```
## set your working directory for export and import

setwd("/Users/swarn/Desktop/LAB 5")

## Package setup

pkgs <- c("tidyverse", "tidycensus", "spdep", "mapview",
          "leafsync", "tmap", "tmaptools", "remotes", "sf", "shiny", "shinyjs")

install.packages(pkgs)
remotes::install_github("walkerke/crsuggest")

## Set your Census API key if need be
library(tidycensus)
census_api_key("671c46c68c7be71e877cd3eeb315bbd0acd627fc")
readRenviron("~/.Renviron")


------------------------------------------------------------------


## ----tidycensus-geometry-------------------------------------------------------------------------------
library(tidycensus)
options(tigris_use_cache = TRUE)


ca_medianrent <- get_acs(geography = "county",
                         variables = c(medrent = "B25064_001"),
                         state = "CA")

ca_medianrent <- get_acs(geography = "county",
                        variables = c(medrent = "B25064_001"),
                        state = "CA",
                        geometry = TRUE)

## ----show-geometry-------------------------------------------------------------------------------------
ca_medianrent


## ----plot-geometry-------------------------------------------------------------------------------------
plot(ca_medianrent["estimate"])



## ----geom-sf-------------------------------------------------------------------------------------------
library(tidyverse)

ca_map <- ggplot(ca_medianrent, aes(fill = estimate)) +
  geom_sf()


## ----plot-geom-sf--------------------------------------------------------------------------------------
ca_map


## ----get-santa-clara-data------------------------------------------------------------------------------
```

```
sf_rent <- get_acs(
  geography = "tract",
  state = "CA",)



##SF Rent map
sf_rent <- get_acs(
  geography = "tract",
  state = "CA",
  county = "San Francisco",
  variables = c(medrent = "B25064_001"),
  geometry = TRUE
)


## ----glimpse-sc-data-----------------------------------------------------------------------------
glimpse(sf_rent)


## ----polygons-map, echo = FALSE------------------------------------------------------------------
library(tmap)

sf_rent <- filter(sf_rent,
                  variable == "medrent")

tm_shape(sf_rent) +
  tm_polygons()


## ----choropleth-show, echo = FALSE---------------------------------------------------------------
tm_shape(sf_rent) +
  tm_polygons(col = "estimate")


## ----custom-choropleth-show, echo = FALSE--------------------------------------------------------
tm_shape(sf_rent,
         projection = sf::st_crs(26915)) +
  tm_polygons(col = "estimate",
              style = "quantile",
              n = 5,
              palette = "Greens",
              title = "Median Rent Of San Francisco") +
  tm_layout(title = "Median Rent Of San Francisco\nby Census tract",
            frame = FALSE,
            legend.outside = TRUE)


## ---- eval = FALSE-----------------------------------------------------------------------------
library(mapview)

mapview(sf_rent, zcol = "estimate")

m1 <- mapview(sf_rent, zcol = "estimate")
```

```
## ----write-shp, eval = FALSE----------------------------------------------------------------------
library(sf)

st_write(sf_rent, "sfdata/sfrent.shp")

##Alameda Rent
Al_rent <- get_acs(
  geography = "tract",
  state = "CA",
  county = "Alameda",
  variables = c(medrent = "B25064_001"),
  geometry = TRUE
)


## ----glimpse-sc-data------------------------------------------------------------------------------
glimpse(Al_rent)


## ----polygons-map, echo = FALSE-------------------------------------------------------------------
library(tmap)

sf_rent <- filter(Al_rent,
                  variable == "medrent")

tm_shape(Al_rent) +
  tm_polygons()


## ----choropleth-show, echo = FALSE----------------------------------------------------------------
tm_shape(Al_rent) +
  tm_polygons(col = "estimate")


## ----custom-choropleth-show, echo = FALSE---------------------------------------------------------
tm_shape(sf_rent,
         projection = sf::st_crs(26915)) +
  tm_polygons(col = "estimate",
              style = "quantile",
              n = 5,
              palette = "Greens",
              title = "Median Rent Of Alameda") +
  tm_layout(title = "Median Rent Of Alameda\nby Census tract",
            frame = FALSE,
            legend.outside = TRUE)


## ---- eval = FALSE-------------------------------------------------------------------------------
library(mapview)

mapview(Al_rent, zcol = "estimate")

m1 <- mapview(Al_rent, zcol = "estimate")
```

```
## ----write-shp, eval = FALSE----------------------------------------------------------------------
library(sf)

st_write(Al_rent, "sfdata/alamedarent.shp")

##Contra Costa Rent
cc_rent <- get_acs(
  geography = "tract",
  state = "CA",
  county = "Contra Costa",
  variables = c(medrent = "B25064_001"),
  geometry = TRUE
)


## ----glimpse-sc-data------------------------------------------------------------------------------
glimpse(cc_rent)


## ----polygons-map, echo = FALSE-------------------------------------------------------------------
library(tmap)

cc_rent <- filter(cc_rent,
                  variable == "medrent")

tm_shape(cc_rent) +
  tm_polygons()


## ----choropleth-show, echo = FALSE----------------------------------------------------------------
tm_shape(cc_rent) +
  tm_polygons(col = "estimate")


## ----custom-choropleth-show, echo = FALSE---------------------------------------------------------
tm_shape(cc_rent,
         projection = sf::st_crs(26915)) +
  tm_polygons(col = "estimate",
              style = "quantile",
              n = 5,
              palette = "Greens",
              title = "Median Rent Of Contra Costa") +
  tm_layout(title = "Median Rent Of Contra Costa\nby Census tract",
            frame = FALSE,
            legend.outside = TRUE)


## ---- eval = FALSE-------------------------------------------------------------------------------
library(mapview)

mapview(cc_rent, zcol = "estimate")

m1 <- mapview(cc_rent, zcol = "estimate")


## ----write-shp, eval = FALSE----------------------------------------------------------------------
```

```
library(sf)

st_write(cc_rent, "sfdata/contracostarent1.shp")

##Santa Clara rent

sc_rent <- get_acs(
   geography = "tract",
   state = "CA",
   county = "Santa Clara",
   variables = c(medrent = "B25064_001"),
   geometry = TRUE
 )


## ----glimpse-sc-data-----------------------------------------------------------------------
glimpse(sc_rent)


## ----polygons-map, echo = FALSE------------------------------------------------------------
library(tmap)

cc_rent <- filter(sc_rent,
                  variable == "medrent")

tm_shape(sc_rent) +
  tm_polygons()


## ----choropleth-show, echo = FALSE---------------------------------------------------------
tm_shape(sc_rent) +
  tm_polygons(col = "estimate")


## ----custom-choropleth-show, echo = FALSE--------------------------------------------------
tm_shape(cc_rent,
         projection = sf::st_crs(26915)) +
  tm_polygons(col = "estimate",
              style = "quantile",
              n = 5,
              palette = "Greens",
              title = "Median Rent Of Santa Clara") +
  tm_layout(title = "Median Rent Of Santa Clara\nby Census tract",
            frame = FALSE,
            legend.outside = TRUE)


## ---- eval = FALSE-----------------------------------------------------------------------
library(mapview)

mapview(sc_rent, zcol = "estimate")

m1 <- mapview(sc_rent, zcol = "estimate")


## ----write-shp, eval = FALSE---------------------------------------------------------------
```

```
library(sf)

st_write(sc_rent, "sfdata/santaclararent.shp")

##Marin County rent

mc_rent <- get_acs(
  geography = "tract",
  state = "CA",
  county = "Marin",
  variables = c(medrent = "B25064_001"),
  geometry = TRUE
)


## ----glimpse-sc-data-----------------------------------------------------------------------
glimpse(mc_rent)


## ----polygons-map, echo = FALSE------------------------------------------------------------
library(tmap)

mc_rent <- filter(mc_rent,
                  variable == "medrent")

tm_shape(mc_rent) +
  tm_polygons()


## ----choropleth-show, echo = FALSE---------------------------------------------------------
tm_shape(mc_rent) +
  tm_polygons(col = "estimate")


## ----custom-choropleth-show, echo = FALSE--------------------------------------------------
tm_shape(mc_rent,
         projection = sf::st_crs(26915)) +
  tm_polygons(col = "estimate",
              style = "quantile",
              n = 5,
              palette = "Greens",
              title = "Median Rent Of Marin County") +
  tm_layout(title = "Median Rent Of Marin County\nby Census tract",
            frame = FALSE,
            legend.outside = TRUE)


## ---- eval = FALSE-----------------------------------------------------------------------------
library(mapview)

mapview(mc_rent, zcol = "estimate")

m1 <- mapview(mc_rent, zcol = "estimate")


## ----write-shp, eval = FALSE---------------------------------------------------------------
```

```
library(sf)

st_write(mc_rent, "sfdata/marincountyrent.shp")

##San Mateo rent

sm_rent <- get_acs(
  geography = "tract",
  state = "CA",
  county = "San Mateo",
  variables = c(medrent = "B25064_001"),
  geometry = TRUE
)


## ----glimpse-sc-data-----------------------------------------------------------------------
glimpse(sm_rent)


## ----polygons-map, echo = FALSE------------------------------------------------------------
library(tmap)

cc_rent <- filter(sm_rent,
                  variable == "medrent")

tm_shape(sm_rent) +
  tm_polygons()


## ----choropleth-show, echo = FALSE---------------------------------------------------------
tm_shape(sm_rent) +
  tm_polygons(col = "estimate")


## ----custom-choropleth-show, echo = FALSE--------------------------------------------------
tm_shape(cc_rent,
         projection = sf::st_crs(26915)) +
  tm_polygons(col = "estimate",
              style = "quantile",
              n = 5,
              palette = "Greens",
              title = "Median Rent Of San Mateo County") +
  tm_layout(title = "Median Rent Of San Mateo County\nby Census tract",
            frame = FALSE,
            legend.outside = TRUE)


## ---- eval = FALSE-----------------------------------------------------------------------------
library(mapview)

mapview(sm_rent, zcol = "estimate")

m1 <- mapview(sm_rent, zcol = "estimate")


## ----write-shp, eval = FALSE---------------------------------------------------------------
```

```
library(sf)

st_write(sm_rent, "sfdata/sanmateorent.shp")
```