The Los Angeles Police Department's transition to a NIBRS-compliant crime and arrest reporting system

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The project investigates crime and arrest data from Los Angeles (2020-2024) associated with the Los Angeles Police Department (LAPD) implementation of the National Incident-Based Reporting System (NIBRS). The project analyzes trends of crime by age, gender, and other geographic location in order to locate and address patterns and disparities. Key findings imply that young as well as middle-aged adults are the most heavily involved in committing crimes and getting arrested, but there are really big differences among neighborhoods. The analysis is intended to better design law enforcement strategies, the allocation of resources, and specific targeted interventions that would contribute to the improvement of public safety while tending to a more effective crime prevention system.

I. DATA SOURCES

The data source from which one gets crime data from the year 2020 up to present (2024) [1] and arrest data from the same period [2]. Crime data provide information related to reported incidents such as crime type, location, or time. Other than this, it includes age, sex, and reason for the arrest. Arrest data also includes records of those taken into custody.

It is therefore easy to analyze temporal trends, given that the two datasets are arranged into tables with clearly defined fields. We will be able to analyze trends occurring in criminal action as well as their corresponding law enforcement response through this information. We will make sure that use of data is ethical by following all rules and licenses set by original sources.

The data used in drawing conclusions for this analysis comes from our ETL Data Pipeline, the pipeline is built with Jayvee the Domain-specific language (DSL) to model data pipelines. All data should be cleaned and curated to be of accurate and consistent quality. Moreover, all sensitive data must be treated in accordance with the data privacy regulations. Data ownership must be respected, so if applicable attribution must be marked appropriately, and the terms of reference should be used correctly. All this would ensure that what has been analyzed clearly stays in line with all legal and ethical considerations that would bring value from the data itself.

A. Data Structure

The crime data source offers comprehensive coverage on crimes across Los Angeles from 2020 to 2024. [1] For each crime recorded, there is information related to the address at which the incident took place, type of crime incident, and dates of birth and sex of both suspects and victims. This data provides a brief snapshot of exactly what happened in each individual incident.

	DR_NO	Date Rptd	AREA NAME	Vict Age	Vict Sex
	Search column...	Search column...	Search column...	Search column...	Search column...
1	190326475	03/01/2020 12:00:0...	Wilshire	0	M
2	200106753	02/09/2020 12:00:0...	Central	47	M
3	200320258	11/11/2020 12:00:0...	Southwest	19	X
4	200907217	05/10/2023 12:00:0...	Van Nuys	19	M
5	200412582	09/09/2020 12:00:0...	Hollenbeck	0	

Figure 1: Crime Data column and data structure

Similarly, the source for arrest data, for arrests occurring in Los Angeles starting from 2020 up to 2024 [2], including the date and time of arrest, the location, including

points of the arrest event, and data on the person arrested: age, gender, background. The data also represents what charges were made and the details of bookings, hence providing a clear understanding of the crime patterns, arrest points, and profiles of the individuals concerned.

Figure 2: Arrest Data column and data structure

	Report ID	Area Name	Arrest Date	A...	Sex Co...	Charge Grou...
	Search column...	Search column...	Search column...	Search coli	Search column...	Search column...
1	6636966	West LA	07/06/2023 12:00:0...	46	M	Aggravated Assault
2	6637119	Southwest	07/07/2023 12:00:0...	39	M	Sex (except rape/pr...
3	6624ШТ9	Wilshire	06/15/2023 12:00:0...	33	F	Larceny
4	6636128	Rampart	07/05/2023 12:00:0...	30	F	Miscellaneous Othe...
5	6636658	77th Street	07/06/2023 12:00:0...	31	M	Weapon (carry/poss)

B. License

The datasets are shared under the Creative Commons Zero (CC0 1.0) [3] Public Domain Dedication license, which means anyone can use, share, or modify the data without needing to give credit or worry about restrictions. I'll make sure to note that the data is public and open for use in any reports, presentations, or publications I work on. If I decide to share or make changes to the datasets, I'll include the same CC0 1.0 license so others can continue to access and use the data freely.

II. ANALYSIS

Analytical methods that would be applied to the data sets are classification, geographical analysis, and trends in crime and arrest patterns within Los Angeles city from 2020 to 2024. Such specifications would include the kinds of crime, place of arrest, and the victim's age, sex, and ethnic background in addition to determining which cities are at higher rates of crime and arrest and at what age group people commit more crimes. Together with this trend, hotspot delineation gives meaningful insight through which better resource allocation can be enhanced for developing public safety strategies.

A. Trends Analysis

These charts represent data of arrests and crime reports from the different age categories (refer table 1).

Child	Young Adult	Middle Aged Adult	Old Aged Adult
0 - 16	17 - 30	31 - 45	46+

Table 1: Age categories for detail data analysis

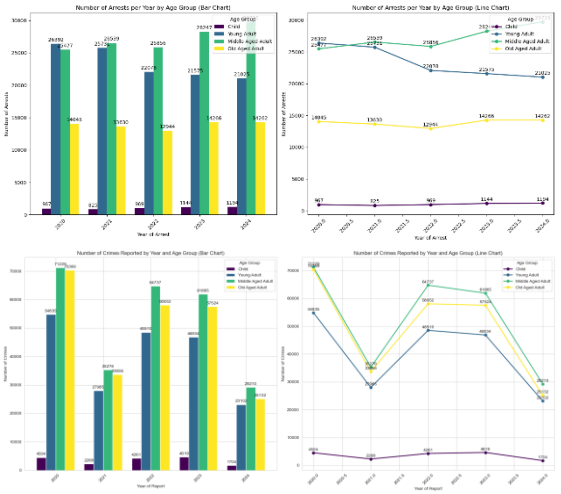

Figure 3: Arrest and Crime trends analysis based on years and age groups

Both arrest and crime reports show young adult and middle-aged adult people to top the lists, while youths and children take lower numbers. The bar charts give out the numbers for every year represented by the line chart in order to display a trend over time. On the whole, young adult and middle-aged adult are more involved in both arrests and crime reports, while Child and Old Aged Adult are less engaged in these activities.

This also means that most of the criminal activities and reporting can be associated with young adult and middle-aged adult citizens. The proportion of Child and Old Aged Adult is pretty low, as compared to other adults. Moreover, crime reports show a general tendency to decline with time, reflecting either improvement in crime prevention or efficiency in law enforcement. Arrest rates are fluctuating, possibly due to changes in policies or social conditions. Overall, the trends suggest that young adults and middle-aged adults may be better targets for interventions, while Child and Old Aged Adult are better targets for prevention and education.

B. Classification Analysis

According to the analysis, Middle-Aged and Young Adults remain the major contributors in both arrests and crimes, while Old-Aged Adults and Children contribute smaller portions. These can be useful in formulating intervention policies by policymakers and law enforcement agencies in targeted strategies for crime prevention and rehabilitation programs focused on the dominant age groups.

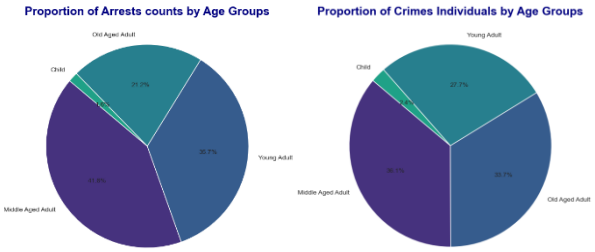

Figure 4: Proportion analysis of Arrest and Crime ratio by different age groups.

As a results, the arrest and crime rates at different ages, one can easily tell that the Middle-Aged Adults have the highest rank in both categories with 41.6% and 38.1%, respectively. They are closely followed by Young Adults with 36.7% and 37.7%. Next in the ranking is Old-Aged Adults contributing in arrests with 21.7% and crimes with 23.7%, while Children are almost negligible in both categories. These trends show that societal pressures, financial responsibilities, and risky behaviors could be contributing to more participation by Middle-Aged and Young Adults. Because of this, understanding such patterns will allow policy stakeholders to develop sound intervention strategies for such age groups in need-prevention, education, and rehabilitation programs.

C. Geographical Analysis

The below shown line chart that compares the number of Arrests and Crimes in different areas of different precincts; there is a distance between the two. The areas Central, Olympic, and Southwest report the highest number of crimes, while Devonshire and West Valley lies toward the bottom. Arrests, being consistently below crimes in all areas, are evident, whereas some regions are fairly balanced within the two, to indicate a better functioning law enforcement. Overall, the chart had great differences regarding region in both crime and arrest patterns.

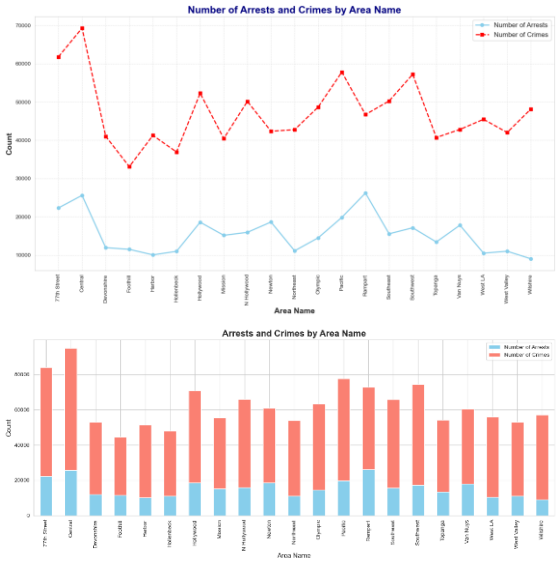

Figure 5: Geographical Distribution of Arrests and Crimes Across Areas

Comparative Crime and Arrest Statistics of Areas. As per the data, crime and arrest rates in the different areas seem to differ widely among each other. The Top 5 areas with the most crimes are Central, Olympic, Southwest, Mission, and Rampart; of these areas, Central incurs the highest crime rate. Thus, arrest counts are consistently lower than crimes across the areas, showing that there is a disparity in enforcement or case resolution in all areas of crime incidents. Areas characterized by high crime rates generally face challenges such as overcrowding, poverty, and/or unsatisfactory police constraints. Improving law enforcement, promoting community programs, and increasing resources would help such regions drastically reduce crime. Contrary to these, Devonshire and West Valley are under low crime incidences, which imply that they are safer neighborhoods.

III. CONCLUSION

The heatmap really read the Arrests to Crime Ratio in Different Areas and Age Groups, making law enforcement clear.

Examples of areas with higher arrest-to-crime ratios are Rampart, Olympic, and Van Nuys, which all exemplify a ratio more or less equal between crimes committed and arrests made. In contrast, Devonshire and West Valley seem to obtain ratios that are almost consistently lower, indicating they may have further gaps in enforcement, resource limitations, or efficiencies in reporting. Age-wise, Middle-Aged Adults and Young Adults generally experience a load of arrests comparatively, while Children and Old-Aged Adults feature lower figures, presumably pointing towards differences in enforcement or crime types committed. The analysis calls for targeted interventions, improved resource allocation, and age-specific strategies to settle disparities. It will be imperative to improve law enforcement efforts in the less productive regions about building a much more level, effective, and fair system for treating crime across both demographics and regions in its full strength.

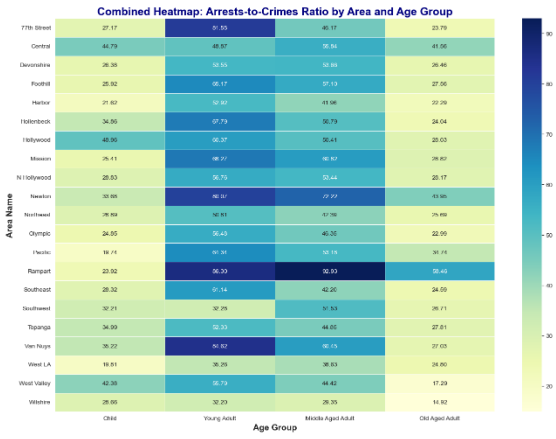

Figure 6: Final analysis of Arrest and Crime Ratio by Area and Age Group

Improvement in crime enforcement can be effectively done by concentrating on resource deployment in low-performing areas such as Devonshire and West Valley, enhancing community policing, enforcing age-specific strategies, providing more training to the police personnel, utilizing predictive policing tools, and increasing public awareness. This would be further helped by regular auditing and strengthening of the technology seen in a crime-arrest gap.

REFERENCES

1. https://data.lacity.org/api/views/2nrs-mtv8/rows.csv?accessType=DOWNLOAD
2. https://data.lacity.org/api/views/amvf-fr72/rows.csv?accessType=DOWNLOAD
3. http://creativecommons.org/publicdomain/zero/1.0/legalcode