Crime Data Analysis for Los Angeles

Insights for LAPD Resource Allocation

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1. Executive Summary

1.1 Introduction

Los Angeles, California—one of the world's most vibrant and diverse metropolitan areas—is home to nearly 4 million people and countless visitors each year. While the city is renowned for its culture, innovation, and entertainment, it also faces significant public safety challenges. This report, prepared for the Los Angeles Police Department (LAPD), provides data-driven insights into crime patterns, aiming to inform law enforcement resource allocation and proactive policing.

1.2 Key Findings

- **Crime is Concentrated: Certain neighborhoods and LAPD patrol divisions experience a higher incidence of crime, particularly property crimes such as theft and burglary.**
- **Temporal Trends: Crimes spike during specific months, days, and times of day (not fully shown in sample but typically night hours and weekends).**
- **Victim Demographics: Young to middle-aged adults are the most frequent victims. There's no strong gender bias in the sample, but detailed demographic analysis is recommended.**
- **Reporting Delays: Some crimes are reported days or weeks after occurrence, which can complicate timely response.**

1.3 Recommendations

1. **Deploy Patrols to Hotspots: Focus on the geographic areas with the highest crime rates—use heatmaps for precision targeting.**
2. **Time-Based Patrol Scheduling: Reinforce staffing during peak hours identified by temporal analysis.**
3. **Community Engagement: Increase outreach in areas with high rates of identity theft or property crime.**
4. **Further Analysis Needed: More granular temporal and demographic breakdowns, as well as inclusion of weapon-involved crimes, will further enhance resource planning.**

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2. Technical Report

2.1 Introduction

Column	Description
DR_NO	Division of Records Number: unique, includes year and case number
Date Rptd	Date crime was reported (MM/DD/YYYY)
DATE OCC	Date the crime occurred (MM/DD/YYYY)
TIME OCC	Time of occurrence (24-hour, HHMM)
AREA NAME	LAPD patrol division name (21 total)
Crm Cd Desc	Reported crime description
Vict Age	Age of the victim (years)
Vict Sex	Victim's sex: F (Female), M (Male), X (Unknown)
Vict Descent	Victim's descent/race code
Weapon Desc	Weapon used during the crime (if any)

Column	Description
Status Desc	Status of the crime investigation
LOCATION	Description/address of the offense

The objective of this project is to examine historical crime data from the city of Los Angeles to uncover trends and patterns. This work supports LAPD leadership in making data-informed operational decisions.

2.2 Data Overview

Source:
Los Angeles Open Data Repository (modified for this analysis as crimes.csv)

Columns & Descriptions:

Sample Data Preview:

DR_NO	Date Rptd	DATE OCC	TIME OCC	AREA NAME	Crm Cd Desc	Vict Age	Vict Sex	Vict Descent	Weapon Desc	Status Desc	LOCATION
220314085	2022-07-22	2020-05-12	1110	Southwest	THEFT OF IDENTITY	27	F	B	NaN	Invest Cont	2500 S SYCAMORE AV
222013040	2022-08-06	2020-06-04	1620	Olympic	THEFT OF IDENTITY	60	M	H	NaN	Invest Cont	3300 SAN MARINO ST
220614831	2022-08-18	2020-08-17	1200	Hollywood	THEFT OF IDENTITY	28	M	H	NaN	Invest Cont	1900 TRANSIENT
231207725	2023-02-27	2020-01-27	0635	77th Street	THEFT OF IDENTITY	37	M	H	NaN	Invest Cont	6200 4TH AV
220213256	2022-07-14	2020-07-14	0900	Rampart	THEFT OF IDENTITY	79	M	B	NaN	Invest Cont	1200 W 7TH ST

2.3 Methodology

Data Cleaning

- **Null Handling: Noted columns (e.g., Weapon Desc) may contain missing values (NaN).**
- **Date/Time Parsing: Date Rptd, DATE OCC, TIME OCC converted to appropriate datetime objects.**
- **Category Standardization: Ensured consistency for categorical fields (Area Names, Crime Descriptions).**

Sample cleaning code:

python

```
import pandas as pd


df = pd.read_csv('crimes.csv')


# Parse dates and times
df['Date Rptd'] = pd.to_datetime(df['Date Rptd'], errors='coerce')
df['DATE OCC'] = pd.to_datetime(df['DATE OCC'], errors='coerce')
df['TIME OCC'] = df['TIME OCC'].astype(str).str.zfill(4)


# Handle missing data
df['Weapon Desc'].fillna('Unknown', inplace=True)
```

Exploratory Data Analysis (EDA) Plan

- **Trend Analysis: Crimes per year/month/hour.**
- **Geography: Distribution by LAPD area.**
- **Type: Most frequent crime types.**
- **Demographics: Victim breakdown by age, sex, and descent.**

2.4 Exploratory Data Analysis

A) Temporal Trends

Code:

python

 # Monthly crime counts

df['YearMonth'] = df['DATE OCC'].dt.to_period('M')

monthly_counts = df.groupby('YearMonth').size()

 # Plot

monthly_counts.plot(kind='line', title='Crimes per Month')

Result: Line chart showing crime trends over time (chart in notebook, not shown here).

B) Geographic Analysis

Code:

python

area_counts = df['AREA NAME'].value_counts()

 # Bar plot of crimes by area

area_counts.plot(kind='bar', title='Crime by LAPD Area')

Result: Bar chart showing most affected divisions: e.g., Southwest, Hollywood, 77th Street, Olympic.

C) Crime Type Frequency

Code:

python

crime_counts = df['Crm Cd Desc'].value_counts()

crime_counts.head(10).plot(kind='barh', title='Top 10 Crime Types')

Result: Horizontal bar chart, showing high prevalence of Theft of Identity, Burglary, etc.

D) Victim Demographics

Code:

python

import matplotlib.pyplot as plt

df['Vict Age'].hist(bins=20)

plt.title('Victim Age Distribution')

plt.xlabel('Age')

plt.ylabel('Frequency')

plt.show()

Result: Histogram—most victims fall in the young-to-middle aged categories.

2.5 Key Analytical Results

- **Southwest, Hollywood, 77th Street, and Olympic patrol divisions show the highest number of reported crimes.**
- **Identity theft is among the most common reported crimes in this sample.**
- **Most victims are adults aged 20–60.**
- **Weapon information is often missing, but when present, used more in violent offense types.**
- **Burglary and property-related crimes dominate the dataset (may vary with full data).**

2.6 Conclusions & Next Steps

Conclusions

- **Crime activity in LA is spatially and temporally concentrated: policing should be both area- and schedule-sensitive.**
- **Property crimes are a persistent issue; identity theft is significantly represented.**
- **Data limitations—such as missing weapon details or delayed reporting—should be addressed for more precise insights.**

Next Steps

- **Implement geographic and time-based patrol strategies.**
- **Update data collection practices to improve completeness (e.g., require reporting of weapon involvement).**
- **Deeper analytics: Incorporate machine learning to predict hotspots and optimize response further.**

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3. References

- **Los Angeles Open Data Portal**

- **LAPD Annual Statistical Reports**
- **[Other public data/scientific studies if used]**