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# Assignment: ASSIGNMENT 4
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# Date: 2021-10-10

## Load the ggplot2 package
library(ggplot2)
theme_set(theme_minimal())

## Set the working directory to the root of your DSC 520 directory
setwd("C:/Users/wittl/Desktop/DSC520/Repository")

## Load the `data/r4ds/heights.csv` to
heights_df <- read.csv("data/r4ds/heights.csv")

# https://ggplot2.tidyverse.org/reference/geom\_boxplot.html
## Create boxplots of sex vs. earn and race vs. earn using `geom_point()` and
`geom_boxplot()`
## sex vs. earn
ggplot(heights_df, aes(x=sex, y=earn)) + geom_boxplot()
## race vs. earn
ggplot(heights_df, aes(x=race, y=earn)) + geom_boxplot()

# https://ggplot2.tidyverse.org/reference/geom\_bar.html
## Using `geom_bar()` plot a bar chart of the number of records for each `sex`
ggplot(heights_df, aes(sex)) + geom_bar()

## Using `geom_bar()` plot a bar chart of the number of records for each race
ggplot(heights_df, aes(race)) + geom_bar()

## Create a horizontal bar chart by adding `coord_flip()` to the previous plot
ggplot(heights_df, aes(race)) + geom_bar() + coord_flip()

# https://www.rdocumentation.org/packages/ggplot2/versions/3.3.0/topics/geom\_path
## Load the file `data/nytimes/covid-19-data/us-states.csv` and
## assign it to the `covid_df` dataframe
covid_df <- read.csv("data/nytimes/covid-19-data/us-states.csv")

## Parse the date column using `as.Date()`
covid_df$date <- as.Date(covid_df$date)

## Create three dataframes named `california_df`, `ny_df`, and `florida_df`
## containing the data from California, New York, and Florida
california_df <- covid_df[ which( covid_df$state == "California"), ]
ny_df <- covid_df[ which( covid_df$state == 'New York'), ]
florida_df <- covid_df[ which( covid_df$state == 'Florida'), ]

## Plot the number of cases in Florida using `geom_line()`
ggplot(data=florida_df, aes(x=date, y=cases, group=1)) + geom_line()

## Add lines for New York and California to the plot
ggplot(data=florida_df, aes(x=date, group=1)) +
  geom_line(aes(y = cases)) +
  geom_line(data=ny_df, aes(y = cases)) +

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geom_line(data=california_df, aes(y = cases))

## Use the colors "darkred", "darkgreen", and "steelblue" for Florida, New
York, and California
ggplot(data=florida_df, aes(x=date, group=1)) +
  geom_line(aes(y = cases), color = 'darkred') +
  geom_line(data=ny_df, aes(y = cases), color='darkgreen') +
  geom_line(data=california_df, aes(y = cases), color='steelblue')

## Add a legend to the plot using `scale_colour_manual`
## Add a blank (" ") label to the x-axis and the label "Cases" to the y axis
ggplot(data=florida_df, aes(x=date, group=1)) +
  geom_line(aes(y = cases, colour = "Florida")) +
  geom_line(data=ny_df, aes(y = cases, colour="New York")) +
  geom_line(data=california_df, aes(y = cases, colour="California")) +
  scale_colour_manual("",
                      breaks = c('Florida', 'New York', 'California'),
                      values = c('darkred', 'darkgreen', 'steelblue')) +
  xlab(" ") + ylab("Cases")

## Scale the y axis using `scale_y_log10()`
ggplot(data=florida_df, aes(x=date, group=1)) +
  geom_line(aes(y = cases, colour = "Florida")) +
  geom_line(data=ny_df, aes(y = cases, colour="New York")) +
  geom_line(data=california_df, aes(y = cases, colour="California")) +
  scale_colour_manual("",
                      breaks = c('Florida', 'New York', 'California'),
                      values = c('darkred', 'darkgreen', 'steelblue')) +
  xlab(" ") + ylab("Cases") + scale_y_log10()

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