An Analysis of Crime in Los Angeles from 2010 to 2019

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Introduction

Crime has been a major issue in the city of Los Angeles due to a variety of factors, including high population density, gang activity, and elevated levels of poverty and homelessness (Berger, 2018). Boasting one of the highest crime rates in the nation (36 per 1,000 residents), Los Angeles is considered safer than only 7% of U.S. cities (NeighborhoodScout, n.d.). In order to keep track of the crime incidents, police officers are required to fill out a police report which is later transcribed to their digital record system. According to the Los Angeles Police Department Automated Report System (LAPD ARS), approximately 2.1 million crime incidents took place in Los Angeles from 2010 to 2019 (Los Angeles, 2024). However, it should be noted that this figure is likely an underestimate as many crimes go unreported (Wu et al., 2019).

Currently, most analyses of police report data focus on determining the total counts of each type of crime to examine crime rate trends over time. However, advanced analysis is necessary to identify which demographic groups are most affected by crime. This would allow for the development of targeted programs that not only assist those in need, but also help prevent future occurrences. Thus, this paper aims to analyze the available data from LAPD ARS to identify 1) which demographic experienced the most crime from 2010 to 2019, 2) the types of crime they most reported, and 3) the locations in Los Angeles where they occurred most frequently.

Methods

Data was retrieved from the "Crime Data from 2010 to 2019" dataset on the Los Angeles Open Data website. Crime incidents with missing gender and ethnicity were categorized under the appropriate "unknown" category. Latitude and longitude values of 0^{o} were converted to missing values in accordance with the dataset's notes. Ages less than zero were converted to missing values. Furthermore, upon exploratory analysis, an age of zero appeared to have been used when age was unknown, making it challenging to differentiate between crimes involving

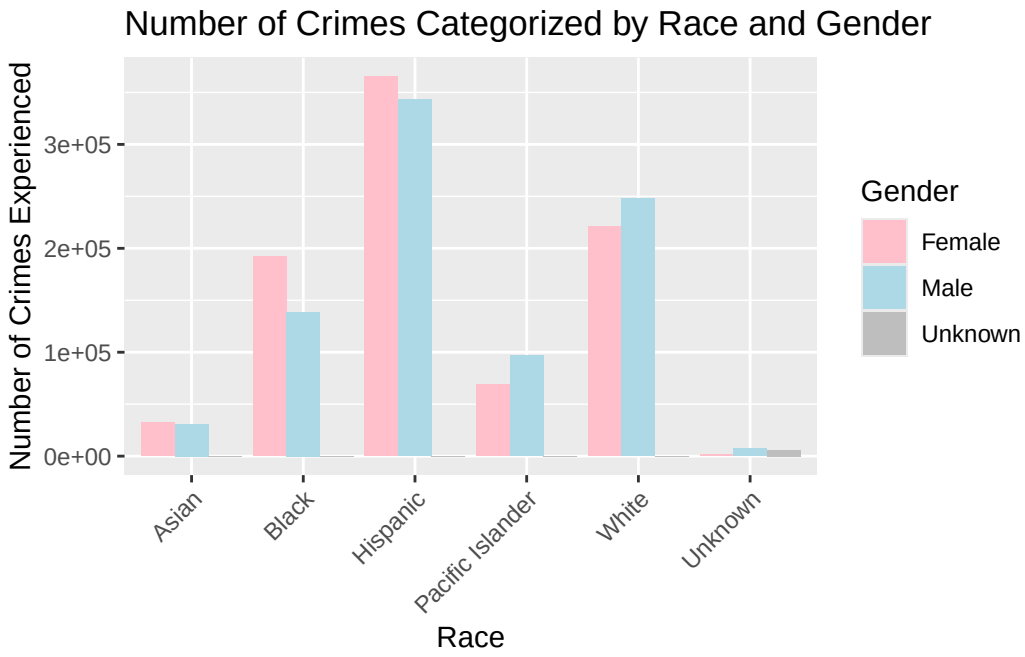
children of 0 years old and those where the age was not recorded. Consequently, all observations with an age of 0 were converted into missing values, except for those associated with crime codes related to children (child abandonment, child abuse (physical) - aggravated assault, child abuse (physical) - simple assault, child annoying (17yrs & under), child neglect (see 300 W.I.C.), child pornography, child stealing, and lewd/lascivious acts with child). Ethnic data was condensed into 6 groups: Asian, Black, Hispanic, White, Pacific Islander, and Unknown. Only records with complete data for these variables, as well as precinct area, were included in the subsequent analysis.

Filtered data was grouped by descent and gender and visualized into a barplot to determine which demographic experienced the most crime incidents within Los Angeles. Age was then categorized into ranges of 10 years. Crime distribution by age range was then investigated for the city of Los Angeles and the most targeted victim demographic to investigate if there was a difference. Next, the top 5 crimes were evaluated for the city of Los Angeles as a whole, for each sex, for the most targeted demographic group, for each sex of the targeted demographic group, and for the most targeted age range of that demographic group. The differences in the types of crime were then evaluated.

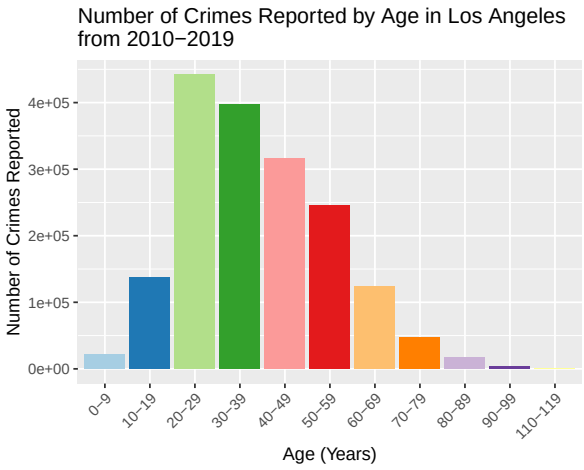
Next, we looked at the number of crime incidents in each precinct area for the targeted demographic. Lastly, a choropleth map was created to display the distribution of the targeted demographic using 2020 Census data. As the Census did not have detailed information on only Los Angeles, the whole county is colored. However, the city of Los Angeles and its precinct areas are demarcted with a black border. Furthermore, on the map, the top 100 coordinates where crimes were reported were plotted. All data analyses were done using R 4.4.1.

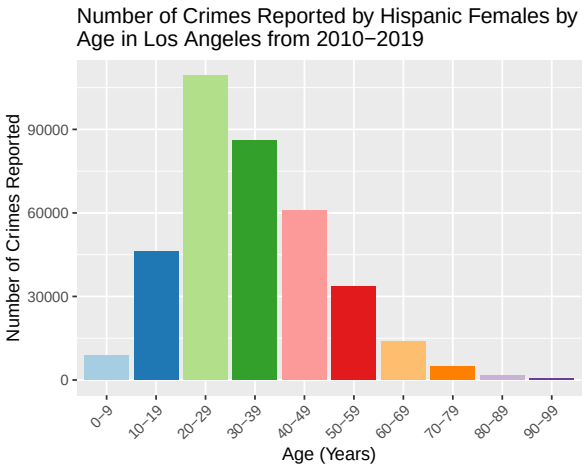
Results

When stratifying crime incidents by race and gender, we can see that for most ethnic descents, women and men reported similar numbers of crime incidents for the 2010 to 2019 time period. The largest difference in reported crimes was between Black women and men, in which Black women reported approximately 50,000 more crime incidents. Overall, however, Hispanics experienced the highest number of crime incidents, with Hispanic women experiencing slightly more than Hispanic men and the most of all demographics. After the Hispanic population, Whites experienced the most crime, followed by Black, Pacific Islander, and then Asian. Further analysis will be conducted solely on Hispanic females.



Looking at the age distribution of Hispanic female victims who reported crimes, we can see that it was the 20-29 age category that reported the most crimes. They were then followed by 30-39 year olds and 40-49 year olds. While the age distribution did not differ very much from that of Los Angeles as a whole, there is a sharper decrease in crime for Hispanic females as they age compared to the city data.



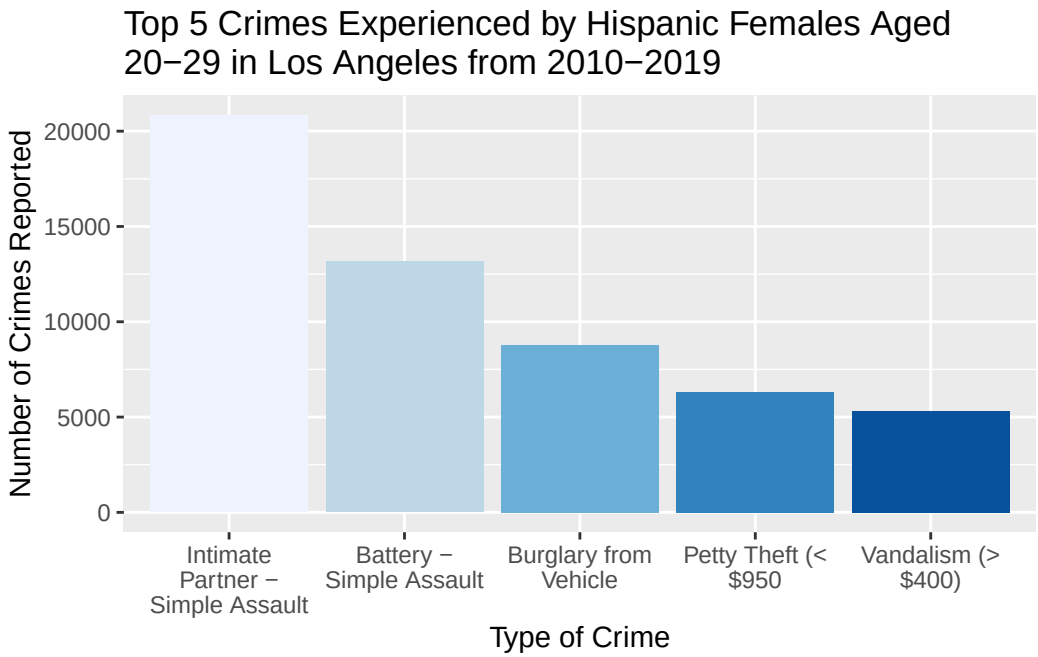


When comparing the top 5 reported crimes for each demographic group, we can see that battery, burglary from a vehicle, and petty theft are common for all of the listed demographic groups. Men were more likely to report violent crimes, such as assault with a deadly weapon/aggravated assault. Women, on the other hand, were more likely to report simple

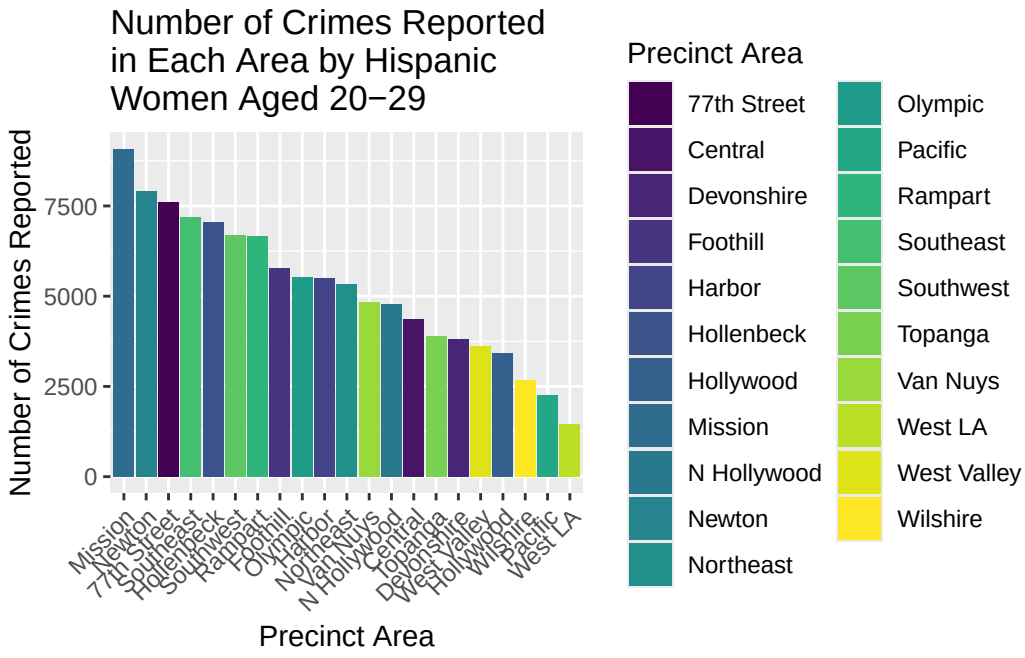
assault or being assaulted by their intimate partner. When comparing the general female category to the Hispanic female categories, we can see that the first and second most reported crimes are switched, with Hispanic women being more likely to report being assaulted by their intimate partner than a simple assault. Females in Los Angeles reported the same top 5 crimes as Hispanic females. Hispanic females aged 20-29, however, experienced more vandalism as opposed to identity theft.

Ranking of Reported Crimes	Top Crimes for Los Angeles	Top Crimes for Males	Top Crimes for Females	Top Crimes for Hispanic Females	Top Crimes for Hispanic Females Aged 20-29
1	Battery - Simple Assault	Battery - Simple Assault	Battery - Simple Assault	Intimate Partner - Simple Assault	Intimate Partner - Simple Assault
2	Burglary from Vehicle	Burglary from Vehicle	Intimate Partner - Simple Assault	Battery - Simple Assault	Battery - Simple Assault
3	Petty Theft (< $950)	Burglary	Burglary from Vehicle	Burglary from Vehicle	Burglary from Vehicle
4	Identity Theft	Assault with Deadly Weapon, Aggravated Assault	Petty Theft (< $950)	Petty Theft (< $950)	Petty Theft (< $950)
5	Burglary	Petty Theft (< $950)	Identity Theft	Identity Theft	Vandalism - Felony (> $400)

When looking at the distribution of the top 5 crimes reported by Hispanic females aged 20-29, we see that there is a large difference between the first reported crime (intimate partner - simple assault) and the subsequent reported crimes. It is almost double the number of reported battery cases and more than double the reported burglary from vehicle, petty theft, and vandalism.



Of the 21 precinct areas that make up Los Angeles, Mission reported the most crimes with a total of 9071 crime incidents. It was then followed by Newton and 77th street. West LA reported the least amount of crime. However, no precinct areas reported less than 2000 crime incidents.



When analyzing the choropleth map (Tab 6), it is evident that Hispanic women are heavily clustered east of the city of Los Angeles. However, within the city boundaries, they have pockets of high population density in the precinct areas of Mission, Newton, 77th Street, Southeast, Hollenbeck, Southwest, Rampart, Olympic, Foothill, and Harbor. The coordinate with the highest incidents of crime was located in the the western Central Precinct area with 315 reports, followed by 210 reports in central Devonshire. Interestingly, neighborhoods reporting high levels of crime (greater than 100 reports) typically had low percentages of Hispanic women. However, according to the map, crime was heavily clustered in the Mission, Rampart, and Central precinct areas.

Conclusion and Summary

According to the data analysis, the demographic that had been the victim of the most crimes in Los Angeles from 2010 to 2019 were Hispanics. More specifically, it was Hispanic females aged 20 to 29. However, crime distibution by age for Hispanic females was similar to that of the city, meaning that it was not unexpected for this age group to report the most crime. However, Hispanic women showed a sharper downward trend in reported crimes as they got older, suggesting the presence of external factors, such as decreased likelihood to report or divorce/separation from their abusive partners ("Intimate Partner - Simple Assault" was the most reported crime for Hispanic females).

Hispanic females and the general female population of Los Angeles (or Los Angelenos women) reported the same top five crimes, with the only difference being the swapping of the top two most reported crimes. The most reported crime among Los Angelenos women was "Battery - Simple Assault," whereas Hispanic women most frequently reported "Intimate Partner - Simple Assault". Similar to the general Hispanic female population, the targeted demographic most reported "Intimate Partner - Simple Assault." The large number of reports of spousal abuse may be due to the Latin culture's tradition of "El Machismo" in which Latino men want to be seen as extremely masculine, leading to aggressive and/or abusive behavior towards their intimate partners to foster an environment of obedience (Ycast Media Group, 2024). However, the number of reports towards intimate partner abuse is is almost double that of the other reported crimes, showing how prominent of an issue it was for young Hispanic women. More current data is needed to determine if this is still the most reported crime they face in Los Angeles and research should be aimed at dismantling the tradition of "El Machismo" and promoting the safety of Hispanic women within their relationships.

When analyzing the number of crimes in each of the 21 precinct areas that make up Los Angeles, the precinct area with the most crime was Mission, followed by Newton, and then 77th street. The precinct area with the least amount of crime was West LA. The trend in crime may be due to differences in socioeconomic statuses of the different areas. Using the choropleth map, it was determined that Hispanic females had high density areas in the precinct areas of Mission, Newton, 77th Street, Southeast, Hollenbeck, Southwest, Rampart, Olympic, Foothill, and Harbor. These are also the top ten precinct areas with the highest reported

crimes for the targeted demographic. Thus, it is not unexpected to observe higher levels of crime in these areas, given the higher percentages of Hispanic females living there.

Upon evaluating the top 100 coordinates with the most reported crimes, high numbers of crime reports were clustered in the Mission, Rampart, and Central precinct areas. This may due to locational factors, such as being areas that Hispanic women are likely to frequent. However, further analysis into these locations is necessary to test this hypothesis. Furthermore, a surprising discovery was that the locations with more than 100 reported crimes were located in areas with relatively low reported Hispanic female populations (less than 20%). Once again, this could be attributed to locational factors, such as proximity to a mall or other facilities that Hispanic women may frequent. Another factor could be that gangs or criminals are specifically targeting these locations to exploit victims. Additionally, areas with high Hispanic female populations may have a higher crime distribution, meaning that they are more spread out across the map. Thus, areas with large Hispanic female populations may report more crimes, but it is not demonstrated by looking at only the top 100 coordinates due to their small values.

There are many limitations to this study. Firstly, there were many missing observations. If there was a bias in the missing information by any of the analyzed variables, the data may be inaccurate. Furthermore, the data on children of 0 years of age may be inaccurate due to the use of 0 as a placeholder for unknown age. While we tried to determine which crime codes could be applied to newborns, there may been errors or overlooked crime codes in the process, leading to inaccurate data. Additionally, the 2020 decennial Census data introduces errors in the data for privacy and confidentiality purposes, which could have impacted the results. Lastly, there may have been many crimes that were misclassified. The LAPD has had many issues with classifying serious offenses as minor offenses (ABC7, 2014; Poston & Rubin, 2015). Thus, the crime codes may not accurately reflect the crimes reported, leading to errors in the crime analysis.

More accurate analyses could have been conducted with access to more specific data from the city of Los Angeles. While the 2020 Census reported the total population, as well as the percentages of each race and gender, it lacked detailed information on the intersections of these categories, such as the breakdown of Hispanic men and women. With this information, crime rates per N individuals could be calculated for each demographic, giving a better representation of the crime rates. Furthermore, Los Angeles city data is divided into 15 city council districts, which have different boundaries than the 21 precinct areas. With detailed population for each of these 21 precinct areas, more informative measures of crime rates could be calculated.

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