Using ggplot2

Juan Carlos Villaseñor-Derbez (JC)

Part 1: Build a basic plot

- Open RStudio
- Make sure you are in the EVR628 project
- Create a new script, and save it to scripts as `week2_ggplot.R`
- Add a basic descriptive header
- Load packages

```
library(EVR628tools)
library(tidyverse)
```

```
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.4     v readr     2.1.5
v forcats   1.0.0     v stringr   1.5.1
v ggplot2   3.5.2     v tibble    3.3.0
v lubridate 1.9.4     v tidyr     1.3.1
v purrr     1.1.0
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to beco
```

- Inspect data

```
glimpse(data_lionfish)
```

```
Rows: 109
Columns: 9
$ id              <chr> "001-Po-16/05/10", "002-Po-29/05/10", "003-Pd-29/05/10~
$ site            <chr> "Paraiso", "Paraiso", "Pared", "Canones", "Canones", "~
$ lat             <dbl> 20.48361, 20.48361, 20.50167, 20.47694, 20.47694, 20.5~
$ lon             <dbl> -87.22611, -87.22611, -87.21167, -87.23278, -87.23278,~
$ total_length_mm <dbl> 213, 124, 166, 203, 212, 210, 132, 122, 224, 117, 211,~
$ total_weight_gr <dbl> 112.70, 27.60, 52.30, 123.10, 129.00, 138.75, 50.29, 1~
$ size_class      <chr> "large", "medium", "medium", "large", "large", "large"~
$ depth_m         <dbl> 38.1, 27.9, 18.5, 15.5, 15.0, 22.7, 13.4, 18.5, 18.2, ~
$ temperature_C   <dbl> 28, 28, 28, 28, 28, 29, 29, 29, 29, 29, 28, 28, 28, 28~
```

The `ggplot` function

- Show documentation: point out data and mapping
- Specify data

The `aes` function

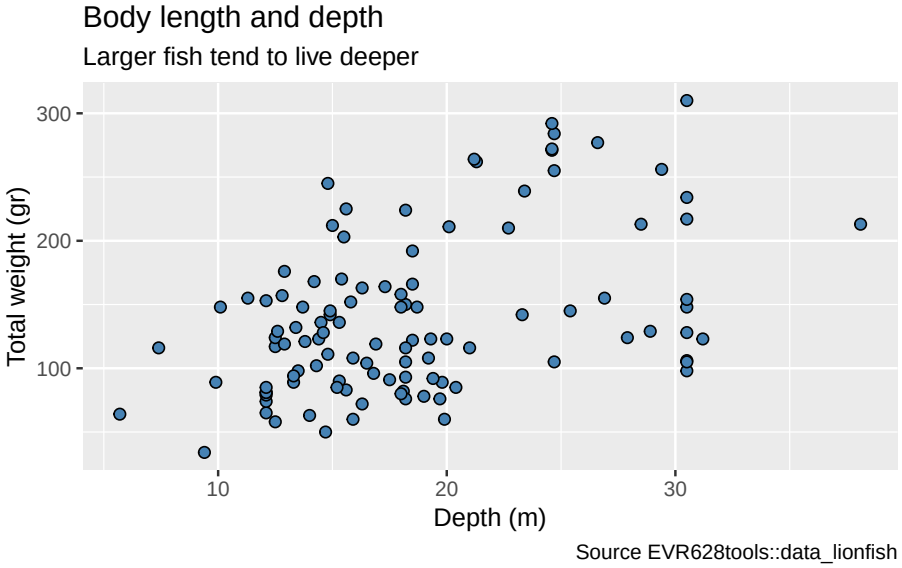
- Show documentation
- Then specify mapping
- Emphasis of use of commas and named arguments
- Show what happens when you don't name arguments
- Multiple lines and parentheses

The `geom_point` function

- Emphasiz on `+` for layering
- Run with simple points
- Show documentation and scroll down to the **Aesthetics** section
- Show how to change colors / sizes etc…
- Emphasize difference between using variables and constant values (inside vs outisde aes)

`labs` function

```
ggplot(data = data_lionfish,
       mapping = aes(x = depth_m,
                     y = total_length_mm)) +
  geom_point(shape = 21,
             fill = "steelblue",
             size = 2) +
  labs(x = "Depth (m)",
       y = "Total weight (gr)",
       title = "Body length and depth",
       subtitle = "Larger fish tend to live deeper",
       caption = "Source EVR628tools::data_lionfish")
```



Part 2: Saving plots

- Repeat the entire process, one line at a time, showing how to save to an object
- Then show how to save plot with ggsave
- Show documentation of ggsave
- Emphasize on creating plot objects

Part 3: Visualizing distributions

- Categorical variable with `geom_bar()`
  - basic with site
  - with `fct_infreq` and site
  - with `fct_relevel` and size class
- Numerical variable with `geom_histogram()`
  - Distribution of lengths

Part 4: Visualizing relationships

- A numerical and a categorical variable : depth by size class
- Two categorical variables: N by size class and site
- Two numerical variables: depth vs temp

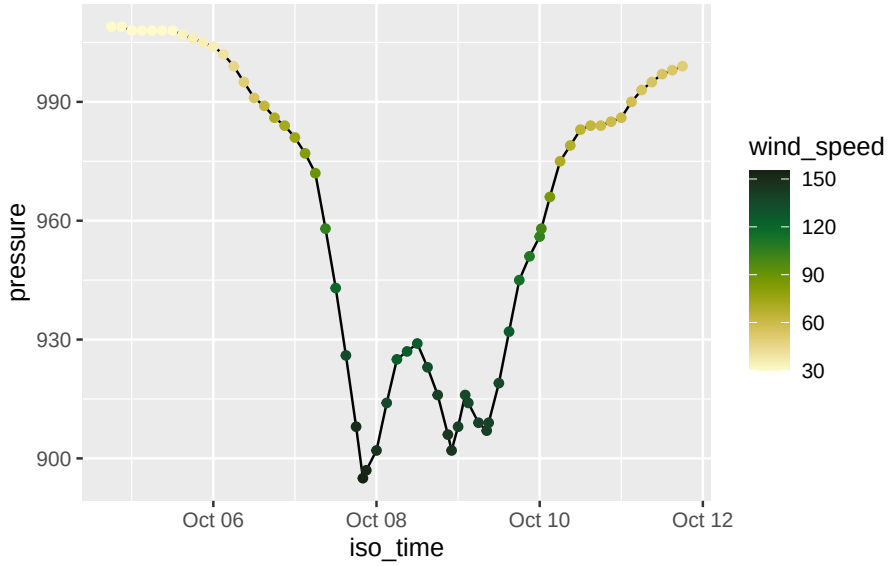
Three or more

- length vs depth with size for weight and color for temp?

Part 3: Layering

- Show `data_milton` documentation again
- Build plot below
- Show use of `color` vs `fill` inside main `aes()` (affecting line and points) vs `aes()` inside `geom_point()` (affecting only the poitns)

```
ggplot(data = data_milton,
       mapping = aes(x = iso_time,
                     y = pressure,
                     )) +
  geom_line() +
  geom_point(aes(color = wind_speed)) +
  scale_color_gradientn(colours = palette_IPCC(var = "wind", type = "seq"))
```



Part 4: Facetting

- Show documentation for `facet_wrap` and `facet_grid`
- Show how each of these work