Battle of the Neighborhoods - Presentation

Overall Business Goal: Due to improved economic conditions, ACME Co. has decided to establish one or two jewelry stores providing not only highest quality and grade of jewelries but also provide services such as creating custom jewelry dependent on high net-worth clients' requirements.

Detailed Business Goal: Los Angeles county is culturally diverse, close to international shipping routs (Long Beach shipyards), center for most famous fashion industries and large number of high net worth individuals. Due to the facts above, ACME has decided to open high-end jewelry stores in Los Angeles county. Because of this they need to find the best LA city/cities to open one or two exclusive jewelry stores. This would also provide an opportunity for ACME Co. to introduce and build a brand for itself among the high net-worth communities.

Solutions/Data Resources:

Ideas: So the questions that comes to mind are where are the best Los Angeles areas to provide jewelry services to high net-worth individuals? What is the best way to find these individuals and have them visit our store(s)? How can we find high net-worth individuals?

Solution: In my opinion the best answer is not to focus on such people because they could be spread out through out Los Angeles. In some areas more and in some areas with less density. Additionally, some could also leave in middle class areas. So instead of focusing on distinguished clientele, we will focus on properties which such individuals own, specifically their homes. In conclusion, we will be focusing on Los Angeles zip codes that have the highest >average< house values.

Solution in Detail: So should we just find the first zip code with the highest average house price, and put up our jewelry store there? The answer is NO, because some expensive zones could be mostly residential, or the zones might not have the right type business environment or the zones/centers might not be the right type for jewelry store foot traffic. So we will grab the top 10 zip codes and cluster them into three groups and then evaluate each group by the type of popular venues/businesses nearby.

Resources/Data: Our analysis will be based on several types of resources and data:

- A list of all Los Angeles county zip codes, names and geo positions
- Resources: https://simplemaps.com/data/us-zips
- A list of all Los Angeles county zip codes and their average "single family" home values
- Resource: https://www.zillow.com/los-angeles-county-ca/home-values/
- Finally, top 5 venues for each of the "top 10 zip codes" above
- Resource: Foursquare.com

Machine Learning Algorithm: The best suited algorithm for clustering/grouping our top 10 zip codes will be K-Means algorithm creating three K's evaluating five top venues for each cluster.

Results

The following bar chart is a list of all zip codes and their average home prices in Los Angeles county. We can see a wide range of prices from around $250,000 to under $6,000,000.
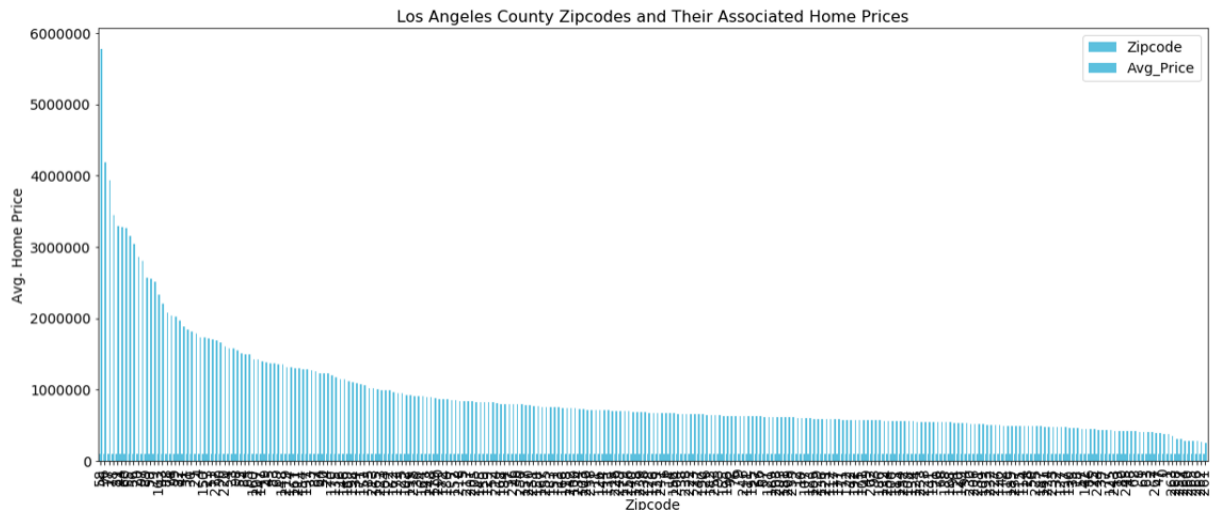
The following is a list of top 10 highest price zip codes in Los Angeles county. The name of the city (City_Name) is also included in this list.

	Zipcode	Latitude	Longitude	City_Name	Zip_City	Avg_Price
5	90210	34.1010	-118.4148	Beverly Hills	90210-Beverly Hills	5782800
9	90402	34.0356	-118.5036	Santa Monica	90402-Santa Monica	4190600
0	90020	34.0664	-118.3099	Los Angeles	90020-Los Angeles	3937900
7	90265	34.0719	-118.8499	Malibu	90265-Malibu	3442600
8	90272	34.0799	-118.5422	Pacific Palisades	90272-Pacific Palisades	3295600
2	90049	34.0872	-118.4893	Los Angeles	90049-Los Angeles	3286300
6	90212	34.0622	-118.4019	Beverly Hills	90212-Beverly Hills	3265100
3	90069	34.0938	-118.3817	West Hollywood	90069-West Hollywood	3156200
4	90077	34.1055	-118.4561	Los Angeles	90077-Los Angeles	3039300
1	90024	34.0657	-118.4350	Los Angeles	90024-Los Angeles	2859000

The following map indicates geographical positions of each of the top 10 zip codes in relation to each other. We can see here that most of the cities are between Santa Monica and east of West Hollywood.
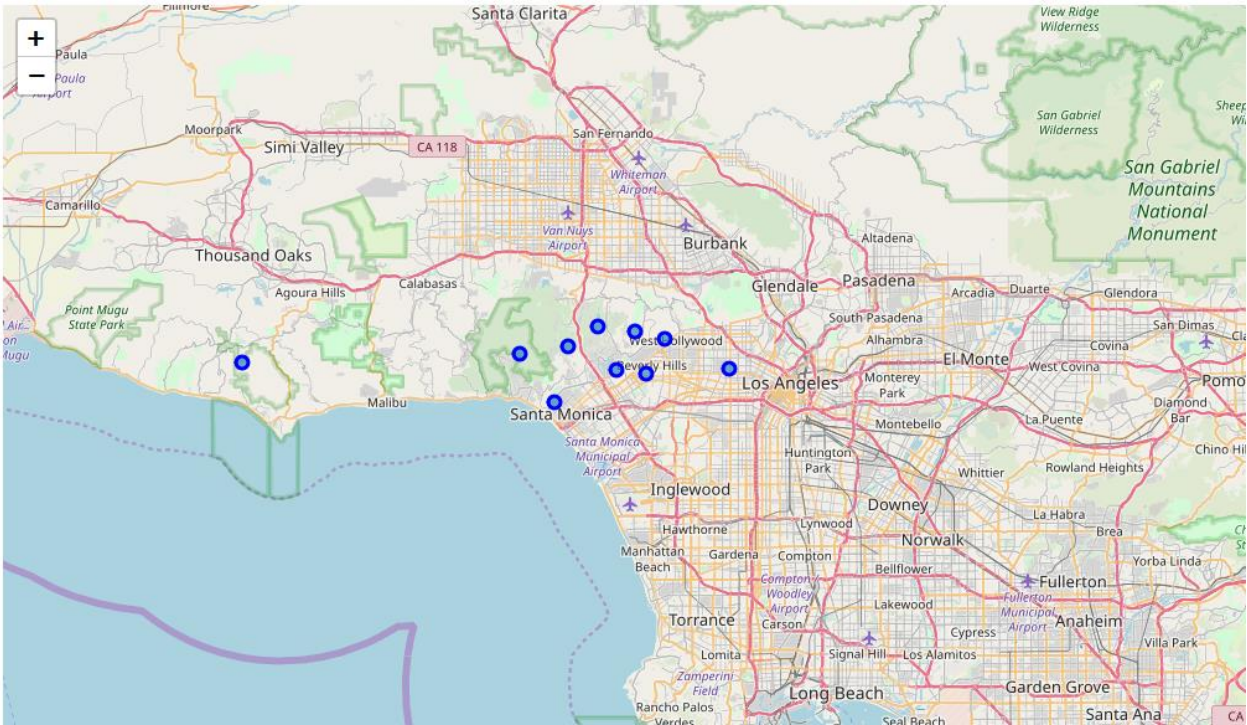

The following list contains most five common venues (points of interest) in each of our top 10 zip codes. It seems here that each zip code has different types of point of interest within the radius of 2 Kilometers.

	Zip_City	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	90020-Los Angeles	Korean Restaurant	New American Restaurant	Bar	Burger Joint	Yoga Studio
1	90024-Los Angeles	Hotel	College Theater	Garden	Residential Building (Apartment / Condo)	Movie Theater
2	90049-Los Angeles	Art Museum	Garden	Building	Yoga Studio	Food Truck
3	90069-West Hollywood	American Restaurant	Boutique	Mexican Restaurant	Café	Sushi Restaurant
4	90077-Los Angeles	Grocery Store	Indian Restaurant	Road	Café	Historic Site
5	90210-Beverly Hills	Park	Historic Site	Food Truck	Other Great Outdoors	Yoga Studio
6	90212-Beverly Hills	Café	Steakhouse	Jewelry Store	Mediterranean Restaurant	Hotel
7	90272-Pacific Palisades	Trail	Scenic Lookout	Gym	Nightlife Spot	Bar
8	90402-Santa Monica	Yoga Studio	Beach	Gym	Ice Cream Shop	Indie Movie Theater

We have used "K-means" clustering algorithm to create three groups of zip codes using common venues as focus of our grouping (Cluster_Labels) column: Group #1 → 0, Group #2 → 1, Group #3 → 2

Zipcode	Latitude	Longitude	City_Name	Zip_City	Avg_Price	Cluster_Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
90210	34.1010	-118.4148	Beverly Hills	90210-Beverly Hills	5782800	0	Park	Historic Site	Food Truck	Other Great Outdoors	Yoga Studio
90020	34.0664	-118.3099	Los Angeles	90020-Los Angeles	3937900	0	Korean Restaurant	New American Restaurant	Bar	Burger Joint	Yoga Studio
90049	34.0872	-118.4893	Los Angeles	90049-Los Angeles	3286300	0	Art Museum	Garden	Building	Yoga Studio	Food Truck
90212	34.0622	-118.4019	Beverly Hills	90212-Beverly Hills	3265100	0	Café	Steakhouse	Jewelry Store	Mediterranean Restaurant	Hotel
90069	34.0938	-118.3817	West Hollywood	90069-West Hollywood	3156200	0	American Restaurant	Boutique	Mexican Restaurant	Café	Sushi Restaurant
90024	34.0657	-118.4350	Los Angeles	90024-Los Angeles	2859000	0	Hotel	College Theater	Garden	Residential Building (Apartment / Condo)	Movie Theater
90402	34.0356	-118.5036	Santa Monica	90402-Santa Monica	4190600	1	Yoga Studio	Beach	Gym	Ice Cream Shop	Indie Movie Theater
90272	34.0799	-118.5422	Pacific Palisades	90272-Pacific Palisades	3295600	1	Trail	Scenic Lookout	Gym	Nightlife Spot	Bar
90077	34.1055	-118.4561	Los Angeles	90077-Los Angeles	3039300	2	Grocery Store	Indian Restaurant	Road	Café	Historic Site

The following geographical map shows the same top 10 zip codes but grouped by colors. We can see here that 6 of them have similar grouping and the other two have different types of venues. What is additionally interesting is that "90265-Malibu" is no longer part of our Analysis. There are no special venues within the 2 Kilometer range of this area.
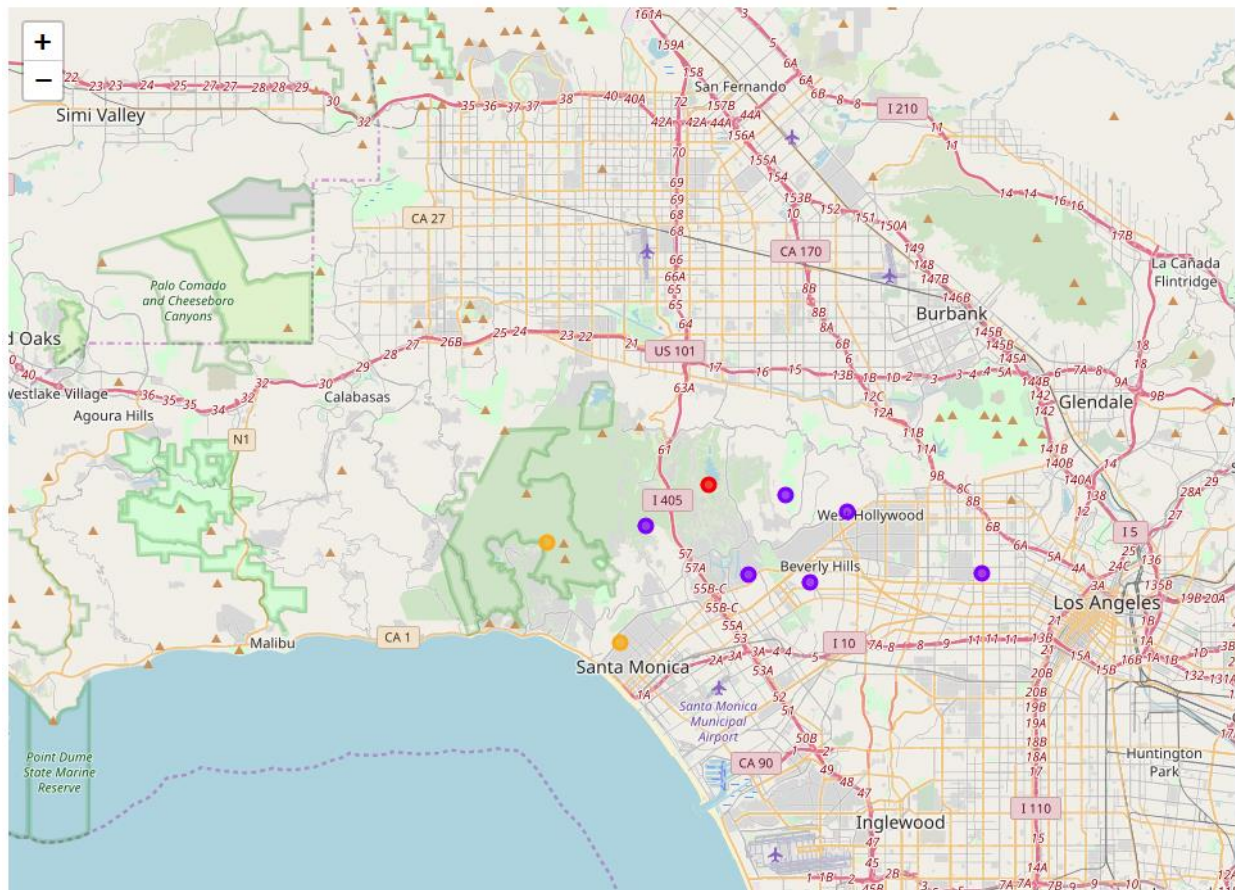
In Conclusion

Cluster/Group Dynamics:

- First Cluster(#0): We can see that Cluster(#0) has various venues which are very different in different zipcodes. It seems that the best two candidates for this group are "90212-Beverly Hills" and "90024-Los Angeles". Other cities' venues in this group have more of a casual type of commerce which would not be compatible with our high-end jewelry store.
- Second Cluster(#1): Here in this group we can see that most popular venues are either casual type commerce or free outdoor activities. Therefore, none of these cities seem to offer us proper commerce centers for our business.
- Third Cluster(#2): In this last group we have only one zipcode and the venues seem to be not only casual commerce but also center for tourists which are not the type of clientele we're going after.

Geographic observations:

- City Map Placement: By looking at the map above, we can see that the cities in each group are somewhat closely situated to other cities in the same group.

Final Decision!

 So to review our original goal, in summary, we would like to open one or two high-end jewelry stores in proper zipcode(s). The second cluster(#1) and the third cluster(#2) do not seem to have compatible top venues for foot traffic of high-end clientele we are looking for. However, first cluster(#0) seems to provide couple of opportunities for our store.

Decision in more Detail

It seems that "90212-Beverly Hills" seems to offer the best type of venues because not only commerce centers are the compatible with our type of high-end clientele, additionally there are other jewelry stores nearby. Other jewelry stores here are not only not competition, but if we put our business there, as a group we could attract more foot traffic for shoppers interested in high-end jewelry. Moreover, since the zip codes in this group are physically very close to each other, it would not make any sense to open a second store in other cities in this group. So finally, establishing one jewelry store in "90212-Beverly Hills" should satisfy all of our requirements.