

# Homework 5 Answers

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## Libraries needed

```
library(dplyr)
library(tidyr)
library(broom)
library(purrr)
library(ggplot2)
library(stringr)
library(lubridate)
library(here)
```

## Reading in the data

```
homicides <- read.csv(here("data", "homicide-data.csv"))

# Creating a new column combining city and state
homicides <- homicides %>%
  mutate(city_name = paste(city, state, sep = ", "))

homicides <- homicides %>%
  mutate(reported_date = ymd(reported_date))
```

## Selecting only Baltimore Data

```
baltimore_monthly <- homicides %>%
  filter(city_name == "Baltimore, MD") %>%
  mutate(month = floor_date(reported_date, "month")) %>%
  count(month, name = "homicides")

baltimore_monthly <- baltimore_monthly %>%
  mutate(
    season = ifelse(month(month) %in% c(11,12,1,2,3,4),
                    "Winter", "Summer")
  )

freddie_date <- as.Date("2015-04-12")
```

## Baltimore Graph

Recreate a graph that 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.

```
ggplot(baltimore_monthly, aes(x = month, y = homicides, fill = season)) +  
  geom_col(color = "gray30") +  
  scale_fill_manual(values = c("Summer" = "lightgray", "Winter" = "skyblue")) +  
  
  geom_smooth(aes(group = 1), se = FALSE, color = "blue", size = 1, span = 0.2) +  
  
  geom_vline(  
    xintercept = freddie_date,  
    color = "red", linetype = "dashed", size = 1) +  
  
  annotate("text",  
    x = freddie_date + 150,  
    y = max(baltimore_monthly$homicides) * 0.95,  
    label = "Arrest of\nFreddie Gray",  
    color = "red", hjust = 1.75, size = 5) +  
  
  labs(  
    title = "Homicides in Baltimore, MD",  
    x = "Date",  
    y = "Monthly homicides",  
    fill = "") +  
  
  theme_minimal(base_size = 14) +  
  theme(  
    panel.background = element_rect(fill = "gray50", color = NA),  
    plot.background = element_rect(fill = "gray50", color = NA),  
    panel.grid.major = element_line(color = "gray40"),  
    panel.grid.minor = element_blank(),  
    axis.text = element_text(color = "white"),  
    axis.title = element_text(color = "white"),  
    plot.title = element_text(color = "white", face = "bold"),  
    legend.position = "bottom",  
    legend.text = element_text(color = "white"))
```

