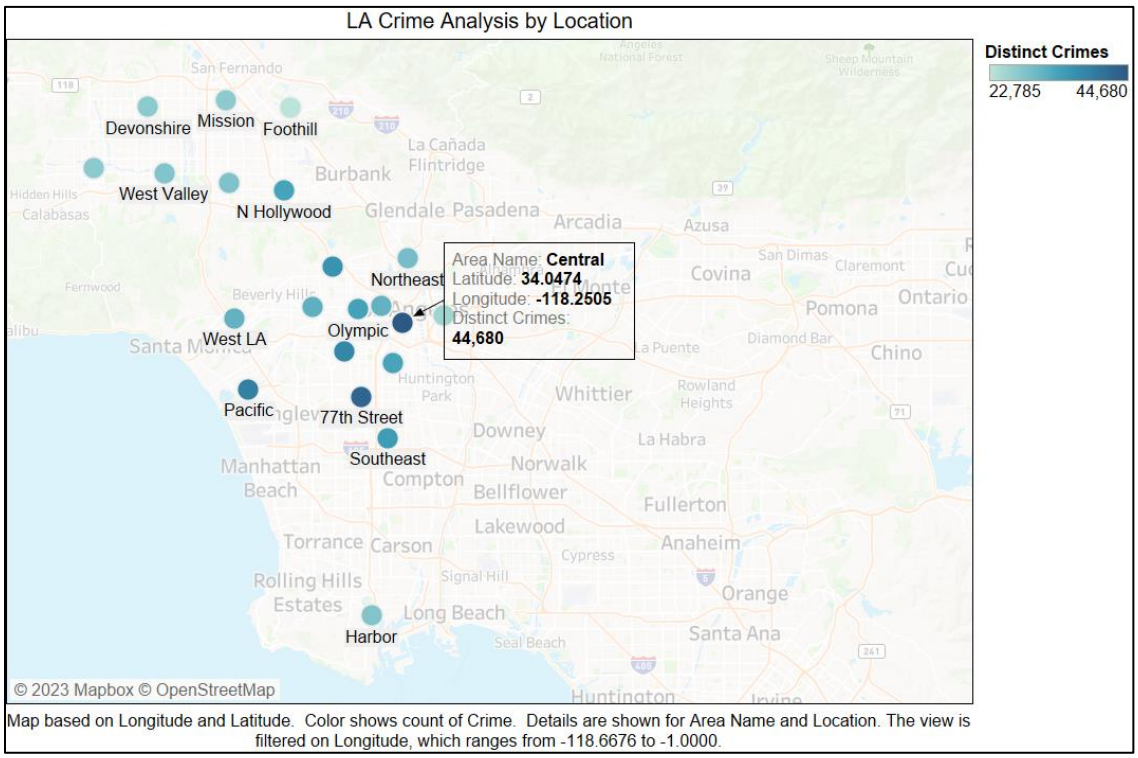
Data Visualizations

The information in the LA Crime Dataset has been examined to determine the number of crimes that occurred each year, categorized by bureau & Areas, types of crime, the reported status of the crimes & victim's demographic data. This analysis enables us to gain insight into the LAPD's effectiveness over time in establishing a secure environment for the community.

1. What parts of Los Angeles experience elevated levels of criminal activity? Display the distribution of crime throughout Los Angeles.



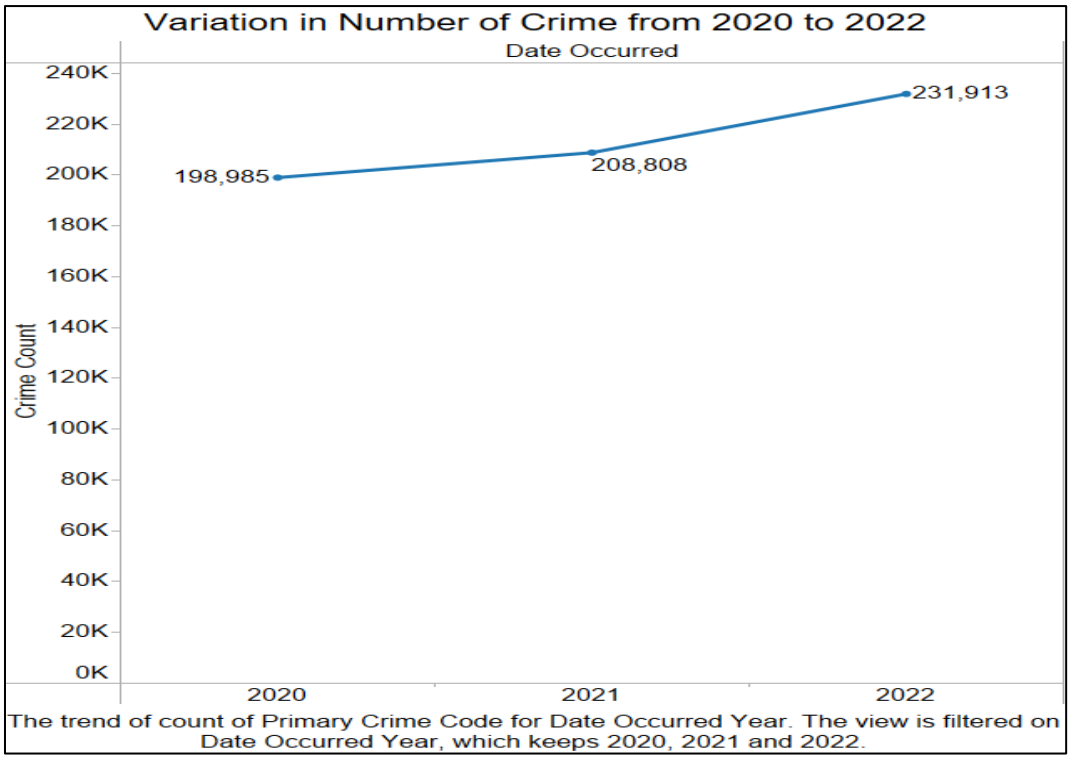
Categories used: Geographic Maps, Calculated Fields

Using the geographical coordinates provided in the dataset, we created a visualization in Tableau that displays the distribution of crime in the nearby vicinity. The process was made easier due to the availability of location data in terms of latitude & longitude.

The density of crime in a particular area is represented by the darkness of the markers, with clusters of closely located crime data points forming a group. **The existence of several groupings in the central region of LA implies a greater occurrence of unlawful acts in that vicinity.** As individuals attending Cal State LA, the knowledge we have acquired about the whereabouts of criminal activity is assisting us in pinpointing potentially more secure pathways throughout the metropolis.

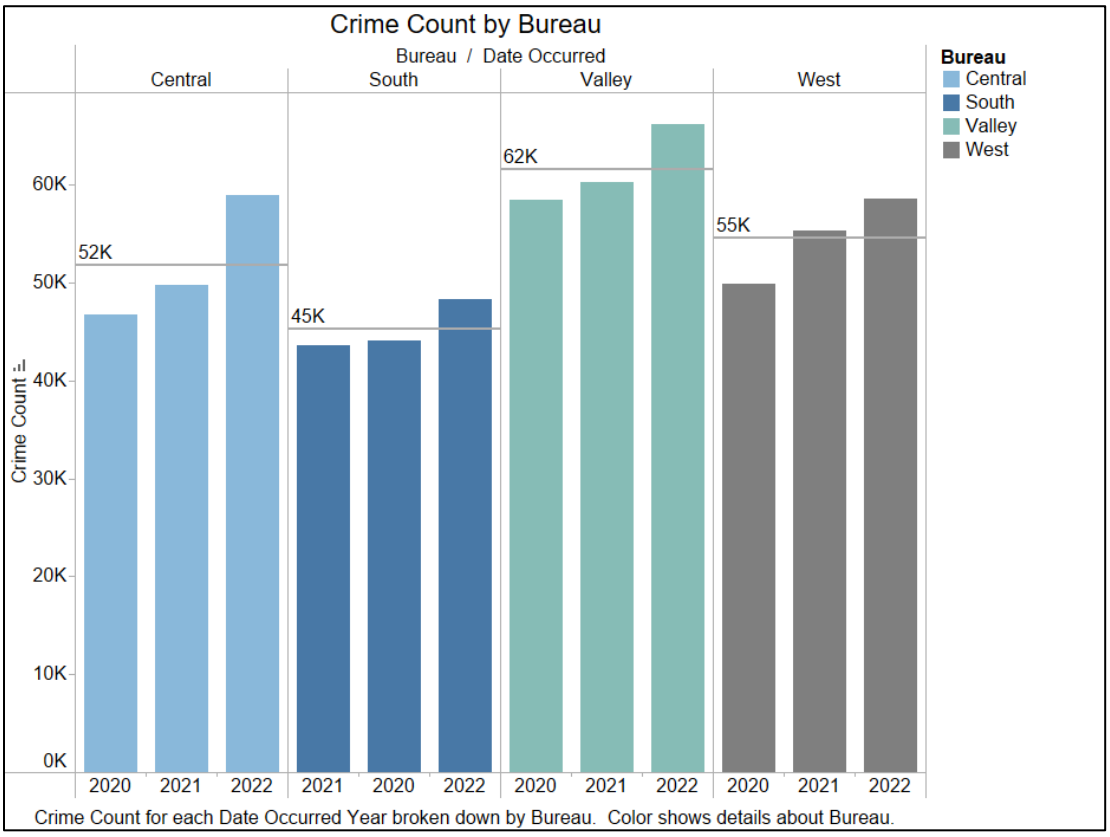
Moreover, the zones identified by the lighter density demonstrate a lower frequency of criminal incidents, such as the vicinity encompassing the Foothill area. This indicates that fewer unlawful activities occur in this specific location compared to other areas in the city.

2. What is the current state of the trend in criminal activity? Display the year-over-year rise or fall of crime for each bureau.



Categories used: Line graph, Dates

Through an examination of the quantity of criminal offenses committed throughout the years, we can assess whether the frequency of crime has risen or fallen. A line chart has been employed to illustrate the changes in crime rates visually, spanning from 2020 to 2022. The greatest quantity of criminal activities, nearly 199K, were recorded in 2020, with the number escalating over the following two years. By 2022, the number of reported crimes had risen to approximately 232K.

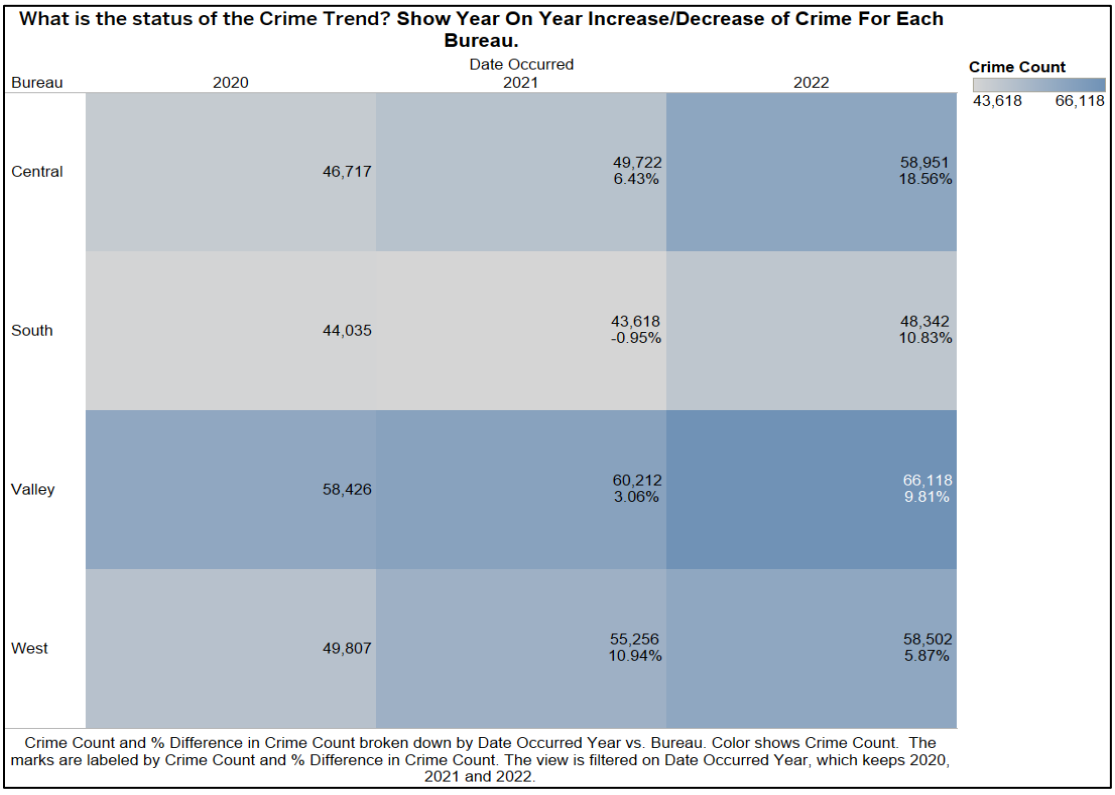


Categories used: Bar chart, Dates, Groups, Calculated Fields, Reference Lines

The chart offers an understanding of the variation in crime rates across various bureaus, highlighting those with the highest and lowest levels of criminal activity. To simplify comparisons, a reference line has been included on the graph for each year, representing the average total number

of crimes committed during that period. This line assists in identifying the bureaus that have more criminal incidents than the average.

The analysis highlights that the Valley Bureau had the highest crime rate in 2022, with an approximate average count of 62,000 for all three years. This indicates that criminal activity has been consistently high in this area over the years. On the other hand, the South Bureau had the lowest average number of crimes, suggesting that it is comparatively safer than other areas in Los Angeles.

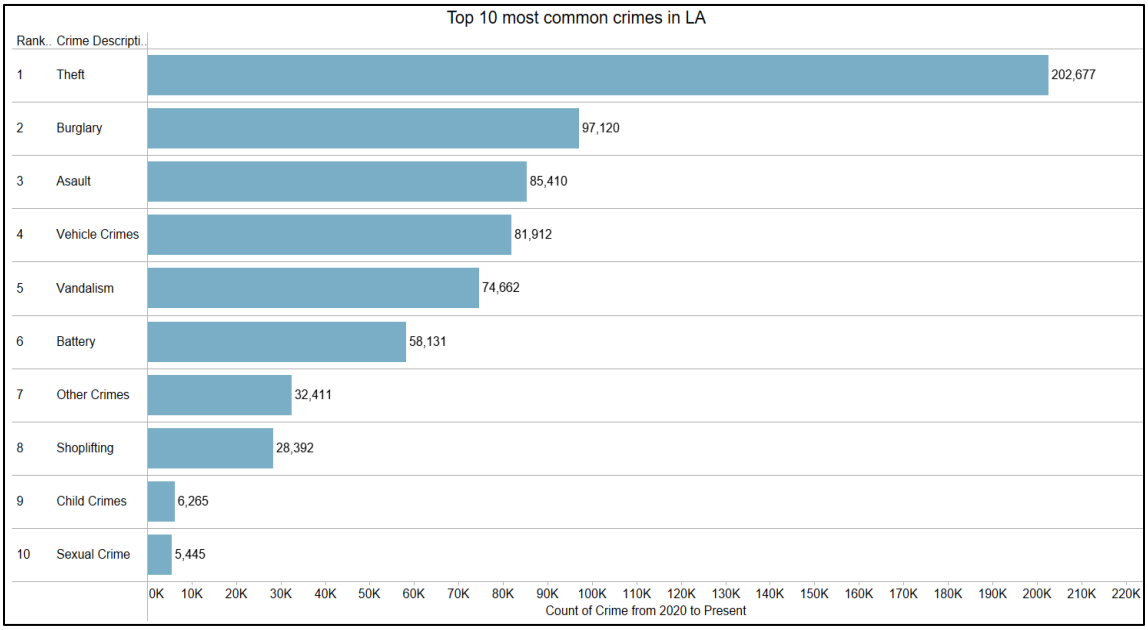


Categories used: Heatmap, Dates-Year, Groups

We have determined the exact fluctuation in crime rates over time for each bureau by calculating the percentage difference between consecutive year values. The percentage difference indicates the change in value in relation to the preceding year. The Heatmap employs various shades of color

to enable us to easily identify the bureau that had the most significant decrease or increase in crimes each year. For instance, in 2022, the Central bureau experienced a notable increase in crimes, approximately 19%, compared to the previous year, 2021. Conversely, in 2021, the West bureau had a noteworthy rise in crimes. In contrast, the South bureau observed a decline in criminal incidents, approximately 0.95%, in 2021 compared to 2020. Visual representations, like this one, simplify the analysis of data.

3. What are the ten most frequently occurring crimes in Los Angeles from 2020 to the present?

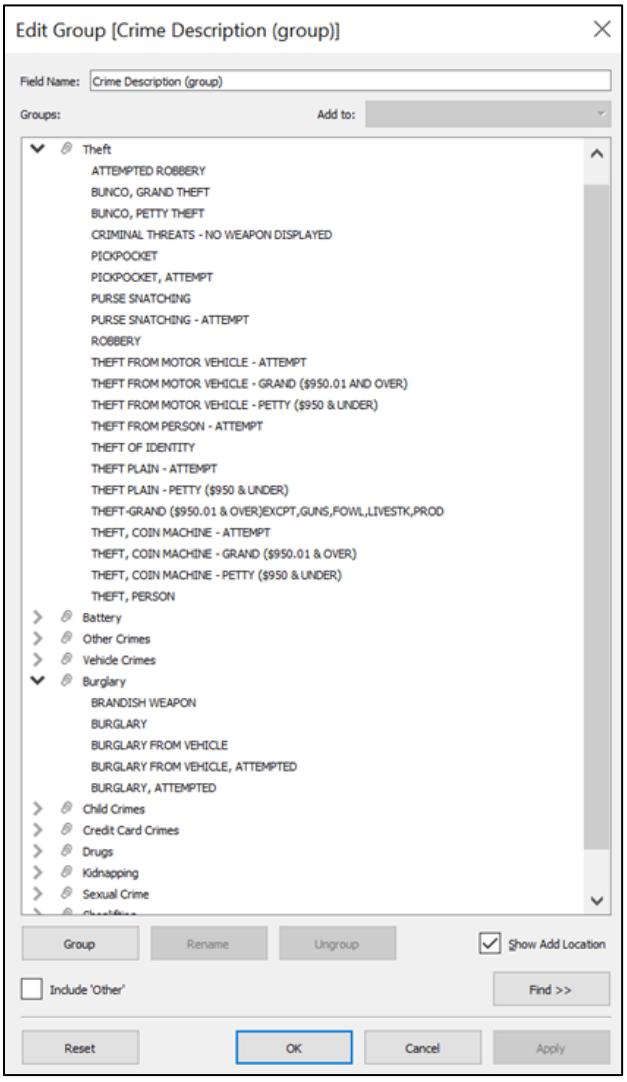


Categories Used: Filters, Groups, Rank, Count

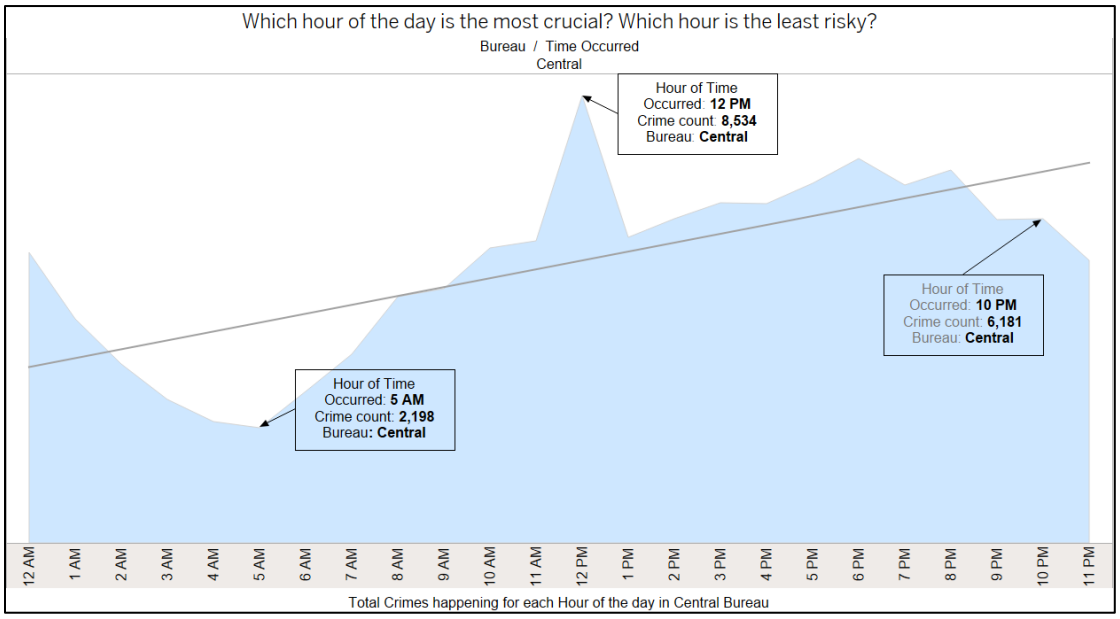
In the above graph, we have used a bar chart to visualize the Top 10 most common crimes in the city of Los Angeles in the period 2020 to the present. This analysis depicts the breakdown of crimes in a structured manner, allowing us to determine which crimes occur most frequently. By

filtering for the Top 10 crime types, we can rank them in order of occurrence from high to low. The results indicate that theft is the most prevalent crime, indicating that the residents of LA are at a higher risk of experiencing theft and should take caution in their surroundings. Additionally, this type of analysis can be useful for law enforcement agencies, LAPD, and the public in understanding the nature and extent of criminal activity.

Additionally, this analysis utilizes Tableau's grouping functionality to categorize similar types of crimes under one heading. The below screenshot shows how the groups are formed for the Crime Description.



4. In the Central Bureau (the region with the high crime rate) - which hour of the day is the most crucial? Which hour is the least risky?



Categories Used: Area chart, Dates – the Hour part, Groups, Forecast Trend Lines

The time of day is a significant factor in criminal activity. We have generated a chart above that displays the hours of the day in 12-hour format and highlights the most critical and least dangerous times of day, accompanied by the number of crimes that occurred during those hours.

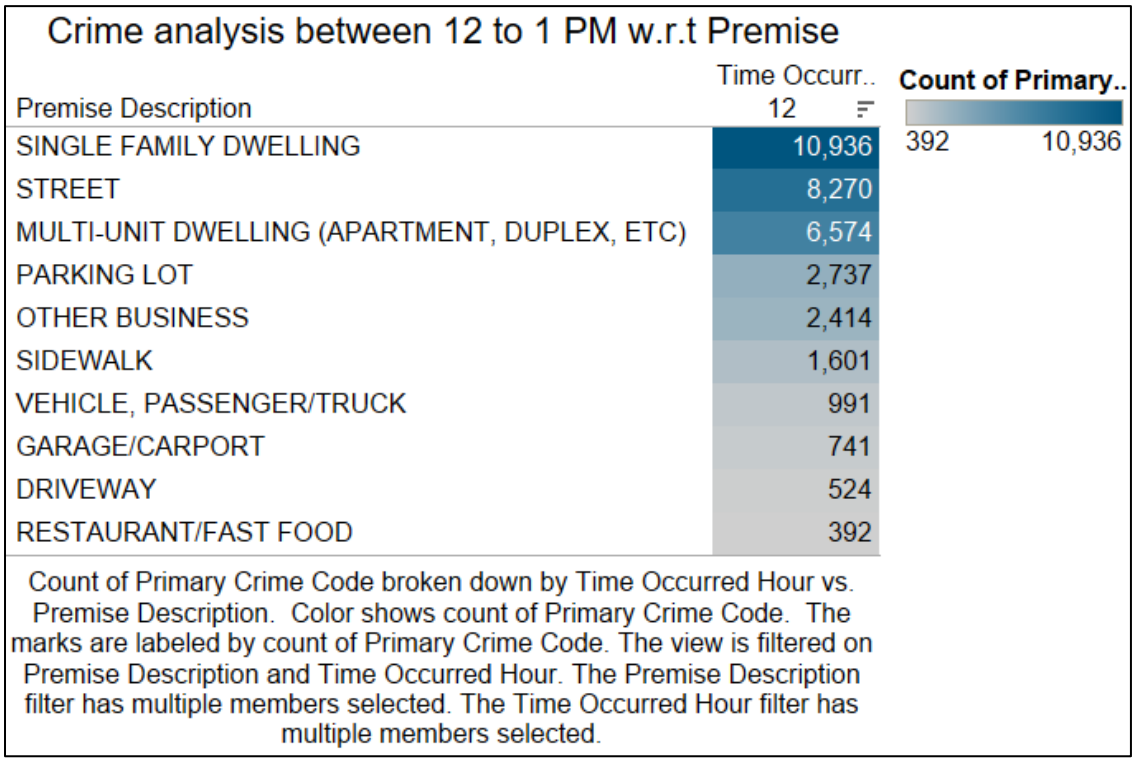
According to the analysis, there is a decrease in criminal activities at 5 am when most people are sleeping. This outcome is not surprising since it is commonly known that fewer people are out on the streets during the early morning hours, resulting in fewer opportunities for criminal activities.

On the other hand, we anticipated an increase in criminal incidents at 10 pm, a time when there are fewer people around to witness the crimes, and the darkness provides a cover for the perpetrators to conceal their identity and actions. This outcome is expected since nighttime hours

are usually considered more dangerous due to the lower visibility and less presence of people on the streets.

However, what caught the analysis off guard was the surge in criminal activities during midday, a time when the streets are more crowded, and there are more opportunities for potential witnesses to observe and report criminal incidents. The rise in criminal activity during midday was almost reaching its peak level, which was unexpected and could be attributed to several factors, such as increased foot traffic, more unlocked homes during this time, and other societal and economic factors that might have affected the criminal behavior patterns.

5. **Premises analysis for the crucial hour of the day (12 PM to 1 PM) based on previous analysis**

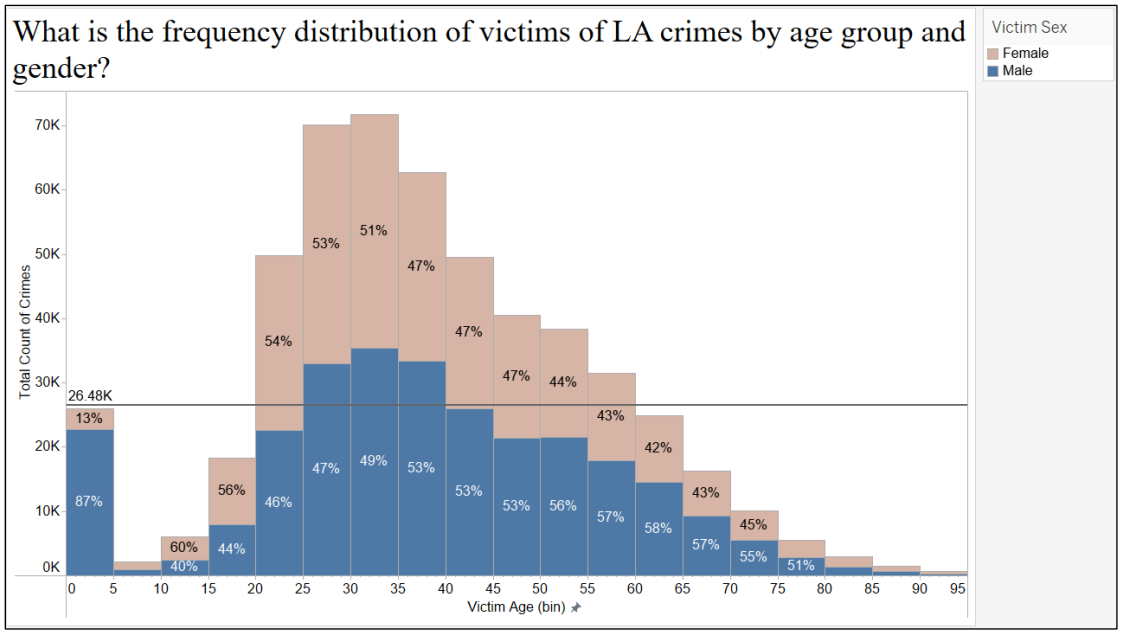


After conducting a deeper analysis of the LA crime data, we found that single-family dwelling apartments were the most targeted type of residence during the identified crucial hour. This

suggests that individuals who live in single-family apartments may be at a higher risk of being victimized during this time. The second most common location for crime during this period was on the street, which is not surprising given that it is a public space. However, it is important to note that crime can occur anywhere, and caution should be exercised in all areas.

It is also worth noting that restaurants ranked only 10th out of all premises where crimes take place. This may be due to several factors, such as the presence of security measures, surveillance cameras, or the fact that many restaurants are located in areas with high foot traffic and visibility.

6. What is the distribution of LA crime victims based on their age group and gender?

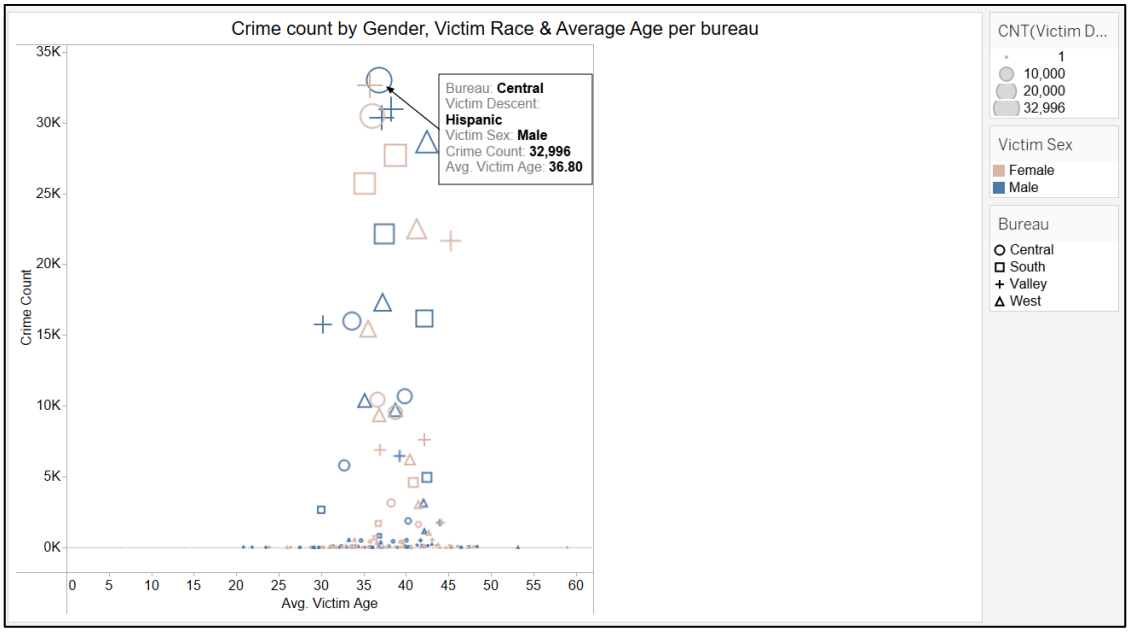


Categories Used: Histogram, Reference Line, Filter, Bin

We have used histogram to analyze victims of which age group based on gender are vulnerable to crime. Histogram is like a bar chart. The only difference is that it groups the value of Age into a continuous range (0-5, 5-10, and so on). Each bar represents the number of victims within a

specific age range and gender group. The height of the bar indicates the frequency or the count of victims in that age and gender group, while the width of the bar indicates the range of ages that the group encompasses. It is quite evident from the graph that people in the age group 25-40 are more prone to crime. The data indicates that within the age group of 25-35, the percentage of female victims is slightly higher than that of males, implying that females are slightly more likely to be victims of crimes in this age range. In contrast, within the age range of 35-40, the percentage of male victims is higher than that of females, suggesting that males are more likely to be victims of crimes in this age range. While creating the histogram we set the bin size to 5. The Average count of crime is shown by Reference Line and is 26.48K. This reference Line serves as a point of comparison to the bras of the histogram. The Age group 20-60 is above the reference line which indicates the crime count for this age group is higher than the average count.

7. What is the demographic group that is most impacted by crime in the bureau? Display the information by age and gender of the victims.

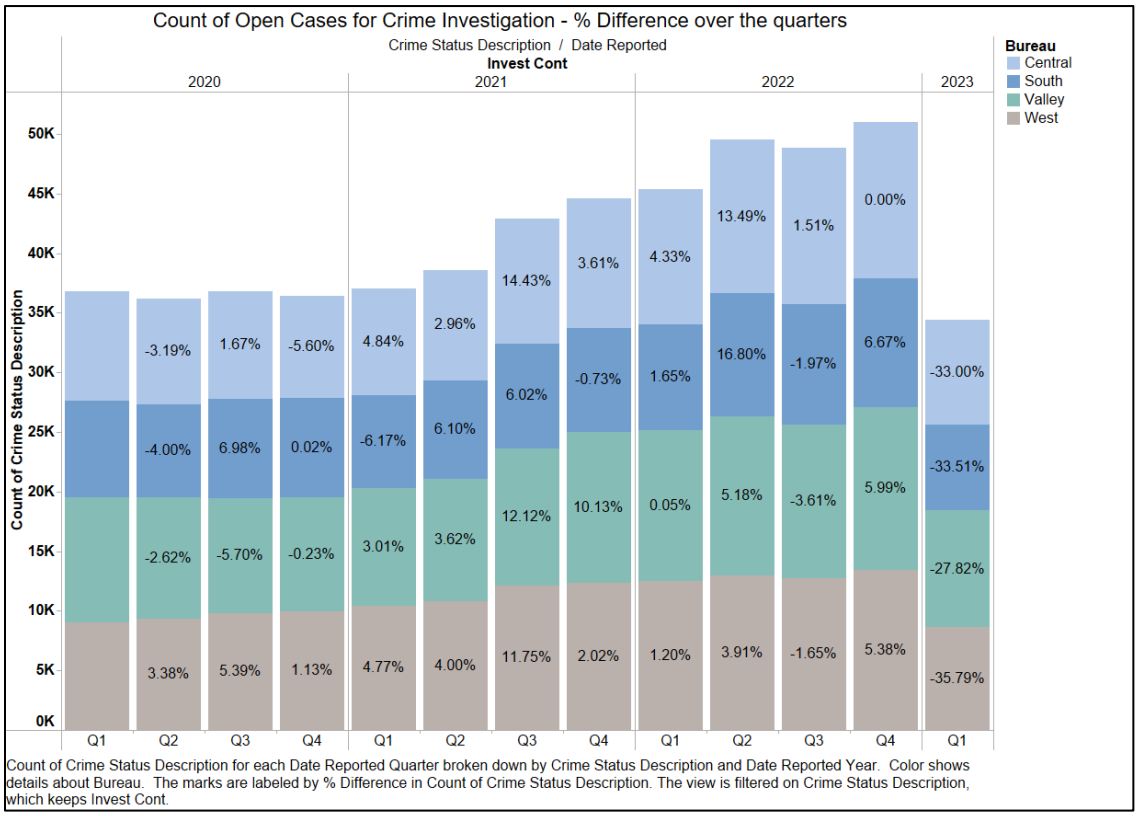


Categories Used: Scatter plot, Group, Filters

An analysis has been conducted to investigate the crime count pattern based on the victim's age, gender, and ethnic background. This analysis can help us identify which age group is more vulnerable to crime, and by incorporating the bureau as a dimension, we can determine the areas with a higher risk of victimization.

A Scatter plot is used to graphically represent the count of crimes and the average age of the victim. The different shapes on the graph represents the number of crimes that occurred in the bureau, while different colors distinguish between male and female victims. The data shows that the age group with the highest number of victims falls between 30 to 40, and the Central bureau has the highest number of male victims, while the Valley bureau has the highest number of female victims. Our analysis indicates that victims of White and Hispanic descent have the highest incidence of crime.

8. How many open cases are there for criminal investigations, and what is the percentage difference for each quarter between the years 2020 and 2023?



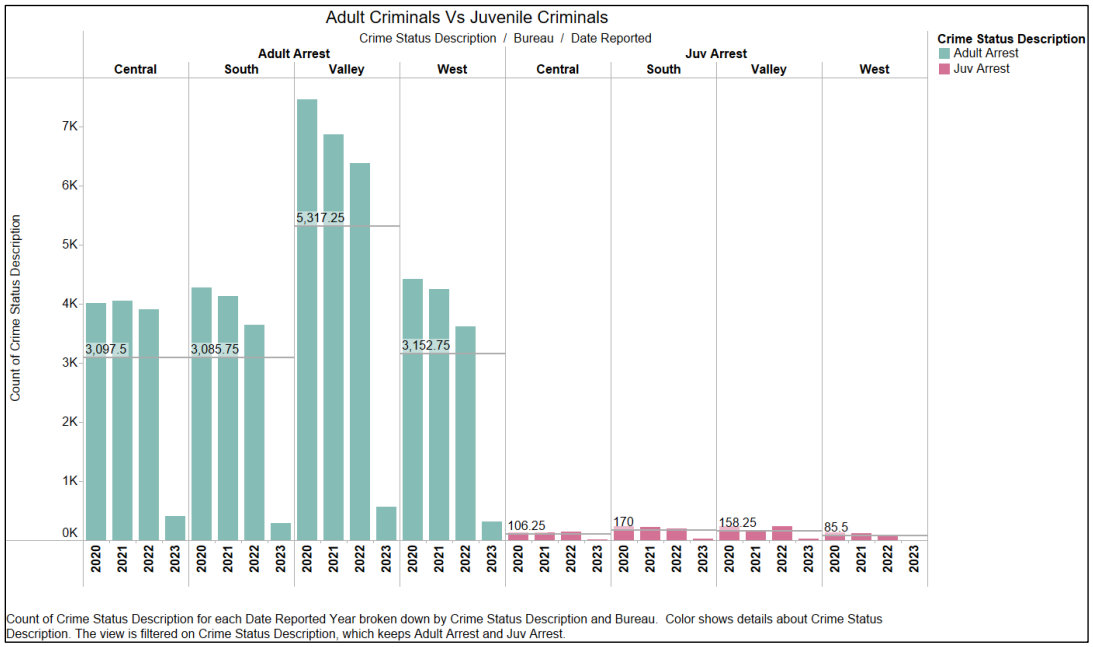
Categories Used: Date – Year, Quarters, Group, Stacked Bars

An Analysis is made to determine how many open cases are there in each bureau and for each quarter. This analysis will be helpful to allocate more resources and to prioritize the cases.

We have used stacked bars and applied colors to differentiate each bureau. The difference in percentage is calculated by comparing the count of open crime status with the previous quarter. From the analysis it is clear the count of open cases increases gradually and the year 2021 Q3, except for south bureau all the other bureau open crime counts increased and decreased again for Q4, whereas in 2022 Q2 South bureau open cases were increased from 1.65 % to 16.80%. In 2022

Q4, the central bureau has the same number of open cases compared to the previous quarter Q3. This type of analysis provides insight to law enforcement team to solve cases more effectively and build trust with the community.

9. Which Bureau has the highest Adult and Juvenile Arrest? Compare by year on year.



Categories Used: Groups, Reference Line, Date - Year

We have created a side-by-side bar chart to compare adult and juvenile arrest data, which was grouped by bureau using the create option based on their division. Analyzing and comparing the arrest rates between juveniles and adults is crucial in understanding crime patterns and identifying risk factors for each group. Adults and juveniles may have different reasons and motivations for committing crimes, and they may require different approaches for rehabilitation and reintegration into society. By understanding the differences between adult and juvenile offenders, law

enforcement agencies can tailor their response and interventions to best address the needs of each group, ultimately leading to better outcomes for both the offenders and the community.

We generated a visual representation to gain a clear understanding of the bureau with the highest crime rate and the year with the most significant number of arrests. The analysis reveals that the Valley Bureau had the most significant number of adult and juvenile arrests. Furthermore, we observed that the year 2020 recorded the highest number of adult arrests, while in the case of juveniles, there was a change in trend. In 2021, the South bureau had the most substantial number of juvenile arrests, whereas the Valley bureau had the highest number of arrests in 2022. We also included a reference line to estimate the average crime rate in the bureau over the years.