



**University of
Niagara Falls
Canada**

Master of Data Analytics

Spring 2025

“Assignment: Python Analytics Part 4”

JUNE 22ND, 2025

PRESENTED BY

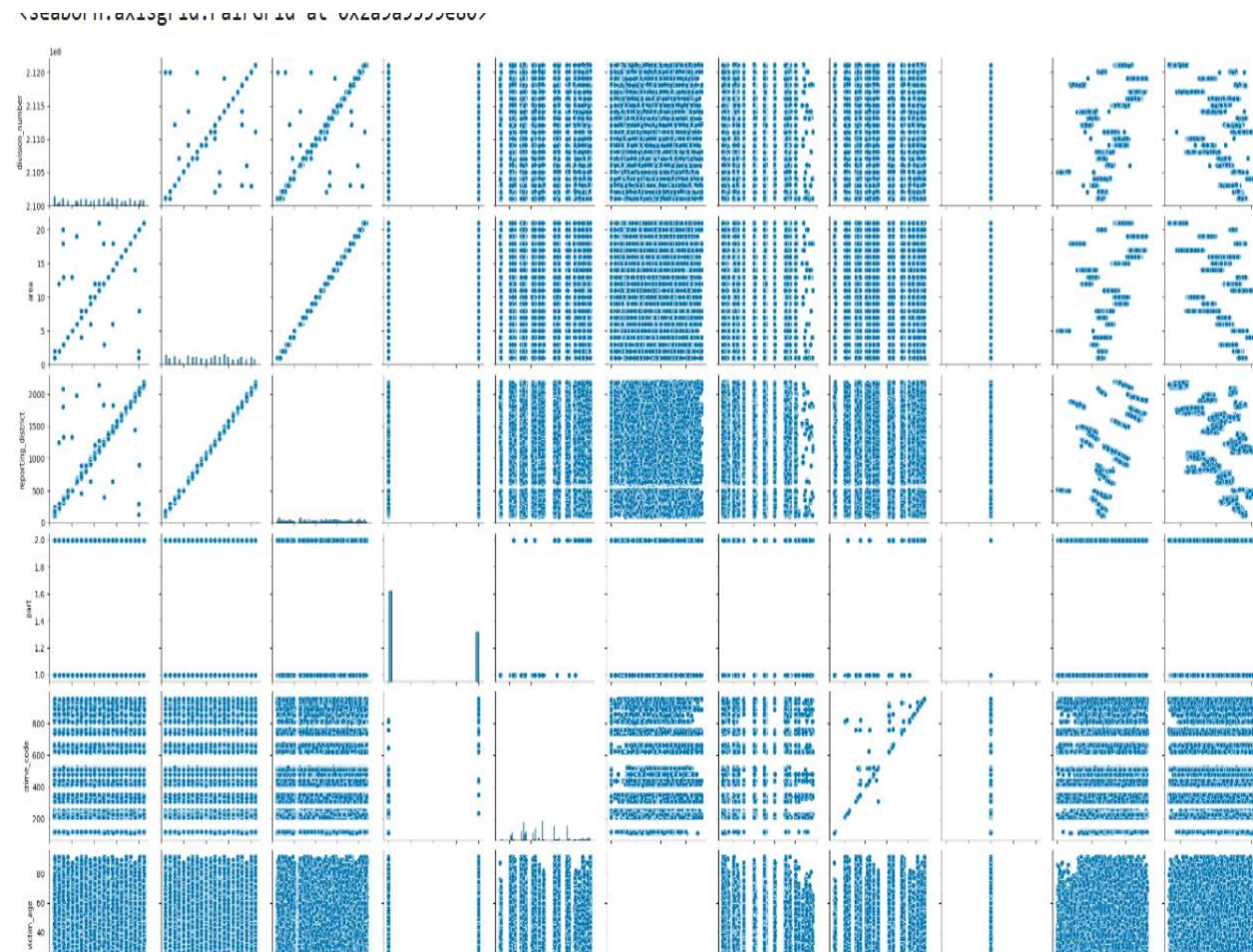
PRATEEK SINGH SANDHU

Insights, Interpretation, and Reporting

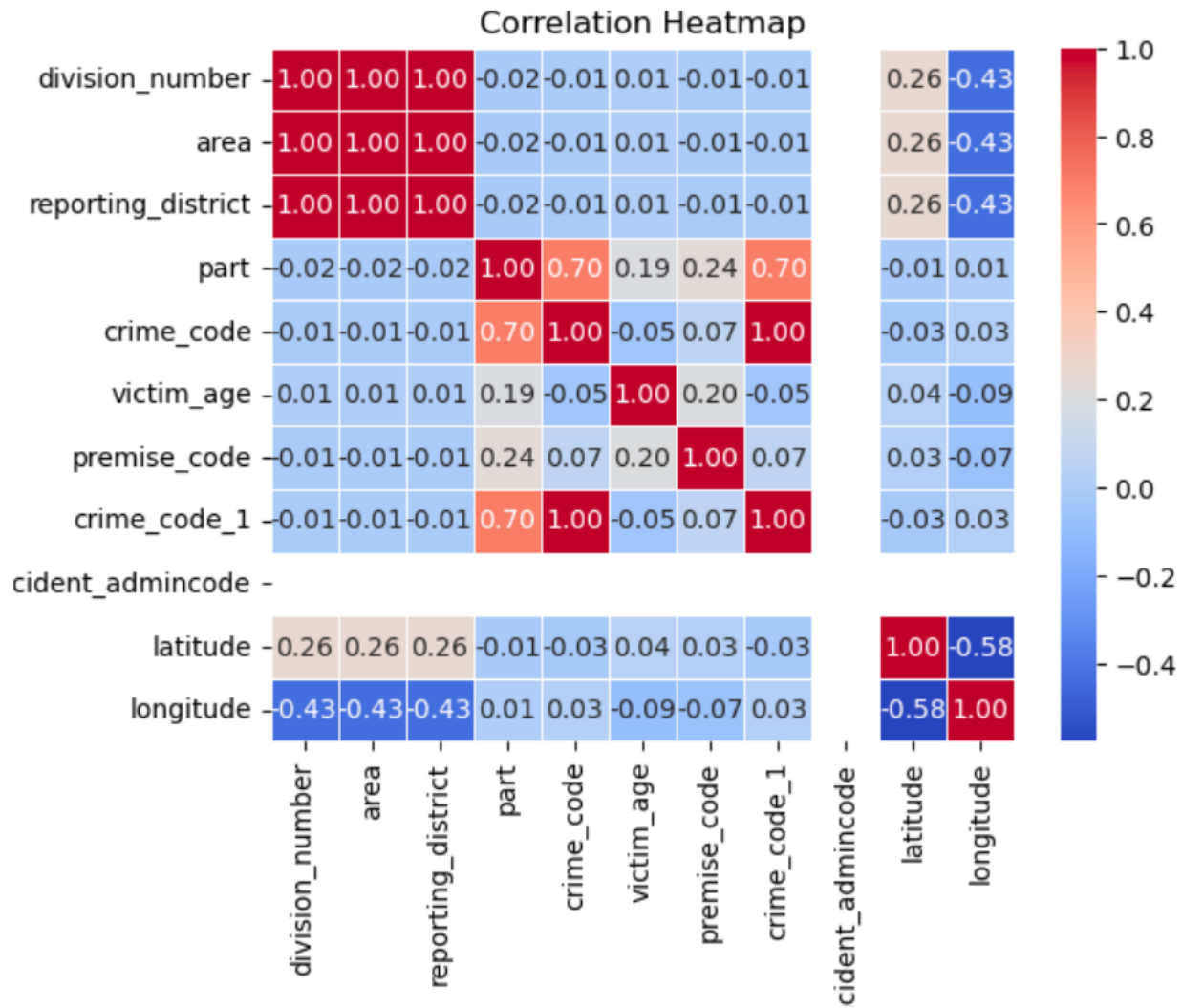
| Section | Summary |
|---|--|
| Executive Summary | This project explored factors influencing crime case solvability using a comprehensive dataset of ~200,000 crime reports. Key findings show that location, crime type, and victim demographics are important indicators of whether a case gets solved. Targeted interventions in high-risk areas and improved community-police engagement are recommended. |
| Key Factors Influencing Solvability | <ul style="list-style-type: none">- Crime Type: Certain violent crimes (e.g., assault, robbery) show higher resolution rates.- Location: Crimes near residential or well-monitored areas are more likely to be solved.- Time of Occurrence: Daytime crimes have higher solvability than nighttime incidents.- Victim Profile: Gender and ethnicity patterns may influence follow-up actions or reporting rates. |
| Spatial, Temporal, and Demographic Patterns | <ul style="list-style-type: none">- Spatial: Hotspots observed in "Central" and "Harbor" divisions.- Temporal: Peaks in crime activity late at night and weekends.- Demographic: Young male victims (age 18–35) appear more frequently in unsolved cases; missing demographic info may limit full analysis. |
| Recommendations & Interventions | <ul style="list-style-type: none">- Increase patrol and lighting in high-risk areas identified by spatial mapping.- Encourage reporting and community engagement to gather critical witness information.- Use data to prioritize cases that have high solvability based on historical patterns. |
| Limitations of the Analysis | <ul style="list-style-type: none">- Many missing values in victim_gender, victim_ethnicity, and weapon_code limit demographic insights.- Lack of suspect or evidence-level data makes it difficult to infer investigation depth.- Some geographic fields (like location and cross_street) are inconsistent. |
| Report Structure (Suggested) | <ol style="list-style-type: none">1. Introduction and Objective2. Data Collection and Description3. Data Cleaning and Preprocessing4. Exploratory |

| Section | Summary |
|---------|---|
| | Data Analysis5. Hypothesis Testing and Model (if any)6. Key Findings7. Recommendations8. Limitations and Future Scope |

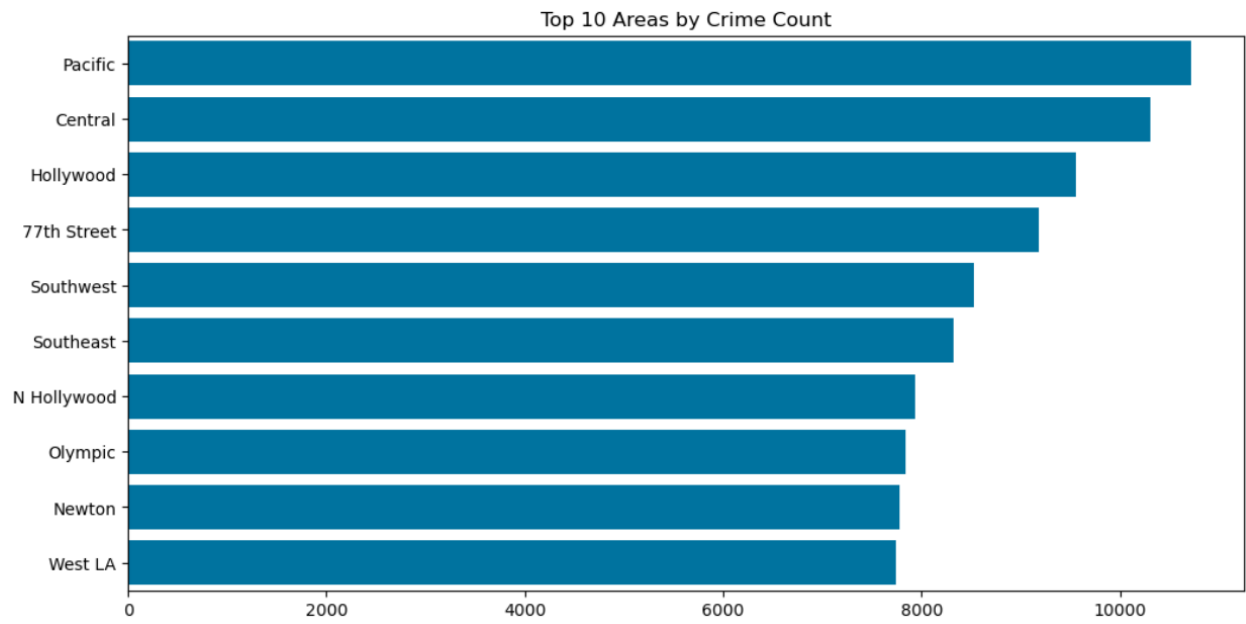
Distributing Variable



Correlation Heatmap



Top 10 areas by crime count



Solve rate by area

