Temporal Crime Pattern Analysis of Boston

Team 5

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Project Overview:

In Boston, crime incident dynamics offer insights into the safety of streets and the well-being of neighborhoods. Analyzing crime reports from the Boston Police Department (BPD) between June 14, 2015, and September 3, 2018, this project harnesses data mining techniques to understand and predict temporal crime patterns. Through a deeper understanding and predictive insights, we aim to foster better community awareness and enhance the safety and security of Boston's inhabitants and visitors.

Project Objective:

Identify temporal crime trends in Boston, focusing on specific times, days, or months with elevated crime rates. The aim is to optimize resource deployment for law enforcement and inform communities about their surroundings.

Dataset:

The dataset includes 319,074 entries with 17 columns, detailing crime incidents in Boston. It provides essential information on incident specifics, location, date, and time, aiding law enforcement and urban planning efforts.

S.M.A.R.T Questions:

1. **Can we identify patterns or trends in the nature of crime over the years?**
2. **Are there certain locations that have a higher or more violent crime rate compared to other areas of Boston?**
3. **Can we identify relationships between the type of offense, their specific district locations, and the time variables (day of the week, hour) within the dataset?**
4. **Based on the three years' data, can we forecast the crime rates for the upcoming years in Boston?**

Source of Dataset: https://www.kaggle.com/datasets/AnalyzeBoston/crimes-in-boston

GitHub Repository: https://github.com/NamrathaP1999/DATS_6103_Project

Proposed Modeling Methods:

1. **Regression:** Predict future crime rates based on historical data, helping resource allocation.
2. **K-Means Clustering:** Group similar crime incidents to discover hidden patterns in timing and locations of criminal activities in Boston.