

Capstone Project

The Battle of Neighborhoods

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1. Introduction

Los Angeles with an estimated population of nearly 4 million, is the largest city in California, second-largest city in the United States. LA is also known for its ethnic and cultural diversity and it as well has a diverse economy and businesses. For a big city like this, it draws people from around the world to pursue their dream.

Business Problem:

This project aims to help real estate investors investing in the right location. Los Angeles is a city formed by people with various ethnicity and races. The neighborhood in the county varies from one another. By analyzing different factors, we are able to come up with the location where can give the investors bigger return.

2. Data

- ♦ **US Cities**

The dataset contains information such as city name, county, state, latitude and longitude. This dataset is used to generate map.

(Source: <https://simplemaps.com/data/us-cities>)

- ♦ **Foursquare API**

Foursquare API is used to explore neighborhood around selected location and return its top venues.

- ♦ **LA crime data**

The dataset contains crime rate for each city in LA.

(Source: https://en.wikipedia.org/wiki/California_locations_by_crime_rate)

- ♦ **Rent data**

This dataset contains rent data in different area.

(Source: https://www.huduser.gov/portal/datasets/fmr.html#2021_data)

- ♦ **Zip code data**

This dataset contains zip code, city name, latitude and longitude in CA.

(Source: <https://public.opendatasoft.com/explore/dataset/us-zip-code-latitude-and-longitude/export/>)

3. Methodology

First, we are going to import the libraries we are going to use in the project.

```
import pandas as pd
import numpy as np # library to handle data in a vectorized manner
import requests

import plotly.graph_objects as go
import plotly.express as px

print('Libraries imported.')
```

Libraries imported.

After all the libraries are imported, we are ready to work with our data.

Data wrangling

We are now importing our first dataset – US cities. However, we don't necessarily need all the information in the dataset. Therefore, we are going to filter out only the data that has the county name "Los Angeles".

	city	city_ascii	state_id	state_name	county_fips	county_name	lat	lng	population	density	source	military	incorporated	t
1	Los Angeles	Los Angeles	CA	California	6037	Los Angeles	34.1139	-118.4068	12750807	3276	polygon	False	True	America/Los_
93	Long Beach	Long Beach	CA	California	6037	Los Angeles	33.7981	-118.1675	462628	3523	polygon	False	True	America/Los_
125	Lancaster	Lancaster	CA	California	6037	Los Angeles	34.6935	-118.1753	343304	645	polygon	False	True	America/Los_
143	Santa Clarita	Santa Clarita	CA	California	6037	Los Angeles	34.4175	-118.4964	312446	1162	polygon	False	True	America/Los_

There's still too many columns and we don't need all of them. So we select the columns we need and make them into a new column.

	city	state_name	county_fips	county_name	lat	lng
1	Los Angeles	California	6037	Los Angeles	34.1139	-118.4068
93	Long Beach	California	6037	Los Angeles	33.7981	-118.1675
125	Lancaster	California	6037	Los Angeles	34.6935	-118.1753
143	Santa Clarita	California	6037	Los Angeles	34.4175	-118.4964
226	Glendale	California	6037	Los Angeles	34.1818	-118.2468

Foursquare API

We now obtain the cities in LA county. In the next step, we are going to explore the neighborhood in these cities using foursquare API.

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Los Angeles	34.1139	-118.4068	Poolside BH	34.113805	-118.403169	Pool
1	Long Beach	33.7981	-118.1675	Signal Hill Skyline	33.799343	-118.165590	Park
2	Long Beach	33.7981	-118.1675	Hilltop Park	33.799255	-118.165109	Park
3	Long Beach	33.7981	-118.1675	The Home Depot	33.801868	-118.166359	Hardware Store
4	Long Beach	33.7981	-118.1675	Mother's Market & Kitchen	33.802214	-118.168039	Organic Grocery
...
1077	Industry	34.0175	-117.9267	Red Restaurant @ Pacific Palms Hotel & Conferen...	34.020758	-117.926322	Restaurant
1078	Industry	34.0175	-117.9267	St. Andrew's Commons	34.020777	-117.927096	Golf Course
1079	Industry	34.0175	-117.9267	Panaderia La Mexicana	34.014103	-117.923180	Bakery
1080	Vernon	34.0019	-118.2106	Loveseat.com Online Furniture Auction Los Angeles	33.999964	-118.206722	Furniture / Home Store
1081	Vernon	34.0019	-118.2106	Express Mold	34.000675	-118.205650	Business Service

One hot encoding

Before going into clustering, we prepared the data using one hot encoding. One hot encoding is often used when it comes to categorical data. What it does is to turn categorical data to dummy numbers to work with machine learning algorithm.

	Neighborhood	ATM	Accessories Store	Airport	American Restaurant	Andhra Restaurant	Antique Shop	Arcade	Argentinian Restaurant	Art Gallery	...	Video Game Store	Video Store	Vietnamese Restaurant	Vineyard	Warehou Stc
0	Los Angeles	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0
1	Long Beach	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0
2	Long Beach	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0
3	Long Beach	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0
4	Long Beach	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0

5 rows × 221 columns



LA_onehot.shape

(1082, 221)

Next step we are going to group rows by neighborhood and by taking the mean of the frequency of occurrence of each category.

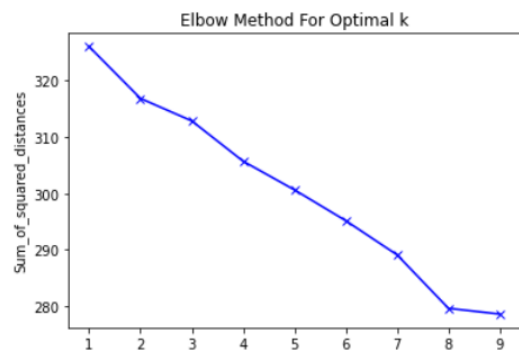
	Neighborhood	ATM	Accessories Store	Airport	American Restaurant	Andhra Restaurant	Antique Shop	Arcade	Argentinian Restaurant	Art Gallery	...	Video Game Store	Video Store	Vietnamese Restaurant	Vineyard	V
0	Acton	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.000000	0.0	0.0	0.0
1	Agoura Hills	0.047619	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.000000	0.0	0.0	0.0
2	Agua Dulce	0.000000	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.000000	0.0	0.0	0.0
3	Alhambra	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.076923	0.0	0.0	0.0
4	Alondra Park	0.000000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0.0	0.000000	0.0	0.0	0.0

Then we obtain the top 10 most common venues in the neighborhood.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Acton	Sandwich Place	Yoga Studio	Dog Run	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant	Farmers Market	Farm
1	Agoura Hills	Fast Food Restaurant	ATM	Italian Restaurant	Pharmacy	Pizza Place	Coffee Shop	Deli / Bodega	Shipping Store	Mexican Restaurant	Smoke Shop
2	Agua Dulce	Airport	Yoga Studio	Donut Shop	Food & Drink Shop	Food	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant
3	Alhambra	Convenience Store	Video Store	Pizza Place	Pet Store	Business Service	Fast Food Restaurant	Breakfast Spot	Sporting Goods Shop	Hardware Store	Mexican Restaurant
4	Alondra Park	Park	Yoga Studio	Dog Run	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant	Farmers Market	Farm

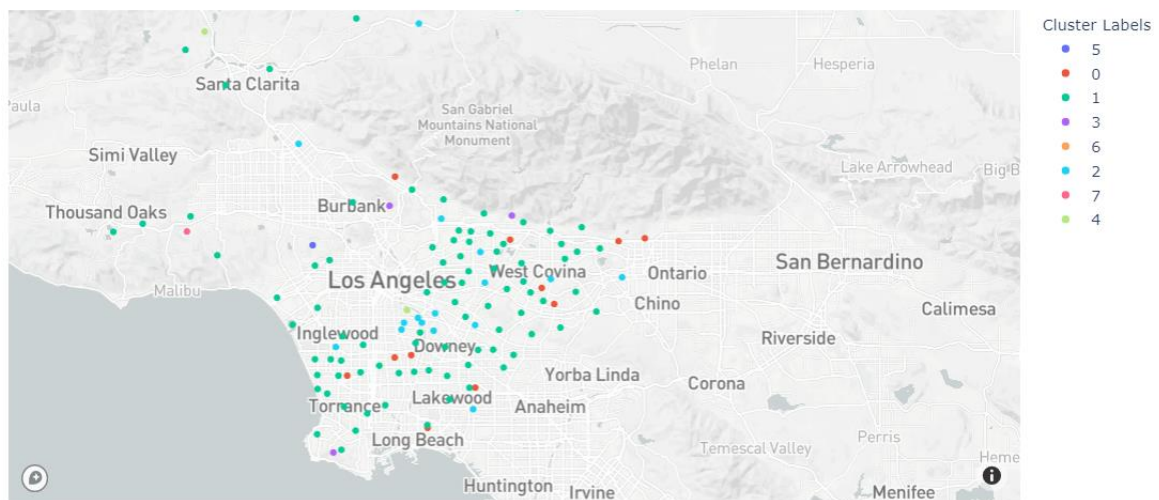
K-Means Clustering

After the data are fully prep, we are ready to work on clustering. First of all, we need to run the elbow method to obtain the best k for our groups. According to the result, we should make the data in to 8 groups.



Data Visualization

Data visualization helps people better understand the data. The data visualization used in this project in plotly. We used it to create a scatter plot of the clusters.



Now we are going to import dataset - LA crime data to help us get a better insight into the area. We are going through another process of data wrangling. We joined the crime data with LA_new to obtain the latitude and longitude of each location. Once we have all the data on the same data frame, we can go ahead and make it into a graph.

	city	County	Population	Populationdensity	Violent crimes	Violent crime rateper 1,000 persons	Property crimes	Property crime rateper 1,000 persons	state_name	county_fips	county_name	lat	lng
0	Los Angeles	Los Angeles	3906772	8335.9	19171	4.91	83139	21.28	California	6037	Los Angeles	34.1139	-118.4068
1	Long Beach	Los Angeles	471123	9366.1	2304	4.89	12438	26.40	California	6037	Los Angeles	33.7981	-118.1675
2	Compton	Los Angeles	98224	9810.6	1129	11.49	2619	26.66	California	6037	Los Angeles	33.8930	-118.2275
3	Lancaster	Los Angeles	160190	1698.8	891	5.56	3661	22.85	California	6037	Los Angeles	34.6935	-118.1753
4	Palmdale	Los Angeles	158210	1493.0	840	5.31	3219	20.35	California	6037	Los Angeles	34.5944	-118.1057
5	Inglewood	Los Angeles	111997	12350.8	783	6.99	2740	24.46	California	6037	Los Angeles	33.9566	-118.3444

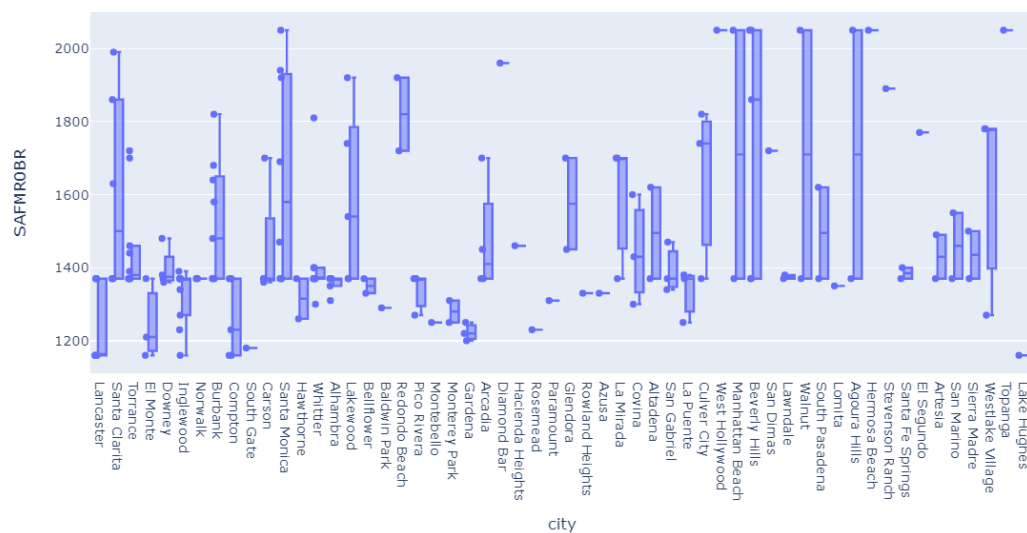
Another dataset we are going to import here is rent data.

ZIP Code	HUD Area Code	HUD Metro Fair Market Rent Area Name	SAFMR0BR	SAFMR0BR - 90% Payment Standard	SAFMR0BR - 110% Payment Standard	SAFMR 1BR	SAFMR 1BR - 90% Payment Standard	SAFMR 1BR - 110% PaymentStandard	SAFMR 2BR	SAFMR 2BR - 90% Payment Standard	SAFMR 2BR - 110% PaymentStandard	SAFMR 3BR	SAFMR 3BR - 90% Payment Standard	SAFMR 3BR - 110% PaymentStandard	SAFMR 4BR	SAFMR 4BR - 90% Payment Standard	Payn			
0	76437	METRO10180M10180	Abilene, TX MSA	\$570	\$513	\$627	\$590	\$531			\$649	\$780	\$702		\$858	\$1,030	\$927	\$1,133	\$1,320	\$1,188
1	76443	METRO10180M10180	Abilene, TX MSA	\$580	\$522	\$638	\$600	\$540			\$660	\$780	\$702		\$858	\$1,050	\$945	\$1,155	\$1,340	\$1,206
2	76464	METRO10180M10180	Abilene, TX MSA	\$570	\$513	\$627	\$590	\$531			\$649	\$780	\$702		\$858	\$1,030	\$927	\$1,133	\$1,320	\$1,188
3	76469	METRO10180M10180	Abilene, TX MSA	\$590	\$531	\$649	\$610	\$549			\$671	\$800	\$720		\$880	\$1,080	\$972	\$1,188	\$1,370	\$1,233
4	79501	METRO10180M10180	Abilene, TX MSA	\$700	\$630	\$770	\$720	\$648			\$792	\$940	\$846		\$1,034	\$1,260	\$1,134	\$1,386	\$1,610	\$1,449

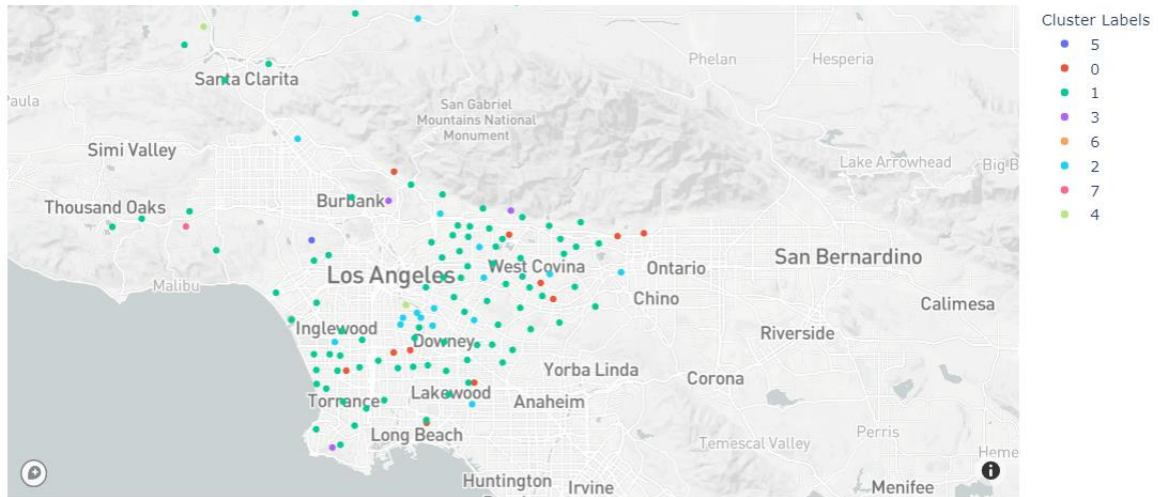
We can see that in this dataset, only the zip codes were given. Thus we need to try to add the city name corresponds to the zip code the data in order to work with our cluster data.

	city	SAFMR0BR	SAFMR 1BR	SAFMR 2BR	SAFMR 3BR	SAFMR 4BR
0	Lancaster	1160	1370	1770	2360	2580
1	Lancaster	1160	1370	1770	2360	2580
2	Lancaster	1160	1370	1770	2360	2580
3	Lancaster	1370	1610	2060	2740	2990
4	Lancaster	1370	1610	2060	2740	2990
...
212	Westlake Village	1780	2110	2690	3680	4230
213	Westlake Village	1780	2110	2690	3680	4230
214	Westlake Village	1270	1520	1920	2690	3180
216	Topanga	2050	2410	3090	4110	4480
230	Lake Hughes	1160	1370	1770	2360	2580

After we merge cluster 1 with our rent data, we obtain data frame above. Now we can take a look at how the rent scale is distributed in every city.



4. Results



Cluster 0

The locations in this cluster have “park” as their top venues. The category are quite similar.

	state_name	lng	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
93	California	-118.1675	0	Park	Hardware Store	Food Truck	Trail	Scenic Lookout	Organic Grocery	Event Service	Donburi Restaurant	Donut Shop	Electronics Store
694	California	-118.2017	0	Pharmacy	Gym	Park	Yoga Studio	Donburi Restaurant	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant
998	California	-118.0686	0	Food Truck	Park	Yoga Studio	Donburi Restaurant	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant	Farmers Market
1352	California	-117.7153	0	Home Service	Park	Yoga Studio	Donburi Restaurant	Food	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant
1520	California	-117.7702	0	Park	Yoga Studio	Dog Run	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant	Farmers Market	Farm

Cluster 1

Different from cluster 0, cluster 1 shows wide variety of categories. This is also the largest cluster in the clusters. They have different types of restaurant as well as various kinds of stores.

	state_name	lng	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
125	California	-118.1753	1	Discount Store	Department Store	Fast Food Restaurant	Sandwich Place	Chinese Restaurant	Pet Store	Cosmetics Shop	Paper / Office Supplies Store	Optical Shop	ATM
143	California	-118.4964	1	Gym	Mexican Restaurant	Chinese Restaurant	Burger Joint	Donut Shop	Liquor Store	Tattoo Parlor	Gastropub	Greek Restaurant	Hardware Store
309	California	-118.3417	1	Cosmetics Shop	Pool	Steakhouse	Recreation Center	Garden	Yoga Studio	Dog Run	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant
365	California	-118.1691	1	Food	Chinese Restaurant	Intersection	Taco Place	Liquor Store	Bus Station	Donut Shop	Flower Shop	Flea Market	Fish & Chips Shop
389	California	-118.0291	1	Pharmacy	Hotel	Juice Bar	Bank	Sandwich Place	Discount Store	Burger Joint	Donut Shop	Veterans' Organization	Video Store

Cluster 2

This cluster shows top venues in “Mexican Restaurant”

	state_name	lng	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
293	California	-117.7626	2	Seafood Restaurant	Mexican Restaurant	Fried Chicken Joint	Gas Station	Donut Shop	Yoga Studio	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant
318	California	-118.1390	2	Mexican Restaurant	Thai Restaurant	Currency Exchange	Grocery Store	Donut Shop	Food	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service
437	California	-117.9112	2	Mexican Restaurant	Juice Bar	Trail	Butcher	Sports Bar	Department Store	Electronics Store	Food & Drink Shop	Food	Flower Shop
872	California	-118.2167	2	Mexican Restaurant	Fried Chicken Joint	Fast Food Restaurant	Bakery	Café	Yoga Studio	Donut Shop	Flower Shop	Flea Market	Fish & Chips Shop
1170	California	-118.1550	2	Mexican Restaurant	Grocery Store	Donut Shop	Food	Fast Food Restaurant	Fried Chicken Joint	Liquor Store	Burger Joint	Thai Restaurant	Sporting Goods Shop

Cluster 3

This cluster shows top venues in “Trail”

	state_name	lng	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
226	California	-118.2468	3	Trail	Yoga Studio	Donburi Restaurant	Food	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant	Farmers Market
1184	California	-118.3637	3	Trail	Nature Preserve	Yoga Studio	Donburi Restaurant	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant	Farmers Market
1348	California	-117.9921	3	Trail	Yoga Studio	Donburi Restaurant	Food	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant	Farmers Market

Cluster 4

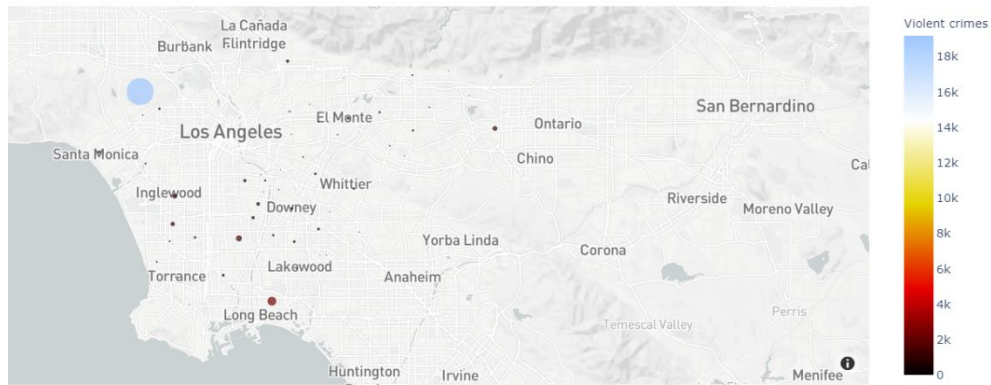
This cluster shows top venues in “Furniture/Home store”

	state_name	lng	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
2469	California	-118.6317	4	Furniture / Home Store	Yoga Studio	Food Court	Food	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant	Farmers Market
25948	California	-118.2106	4	Furniture / Home Store	Business Service	Yoga Studio	Donut Shop	Food	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant

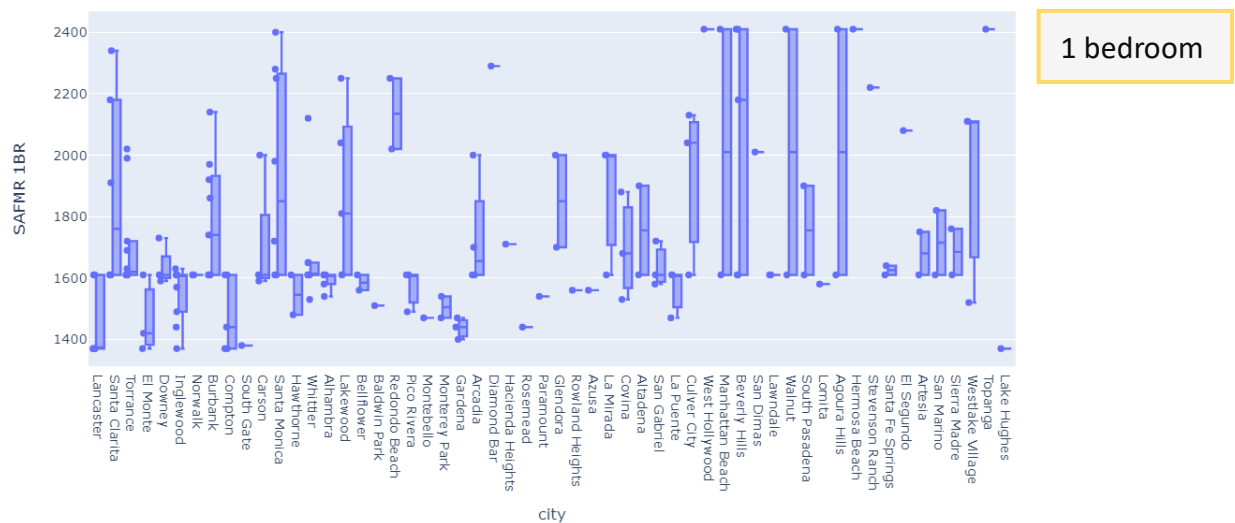
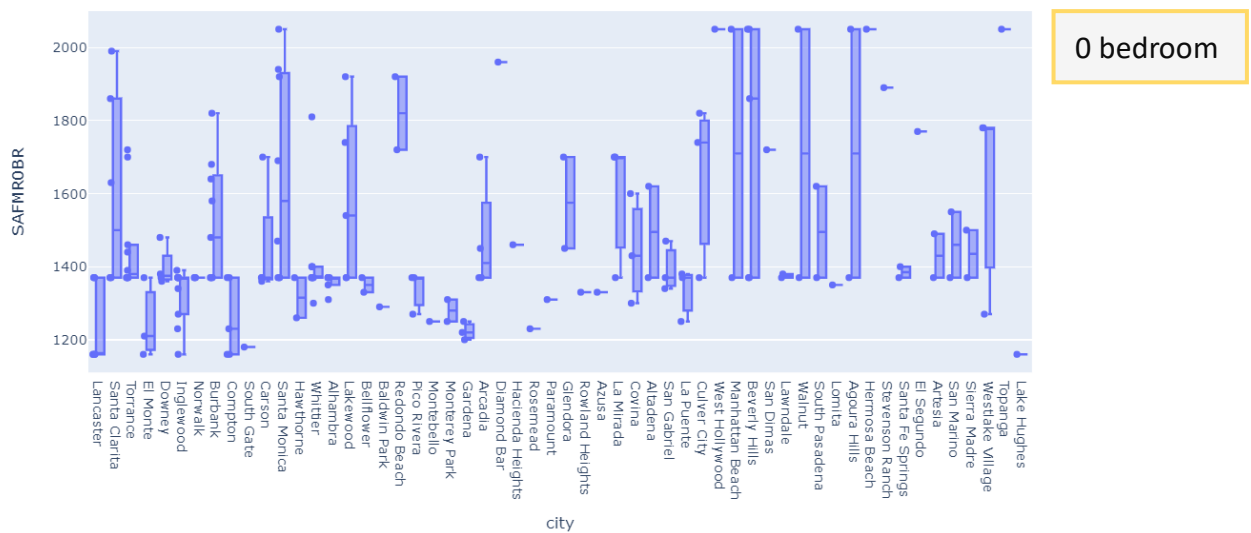
Cluster 5, 6, 7

These clusters include only one location in each.

	state_name	lng	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
1	California	-118.4068	5	Pool	Dog Run	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant	Farmers Market	Farm	Event Service
	state_name	lng	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
284	California	-118.1057	6	Nightlife Spot	Yoga Studio	Donburi Restaurant	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant	Farmers Market	Farm
	state_name	lng	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
2035	California	-118.6689	7	Tennis Court	Yoga Studio	Food Court	Food	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant	Farmers Market



Through the graph, we can easily tell that which city has the highest crime rate. Los Angeles and Long Beach has the highest crime rate among all the other cities.



This boxplot demonstrates the scale of rental prices in different cities. We can tell that some cities are a lot more expensive than others.

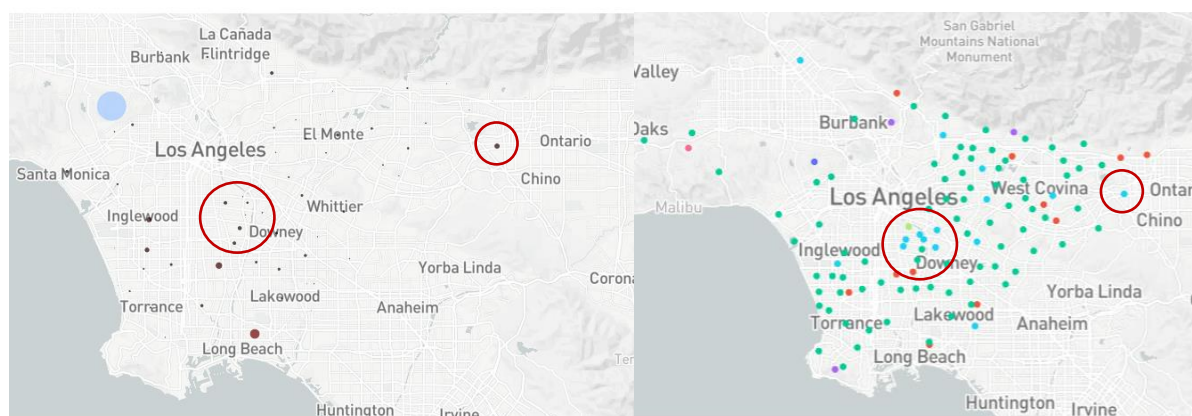
5. Discussion & Recommendation

According to the clustering result, cluster 1 and cluster 2 are both areas that have wide variety of venues. You can get everything you need within short distance. It could be a key factor for tenants to rent the house since it's convenient.

	state_name	Ing	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
125	California	-118.1753	1	Discount Store	Department Store	Fast Food Restaurant	Sandwich Place	Chinese Restaurant	Pet Store	Cosmetics Shop	Paper / Office Supplies Store	Optical Shop	ATM
143	California	-118.4964	1	Gym	Mexican Restaurant	Chinese Restaurant	Burger Joint	Donut Shop	Liquor Store	Tattoo Parlor	Gastropub	Greek Restaurant	Hardware Store
309	California	-118.3417	1	Cosmetics Shop	Pool	Steakhouse	Recreation Center	Garden	Yoga Studio	Dog Run	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant
365	California	-118.1691	1	Food	Chinese Restaurant	Intersection	Taco Place	Liquor Store	Bus Station	Donut Shop	Flower Shop	Flea Market	Fish & Chips Shop
389	California	-118.0291	1	Pharmacy	Hotel	Juice Bar	Bank	Sandwich Place	Discount Store	Burger Joint	Donut Shop	Veterans' Organization	Video Store

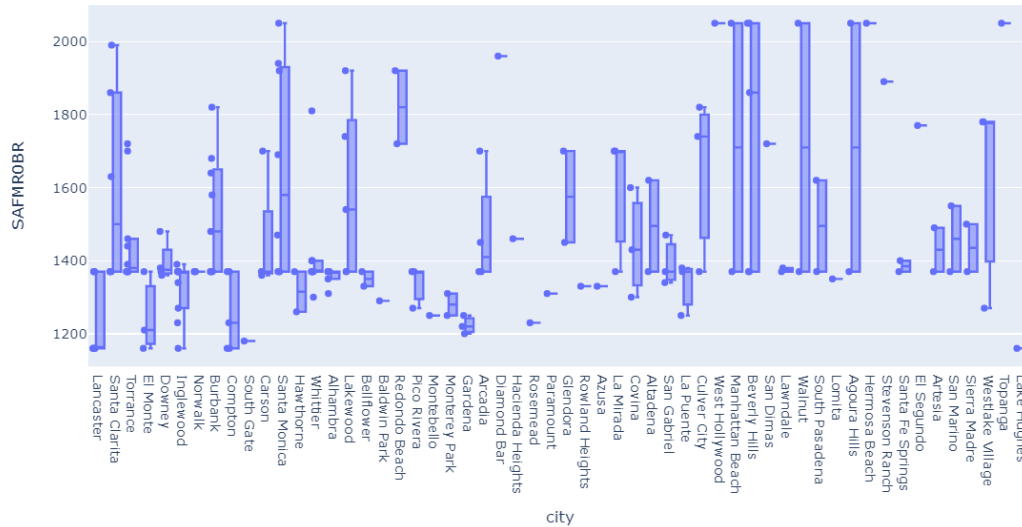
	state_name	Ing	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
293	California	-117.7626	2	Seafood Restaurant	Mexican Restaurant	Fried Chicken Joint	Gas Station	Donut Shop	Yoga Studio	Flea Market	Fish & Chips Shop	Financial or Legal Service	Fast Food Restaurant
318	California	-118.1390	2	Mexican Restaurant	Thai Restaurant	Currency Exchange	Grocery Store	Donut Shop	Food	Flower Shop	Flea Market	Fish & Chips Shop	Financial or Legal Service
437	California	-117.9112	2	Mexican Restaurant	Juice Bar	Trail	Butcher	Sports Bar	Department Store	Electronics Store	Food & Drink Shop	Food	Flower Shop
872	California	-118.2167	2	Mexican Restaurant	Fried Chicken Joint	Fast Food Restaurant	Bakery	Café	Yoga Studio	Donut Shop	Flower Shop	Flea Market	Fish & Chips Shop
1170	California	-118.1550	2	Mexican Restaurant	Grocery Store	Donut Shop	Food	Fast Food Restaurant	Fried Chicken Joint	Liquor Store	Burger Joint	Thai Restaurant	Sporting Goods Shop

However, when we take crime rate into account, we found out that location in cluster 2 tend to have higher crime rate. So now we will go with cluster 1.



Apart from crime rate, the investment return is also a key thing to discuss.

Take the rental price for studio for example, we can see that there's a large scale of differences in the rental price. The area on the west side of LA is quite pricey. This also has to do with the housing price.



Zip Code	City / Community	2021*	2020	2019	2018	2017	2016
90305	Inglewood	\$753,810	\$728,699	\$643,870	\$636,901	\$591,598	\$509,946
90401	Santa Monica (Downtown)	\$2,001,639	\$2,043,508	\$2,087,075	\$1,986,856	\$1,831,529	\$1,714,671
90402	Santa Monica	\$4,621,647	\$4,551,562	\$4,352,830	\$3,989,826	\$3,642,068	\$3,128,069
90403	Santa Monica	\$2,488,035	\$2,481,003	\$2,319,398	\$2,153,253	\$1,864,420	\$1,596,428
90404	Santa Monica	\$1,459,242	\$1,455,014	\$1,390,636	\$1,295,619	\$1,215,489	\$1,139,217

(Source: <http://www.laalmanac.com/economy/ec37b.php>)

Take Santa Monica as an example, even though the rental price is quite high, the housing price is high as well. So you might not get a good return on this one.

Zip Code	City / Community	2021*	2020	2019	2018	2017	2016
91768	Pomona	\$501,595	\$493,164	\$452,682	\$436,361	\$416,895	\$382,551
91770	Rosemead	\$692,734	\$684,618	\$626,591	\$622,861	\$593,464	\$556,306

(Source: <http://www.laalmanac.com/economy/ec37b.php>)

But if we look at city like Rosemead, the rental price is in a more reasonable range and the housing price is more acceptable as well.

6. Conclusion

This project aims to help real estate investors to target the right property to invest. We've look at the crime rate and rental price in the area and came out with some idea of the desired investing properties. There are lots of different factors that could possibly affect the value of the property. For example, household income or school district can also be the reason why people choose to live in certain area. In future research, as more factors are adding in, the more accurate the result will be.