

# Los Angeles Crime and Drug Trends 2010-2019

Group 10 - Miao Zhang, Blessing Umoeka

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## Introduction

Los Angeles, California is one of the largest cities in the country. It is a port city and is especially ethnically diverse. It is home to the epicenter of the entertainment industry, has proximity to the Mexican drug trade, and has inhabitants over the whole socioeconomic spectrum.

According to Los Angeles criminal defense attorney Diana Aizman, because of this and a mix of many other factors, Los Angeles has an intense history of crime, including riots, organized criminal activity, gang wars, and more. However, according to the State of California Department of Justice and the Office of the Attorney General, the city has experienced an overall decrease in crimes committed in the last few decades.

These factors are interesting to hear and much can be learned from them. Thus, we wanted to conduct a study of the crime statistics in Los Angeles to figure the who, what, when, where, and why.

We believe it would be interesting to have drug possession data as our secondary data since Los Angeles has long been known for drug trafficking, which could relate to a variety of other crimes. The drug possession data could also be of help when put into the context of Proposition 47 and the legalization of recreational marijuana. This dataset was also chosen to enhance the crime incidents data because there is a common conception that higher drug use leads to crime.

In November 2014, Proposition 47 was passed in California which means less penalty for drug and property crimes. Many researchers suggest that this proposition does not lead to more crimes. This could be an interesting question to look at with our drug possession data.

In November 2016, Proposition 64 was also passed in California, making legal the sales and distribution of Marijuana. This again, would be interesting along our crime and drug data sets.

## Main Dataset

Our main dataset is crime data from the city of Los Angeles from the official Los Angeles open data website. The dataset we extracted contains records of 2.12 million crime incidents that took place in Los Angeles from 2010 to 2019. For each crime incident, the dataset records

- Time: DATE REPORTED, DATE OCC, TIME OCC
- Location
  - AREA (Numbered from 1-21)
  - AREA NAME
  - RPT DIST NO (Four digit code that represents a subarea)
  - LOCATION (Nearest cross street to the crime)
  - CROSS STREET (Street address if known)
  - LONGITUDE and LATITUDE
- Type of Crime
  - CRIME CODE
  - CRIME CODE DESC
  - CRM CODE 1-4 (1 = most serious, 4 = least serious)
  - WEAPON USED CD
  - WEAPON DESC
  - PRES MIS CD (Type of structure, vehicle, or location where the crime took place)
  - PRES MIS DESC

- MOCODES (Activities associated with the suspect)
- Persons Involved
  - VICT AGE (Two character numeric)
  - VICT SEX (F - Female, M - Male, X - Unknown)
  - VICT DESCENT (Descent Code: A - Other Asian, B - Black, C - Chinese, D - Cambodian, F - Filipino, etc)
- Status
  - STATUS
  - STATUS DESC

## Auxiliary Dataset

Our secondary data set includes drug possession information in the city of Los Angeles from 2010 to 2018. It came from the same website as our primary data set.

## Research Question

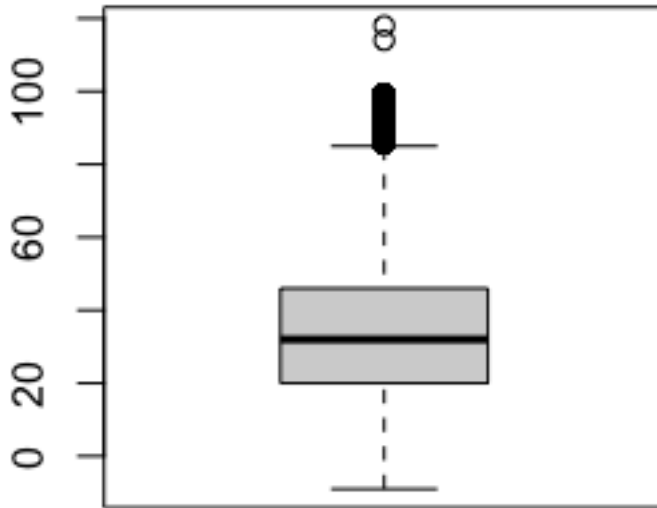
After querying our data sets, we decided to focus on 2 areas for this report:

- Victim Demographics
  1. What populations are more at risk of being victimized?
  2. What are some trends in victim demographics throughout the last decade?
- Crime by Areas in LA
  1. Which areas are seeing changes in crime?
  2. What trends in crime is happening in these areas in the last decade?

To address these questions, we will slice and dice the data sets to create visualizations that help identify trends of crime in the city of Los Angeles from the year 2010 to 2019.

## Data Preprocessing

When preparing the data, we looked at unique values for columns containing strings and summary information for columns with numeric values. We were able to weed out many data points that were unclear or that appear to be outliers. For example, the following is a boxplot of column “Vict.Age” (age of the victim). You can clearly see that there are 2 points exceeding almost 20 years over 100. Just a simple Google search of the oldest people in the US will reveal that there are no records of people aged 114 and 118 in the LA area. So we took out the 2 rows that contained these 2 age numbers.

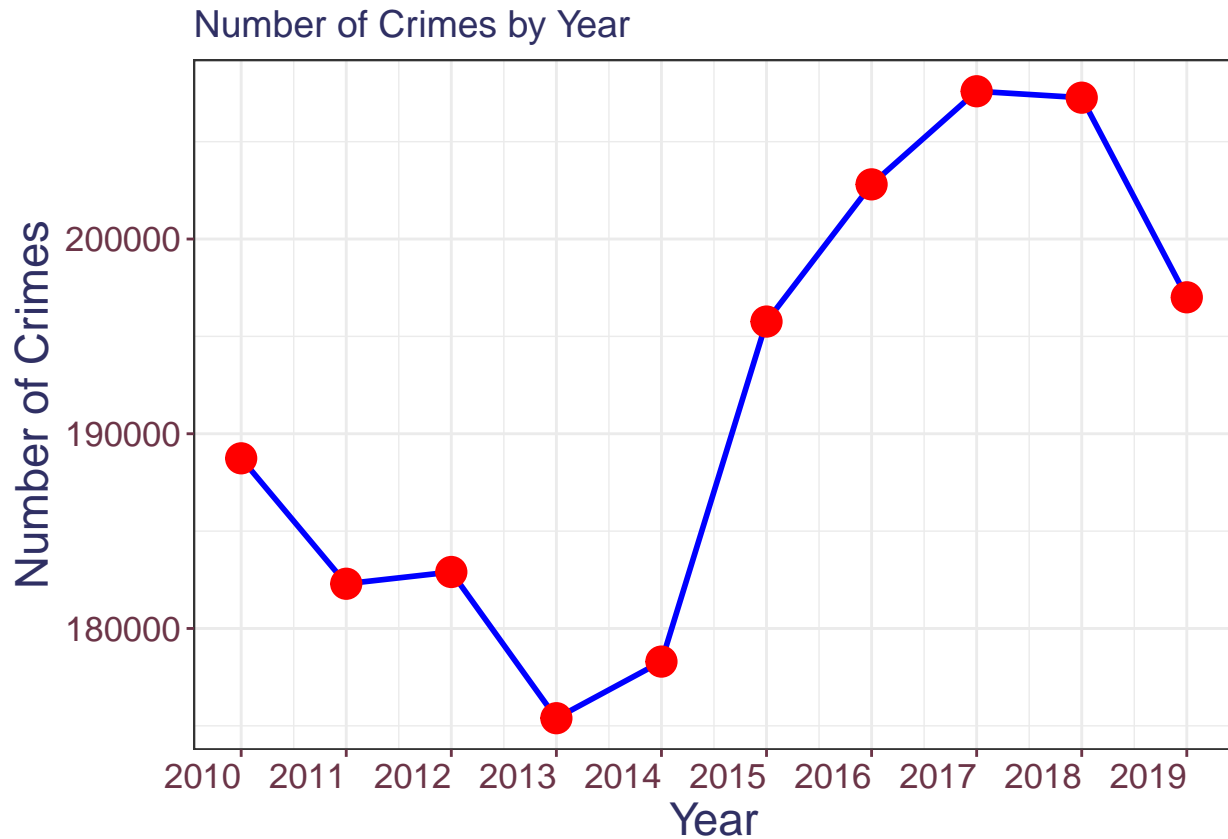


After the data clean-up process, we ended up with 1.9 million rows of the primary data set. The R code for the data preprocessing for both the primary and secondary data sets are linked in the Appendix. For this report, we will be using the cleaned up data sets.

## Data Visualization and Investigation

### LA Crime Over The Last Decade

To begin our analysis, we started by plotting the amount of crime in LA from 2010 to 2019. This plot shows that starting in 2010 crime was steadily decreasing until 2013. And then from 2014 to 2015 there was a sharp increase in the amount of crime and it has stayed relatively high until 2018 where it started decreasing again.



To better understand these trends, we did some research on what was happening in Los Angeles during these times. According to LAPD Commander Phillip Tingirides, the sudden increase in crime in 2015 can be attributed to gang violence and attacks. At the time, he stated, “There were internal gang disputes, there were love triangles, there was domestic violence. Almost everything involved gangs in some way, shape, or form.”

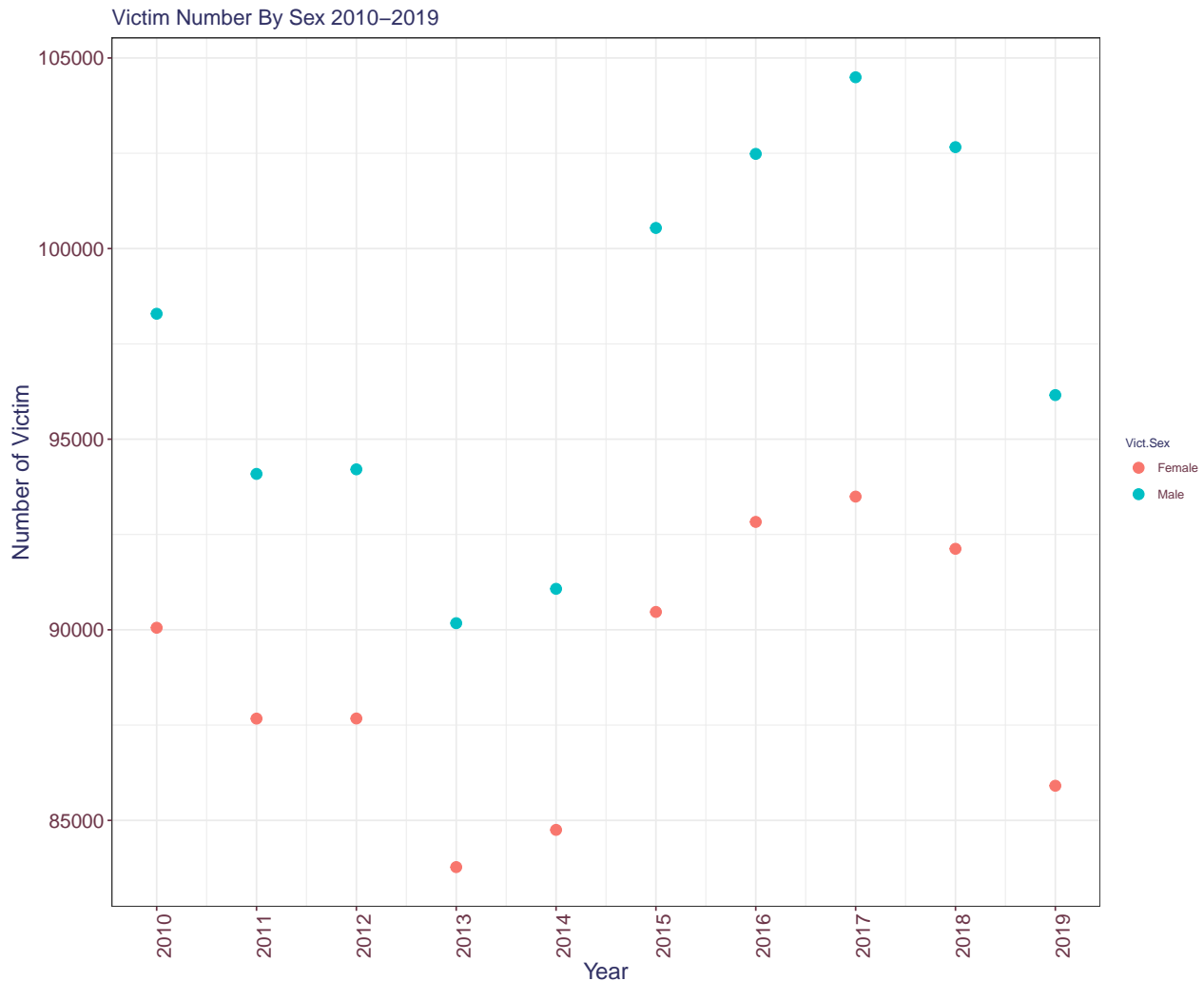
In contrast, there was a decrease in the number of crimes in 2019. According to LAPD Chief Michel Moore, now is one of the safest times in Los Angeles. The officials have attributed the decline in crimes to a variety of strategies, including gang intervention, community outreach efforts, and more hours of patrols.

Thus, the research conducted on the crime in Los Angeles accurately lines up with the timeline created by this plot.

## Victim Demographics

### Victim Number By Sex By Year Scatterplot

After examining this trend as a whole using the line graph, we can now look at the victim demographics, beginning with gender.



This scatterplot shows the change in crime from 2010 to 2019 but differentiates males and females. From this plot, we can see that males make up a lot more victims than females, specifically more than double.

To understand this, research on who is more likely to be the victim of a crime had to be conducted. According to a publication by Statistics Netherlands (CBS) and the Netherlands Institute for Social Research (SCP), the majority of victims are male, specifically 1.6 percent of men against 1.1 percent of women. In addition, more men than women fall victim to assault, with it being 0.9 percent to 0.5 percent. And according to our analysis, males are more likely to become victims in Los Angeles so this research can be reflected in this dataset.

### Treemap Of Victim Descent And Sex Information

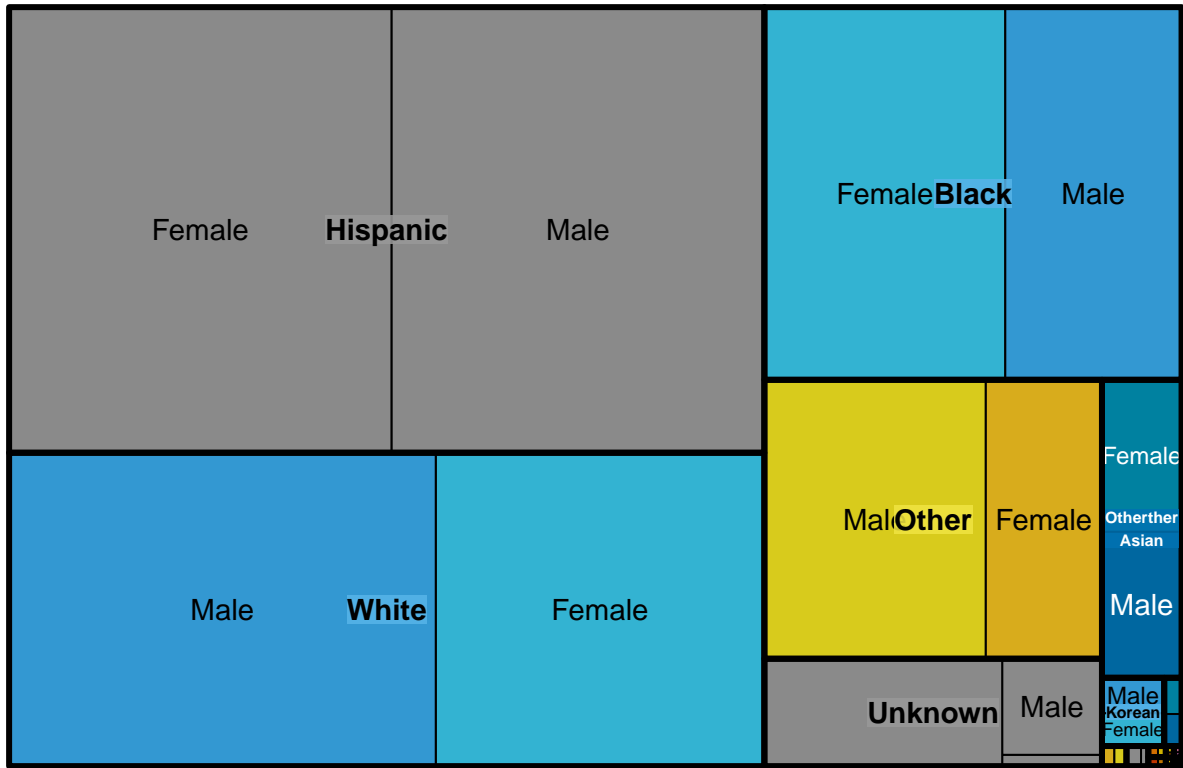
After learning more about the gender makeup of victims of crimes, we wanted to look at the ethnicities of the victims.

This plot is a treemap of victim descent and sex information. This plot shows that the Hispanic population makes up the highest percentage of crime victims which matches up well with the actual demographics of Los Angeles. This is also the case for the Non-Hispanic white population.

Table 1: Los Angeles Population Demographics

Descent	%
Hispanic or Latino (of any race)	47.5%
Non-Hispanic Whites	29.4%
Asian	10.7%
Black or African American	9.8%
Two or more races	2.8%
Native American	0.5%
Native Hawaiian and Other Pacific Islander	0.2%
Other	25.2%

### Victim Demographics



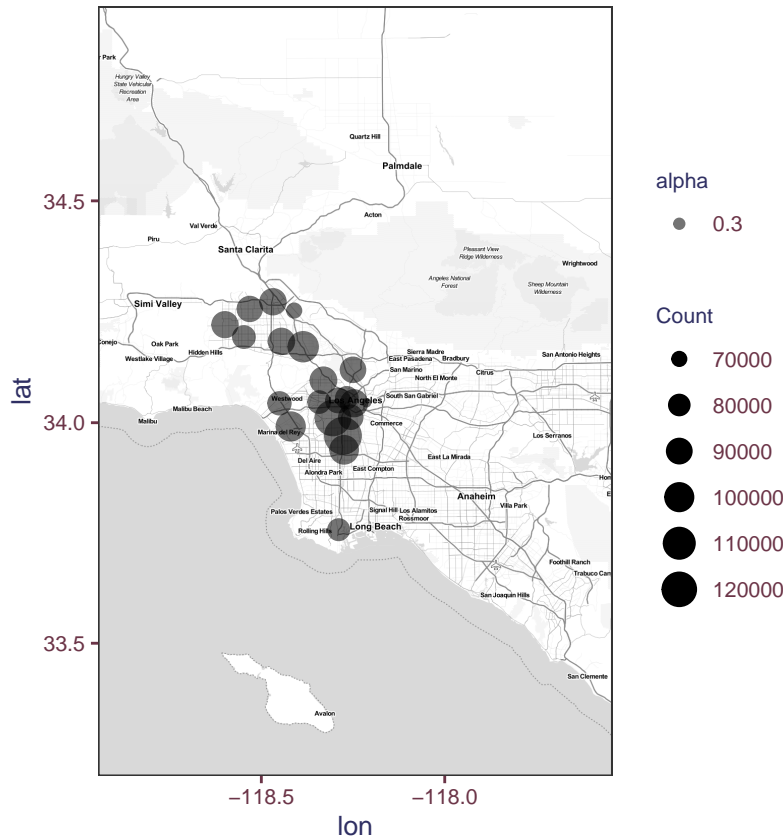
Where the real discrepancy comes in is with the difference between the Asian and African-American populations. Asians make up a slightly higher percentage of Los Angeles than African-Americans, yet make up a much smaller portion of victims than African-Americans. So though African-Americans make up a smaller portion of Los Angeles, they make up a higher portion of victims. This shows that the African-American population is more likely to be the victim of crimes in Los Angeles, specifically when the demographic makeup of Los Angeles is taken into account.

However, we can also take gender into account. As seen by the plot, African-American females make up a higher portion of victims than African-American males. This is an interesting find because it differs from the conception that African-American males make up the highest proportion of victims.

## Crime By Area

### LA Crime Map

This LA Crime Map provides a quick look around the Area information for LA both in terms of amount of crime and amount of drug possession arrests in the years 2010 to 2019.

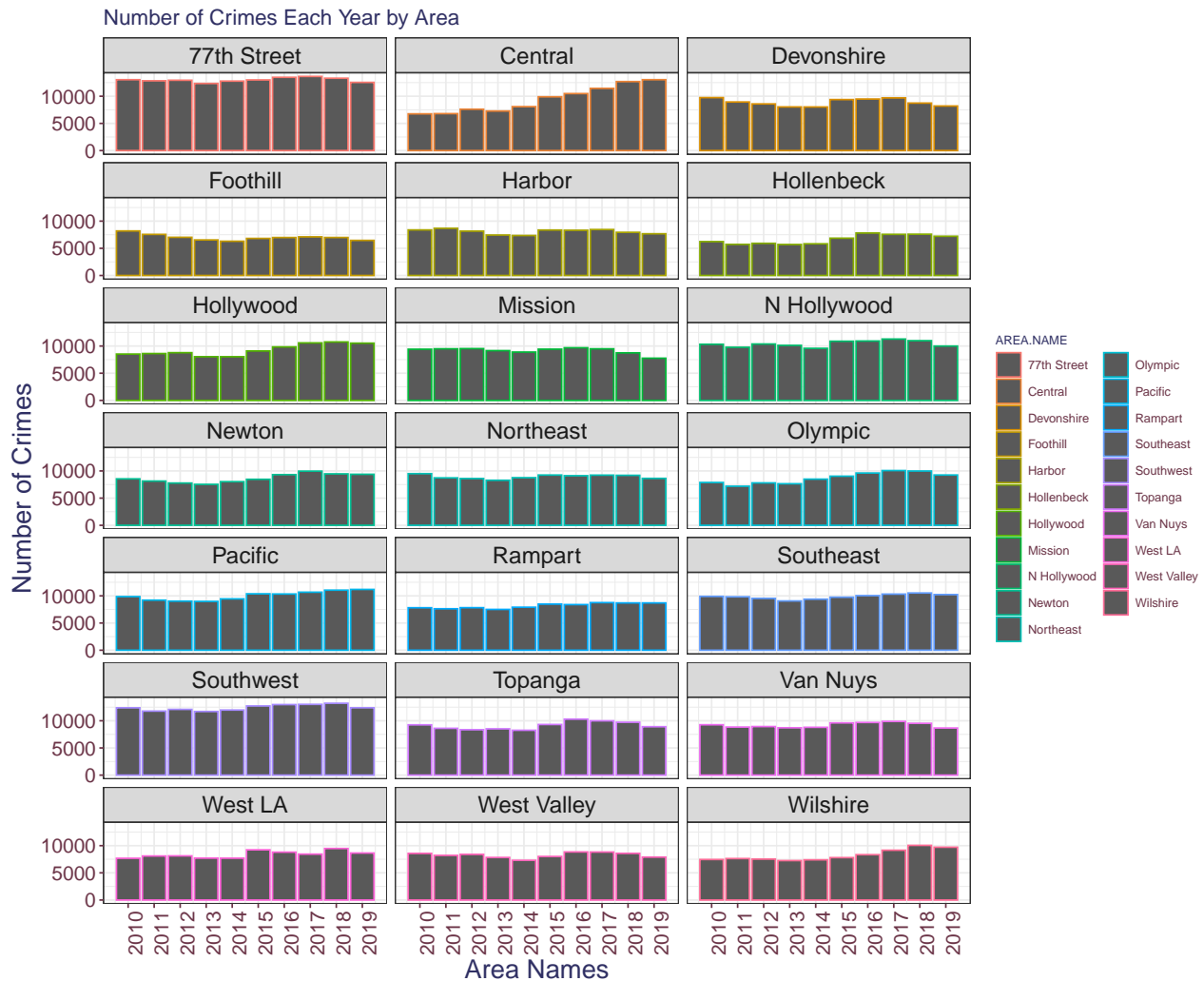


There are 21 areas in Los Angeles. Each dot on the map represents an area. The bigger the dot, the more crimes were reported in that area in the past decade. It is clear to see that most of the crimes concentrate in the center of the city. The areas with the most amount of crime over the years is 77th Street.

### Number Of Crimes Each Year By Area

Next up, we will single out each area and look at the change in number of crimes over time in that area. We are looking to see any trends in the amount of crime over the years.

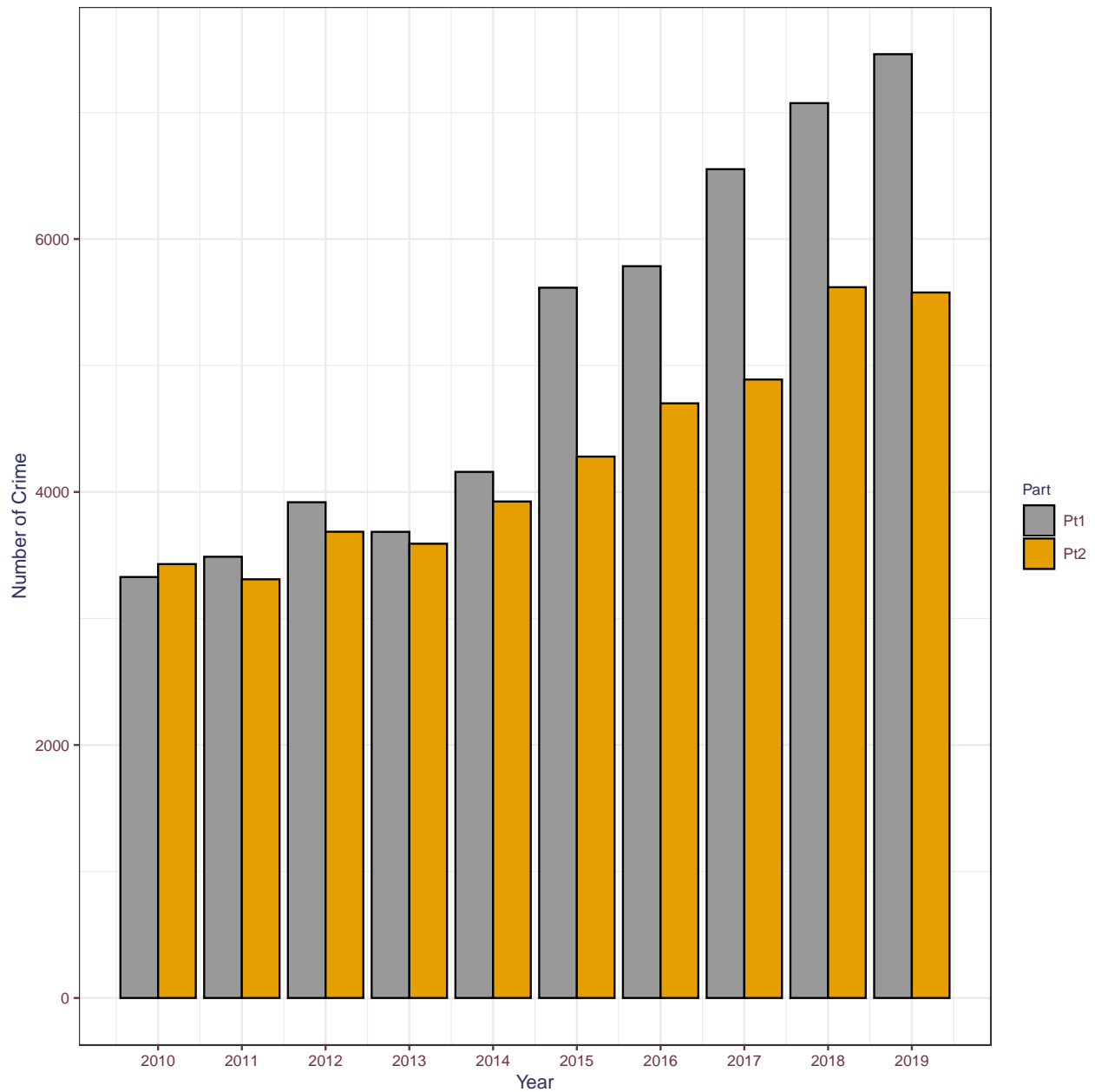




The one area that stands out is Central. The crime in this area has been increasing consistently over the years, while the amount of crime in other areas stayed relatively similar with only small fluctuations. Thus, the rest of this section will be focused on the Central area to figure out what is causing this upward trend in crime.

### Part 1 Crime vs Part 2 Crime In Central Area

Now we take a deeper dive into the Central area to see which Part of crime is causing this continued increase in the area. Part 1 crimes include more severe crimes, such as assault, rape, robbery and burglary. However, Part 2 crimes are crimes that carry less harsh punishments, such as a misdemeanor.

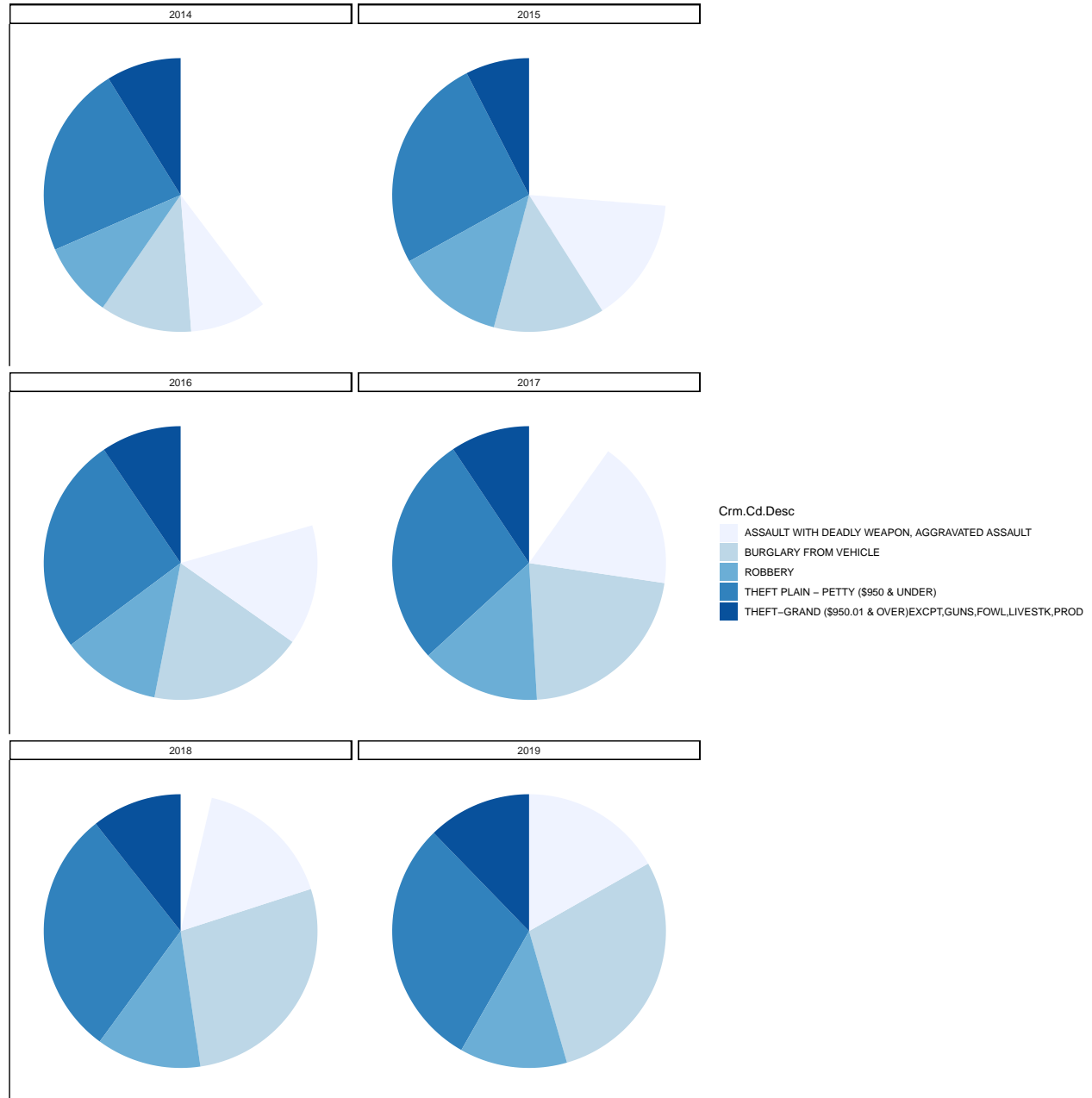


The graph shows a more significant upward trend for Part 1 crime. The amount of Part 1 crime has been increasing at a higher rate than Part 2 crime, especially since 2014. This means that the increase in crime in the Central area is primarily driven by the increase in Part 1 crime.

#### Top 5 Part 1 Crimes In Central Area Since 2014

Now that we know the increase in crime in the Central area starting from 2014 is mainly driven by the increase in Part 1 crimes. We want to look at which Part 1 crimes are the culprits. We picked the top 5 most common Part 1 crimes in the Central area since 2014 and plotted pie charts to see which of these crimes have taken on more prominence since 2014.

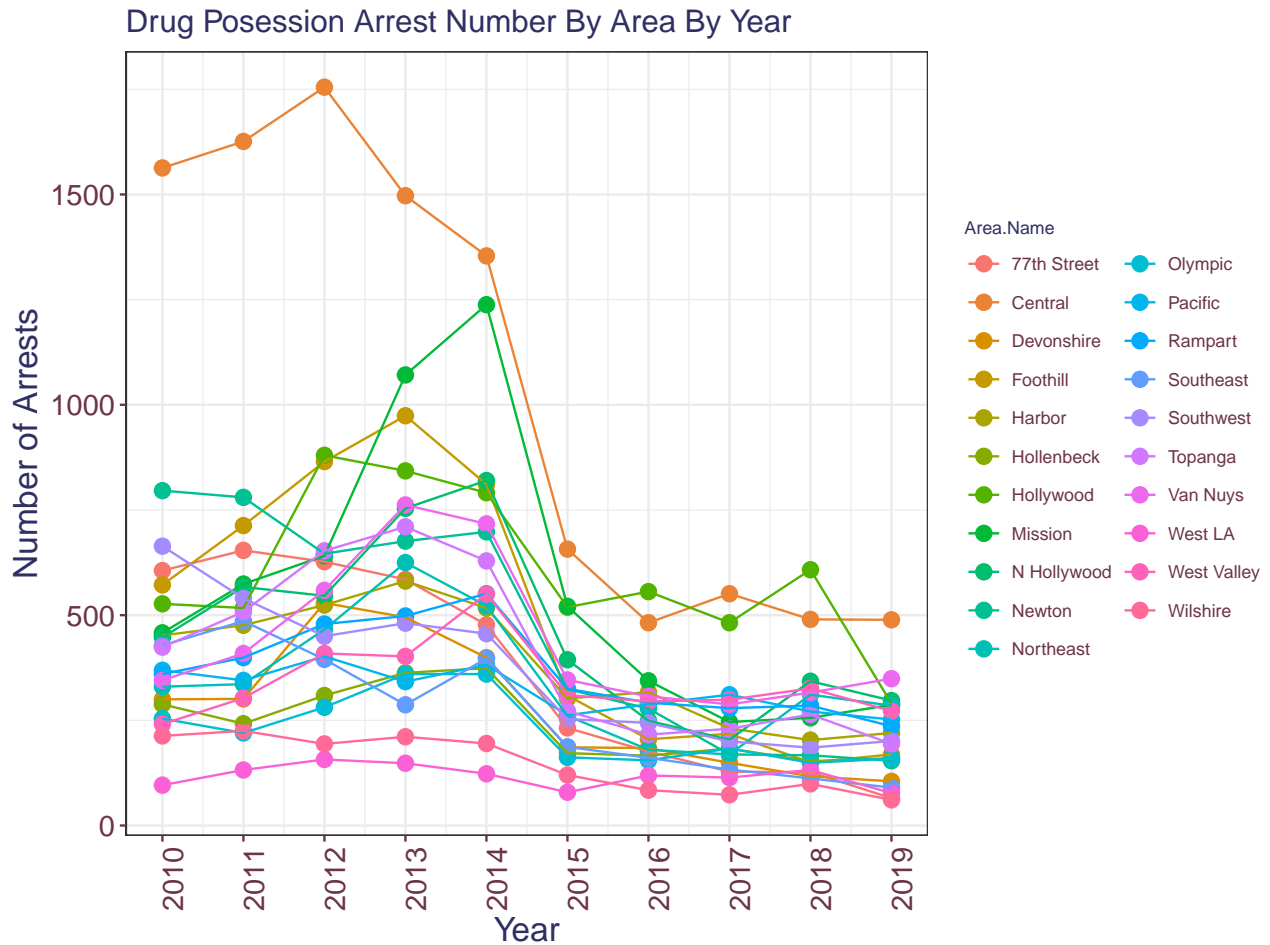
Top 5 Part 1 Crimes in Central Area



One type of crime that continues to stick out is “THEFT PLAIN - PETTY (\$950 & UNDER)”. It has been consistently the most common crime in the Central area. Another type of crime also sticks out as the kind with the most growth since 2014 is “BURGLARY FROM VEHICLE”. And now we know that increase in petty theft and car burglary is a big contributor to the overall increase in Part 1 Crimes and crimes in general in the Central area since 2014.

### Drug Possession Arrest In Central Area By Year

We are also going to take a look at the drug possession data set for the Central Area to see if the same increasing trend is happening for drug related arrests as well.



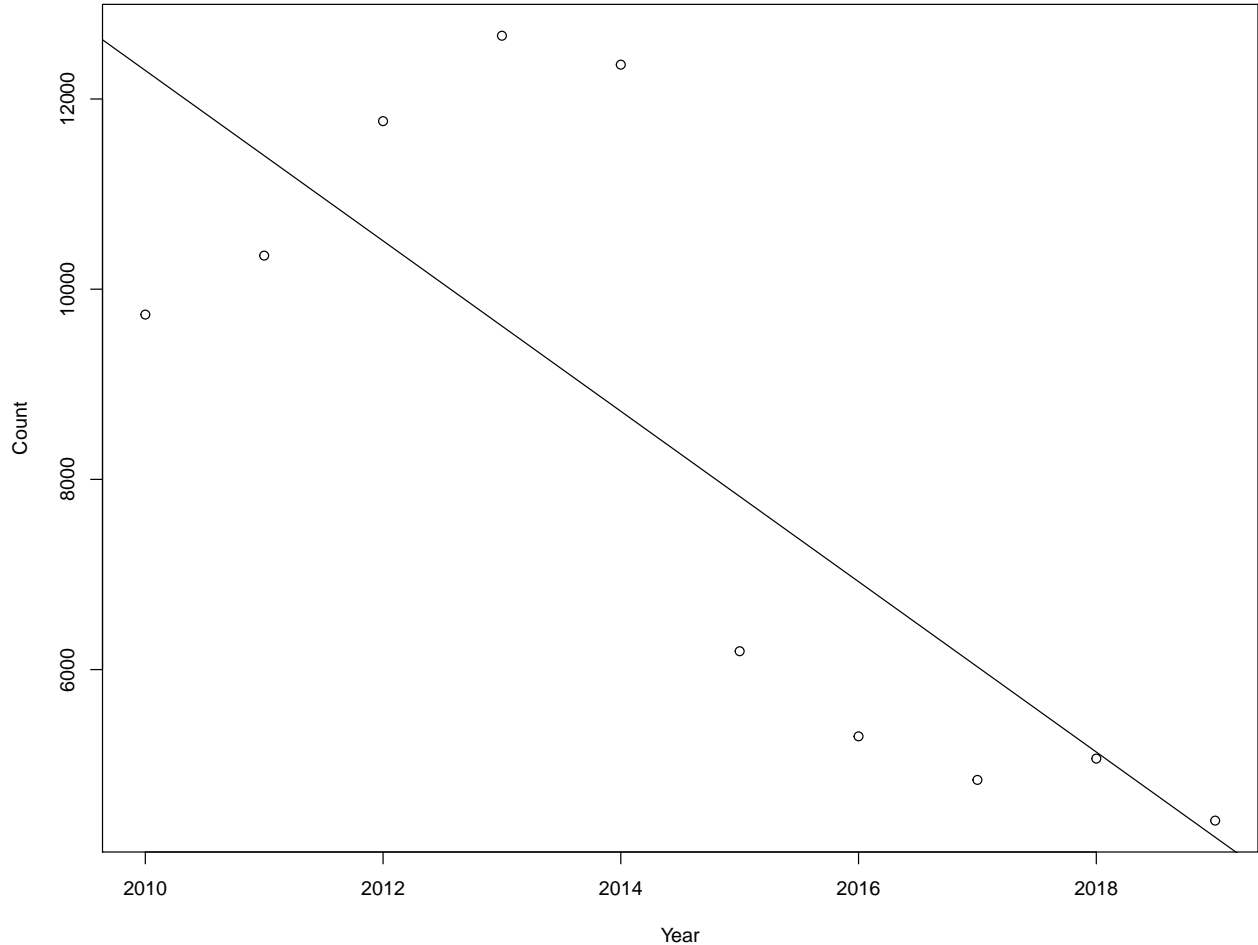
The Central area line in orange really stands out from the graph. It is the highest line on the graph, indicating that there are more drug arrests in Central area than any other areas in Los Angeles. We can also see a sharp downward trend for the Central area, opposite of the upward trend seen in crimes.

### Drug Arrest Trends

Unlike the increasing trends of crime in the central area. The drug arrest number is showing a decreasing trend. We plot this out with a fitted regression line of drug arrest number on year.

Table 2: Regression Fit

Parameters	Values
Coefficient	-895.9
R-Squared	0.6316
P-Value	0.006015



The -895.9 coefficient on the parameter Year means that there is a decreasing trend in the number of drug possession arrests on year. The R-squared value for this regression is 0.6316, which means that about 63% of the changes in number of arrests can be explained by Year. The P-value for this regression is 0.006015, which is less than 0.05, making Year a significant parameter in this regression.

## Conclusion

In terms of victim demographics, there are many takeaways that we can find from this analysis. We learned that males make up a much higher percentage of victims than females. Next, the African-American population makes up a higher proportion of victims, especially considering their smaller portion of the overall demographic makeup of Los Angeles. Finally, when both gender and ethnicity are taken into account, African-American females make up a higher proportion of victims altogether.

In terms of crime by areas in Los Angeles, there are also many takeaways that we have discovered. Firstly, we learned that the Central area of Los Angeles has had the largest increase in crime over the past decade.

This is likely because South Central Los Angeles has an extensive history of gang violence which has caused many feuds to this day. Taking a deeper dive into the Central area, we discovered that Part 1, or more severe, crimes make up the majority of crimes. Specifically, the most common crime committed was petty theft and burglaries from vehicles.

Tying in our secondary drug dataset, we learned that drug possession arrests in Los Angeles are going down. Even though crime seemed to have a relatively upward trend, drug possession arrests are on a downward trend which we found interesting. After conducting further research, we saw that Proposition 47, passed in 2014, reduced the possession of hard drugs from a felony to a misdemeanor. Thus, we think that this could be a reason why drug possession arrests are going down and is something we could research more in the future.

This analysis is important because of all of the things that crime statistics can accomplish. Firstly, the understanding of crime datasets, such as this one, can assist police departments. It allows for predictive policing because the statistics can be a tool in helping them anticipate an increased risk of crime. These statistics can allow law enforcement to focus on a specific area and allow resources to be used more efficiently. For instance, because petty theft and burglaries from vehicles seem to be the most common crime in Central Los Angeles, things can be put in place to lower the amount of times it occurs.

Crime statistics can also help with budget formation which is a vital part of law enforcement at all levels. Analyses such as these can show where resources are needed so that communities can be safer. For example, this data can be used to specify programs or communities that can receive criminal justice grants, such as ones for African-American females. It can also be used to figure out when and where police officers should patrol and at what times, such as in this case, the Central area likely needs the most patrol. Overall, the analysis of a city's crime data can help criminal justice professionals know whether or not their initiatives are successful.

This analysis of crime and drug data does not only assist criminal justice departments but many others as well, including but not limited to program evaluation entities, the business sector, the public sector, and academic researchers. Most importantly, knowledge of who victims are helps us understand our society better. It allows us to look at the raw facts and better digest information given to us by the news, media, and the public.

In the future, we can study more about different overlaps, such as the interaction between demographics and location. We can also look into specific programs and initiatives created to decrease crime and see how exactly this affects crime overall.

## **Appendix**

### **Data Sets Sources**

<https://data.lacity.org/A-Safe-City/Crime-Data-from-2010-to-2019/63jg-8b9z>

<https://data.lacity.org/A-Safe-City/Drug-Possessions-1-1-2010-1-23-2018/tds7-a3cj>

### **Data Sets Clean Up**

Please refer to the 2 R files that are submitted alongside this report for detailed information of the data preprocessing process. The file named "LA\_Crime\_Cleanup.R" is for the preprocessing of our primary data set. And the file named "LA\_Drug\_Cleanup.R" is for the secondary data set.

### **Other Sources**

<http://www.laalmanac.com/crime/cr02.php>

[https://en.wikipedia.org/wiki/Demographics\\_of\\_Los\\_Angeles](https://en.wikipedia.org/wiki/Demographics_of_Los_Angeles)

[https://www.ppic.org/wp-content/uploads/r\\_0618mbr.pdf](https://www.ppic.org/wp-content/uploads/r_0618mbr.pdf)

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<https://aizmanlaw.com/the-history-of-los-angeles/>  
<https://www.cbsnews.com/news/2015-was-a-violent-year-in-los-angeles/>  
[https://laist.com/2020/01/15/violent\\_crime\\_Los\\_Angeles\\_LAPD\\_Michel\\_Moore\\_homicide\\_property\\_crime\\_hit\\_and\\_run.php](https://laist.com/2020/01/15/violent_crime_Los_Angeles_LAPD_Michel_Moore_homicide_property_crime_hit_and_run.php)  
<https://www.cbs.nl/en-gb/news/2018/51/fewer-women-than-men-fall-victim-to-violence>  
<https://www.bjs.gov/index.cfm?ty=tp&tid=955>  
<https://www.waldenu.edu/online-bachelors-programs/bs-in-criminal-justice/resource/why-national-crime-statistics-are-important>  
<https://www.nap.edu/read/23492/chapter/5#101>  
[https://en.wikipedia.org/wiki/Crime\\_in\\_Los\\_Angeles#South\\_Central\\_L.A.](https://en.wikipedia.org/wiki/Crime_in_Los_Angeles#South_Central_L.A.)  
[https://www.desertsun.com/story/news/crime\\_courts/2016/12/14/prop-47-crime-drug-impact/94635940/](https://www.desertsun.com/story/news/crime_courts/2016/12/14/prop-47-crime-drug-impact/94635940/)  
<https://xtown.la/2020/01/16/lapd-making-almost-half-as-many-arrests-as-a-decade-ago/>