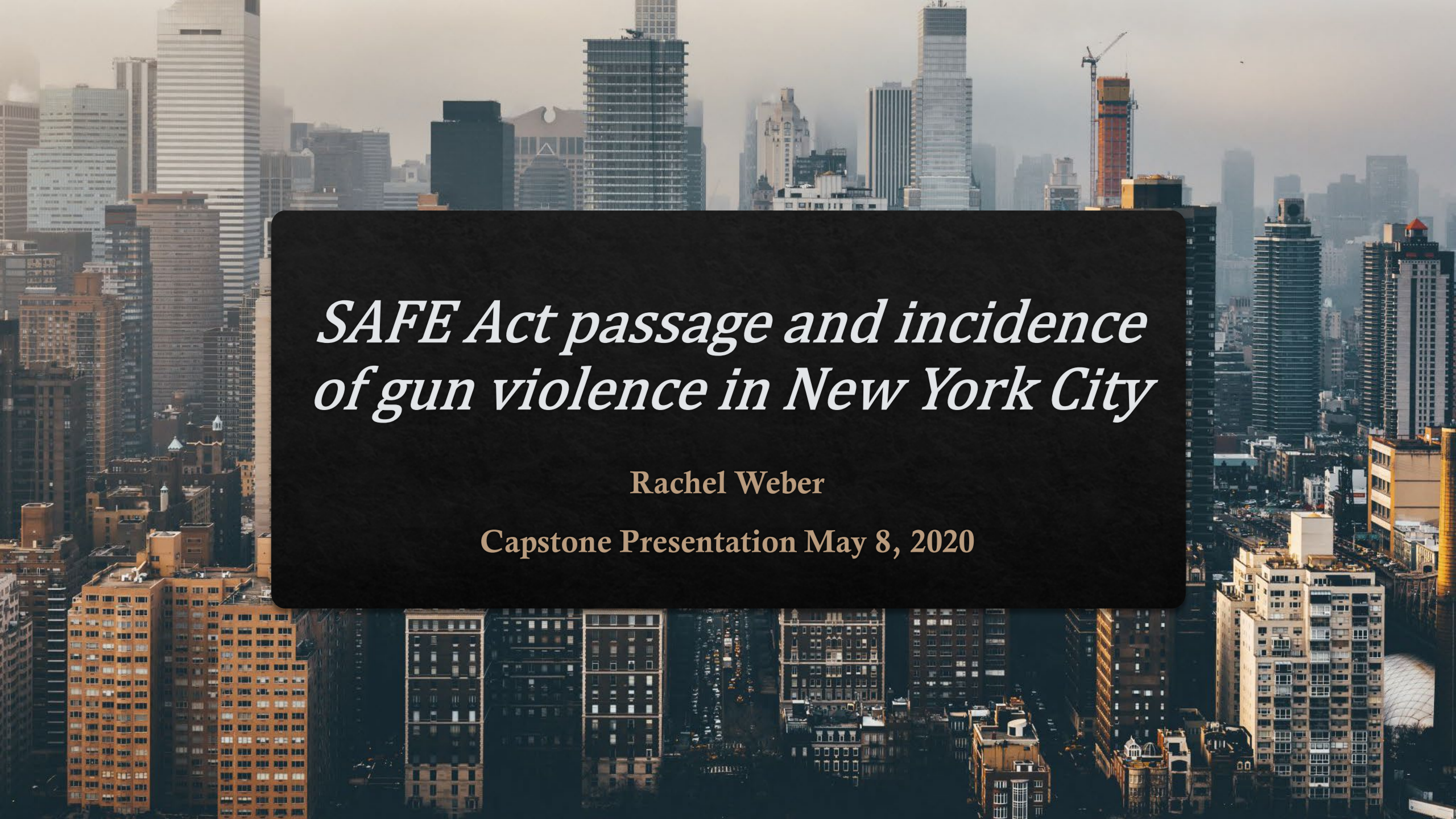


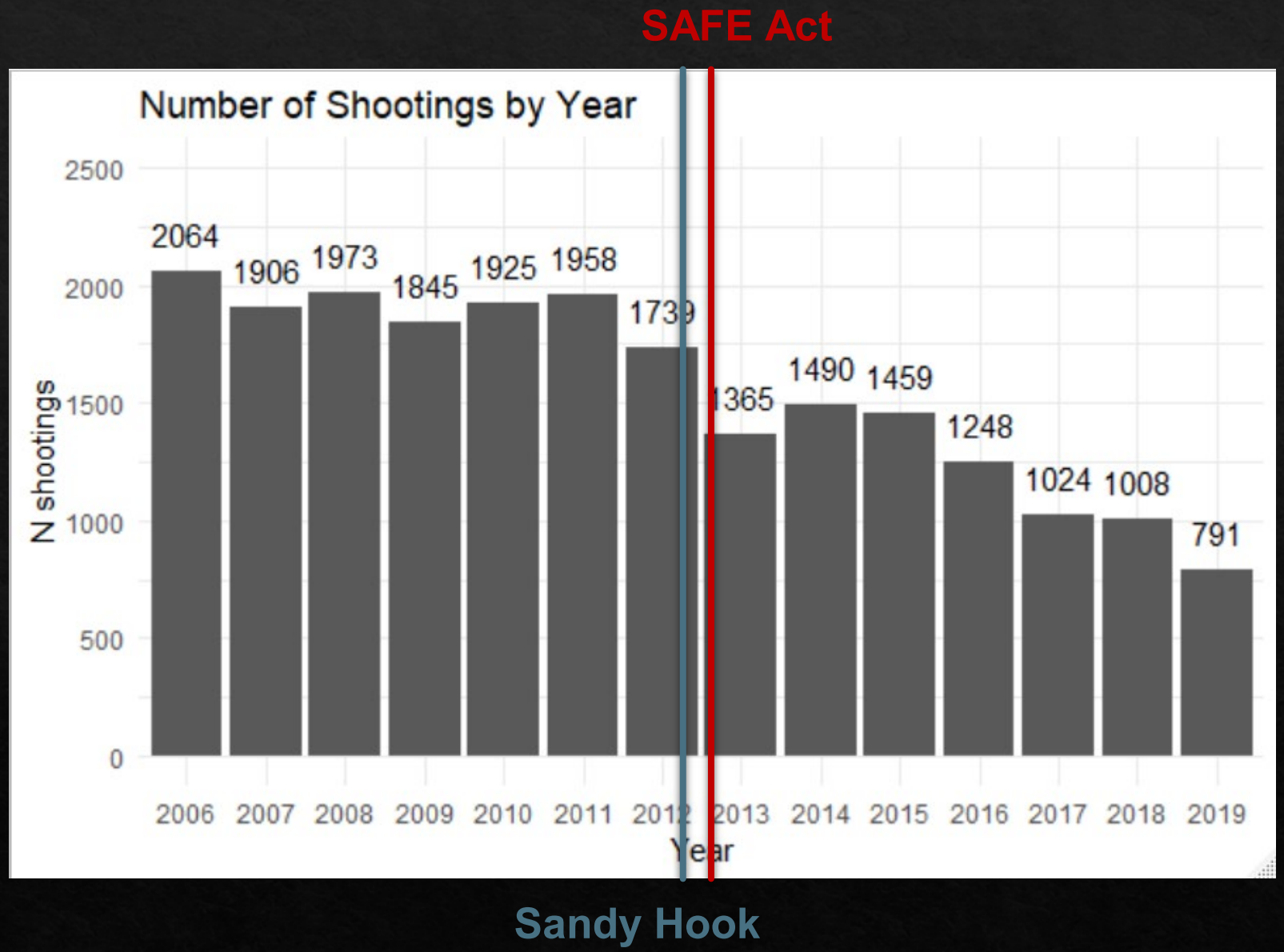
SAFE Act passage and incidence of gun violence in New York City

Rachel Weber

Capstone Presentation May 8, 2020

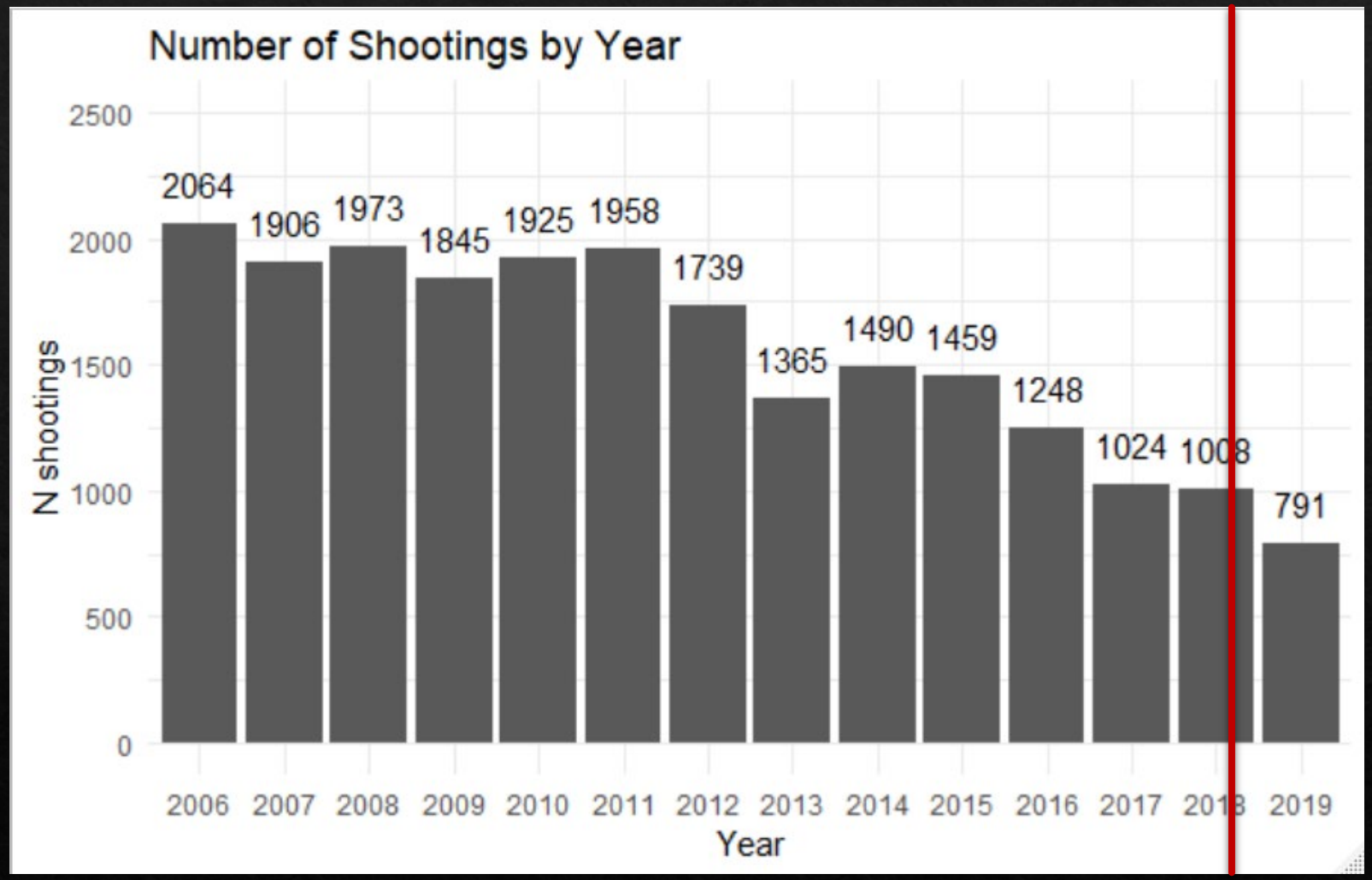
Introduction

- NYC has had a steady decline in shootings over the past 12 years
- The SAFE Act was passed in January 2013. Did shootings fall concurrently with this legislative change?



Introduction

- NYC has had a steady decline in shootings over the past 12 years
- The SAFE Act was passed in January 2013. Did shootings fall concurrently with this legislative change?
- BONUS: There was a shooting-free weekend in October 2018, we will look at how the odds of that happening have changed over time.



Aims and Hypotheses

- **Aim**: Build an interrupted time series negative binomial model to predict the number of shootings expected on a given day
  - **Hypothesis 1:** Day of the week is a significant predictor of the number of shootings estimated to occur
  - **Hypothesis 2**: SAFE Act passage is associated with a decrease in the total number of expected shootings in a day.

The Data

- NYC's Open Data program provides downloadable files documenting each shooting that is reported in the city's boundaries.
- Contained in the data:
  - Date and time of shooting
  - Location (precinct, longitude, latitude, burrow)
  - Shooter/victim demographics
- Data span 2006 to September 2019 and are updated quarterly

Methods

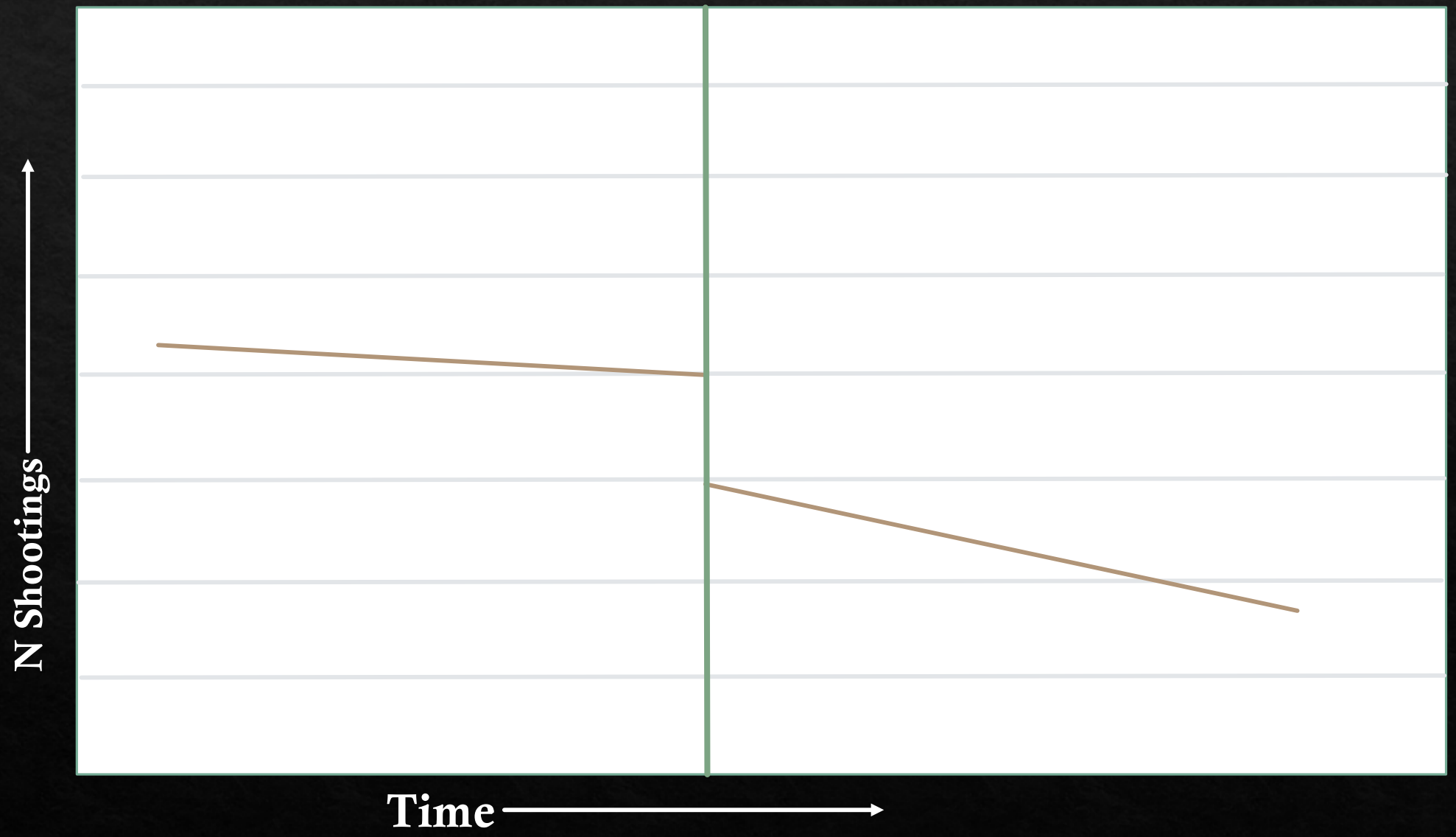
Variable Creation: Month, Year, Pre/Post SAFE Act, and Day of the Week

Univariate Analysis

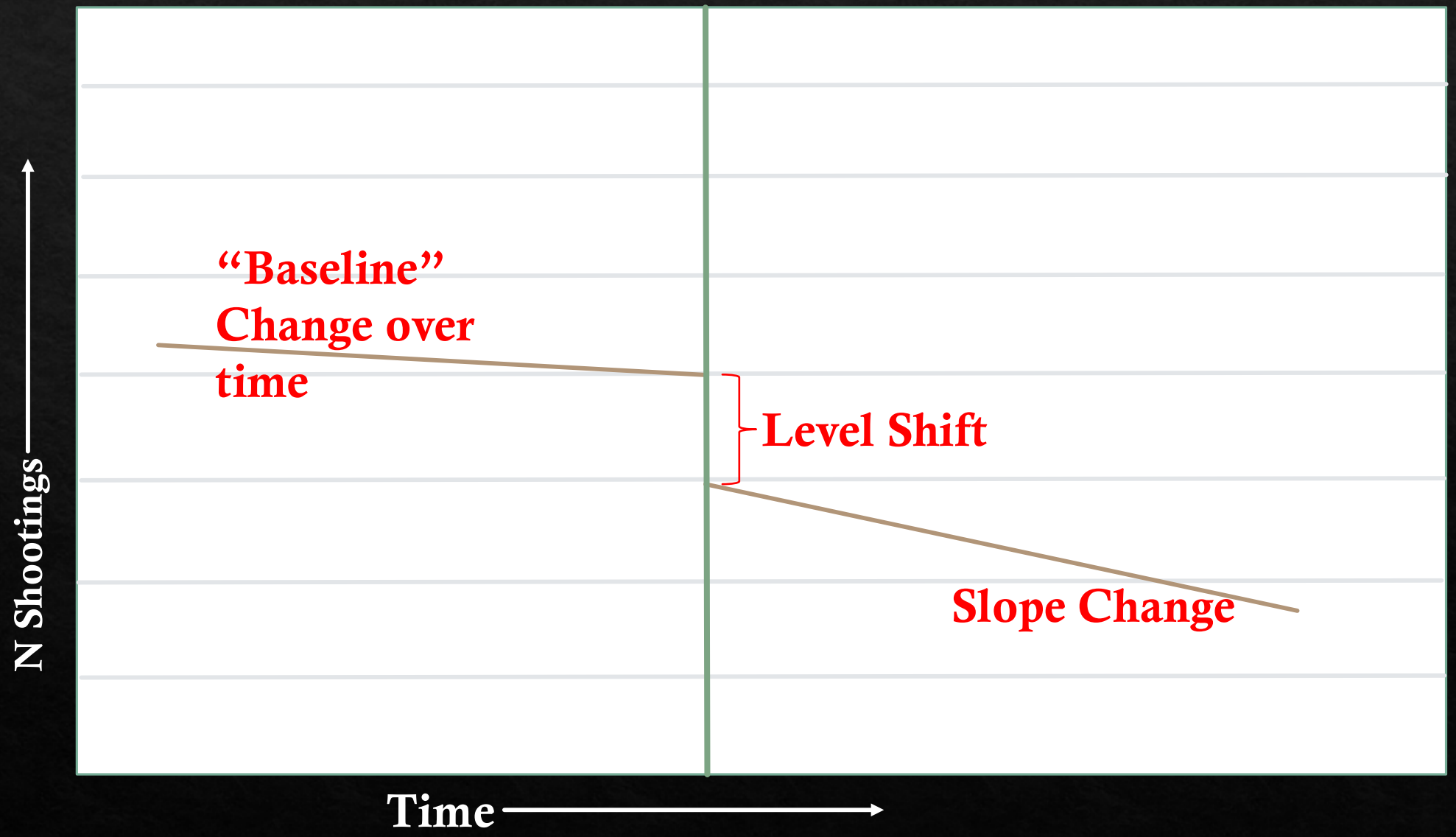
Negative Binomial Regression with Interrupted Time Series

Interpretation and Prediction

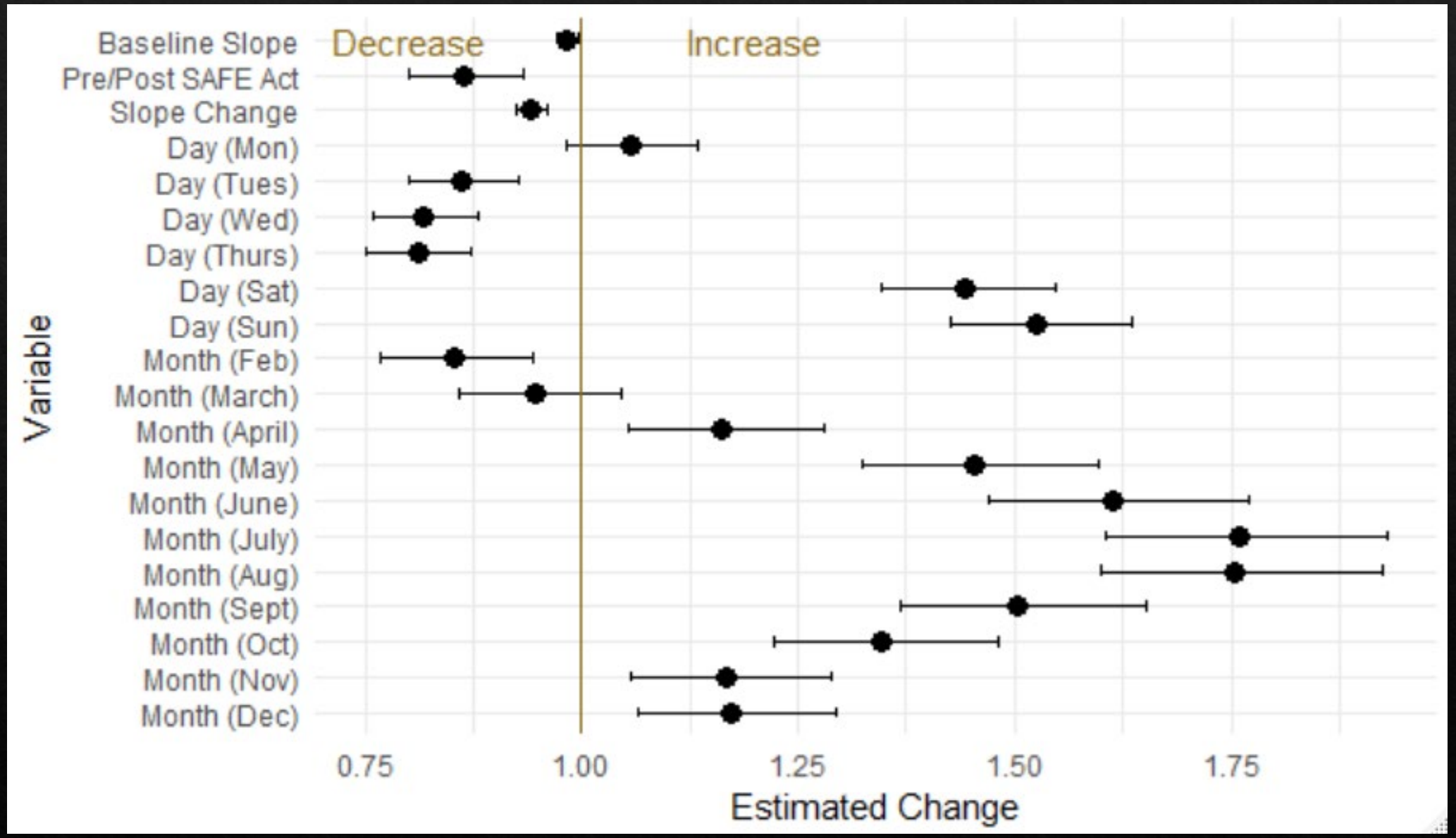
Interrupted Time Series



Interrupted Time Series

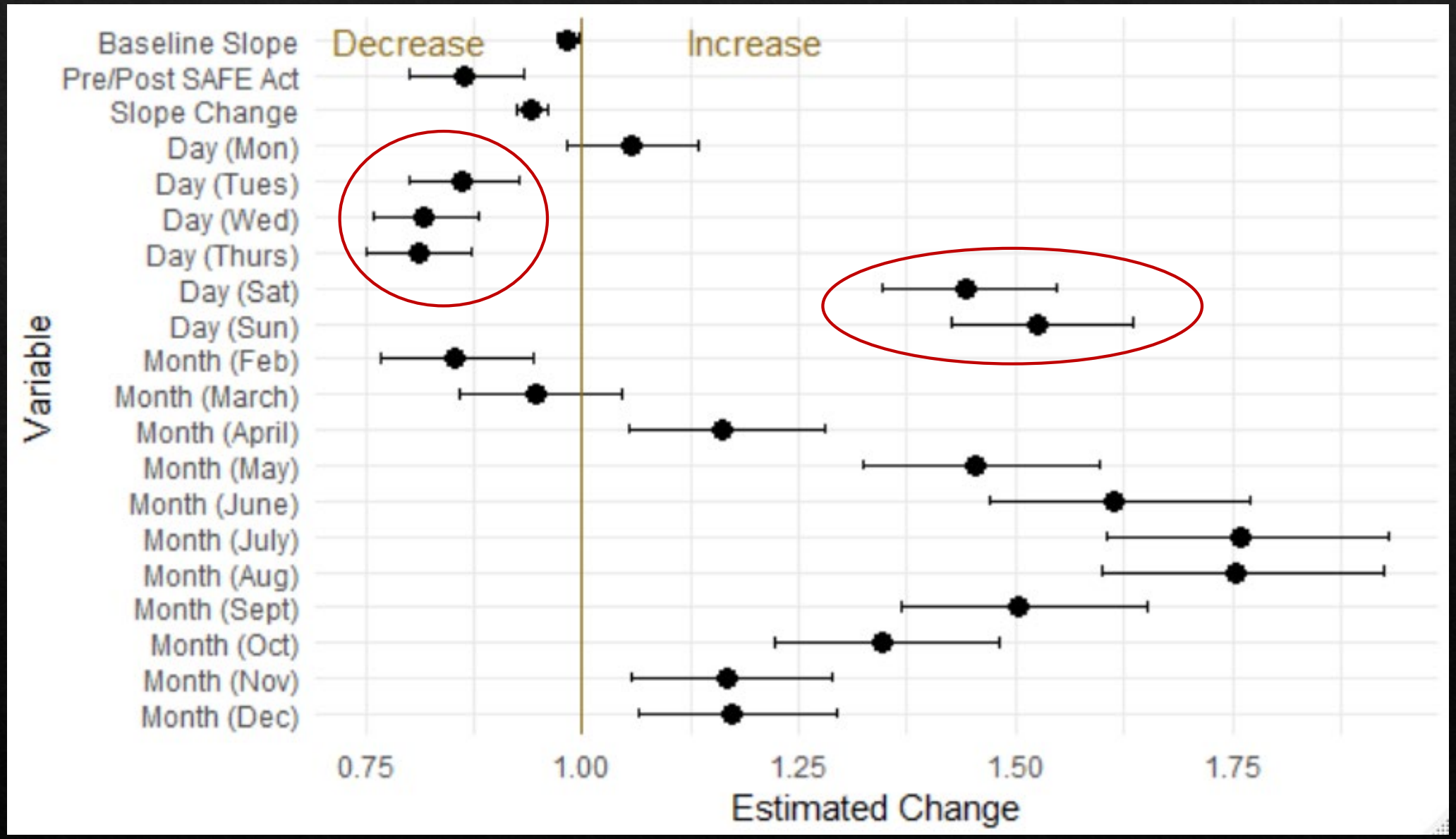


Model Results



Intercept: 3.8 shootings per day

Model Results



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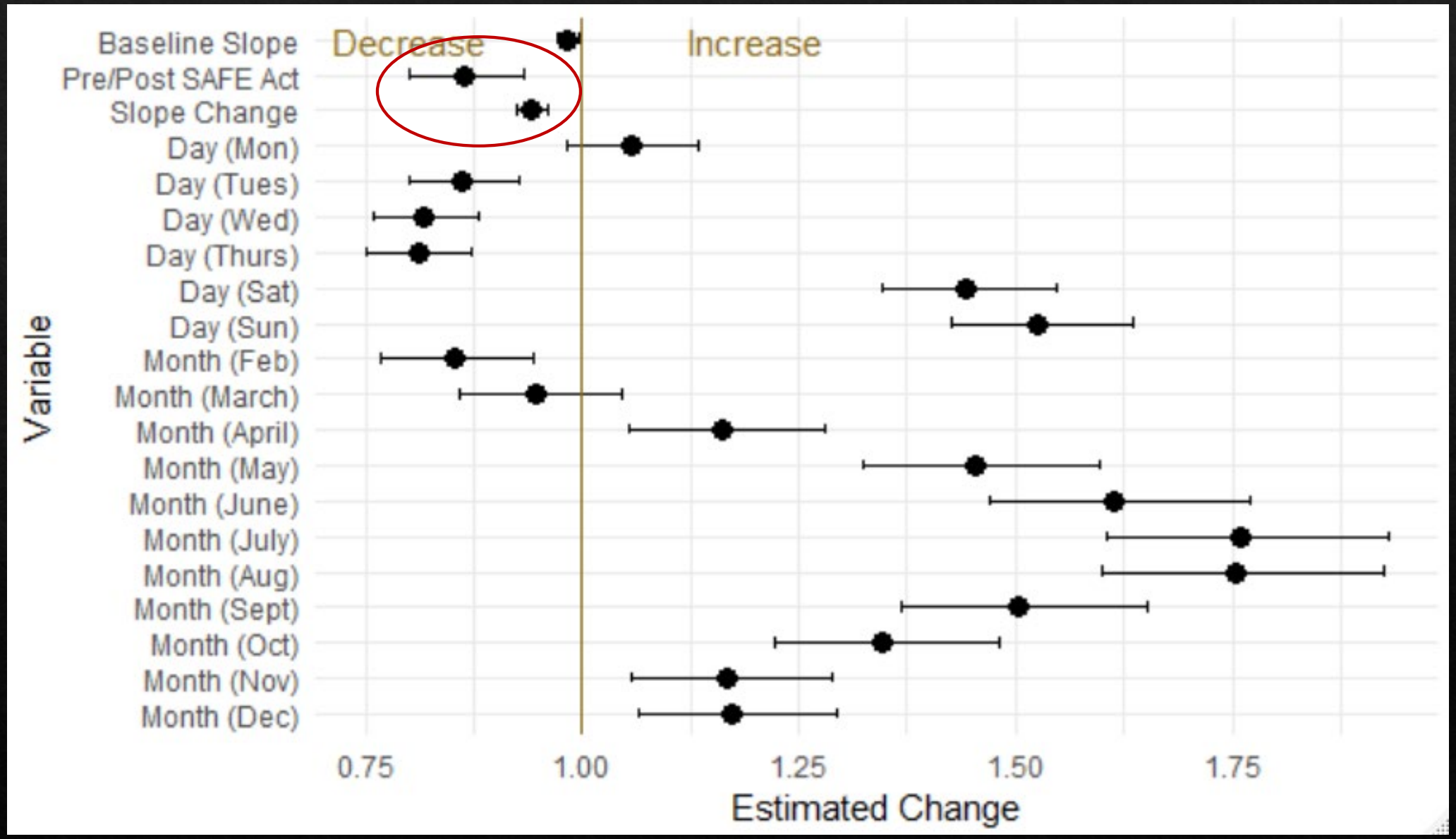
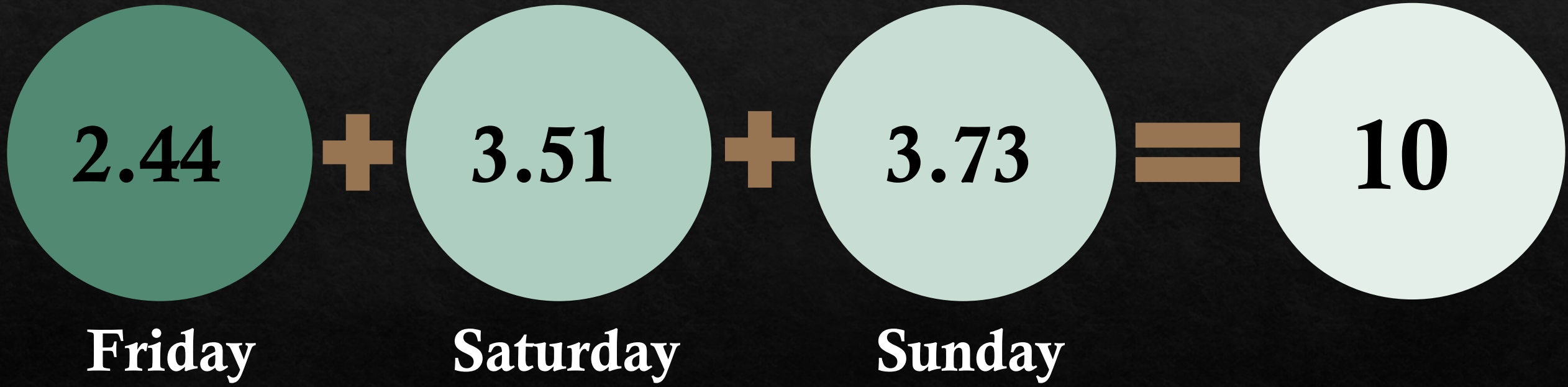
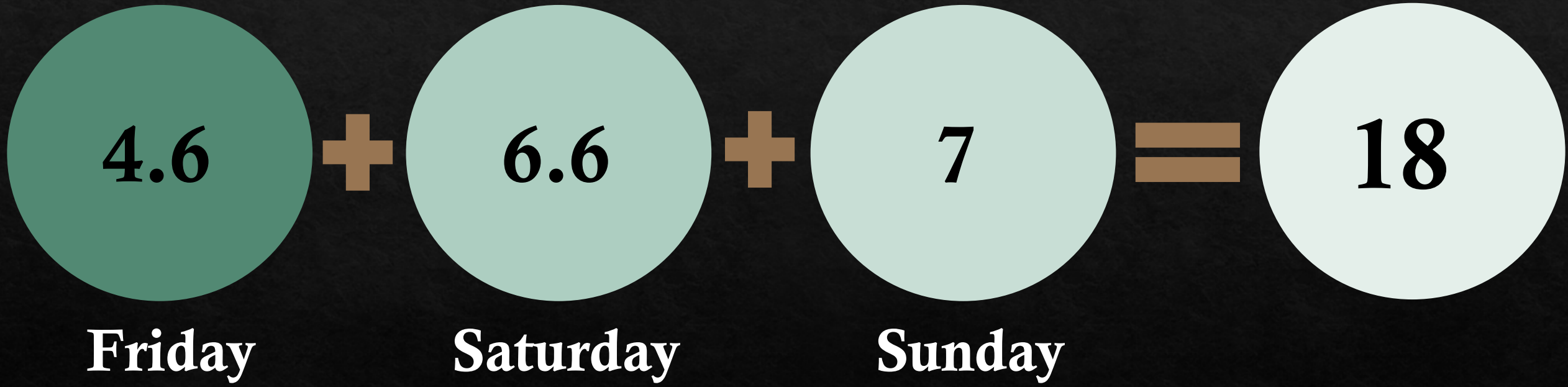


Intercept: 3.8 shootings per day

What did we expect that weekend in October 2018?



How does that compare to October 2012?



Main Findings

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4. **SAFE Act is associated with a 14% reduction in incidence overall**
5. **The shooting-free weekend in October 2018 *was* an extremely unusual event and had a statistical likelihood of nearly zero.**
    - **Though over time it has become more likely**

Questions?