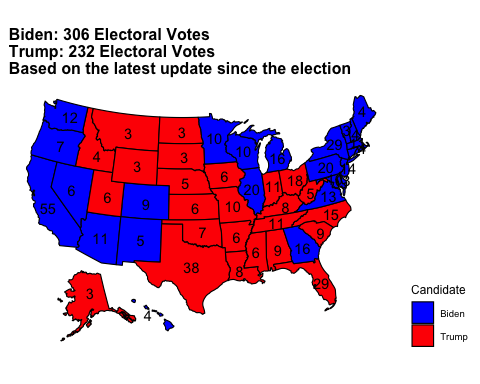
Final Project

Taylor Last

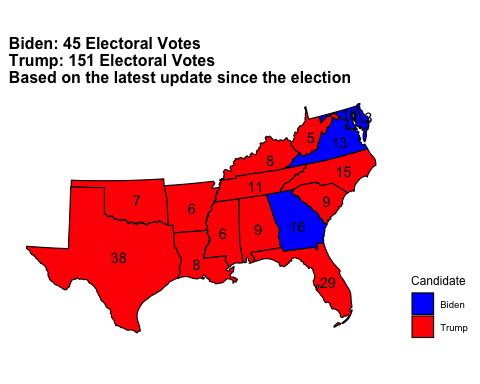
12/7/2020

######################  
# Taylor Last  
# Final Project  
######################  
  
library(tidyverse)  
library(lubridate)  
library(usmap)  
library(maptools)  
library(rgdal)  
  
plot\_election\_results <- function(electoral = F,vote\_type = 'total', region = statepop$abbr){  
   
 if (electoral != T && electoral !=F && electoral != TRUE && electoral != FALSE){  
 return('error: invalid input for electoral')  
 }  
   
 # Read in the file and create inperson column votes  
 election\_latest <- read\_csv('/Users/taylorlast/Documents/UGA\_FourthYear/STAT\_4365/USElection2020-NYT-Results-master/data/latest/presidential.csv', na = c('','NA',"NULL",'PrivacySuppressed'))  
 election\_latest = mutate(election\_latest,results\_inperson\_trumpd = results\_trumpd - results\_absentee\_trumpd,  
 results\_inperson\_bidenj = results\_bidenj - results\_absentee\_bidenj,  
 inperson\_votes = votes - absentee\_votes)  
 if(vote\_type == 'total'){  
 election=select(election\_latest,state,votes,results\_trumpd,results\_bidenj)  
   
 election\_states=group\_by(election,state)  
 election\_states  
   
 #Total votes by state  
 total\_votes=summarise(election\_states,sum(votes))  
 total\_votes  
   
 #Trump votes  
 trump\_votes=summarise(election\_states,sum(results\_trumpd))  
 trump\_votes  
   
 #Biden votes  
 biden\_votes=summarise(election\_states,sum(results\_bidenj))  
 biden\_votes  
   
 #Mutate the data frame  
 voting\_data=mutate(total\_votes,  
 trump = trump\_votes$`sum(results\_trumpd)`/total\_votes$`sum(votes)`,  
 biden = biden\_votes$`sum(results\_bidenj)`/total\_votes$`sum(votes)`,  
 total = `sum(votes)`)  
 }else if (vote\_type == 'absentee'){  
 election=select(election\_latest,state,absentee\_votes,results\_absentee\_trumpd,results\_absentee\_bidenj)  
   
 election\_states=group\_by(election,state)  
 election\_states  
   
 #Total votes by state  
 total\_votes=summarise(election\_states,sum(absentee\_votes))  
 total\_votes  
   
 #Trump votes  
 trump\_votes=summarise(election\_states,sum(results\_absentee\_trumpd))  
 trump\_votes  
   
 #Biden votes  
 biden\_votes=summarise(election\_states,sum(results\_absentee\_bidenj))  
 biden\_votes  
   
 #Mutate the data frame  
 voting\_data=mutate(total\_votes,  
 trump = trump\_votes$`sum(results\_absentee\_trumpd)`/total\_votes$`sum(absentee\_votes)`,  
 biden = biden\_votes$`sum(results\_absentee\_bidenj)`/total\_votes$`sum(absentee\_votes)`,  
 total = `sum(absentee\_votes)`)  
 }else if (vote\_type == 'in-person'){  
 election=select(election\_latest,state,inperson\_votes,results\_inperson\_trumpd,results\_inperson\_bidenj)  
   
 election\_states=group\_by(election,state)  
 election\_states  
   
 #Total votes by state  
 total\_votes=summarise(election\_states,sum(inperson\_votes))  
 total\_votes  
   
 #Trump votes  
 trump\_votes=summarise(election\_states,sum(results\_inperson\_trumpd))  
 trump\_votes  
   
 #Biden votes  
 biden\_votes=summarise(election\_states,sum(results\_inperson\_bidenj))  
 biden\_votes  
   
 #Mutate the data frame  
 voting\_data=mutate(total\_votes,  
 trump = trump\_votes$`sum(results\_inperson\_trumpd)`/total\_votes$`sum(inperson\_votes)`,  
 biden = biden\_votes$`sum(results\_inperson\_bidenj)`/total\_votes$`sum(inperson\_votes)`,  
 total = `sum(inperson\_votes)`)  
 }else{  
 return('error: invalid vote type')  
 }  
  
 voting\_data = voting\_data[c('state','trump','biden','total')]  
   
 voting\_data = mutate(voting\_data, trump\_win = ifelse(voting\_data$trump > voting\_data$biden,1,0))  
   
 # Get the centers for each state  
 state\_centers = usmap\_transform(tibble(state.center$x, state.center$y,state.name))  
   
 # Read in our electoral dataframe  
 electoral\_votes <- read\_csv('/Users/taylorlast/Documents/UGA\_FourthYear/STAT\_4365/electoralvotes.csv')  
   
 # Data Frame allows us to calculate electoral votes with DC  
 electoral\_college = merge(voting\_data,electoral\_votes, by ='state')  
 electoral\_college = mutate(electoral\_college,abbr = statepop$abbr)  
 electoral\_college = filter(electoral\_college, abbr %in% region)  
 electoral\_biden = sum(electoral\_college$`number of votes`) - sum((electoral\_college$`number of votes`)\*(electoral\_college$trump\_win))  
 electoral\_trump = sum((electoral\_college$`number of votes`)\*(electoral\_college$trump\_win))  
   
 # Remove DC because it doesn't have values for center  
 electoral\_votes = electoral\_votes[-9,]  
 electoral\_votes = mutate(electoral\_votes,center\_long = state\_centers$state.center.x.1, center\_lat = state\_centers$state.center.y.1)  
   
 # Change the center for Alaska and Hawaii  
 electoral\_votes[2,3]=-1203560  
 electoral\_votes[2,4]=-1837070  
 electoral\_votes[11,3]=-450000  
 electoral\_votes[11,4]=-2130070  
   
 voting\_data = mutate(voting\_data, state = statepop$full, abbr = statepop$abbr)  
 electoral\_votes = mutate(electoral\_votes,state = state.name)  
 election\_results = merge(voting\_data,electoral\_votes, by = 'state')  
   
 #Filter by region - will make sure electoral votes don't show for out of region  
 election\_results = filter(election\_results,abbr %in% region)  
   
 if (electoral == F){  
 plot\_usmap(data = election\_results, regions = 'states',values = 'trump',include = region) +  
 scale\_fill\_continuous(low = 'white', high = 'red', name = 'Vote Percentage for Trump')+  
 theme(legend.position = "right") +  
 ggtitle(paste(vote\_type, 'popular vote based on the latest update since the election'))+  
 theme(plot.title = element\_text(size = 12, face = "bold"))  
 }else {  
 plot\_usmap(data = election\_results,regions = 'states', values = 'trump\_win', include = region) +  
 scale\_fill\_continuous(low= 'blue',high = 'red', labels = c('Biden','Trump'), breaks = c(0,1), name = 'Candidate',guide = 'legend') +  
 geom\_text(data=election\_results,aes(x=center\_long,y=center\_lat,label = `number of votes`)) +  
 theme(legend.position = 'right') +  
 ggtitle(paste('Biden:', electoral\_biden,  
 'Electoral Votes\nTrump:', electoral\_trump,  
 'Electoral Votes\nBased on the latest update since the election'))+  
 theme(plot.title = element\_text(size = 12, face = "bold"))  
 }  
}

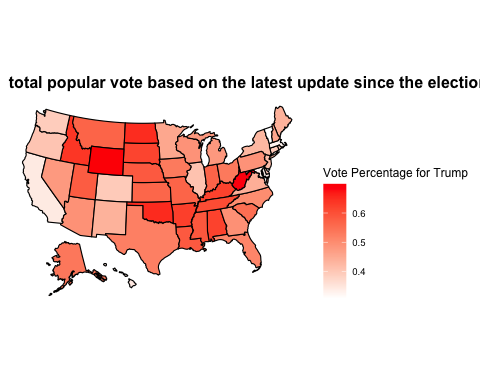
#Test cases  
plot\_election\_results(electoral = T, vote\_type = 'total')



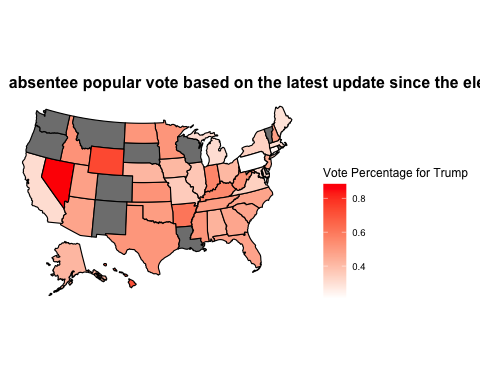
plot\_election\_results(electoral = T, vote\_type = 'total', region = .south\_region)



plot\_election\_results(electoral = F, vote\_type = 'total')



plot\_election\_results(electoral = F, vote\_type = 'absentee')



plot\_election\_results(electoral = F, vote\_type = 'in-person')

