

Los Angeles Homelessness Project

DSO 545 Final Project – Fall 2017
Xiwen Chen, Ting Gu, Ying Liu, Xi Yuan, Shuxiao Zhou

PART I: Introduction

Our goals of this project are to measure the homeless density based on time and location, to identify potential risks and health issues towards homeless people, to figure up the services and shelters provided by the governments and institutions, and to provide implantable recommendations for the city of Los Angeles.

We will discuss the data sets we used first, and then we will analyze the homeless distribution and crime distributions over time and location. We will also discuss the location of services and shelters provided.

Our recommendation will mainly focus on providing affordable places to live and preventing the increasing number of homeless. We recommend the City of Los Angeles to build more affordable housing, provide easier access to the shelters and services, offer more employments and career training programs, and cooperate with hospitals and prisons to provide local and mental services.

PART II: Data Sets

311 Calls:

- 311 Calls that reported homeless from 01/01/2017 to 11/01/2017
- Including reported time, location, and reporting sources

Crime Data:

- Crimes (victims are homeless people) happened between August 2016 to October 2017
- Including crime type, time, location, and victim demographics

Shelter Data:

- Shelter's location, descriptions, links and time

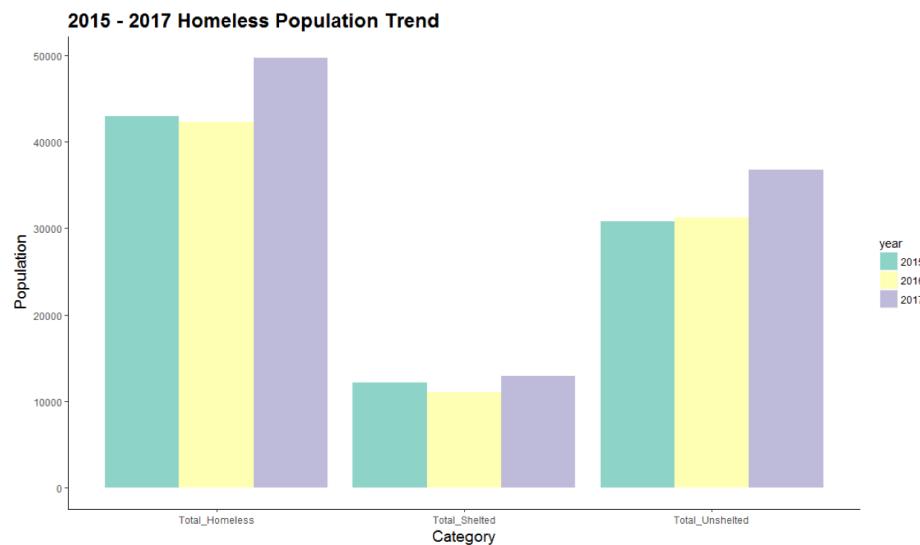
Homeless 2015 - 2017:

- Homeless' demographic in year 2015, 2016 and 2017
- Including location, sheltered/unsheltered, with/without youth, and with/without family members

PART III: Data Analysis

Overview:

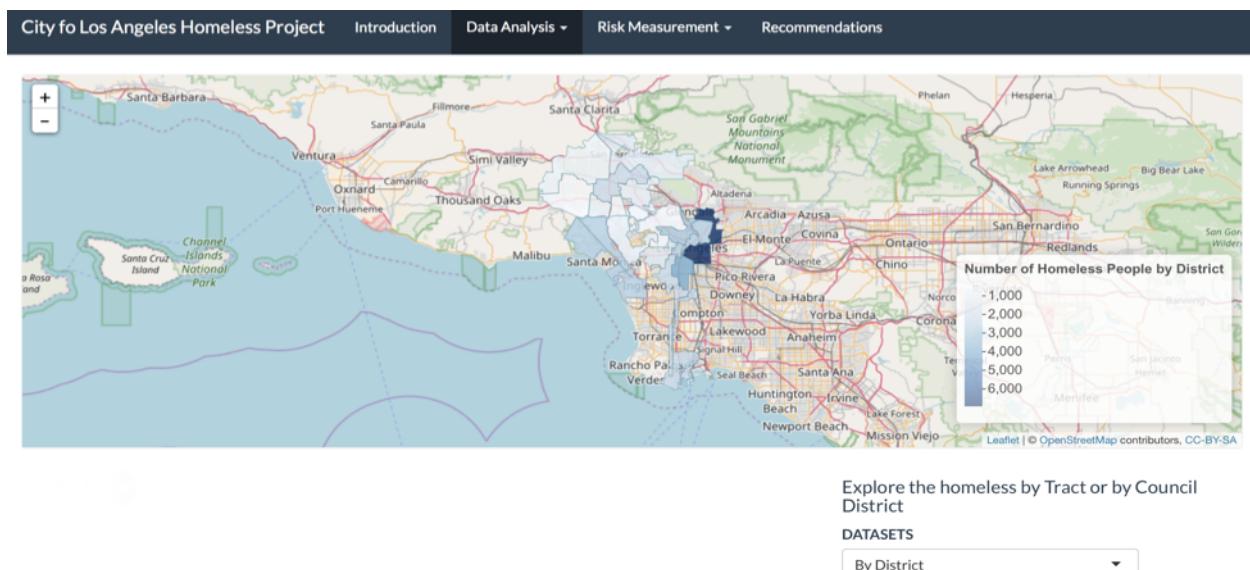
2015 – 2017 Homeless Population Trend:



- We build a bar chart to see the population of homeless people. Though having a slight decrease in 2016, the total homeless people registered a huge increase in Los Angeles County in 2017 . The majority of the homeless people are unsheltered.

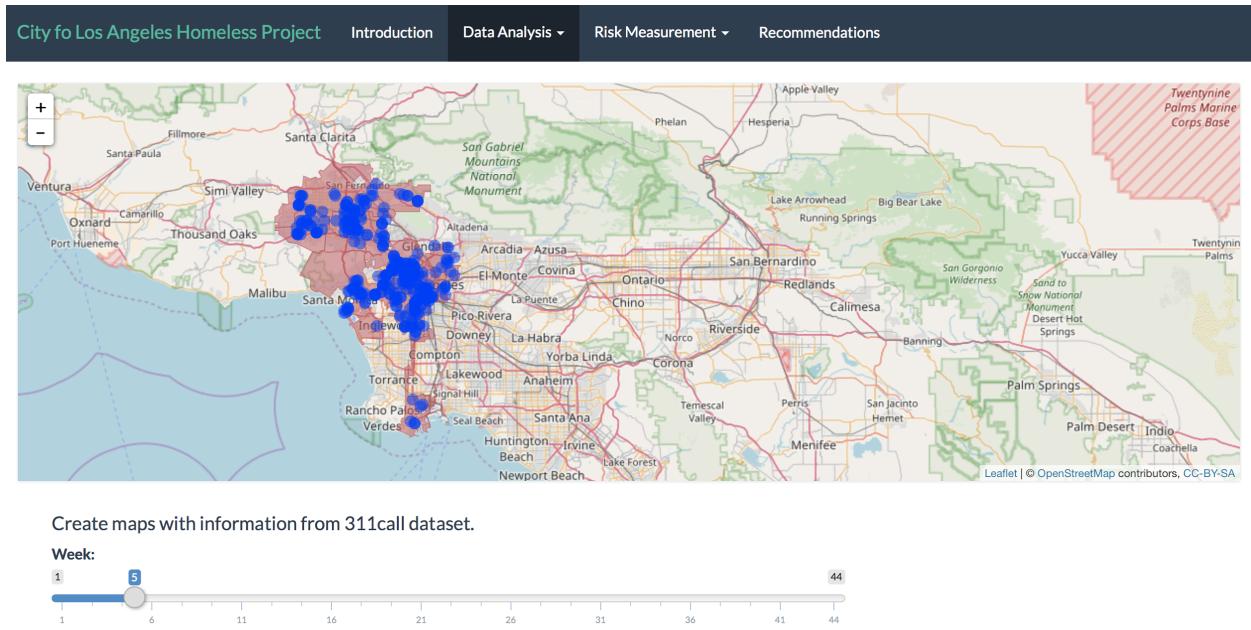
Data Analysis:

Number of Homeless People by District:



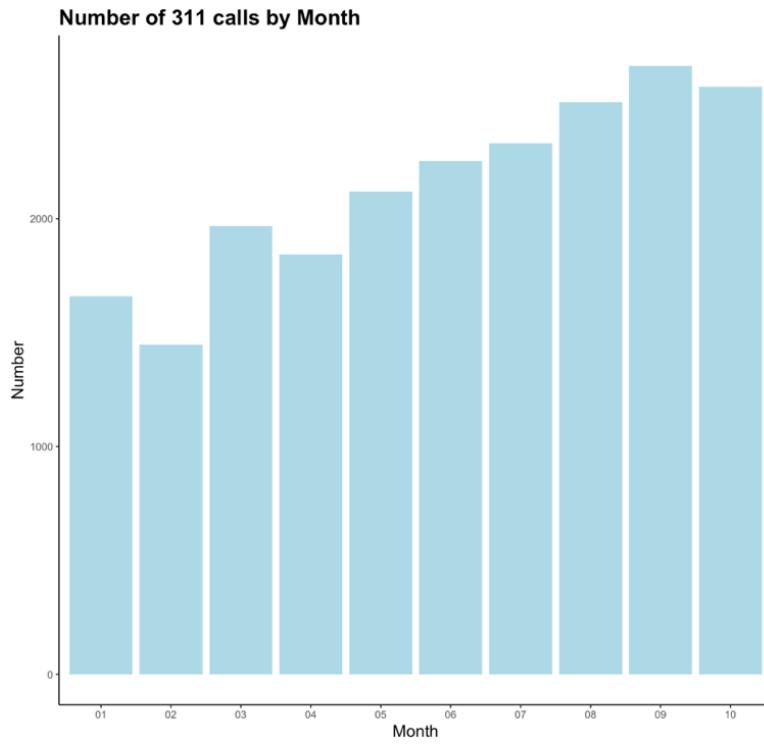
- This interactive map is built both on a tract level and a council district level to see where the homeless people are in Los Angeles city. On either level, the downtown area of Los Angeles city has the greatest number of homeless people.
- You can change the area boundaries by switching the mapping dataset on the bottom right.

Change of Locations of 311 Calls Reported Through Week:



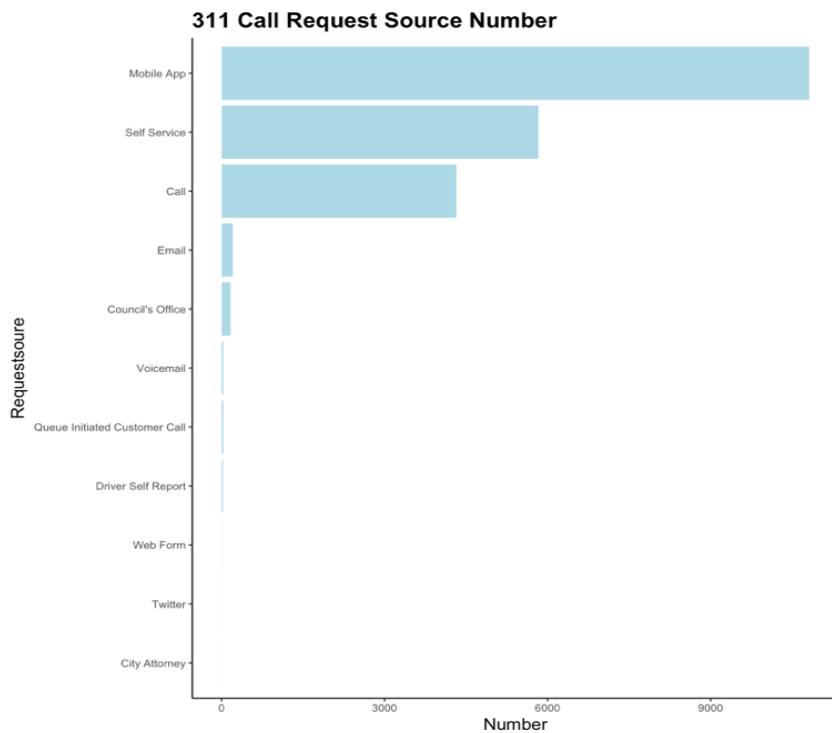
- We build an interactive map, based on the 311 calls received each week and locations, to show the movement of homeless population. The red area is the Los Angeles city, where we focused our analysis on. Each blue circle represents a 311 call received. The area that contains most of blue circles indicates higher number of 311 calls received.
- You can move the weeks to see how the population and distribution of homeless people changed, based on the 311 calls data. The city of Los Angeles can use this map to determine when and where they should allocate more resources to help the homeless people.

Number of 311 Calls by Month:



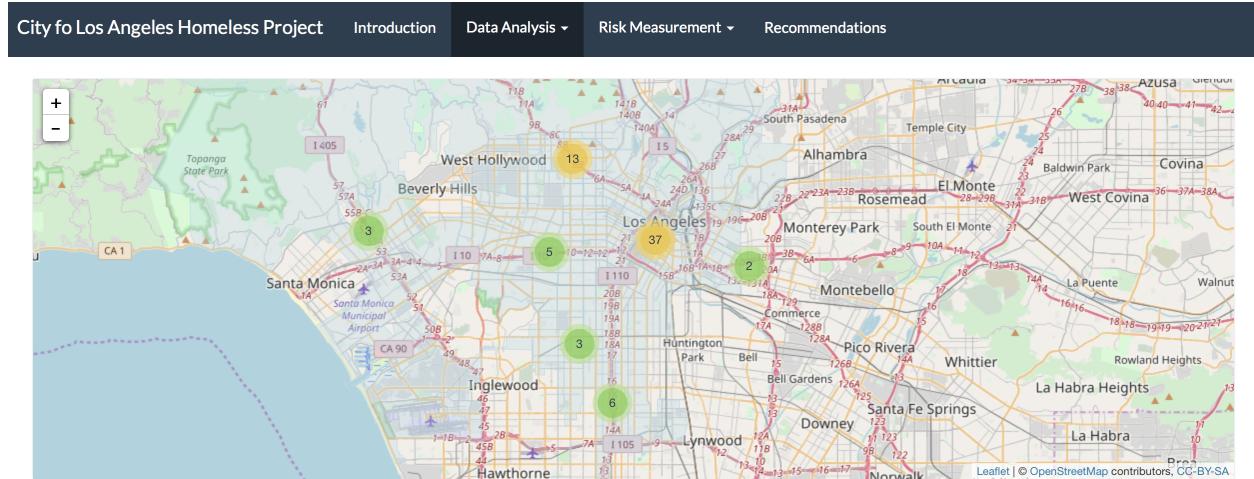
- We plotted the total number of 311 calls received by month from January 2017 to October 2017. We can see a clear increasing trend of the number of 311 received from February to September. The months that have the highest 311 calls are August, September and October.
- There are more 311 calls received in summer than the winter time. One reason that in summer the number of 311 calls is higher is that there are more homeless people on the street in the summer. Another possible reason is that in the summer people are more active and like to go outside. Therefore, they may have more chance to see homeless people outside.
- The city of Los Angeles could provide more shelters and services in the summer time, when the number of homeless people are on the peak. In the winter time, the city of Los Angeles could encourage residents to report the homeless they saw.

311 Call Request Source:



- We plotted the number of 311 calls received by the difference source, such as mobile App and calls. We can see from the chart that about 50% of people reports homeless by mobile App. Other common sources used to report homeless people are self-service, call and emails.
- Since there are more people like to use mobile app to report homeless, the city of Los Angeles could perfect their apps to simplify the reporting process. Moreover, city of Los Angeles can also send out notification to the residents using apps to let them know when the cases they reported are resolved.

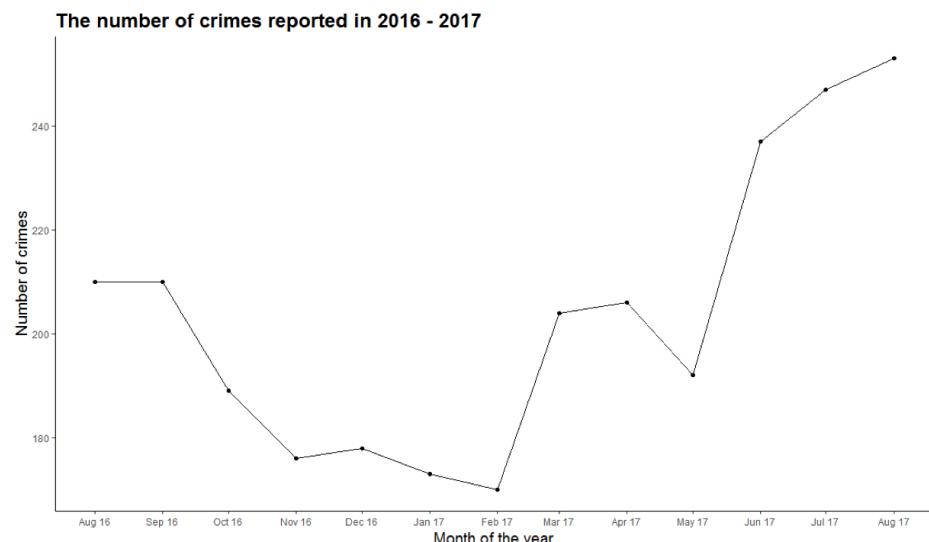
Distribution of Shelters in Los Angeles City:



Zoom in and Zoom out to see more specific distributions of shelters

- We built an interactive map to see how the shelters that we have so far in Los Angeles city are distributed.
- Most of the shelters are distributed around Los Angeles City. Among those, 37 shelters are located in the downtown area of Los Angeles City as is depicted in the above screen shot.
- You can zoom in or zoom out to see how those shelters are distributed on different scales.
- It is necessary to build more shelters where homeless people are most gathered.

Number of Crimes Reported in 2016 – 2017:

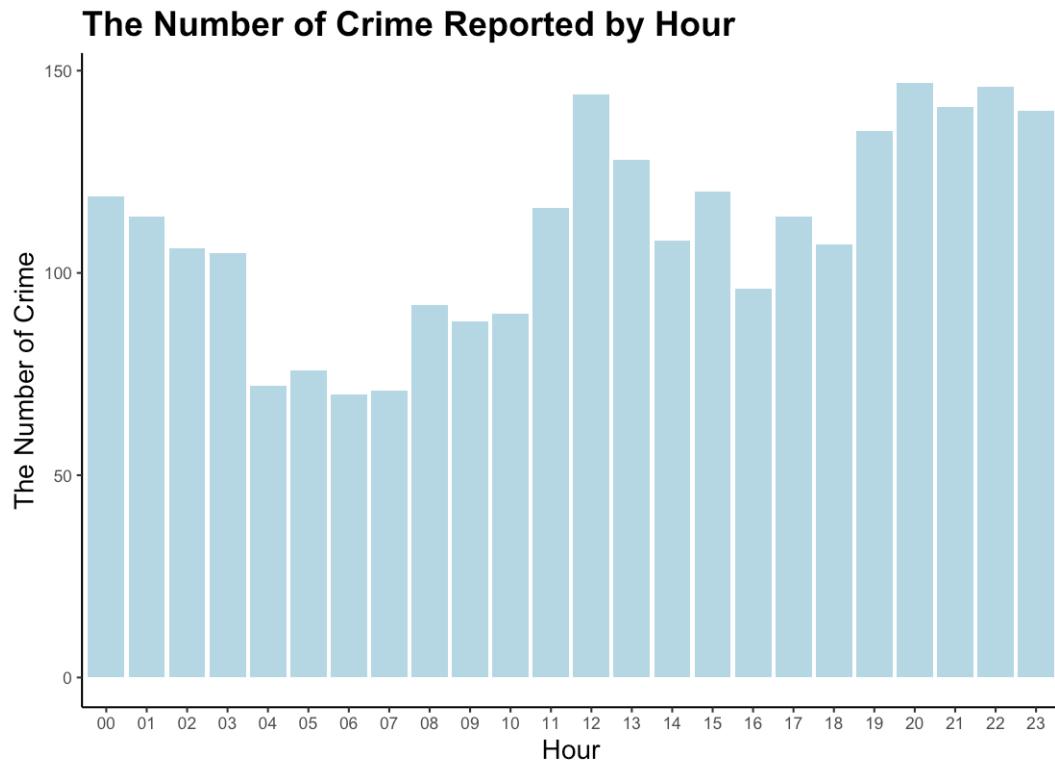


- We plotted the number of crimes reported from August 2016 to August 2017, and try to figure out the relationship between months and the number of crimes. It's obvious to see

from the graph that the number of crimes reported in the winter season (from November to February) is greater than the number of crimes reported in the summer season (from June to September).

- One possible explanation of this trend is that there are more homeless people on the street in the summer, so they will face high risks of being hurt. Meanwhile, people tend to be more active in summer than in winter. More outdoor activities in summer months might be a possible cause of this trend.
- Even in the same month, we could see that the number of crimes reported in 2017 is greater than that reported in 2016, which is consistent with the trend of homeless population from 2016 to 2017.

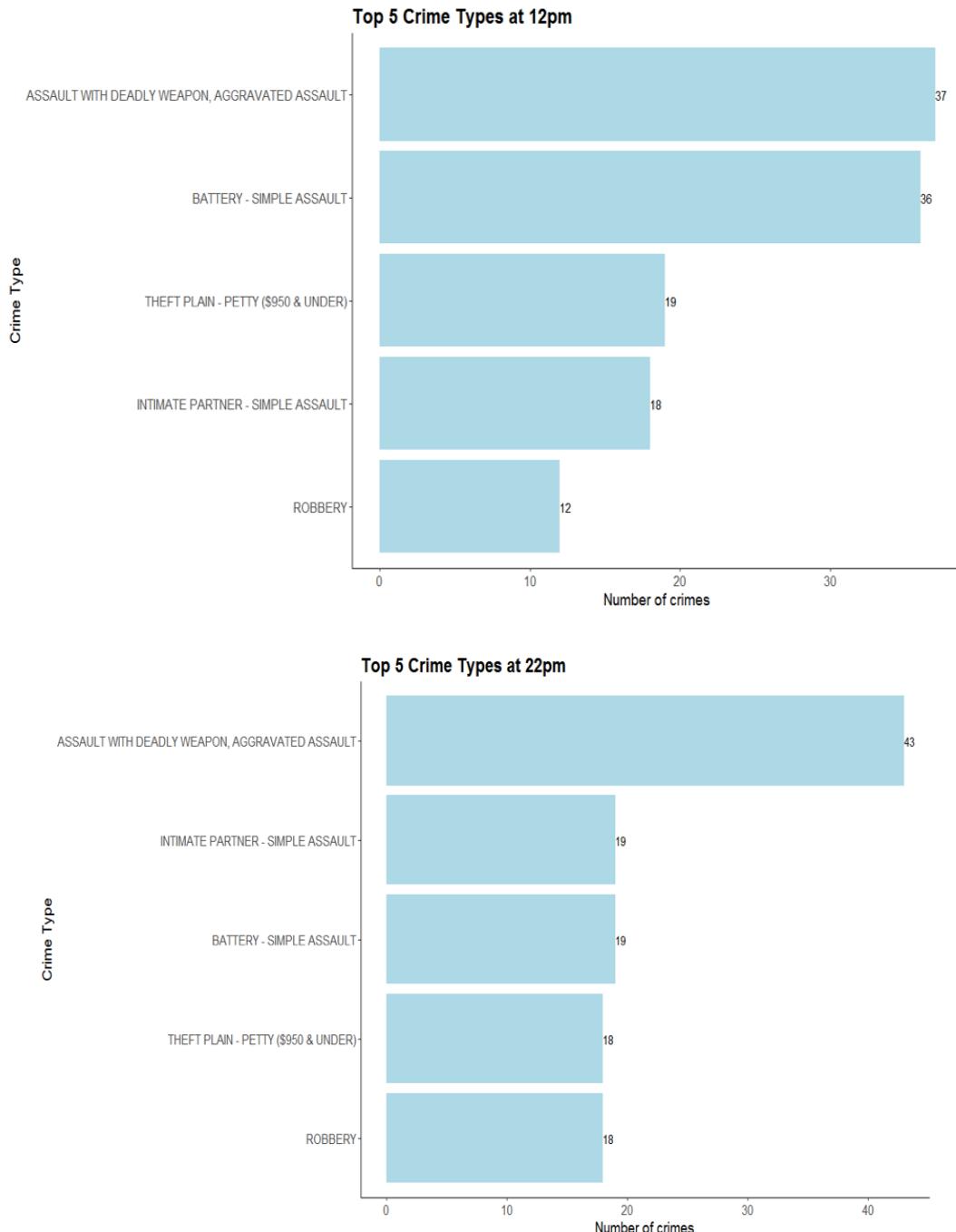
Number of Crimes Reported by Hour:



- We plotted the number of crimes reported by hour. In general, there are more crimes reported at noon and midnight.
- It's reasonable that more crimes reported at midnight because criminals usually show up in the evening and there is less police on the street. However, the possible reason that there are more crimes reported at noon is there are more witnesses on the street because people usually go out for lunch.

- The suggestion for reducing the number of homeless victims is that to add more police on the street at midnight, and set up an emergency service line for the homeless people.

Major Crimes During Peak Hours for Crimes Committed on the Homeless:

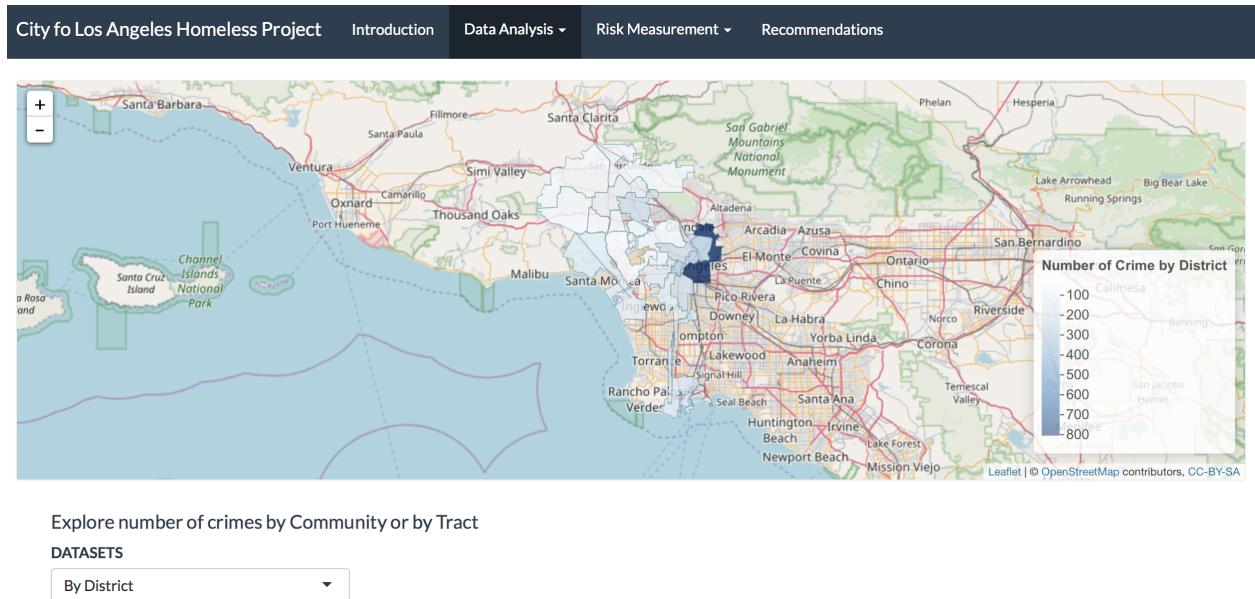


- In order to figure out the most serious crime type happened at noon and midnight, we plotted the top 5 crime type reported at 12pm and 22pm respectively. Top 5 crime types reported at 12pm are assault with deadly weapon, battery – simple assault, theft plain – petty, intimate partner, and robbery. And top 5 crime types reported at 22pm are assault

with deadly weapon, intimate partner, battery – simple assault, theft plain – petty, and robbery.

- We could see there are not a lot of differences of crime types between midnight and noon. And it also confirms our hypothesis that there are more witnesses at noon to report the crimes associated with homeless people.

Number of Crimes by District:



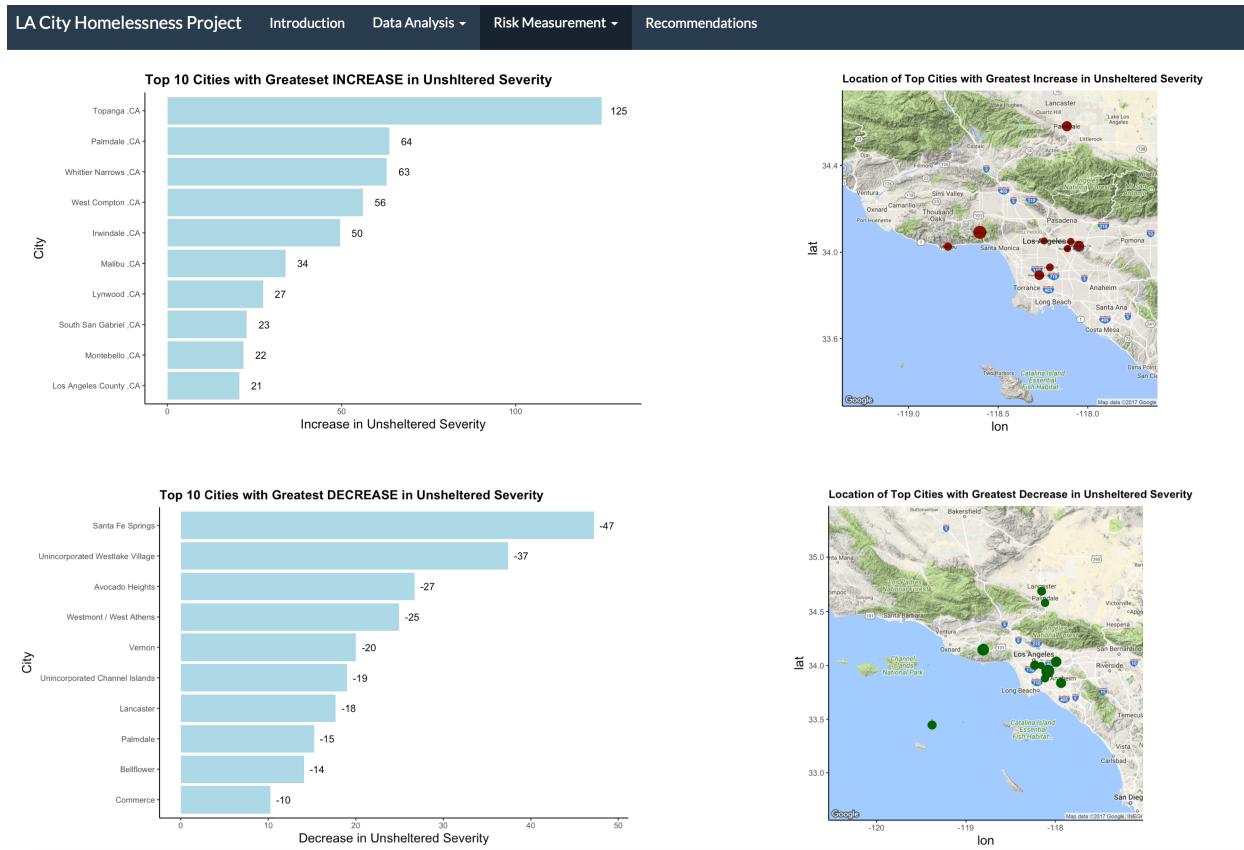
Explore number of crimes by Community or by Tract

DATASETS

By District

- This graph illustrates a geographical map of the Los Angeles city divided into different Council Districts. The color scale corresponds to the number of crime associated with the districts.
- We see that the area highlighted in dark blue is Council District 14, which mostly covers the downtown Los Angeles Area. Note that this district is also the area with the highest number of homeless people. This district sees total crime of 802. The number is 4.8 times the average number for all districts, and is 2.93 times higher than the second highest district, district 1 with crime number of 274. Furthermore, the top 2 districts are also next to each other.
- Therefore, we can conclude that the downtown area, covering district 14 and district 1 are most severe areas regarding number of crimes.

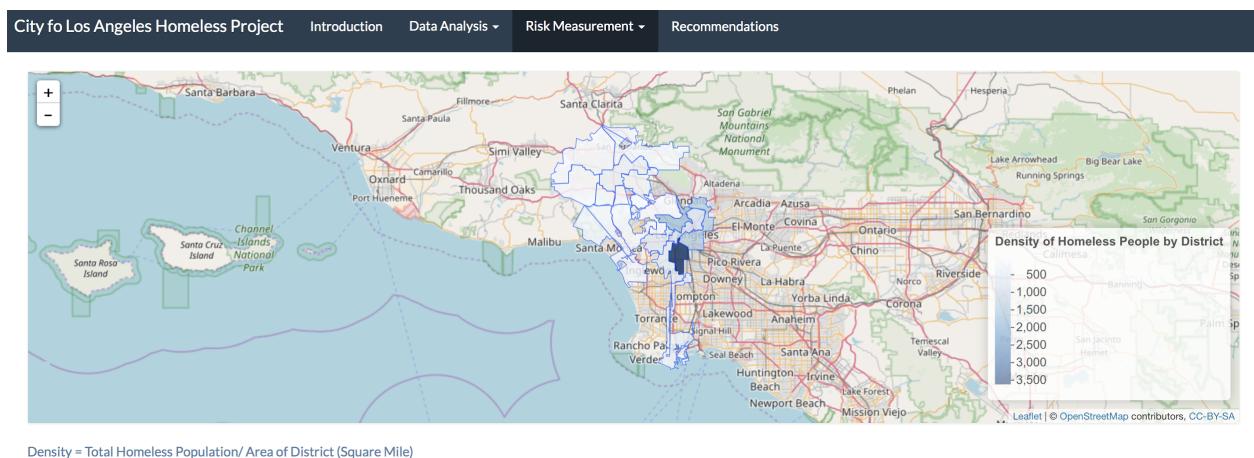
Unsheltered severity:



- When looking at unsheltered people in the County of Los Angeles, we developed a measurement called “Unsheltered Severity” Index for each city. It is calculated as multiplying the number of unsheltered homeless people with the percentage of unsheltered homeless people. We developed this measurement because we noticed that certain cities have very high amount of unsheltered homeless, yet the percentage compared the total homeless people is relatively low because the total amount of homeless people is very high. Similarly, certain cities have low number of homeless people compared to other cities, yet the percentage of unsheltered homeless is very high.
- After calculating the “Unsheltered Severity” index for each city and for each year, we calculated the change in severity over the years. For the cities with data for all three years (2015 – 2017), we calculated the change from 2015 to 2017. For cities with data for only two years (2016 – 2017), we calculated the change from 2016 to 2017. We then ranked the cities with the top 10 increase and decrease in “Unsheltered Severity”. Cities showing increase in unsheltered severity imply that they are doing worse over the years, and cities showing decrease in unsheltered severity mean that they are doing better in diminishing unsheltered homeless. We also made two graphs to demonstrate the locations of the cities on geographical maps for the top increasing and decreasing cities. The size of the dot represents the scale of increase or decrease in severity. The bigger the dot, the more change we see over the years.

- We see that the top 10 cities that see the most increase in unsheltered severity are Topanga, Palmdale, Whittier Narrows, West Compton, Irwindale, Malibu, Lynwood, South San Gabriel, Montebello, and Los Angeles County (in order). These cities should investigate the reasons behind the increase, especially Topanga that sees an increase of 125 index points over the years. The top 10 cities that see the most decrease in unsheltered severity are Santa Fe Springs, Unincorporated Westlake Village, Avocado Heights, Westmont/ West Athens, Vernon, Unincorporated Channel Islands, Lancaster, Palmdale, Bellflower, and Commerce (in order). We can also conduct more research to explore what has caused the decrease and perhaps implement similar measures to other cities.

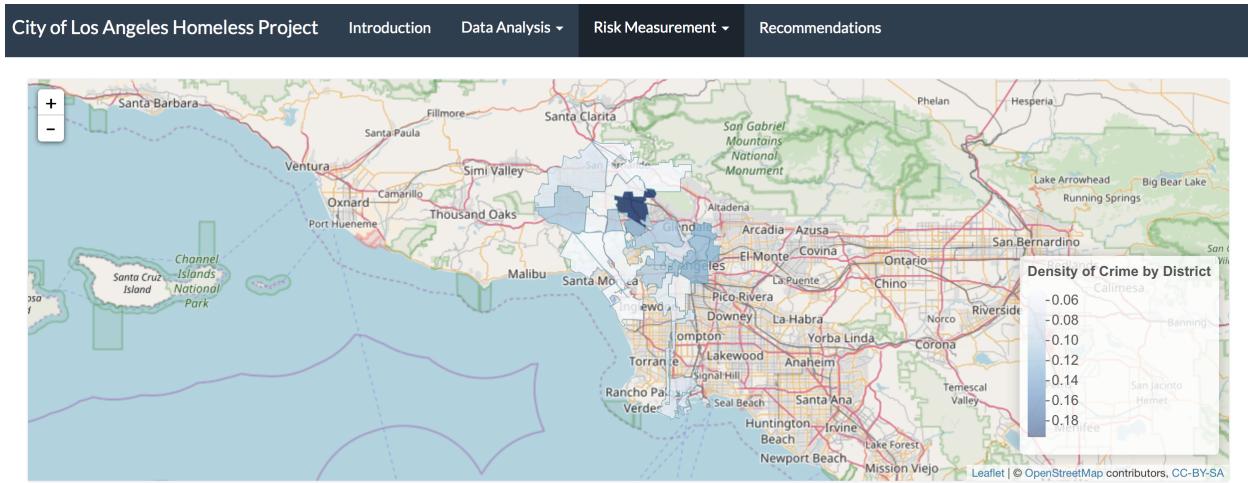
Density of the Homeless People:



Density = Total Homeless Population/ Area of District (Square Mile)

- This chart shows a geographical chart of Los Angeles City map, in which the color scale represents the density of total homeless people density by council district. Density is calculated as the total homeless people divided by council district area. The darker the area, the higher the density.
- From the map, we can see that council district 14 has the highest density with more than 250 homeless people per square mile. District 14 consists of all or part of the neighborhoods of the Downtown, Boyle Heights, Eagle Rock, El Sereno, Garvanza, Glassell Park, Lincoln Heights, and Monterey Hills. In accordance with the total homeless people distribution, downtown area also has high density even when considering area in.

Density of Crime By District:



- This chart shows a geographical map of the Los Angeles County divided into different Council Districts. The color scale shows the crime density associated with the district.
- Crime density is calculated as the number of crime victims divided by total homeless people in the area. The darker the color of the district, the higher the crime density.
- We see that the areas with the highest density (dark blue) are adjacent to each other. The top three districts with the highest crime density are Council District number 2, 14, and 1. District 2 covers mostly the communities of North Hollywood, Studio City, Sun Valley. And District 14 and 1 covers most of downtown Los Angeles area. District 2 has an exceptionally high crime density of 0.196 crimes per square mile, while the second-place district 14 has a crime density of 0.116 crimes per square mile, and third-place district 1 has a density of 0.111. In general, we observed that the areas closer to downtown usually has a higher crime density.

PART IV: Recommendations

To achieve the goal of reducing homelessness in LA by 50% by the year of 2020, our recommendation comes in two parts. First is to decrease the number of currently homeless people. Second is prevention.

1. Affordable Housings – “Tiny Houses”

- First way to decrease the number of currently homeless people is to build more affordable housing. Areas with higher homeless density, severity, and crime rate according to the data should be given priority. In addition, on top of traditional permanent housing accommodations, we found there is a project called “tiny houses”. It’s a low-cost temporary housing that serves as a bridge between gutter and permanent housing. It has all the living necessities inside and can greatly reduce health and crime risks for the homeless.

2. Branches for Successful Shelters – Focus on Career Training

- Second way to decrease the number homeless is to provide more Shelter and Services. Similarly, they should be built in the most severe areas as identified by the data. We recommend opening more branches of existing successful shelters. For example, the Union Station Homeless Service in Pasadena helped reduce homeless in the city by 54% since 2009. The shelters should be more focused on career training, job seeking, and mental consultation, instead of merely providing a place to sleep.

3. Easier Accesses to Shelters and Services

- With more facilities in place, we also need to have easier access to the services. Currently, only 16% of homeless people seek local services. This low ratio is largely due to difficult access to services. We recommend setting up service points at local stores such as 7-11, Walgreen, and CVS. The service points should provide free calling service to local shelter, easy application process to shelters, basic drugs for those in need, consultation service for mental issues, and report for crimes and dangers.

4. Employment Programs

- Since the majority of homelessness is caused by unemployment, we recommend setting up better employment programs to help the homeless better seek a job. First, we can recruit people who previously graduated from successful shelter to build new shelters in the severe areas. Depending on their individual skills, they can be hired as construction workers, administrative staff, cooks, or teachers. Second, we suggest initiating a “Buddy Program” to connect previous homeless people with new homeless people. People escaped from homeless can introduce job opportunities, provide mental support, and teach ways to combat homelessness and poverty.

5. Homeless Prevention

- The second part of our recommendation is prevention. Currently, 25% of single adult homeless suffer from mental illness, and 20% of people released from incarceration go to the street. The news and public has concluded that people released from mental hospitals and prisons without proper accommodations are a huge cause for homelessness. Therefore, we recommend forming better connection between mental hospitals and local homeless services, as well as between jails and homeless services. It can prevent mentally-ill people released from hospitals from going on the street, as well as those released from the prison. Since they usually need to readjust to lives outside of the hospital and prison, they can spend time in shelter services to acquire the basic skills necessary for employment.