**🧪 ITSE 2309 Lab 8 Video Notes**

**📚 Setup**

* Lab 8 uses the **ramen\_rating.csv** file (you will need to upload it to your working directory).
* **Instructor Example** uses a **drinks\_north\_america.csv** to demonstrate similar steps.

**📥 Step 1: Read CSV File**

library("tidyverse")

drinks <- read\_csv("drinks\_north\_america.csv")

drinks

* Displays columns: **country**, **beer\_servings**, **spirit\_servings**, **wine\_servings**, **total\_litres\_of\_pure\_alcohol**.

**📊 Step 2: Summarize Mean Servings**

* We want to **average** beer, spirit, and wine servings into **one value** per country.

drink\_stats <- drinks %>%

group\_by(country) %>%

summarize(MeanServings = mean(beer\_servings, spirit\_servings, wine\_servings))

drink\_stats

* ✅ Now you have a table with just **country** and **MeanServings**!

**📈 Step 3: Create a Bar Plot (geom\_col)**

ggplot(drink\_stats,

aes(x = country, y = MeanServings, fill = country)) +

geom\_col()

* X-axis: **country**
* Y-axis: **MeanServings**
* Color fill by **country** 🎨
* 🖼️ Result: Bar chart with country colors!

A graph of different colored bars

AI-generated content may be incorrect.

**🌎 Step 4: Create a Simple World Map (optional)**

ggplot(data = map\_data("world"),

aes(x = long, y = lat, group = group)) +

geom\_polygon(fill = "white", color = "black") +

coord\_quickmap()

* 🗺️ Result: Map of the world with country outlines (black border, white fill).

A map of the world

AI-generated content may be incorrect.

**⚡ Step 5: Create a Scatterplot (geom\_point)**

ggplot(drink\_stats, aes(x = country, y = MeanServings, color = country)) +

geom\_point(size = 3)

* X-axis: **country**
* Y-axis: **MeanServings**
* Points are colored by country 🎯

A graph with colored dots

AI-generated content may be incorrect.

**🎨 Step 6: Customize Scatterplot (Add Title + Clean Up)**

ggplot(drink\_stats, aes(x = country, y = MeanServings, color = country)) +

geom\_point(size = 3) +

labs(title = "Thomas Lackey") +

theme(axis.ticks = element\_blank(),

axis.text = element\_blank())

* ✏️ Add a **title** (your **name** goes here).
* 🎯 Remove **tick marks** and **axis labels** at the bottom.

A graph with colored dots

AI-generated content may be incorrect.

**📏 How to Add Error Bars (Standard Deviation)**

**🛠️ Step 1: Summarize both Mean and Standard Deviation**

Instead of only calculating the mean like before, now calculate **both** mean and standard deviation:

drink\_stats <- drinks %>%

group\_by(country) %>%

summarize(

MeanServings = mean(c(beer\_servings, spirit\_servings, wine\_servings)),

SDServings = sd(c(beer\_servings, spirit\_servings, wine\_servings))

)

drink\_stats

✅ Now your table will have **MeanServings** and **SDServings** columns!

**🛠️ Step 2: Create a Bar Plot with Error Bars**

ggplot(drink\_stats, aes(x = country, y = MeanServings, fill = country)) +

geom\_col() +

geom\_errorbar(aes(ymin = MeanServings - SDServings,

ymax = MeanServings + SDServings),

width = 0.2) +

labs(title = "Your Name Here") +

theme(axis.text.x = element\_text(angle = 45, hjust = 1))

✨ Explanation:

* geom\_col() ➔ normal bar chart 📊
* geom\_errorbar() ➔ adds vertical lines showing the **plus/minus standard deviation** 📏
* width = 0.2 ➔ controls how wide the little caps on the error bars are
* theme(axis.text.x = element\_text(angle = 45, hjust = 1)) ➔ tilts the country names so they fit better!

**📋 Quick Example Output:**

| **Country** | **MeanServings** | **SDServings** |
| --- | --- | --- |
| Belize | 263 | 80 |
| Canada | 240 | 50 |
| ... | ... | ... |

The error bars will show the **range** around each bar ➔ like "Mean ± SD."

**🧠 Important Tip**

* You **must** use mean() and sd() **correctly**.
* **For ramen\_rating.csv**, you’ll need to pick **3 or more numeric columns** (similar to beer/spirit/wine) to average and get the standard deviation.

**✅ Summary of the Full Workflow for Lab 8**

| **Step** | **What You Do** |
| --- | --- |
| 1 | Read ramen\_rating.csv |
| 2 | Summarize **Mean** and **Standard Deviation** |
| 3 | Create **bar plot with error bars** |
| 4 | Create **scatter plot** |
| 5 | Add your **name as the title** |
| 6 | Clean up the axes |

**📋 Reminders for Lab 8**

* 🗂️ Use **ramen\_rating.csv**, not the drinks dataset.
* 🧮 Summarize a set of variables into **one average**.
* 📊 Create **at least one bar plot**.
* 🎯 Create **at least one scatter plot** with a title and cleaned-up axes.
* 📈 Create a **bar plot with error bars** (standard deviation — **not shown in the video**, but required!).
* ✅ Follow this structure and adjust for the **ramen\_rating** file!