STAT 6313
Mini Project 2
Spring 2017

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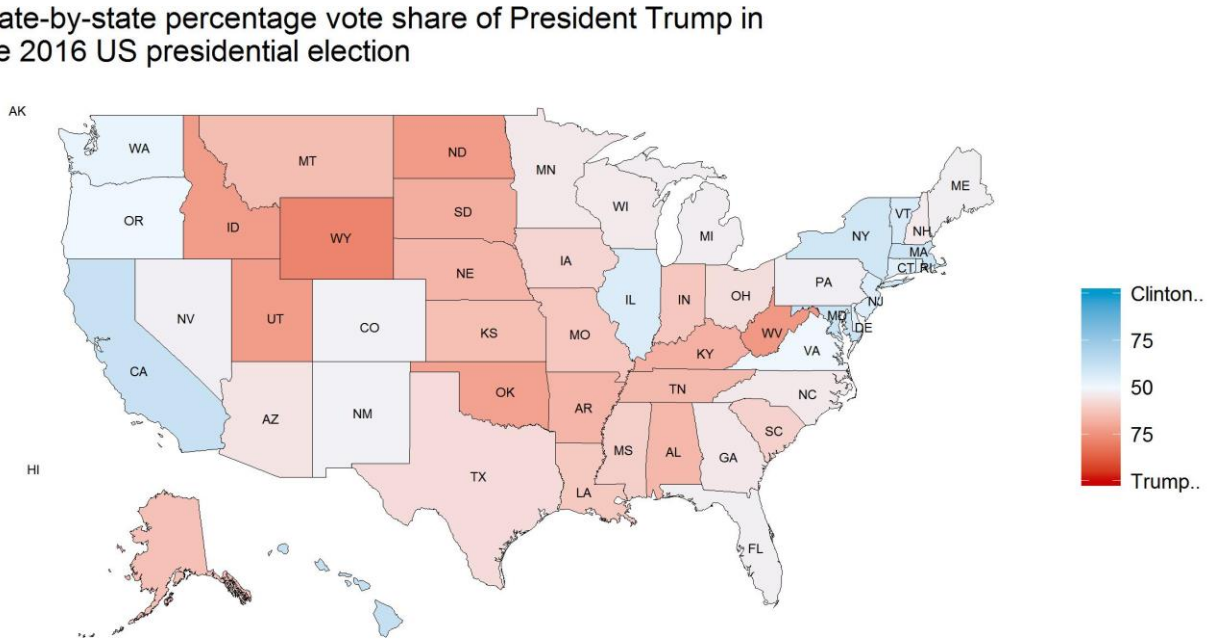
Contribution of each member:

Both of us contributed equally to the project.
Each and every step is done with proper discussion.

Section 1

(a) Use R to make a map of state-by-state percentage vote share of President Trump in the 2016 US presidential election. The data are stored in a CSV file on eLearning. Be sure to include Alaska and Hawaii in your map. Get the color scheme in your map to look like the one shown at
http://projects.fivethirtyeight.com/2016-election-forecast/?ex_cid=rrpromo
(for an unrelated dataset). It uses shades of red for Donald Trump and shades of blue for Hillary Clinton.



(b) What does the map show? Justify your conclusions.

- The map essentially shows state-by-state percentage vote share of President Donald Trump in 2016 US Presidential election.
- The states are colored according majority of vote share in the election. If the state is colored in RED shades, that means Donald Trump has more than 50% vote share than Hillary Clinton for that state. It means he is leading in those states.
  Similarly, if a state is colored in the shades of blue that means Hillary Clinton shares higher percentage of vote share than Donald Trump.
- From map, we observe that the President Donald Trump has got maximum share of the votes from the central region of the United States of America, whereas Hillary Clinton has got maximum share of the votes from Eastern and Western region of the United States of America.
- From the map, we can say that, **states favoring President Donald Trump lie in the central region whereas his contender Hillary Clinton is been favored by the states that are located in bay areas (both eastern and western).**
- Donald Trump won 30 states whereas Hillary Clinton 20 states.

Section 2

R CODE

```
Install.packages(raster)
Install.packages(ggplot2)
Install.packages(ggmap)
Install.packages(plyr)
Install.packages(scales)
Install.packages(maps)



library(raster) # to get map shape file
library(ggplot2) # for plotting and miscellaneous things
library(ggmap) # for plotting
library(plyr) # for merging datasets
library(scales) # to get nice looking legends
library(maps) # Creates high quality maps that may be shaded or
projected in a variety of ways.

# Get a shape file of states in the US
usa.df <- fifty_states
colnames(usa.df)[6] <- "State"

# Get the data to be plotted
usa.dat <- read.csv("us_2016_election_data.csv", header = T, sep
= ",")
usa.dat$State <- tolower(usa.dat$State)
usa.dat$Clinton..<- as.numeric(gsub("%", "", usa.dat$Clinton..))
usa.dat$Trump..<- as.numeric(gsub("%", "", usa.dat$Trump..))
usa.dat <- usa.dat[,c("State", "Clinton..", "Trump..")]
usa.Hillary    <-    usa.dat[usa.dat$Clinton..    <    50    ,
c('State','Clinton..')]
usa.Donald <- usa.dat[usa.dat$Trump..>=50, c('State','Trump..')]

# Merge the data with the shape file

usa.df <- join(usa.df, usa.dat, by = "State", type = "inner")
```

```
usaDonald.df <- join(usa.df, usa.Donald, by = "State", type =
"inner")
usaHillary.df <- join(usa.df, usa.Hillary, by = "State", type =
"inner")


# Abbreviations of states and where thy should be plotted

states <- data.frame(state.center, state.abb) # centers of states
and abbreviations
subset <- tolower(state.name) %in% usa.df$State # exclude Hawaii
as there is no data for this state
states <- states[subset, ]


 # A function that plots the map based on the data given
p1 <- function(data, title)
  {

ggp<- ggplot()+geom_polygon(data = usa.df, aes(x = long, y = lat,
group = group, fill = Clinton..), color = "black", size = 0.15) +
scale_fill_gradient2(midpoint=50,low="red3",
mid="aliceblue",high="deepskyblue3",breaks=c(0,25,50,75,100),lab
els=c("Trump..","75","50","75","Clinton.."),limits=c(0,100))+
  theme_nothing(legend = TRUE) + labs(title = title, fill = "") +


geom_text(data = states, aes(x = x, y = y, label = state.abb),
size = 2)
return (ggp)
}

figure.title <- "State-by-state percentage vote share of President
Trump in
the 2016 US presidential election"

#saves the map to a file
 ggsave(p1(usa.df, figure.title), height = 4, width = 4*1.9,
                                file = "ElectionResult2016.jpg")
```