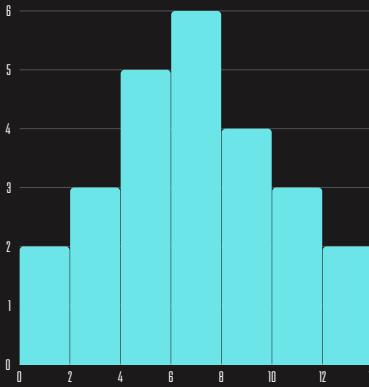


EDA & VIZ
GROUP 14

MONTGOMERY COUNTY POLICE AUDIT

Yan Naing Aung, Cheryl Lee, Venkatachalam Subramanian Periya Subbu





OUR AUDIT PROCESS

Brief overview into our data cleaning and EDA procedures.



DISTRICT ANALYSIS

Analyze demographic trends within the 6 police districts in Montgomery County, comparing arrest trends with population data.

Identify the safest districts in terms of number of school-adjacent crimes to send your children to.



MAJOR POLICE DEPARTMENT AUDIT

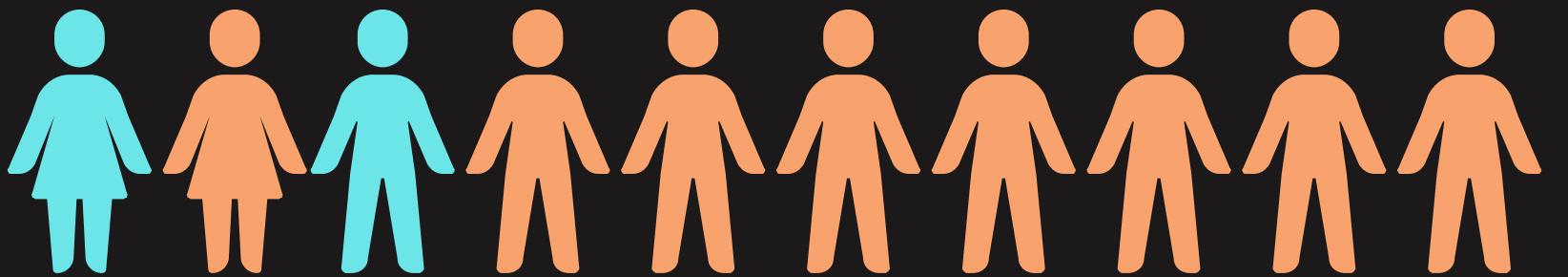
Audits demographic data vs. overall population between the Gaithersburg and Rockville City Police Departments.



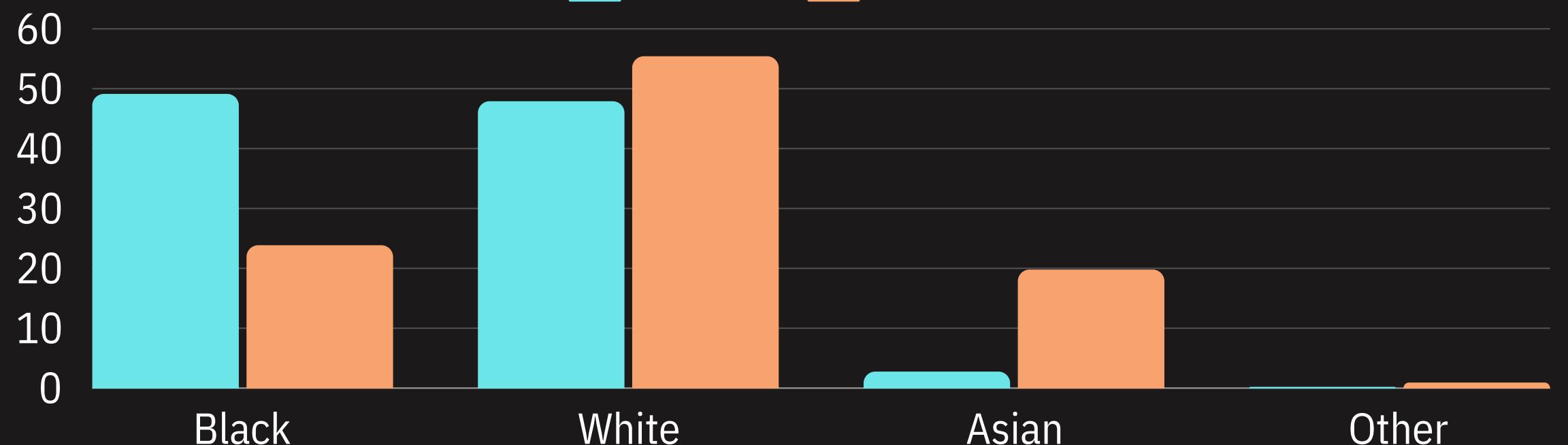
ARREST TRENDS OVER TIME

Understand when crimes are happening and general trends over past audits

DEMOGRAPHIC INSIGHTS

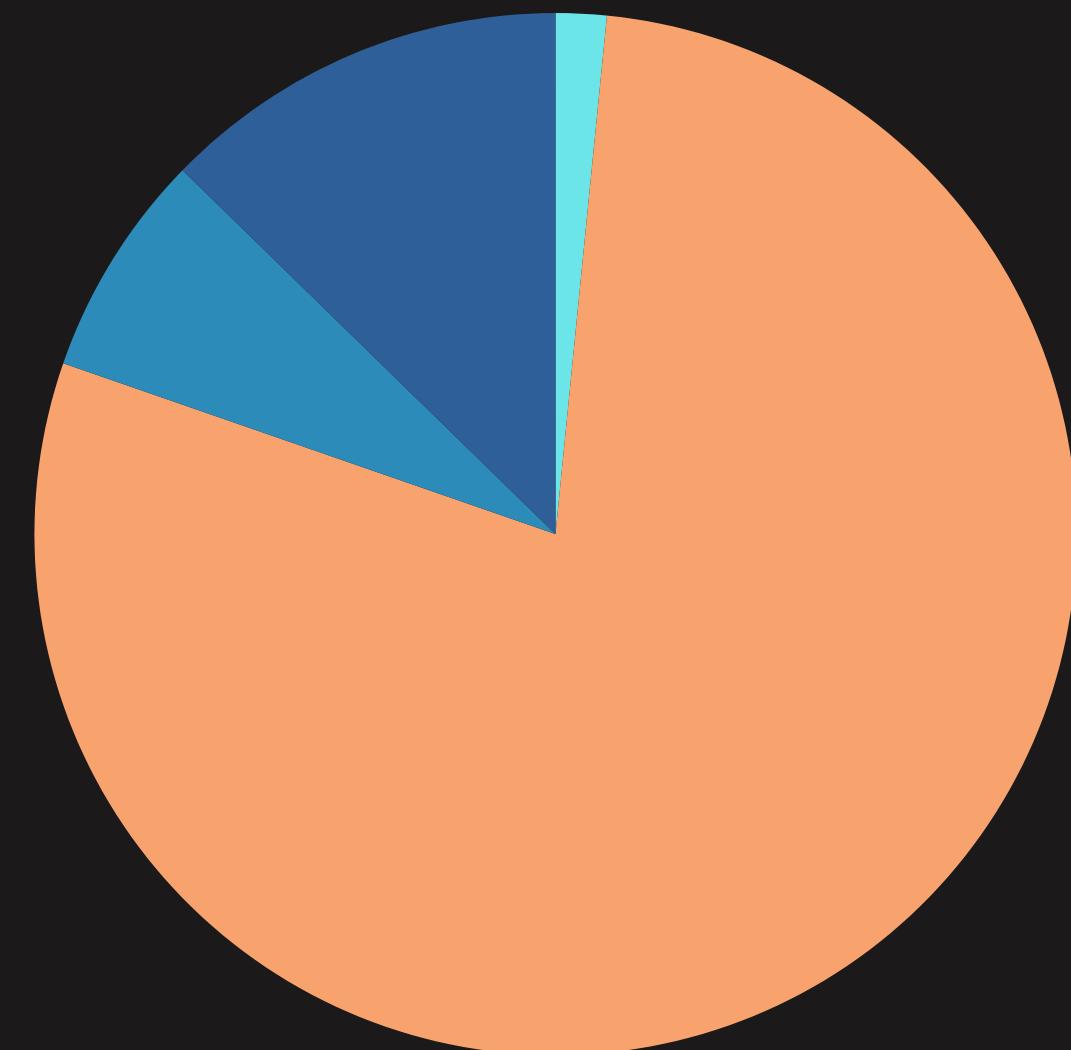


Arrests Population

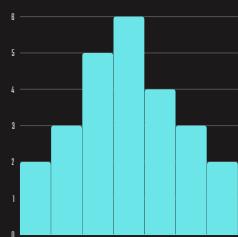


ROWS REMOVED

- Age < 10 or > 80
- District 8 or TPPD
- Unknown Persons
- Assigned Division NaN



EDA:
KEY INSIGHTS

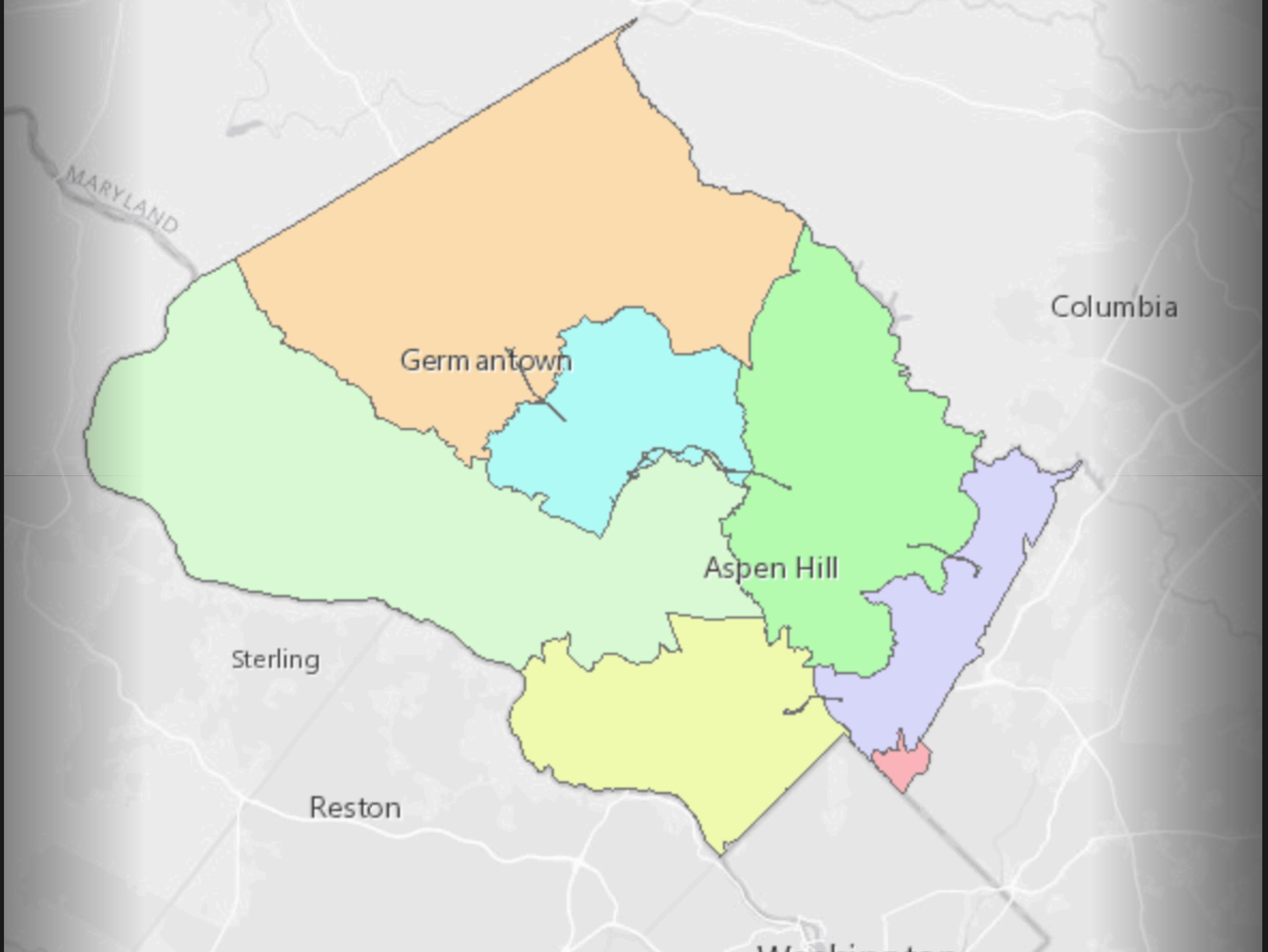


- 1,016 records removed
- 3,668 NaNs Assigned Bureau (associated with Police Departments)
- Females made up 20% of cleaned data
- Disproportionate racial breakdown: arrests vs. population

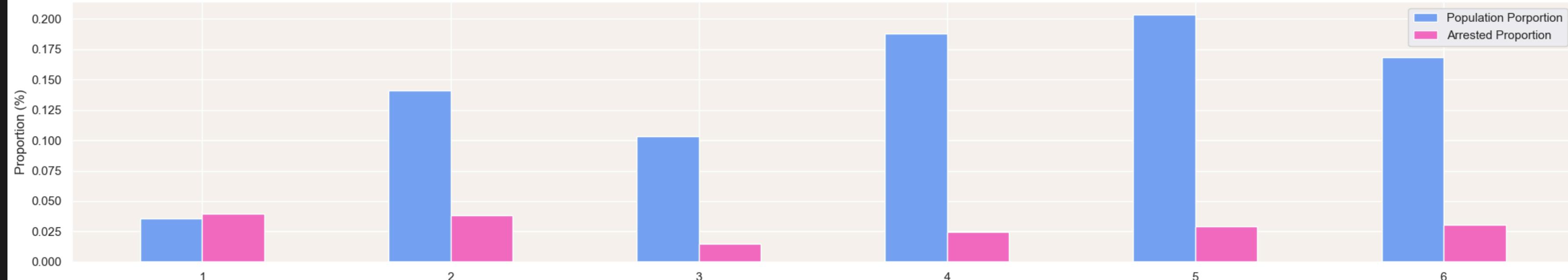


POLICE DISTRICT ANALYSIS

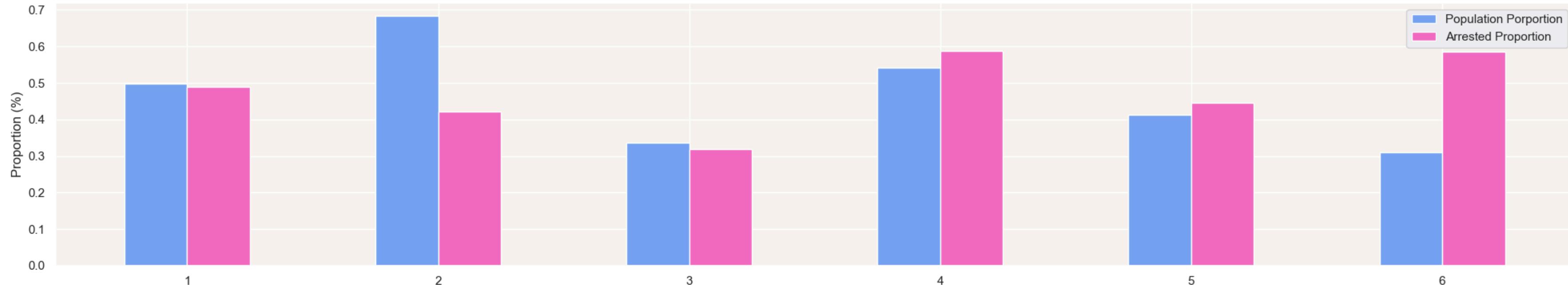




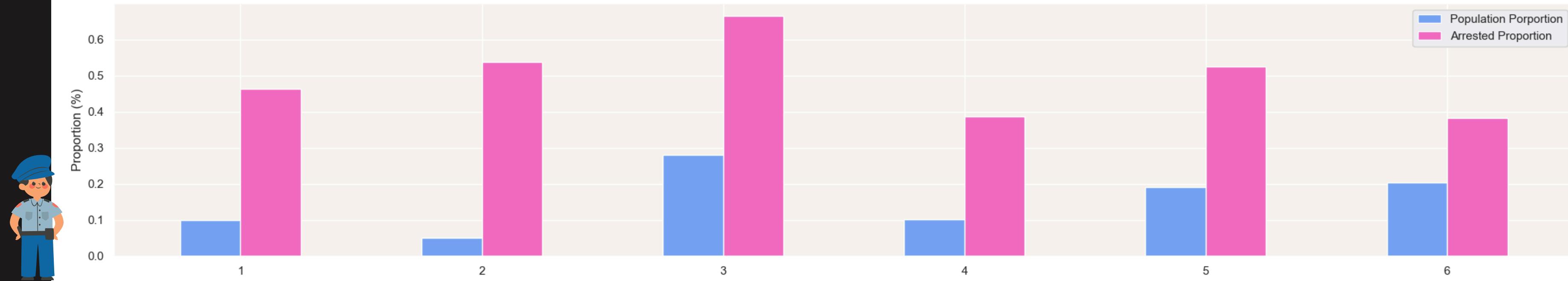
Proportion of Arrested vs Actual Demographic of Race across Police Districts (Asian)



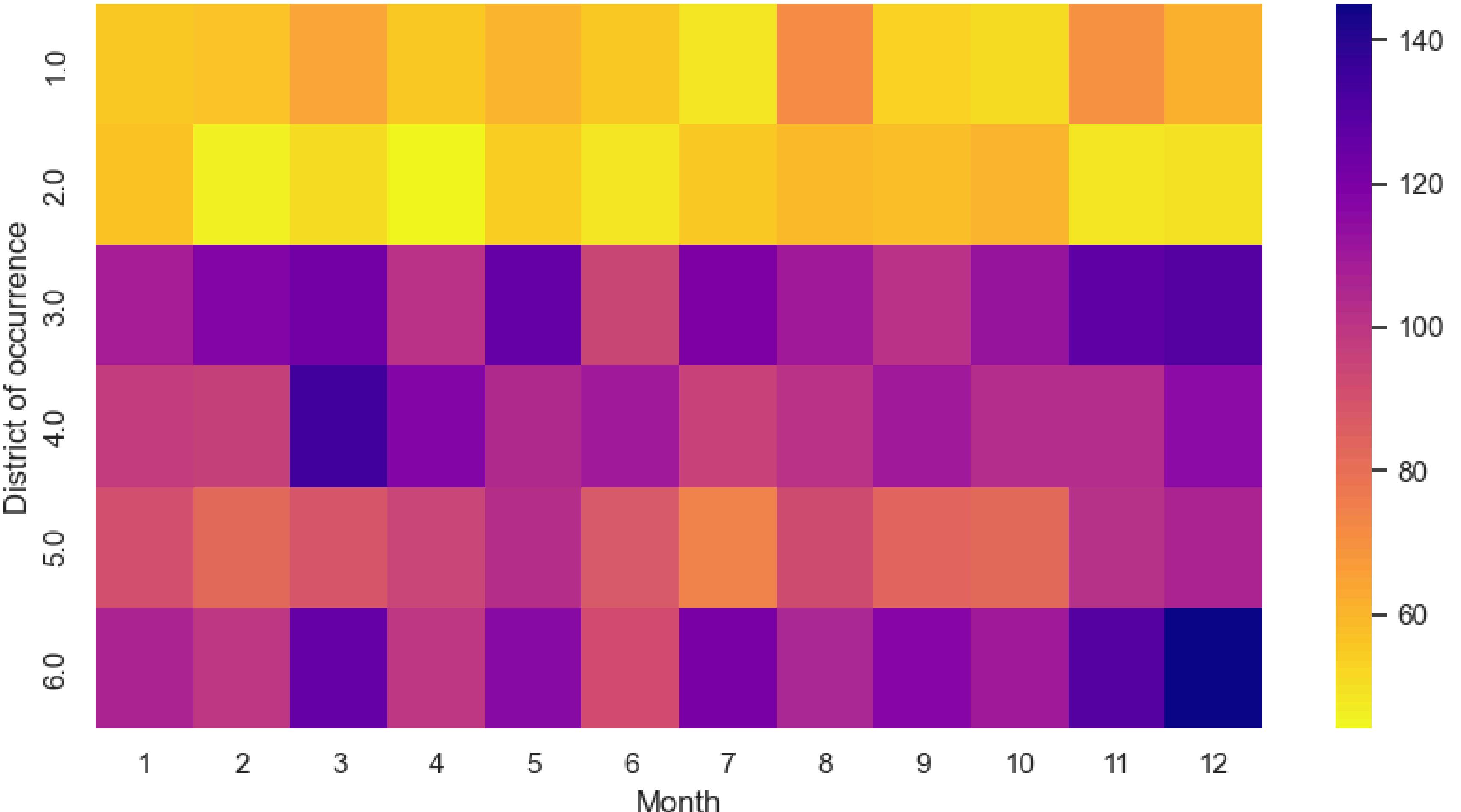
Proportion of Arrested vs Actual Demographic of Race across Police Districts (White)



Proportion of Arrested vs Actual Demographic of Race across Police Districts (African American)



Heatmap of Arrest Counts in Police Districts across Months



BUREAU BREAKDOWN



PATROL SERVICE BUREAU (PSB)

- Responsibilities: Front-line police activities and services.
- Types of Crime: Traffic violations and enforcement; DUI Incidents; Hostage; Domestic Calls

INVESTIGATIVE SERVICE BUREAU (ISB)

- Responsibilities: focuses on in-depth investigations and specialized crime-solving tasks.
- Types of Crime: Homicides; Narcotics; Gang Activities; Cybercrimes

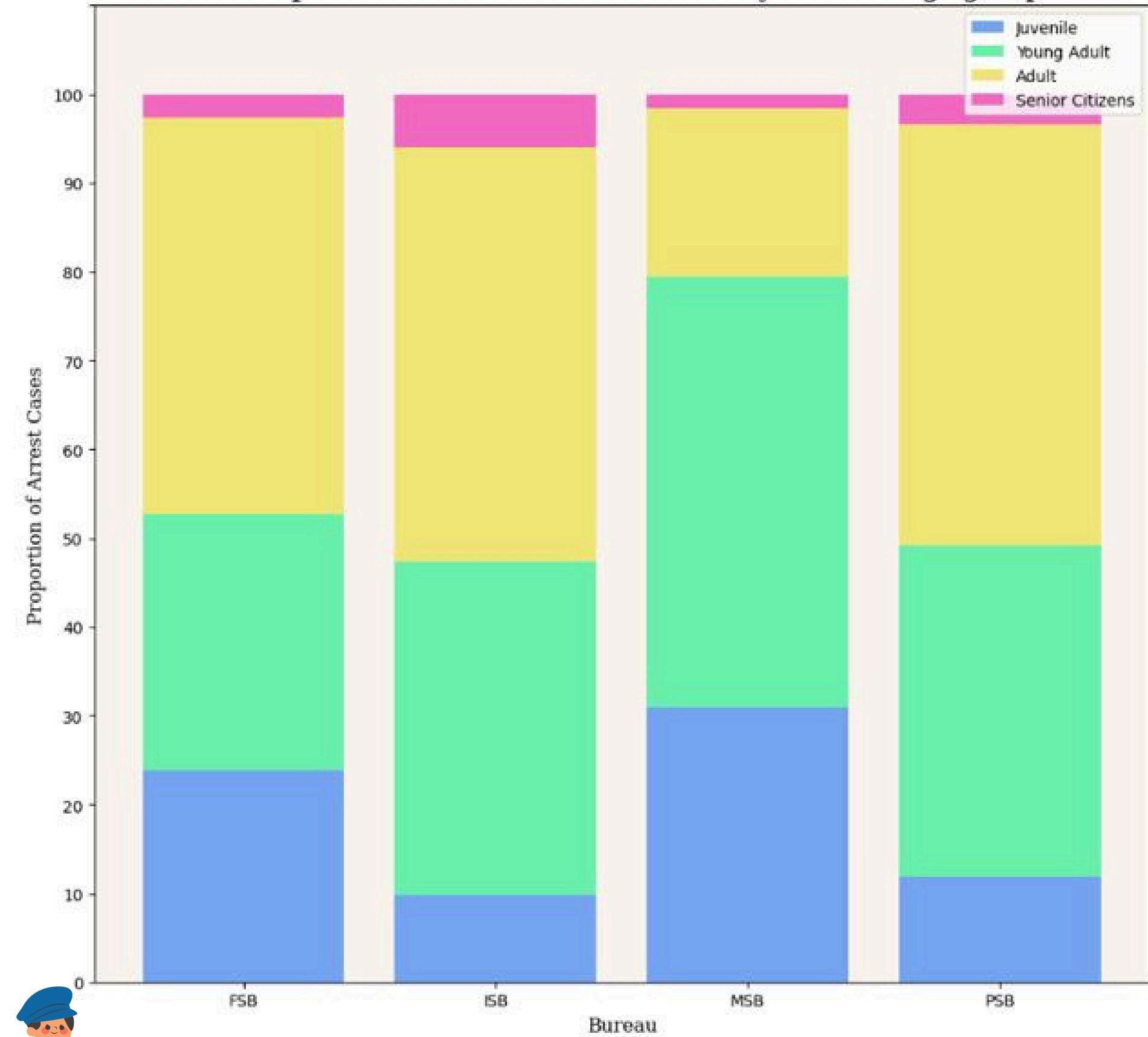
MANGAEMENT SERVICE BUREAU (MSB)

- Responsibilities: administrative and support functions within a police department.
- Types of Crime: Domestic Calls; Internal Affairs; Public Nuisance

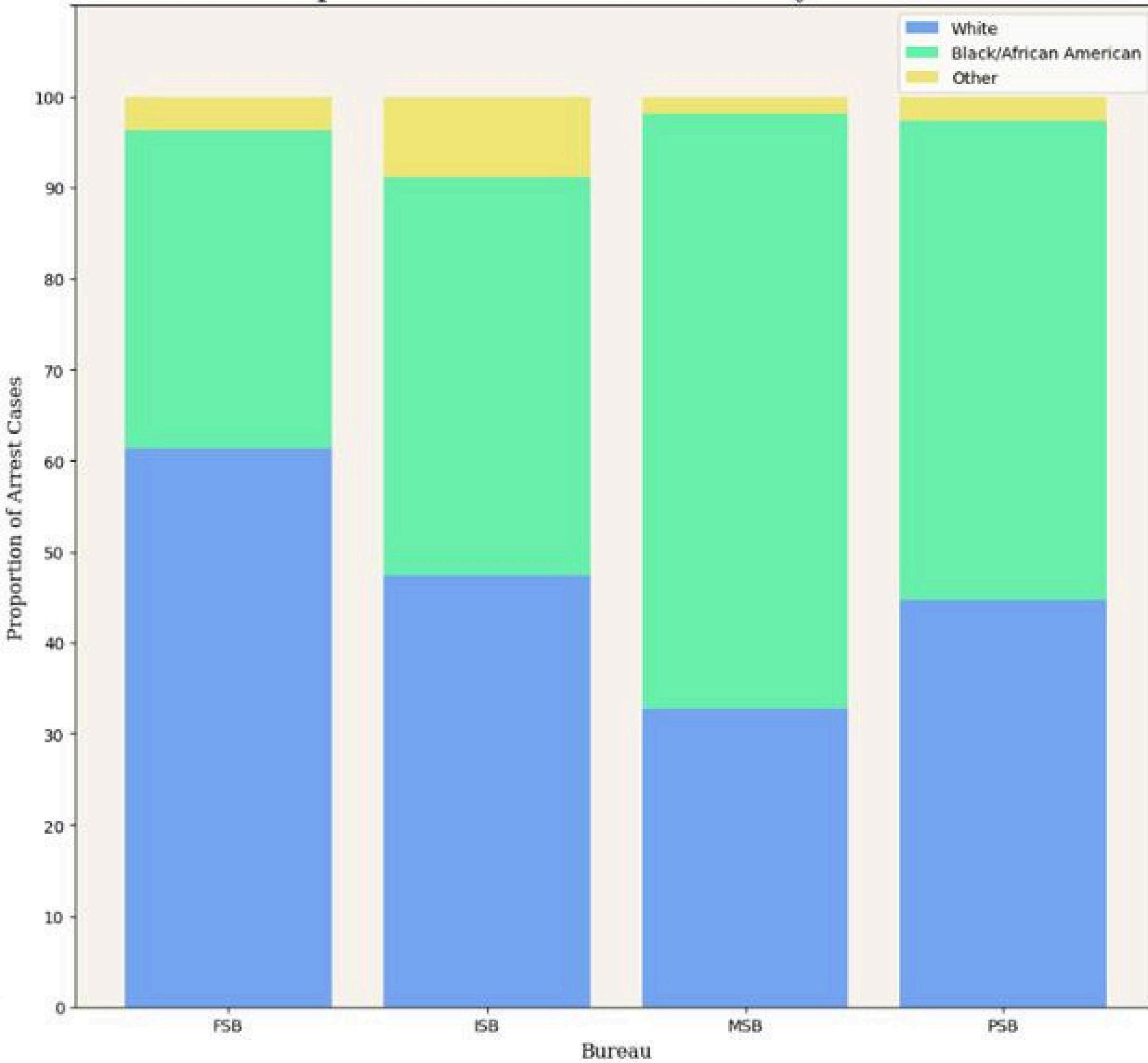
FIELD SERVICE BUREAU (FSB)

- Responsibilities: patrol neighborhoods , provide routine law enforcement presence and crime scene management.
- Types of Crime: Theft; Petty Crimes; Assault

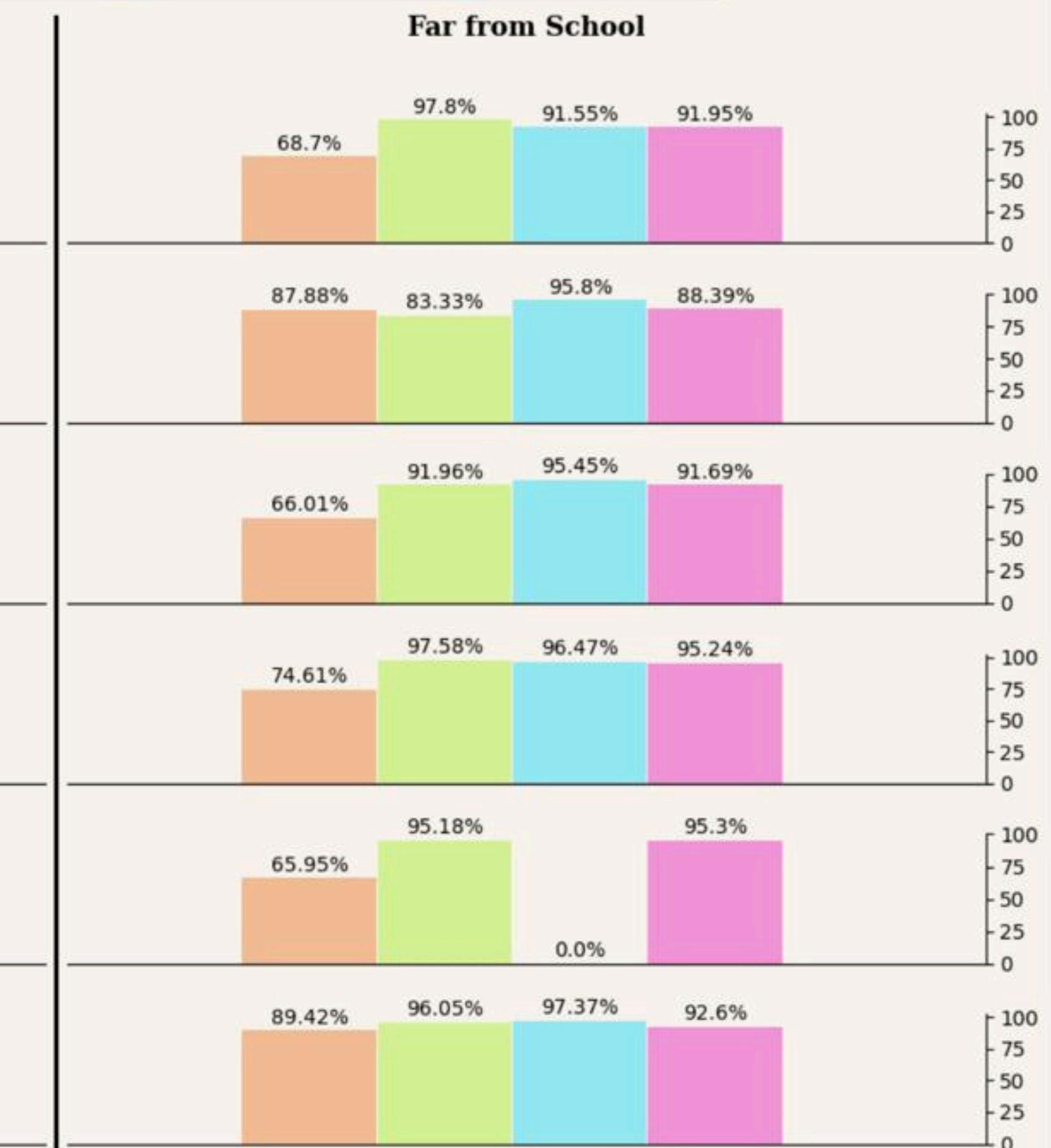
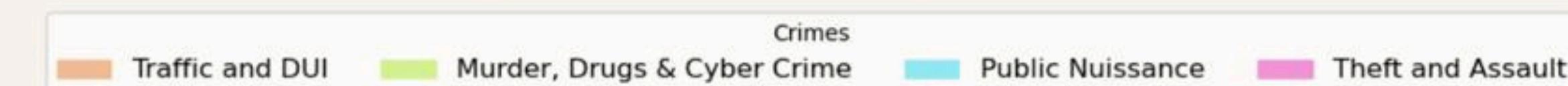
What Proportion of Crimes are committed by different age groups ?



What Proportion of Crimes are committed by different races ?



Proportion of cases near school



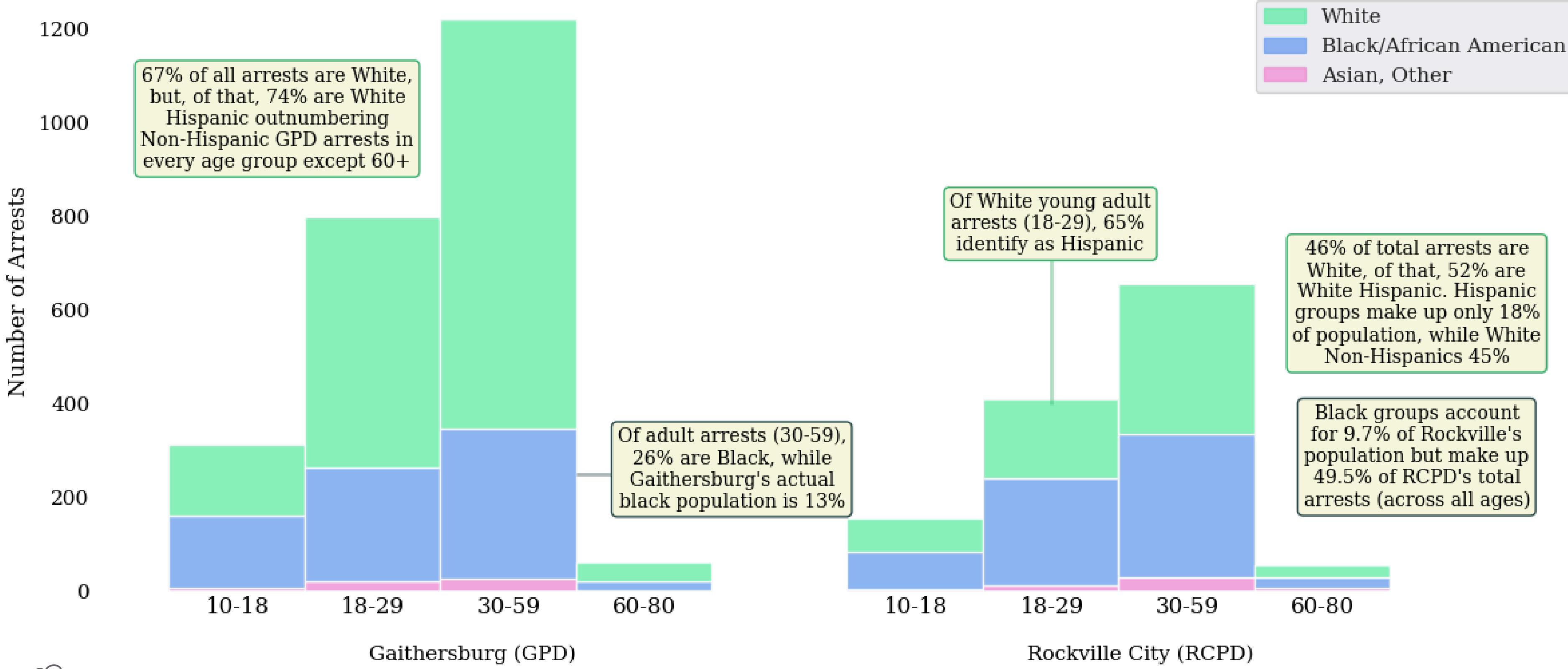
MAJOR POLICE DEPARTMENT AUDIT



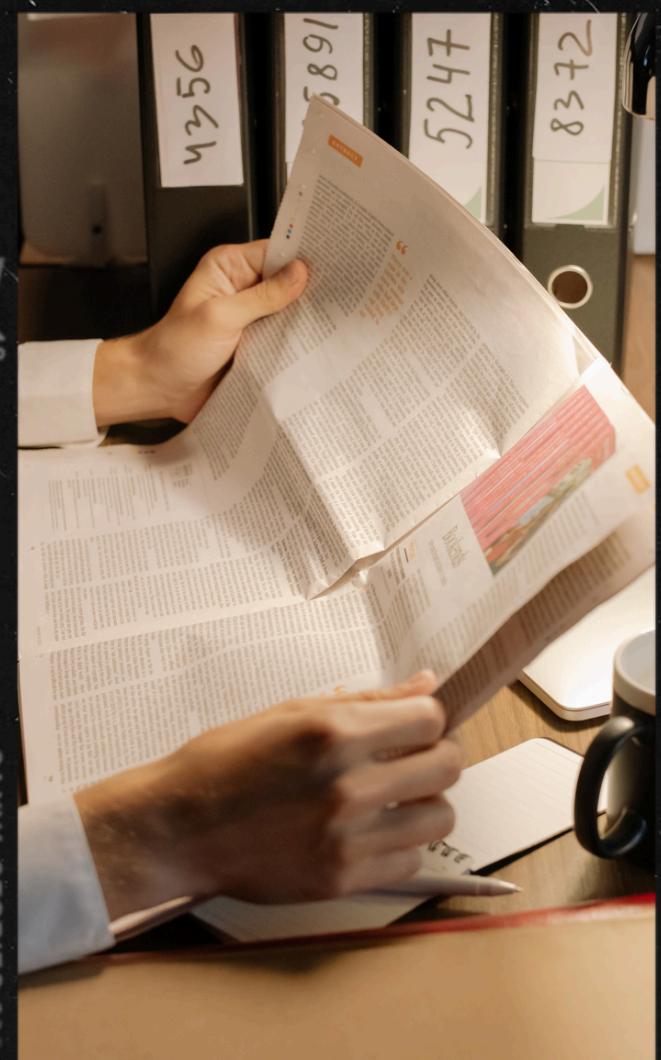
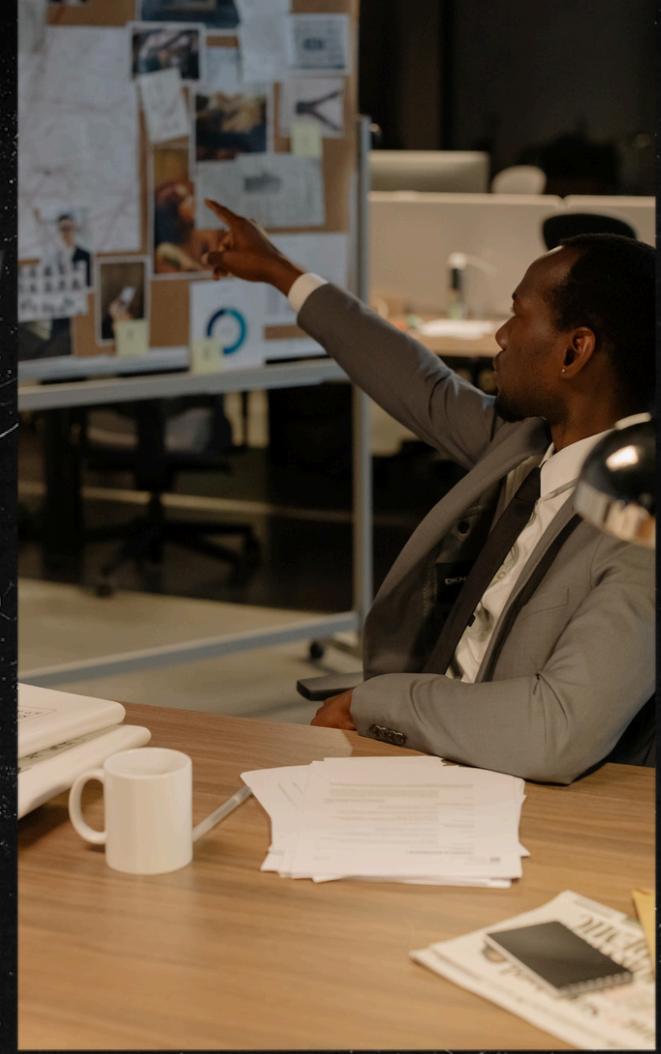
CANVA STORIES

CANVA STORIES

Racial Group Distribution Across Age Brackets within Police Departments



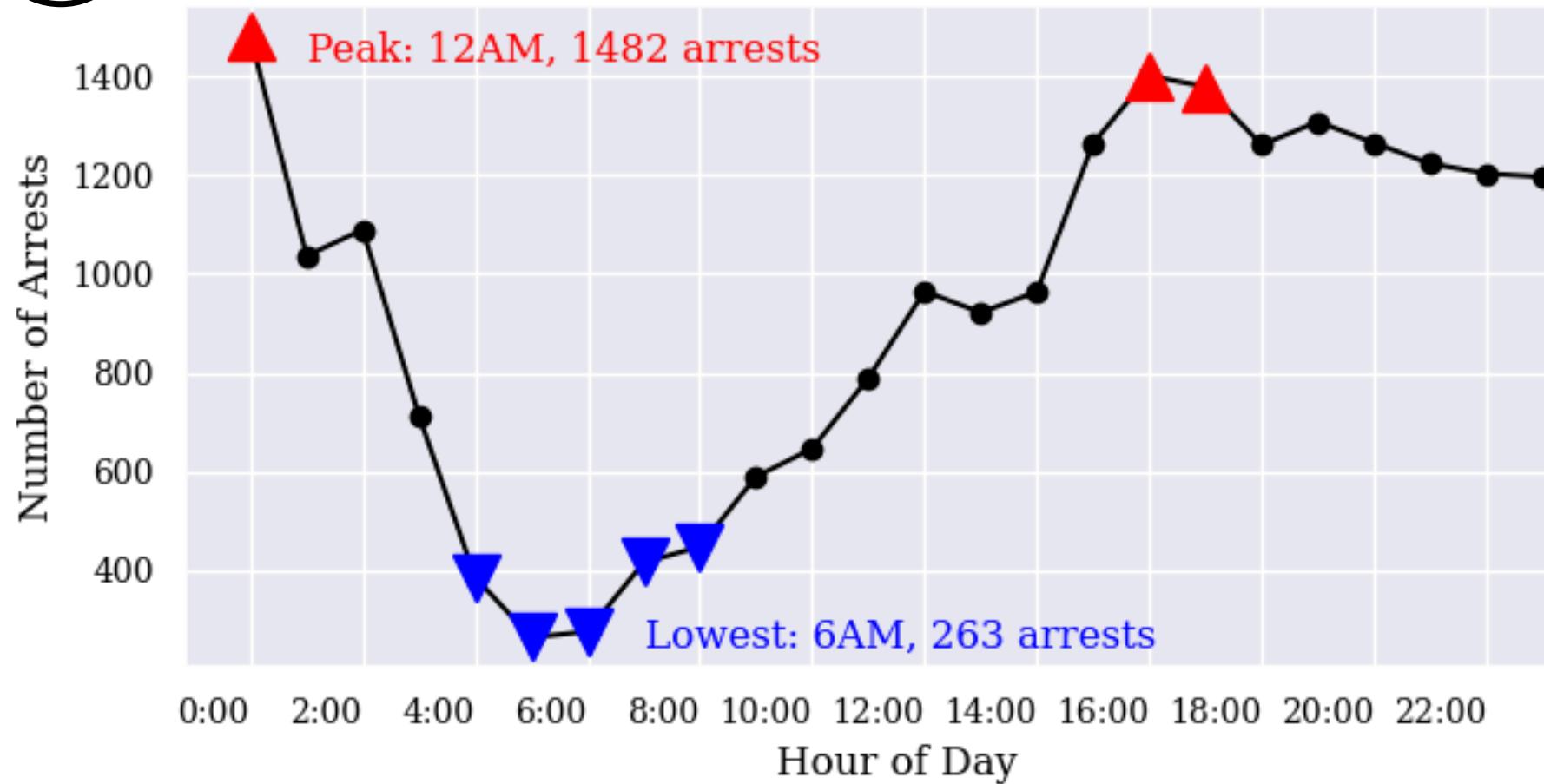
Major Police Departments in Montgomery County



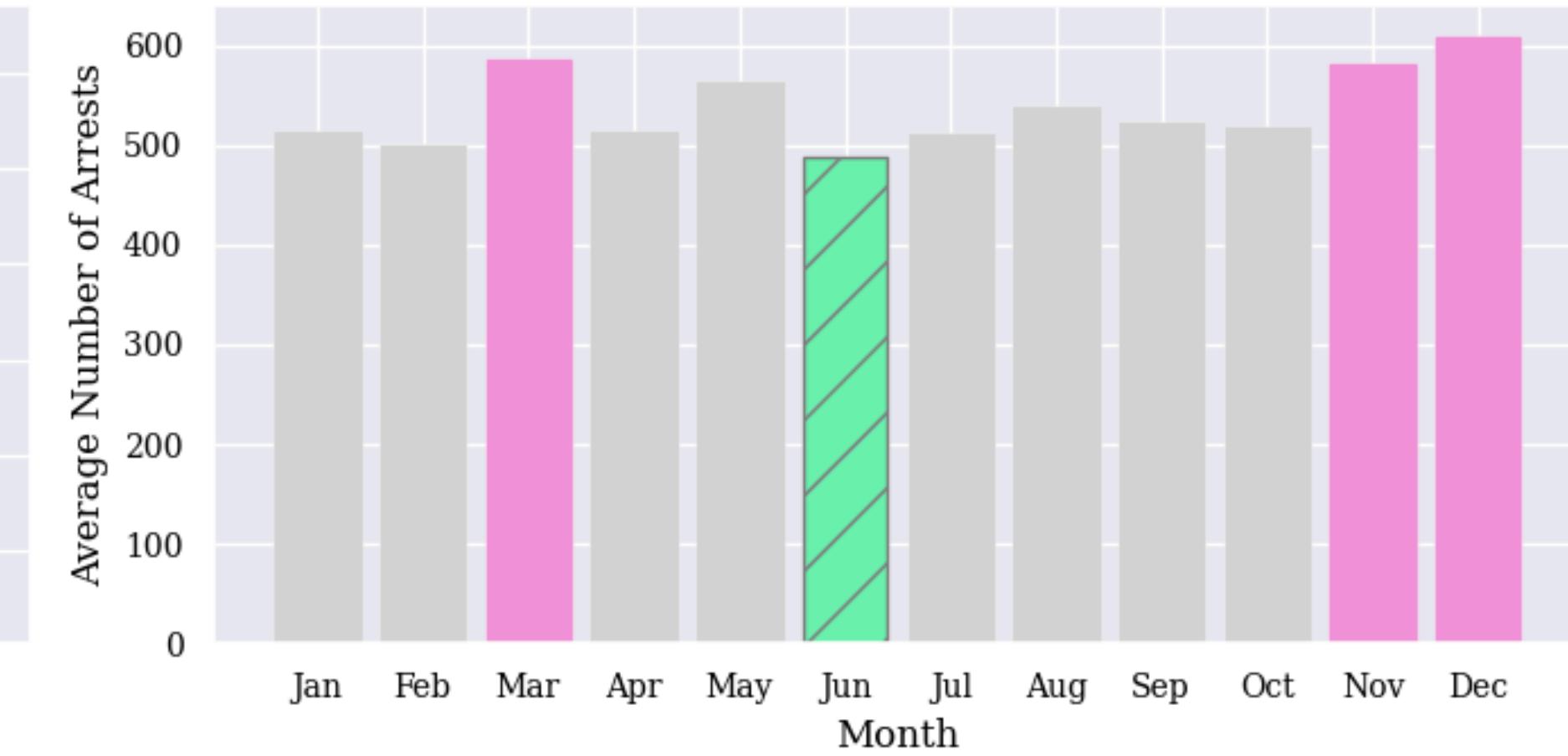
ARREST TRENDS OVER TIME

Holistic View of Arrest Trends: Hourly, Daily, Monthly Patterns and Overall Trends

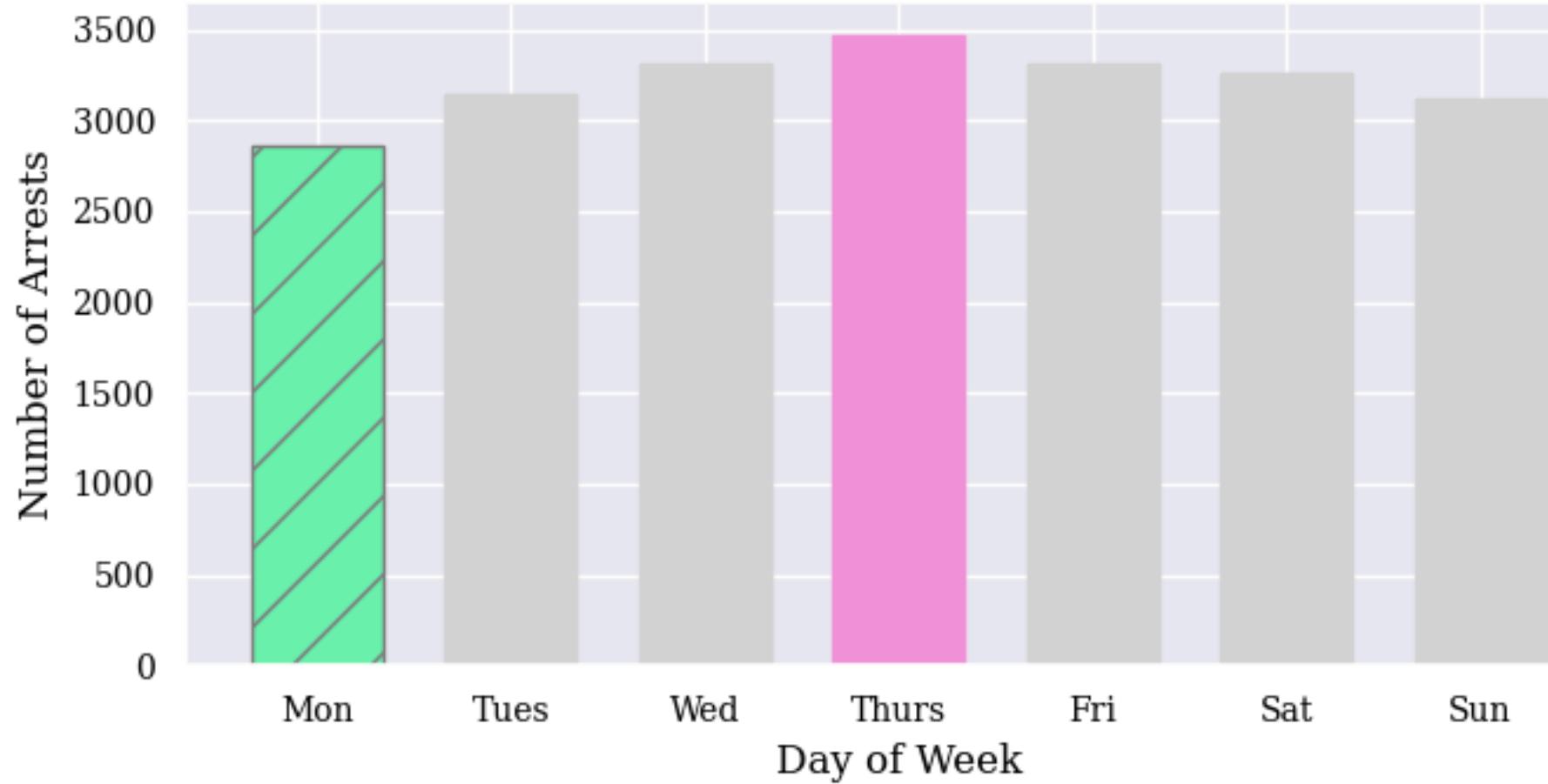
Distribution of Arrests by Hour of the Day



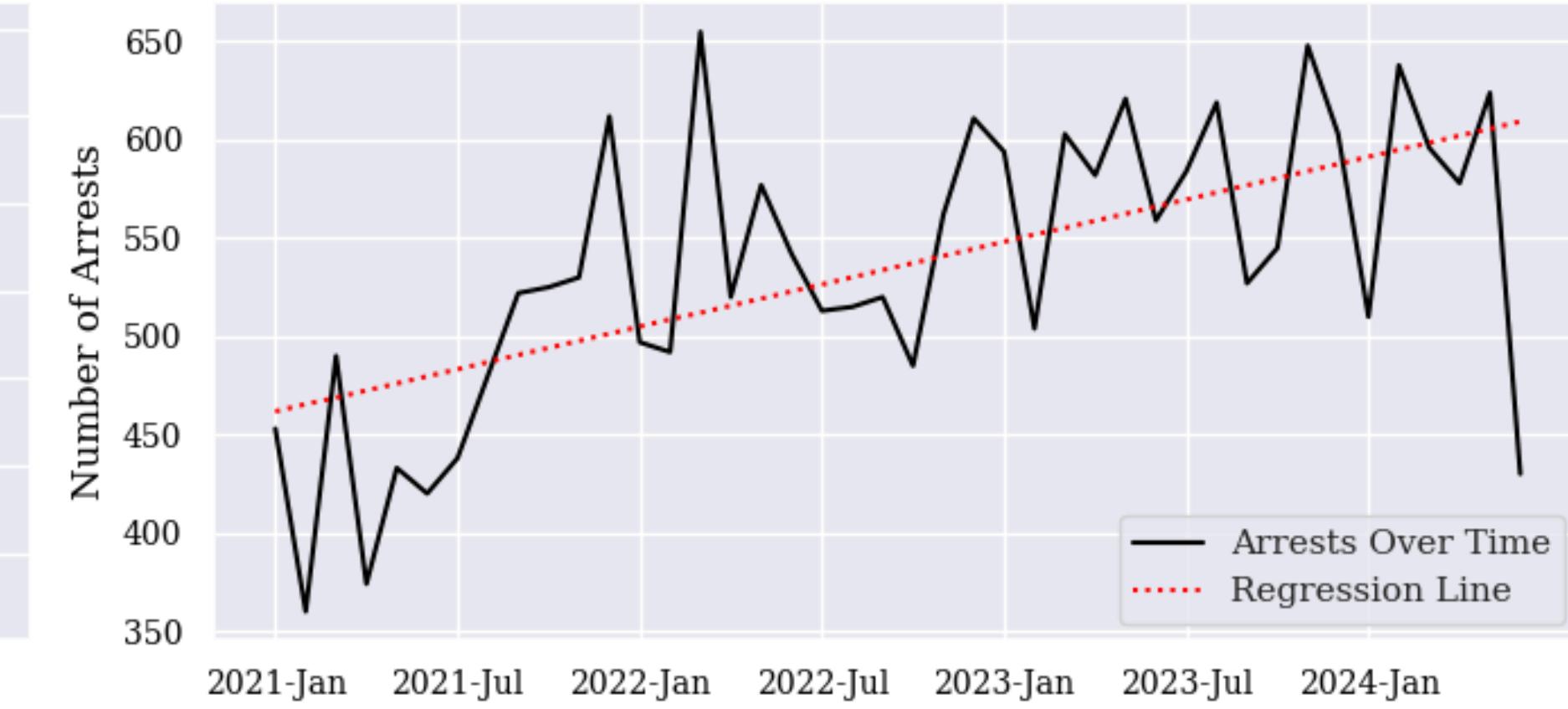
Average Number of Arrests per Month



Arrest Distribution Across Days of the Week



Trends in Arrest Numbers Over Time (2021-2024)





THANK YOU

REFERENCES

- <https://www.gaithersburgmd.gov/government/departments/gaithersburg-police-department>
- <https://datausa.io/profile/>
- <https://www.arcgis.com/apps/Viewer/index.html?appid=4317830a05654b8f907e65515970a5ba>
- https://data.census.gov/profile/Montgomery_County,_Maryland?g=050XX00US24031#race-and-ethnicity
- https://en.wikipedia.org/wiki/Montgomery_County_Police_Department
- <https://www.montgomerycountymd.gov/pol/bureaus/index.html>
- <https://www.montgomerycountymd.gov/pol/districts.html>