TERRY TRAFFIC STOP ANALYSIS IN SEATTLE, WASHINGTON

CONTRIBUTORS:

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OVERVIEW

- What is a Terry Stop?
    - Definition
    - Terry vs. Ohio 1968

- Why a Terry Stop is the scope of our study.
    - Problem statement.

Importance of our study
    - Establish a pattern.

OBJECTIVES AND STAKEHOLDERS

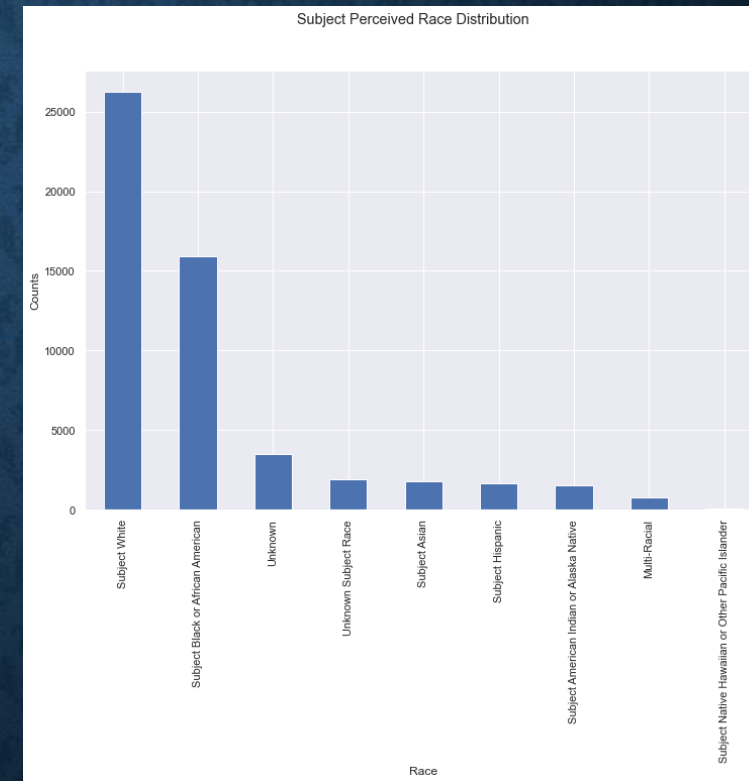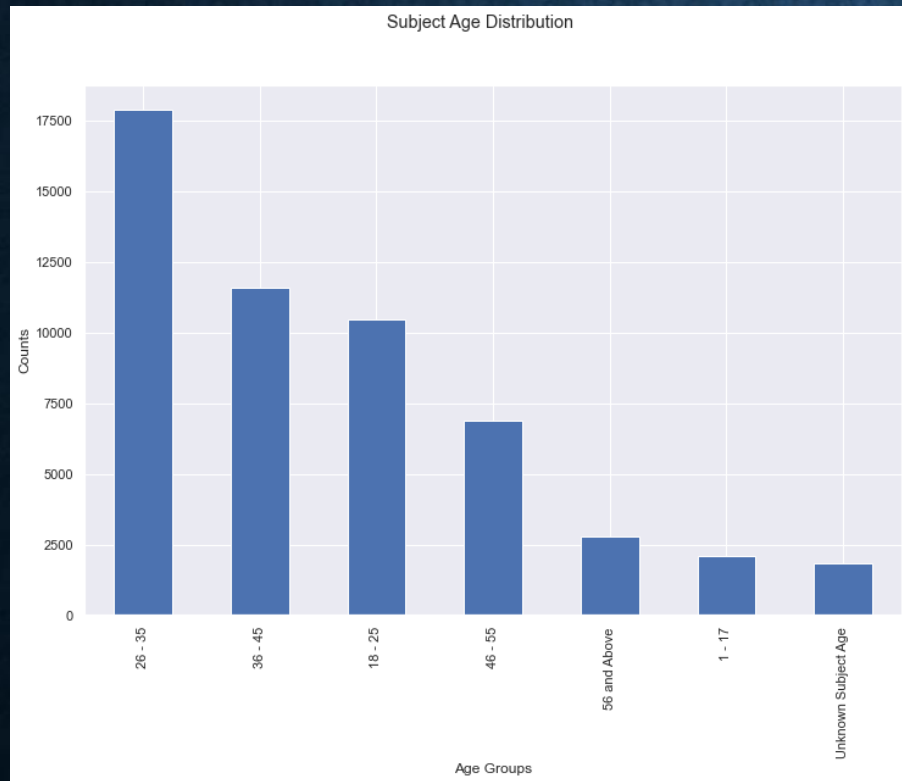The Public and the Law Enforcement Agencies.

Objectives:

- Investigate what factors would highly result to a person being arrested after a Terry Stop.

- predict whether an arrest was made after a Terry Stop.

- Find out whether Terry Stops are biased towards minority groups.

- Build a Terry Stop arrest classifier
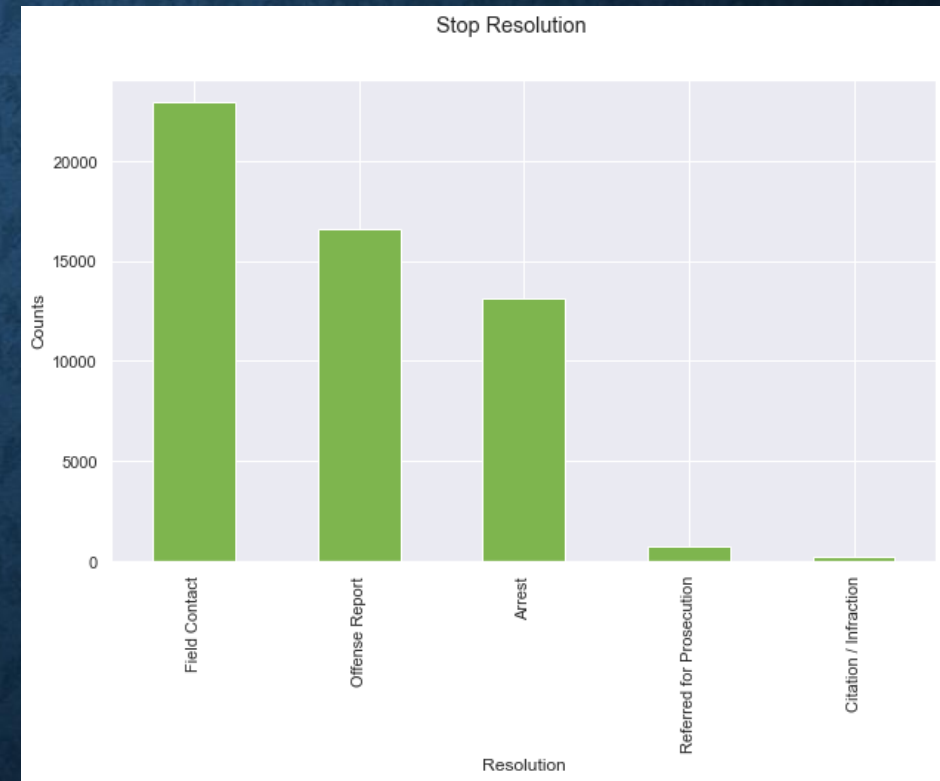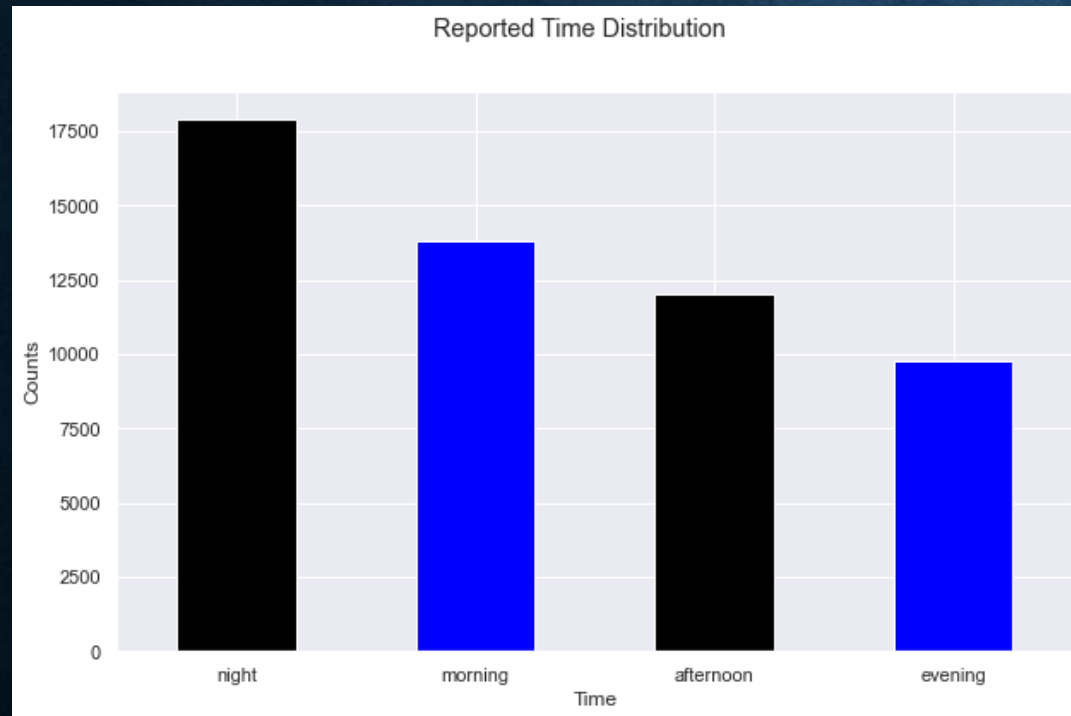
DATA UNDERSTANDING

- This data represents records of police reported stops under Terry v. Ohio, 392 U.S. 1(1968).

- The dataset was created on 04/12/2017 and is provided by the city of Seattle, Washington.

- The data is continuously updated.

- We have 53654 rows and 23 columns. Our target is 'Arrest Flag'.

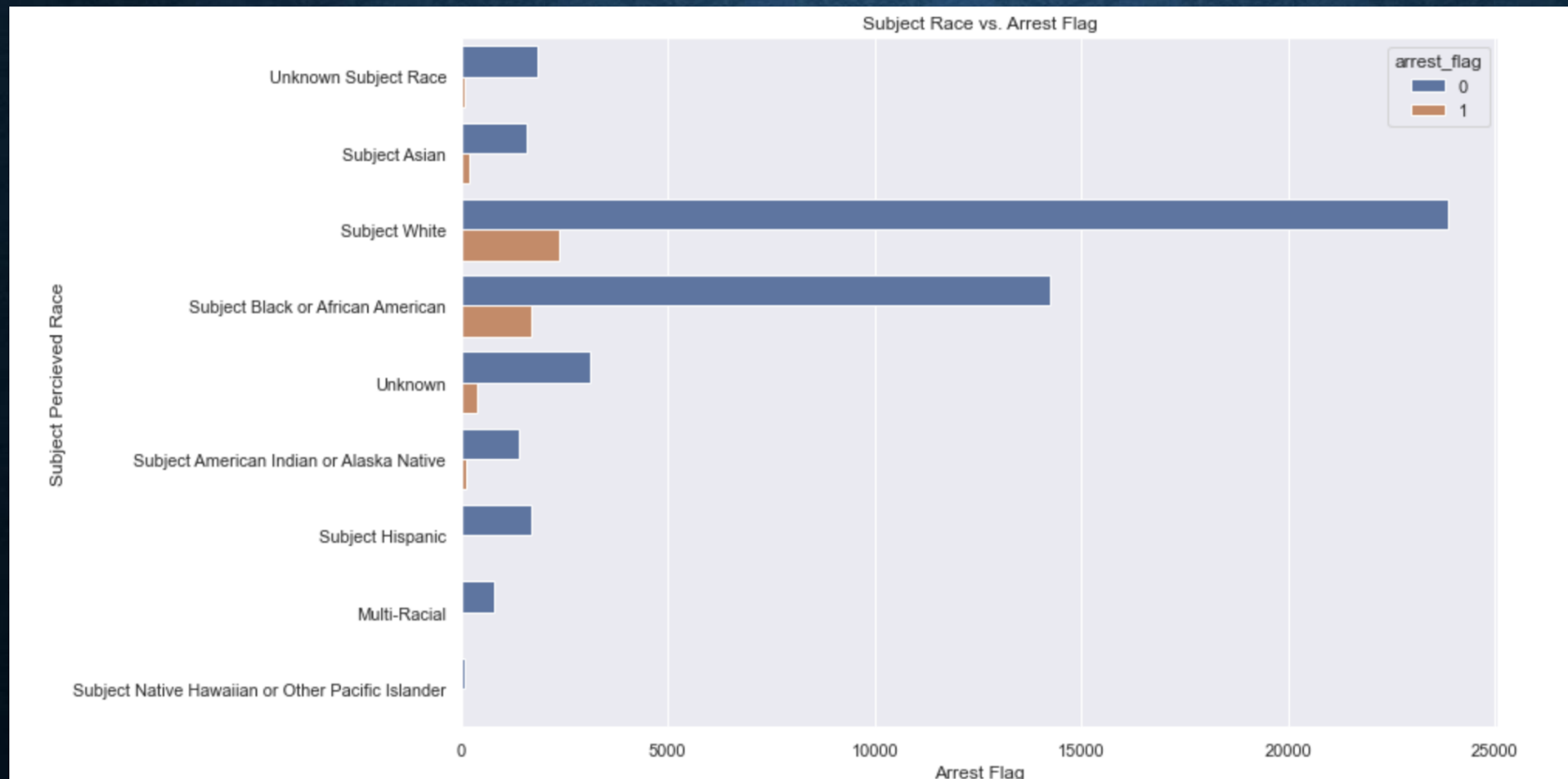# EXPLORATORY DATA ANALYSIS UNIVARIATE ANALYSIS

UNIVARIATE ANALYSIS
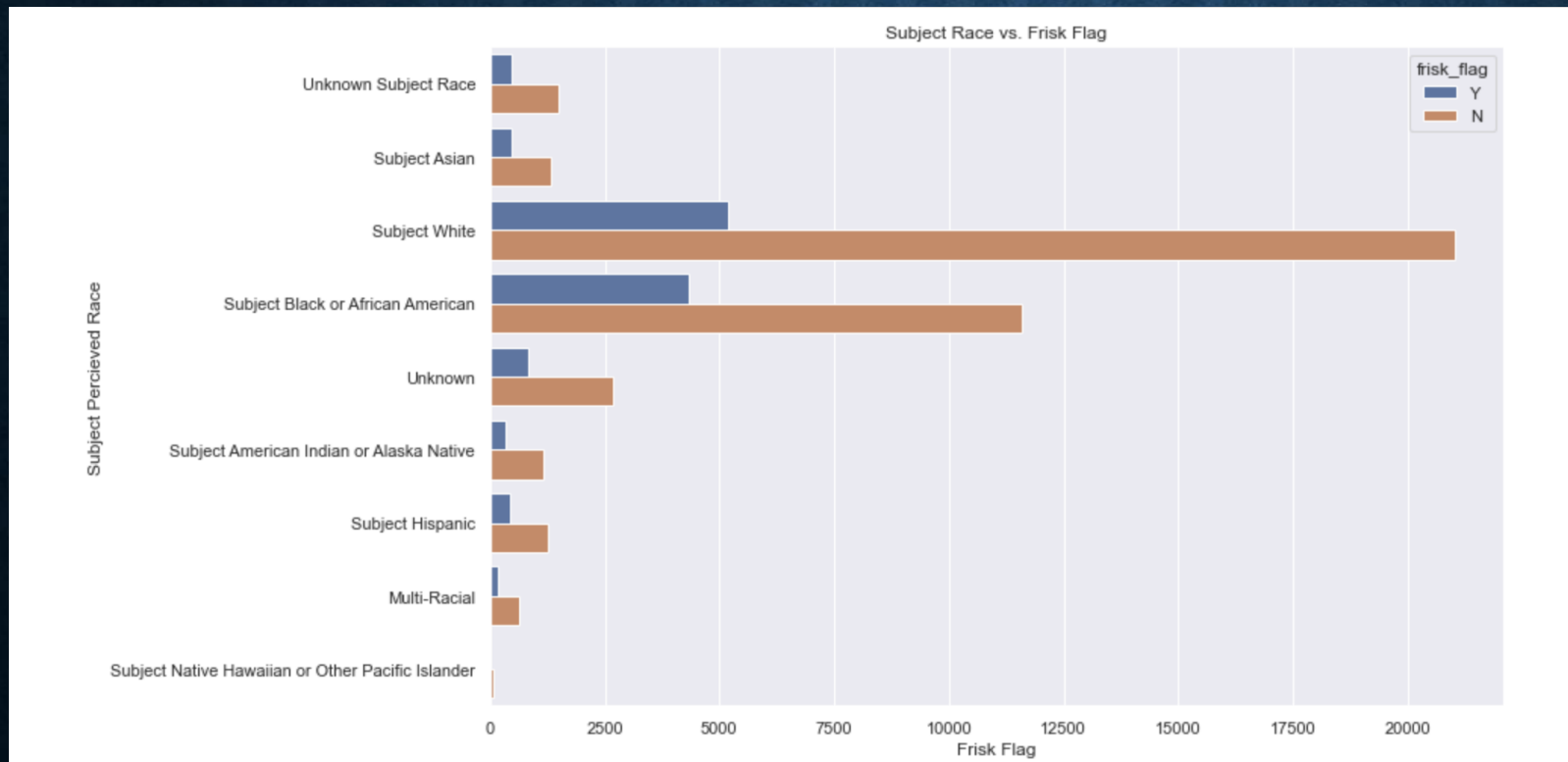
EXPLORATORY DATA ANALYSIS BIVARIATE ANALYSIS

- What is the racial comparison of arrests?
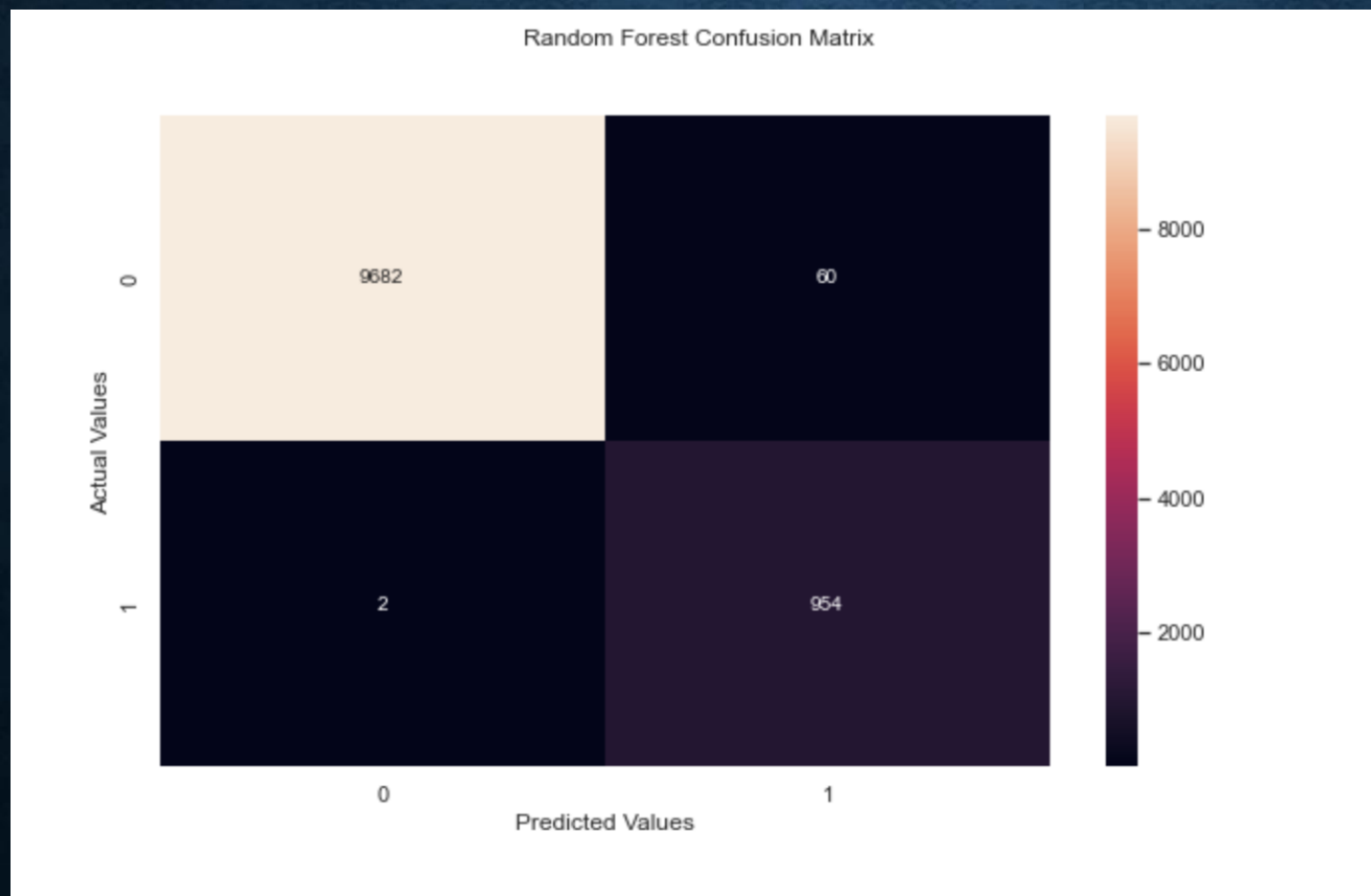
BIVARIATE ANALYSIS

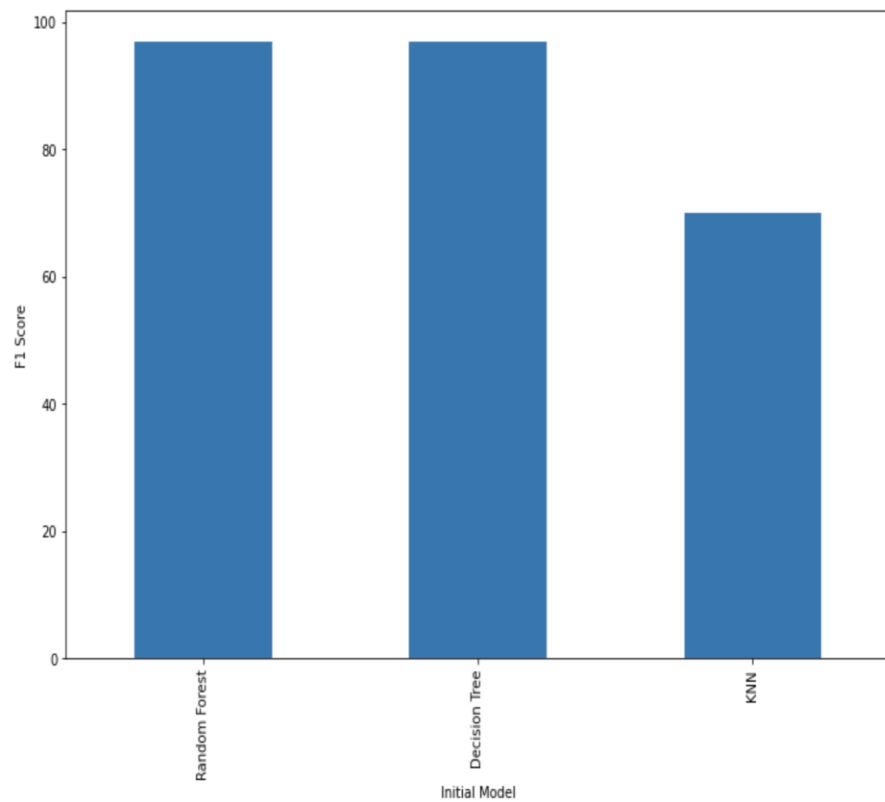- Racial distribution of Terry frisks

MODELING
CLASSIFICATION MODELS USED:

- Random Forest.

- Decision Tree Classifier.

- K Nearest Neighbors Classifier.
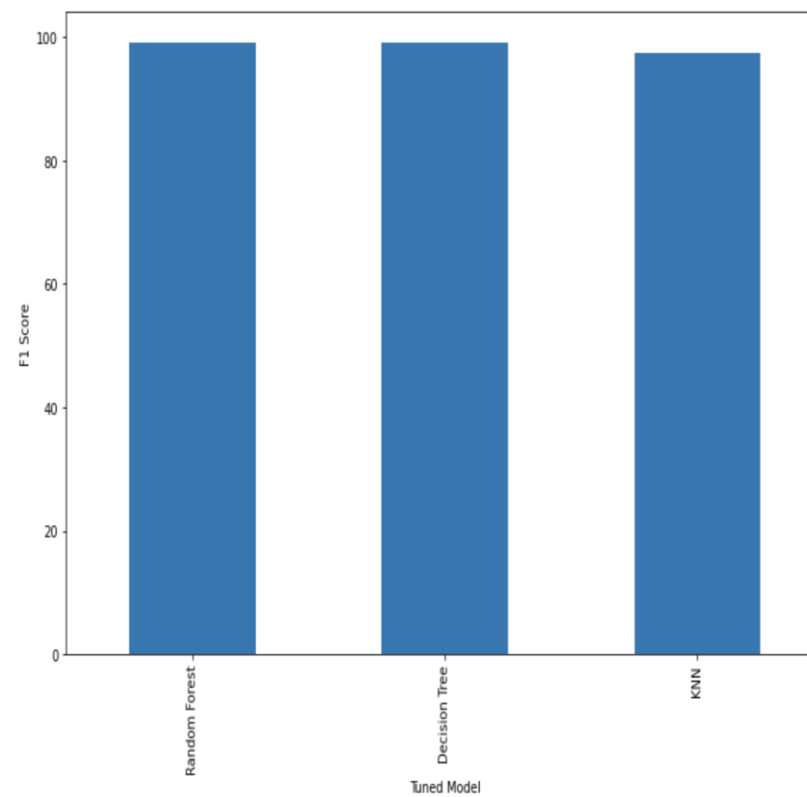
RANDOM FOREST CONFUSION MATRIX

MODELS SUMMARY

MODEL SUMMARY

- Which model performs better?

Model	Initial Model	Tuned Model
Random Forest	0.97	0.99
Decision Tree	0.97	0.99
KNN	0.70	0.97

FINDINGS:

- Reported Year, Reported Month Subject Age Group, Weapon Type and Reported Time highly influence a Terry Stop arrests.

- The number of frisks during Terry stops increased in only two precincts, and the likelihood that a stop would lead to a frisk also increased in the East and South.

- Blacks continue to be over-represented in the Terry stops data compared to their representation in the entire population of Seattle.

RECOMMENDATIONS

- Combined Law Enforcement and Community Policing Members of the community join police officers and observe the officers' activities while working their Beat. This can lead to an increase in public trust, a better understanding of the people in their jurisdiction, as well as educate people about why certain policies are in place.

- In determining whether probable cause exists, courts more readily accept the judgment of a law enforcement officer if it is backed by evidence of a crime/weapon possession.

FUTURE WORK

- The dataset contained a lot of NaN or incomplete information. Collect more data that adds more context to the nature of stops

- Audit record system and reduce redundant columns to reduce noise

- Look into data for police reported stops in other regions for comparison

- Collect and analyze data on those arrested and eventually found guilty in court