STAT 231: Problem Set 3B

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due by 5 PM on Friday, September 18

This homework assignment is designed to help you futher ingest, practice, and expand upon the material covered in class over the past week(s). You are encouraged to work with other students, but all code and text must be written by you, and you must indicate below who you discussed the assignment with (if anyone).

Steps to proceed:

1. In RStudio, go to File > Open Project, navigate to the folder with the course-content repo, select the course-content project (course-content.Rproj), and click "Open"
2. Pull the course-content repo (e.g. using the blue-ish down arrow in the Git tab in upper right window)
3. Copy ps3B.Rmd from the course repo to your repo (see page 6 of the GitHub Classroom Guide for Stat231 if needed)
4. Close the course-content repo project in RStudio
5. Open YOUR repo project in RStudio
6. In the ps3B.Rmd file in YOUR repo, replace "YOUR NAME HERE" with your name
7. Add in your responses, committing and pushing to YOUR repo in appropriate places along the way
8. Run "Knit PDF"
9. Upload the pdf to Gradescope. Don't forget to select which of your pages are associated with each problem. *You will not get credit for work on unassigned pages (e.g., if you only selected the first page but your solution spans two pages, you would lose points for any part on the second page that the grader can't see).*

If you discussed this assignment with any of your peers, please list who here:

ANSWER:

Shiny app

1. Finish your app from Lab04b and add your app code to the R code chunk below:

(1) update the Lab04b app to still explore the `hate_crimes` dataset, but with different app functionality (e.g. different widgets, variables, layout, theme...); OR
(2) use it as a template to create a Shiny app for a different dataset, choosing from:

- `mad_men` (tv performers and their post-show career)
- `ncaa_w_bball_tourney` (women's NCAA div 1 basketball tournament, 1982-2018)
- `nfl_suspensions` (NFL suspensions, 1946-2014)
- `candy_rankings` (candy characteristics and popularity)

These four datasets are also part of the `fivethirtyeight` package and their variable definitions are included in a pdf posted to the Moodle course page.

If using the `hate_crimes` dataset, be sure to update:

- at least 2 different widgets; and
- the layout (e.g. not in tabs or different page layout) or the theme
  - check out: https://rstudio.github.io/shinythemes/
- like a challenge? incorporate one of the click, hover or brush features
  - check out: https://shiny.rstudio.com/articles/plot-interaction.html

```
library(fivethirtyeight)
library(shinythemes)
library(tidyverse)
library(datasets)
library(janitor)
library(DT)
library(mosaic)
library(readxl)
library(ICON)
library(leaflet)
library(GISTools)
library(shiny)
library(dplyr)


#NFL TEAM Locations (note: the file path was removed in published version)
stadiums_nfl <- read_excel("/Users/jackdove/Desktop/Data Science/Stat231JackDove/Labs/Lab04b-shiny-nflsu
stadiums_nfl1 <- stadiums_nfl %>%
  dplyr::select(ABBREVIATION, TEAM, LONGITUDE, LATITUDE, CONFERENCE, DIVISION) %>%
  mutate(team = ABBREVIATION)


#Add locations to suspensions data set
nfl_suspensions1 <- nfl_suspensions %>%
  filter(team != "FREE") %>%
  filter(games != "Indef.") %>%
  group_by(team) %>%
  summarize(NumSuspensions = n()) %>%
```

```
  inner_join(stadiums_nfl1, by=c("team" = "team"))


division_choices <- (nfl_suspensions1 %>%
                       count(DIVISION))$DIVISION
conference_choices <- (nfl_suspensions1 %>%
                       count(CONFERENCE))$CONFERENCE

ui <- fluidPage(

  h1("Team-based Overview of NFL Player Suspensions"),

  sidebarLayout(
    sidebarPanel(
      checkboxGroupInput(inputId = "div"
                         , label = "Include divisions: "
                         , choices = division_choices
                         , selected = division_choices
                         , inline = TRUE),
      checkboxGroupInput(inputId = "conf"
                         , label = "Include conferences: "
                         , choices = conference_choices
                         , selected = conference_choices
                         , inline = TRUE),
    ),
    mainPanel (
    navbarPage(title = "NFL Suspensions",
               tabPanel(title = "Team Comparison",
                        plotOutput("scatter")),
               tabPanel("Map",
                        leafletOutput("map")
                        )
    )
    )
  )
)

server <- function(input,output){

  use_data <- reactive({
    data <- filter(nfl_suspensions1, DIVISION %in% input$div & CONFERENCE %in% input$conf)
  })


  output$scatter <- renderPlot({
    ggplot(data = use_data(), aes(x = TEAM, y = NumSuspensions)) +
      geom_col() +
      labs(y = "Number of Suspensions", title = "NFL Suspensions 1946-2014 by Team")  +
      theme(axis.text.x = element_text(
        angle = 90,
        color="blue",
        size=15,
        face=3)
```

```
    )
  })

  output$map <- renderLeaflet({

    #TEAM Icons
    NFL_icons <- list(
      iconUrl =       ifelse(use_data()$TEAM=="Pittsburgh Steelers", "http://prod.static.steelers.clubs
                      ifelse(use_data()$TEAM=="Cleveland Browns","https://static.nfl.com/static/
                             ifelse(use_data()$TEAM=="Cincinnati Bengals","https://static.nfl.co
                                    ifelse(use_data()$TEAM=="Baltimore Ravens","https://static.n
                                           ifelse(use_data()$TEAM=="Chicago Bears","https://stat
                                                  ifelse(use_data()$TEAM=="Houston Texans","http
                                                         ifelse(use_data()$TEAM=="Kansas City Ch
                                                                ifelse(use_data()$TEAM=="New Orl
                                                                       ifelse(use_data()$TEAM=="
                                                                              ifelse(use_data()$
                                                                                     ifelse(use_
                                                                                            ifel
```

```
    map <- use_data() %>%
      leaflet() %>%
      addTiles() %>%
      setView(-95, 37.5,
              zoom = 4) %>%
      addMarkers(icon = ~NFL_icons, label=(~NumSuspensions), lng=~(as.numeric(LONGITUDE)), lat=~(as.num
    map
  })

}

# call to shinyApp
shinyApp(ui = ui, server = server)
```

2. Publish your app. Then, go to the GitHub discussion "Shiny Apps" and reply to the message with (1) the URL to your published Shiny app; and (2) a paragraph explaining what story your Shiny app is telling, and how the interactivity you created enhances the telling of that story.

   ANSWER: Do not include anything here. The link to your app and the paragraph should be posted to the "Shiny Apps" discussion thread on GitHub.