CENTRAL LOS ANGELES NEIGHBORHOOD ANALYSIS

Jakhongir Khatamov

Coursera Capstone Project

Introduction

Los Angeles (LA) is one of the biggest and most populous cities of the USA. Due to its Mediterranean climate, ethnic diversity and Hollywood entertainment industry, every year many people visit and enjoy all the benefits the city offers.

Introduction

Travelers have some challenges and anxieties:

- Which neighborhood should I live in?
- How the rent prices differ across the neighborhoods?
- Which neighborhood has more jobs that fit my skills and abilities?

To answer this questions, I have conducted my own, analysis using spatial data and tools such as choropleth map, K-means clustering algorithm and Foursquare API.

There are 26 neighborhoods in central LA area

Arlington Heights	Hancock Park
Beverly Grove	Harvard Heights
Carthay	Hollywood
Chinatown	Hollywood Hills
Downtown	Hollywood Hills West
East Hollywood	Koreatown
Echo Park	Larchmont
Elysian Park	Los Feliz
Elysian Valley	Mid-City
Faircrest Heights	Mid-Wilshire
Griffith Park	Pico-Union
	Silver Lake
	West Hollywood
	Westlake
	Windsor Square

Data

Most of the data was obtained from the internet by scraping the web pages.

The following features was collected to do the analysis:

- Latitude and longitude values of neighborhoods

- Average rent price of neighborhoods

- 100 venues around each neighborhood

- GEOJSON file was constructed using other source files

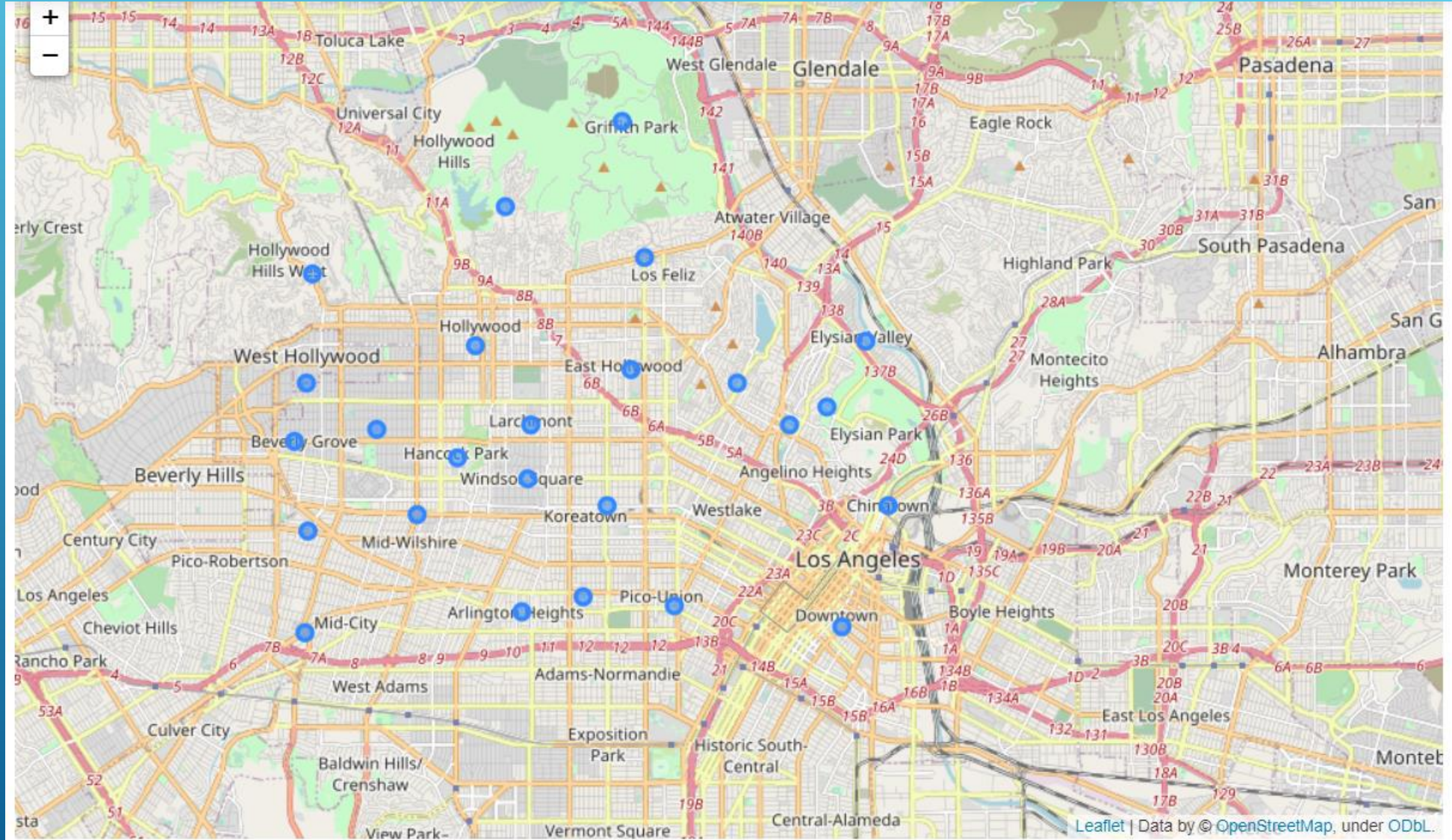|	Neighborhood	Longitude	Latitude	Average Rent
0	Arlington_Heights	-118.320109	34.043611	$1,605
1	Beverly_Grove	-118.372111	34.076009	$3,804
2	Carthay	-118.369000	34.059000	$3,591
3	Chinatown	-118.235806	34.063711	$2,530
4	Downtown	-118.246707	34.040812	$2,649
5	East_Hollywood	-118.295108	34.089509	$2,077
6	Echo_Park	-118.258707	34.079010	$2,301
7	Elysian_Park	-118.249807	34.082510	$2,501
8	Elysian_Valley	-118.241107	34.095009	$2,088
9	Fairfax	-118.353310	34.078209	$2,927
10	Hancock_Park	-118.334603	34.072863	$2,519
11	Harvard_Heights	-118.306025	34.046469	$1,607
12	Hollywood	-118.330610	34.094206	$2,485
13	Hollywood_Hills	-118.323665	34.120717	$2,380
14	Hollywood_Hills_West	-118.367911	34.107708	$2,529
15	Koreatown	-118.300608	34.063810	$1,970

Methods

Top 10 venues for each neighborhood was extracted using Foursquare API.

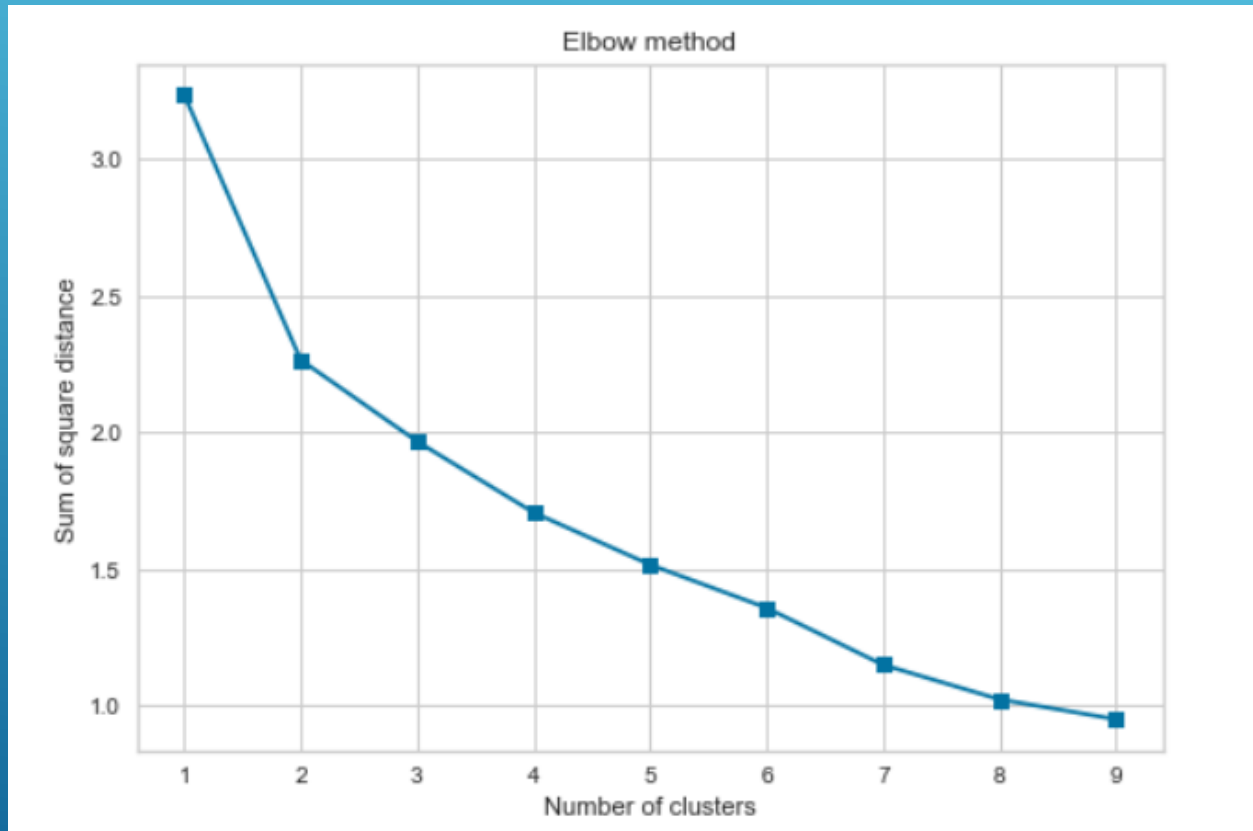|	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Arlington_Heights	Restaurant	Seafood Restaurant	Café	Grocery Store	Shop & Service	Pizza Place	Liquor Store	Rental Car Location	Dumpling Restaurant	Fast Food Restaurant
1	Beverly_Grove	Clothing Store	Cosmetics Shop	Juice Bar	Mexican Restaurant	Italian Restaurant	Seafood Restaurant	Sushi Restaurant	Lingerie Store	Café	Gym / Fitness Center
2	Carthay	Ethiopian Restaurant	Historic Site	Fast Food Restaurant	Intersection	Dentist's Office	Video Store	Café	Park	Food Truck	Convenience Store
3	Chinatown	Chinese Restaurant	Vietnamese Restaurant	Bakery	Bar	Café	Coffee Shop	French Restaurant	Bookstore	Grocery Store	Brewery
4	Downtown	Arts & Crafts Store	Southern / Soul Food Restaurant	American Restaurant	Wine Bar	Gay Bar	Neighborhood	Café	Breakfast Spot	Sushi Restaurant	Flower Shop
5	East_Hollywood	Asian Restaurant	Pizza Place	Bakery	Restaurant	Pharmacy	Convenience Store	Fast Food Restaurant	Bus Line	Middle Eastern Restaurant	Coffee Shop
6	Echo_Park	Food Truck	Café	Mexican Restaurant	Bar	Pizza Place	Coffee Shop	American Restaurant	Art Museum	Restaurant	Wine Bar
7	Elysian_Park	Yoga Studio	Grocery Store	Furniture / Home Store	Juice Bar	Arts & Crafts Store	Café	Trail	Gift Shop	Scenic Lookout	Playground
8	Elysian_Valley	Trail	Rock Club	Gym / Fitness Center	Rental Car Location	Burrito Place	Spiritual Center	Intersection	Asian Restaurant	Fast Food Restaurant	Garden Center
9	Fairfax	Italian Restaurant	Mexican Restaurant	Pet Store	Arts & Crafts Store	Coffee Shop	Residential Building (Apartment / Condo)	Mediterranean Restaurant	Dessert Shop	Sandwich Place	Cosmetics Shop

Methods

Python's Folium package was used to initially visualize the neighborhoods.

Methods

K-Means clustering algorithm was used to cluster the neighborhoods as well as the elbow method to identify the appropriate number of clusters.
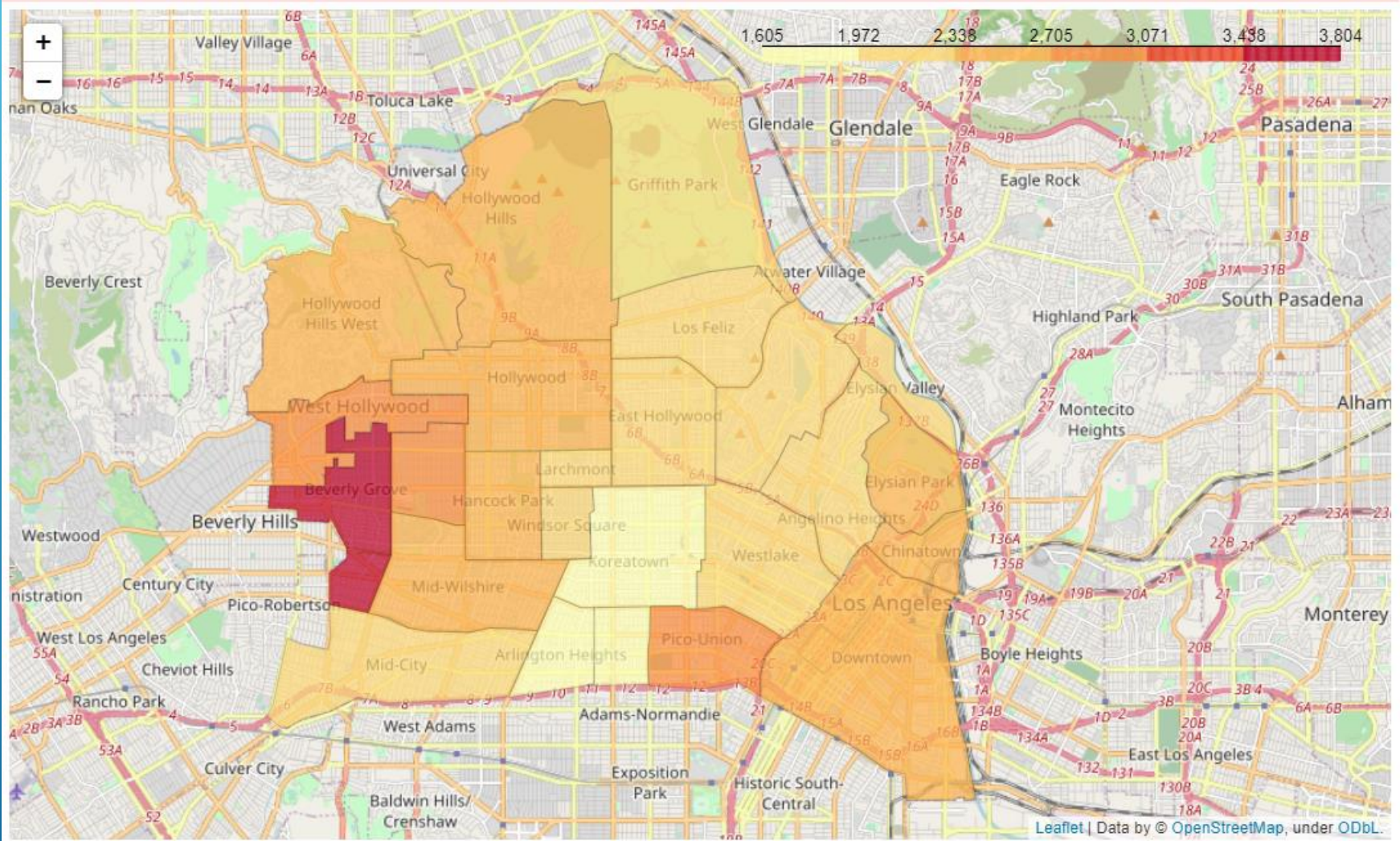

As we can see from the elbow method above, the sum of squares distance within the clusters does not decrease significantly after k = 3. Therefore, I have decided to generate three clusters.

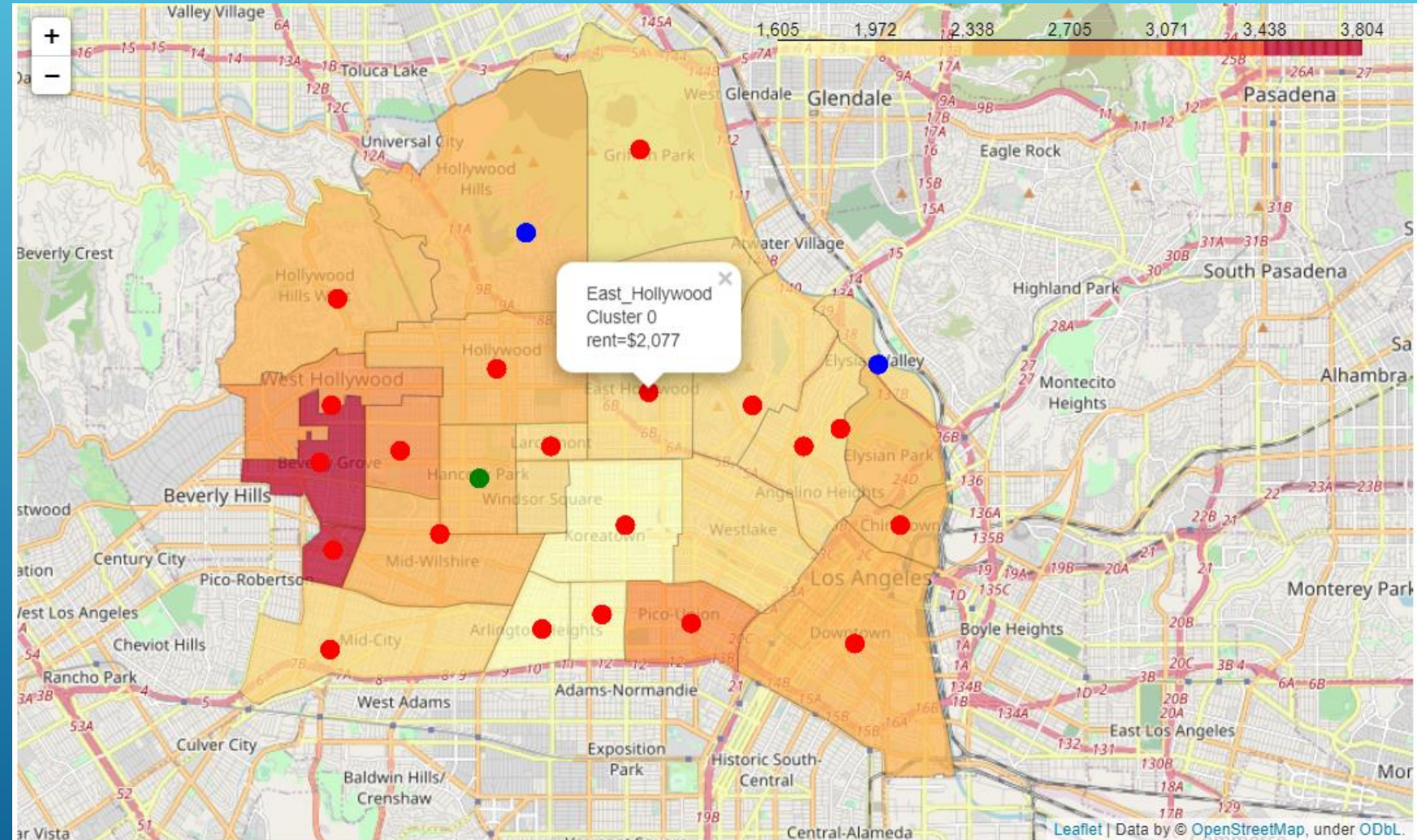# Results

Here is the choropleth map:

As we can see from the color bar, the darker the color the higher the average rent price in that neighborhood.

Results

The neighborhood clusters are superimposed on top of the choropleth map.

What is great about this map is that if you click on the circle markers which are the centers of the neighborhoods, they will display the name of the neighborhood, the category of cluster and the average rent price
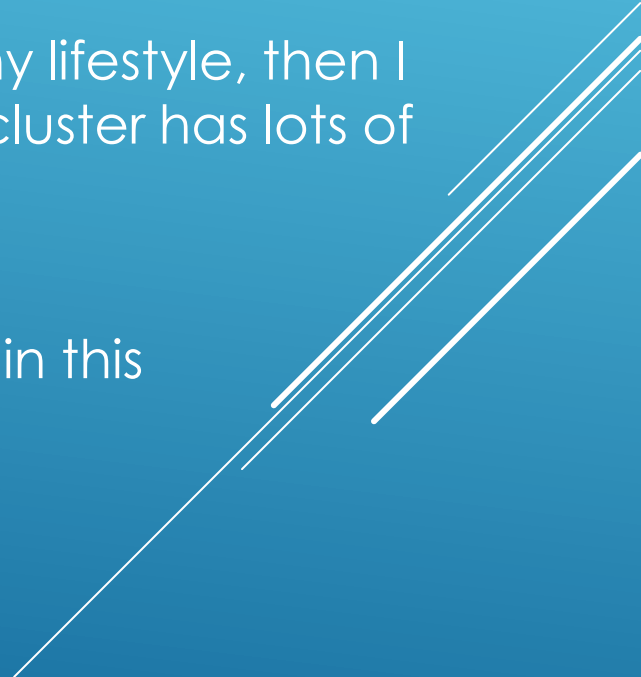
Clusters

Cluster 1
Because it contains most of the neighborhoods, we can say that the central LA neighborhoods does not differ to much in terms of the venues they have. As we observed, most of the venues turned out to be the restaurants. Thus, if one has restaurant related skills and knowledge, then the central LA has a lot of jobs to offer.

Cluster 2
If one likes working out, doing physical exercise and tries living in a healthy lifestyle, then I would recommend living in neighborhoods that belong to cluster 2. This cluster has lots of trails and gym/fitness centers.

Cluster 3
This cluster seems to be suitable for those who like reading a lot because in this cluster they can find many bookstores.

Recommendations

The most affordable neighborhoods are Arlington Heights where the average rent is $1,605/month, Harvard Heights where renters pay on average $1,607/month on average and Koreatown where the average rent is $1,970/month.

The most expensive neighborhoods turned out to be Carthay where the average rent is $3,591/month and Beverly Grove where renters pay $3,804/month on average.

Another interesting fact is that the neighborhoods that are located on the eastern part of the area are relatively cheaper than those that are located on the western part.

Finally, for travelers and guests who want to stay or live in central LA, I would recommend living either in Arlington Heights or in Harvard Heights or in Koreatown. These three neighborhoods are much cheaper than others and the same time they do not differ significantly from other neighborhoods in terms of the type of venues and jobs they have.