

# Homework 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 homicides

```
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 06000000US0607390258 0607390258
## 2      06      073      91440 01935149 06000000US0607391440 0607391440
## 3      06      073      91510 01935156 06000000US0607391510 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(size=6), axis.text.y=element_text(size=6)) +
labs(color='Victim Race', title= "# of Solved vs Unsolved Homocides", subtitle = "City of San Diego")
```

## # of Solved vs Unsolved Homocides

### City of San Diego

