

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)

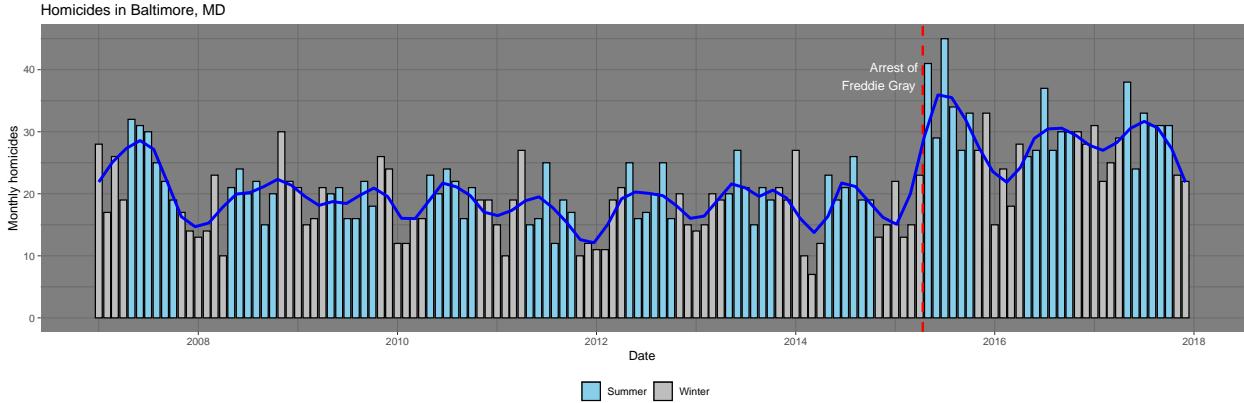
# to set date of Freddie Gray's arrest
freddie_date <- as.Date("2015-04-12")

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

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