Homwork 5

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Pick one city in the data. Create a map showing the locations of the homicides in that city, using the sf framework discussed in class. Use tigris to download boundaries for some sub-city geography (e.g., tracts, block groups, county subdivisions) to show as a layer underneath the points showing homicides. Use different facets for solved versus unsolved homicides and different colors to show the three race groups with the highest number of homicides for that city (you may find the fct_lump function from forcats useful for this).

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

Load in libraries

```
library(tidyverse)
library(tigris)
library(sf)
library(forcats)
```

Load in data

```
homocides <- read.csv("data/homicide-data.csv")
head(homocides)
```

```
##          uid reported_date victim_last victim_first victim_race victim_age
## 1 Alb-000001      20100504      GARCIA         JUAN    Hispanic         78
## 2 Alb-000002      20100216     MONTOYA      CAMERON    Hispanic         17
## 3 Alb-000003      20100601 SATTERFIELD      VIVIANA       White         15
## 4 Alb-000004      20100101    MENDIOLA       CARLOS    Hispanic         32
## 5 Alb-000005      20100102        MULA       VIVIAN       White         72
## 6 Alb-000006      20100126        BOOK    GERALDINE       White         91
##   victim_sex        city state      lat       lon           disposition
## 1       Male Albuquerque    NM 35.09579 -106.5386 Closed without arrest
## 2       Male Albuquerque    NM 35.05681 -106.7153      Closed by arrest
## 3     Female Albuquerque    NM 35.08609 -106.6956 Closed without arrest
## 4       Male Albuquerque    NM 35.07849 -106.5561      Closed by arrest
## 5     Female Albuquerque    NM 35.13036 -106.5810 Closed without arrest
## 6     Female Albuquerque    NM 35.15111 -106.5378        Open/No arrest
```

Get san diego homocides

```
sd <- homocides %>%
  filter(city == "San Diego") %>%
  filter(!is.na(lat)) %>%
  mutate(case_status = case_when(
    disposition %in% c("Open/No arrest","Closed without arrest") ~"Unsolved",
    disposition == "Closed by arrest" ~ "Solved")) %>%
  mutate(lump_race = fct_lump_n(victim_race, 3))

head(sd)
```

```
##         uid reported_date victim_last    victim_first victim_race victim_age
## 1 SD-000001      20070107       RAMOS           DAVID    Hispanic         22
## 2 SD-000002      20070114      VALDEZ            RUDY    Hispanic         25
## 3 SD-000003      20070126      HARPER  GREGORY WALTER       Black         25
## 4 SD-000004      20070217   HERNANDEZ FRANCISCO ARIEL    Hispanic         25
## 5 SD-000005      20070217     RAMIREZ        MERCEDES    Hispanic         75
## 6 SD-000006      20070226       HAWES         ALLEN B       White         57
##   victim_sex      city state      lat       lon      disposition case_status
## 1       Male San Diego    CA 32.55026 -117.0460   Open/No arrest    Unsolved
## 2       Male San Diego    CA 32.74412 -117.1156   Open/No arrest    Unsolved
## 3       Male San Diego    CA 32.70643 -117.0332 Closed by arrest      Solved
## 4       Male San Diego    CA 32.55837 -117.0472   Open/No arrest    Unsolved
## 5     Female San Diego    CA 32.75247 -117.1106 Closed by arrest      Solved
## 6       Male San Diego    CA 32.59200 -117.0841 Closed by arrest      Solved
##   lump_race
## 1  Hispanic
## 2  Hispanic
## 3     Black
## 4  Hispanic
## 5  Hispanic
## 6     White
```

Get san diego subdivisions.

```
sd_mapping <- county_subdivisions(state = "CA", county= "San Diego", cb = TRUE)
```

```
## Retrieving data for the year 2020
```

```
slice(sd_mapping, 1:3)
```

```
## Simple feature collection with 3 features and 14 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XY
## Bounding box:  xmin: -116.967 ymin: 32.55779 xmax: -116.0809 ymax: 33.42889
## Geodetic CRS:  NAD83
##   STATEFP COUNTYFP COUSUBFP COUSUBNS            AFFGEOID      GEOID
## 1      06      073    90258 01935013 0600000US0607390258 0607390258
## 2      06      073    91440 01935149 0600000US0607391440 0607391440
## 3      06      073    91510 01935156 0600000US0607391510 0607391510
##                  NAME               NAMELSAD STUSPS       NAMELSADCO STATE_NAME
## 1    Borrego Springs    Borrego Springs CCD     CA San Diego County California
## 2              Jamul              Jamul CCD     CA San Diego County California
## 3 Laguna-Pine Valley Laguna-Pine Valley CCD     CA San Diego County California
##   LSAD      ALAND  AWATER                       geometry
## 1   22 2759172323   47260 MULTIPOLYGON (((-116.6181 3...
## 2   22  534862779 4816820 MULTIPOLYGON (((-116.967 32...
## 3   22  602622351 8212807 MULTIPOLYGON (((-116.7902 3...
```

Convert lat long for plotting.

```
sd <- st_as_sf(sd, coords = c("lon", "lat")) %>%
  st_set_crs(4269)
```

Plot San Diego

```
ggplot() +
  geom_sf(data = sd_mapping, color = "light grey") +
  geom_sf(data = sd, aes(color = lump_race), alpha = 0.5) +
```

```
  facet_wrap(~ case_status, ncol = 2) +
  theme_dark() +
  theme(legend.position="bottom") +
  theme(axis.text.x = element_text(angle = 45, vjust = 0.5, hjust=1)) +
  labs(color='Victim Race', title= "# of Solved vs Unsolved Homocides", subtitle = "City of San Diego")
```