library(ggplot2)

library(tidyverse)

library(RCurl)

# Read in the drugdose datasets

drugdose <- read.csv('https://raw.githubusercontent.com/IAA-Faculty/statistical\_foundations/master/drug.csv')

# Group the data by drug dose and disease and look at summary statistics of the change in blood pressure

drug\_plot <- drugdose %>%

group\_by(DrugDose, Disease) %>%

dplyr::summarise(mean = mean(BloodP),

sd = sd(BloodP),

max = max(BloodP),

min = min(BloodP))

# Use the grouped data to plot the side-by-side bar chart for change in blood pressure

ggplot(data = drug\_plot, aes(x = DrugDose, y = mean, fill = Disease)) +

geom\_bar(stat = "identity", position = position\_dodge()) +

labs(y = "Change in Blood Pressure", x = "Drug Dose Category") +

scale\_fill\_brewer(palette = "Paired") +

theme\_minimal()

# Two-way ANOVA with interaction

dd\_aov\_int <- aov(BloodP ~ factor(DrugDose)\*Disease, data = drugdose)

summary(dd\_aov\_int)

# Interaction was significant

# Sliced ANOVA for different levels of heart disease

dd\_aov <- drugdose %>%

group\_by(Disease) %>%

nest() %>%

mutate(aov = map(data, ~summary(aov(BloodP ~ factor(DrugDose), data = .x))))

print(dd\_aov$aov)

# Read in the disk data

disks = read.csv('https://raw.githubusercontent.com/IAA-Faculty/statistical\_foundations/master/disks.csv')

# Two-way ANOVA with interaction

d\_aov\_int <- aov(Time ~ Technician\*factor(Brand), data = disks)

summary(d\_aov\_int)

# Interaction was significant

# Sliced ANOVA for different levels of Brand

d\_aov\_b <- disks %>%

group\_by(Brand) %>%

nest() %>%

mutate(aov = map(data, ~summary(aov(Time ~ Technician, data = .x))))

print(d\_aov\_b$aov)

# Sliced ANOVA for different levels of Technician

d\_aov\_t <- disks %>%

group\_by(Technician) %>%

nest() %>%

mutate(aov = map(data, ~summary(aov(Time ~ factor(Brand), data = .x))))

d\_aov\_t

print(d\_aov\_t$aov)