

LA Crime Forecasting

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Introduction

- Summer of 2020 national protest movements calling to 'Defund the Police'
- Mayor of LA divested \$150M from LAPD, 3rd largest PD in the US
- What can we learn/predict about crime with the data provided by the City of LA?



Process

1

Gather Data

3

Model
Iterations

5

Final Model
Selection

2

..... Clean Data

4

..... Model
Evaluation

6

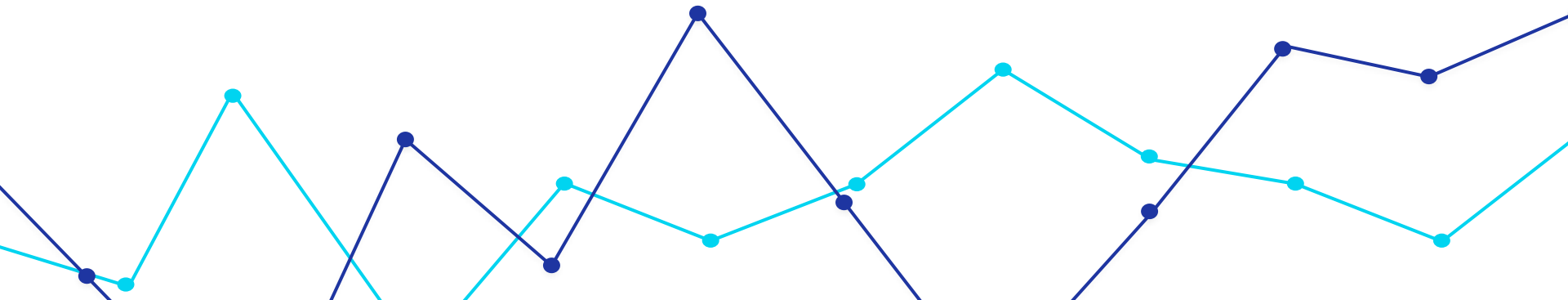
..... Analysis



Data & Methods



- **Los Angeles Crime & Arrest Data** from Kaggle
- Reported crimes from **2010 to mid-2019**
- **1.99 million** rows
- Target Variable: **monthly average reported crime count**
- Exploratory features:
 - Location
 - Victim Descent



Business Questions

1

HOW MUCH
HAS **CRIME**
FLUCTUATED IN
THE LAST
8 YEARS?

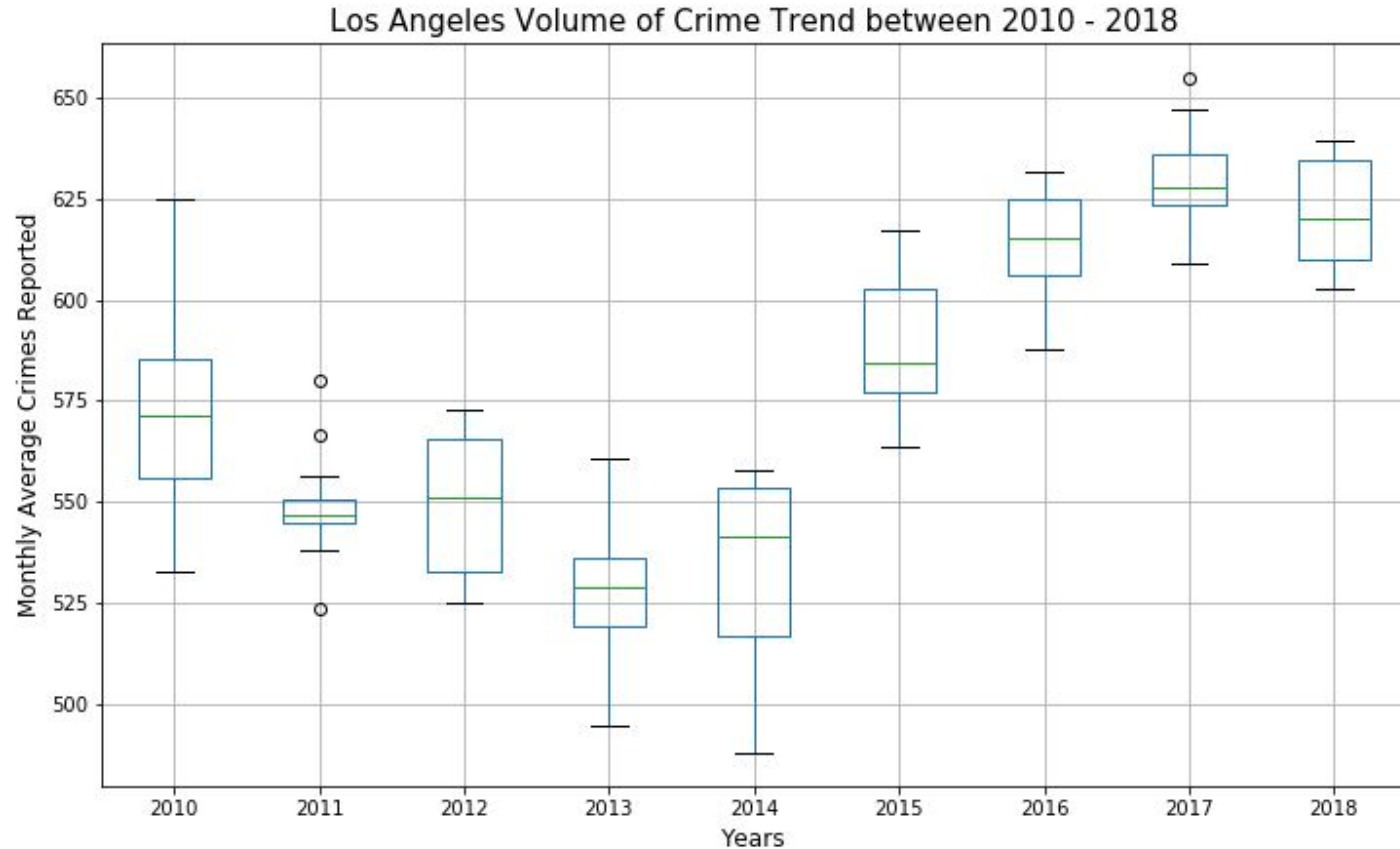
2

WHAT **AREAS** IN
LA HAVE THE
HIGHEST
REPORTED
CRIME RATE?

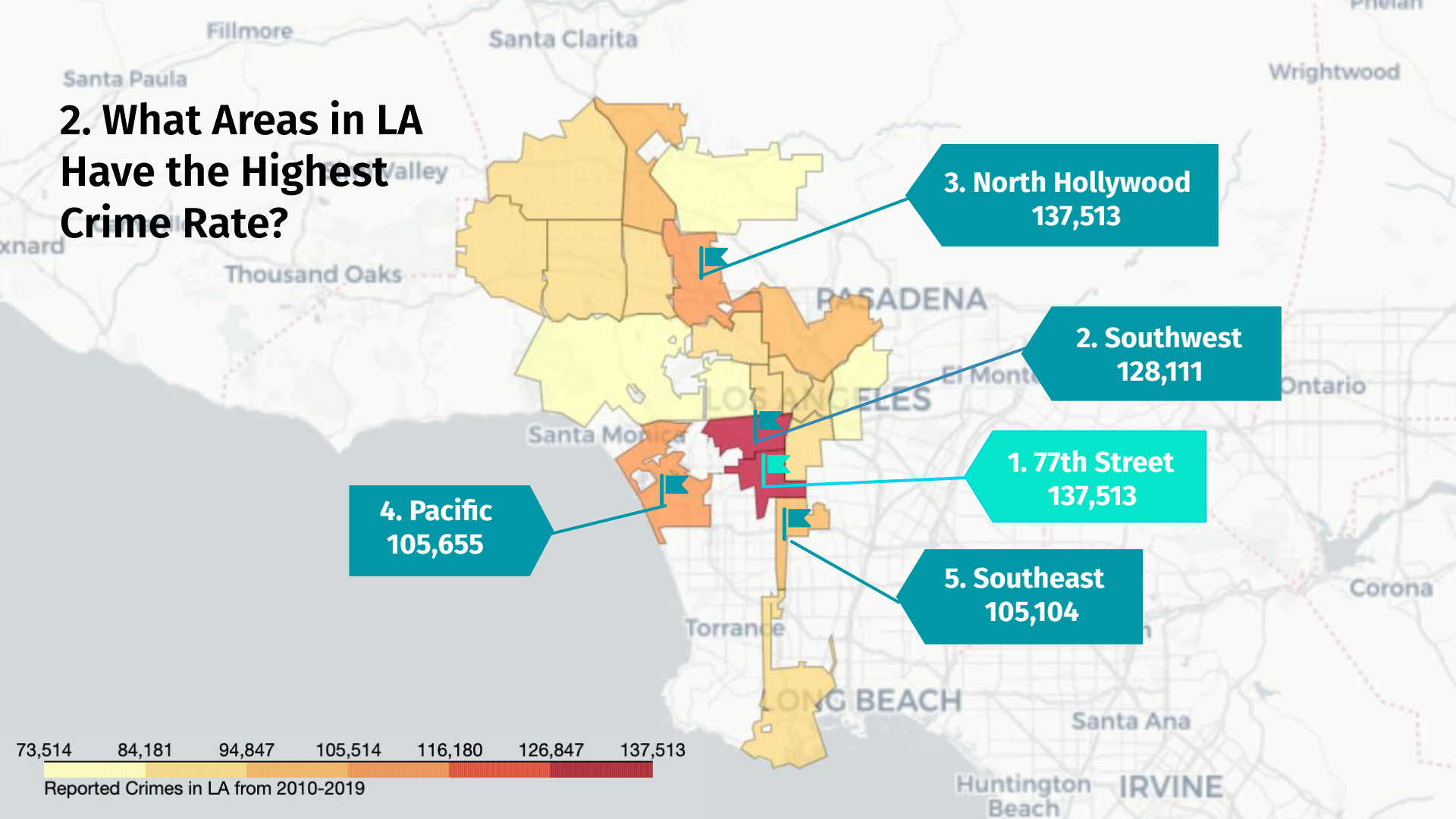
3

WHAT ARE THE
TOP 3 MOST
IMPACTED
DEMOGRAPHICS
IN LA?

1. How Much Has Crime Fluctuated in the Last 8 Years?

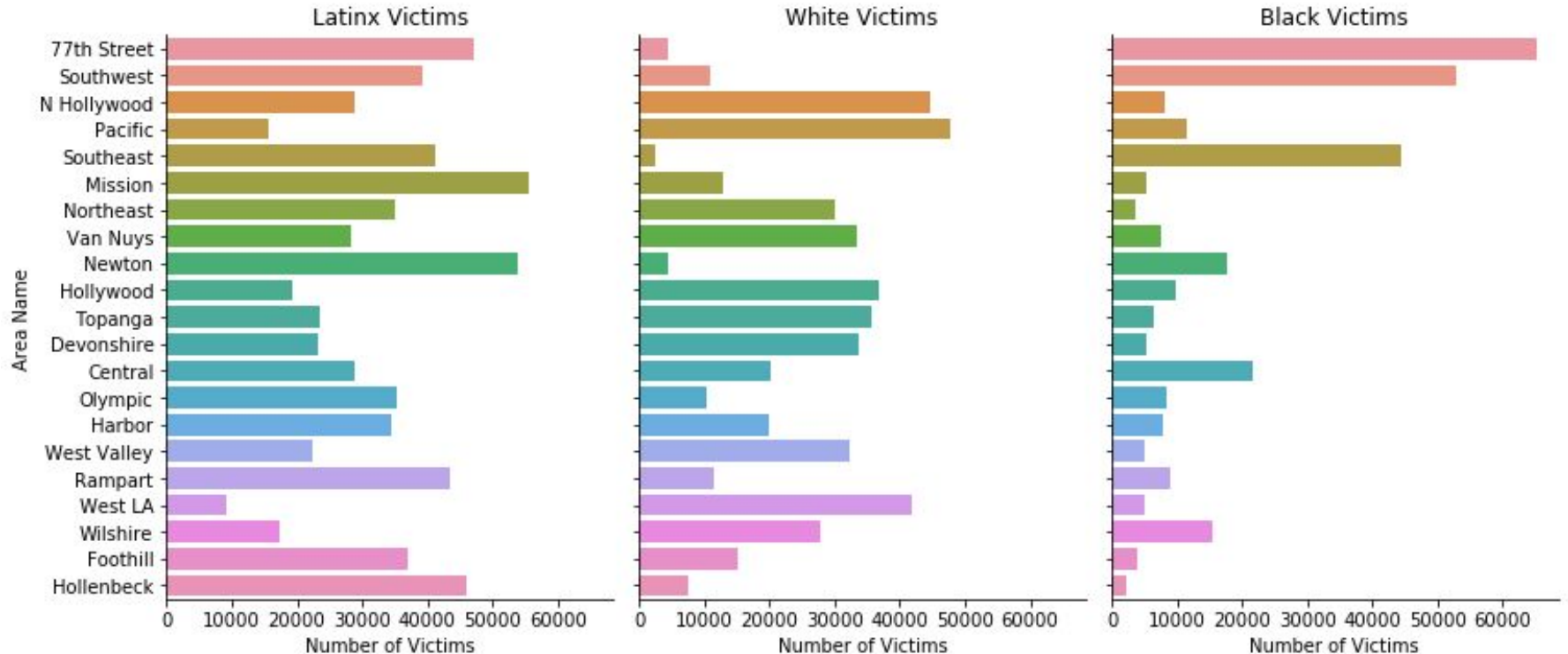


2. What Areas in LA Have the Highest Crime Rate?



3. What Are the Top 3 Most Impacted Demographics in LA?

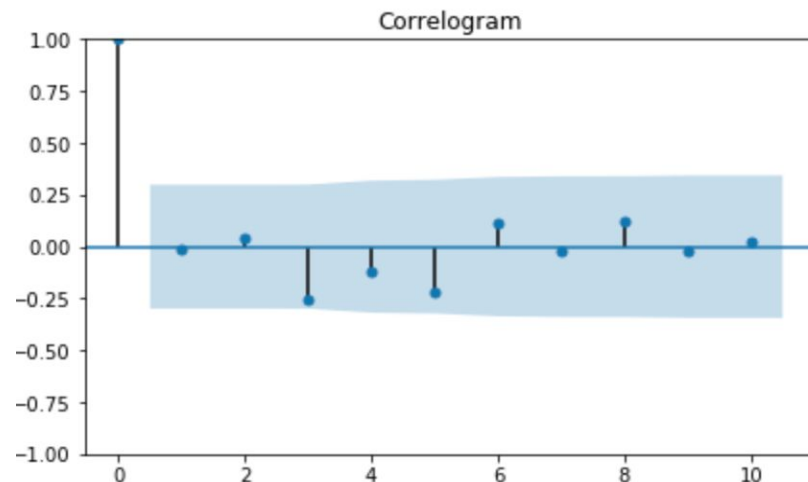
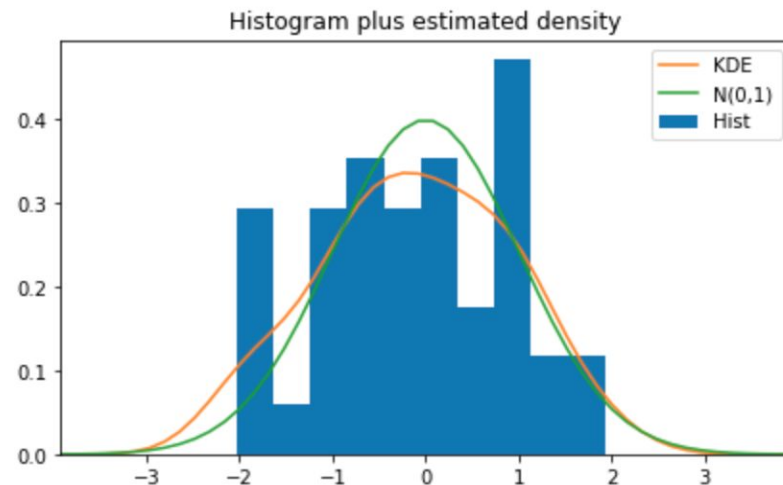
Los Angeles- Distribution of top 3 Victim Descents by Crime Area



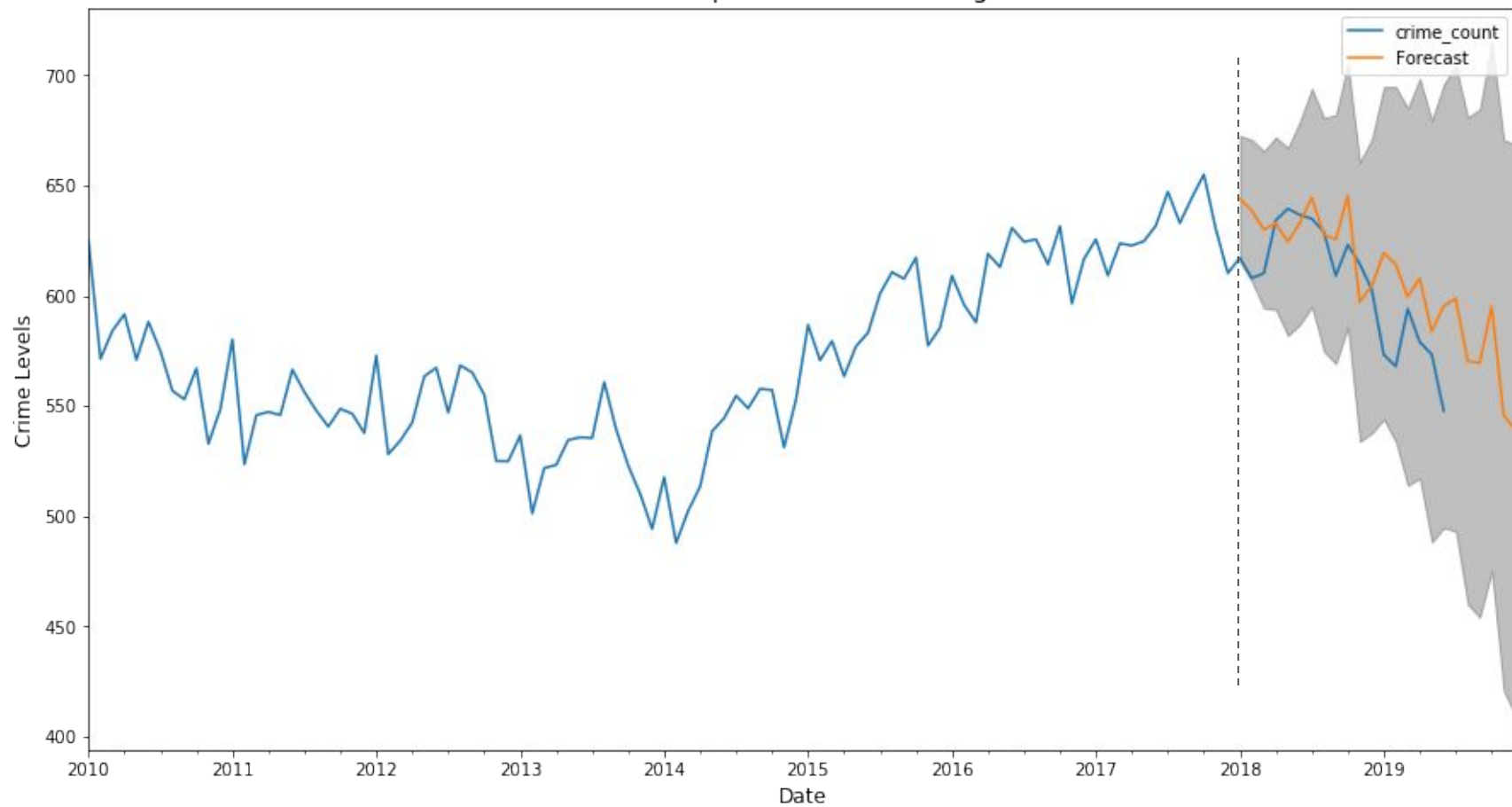
Final Model Results

Model	AIC	RMSE
AR - 1	842.259	27.532
MA - 1	914.181	42.634
AR - 1 - diff	829.175	25.103
MA - 1 - diff	833.747	25.669
ARMA - 3,5 - diff	794.65	23.272
SARIMA	384.84	24.656

1. Evaluation Metrics: **AIC & RMSE**
2. Final Model: **SARIMA Model**
3. Model Analysis: Residuals diagnostics



Forecasted Reported Crimes through 2019

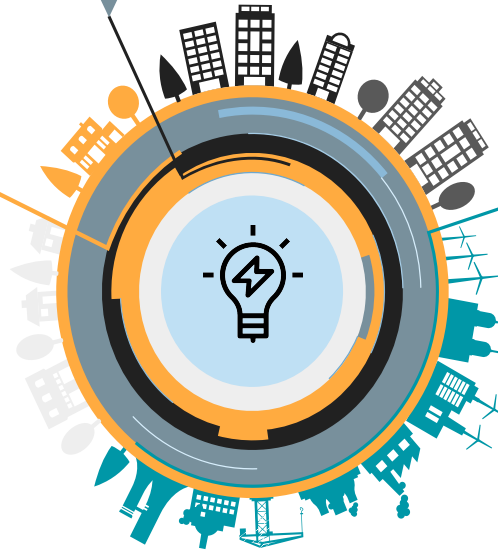


Recommendations

1
Compile
more decades of
historical data.

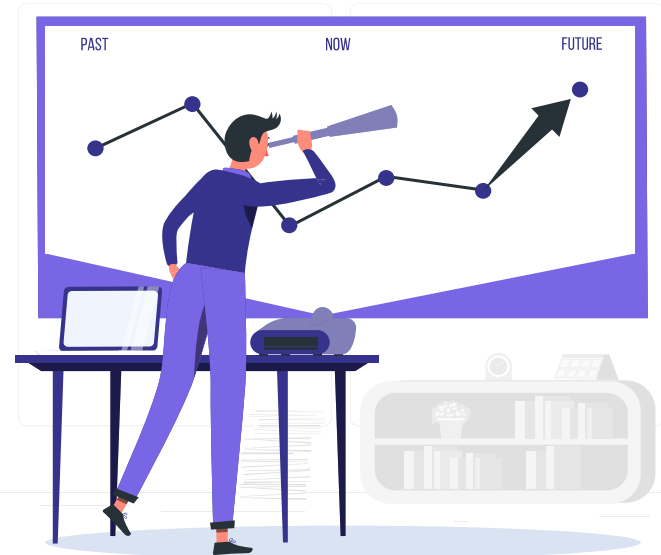
2
Redistribute
LAPD funding to top
high-crime areas.

3
Black & Latinx
communities to
receive community-
building incentives.



Next Steps

1. Evaluate model on **incoming data**
2. Include **exogenous variables** in SARIMAX
3. Run **advanced models** such as Facebook Prophet Model



Thank You!



GitHub Repository

https://github.com/sidneykung/LA_crime_forecasting



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