Welcome to Week 4!

1. Make sure you have the session 4 practice materials downloaded from the webpage

   https://ucb-psychology-quack.github.io/site/summer_bootcamp/bootcamp

2. Open up `s4_warmup_livedemo_starter.R` in Rstudio and get started with the warm-up (use penguins.csv not penguins_wide)

Week 4: Data Visualization

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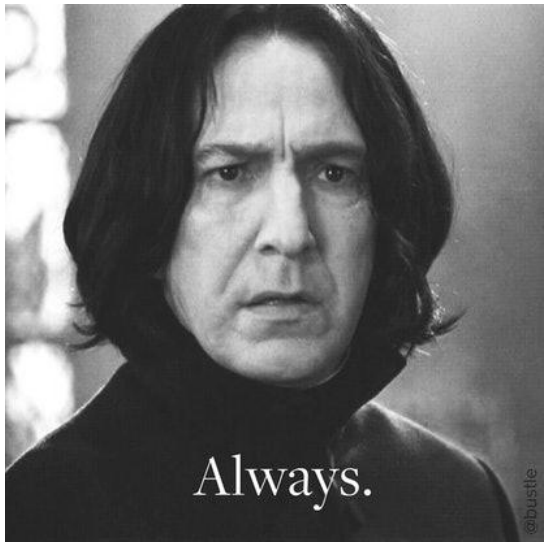
Today's agenda

- Warm-up
- Introduction to ggplot
- Demo: Plotting and data reshaping
- Group work - Data visualization
- Discussion - Present plots

When do you visualize your data?



Introducing ggplot

Blast off into the...

Last week we learned about Tidyverse. We used a part of tidyverse called "`dplyr`" that helped us clean data.

Today we are learning about another package in tidyverse called `ggplot` that is created for data visualization.

Why ggplot

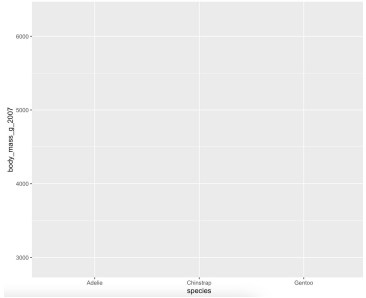
- Easy to use
- Works well with the rest of tidyverse and R
- Flexible, easily customizable plots

Build any plot with ggplot

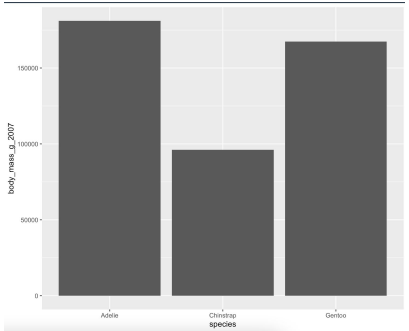
Like last week, we can combine steps together in ggplot to create a plot.

You can think of each element of your plot as a layer that you can build up. This is what makes ggplot so flexible!

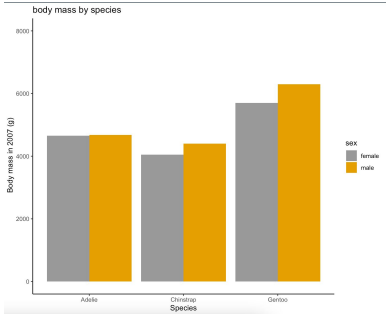
Step 1: create a plot and designate variables



Step 2: Decide how to represent the data



Step 3: customize

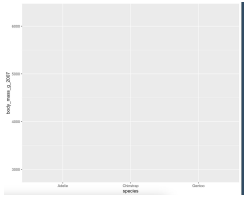


ggplot terminology

1. Create a ggplot object

aesthetic mapping: Tell ggplot how to map the variables in your dataframe to visual properties . (ie how do you want to arrange the data).

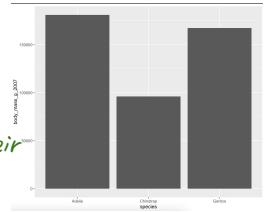
```
ggplot(data = myDataFrame, aes(x = xaxis_values, y = yaxis_values))
```



2. Add geometric objects to your plot. These tell ggplot how to represent your data.

```
ggplot(data = myDataFrame, aes(x = xaxis_values, y = yaxis_values)) +
 geom_col()
```

Notice "+" not "%>%" connects ggplot objects together

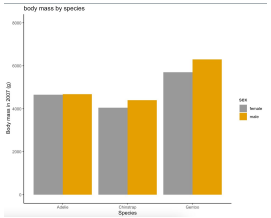


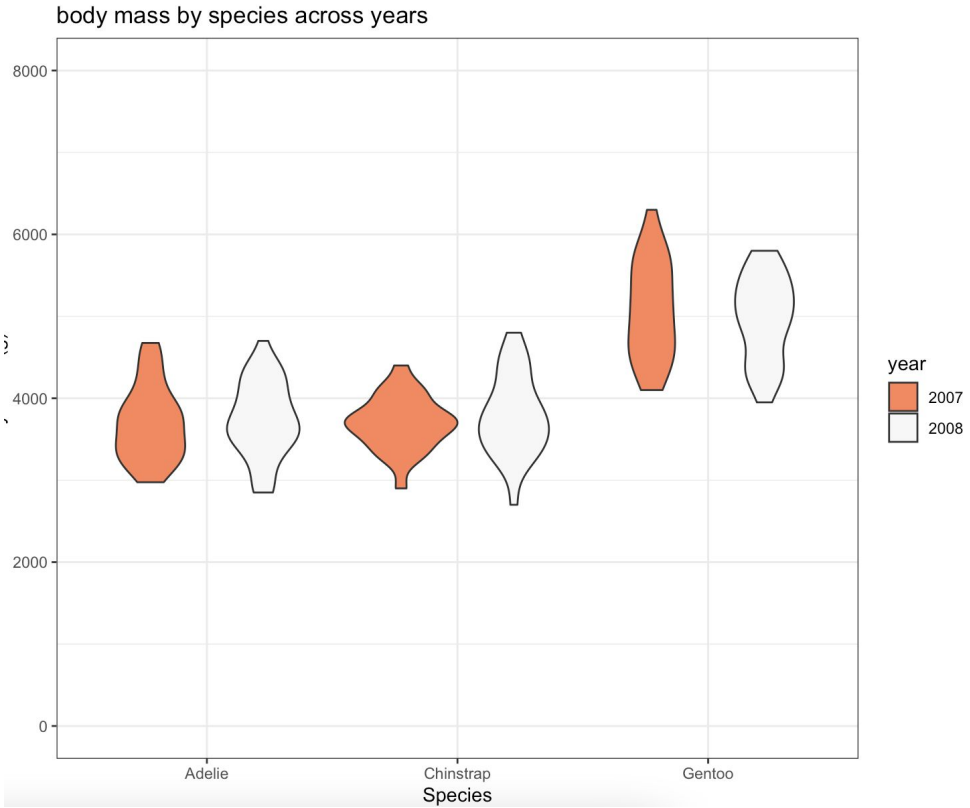
```
 geom_point(color = "dark gray")
```

geoms can also contain additional data and/or their own aesthetic mappings

3. Add other layout and design features

```
 theme_classic()
```




body mass by species across years
8000
6000
4000
2000
0
Adelie
Chinstrap
Gentoo
Species
year
2007
2008

Group Activity

Activity Instructions:
https://docs.google.com/document/d/1Z8FhPd7BdtD_h8SBk2CUCKXchxxcSkKgJz_Ovij1l30/edit?usp=sharing

Help sheet:
https://docs.google.com/document/d/1V3Abf6CAHhvY0CM4dOMOFZAvXDEmCMOBd3oVTXLkSXQ/edit?usp=sharing

Jamboard to share plots:
https://jamboard.google.com/d/1ce3wLeoVqhsVYb02eVdv7ljt1ETywRhN_fGW2VkCELU/edit?usp=sharing