

Will a Terry Stop end in an arrest?

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What is a Terry stop?

- Fourth Amendment – protects against **unreasonable** search and seizure
- Define “reasonable” (1968 Supreme Court case of Terry v. Ohio)
- Terry Stops include pedestrian searches (“Stop and Frisk”) and traffic stops

The Data

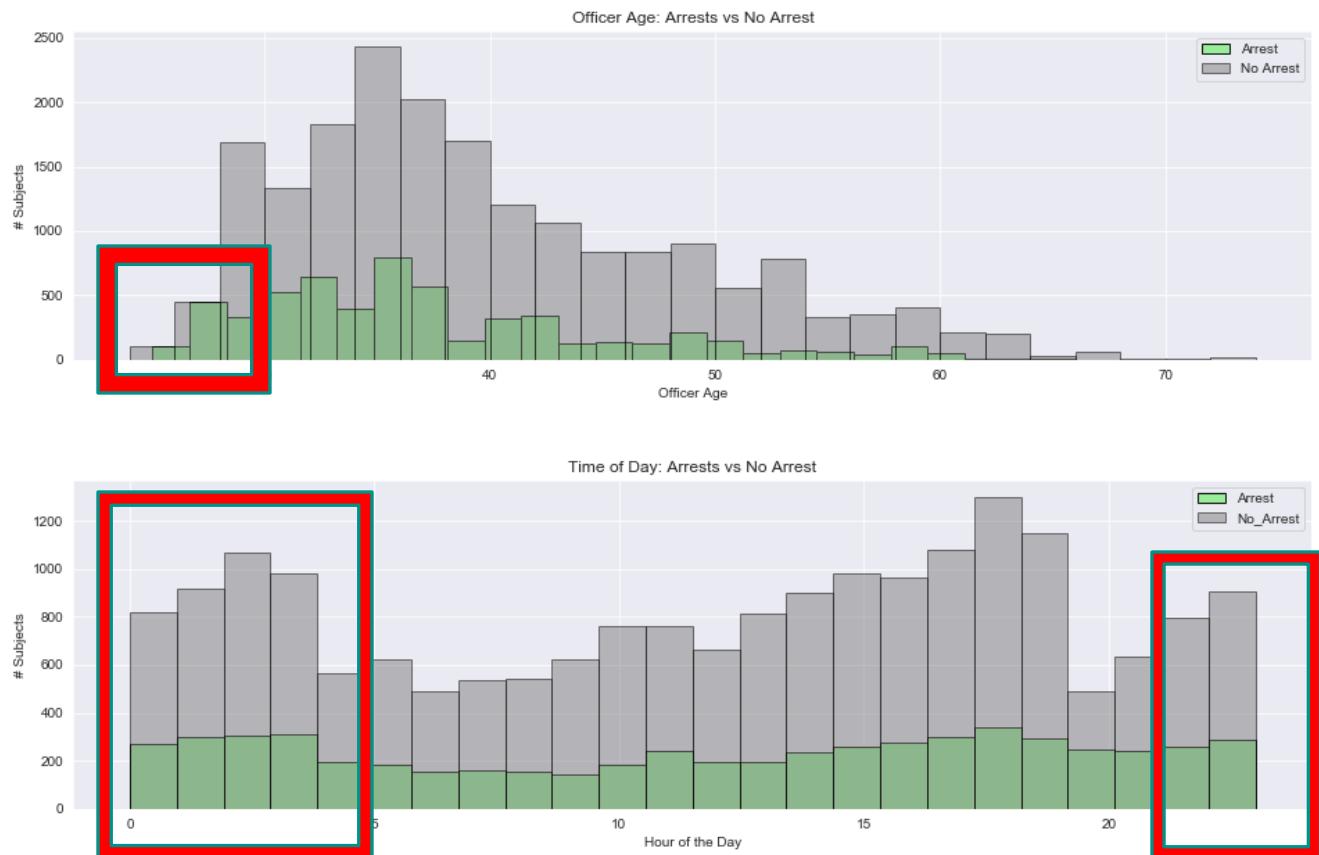
- City of Seattle
- Records of pedestrian Terry stops
- Including:
 - Date
 - Time
 - officer demographics
 - **perceived** subject demographics
 - Was the subject frisked?
 - Weapon type discovered after search
 - Whether or not an arrest was made

Hypothesis

- In a progressive area like the PNW, the subject's **race** and **gender** do not have an effect on arrest probability
- **Age of subject** will have an effect – the young subjects are more likely to be arrested than older subjects
- **Age of officer** will have an effect – older/more experienced officers might not be so quick to make an arrest (or may not want to deal with the paperwork?)
- **Time of day** will have an effect - people walking around late at night are more likely to be arrested

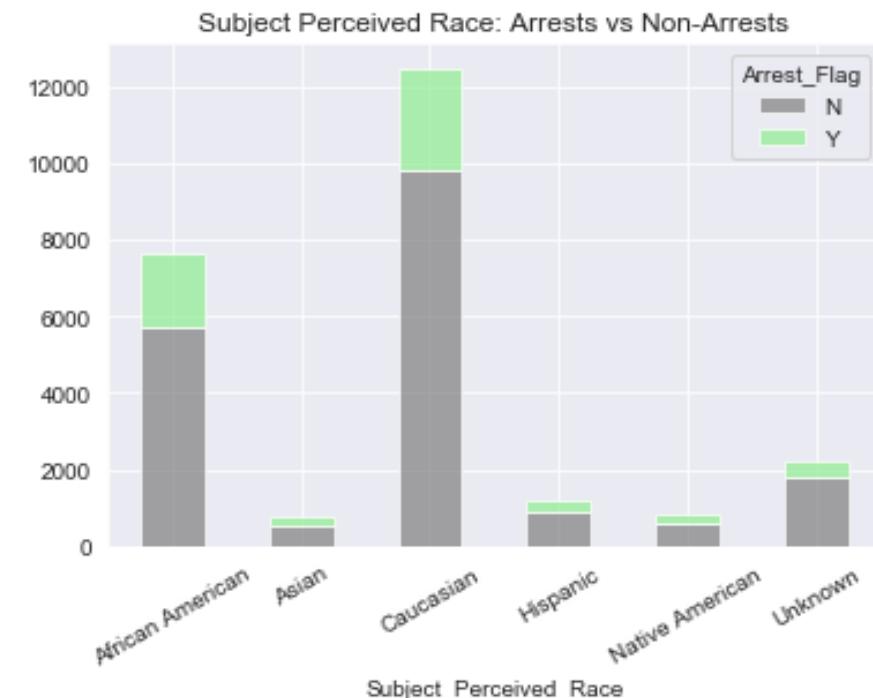
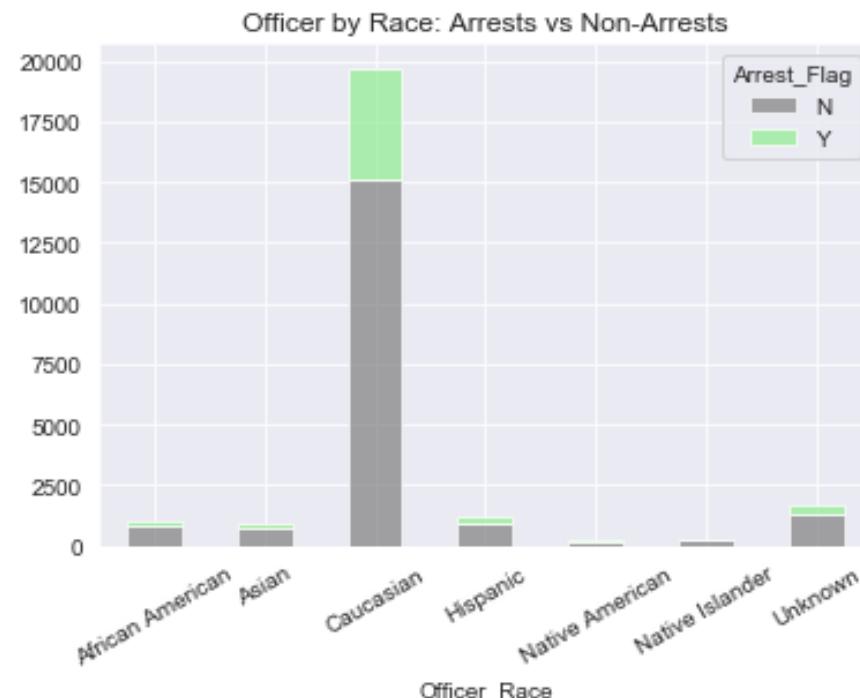
Feature Engineering

- Young Officers – under 29 y/o
- Late night – hours between 8p – 4a



Feature Engineering

- Officer white vs. all other races
- Subject Perceived white vs all other races



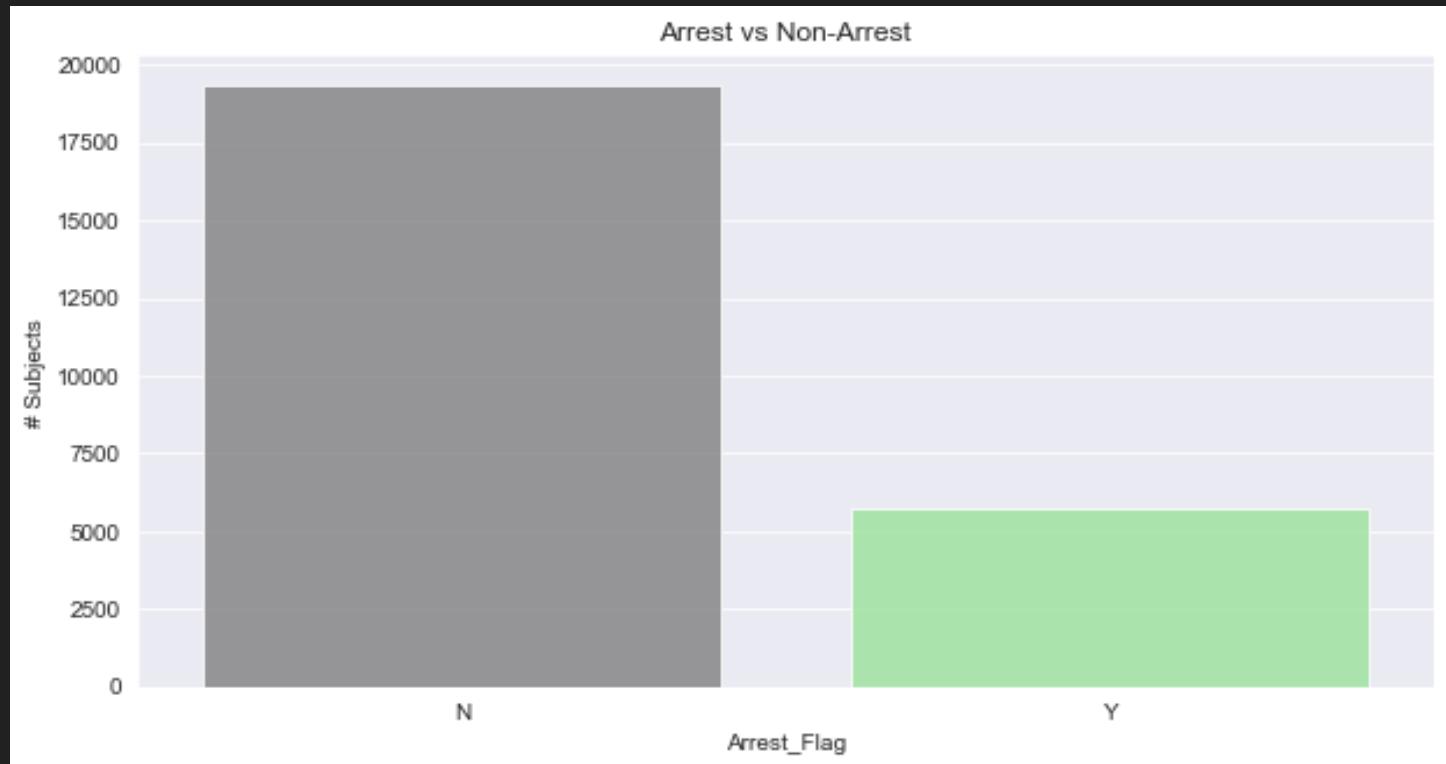
Model Evaluations

- Null Accuracy: 76.96%

Model	Accuracy	Precision	Recall	F1
KNN	75.3 %	38.2 %	11.8 %	18.0 %
Decision Tree	76.4 %	39.8 %	5.0 %	8.9 %
XGBoost	77.5 %	60.5 %	3.3 %	6.2 %
XGBoost (GridSearch)	77.8 %	62.8 %	6.4 %	11.6 %
Logistical Regression	77.1 %	53.6 %	3.1 %	5.9 %

Results and Performance

- Models were insignificantly better than just assuming the subject will not be arrested
 - Problems in feature engineering?
 - Seattle Police don't discriminate?
 - Features not adequate predictors?



Further Investigation

- Eliminate those subjects that were not frisked? (weapon type==None overly important)
- Repeat offenders
 - Subject IDs which appear many times vs. few times
- Weather
 - Scrape weather based on date
 - Does rain/cold effect the officer's likelihood of making an arrest?
 - Does presence despite bad weather raise more suspicion resulting in more stops, frisks, arrests?