

# ERHS 535: HOMEWORK 5

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```
# to load required packages
library(readr)
library(tidyverse)
```

```
## Warning: package 'tidyverse' was built under R version 4.5.2
```

```
library(lubridate)
library(scales)

# to read in the Washington Post homicide data
homicides <- read_csv("data/homicide-data.csv")

# to keep only Baltimore and create monthly counts
baltimore_monthly <- homicides %>%
  filter(city == "Baltimore") %>%
  mutate(
    # to convert reported_date (YYYYMMDD) to Date
    date = ymd(reported_date),
    month = floor_date(date, "month"),
    m_num = month(month),

    # to identify season Winter: Nov-Apr, Summer: May-Oct
    season = if_else(m_num %in% c(11, 12, 1, 2, 3, 4),
                     "Winter", "Summer")
  ) %>%
  group_by(month, season) %>%
  summarize(
    monthly_homicides = n(),
    .groups = "drop"
  ) %>%
  arrange(month)

# to set date of Freddie Gray's arrest
freddie_date <- as.Date("2015-04-12")
```

```
# to plot
baltimore_monthly %>%
  ggplot(aes(x = month)) +

  geom_col(aes(y = monthly_homicides, fill = season),
           color = "black") +
```

```

scale_fill_manual(values = c("Winter" = "grey", "Summer" = "skyblue")) +

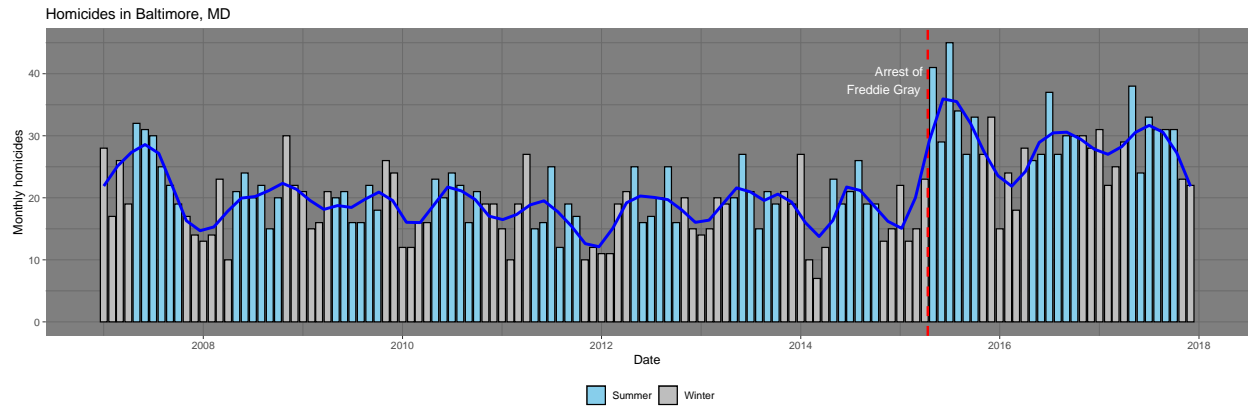
# to create vertical line for Freddie Gray's arrest
geom_vline(xintercept = freddie_date,
           color = "red",
           linetype = "dashed",
           linewidth = 1) +

# to add annotation text
annotate(
  "text",
  x = freddie_date,
  y = 40,
  label = "Arrest of\nFreddie Gray",
  color = "white",
  hjust = 1.1,
  vjust = 0.75
) +

# to add smooth trend line over time
geom_smooth(
  aes(y = monthly_homicides),
  method = "loess",
  color = "blue",
  linewidth = 1.2,
  se = FALSE,
  span = 0.1
) +

theme_dark() +
theme(legend.position = "bottom") +
scale_y_continuous(
  name = "Monthly homicides",
  breaks = c(0, 10, 20, 30, 40)
) +
labs(
  title = "Homicides in Baltimore, MD",
  x = "Date",
  fill = ""
)

```



## APPENDIX

```
library(knitr)
knitr::opts_chunk$set(echo = TRUE)
knitr::opts_chunk$set(message = FALSE)
knitr::opts_chunk$set(error = FALSE)

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    fill = ""
  )

```