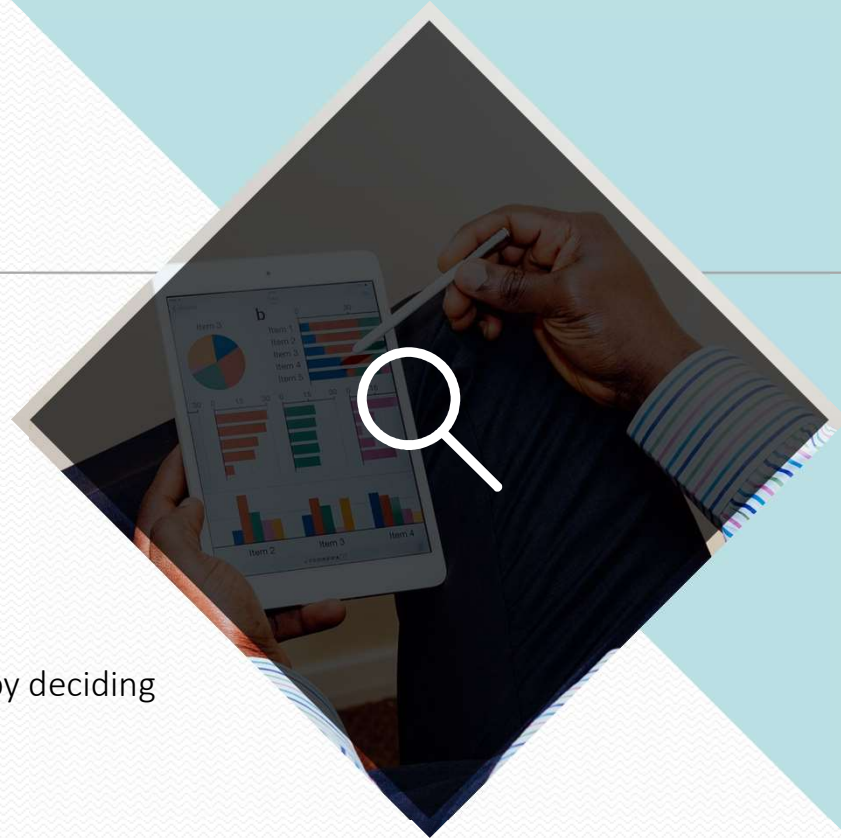


Where to move my business

As a Data Scientist, I've to decide where relocate my business by deciding the best neighborhood





INTRODUCTION

Tarragona is a port city located in northeast Spain on the Costa Daurada by the Mediterranean Sea. Geographically, it is bordered on the north by the Province of Barcelona and the Province of Lleida.

Tarragona contains a number of small bars, restaurants, and cafes serving tapas and sandwiches.



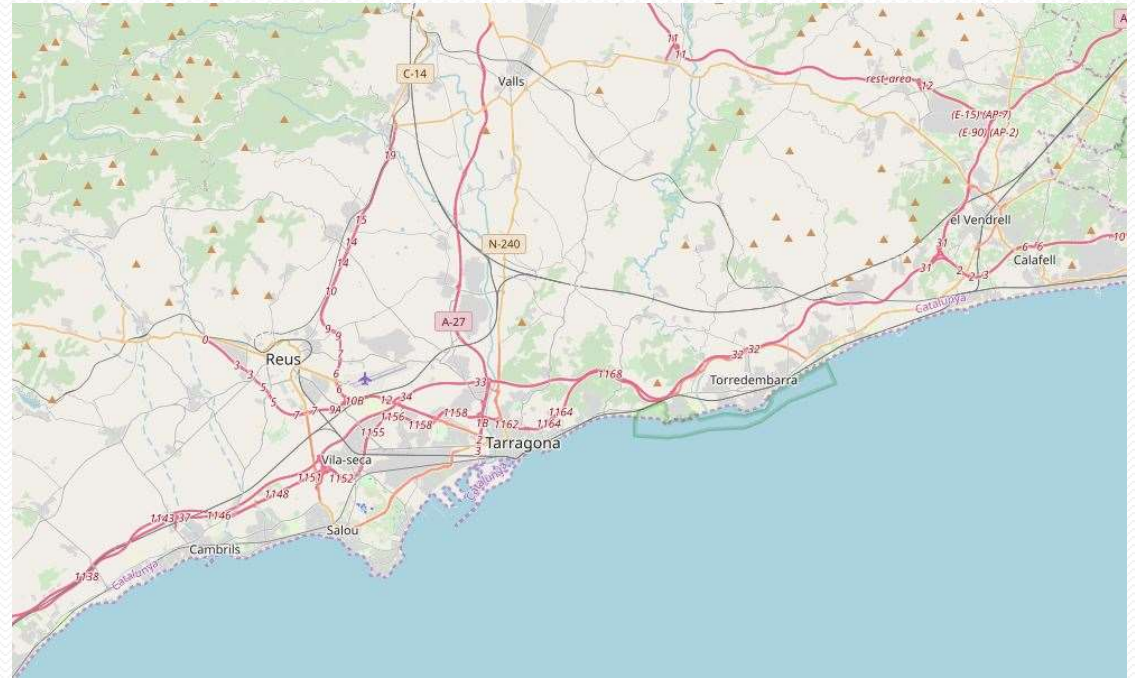


THE PROBLEM

Today I have a restaurant in the Nou Eixample Sud neighborhood of Tarragona. I am very happy because the business is going very well for me.

The problem is that the landlord has raised my rent a lot and I have to relocate my business.

There are many interesting neighborhoods in the province of Tarragona and I have to choose which one is better.



I will choose the neighborhood that has these characteristics:

1. The neighborhood should be as similar as possible to my current neighborhood in terms of services.
2. The number of inhabitants per restaurant must be taken into account. The more the better.



DATA ACQUISITION

I could find a CSV file that contains the basic data of the best neighborhoods in the province. Population, coordinates, zip code, etc.

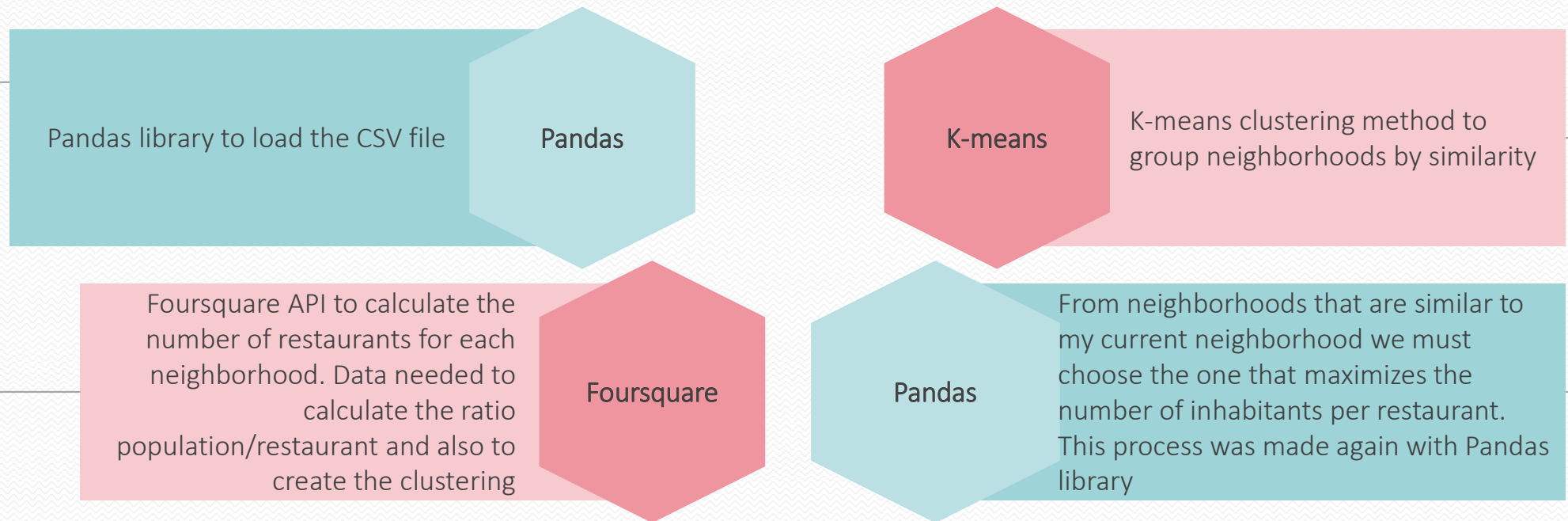
With this data, the following process must be carried out:

1. Calculate for each neighborhood the number of restaurants there are.
2. Group neighborhoods by similarity through clustering.
3. From neighborhoods that are similar to my current neighborhood we must choose the one that maximizes the number of inhabitants per restaurant.

```
Postalcode,Neighborhood,City,Population,Latitude,Longitude
43002,Nou·Eixample·Nord,Tarragona,26080,41.1227814,1.2479709
43006,Torreforta,Tarragona,17010,41.1188235,1.2169539
43007,Sant·Pere·i·Sant·Pau,Tarragona,16694,41.1382712,1.2524378
43005,Nou·Eixample·Sud,Tarragona,15884,41.116315,1.2459971
43007,Urbanitzacions·de·Llevant,Tarragona,13152,41.1180994,1.2727256
43006,Campclar,Tarragona,11705,41.1207885,1.2111104
43001,Eixample·Tarragona,Tarragona,11333,41.1151502,1.2510463
43004,Barris·Marítims,Tarragona,11228,41.1097904,1.2402771
43100,Bonavista,Tarragona,9457,41.1195973,1.1920795
43130,Sant·Salvador,Tarragona,7564,41.157635,1.2409503
43003,Part·Alta,Tarragona,4207,41.1175192,1.25695
43201,Districte·1,Reus,4326,41.1550589,1.1086436
43202,Districte·2,Reus,20360,41.1515997,1.1036228
43205,Districte·3,Reus,18686,41.1451099,1.1075406
43201,Districte·4,Reus,10624,41.1529623,1.1121509
43204,Districte·5,Reus,11480,41.1570852,1.115399
43203,Districte·6,Reus,19568,41.1621051,1.1009828
43204,Districte·7,Reus,7752,41.1433831,1.1297212
43205,Districte·8,Reus,11050,41.1486124,1.0931739
43206,Districte·9,Reus,2563,41.1664064,1.0868026
43206,Districte·10,Reus,2278,41.1534879,1.1233528
43700,El·Vendrell,El·Vendrell,35821,41.2172997,1.530048
43850,Cambrils,Cambrils,31720,41.066421,1.0592146
43840,Salou,Salou,26649,41.0775692,1.131255
43800,Valls,Valls,25092,41.2840967,1.2491888
43820,Calafell,Calafell,24265,41.1932327,1.5645777
43480,Vila-seca,Vila-seca,20866,41.1080161,1.1474114
```

METHODOLOGY

To solve the problem I've used the following methodology:

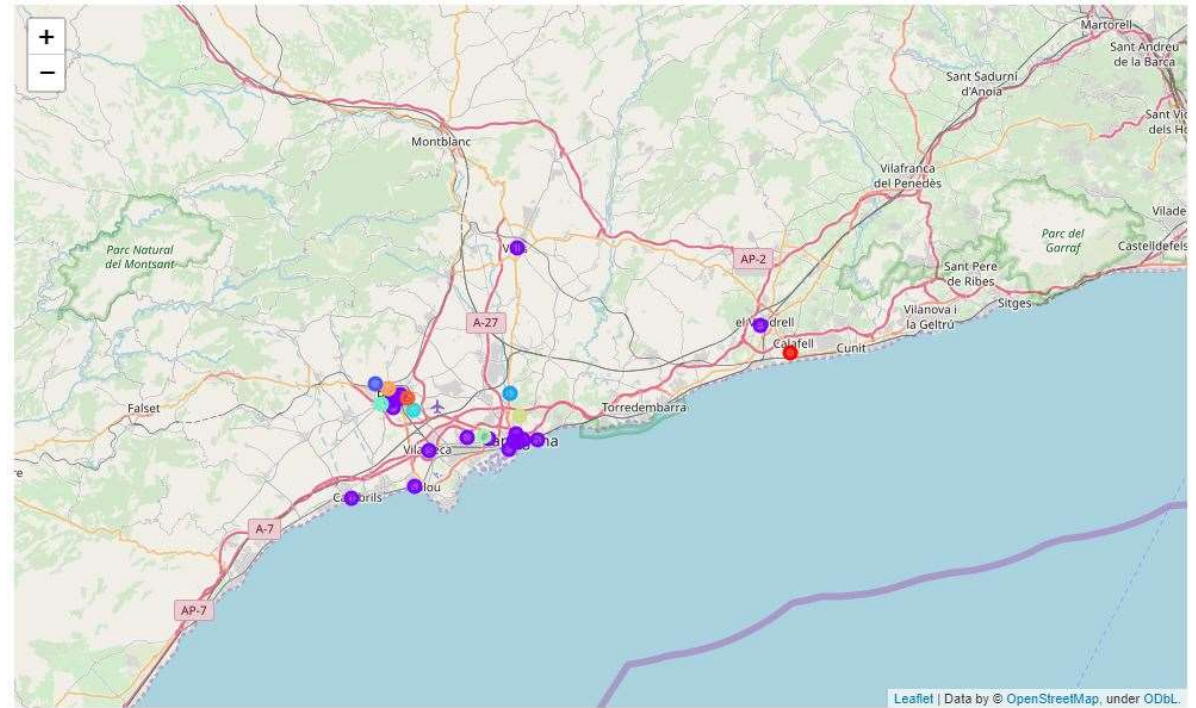




RESULTS

This is the clustering distribution.

As we can see, the dominant cluster is number 1 (violet color). Within that cluster we must find the best neighborhood.





RESULTS (2)

This are the 5 neighborhoods belonging to cluster 1 with maximum ratio population per restaurant (Target):

	Postalcode	Neighborhood	City	Population	Latitude	Longitude	Venues	Target
21	43700	El Vendrell	El Vendrell	35821	41.217300	1.530048	9	3980.111111
1	43006	Torreforta	Tarragona	17010	41.118823	1.216954	5	3402.000000
0	43002	Nou Eixample Nord	Tarragona	26080	41.122781	1.247971	12	2173.333333
13	43205	Districte 3	Reus	18686	41.145110	1.107541	10	1868.600000
4	43007	Urbanitzacions de Llevant	Tarragona	13152	41.118099	1.272726	8	1644.000000

So, now we can decide that the best neighborhood to move forward is **El Vendrell**.



THANK YOU