MATH 118: Notes D

pretty tables with xtable + a little ggplot

```
#LOAD PACKAGES
library(tidyverse)
```

Let's consider our table from last class:

```
#LOAD DATA
library(palmerpenguins)
data(penguins)

#CLEAN UP DATA
penguins <- penguins %>%
  drop_na()
#sometimes this is appropriate. It's questionable here...

penguins %>%
  group_by(species) %>%
  summarise(average_bill_lenth = mean(bill_length_mm),
            average_bill_depth = mean(bill_depth_mm))
```

```
## # A tibble: 3 x 3
##   species   average_bill_lenth average_bill_depth
##   <fct>                  <dbl>              <dbl>
## 1 Adelie                  38.8               18.3
## 2 Chinstrap               48.8               18.4
## 3 Gentoo                  47.6               15.0
```

When we knit this up it looks like of ugly...

Using `kable` to get pretty tables

```
library(kableExtra)
```

```
penguins %>%
  group_by(species) %>%
  summarise(average_bill_length = mean(bill_length_mm),
            average_bill_depth = mean(bill_depth_mm)) %>%
  kbl()
```

species	average_bill_length	average_bill_depth
Adelie	38.82397	18.34726
Chinstrap	48.83382	18.42059
Gentoo	47.56807	14.99664

```
#OR
```

```
table1 <- penguins %>%
```

Table 1: Average Bill Characteristics by Species

Species	Average Bill Length	Average Bill Depth
Adelie	38.82	18.35
Chinstrap	48.83	18.42
Gentoo	47.57	15.00

Table 2: Average Bill Characteristics by Species

Species	Average Bill Length	Average Bill Depth
Adelie	38.82	18.35
Chinstrap	48.83	18.42
Gentoo	47.57	15.00

```
  group_by(species) %>%
  summarise(average_bill_length = mean(bill_length_mm),
            average_bill_depth = mean(bill_depth_mm))

kbl(table1)
```

species	average_bill_length	average_bill_depth
Adelie	38.82397	18.34726
Chinstrap	48.83382	18.42059
Gentoo	47.56807	14.99664

Note that kable will work if you knit to .html (like we do in this class), but also if you choose to knit to Word or PDF (note you need to install some things to knit to PDF).

Options in kable

We customize the content so it's displaying the information more clearly.

```
table1 %>%
  kbl(col.names = c("Species", "Average Bill Length", "Average Bill Depth"),
    caption = "Average Bill Characteristics by Species",
    digits = 2)
```

Better. . .

pretty styling

```
table1 %>%
  kbl(col.names = c("Species", "Average Bill Length", "Average Bill Depth"),
    caption = "Average Bill Characteristics by Species",
    digits = 2) %>%
  kable_styling()
```

Many options for customizing the look of the tables – more here: https://cran.r-project.org/web/packages/kableExtra/vignettes/awesome_table_in_html.html

Let's try one. . .

Table 3: Average Bill Characteristics by Species

Species	Average Bill Length	Average Bill Depth
Adelie	38.82	18.35
Chinstrap	48.83	18.42
Gentoo	47.57	15.00

Let's make each row's color correspond to

```
table1 %>%
  kbl(col.names = c("Species", "Average Bill Length", "Average Bill Depth"),
    caption = "Average Bill Characteristics by Species",
    digits = 2) %>%
  kable_paper() %>%
  column_spec(1, bold=T) %>%
  row_spec(2, color = "#c85bcc") %>%
  row_spec(3, color = "#067176") %>%
  row_spec(1, color = "#ff7501")
```

RStudio hosts a table contest every year!

- Here is a link to this year's contest https://www.rstudio.com/blog/rstudio-table-contest-2022/
- Here is a link to previous year's entries and winners to explore what is possible! https://community.rstudio.com/c/table-gallery/64
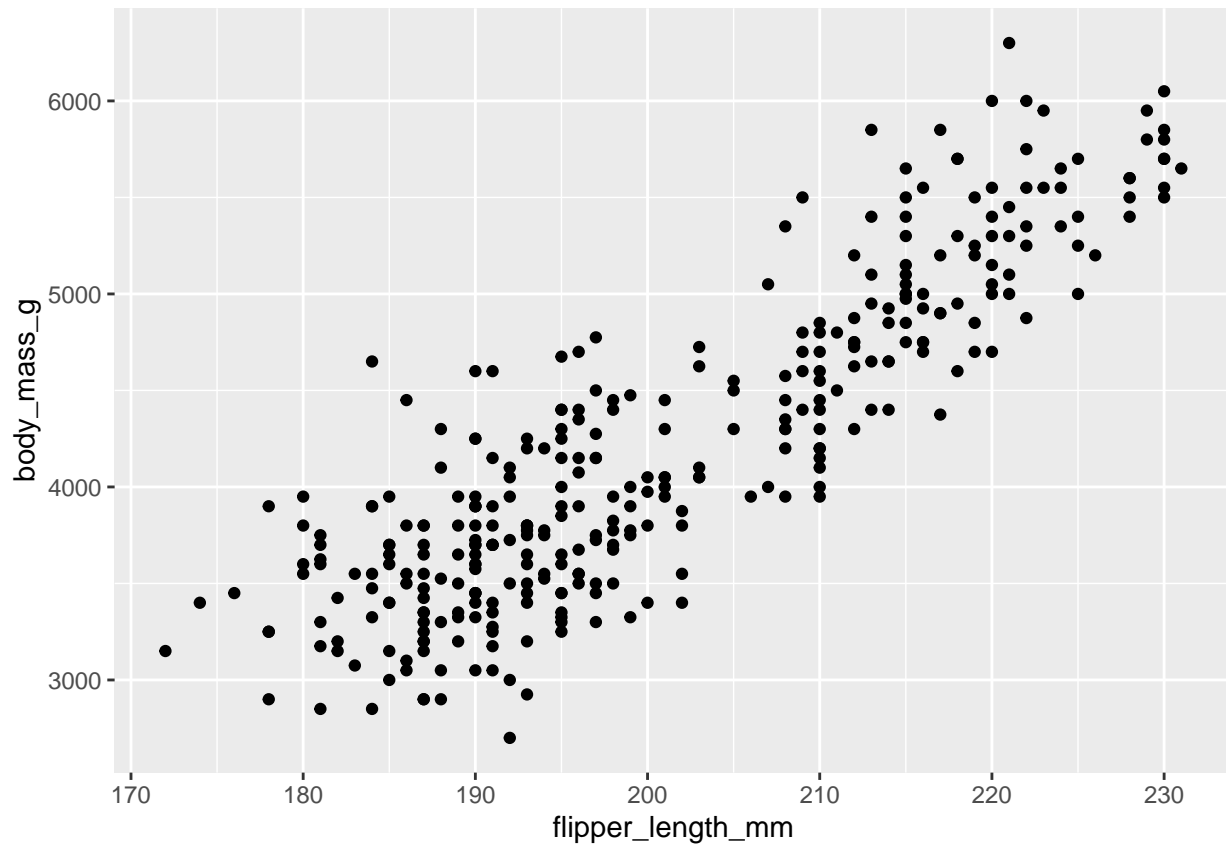
Introduction to ggplot

```
table1 %>%
ggplot(aes(x = species, y = average_bill_length)) +
geom_bar(stat = "identity")
```
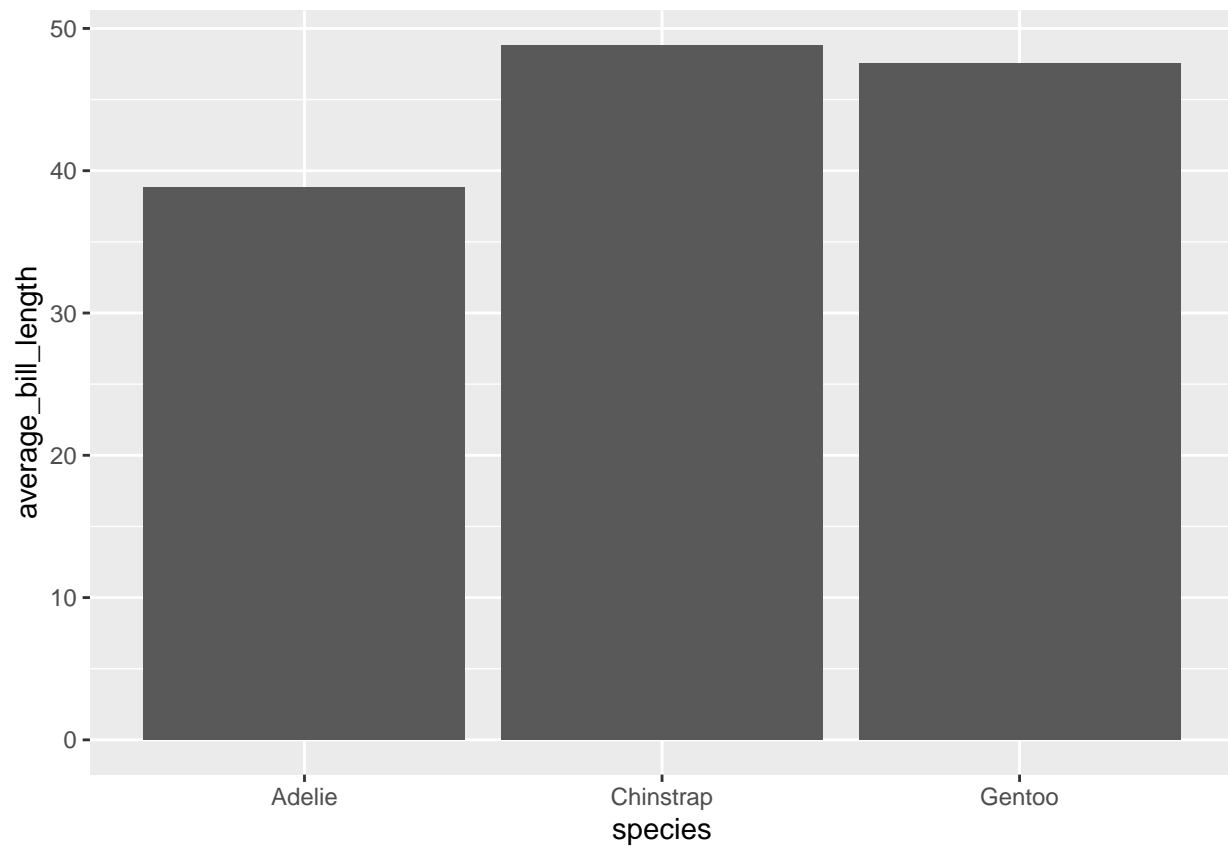
```
table1 %>%
ggplot(aes(x = species, y = average_bill_length, fill=species)) +
geom_bar(stat = "identity") +
scale_fill_manual(values = c("#ff7501","#c85bcc", "#067176")) +
ylab("Average Bill Length") +
theme_minimal() +
theme(legend.position = "none")
```
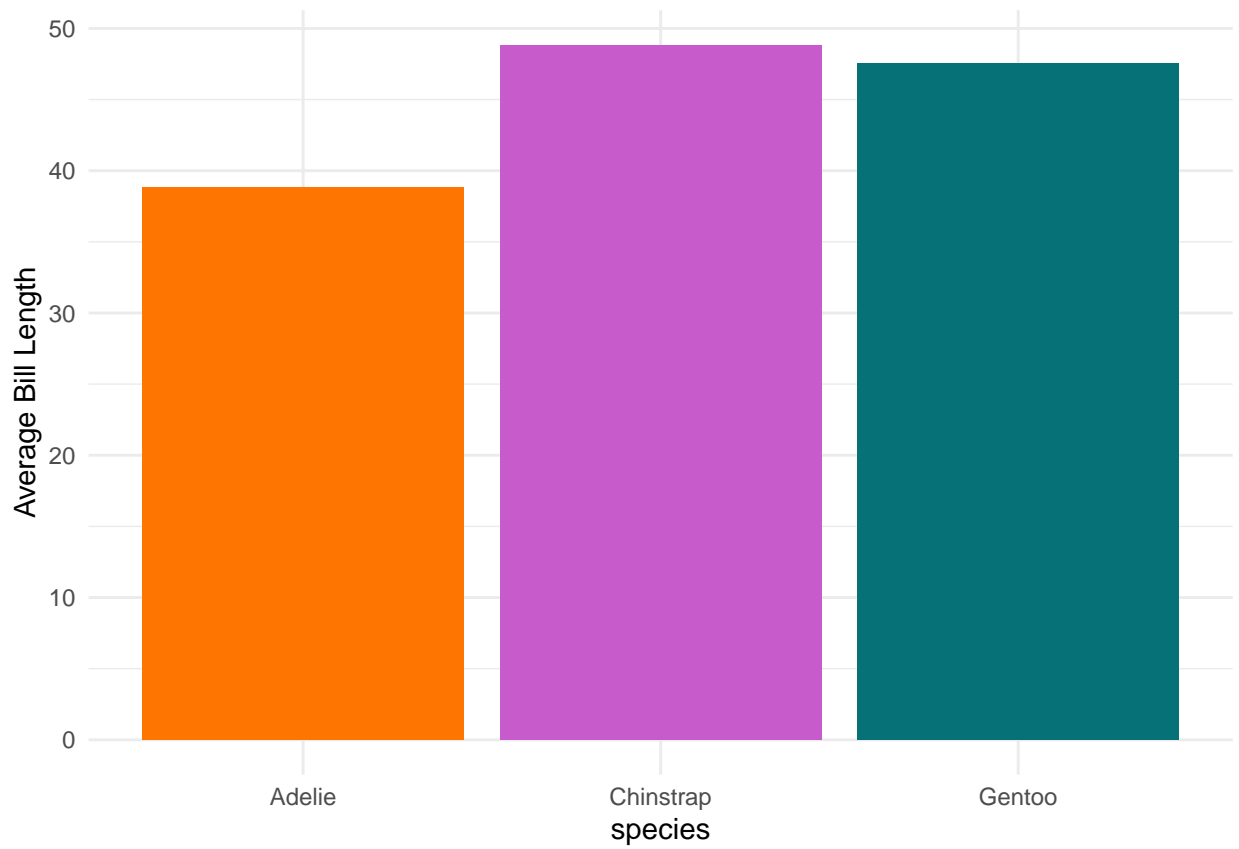
```
penguins %>%
  ggplot(aes(x=flipper_length_mm, y=body_mass_g)) +
  geom_point()
```

```
penguins %>%
  ggplot(aes(x=flipper_length_mm, y=body_mass_g, color=species)) +
  geom_point() +
  scale_color_manual(values = c("#ff7501","#c85bcc", "#067176")) +
  xlab("Flipper Length (in mm)")+
  ylab("Body Mass (in g)") +
  theme_minimal()
```