Capstone Project

Battle of the Neighborhood

1) Introduction

Cuenca commonly referred as 'Santa Ana de los Cuatro Rios', is the capital and largest city of the Azuay Province of Ecuador. Cuenca is located in the Andes Region of South America at about 8400 feet (2560 meter) above the sea. Down town of the city is listed as Unesco World Heritage site due to its many historical churches and buildings. Also, almost all government entities are there too. Therefore, every day there are many people who visit the center for tourism or work, and looking for places to eat while taking a break from their day a good place for a food business.

2) Business Problem

This final project seeks to explore and find a good place to start a new business where people can eat and drink alcoholic beverages such as cocktails or beers and where there are few or no places similar business. Question to answers: Where is a good place in downtown of Cuenca to start a new bar-restaurant business?

3) Data

To address the problem, it's necessary to have information about the location of food business in Cuenca downtown. The idea is to start from the "World Cities Database" and use the geospatial information to extract data about the location of bars and restaurants in the downtown of the Cuenca city using the Foursquare API. As we mention, the databases that will be used are:

- "World Cities Database" available in https://simplemaps.com/data/world-cities: This database contains the names of all the countries and cities of the world, with their respective geographic location information in terms of longitude and latitude. In the figure 1 it can be observed an extract of this database.

	city	city_ascii	lat	lng	country	iso2	iso3	admin_name	capital	population	id
0	Tokyo	Tokyo	35.6897	139.6922	Japan	JP	JPN	Tōkyō	primary	37977000.0	1392685764
1	Jakarta	Jakarta	-6.2146	106.8451	Indonesia	ID	IDN	Jakarta	primary	34540000.0	1360771077
2	Delhi	Delhi	28.6600	77.2300	India	IN	IND	Delhi	admin	29617000.0	1356872604
3	Mumbai	Mumbai	18.9667	72.8333	India	IN	IND	Mahārāshtra	admin	23355000.0	1356226629
4	Manila	Manila	14.5958	120.9772	Philippines	PH	PHL	Manila	primary	23088000.0	1608618140

Figure 1. Example of World Cities Database

- Foursquare database of Cuenca: This database will contain location of bars and restaurants in the downtown of the Cuenca city and will be constructed starting from the World Cities Database. In the figure 2 it can be observed an extract of Foursquare database of Cuenca.

	City	City Latitude	City Longitude	Bussiness	Bussiness Latitude	Bussiness Longitude	Bussiness Category
52	Cuenca	-2.8974	-79.0045	Parque Calderón	-2.897566	-79.004757	Park
53	Cuenca	-2.8974	-79.0045	Hotel Santa Lucia	-2.897900	-79.002874	Hotel
54	Cuenca	-2.8974	-79.0045	Sucré Salé Café	-2.897371	-79.004212	Café
55	Cuenca	-2.8974	-79.0045	Trattoria Novecento	-2.897890	-79.002783	Italian Restaurant
56	Cuenca	-2.8974	-79.0045	Bauhouse Hostel & Bar	-2.895530	-79.004594	Bar

Figure 2. Example of World Cities–Foursquare database

4) Methodology

The methodology be used is:

- Collect the dataset of the world cities.
- Clean the data and extract only the information related to the city of Cuenca in the country of Ecuador.
- Using Foursquare and the clean data, extract the information of the location of food business around 500 meters to the central park of Cuenca. The radius was selected considering that around to the central park is located the most commercial zone in the downtown of Cuenca.
- The analysis approach is based on, finding areas where there are few or no food businesses (restaurants or bars) and also is like 3 blocks near to the central park.

- In the final step, the data are used to generate map visualization and the area of interest is select with a green color.

5) Results

The results of the analysis show that most of the food business are grouped at the south and the east of the central park. In the figure 3 the location of the food business is shown, consider that red dots represent restaurants, violet dot represent bars and blue dot represent the central park.
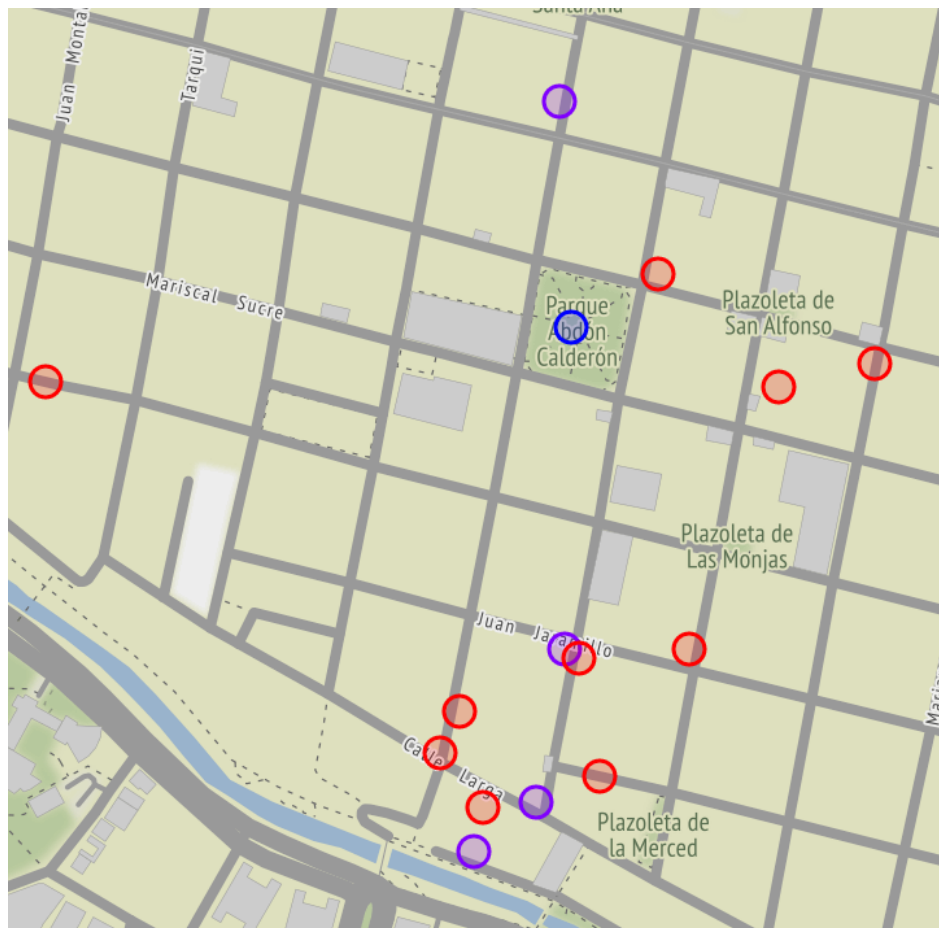

Figure 3. Business location. Red dots represent restaurants, Violet dot represent bars and Blue dot represent the central park.

In addition, it can be noticed that there are areas that are close (about 2 or three blocks) to the central park and there is not food business. In the figure 4, can be seen this fact.
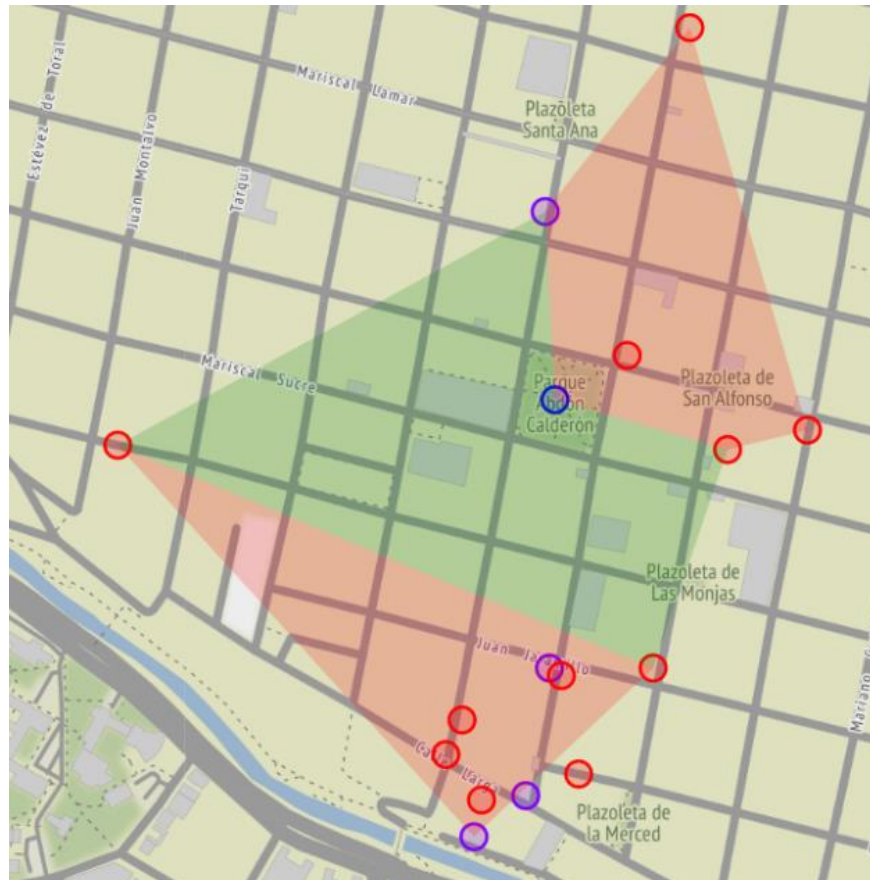
Figure 4. Areas of Business, green represent free areas and red represent areas with business.

Based on this geospatial analysis, a good place to start a new bar-restaurant could be in the green area of the figure 4.

6) Discussion

Based on the results, the green area is a good place to start the new business. However, there is a lot of more parameters to consider. For example, the database extracted Foursquare contains only 14 food business that by far not represent the real food business quantity and this is a very important fact to consider in the analysis. On the other hand, assuming we have the data of all food businesses, there is another important aspect. Although it could be important that there are no food businesses nearby, also its important that the area where the stakeholder is going to place the new food business is in a place that is not too expensive and where many people walk. In the figure 4 is shown that most of the food business and bars are located south east from the central park, this fact could be due to this is a more commercial area than an area near to the central park. In future works these two facts need to be consider if are looking. In future works the analysis could be completed considering these two aspects to obtain a more realistic result. It's worth to say that another parameter could be considered but in my opinion these two are very important

7) Conclusion

Based on the results of the project, there is an area neat the downtown where there are no food businesses and consider only this fact could be a good place to start the new food business. Furthermore, it could be noted that in the database extracted from Foursquare there is only 14 food business that don't represent the real quantity of food business and also there are other parameters to consider in order to made a deeper and real analysis. This fact is important to consider, but due to the idea of this project is for educational purposes the analysis approach meets the goal.