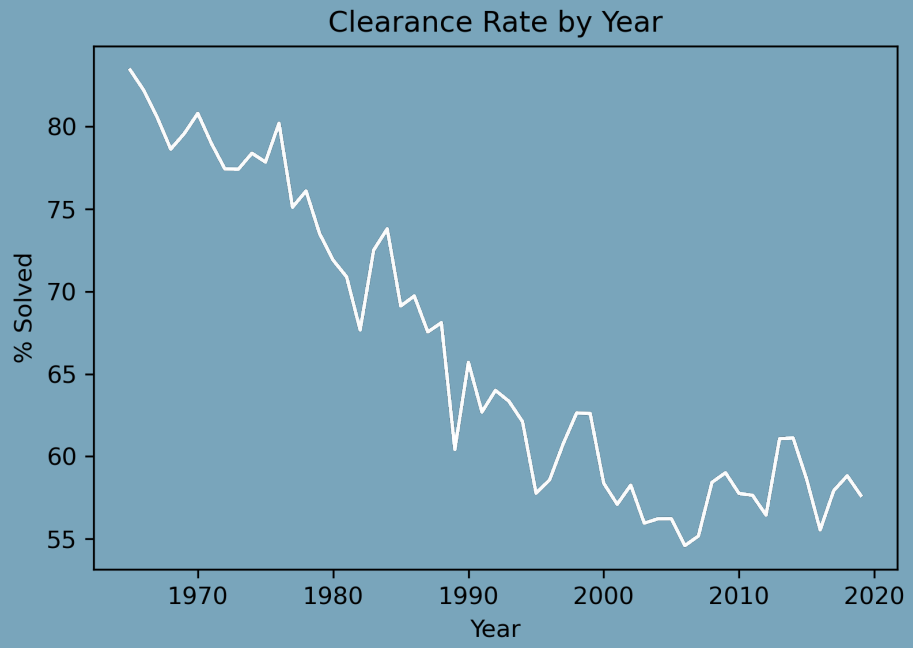
Predicting Murder Clearance

Julia Nguyen

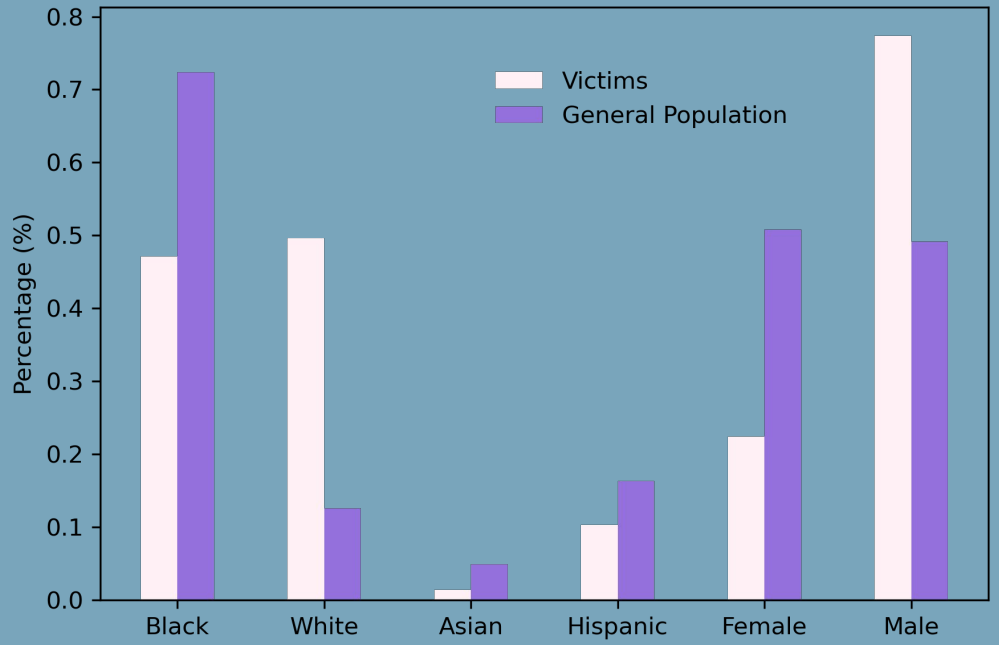
Murder Clearance Rates in America

Murder clearance rate has hovered around 60% for decades

- Some communities have even lower clearance rates
- More crime
- Community distrust



Demographics of Victims

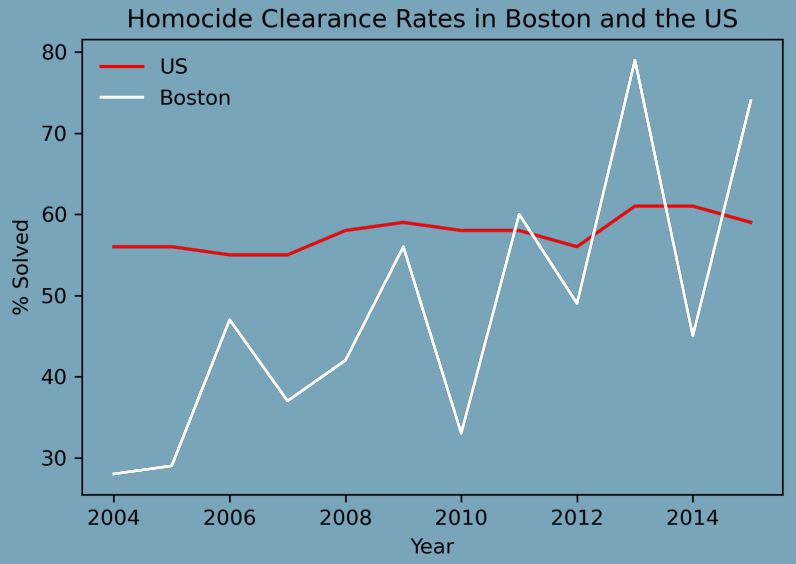


Male and black victims are over represented

More Resources Increases Clearance Rates

2017 study by Braga:

- Boston Police Department increased resources starting 2012
- **10% increase** in average clearance rate



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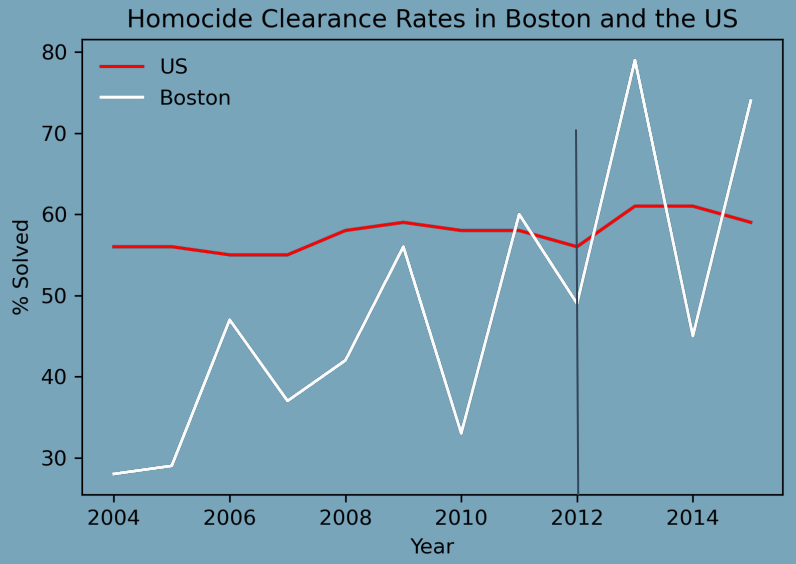


METHODOLOGY

Variables

Race, age, location, and demographics

Model

Logistic Regression: Predict clearance

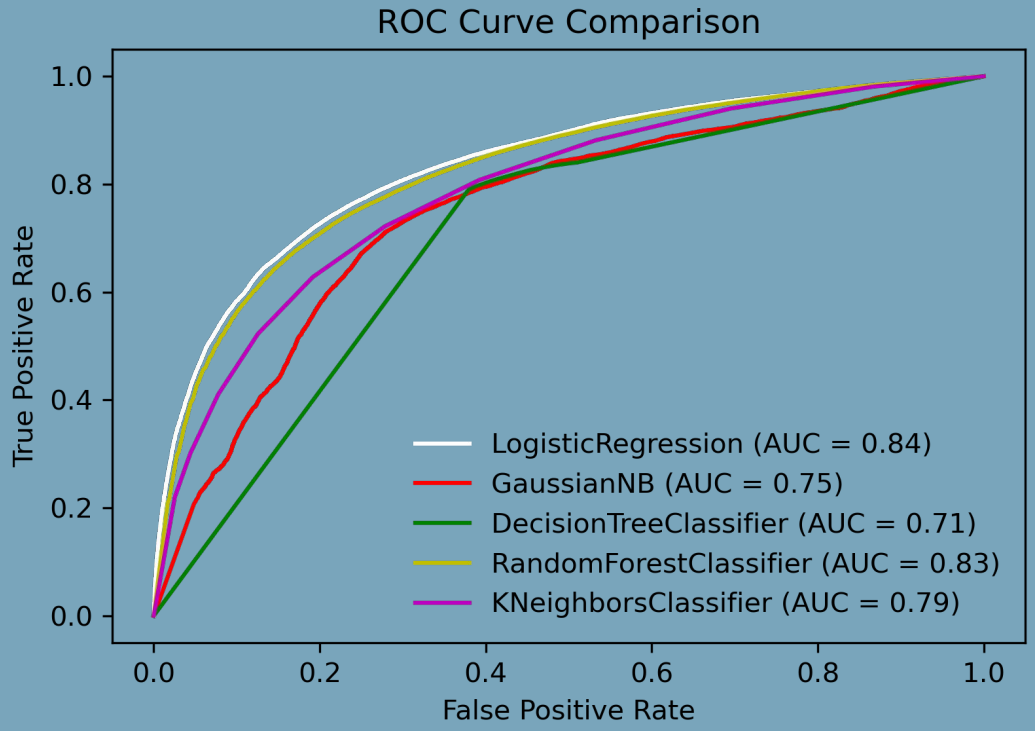
Data

Data collected from murderdata.org and US census

Insights

Factors that correlate to the probability of clearance

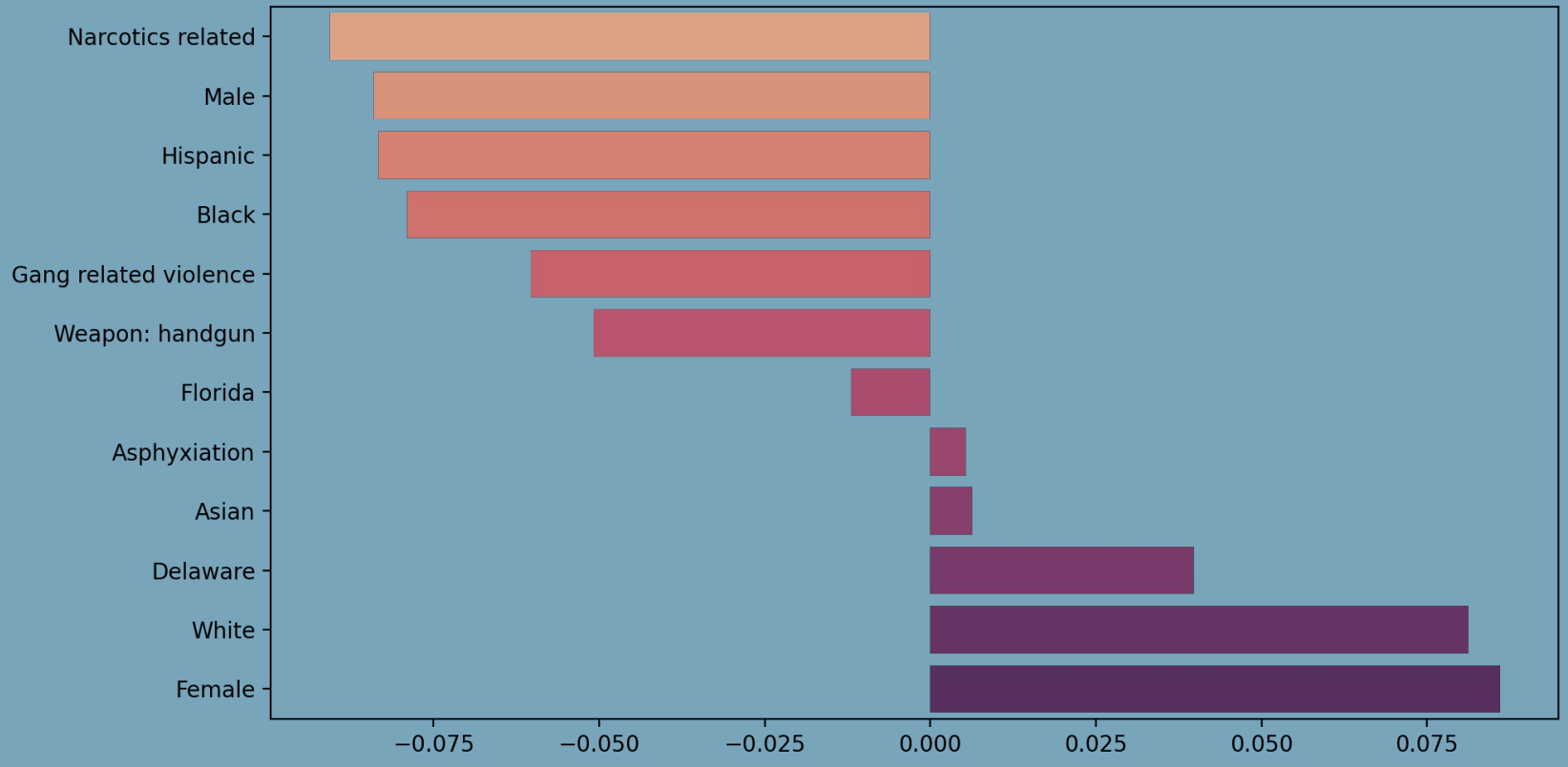
Selecting a Model

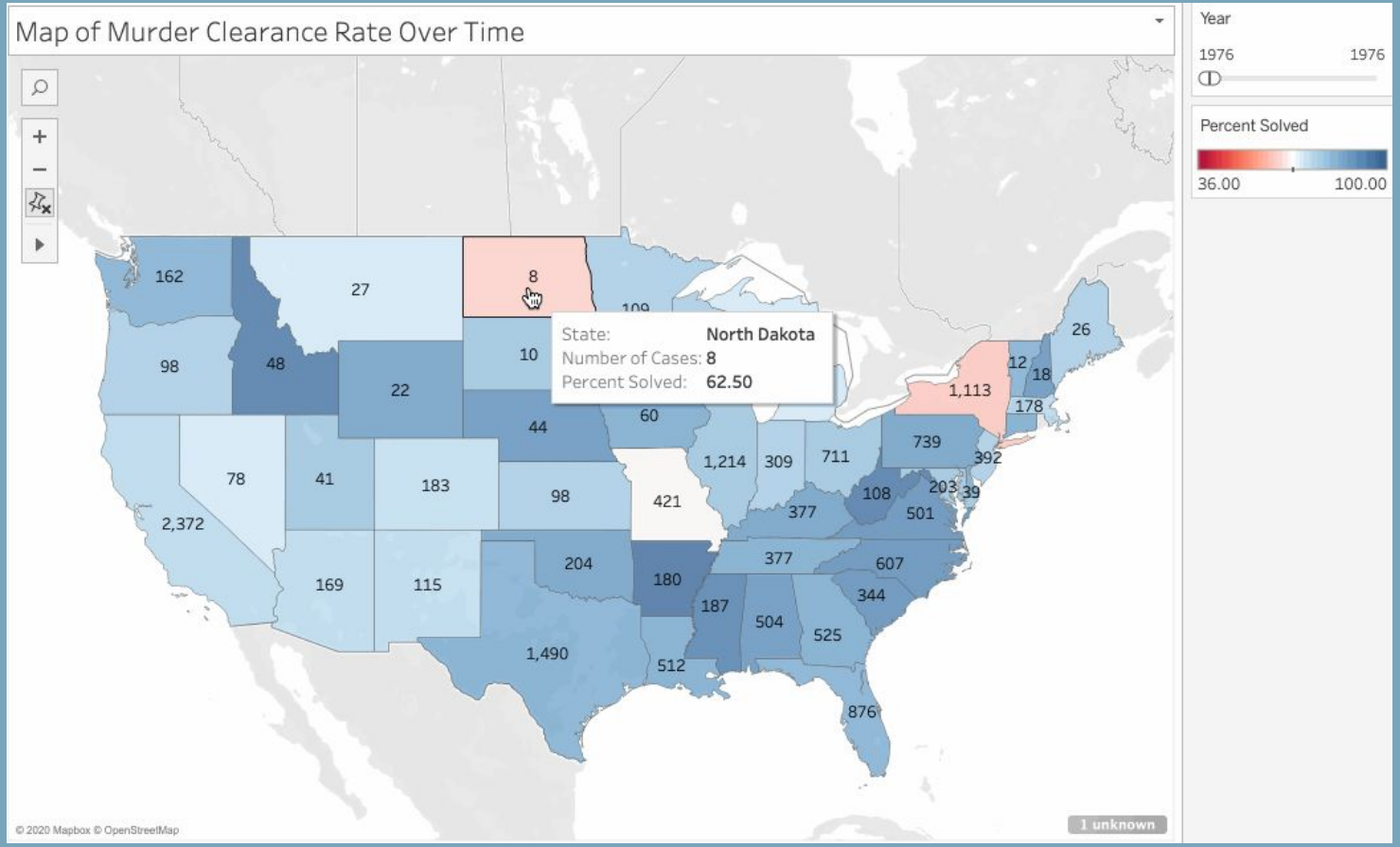


Logistic Regression Model

	Precision	Recall
Unsolved	0.55	0.79
Solved	0.90	0.74

Feature Relationship with Homicide Clearance




Map of Murder Clearance Rate Over Time
Year
1976
1976
Percent Solved
36.00
100.00
State: North Dakota
Number of Cases: 8
Percent Solved: 62.50
162
27
8
98
48
22
10
44
60
26
12
18
178
1,113
739
392
1,214
309
711
78
41
183
98
421
2,372
377
108
203
39
501
204
180
377
607
169
115
187
504
344
525
1,490
512
876
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1 unknown

Future Work

Get more granular data: Demographics for MSA

Demographic data over time

Role of legislation and historical events on clearance rate

Questions?

References

- http://www.murderdata.org
- https://usa.ipums.org/usa-action/variables/met2013#description_section
- https://www.vox.com/2018/9/24/17896034/murder-crime-clearance-fbi-report
- https://www.hks.harvard.edu/sites/default/files/centers/rappaport/files/braga_homicideclearance%20v7.pdf