Finding the best place for Gun Shop in Los Angeles

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1.Introduction

1.1 Background

I will describe my researching in reason to establish firearms dealers network. Firstly we should acknowledge, that it is strong economic industry. Over the past decade, the industry's growth has been driven by an unprecedented number of Americans choosing to exercise their fundamental right to keep and bear arms and purchase a firearm and ammunition. Regardless of economic conditions across the country, the industry has grown and created about 146,000 new, well-paying jobs over the past decade. Detailed description of current industry situation can be find here: https://d3aya7xwz8momx.cloudfront.net/wp-content/uploads/2019/02/2019-Economic-Impact.pdf

1.2 Problem and Interest

The main problem is finding the right place to start a good business. First step is to identify best State that can be provide more benefits. There are key concepts: more free market, enough manufacters and target population. Good place is needed for getting more economic benefits. Right place can provide great start and opportunity to fast scaling-up.

2. Data acquisition and cleaning

2.1 Data sources

Report about industry by each State comparsion.

Data about manufactures and dealers in every State (we need comparsion for finding best State for our shop.

Secondly, after we decided on the State, we need to find place in State to get a place. Through basic previous data analysis (will describe later) we make a decision to establish first shop in California. The most economic attractive city would be where population would be more. And this is Los Angeles. Next data, that we need to get It is best neighborhood for shop. We will take data on the use of weapons from LA crime data from 2010 to 2019 here and from 2020 here. There are location data and firearms usage in crime. Through this data analysis (will describe later) we can find best neighborhood for our shop based on firearm usage.

After I will have neighborhoods with firearms usage statistics, I can describe each neighborhood more detailed with Foursquare API. I will explore each neighborhood in searching venues of these categories: Gun Shop, Gun Range, Hunting Supply. It is needed for establishing shop without competitors in my neighborhood. More detailed data exploration, cleaning and using will describe in next sections.

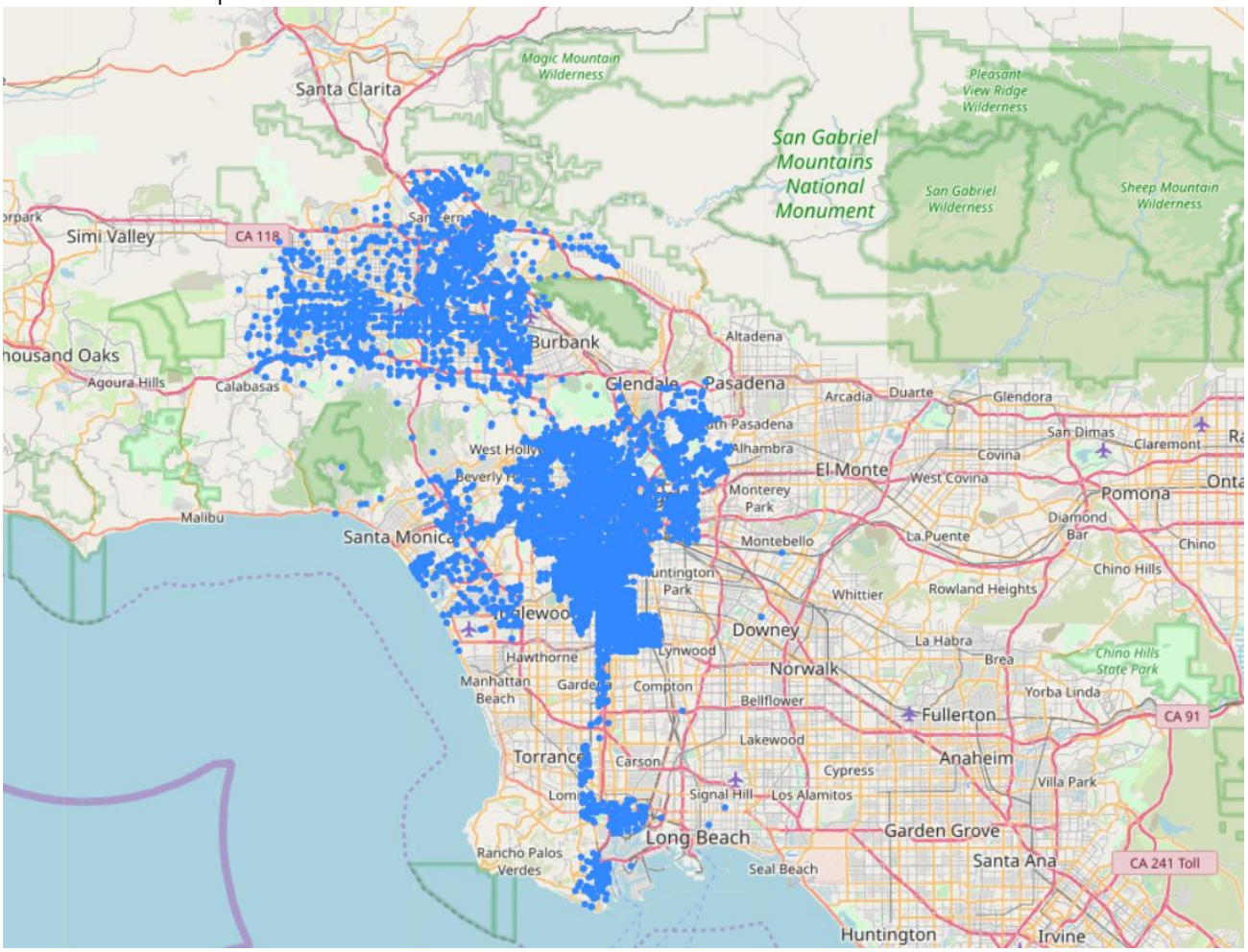
2.2 Cleaning

In dataset with LA crime data we were supposed to composetwo dataset to one. First covered years from 2010 to 2019 and second – 2020 to Present. After, we should to save just rows that contains in Weapon Description needed to us words. Also, there were NaN values, so we should to drop their. After we should to select just relevant information for us and there is LAT and Lon columns, what means location of crime accident. After data cleaning we got 117542 values with location crime accidents with firearms.

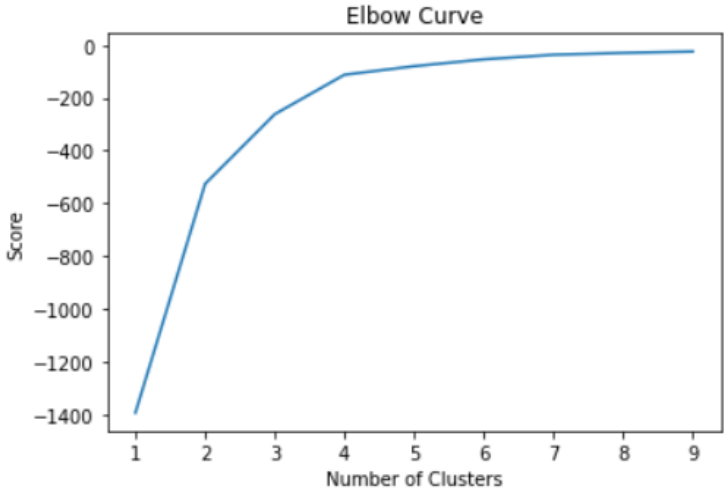
3. Exploratory data analysis

3.1 Visualizing results

Because of many graphic elements and hard to visualize all of the points I will visualize just 1 0000 on the Map.



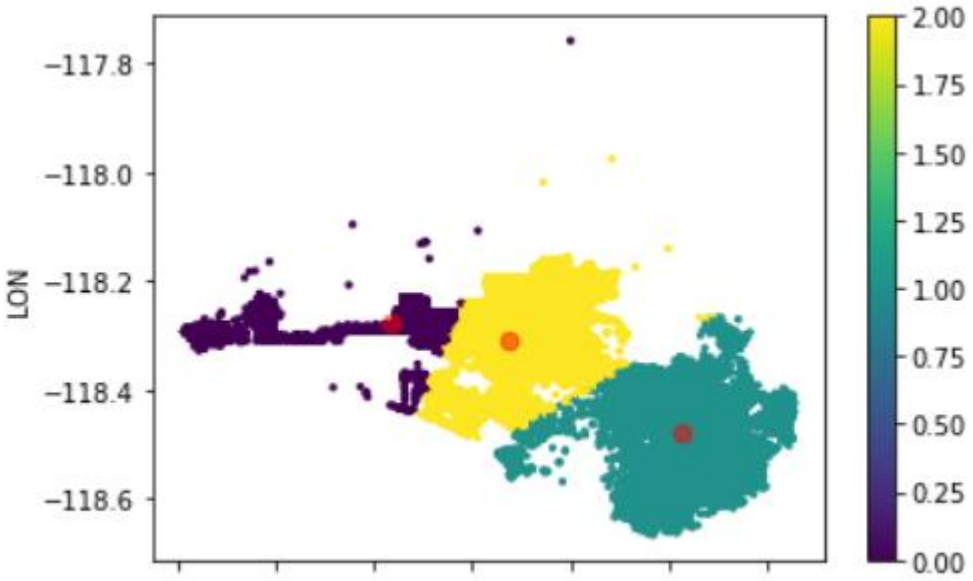
3.2 Clustering



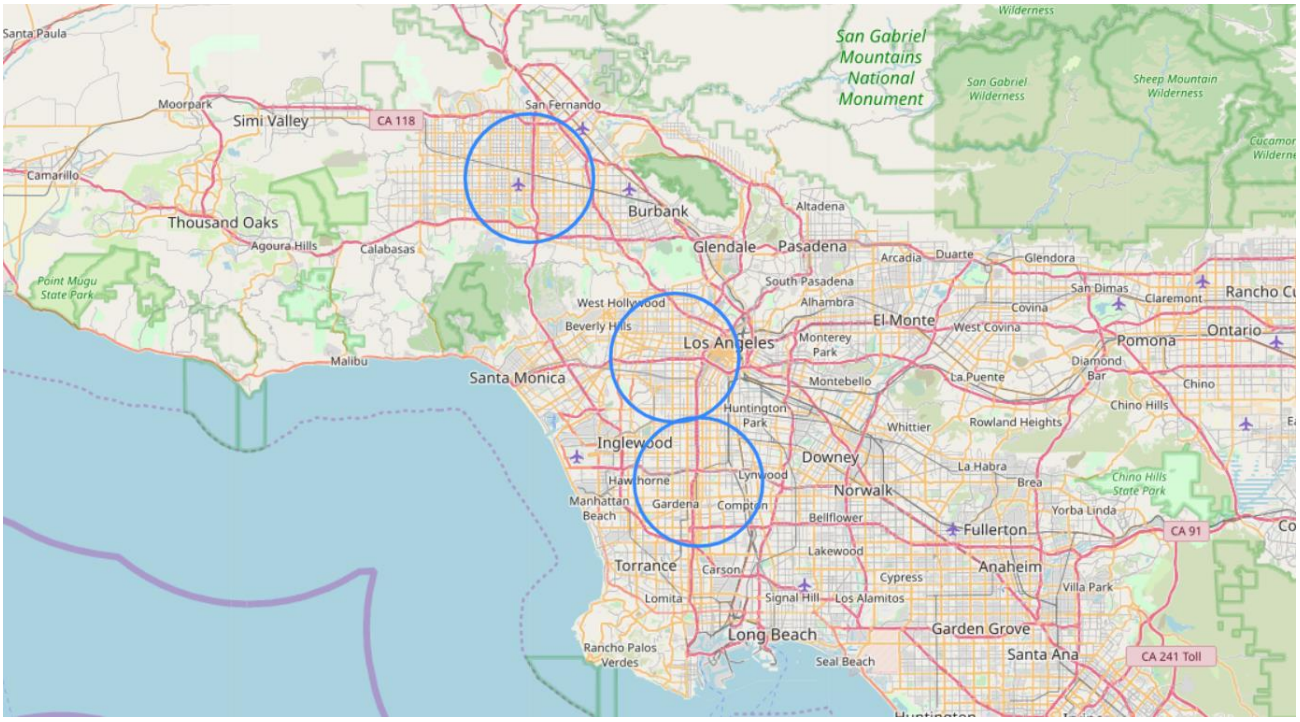
Next step is to mathematically to determine best clusters (neighbors) based on Crime data. I used Kmeans alghorithm, but for the alghorithm We should firstly find best number of cluster based on its graphic. We can see that after 3 number clusters graphi increase less than before. So 3 will be best number.

3.3 Cluster Observing

We can observe clustering of all of our data and see centroids of each.



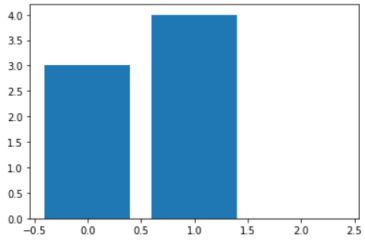
For more detailed understanding we can take centroids and see circle around with radius 7000 meters.

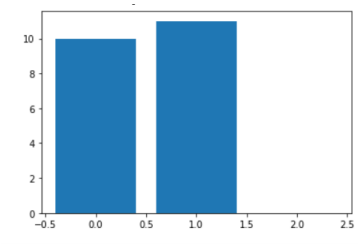


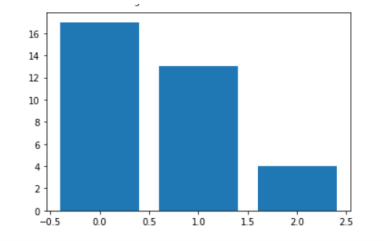
3.4 Determining best cluster(neighbor) with Foursquare data

Rivals in all businesses is big problem, specially on start up. So we should to determine neighbor with minimum number of rivals. Foursquare can help us with it. We could check

are there and how many rivals are there(in certain neighbor with centroid and certain radius). There are some result from Foursquare:







There are graphics for Radiuses: 7km, 12km, 17 km.

How we can observe in third cluster there is less rivals than in others, and we can easily say that third clusters is better for our shop.

After geeting centroid of our cluster we get result of our neighbor:

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34.21099419 -118.47750928
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Thank You for Attention!
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P.S Important Notice! In different notebooks will be different results on
number of cluster, through KMeans random element, but main result of
location will same.
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