



TERRY STOP OUTCOMES PREDICTION

PRESENTED BY GROUP 7

Business Understanding

A Terry stop is a police procedure that permits law enforcement officers to briefly detain an individual based on reasonable suspicion of criminal activity. Terry Stops are controversial because they give police a wider scope of authority or freedom to make decisions which may lead to wrongful arrests. If most stops don't lead to arrests, it raises questions about whether they are fair or effective, a concern to policy makers and civil rights organizations.



Objectives

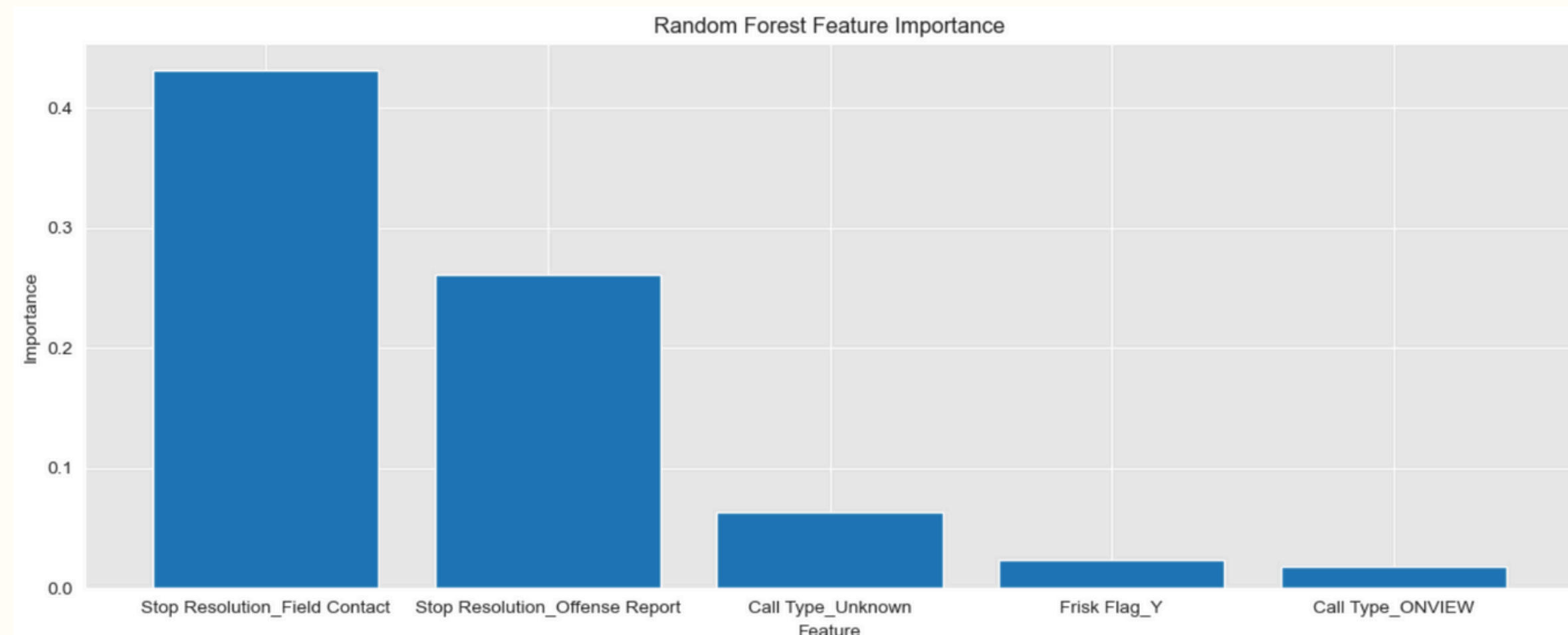
Main objective

To predict whether an arrest was made after a Terry Stop, based on other information from the data.

Specific Objectives

- To explore the Terry Stops dataset to identify key features influencing arrest outcomes.
- To build and compare multiple classification models to determine the most effective model for predicting arrests.
- To tune the selected model to achieve a balance between precision and recall.
- To interpret model results to provide actionable insights for SPD leadership.

Feature importance



Observations

Stop Resolution, Call Type, Frisk Flag were the features that influenced Arrest outcomes the most.

Our Approach

1. Understanding the Data

- Looked at real Terry stop records (who was stopped, why, and what happened).

2. Preparing the Information

- Cleaned the data and made sure it was ready to use.
- Balanced the numbers so we didn't have too many "no arrest" cases compared to "arrest" cases.

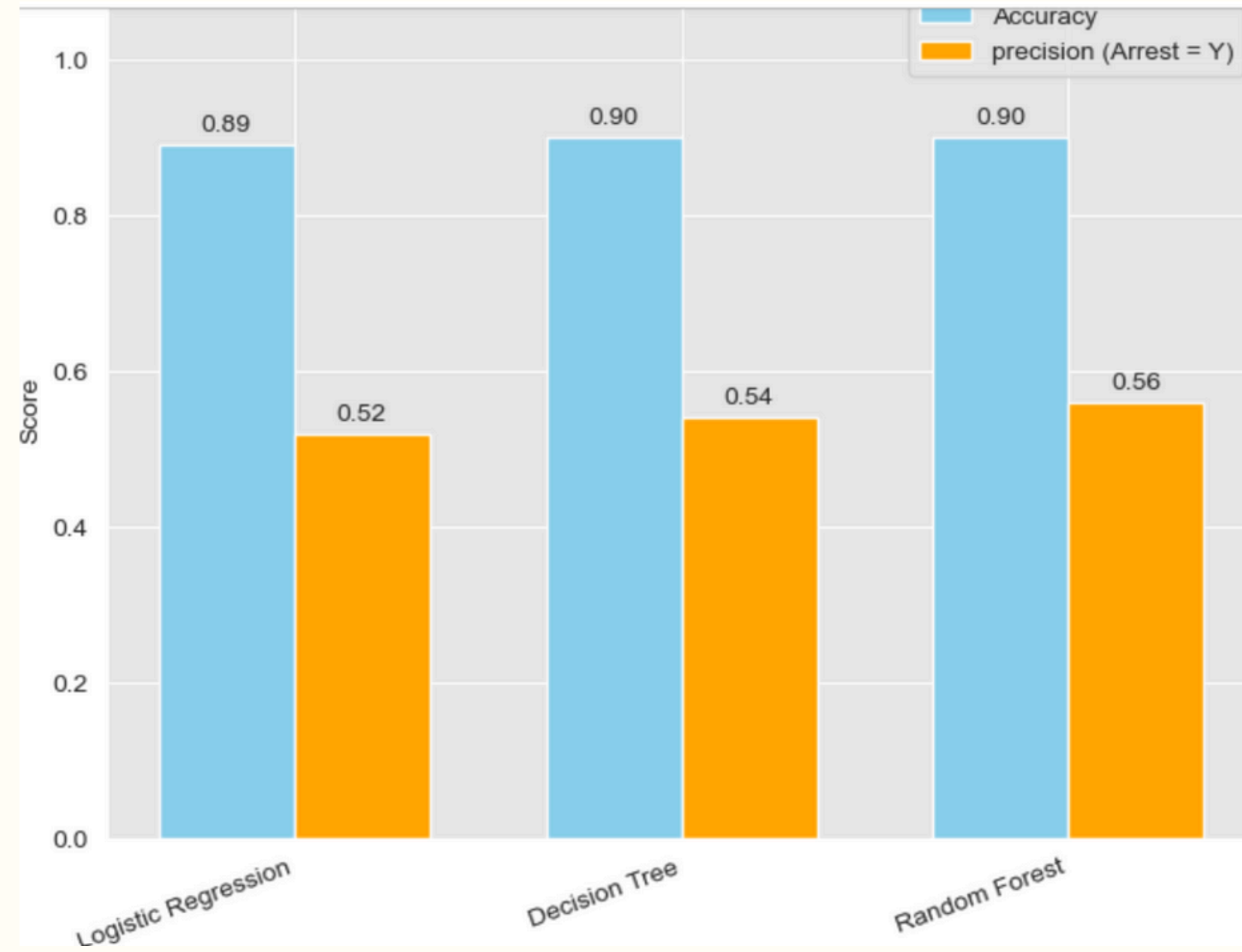
3. Trying Different Methods

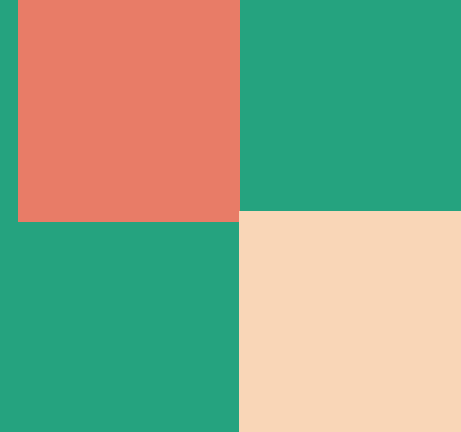
- Tested three ways of predicting arrests:
 - Logistic Regression (simple pattern finding)
 - Decision Tree (step-by-step questions)
 - Random Forest (many trees working together)

4. Measuring Performance

- Checked how accurate each method was overall.
- Paid special attention to how well they predicted arrests, since that was our main interest.

Findings



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- All models achieved high overall accuracy (90%).
 - Precision for predicting arrests was much lower (52–56%).
 - Random Forest performed best, but all models struggled with accurately predicting arrests due to class imbalance.

What this means

- All three methods can predict Terry stop outcomes fairly well overall.
- But when it comes to predicting actual arrests, the models are less confident — meaning they are better at saying “no arrest” than “arrest”.
- The Random Forest method gave the best balance, but even it showed limits.
- This tells us that arrests are harder to predict because they may depend on complex human decisions and factors not fully captured in the data.

Next Steps

- Collect more data: Include more details about the stops (e.g., location, time of day, officer notes) to improve predictions.
- Balance the data: Since arrests are less frequent, the models need better ways to learn from these smaller cases.
- Try other methods: Explore additional approaches like boosting models to see if accuracy for arrests can be improved.
- Use results carefully: These models can support analysis, but they should not be the only tool for decision-making.

**THE
END**

