# Homework 5

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### 9.4.2 Initializing git for an R Project

Write a piece of code that lists the files you saved in the data sub directory.

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

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

### Homework 5: Choice 1

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).

```
homicides <- read_csv("../data/homicide-data.csv") %>%
  mutate(state = case_when(city == "Tulsa" ~ "OK",
                           state == "wI" ~ "WI",
                           city != "Tulsa" ~ state),
         city_name = paste0(city, ", ", state))
```

```
## Rows: 52179 Columns: 12
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (9): uid, victim_last, victim_first, victim_race, victim_age, victim_sex...
## dbl (3): reported_date, lat, lon
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
denver <- tracts(state = "CO", cb = TRUE, class = "sf") %>%
  filter(COUNTYFP == "031")
```

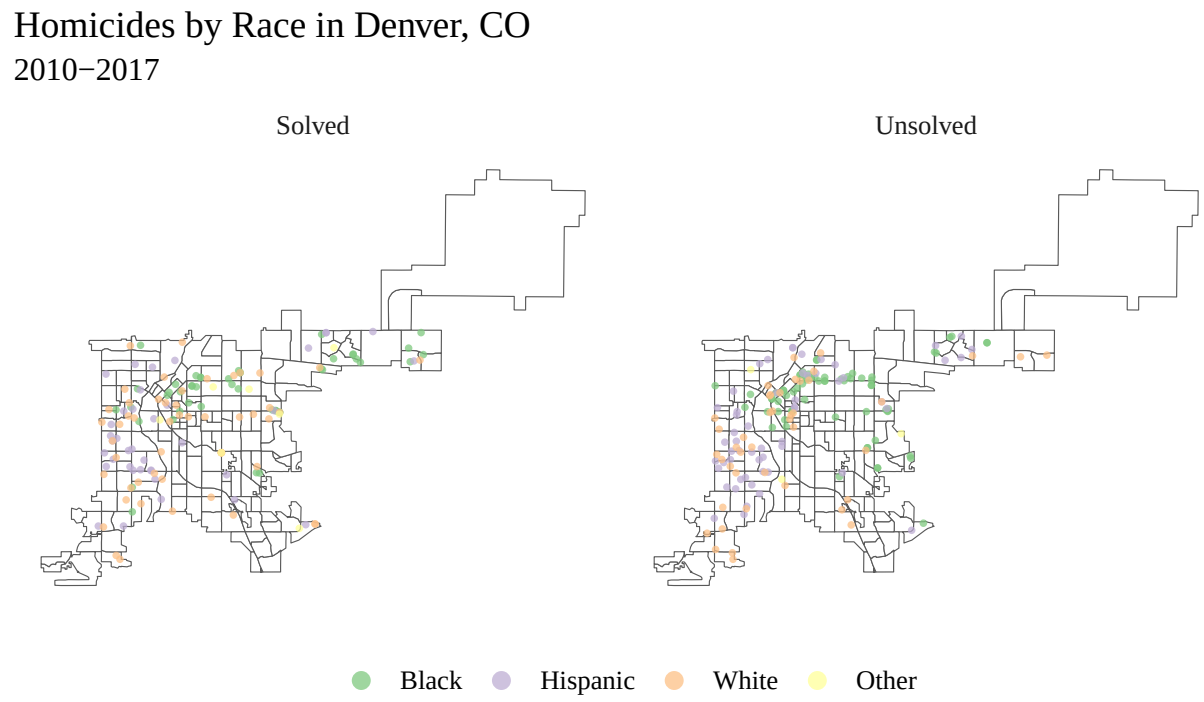
```
## Retrieving data for the year 2020
```

```
##   |                                                                              |
```

```r
homicides_denver <- homicides %>%
  filter(city == "Denver") %>%
  mutate(solved_status = ifelse(disposition %in%
                                  c("Closed without arrest", "Open/No arrest"),
                                "Unsolved","Solved"),
         race = fct_lump(victim_race, 3))

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

```r
ggplot() +
  geom_sf(data = denver, fill = "white", size = 0.1) +
  geom_sf(data = homicides_denver, aes(color = race), alpha = 0.75,
          size = 1, shape = 16) +
  facet_wrap(~solved_status) +
  labs(color = "") +
  ggtitle("Homicides by Race in Denver, CO", subtitle = "2010-2017") +
  scale_color_brewer(palette = "Accent") +
  guides(color = guide_legend(override.aes = list(size=3))) +
  theme_minimal() +
  theme(axis.ticks = element_blank(),
        axis.text = element_blank(),
        panel.grid = element_line(color = "white"),
        text=element_text(size=12,  family="serif"),
        legend.position = "bottom")
```



## Homework 5: Choice 2

Recreate the graph shown below. It shows monthly homicides in Baltimore, with a reference added for the date of the arrest of Freddie Gray and color used to show colder months (November through April) versus warmer months (May through October). There is a smooth line added to help show seasonal and long-term trends in this data.

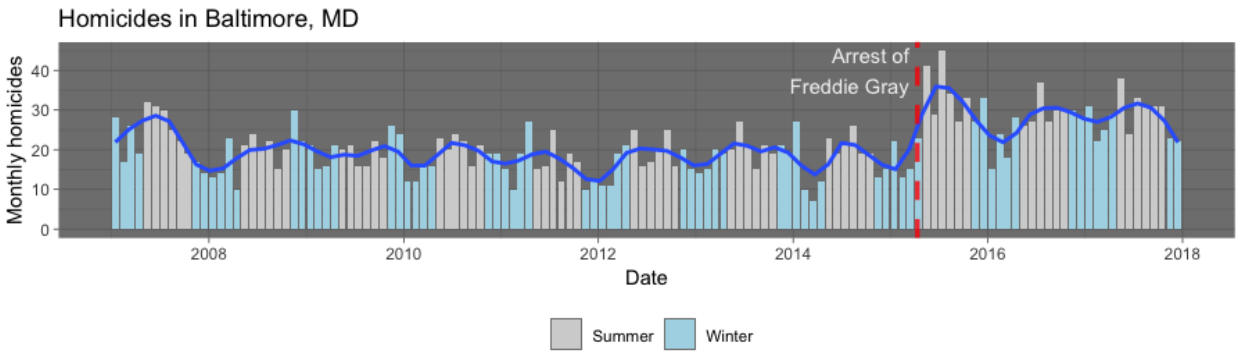



Figure 1: From Course Book

```
homicides_baltimore <- homicides %>%
  filter(city == "Baltimore") %>%
  mutate(solved_status = ifelse(disposition %in%
                                  c("Closed without arrest", "Open/No arrest"),
                                "Unsolved","Solved"),
         race = fct_lump(victim_race, 3),
         date = ymd(reported_date),
         season = ifelse(month(date) %in% c(11,12,1,2,3,4),"Winter","Summer"),
         month = ym(paste0(year(date),month(date))))

freddie_gray <- homicides_baltimore %>%
  filter(victim_first == "FREDDIE CARLOS" & victim_last == "GREY")

homicides_baltimore_count <- homicides_baltimore %>%
  group_by(month, season) %>%
  summarize(count = n())
```

```
## `summarise()` has grouped output by 'month'. You can override using the
## `.groups` argument.
```

```
ggplot() +
  geom_bar(data = homicides_baltimore, aes(x = month, fill = season),
           color = "gray70") +
  geom_smooth(data = homicides_baltimore_count, aes(x = month, y = count),
              se = FALSE, span = 0.1) +
  geom_vline(data = freddie_gray, aes(xintercept = month),
             color = "red", linetype = 2, size = 1.25) +
  annotate("text", x=ym("2014-08"), y=40, label="Arrest of\nFreddie Gray",
           size=3.5, color="gray84") +
  ggtitle("Homicides in Baltimore, MD") +
  labs(x = "Date", y = "Monthly homicides", fill = "") +
```

```
  scale_fill_manual(values=c("Summer"="gray84", "Winter"="lightblue1")) +
  theme_dark() +
  theme(legend.position = "bottom")
```

```
## Warning: Using ‘size‘ aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use ‘linewidth‘ instead.
```

```
## ‘geom_smooth()‘ using method = ’loess’ and formula = ’y ~ x’
```