Heidi Kloser Homework_5

Heidi Kloser

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```
knitr::opts_chunk$set(echo = TRUE, warning = FALSE, message = FALSE,
                      error = FALSE)
```

Libraries

```
#packages
library(tidyverse)
library(lubridate)
library(ggthemes)
library(broom)
library(knitr)
library(scales)
library(tigris)
library(sf)
library(viridis)
library(shiny)
library(leaflet)
library(DT)
library(plotly)
library(flexdashboard)
library(jsonlite)
library(maptools)
library(ggplot2)
```

List files in "data" sub directory

```
list.files("data")
```

```
## [1] "homicide-data.csv"
```

```
# read in data
homicides<-read.csv("data/homicide-data.csv")
```

Putting map components in

```
ga_counties <- counties(state = "GA", cb = TRUE, class = "sf")
```

```
##   |                                                                              |
```

```
#getting geographical data from sf/tigris
class(ga_counties)
```

```
## [1] "sf"         "data.frame"
```

checking county and class data

```
ga_counties %>%
  slice(1:3)
```

```
## Simple feature collection with 3 features and 12 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XY
## Bounding box:  xmin: -82.42044 ymin: 30.35785 xmax: -81.26955 ymax: 33.297
## Geodetic CRS:  NAD83
##   STATEFP COUNTYFP COUNTYNS       AFFGEOID GEOID     NAME        NAMELSAD
## 1      13      049 00357747 0500000US13049 13049 Charlton Charlton County
## 2      13      127 01671513 0500000US13127 13127    Glynn    Glynn County
## 3      13      033 00347944 0500000US13033 13033    Burke    Burke County
##   STUSPS STATE_NAME LSAD      ALAND    AWATER                       geometry
## 1     GA    Georgia   06 2020415648   5963237 MULTIPOLYGON (((-82.42027 3...
## 2     GA    Georgia   06 1086851231 429107116 MULTIPOLYGON (((-81.78263 3...
## 3     GA    Georgia   06 2142015889  20578826 MULTIPOLYGON (((-82.31651 3...
```

```
class(ga_counties$geometry)
```

```
## [1] "sfc_MULTIPOLYGON" "sfc"
```

Incorporating homicide data into map

```
atlanta <- tracts(state = "GA", county = "Fulton", cb = TRUE, class = "sf")
```

```
##   |                                                                              |
```

```
class(atlanta)
```

```
## [1] "sf"         "data.frame"
```

checking tract and class data

```
atlanta %>%
  slice(1:3)
```

```
## Simple feature collection with 3 features and 13 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XY
## Bounding box:  xmin: -84.47101 ymin: 33.65339 xmax: -84.41151 ymax: 33.76466
## Geodetic CRS:  NAD83
##   STATEFP COUNTYFP TRACTCE             AFFGEOID       GEOID   NAME
## 1      13      121  010601 1400000US13121010601 13121010601 106.01
## 2      13      121  008302 1400000US13121008302 13121008302  83.02
## 3      13      121  004200 1400000US13121004200 13121004200     42
##              NAMELSAD STUSPS    NAMELSADCO STATE_NAME LSAD   ALAND AWATER
## 1 Census Tract 106.01     GA Fulton County    Georgia   CT 2930344      0
## 2  Census Tract 83.02     GA Fulton County    Georgia   CT 1890470      0
## 3     Census Tract 42     GA Fulton County    Georgia   CT 1235220      0
##                         geometry
## 1 MULTIPOLYGON (((-84.46957 3...
## 2 MULTIPOLYGON (((-84.46315 3...
## 3 MULTIPOLYGON (((-84.42334 3...
```

```
class(atlanta$geometry)
```

```
## [1] "sfc_MULTIPOLYGON" "sfc"
```

```
ga_f <- county_subdivisions(state = "GA", county = "Fulton", cb = TRUE, class = "sf")
```

```
##   |                                                                              |
```

```
# piping n code to clean up data
homicides<- homicides%>%
  mutate(state = str_to_upper(string = state))%>% # changing case
  mutate(city_name = paste(city, state))%>% # combine city and state name to one col
    mutate(status = factor(disposition, levels = c("Closed by arrest",
                                                   "Closed without arrest",
                                                   "Open/No arrest"),
                           labels = c("Solved", "Unsolved", "Unsolved")))%>%
  # creating new col for solves/unsolved
  filter(str_detect(city_name, "Atlanta"))%>% # filtering to only Atlanta
  select(- city, - state, - disposition) %>% #removing redundant columns
  dplyr::mutate(victim_race = forcats::fct_lump(victim_race, n = 3))


head(homicides, 3)
```

```
##          uid reported_date victim_last victim_first victim_race victim_age
## 1 Atl-000756      20070110    BIRDSONG       ERNEST       Black         29
## 2 Atl-000757      20070110        REED      MICHAEL       Black         29
## 3 Atl-000758      20070114   FELICIANO       JOHNNY    Hispanic         36
##   victim_sex      lat       lon  city_name status
## 1       Male 33.72635 -84.38473 Atlanta GA Solved
## 2       Male 33.80589 -84.46495 Atlanta GA Solved
## 3       Male 33.75267 -84.41836 Atlanta GA Solved
```

Change to an sf object by saying which columns are the coordinates and setting a CRS:

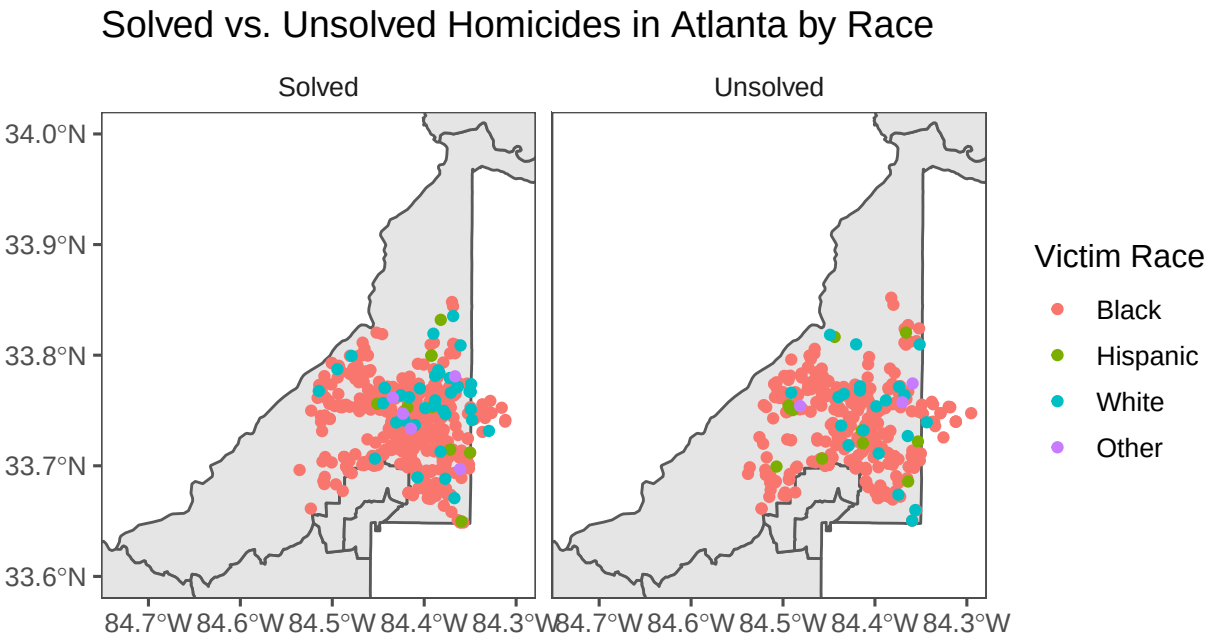
```
at_hom <- st_as_sf(homicides, coords = c("lon", "lat")) %>%
st_set_crs(4269) #setting CRS
at_hom %>% slice(1:3)
```

```
## Simple feature collection with 3 features and 9 fields
## Geometry type: POINT
## Dimension:     XY
## Bounding box:  xmin: -84.46495 ymin: 33.72635 xmax: -84.38473 ymax: 33.80589
## Geodetic CRS:  NAD83
##          uid reported_date victim_last victim_first victim_race victim_age
## 1 Atl-000756      20070110    BIRDSONG       ERNEST       Black         29
## 2 Atl-000757      20070110        REED      MICHAEL       Black         29
## 3 Atl-000758      20070114   FELICIANO       JOHNNY    Hispanic         36
##   victim_sex  city_name status                   geometry
## 1       Male Atlanta GA Solved POINT (-84.38473 33.72635)
## 2       Male Atlanta GA Solved POINT (-84.46495 33.80589)
## 3       Male Atlanta GA Solved POINT (-84.41836 33.75267)
```

Map

```
#trying to put points on the map
ggplot() +
  geom_sf(data = ga_f)+
  theme(axis.text.x = element_text(angle = 45))+
  xlim(c(-84.73, -84.3)) + ylim(c(33.6, 34.0))+
  facet_wrap(~status, ncol = 2)+
  geom_sf(data = at_hom, aes(color = victim_race))+
  ggtitle("Solved vs. Unsolved Homicides in Atlanta by Race")+
  labs(color = "Victim Race")+
```

```
theme_few()
```


Solved vs. Unsolved Homicides in Atlanta by Race
Solved
Unsolved
34.0°N
33.9°N
33.8°N
33.7°N
33.6°N
84.7°W
84.6°W
84.5°W
84.4°W
84.3°W
Victim Race
Black
Hispanic
White
Other