HW5

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Load in the data:

```
library(tidyverse)
homicides <- read.csv('/Users/madelynmaclaughlin/Downloads/R_class/Ch_9/data/homicides.csv')
head(homicides)
```

```
##          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
```

I am creating the graph from choice 2. Let's try and reduce the data to what we need and organize it.

```
homicides_dates <- homicides %>%
  select(reported_date, city) %>%
  filter(city == "Baltimore") %>%
  mutate(reported_date = ymd(reported_date)) %>%
  arrange(reported_date)
head(homicides_dates)
```

```
##   reported_date      city
## 1    2007-01-01 Baltimore
## 2    2007-01-02 Baltimore
## 3    2007-01-05 Baltimore
## 4    2007-01-05 Baltimore
## 5    2007-01-06 Baltimore
## 6    2007-01-06 Baltimore
```

Sorting data into different groups based on season to add season labels to them, to separate them by color in the graph later. Then, I'm merging the two datasets into one so that I can graph everything all at once.

```
summer <- homicides_dates %>%
  mutate(months = month(reported_date, label = FALSE),
         years = year(reported_date)) %>%
  filter(months %in% c(5, 6, 7, 8, 9, 10)) %>%
  group_by(months, years) %>%
  count() %>%
  mutate(total_date = paste(years, months, sep = "-")) %>%
  mutate(total_date = ym(total_date),
         season = "Summer")

winter <- homicides_dates %>%
  mutate(months = month(reported_date, label = FALSE),
         years = year(reported_date)) %>%
  filter(months %in% c(11, 12, 1, 2, 3, 4)) %>%
  group_by(months, years) %>%
  count() %>%
  mutate(total_date = paste(years, months, sep = "-")) %>%
  mutate(total_date = ym(total_date),
         season = "Winter")

w_and_s <- full_join(winter, summer, by = c("season", "total_date", "n", "years", "months")) %>%
  mutate(season = as_factor(season))
```

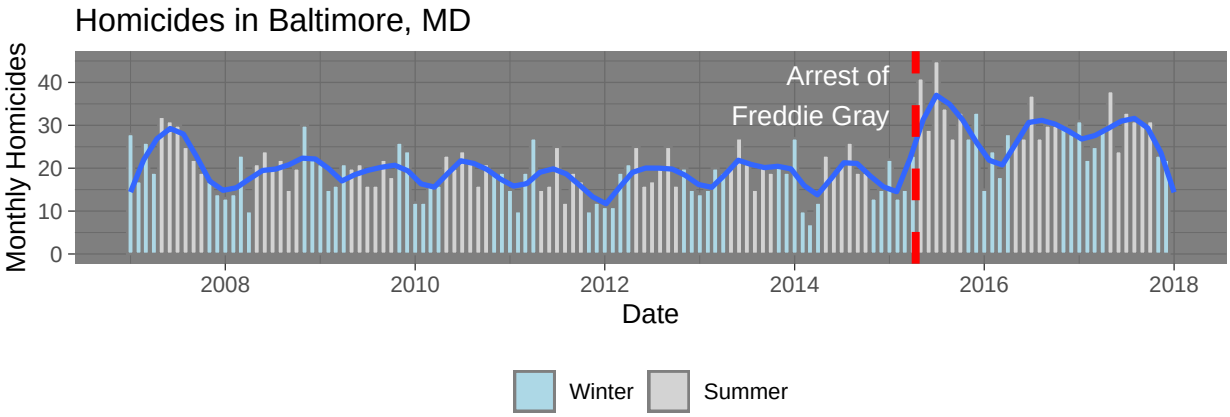
Create a dataset of frequency for the geom_smooth function.

```
h_freq <- homicides_dates %>%
  mutate(month = round_date(reported_date, unit = "month")) %>%
  group_by(month) %>%
  count()
```

Begin graphing:

- span = 0.1 to make the geom_smooth line wiggly
- se = FALSE to remove error shadow
- used the seasons which had been converted to factors in scale_fill_manual to apply fill colors based on factor levels
- other code is mostly based on formatting axes, adding useful references, and working with the theme and legend.

```
ggplot() +
  geom_col(w_and_s, mapping = aes(x = total_date, y = n, fill = season), color = "gray50") +
scale_fill_manual(values = c("Winter" = "lightblue", "Summer" = "lightgray")) +
  geom_smooth(h_freq, mapping =  aes(x = month, y = n), se = FALSE, span = 0.1) +
  theme_dark() +
  labs(x = "Date", y = "Monthly Homicides", title = "Homicides in Baltimore, MD") +
  scale_y_continuous(breaks = c(0, 10, 20, 30, 40)) +
  geom_vline(xintercept = ymd("2015-04-12"), linewidth = 1.5, linetype = 8, color = "red") +
  geom_text(aes(x = ymd("2015-01-01"), y = 37, label = "Arrest of\nFreddie Gray"),
            color = "white", hjust = 1) +
  theme(legend.position = "bottom", legend.title = element_blank())
```


Homicides in Baltimore, MD
Monthly Homicides
40
30
20
10
0
Arrest of
Freddie Gray
2008
2010
2012
2014
2016
2018
Date
Winter
Summer