

Title: Exploring San Francisco Crime Trends: An Analysis of 15 Years of Data

Context: This extended abstract delves into a comprehensive analysis of 15 years of San Francisco crime data, emphasizing trends, methodologies, and significant findings. The study focuses on uncovering patterns, spatial distributions, and forecasting future crime rates, vital for understanding urban safety dynamics.

Introduction:

Motivated by the need to identify safe neighborhoods and understand crime trends, this analysis delves into 15 years of San Francisco crime data, aiming to provide insights for informed decision-making regarding relocation and city safety. The significance lies in unraveling temporal, spatial, and predictive aspects of crime data, offering valuable insights for stakeholders and individuals considering residential shifts.

Methods Used:

The analysis starts with an exploratory phase (EDA), uncovering patterns like the prevalence of "Theft," exploring temporal shifts in crime, and examining spatial distributions. Utilizing time series analysis, spatial mapping, and visualization, it delves into crime evolution and identifies heightened occurrences in specific areas.

It subsequently employs diverse forecasting models: ARIMA, ETS, ACF, PCF, Naïve, drift, and Seasonal models. These predict future crime rates, aiding proactive planning and a deeper grasp of potential crime trends.

Results Highlights:

Analysis of 15 years of San Francisco's crime data reveals key trends: 'Theft' prevails, peaking at midnight and noon on Fridays. Unexpectedly, January and March see higher incidents than typical holidays. Spatial analysis identifies crime hotspots, and time series analysis exposes evolving crime patterns. Remarkably, a basic Mean method outperforms complex models, underscoring the value of grasping straightforward data trends.

Conclusion:

Through extensive data analysis, this study uncovers crucial insights into San Francisco crime trends, facilitating informed decision-making for potential residents. Future endeavors could integrate additional datasets, such as housing prices, for a more comprehensive understanding of neighborhood safety and desirability. By amalgamating diverse analytical techniques, this study bridges the gap between urban safety and data-driven decision-making.

References:

https://github.com/yanxiali/SF_Crime_Analysis

https://data.sfgov.org/Public-Safety/Police-Department-Incident-Reports-Historical-2003/tmnf-yvry/about_data