# Stanford Open Policing Project: MD State Patrol

Exploratory Data Analysis by Violet Zheng


https://openpolicing.stanford.edu/

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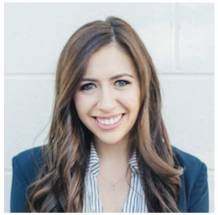

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# What's the Objective & Significance?

Objective:

- Investigate police stops in Maryland
  - From December 2006 to March 2014
  - A total of 3,587,052 recorded stops
- Aim to uncover potential disparities in policing practices, such as racial profiling or bias in search and arrest outcomes

Significance:

- Analyzing the data across different demographics, times, and locations allows for the identification of patterns that may indicate inequities in law enforcement practice
- Gaining insights can inform policy changes aimed at enhancing transparency, accountability, and fairness in policing

# Guiding Questions

**01**

How do traffic stops differ by race, gender, and age group?

**02**

What are the patterns in traffic stops by time of day and day of the week?

**03**

How do stop outcomes (e.g., citations, arrests, warnings) vary by race, gender, and age?

**04**

Which department conducted the most traffic stops?

# 01

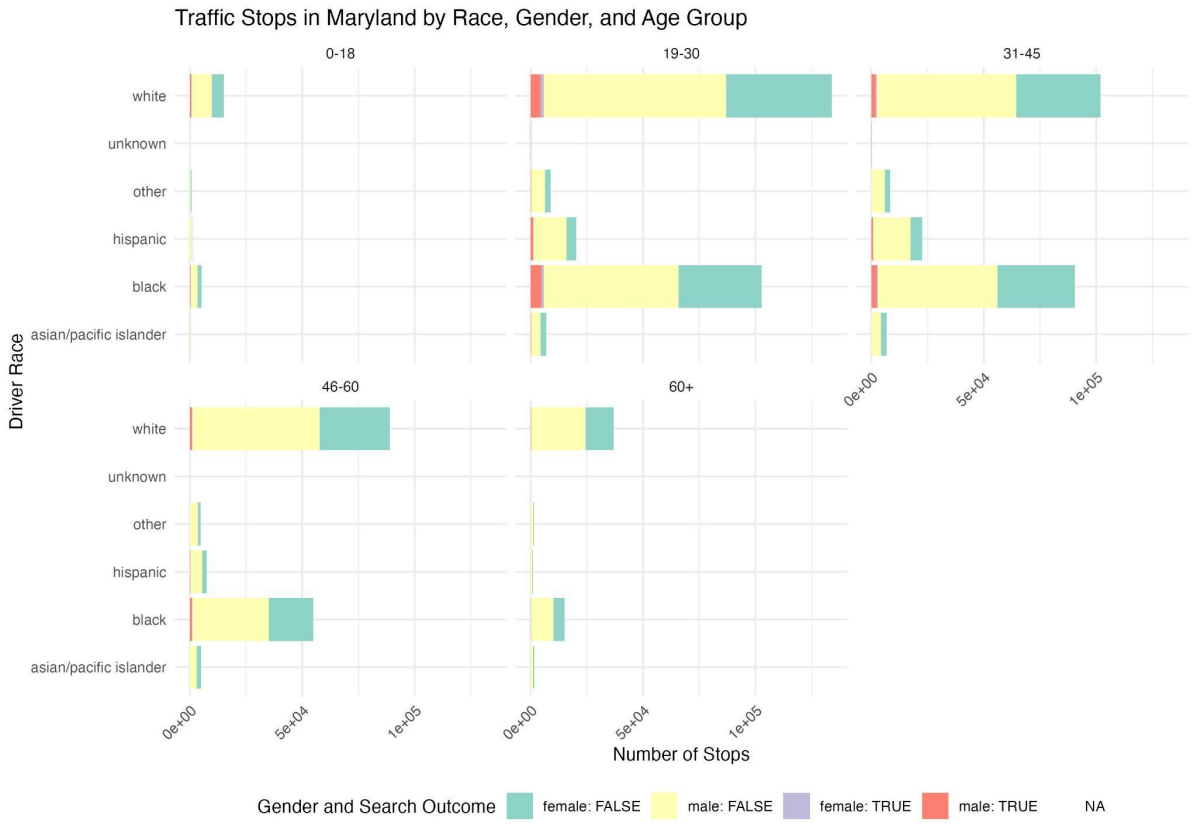
***How do traffic stops differ by race, gender, and age group?***

***Are there noticeable disparities in search outcomes based on demographic factors?***

To analyze,  I created a stacked bar chart

This will show the count of traffic stops segmented by race, further broken down by gender, while also incorporating age groups to reveal possible disparities

# Analysis




**Race-Based Disparities:**
The majority of traffic stops across all age groups involve White and Black drivers

**Gender Differences:**
Male drivers are stopped more frequently than female drivers

**Age Group Patterns:**
The 19-30 and 31-45 age groups see the highest volume of traffic stops across all racial categories

**Search Outcomes:**
Searches are more likely to be conducted on males, but females are not exempt

# 02

***What are the patterns in traffic stops by time of day and day of the week?***

***Are there certain times when stops are more frequent?***

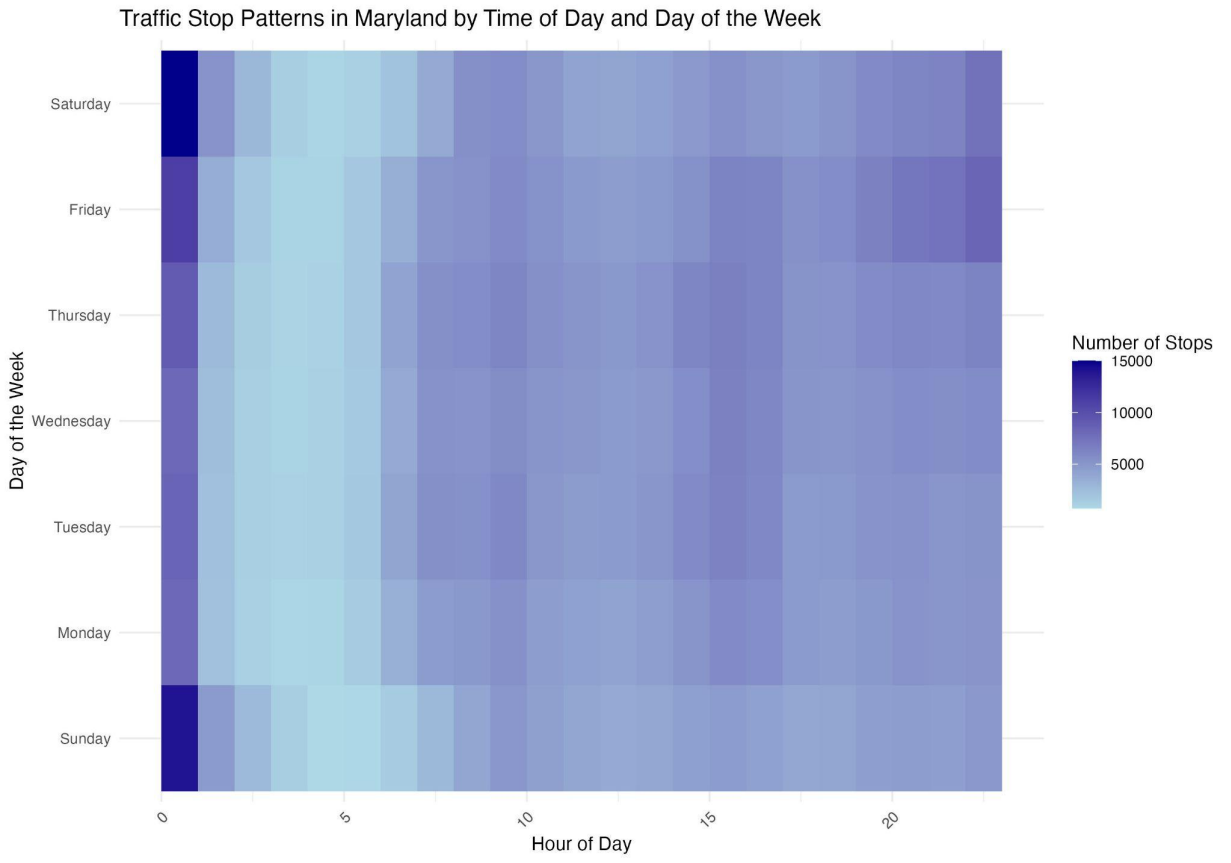
***Are there specific demographics that are stopped more frequently during certain periods?***

To analyze, I created a heatmap

A heatmap will help visualize the frequency of traffic stops at different times across the days of the week

Can further break it down by demographic groups (e.g., race or gender) to identify specific patterns

# Analysis



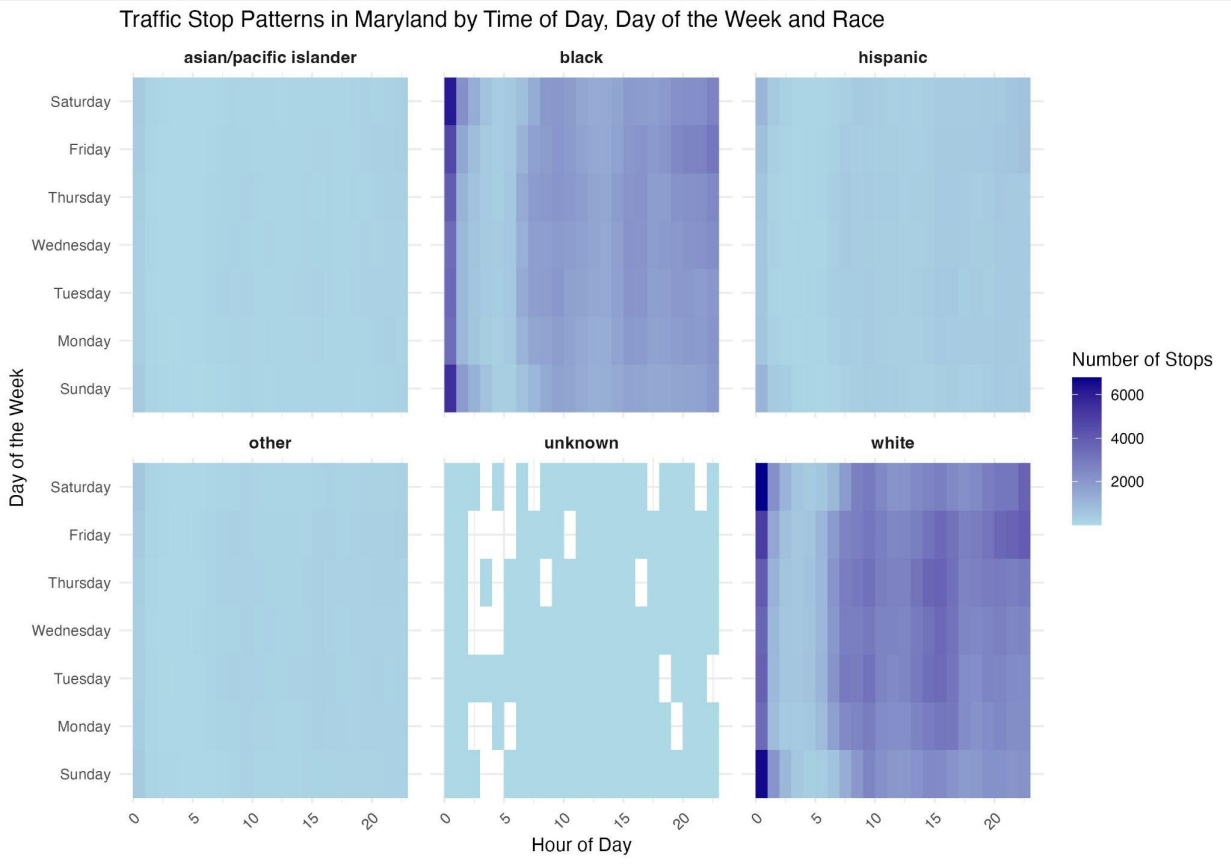

**Peak Days and Time for Traffic Stops:**

Friday and Saturday have the highest concentration of traffic stops, especially late at night (midnight to early morning)

Sunday also sees a relatively high number of stops during the early morning hours

The pattern suggests that police may increase patrols during the late-night hours of weekends, potentially targeting areas with higher nighttime traffic or looking for drivers under the influence

# Analysis




**Demographic-Specific Insights:**

There is a higher concentration of stops for Black and White drivers during the late-night hours (12 AM - 2 AM) on Saturdays

# 03

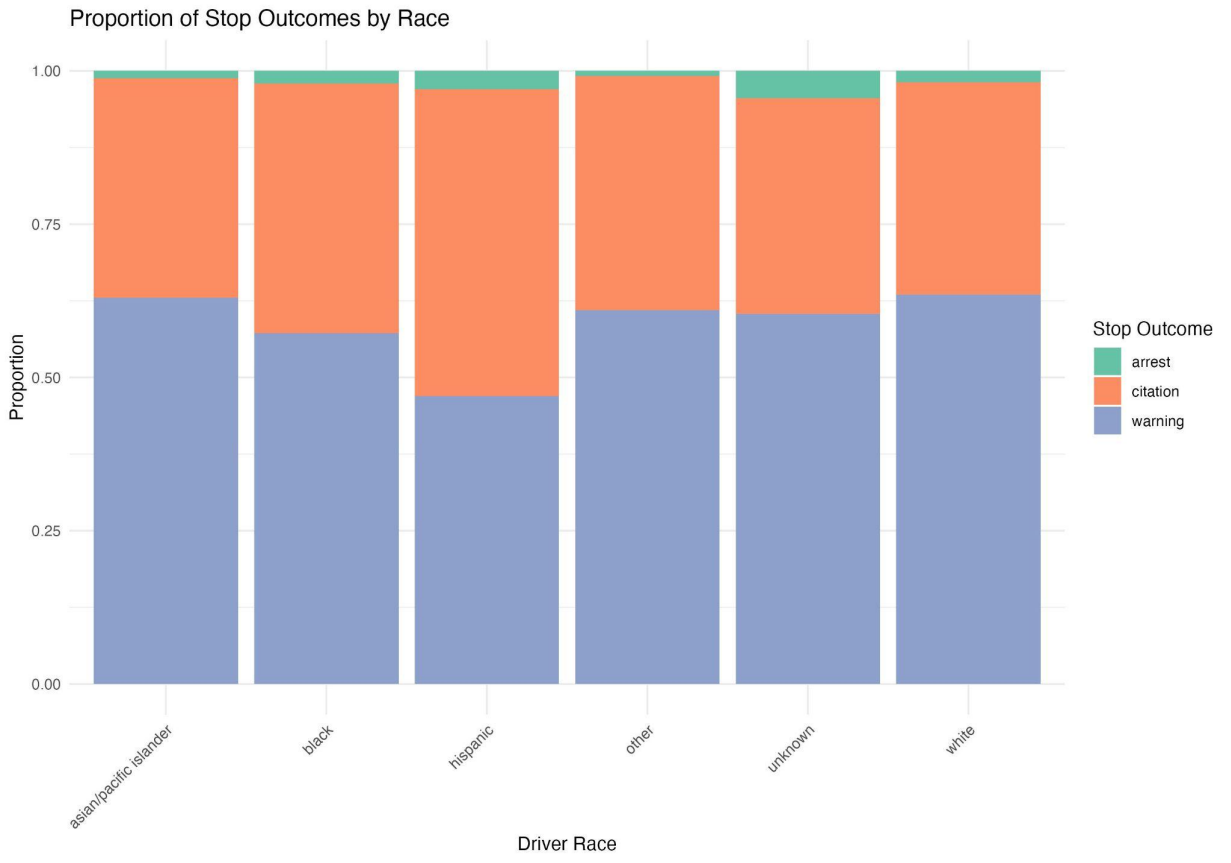
***How do stop outcomes (e.g., citations, arrests, warnings) vary by race, gender, and age?***

***Are there disparities in the likelihood of receiving a citation or being arrested based on demographic characteristics?***

To analyze,  I created a stacked bar chart and a heatmap.

This will help us understand how traffic stop outcomes (citations, arrests, warnings) differ across various demographic groups in Maryland

# Analysis



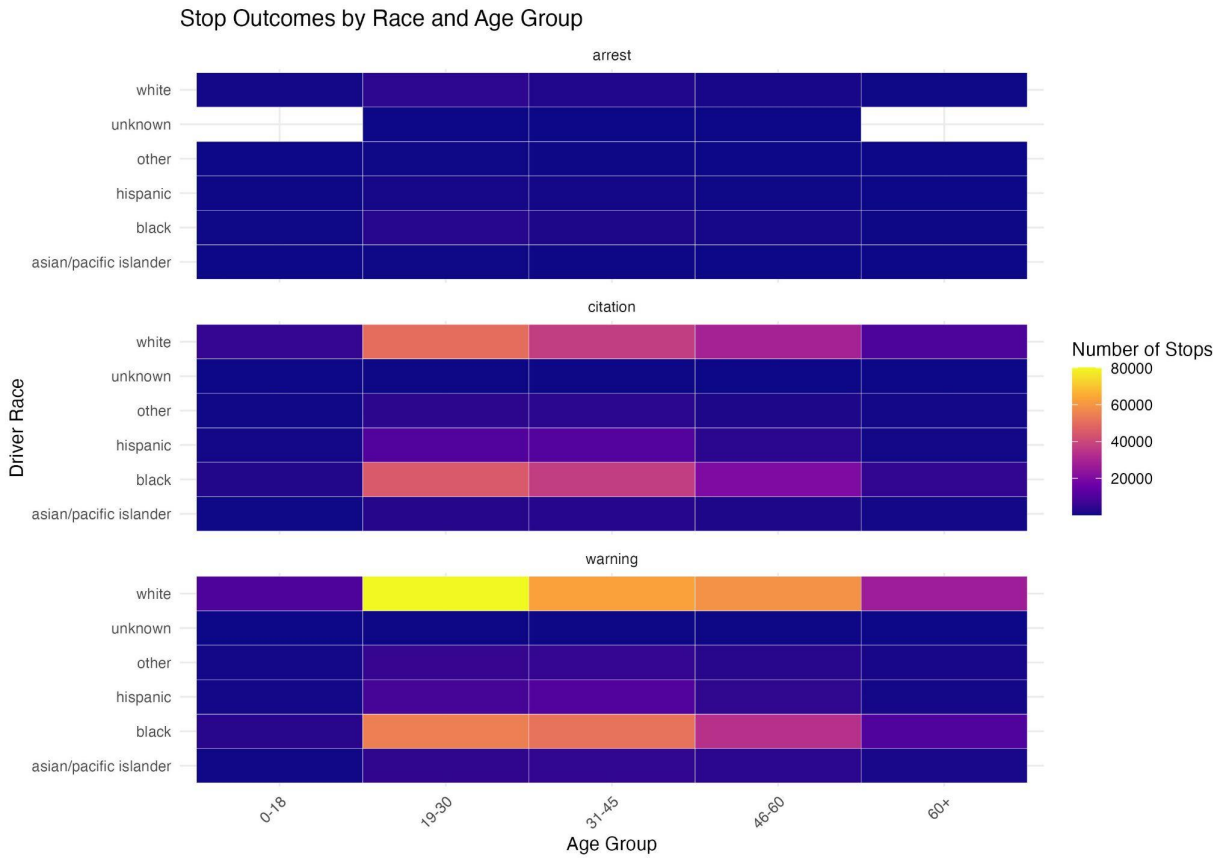

**Variation in Stop Outcomes by Race:**

The proportion of warnings varies slightly by race, with Black and Hispanic drivers receiving a somewhat lower proportion of warnings compared to White and Asian/Pacific Islander drivers

Black and Hispanic drivers receiving a higher proportion of citations relative to other racial groups

Arrests make up the smallest proportion of stop outcomes for all races but are slightly more frequent among Hispanic drivers compared to others

# Analysis




**Variation in Stop Outcomes by Age and Race:**

Young drivers (aged 19-30) tend to have the highest number of stops across all racial groups

Among these, Black and White drivers in this age range are more frequently cited than other racial groups

Warnings are most commonly issued to young White drivers (age 19-30)

Warnings are also commonly issued to drivers in the 31-45 and 46-60 age group

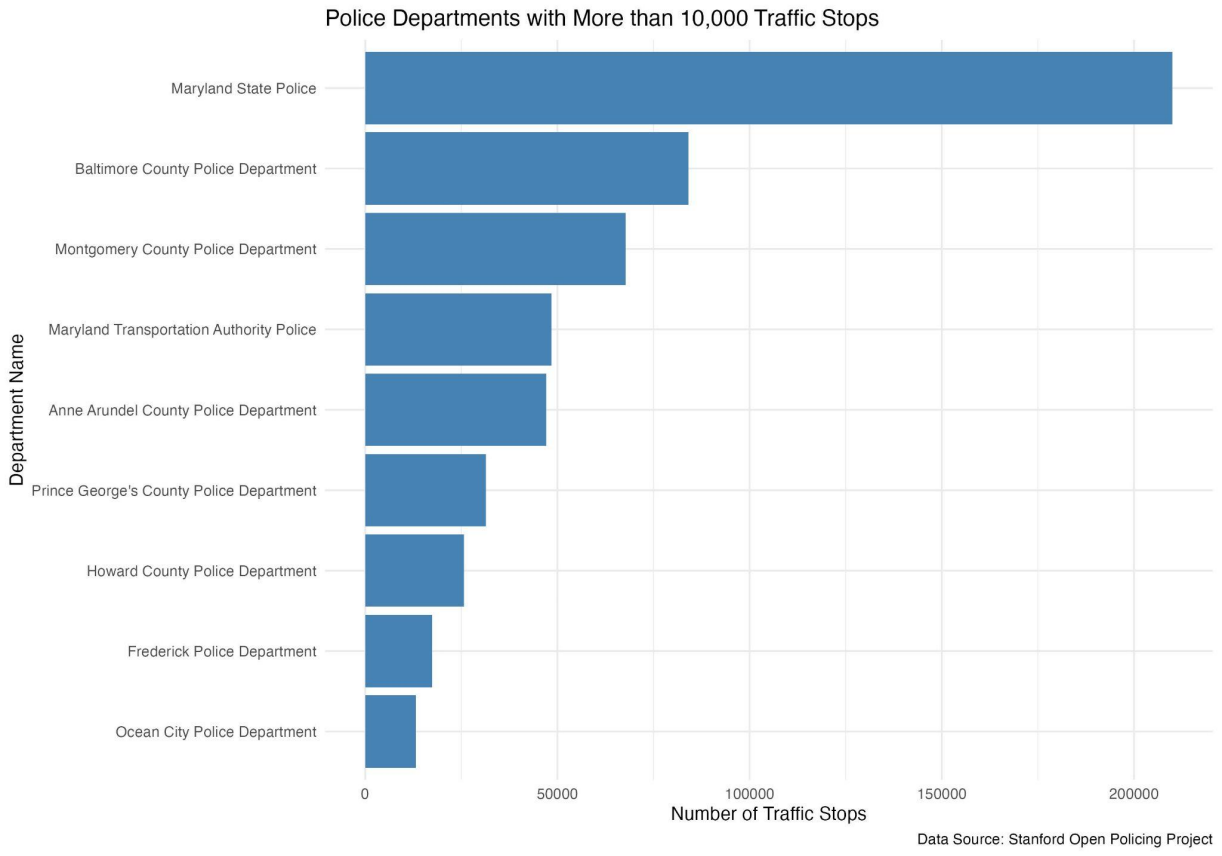
04

## *Which department conducted the most traffic stops?*

To analyze, I created a horizontal bar plot.

This will help visualize the number of traffic stops conducted by various police departments in Maryland

# Analysis




**Outcome:**

Maryland State Police has the highest number of traffic stops, significantly more than any other department

Maryland State Police's dominance in traffic stops is likely due to their statewide jurisdiction, unlike county-specific police departments that are limited to smaller areas

# Conclusion

- Black and White drivers experiencing a higher proportion of citations and warnings compared to others

- Stops are more frequent during late-night hours on weekends, especially for younger male drivers

- Maryland State Police plays a dominant role  in traffic enforcement due to their statewide jurisdiction


# THANKS!

Do you have any questions?