

Padel in Elche



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Introduction

In this project we are studying the business opportunity to open a **Padel Tennis Club** in a neighborhood of Elche, so first we are looking for the existing ones.

We are using the Foursquare API, to search for all the venues in all the neighborhoods, this venues are used to cluster the neighborhoods.

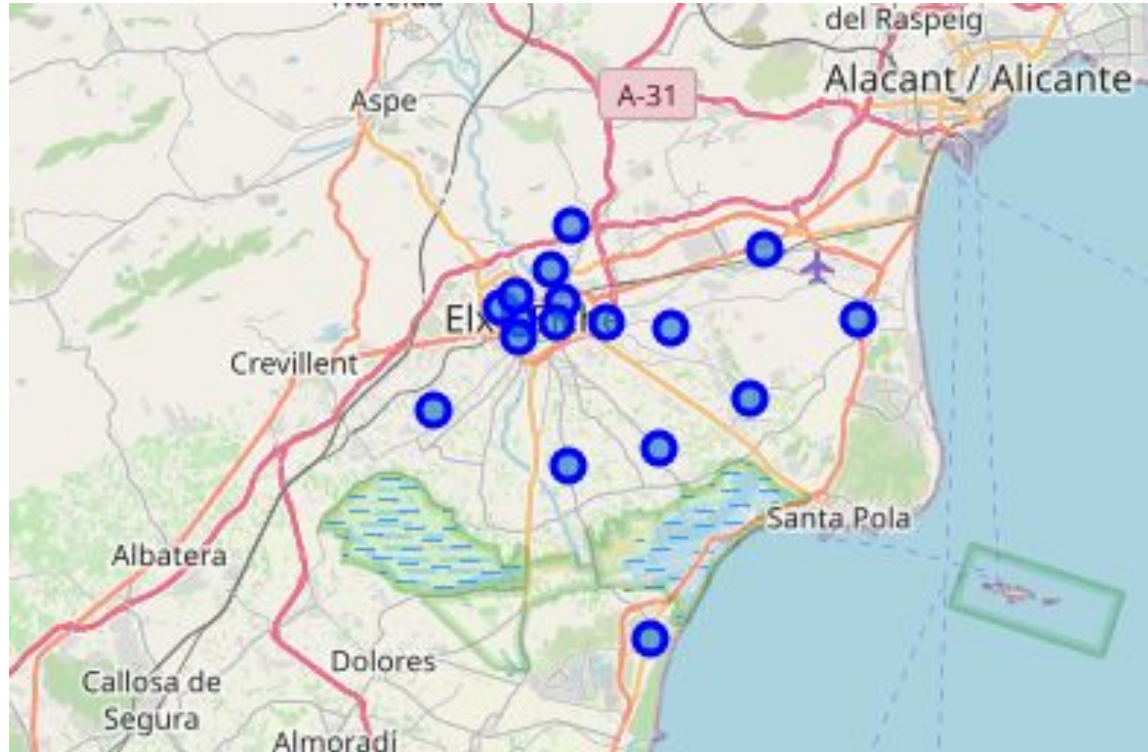


Data Section

1. We are using this [link](#) to know all the postal codes of Elche
2. Google maps for extracting the coordinates of each postal code
3. This [link](#) to know the annual income for each postal code
4. Finally the Foursquare API to download all the venues, and search the existing padel tennis clubs.

	Postal Code	Borough	Neighborhood	Latitude	Longitude	Annual Income
0	03139	Camp d'Elx	Valverde	38.236437	-0.597824	22213
1	03194	Camp d'Elx	La Marina	38.147014	-0.644511	20000
2	03195	Camp d'Elx	El Altet, Los Arenales	38.265322	-0.546587	22213
3	03201	El Pla	Pont Nou, El Pla Alt	38.265580	-0.705921	21638
4	03202	Altabix	Altabix, Candalix, Ciutat Esportiva	38.271360	-0.684831	23595

Data Section. Neighborhoods in Elche using Folium



Data Section. Most common venues

Here we can see the 5 most common venues for the first 5 neighborhoods, this gives us an idea of the data that we obtain from **Foursquare**

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Altavix Sur, Palmerales, La Torreta	Vegetarian / Vegan Restaurant	Spanish Restaurant	Hotel	Botanical Garden	Café
1	Altavix, Candalix, Ciutat Esportiva	Grocery Store	Café	Spanish Restaurant	Plaza	Falafel Restaurant
2	Bonavista	Gym / Fitness Center	Construction & Landscaping	Coffee Shop	Flower Shop	Farmers Market
3	Camp de Futbol	Spanish Restaurant	Tennis Court	Soccer Stadium	Bar	Recreation Center
4	Carrús Est	Gym / Fitness Center	Diner	Bus Stop	Plaza	Vegetarian / Vegan Restaurant

Methodology

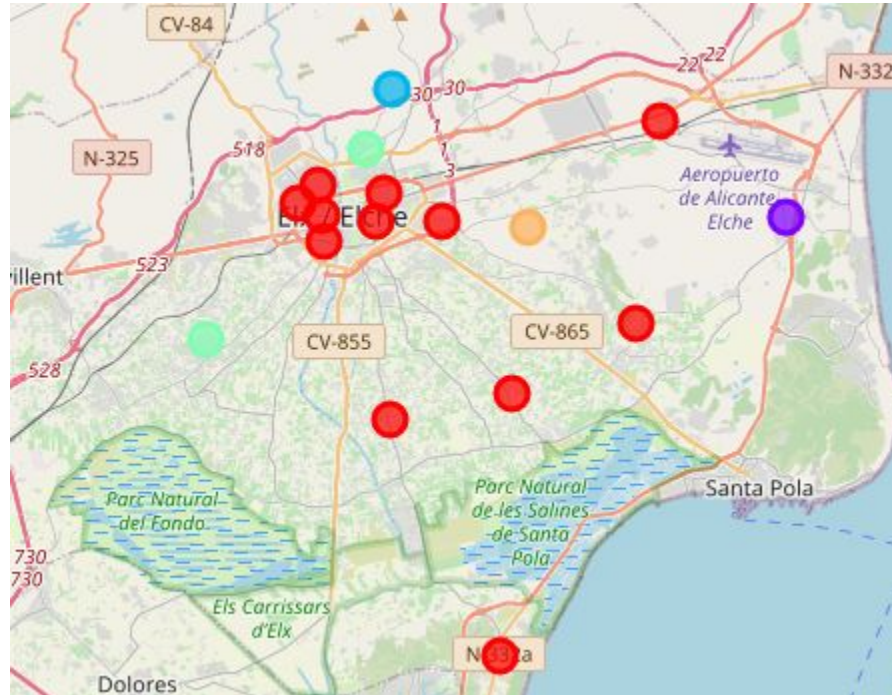
We cluster the neighborhoods using the common venues with the algorithm **k-means**. In our case, we are using 5 clusters, so each cluster has similar characteristics.

The **prerequisites** for an optimal location are:

1. The location must be in the same **cluster** but in a different neighborhood
2. The neighborhood has the highest possible **annual income**
3. It's located the **further away** from existing clubs as possible

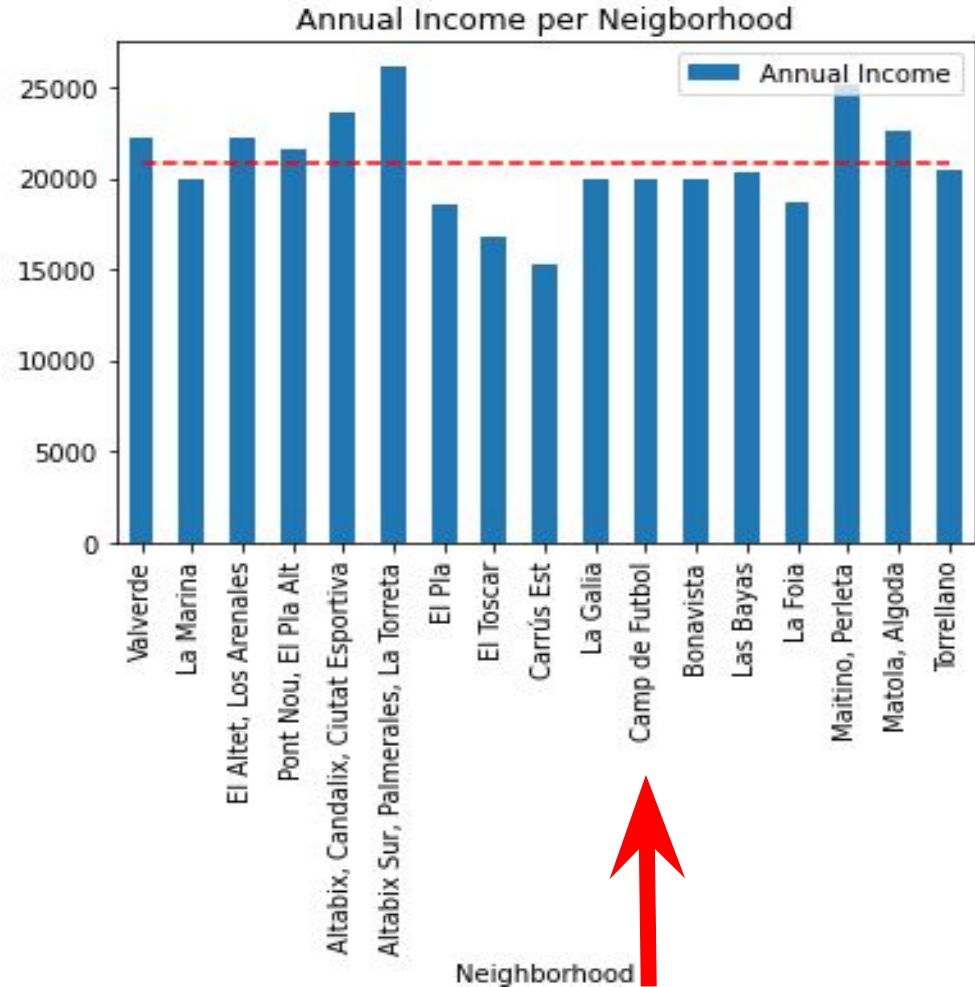
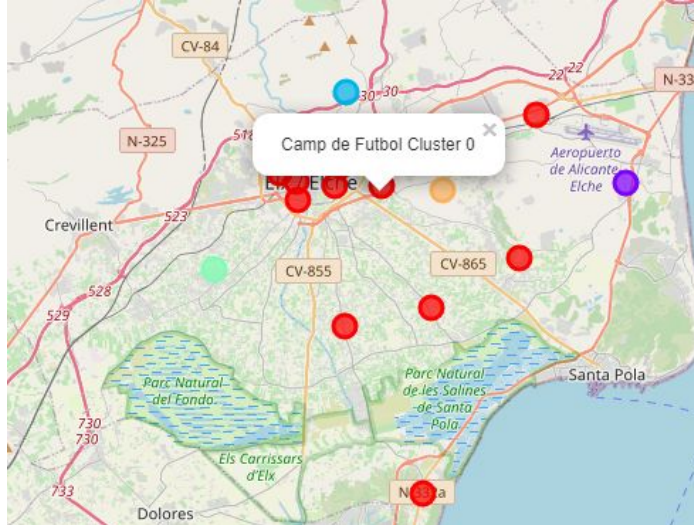
Clustering Neighborhoods

The majority of neighborhoods are in **Cluster 0** or **Red Cluster**



Camp de Futbol

In the "**Camp de Futbol**" neighborhood is located the existing Padel Tennis Club. So the club is not located in a high annual income.



Distance from the existing club

Now using the latitude and longitude, we calculate the distance in kilometers, so we want to be the further away as possible.

	index	Neighborhood	Latitude	Longitude	Annual Income	Distance (Km)
0	5	Altabix Sur, Palmerales, La Torreta	38.263938	-0.687454	26155	2.008235
1	4	Altabix, Candalix, Ciutat Esportiva	38.271360	-0.684831	23595	2.155285
2	0	Valverde	38.236437	-0.597824	22213	3.694155
3	3	Pont Nou, El Pla Alt	38.265580	-0.705921	21638	2.012719
4	16	Torrellano	38.291186	-0.590044	20474	3.600604

Results. Optimal location

Now we rank 2 columns, the **Annual Income** and the **Distance** column, so the highest income obtains 5 points, and the further away distance obtains 5 points. Then we calculate the sum of both columns, being the **optimal location** the maximum number.

Neighborhood	Latitude	Longitude	Annual Income	Distance (Km)	rank Income	rank Distance	total rank
Altabix Sur, Palmerales, La Torreta	38.263938	-0.687454	26155	2.008235	5.0	1.0	6.0
Altabix, Candalix, Ciutat Esportiva	38.271360	-0.684831	23595	2.155285	4.0	3.0	7.0
Valverde	38.236437	-0.597824	22213	3.694155	3.0	5.0	8.0
Pont Nou, El Pla Alt	38.265580	-0.705921	21638	2.012719	2.0	2.0	4.0
Torrellano	38.291186	-0.590044	20474	3.600604	1.0	4.0	5.0

The optimal location with 8 points is **Valverde**.

Results and discussion

Our analysis shows that there is **only one** padel tennis club in Elche, meaning that there is a good **business opportunity**, this club is in the major cluster, near the center of the city. We have decided to open a new club in a different neighborhood to avoid competition, being far from the existing one and with higher incomes.

All in all, we are pondering the **annual income** and the **distance** from the existing club with the **same weight**, maybe other approximation can be better, or including other parameters as population density.

Conclusion

The **purpose** of this project was to find a optimal location to open a padel tennis club, with some prerequisites commented before.

We have obtained an **optimal location** far from the center of the city, but in a peaceful neighborhood, **automating** all the download data can be taken into account in a future time, as well as, evaluating **other parameters** as population density, available surface area and others.

All in all, this is a **research project** that is not intended to make any business decision, but can be a good starting point for other projects. Thanks.