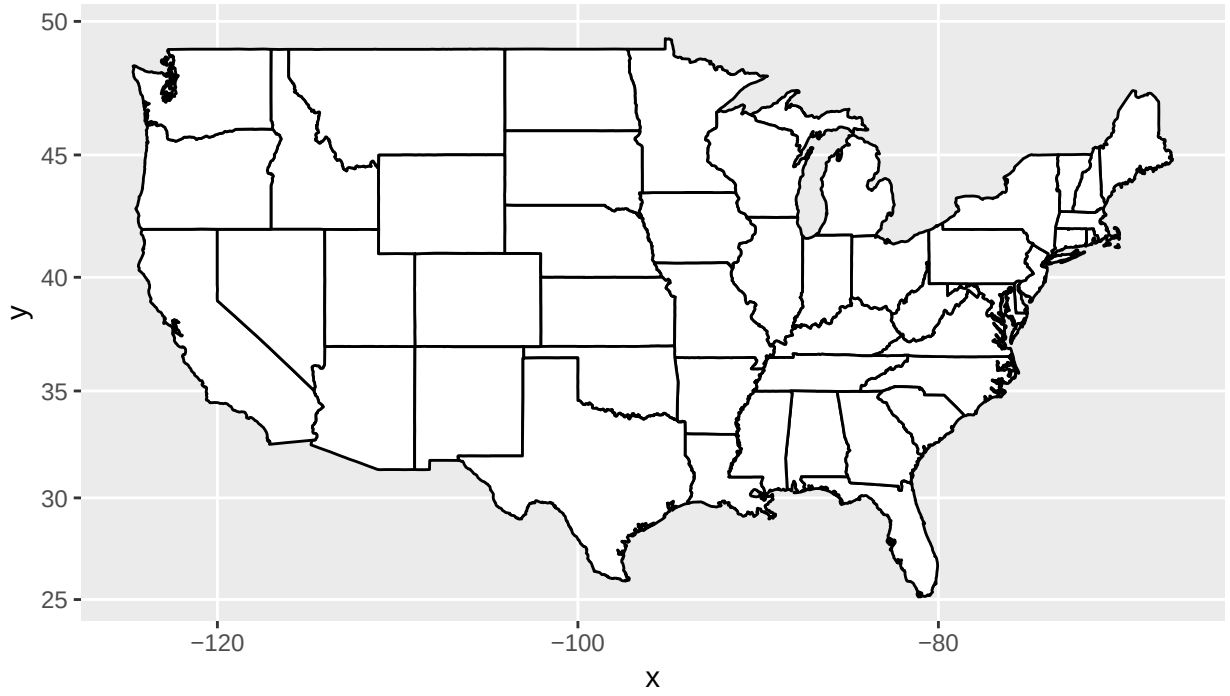
Holden Herrell IST687 HW7

```
#Step 1
#1.1
IncomeData <- read.csv(file="C:/Users/herre/OneDrive/Documents/HW7 Data.csv", header=TRUE)

#1.2.a-b
colnames(IncomeData) <- c("zip","median","mean","population")
IncomeData <- IncomeData[-1,]
IncomeData$zip <- as.character(IncomeData$zip)
IncomeData$zip <-as.integer(IncomeData$zip)
IncomeData$median <-as.numeric(gsub(",","",IncomeData$median))
IncomeData$mean <-as.numeric(gsub(",","",IncomeData$mean))
```

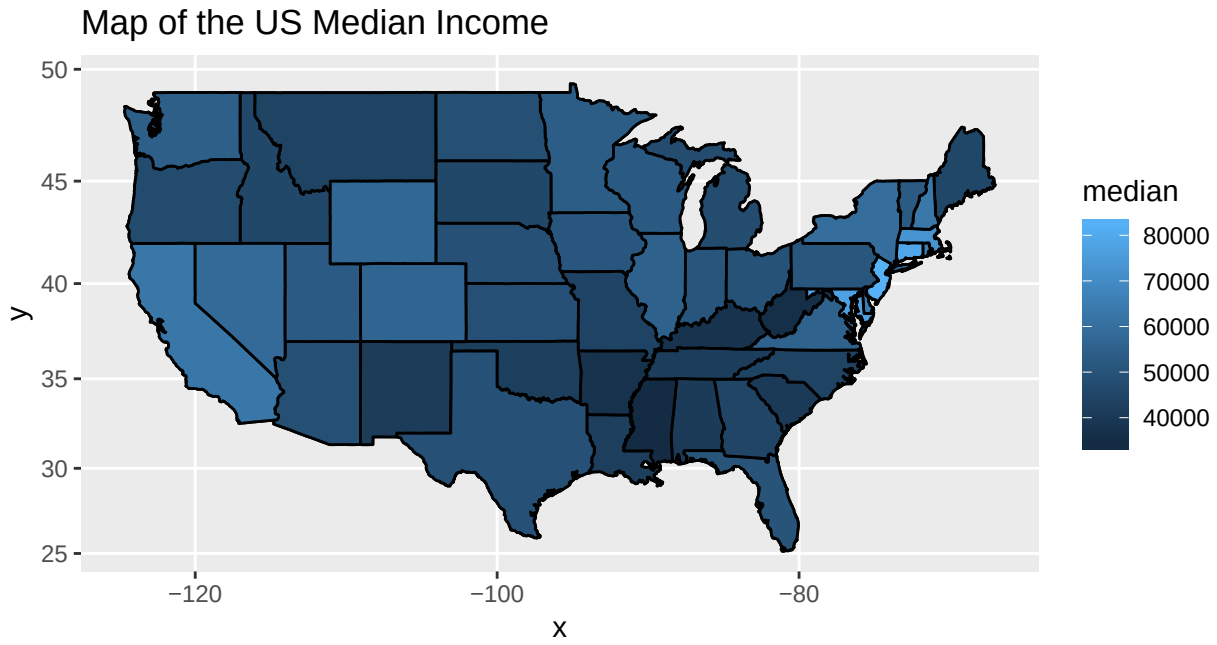
```
## Warning: NAs introduced by coercion
```

```
IncomeData$population <-as.numeric(gsub(",","",IncomeData$population))

#1.3-5
data("zipcode")
zipcode$zip <-as.integer(zipcode$zip)
noAKzip <- subset(zipcode,zipcode$state !="AK")
noHIzip <- subset(noAKzip,zipcode$state !="HI")
CleanZipcode <- noHIzip

IncomeMerge <- merge(CleanZipcode, IncomeData, by.x="zip", by.y="zip")

#Step 2
#2.1
state <- sort(unique(IncomeMerge$state))
median <- tapply(as.numeric(IncomeMerge$median),IncomeMerge$state,mean)
population <- tapply(as.numeric(IncomeMerge$population),IncomeMerge$state,sum)
simplerDF <- data.frame(median, population, state)

#2.2
simplerDF$stateAbbr <- state
simplerDF$stateName <- state.name[match(simplerDF$stateAbbr,state.abb)]
simplerDF$stateName <- tolower(simplerDF$stateName)
simplerDF <- simplerDF[,-3]
```

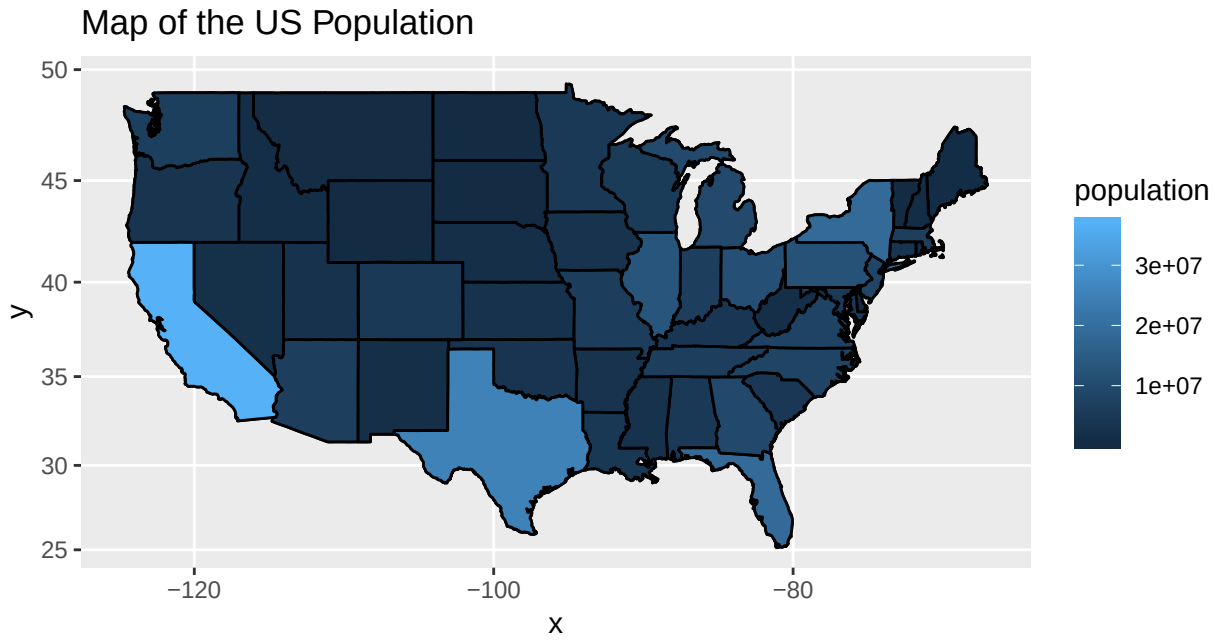
```r
#2.3
USmap<-data.frame(state.name, stringsAsFactors = FALSE)
USmap$state<-tolower(USmap$state.name)
us<-map_data("state")
map.simple <- ggplot(USmap, aes(map_id=state))
map.simple <- map.simple + geom_map(map=us, fill="white", color="black")
map.simple <- map.simple+expand_limits(x=us$long, y=us$lat)
map.simple <- map.simple+coord_map()
map.simple
```



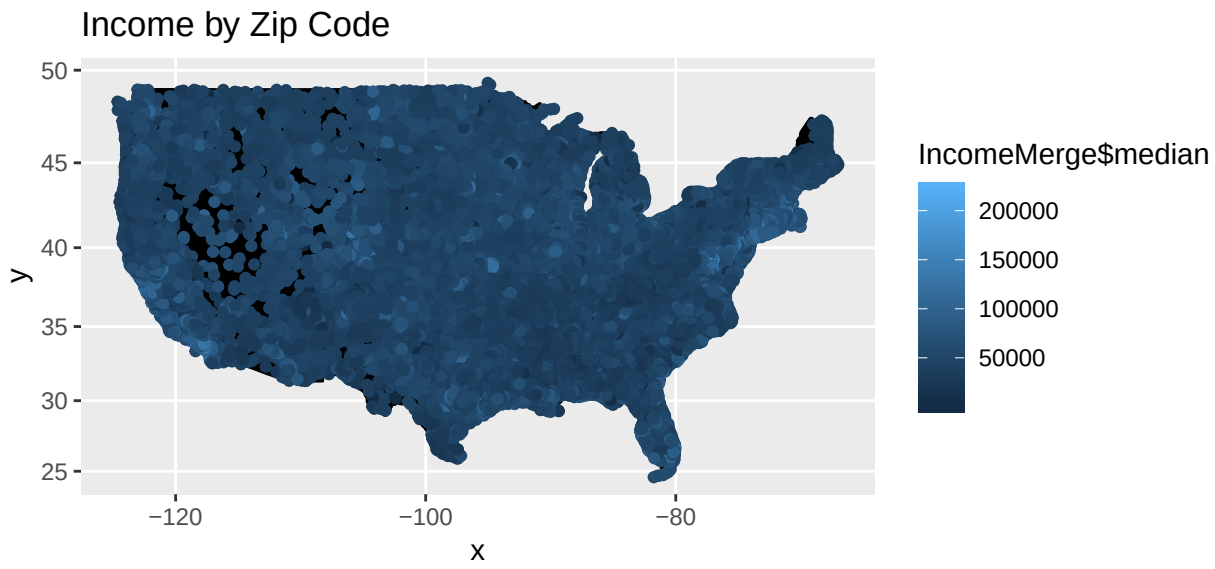
```
IncomeMap <- map.simple+geom_map(data=simplerDF,map=us,
    aes(fill=median,map_id=stateName),color="black",na.rm=TRUE)+ggtitle("Map of the US Median Income")
IncomeMap
```



```
#2.4
IncomeMap2 <- map.simple+geom_map(data=simplerDF,map=us,
    aes(fill=population,map_id=stateName),color="black",na.rm=TRUE)+ggtitle("Map of the US Population")
IncomeMap2
```



```
#Step 3
BlackMap <- ggplot(USmap, aes(map_id=state))
BlackMap <- BlackMap + geom_map(map=us, fill="black", color="black")
BlackMap <- BlackMap+expand_limits(x=us$long, y=us$lat)
BlackMap <- BlackMap+coord_map()
ZipCodeMap<-BlackMap+geom_point(data=IncomeMerge, aes(x=IncomeMerge$longitude,
    y=IncomeMerge$latitude,color=IncomeMerge$median),na.rm=TRUE)
ZipCodeMap<-ZipCodeMap+ggtitle("Income by Zip Code")
ZipCodeMap
```



```
#Step 4
ZipCodeDensity <- map.simple + stat_density2d(data=IncomeMerge,aes(x=IncomeMerge$longitude, y=IncomeMerge$latitude),na.rm=TRUE)
ZipCodeDensity <- ZipCodeDensity+ ggtitle("Zip Code Density")
ZipCodeDensity
```