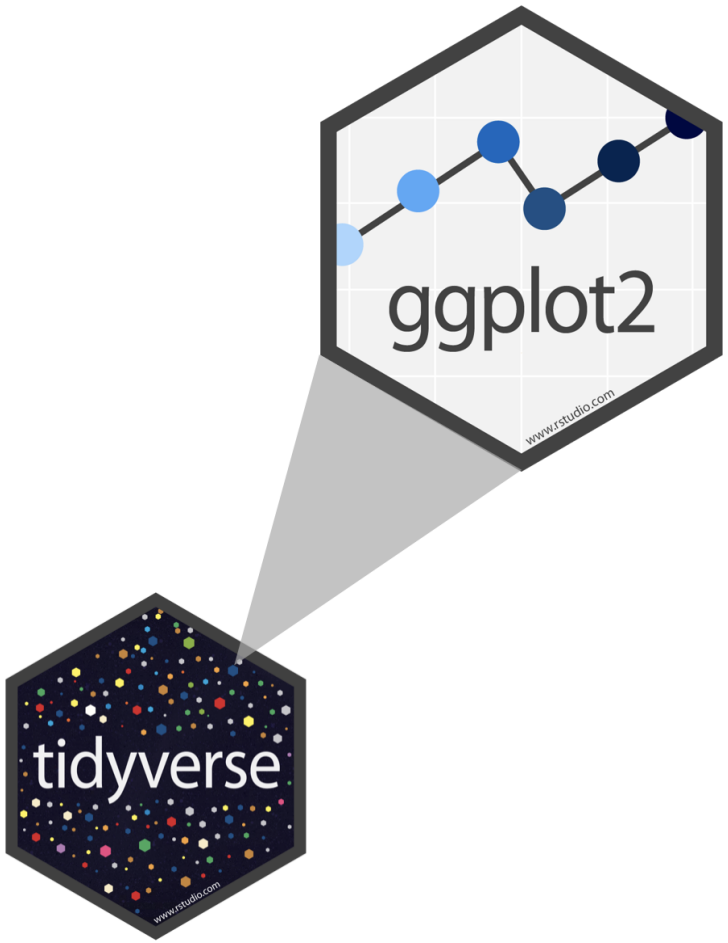
05.12.20

Learning objectives

- Create a scatterplot using **`ggplot`** function
- Add aesthetics (features) to a plot



ggplot2 in tidyverse



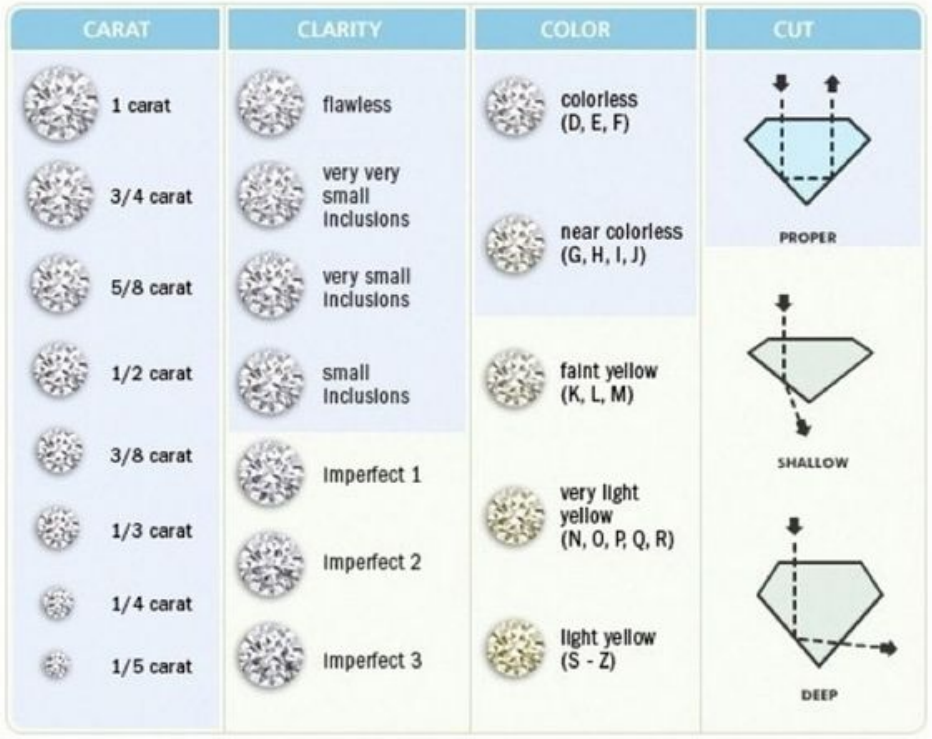
- ggplot2 is tidyverse's data visualization package.
- The **gg** in "ggplot2" stands for "grammar of graphics".
- It is inspired by the book **Grammar of Graphics** by Leland Wilkinson.

Grammar of Graphics

A **grammar of graphics** is a tool that enables us to concisely describe the components of a graphic.

Today's data

- We will use the **diamonds** data set in the **`ggplot2`** package
- Contains price and other attributes for ~ 54,000 diamonds
- Variables:
  - **`cut`**
  - **`clarity`**
  - **`carat`**
  - **`color`**
  - **`price`**



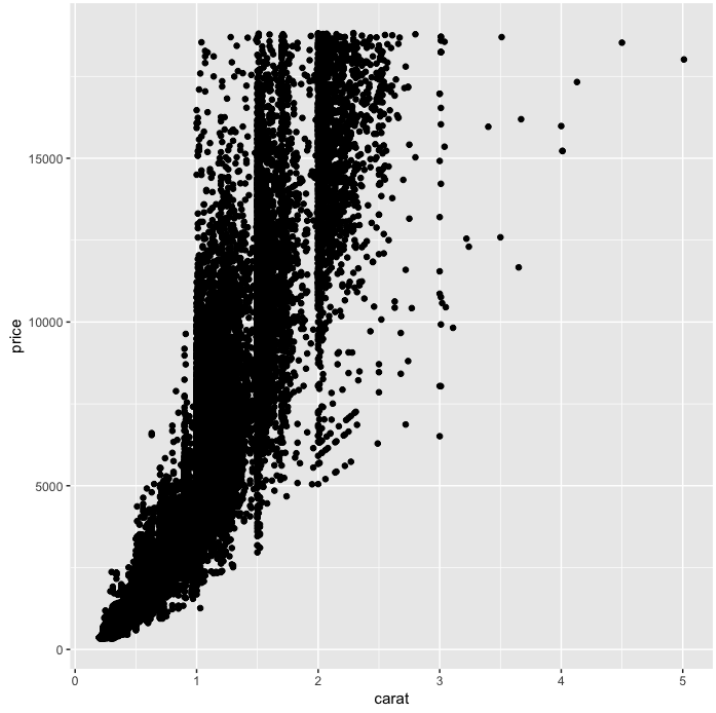
Basic `ggplot` syntax

```
ggplot(data = [dataset], aes(x = [x-var], y = [y-var])) +
  geom_xx() +
  other options
```

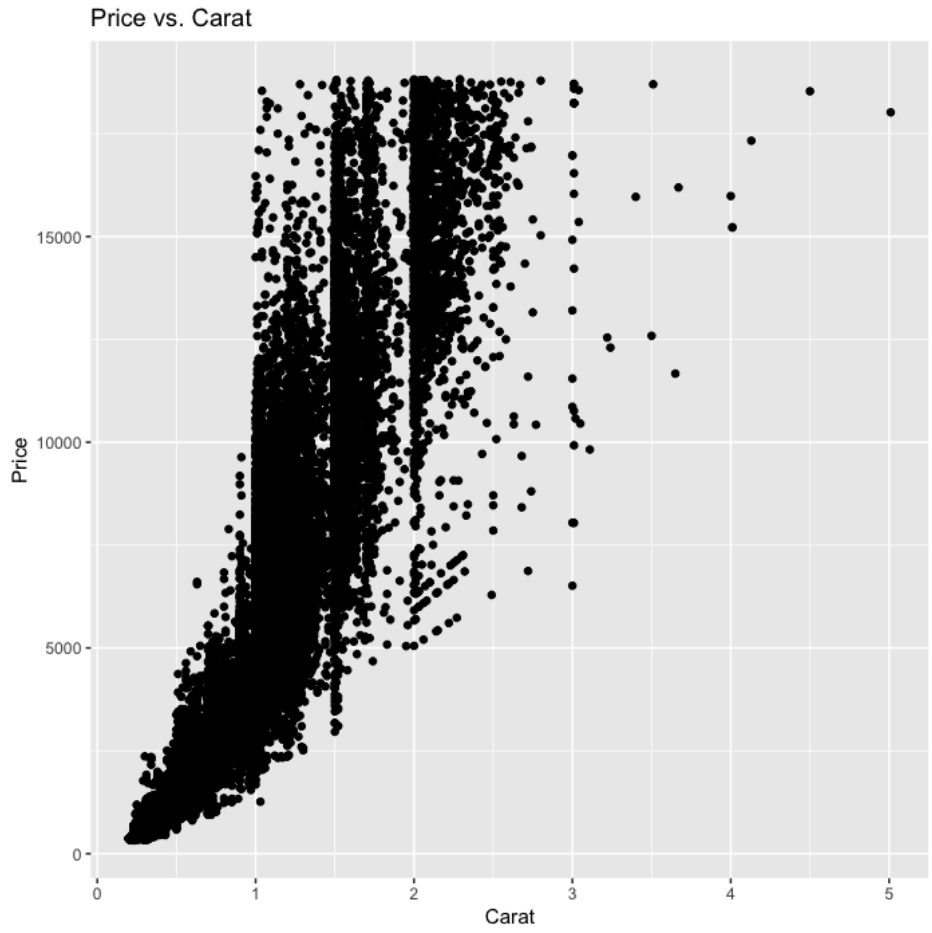
Basic `ggplot` syntax

```
ggplot(data = [dataset], aes(x = [x-var], y = [y-var])) +
  geom_xx() +
  other options
```

```
ggplot(data = diamonds,
       aes(x = carat,
           y = price)) +
  geom_point()
```



Our first plot



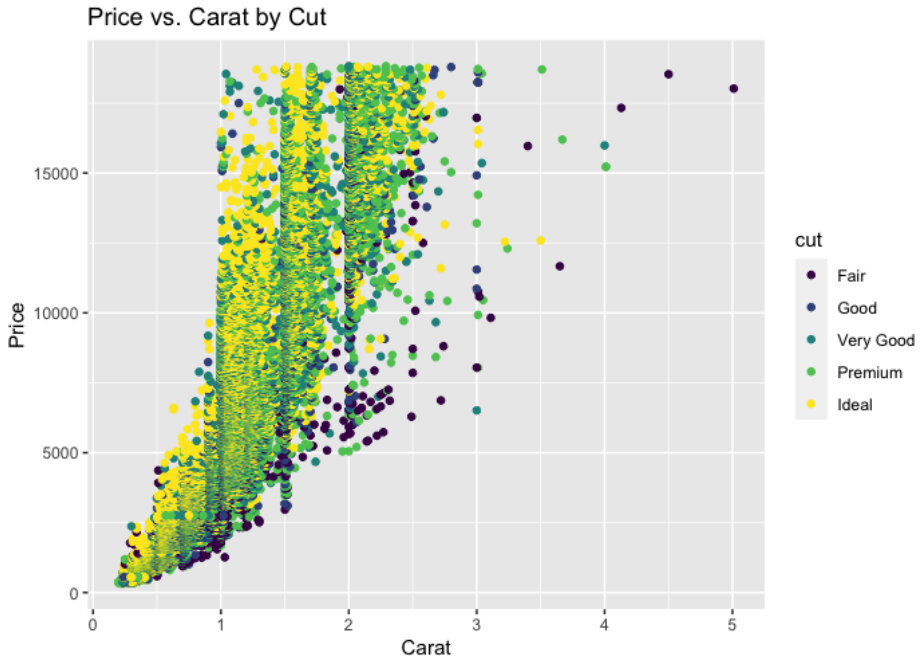
Let's create this plot in R.

Aesthetics

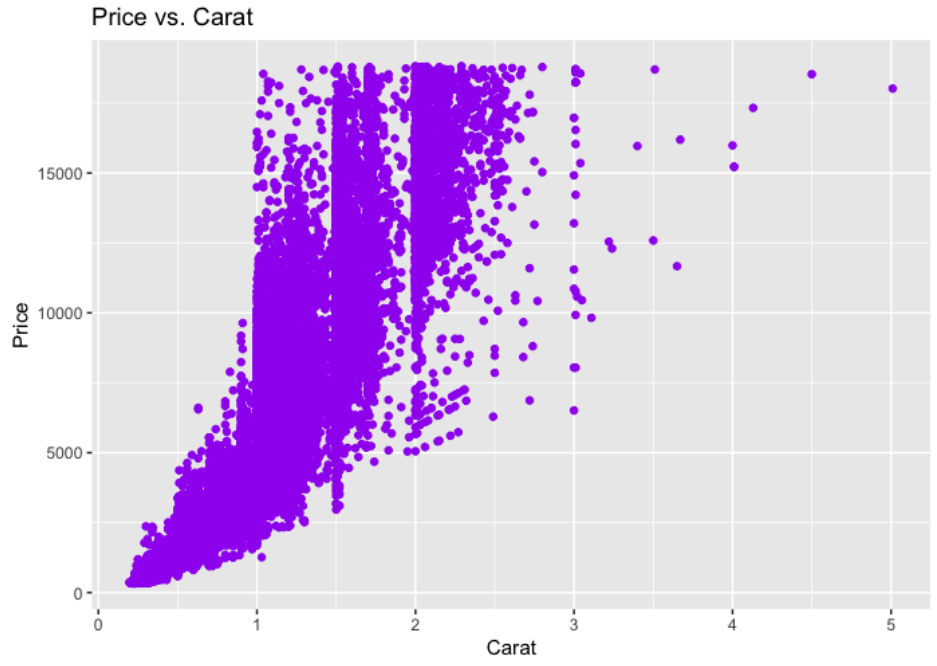
We can add **aesthetics** (features) to our plot to incorporate additional variables or to customize the plot. These aesthetics include

- **`color`**
- **`shape`**
- **`size`**
- **`alpha`** (transparency)

Adding aesthetics



- Aesthetic based on value of **`cut`**.
- Aesthetic defined inside **`aes()`**.



- Same aesthetic for all observations.
- Aesthetic defined outside of **`aes()`**.

Let's add color and shape aesthetics to our plot.

Exercise

Consider the following code:

```
ggplot(data = diamonds, aes(x = carat, y = price)) +
  geom_point(aes(shape = cut), color = "blue")
```

Which of the following best describes the points on the plot?

a. The shape is the same for all points.

b. The color is the same for all points.

c. The color and shape are the same for all points.

Let's put it all together. Create a plot of **`price`** vs. **`carat`**, with an aesthetic by **`clarity`**.

Your turn

It's your turn to create data visualizations using **`ggplot2`**!

- Go to https://matackett.shinyapps.io/data-viz/.
- Click on *Exercise 2: Putting it all together*.

`ggplot2` references

- "Data visualisation" in *R for Data Science*
- ggplot2 Reference
- Data Visualization Cheatsheet
- *ggplot2 : Elegant Graphics for Data Analysis*