



**FIND THE BEST
NEIGHBORHOOD IN MADRID
TO OPEN A RESTAURANT**

MADRID

- ❑ Is the capital and the most populated city in Spain.
- ❑ The city has almost 3.3 million inhabitants and a metropolitan area population of approximately 6.5 million.
- ❑ It concentrates activities directly related to power and to knowledge and technological innovation.
- ❑ It is one of the largest financial centers in Europe and the largest in Spain.

BUSSINES POBLEM

Madrid is administratively divided into 21 districts, which in turn are subdivided into 131 neighborhoods.

Are there differences from one district to another? How are businesses distributed in each of your districts? Where would it be more prosperous to open a new restaurant?

In this analysis we will try to find an optimal location for a restaurant in Madrid taking into account the competitors and which group of people with income will be attracted according to the population of the neighborhood.

DATA ADQUISITION

- **Foursquare API:** Collection of restaurant related data (location, distribution, type of food).
- **National Institute of Statistics (INE):** Official site for downloading demographic data, per capita income and housing prices.
- **Madrid City Council open data portal:** Official site for downloading data related to Madrid.

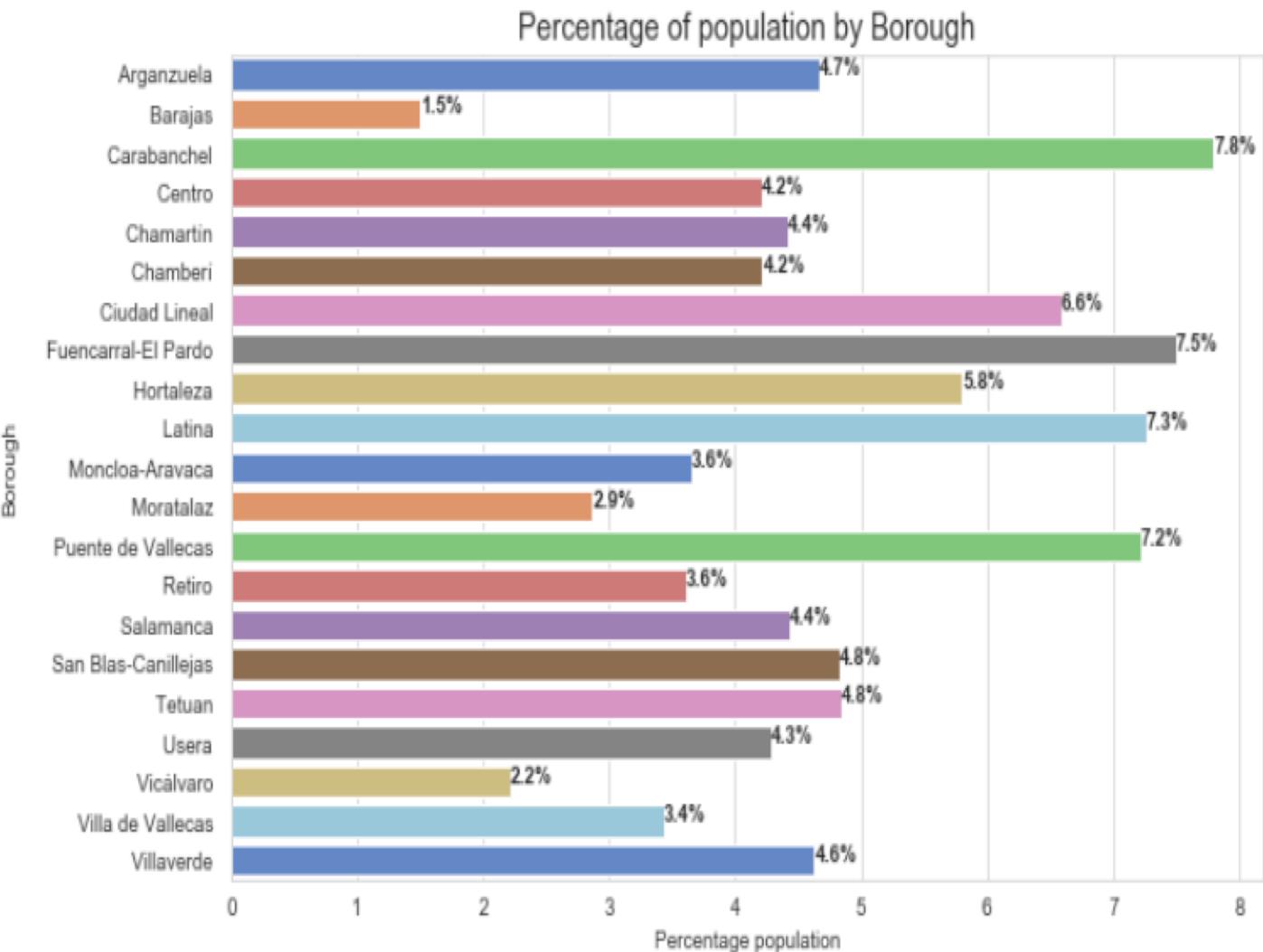
GETTING, EXPLORING AND ANALYZIN, EXPLORING AND ANALYZING THE DATA

- This step was completed with a single dataset composed of Borough, Neighborhood, Population, RentalNE, AvgHousingPrice of each of the boroughs.

	Borough	Neighborhood	Population	RentalNE	AvgHousingPrice
0	Centro	Palacio, Embajadores, Co...	140.473	16147	5479.500000
1	Arganzuela	Imperial, Las Acacias, L...	155.660	17306	4547.750000
2	Retiro	Pacífico, Adelfas, Estre...	120.406	21504	5178.416667
3	Salamanca	Recoletos, Goya, Fuente ...	147.854	24433	6352.916667
4	Chamartín	El Viso, Prosperidad, Ci...	147.551	25969	5944.666667
5	Tetuán	Bellas Vistas, Cuatro Caminos, ...	161.313	14970	4333.708333
6	Chamberí	Gaztambide, Arapiles, Tr...	140.866	22499	6040.750000
7	Fuencarral-El Pardo	El Pardo, Fuentelarreina, ...	249.973	18573	4322.333333
8	Moncloa-Aravaca	Casa de Campo, Argüelles, ...	121.683	22152	4676.958333

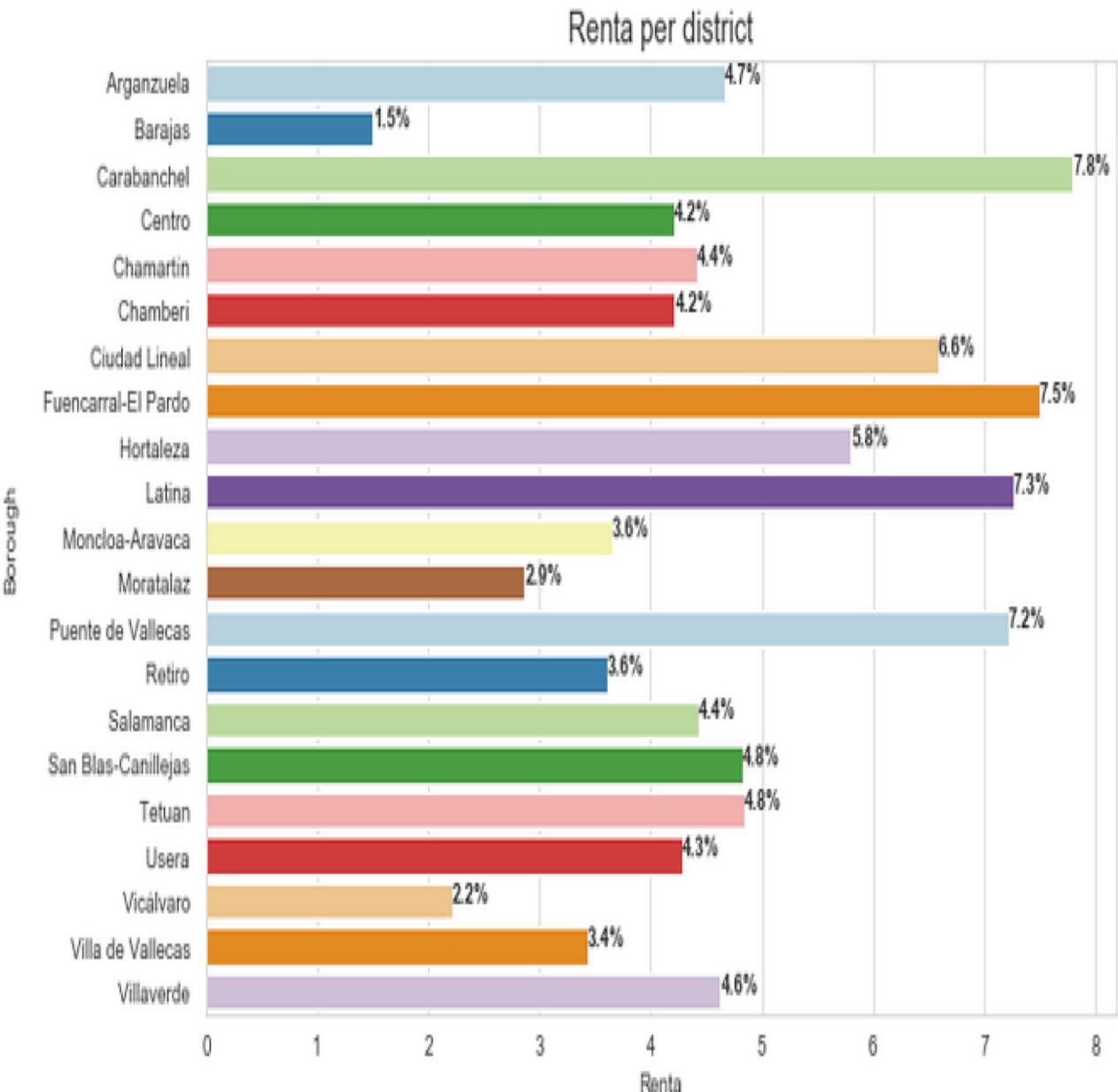
POPULATION

The most populated borough are Carabanchel, Fuencarral- El Pardo, Latina and Puente de Vallecas.



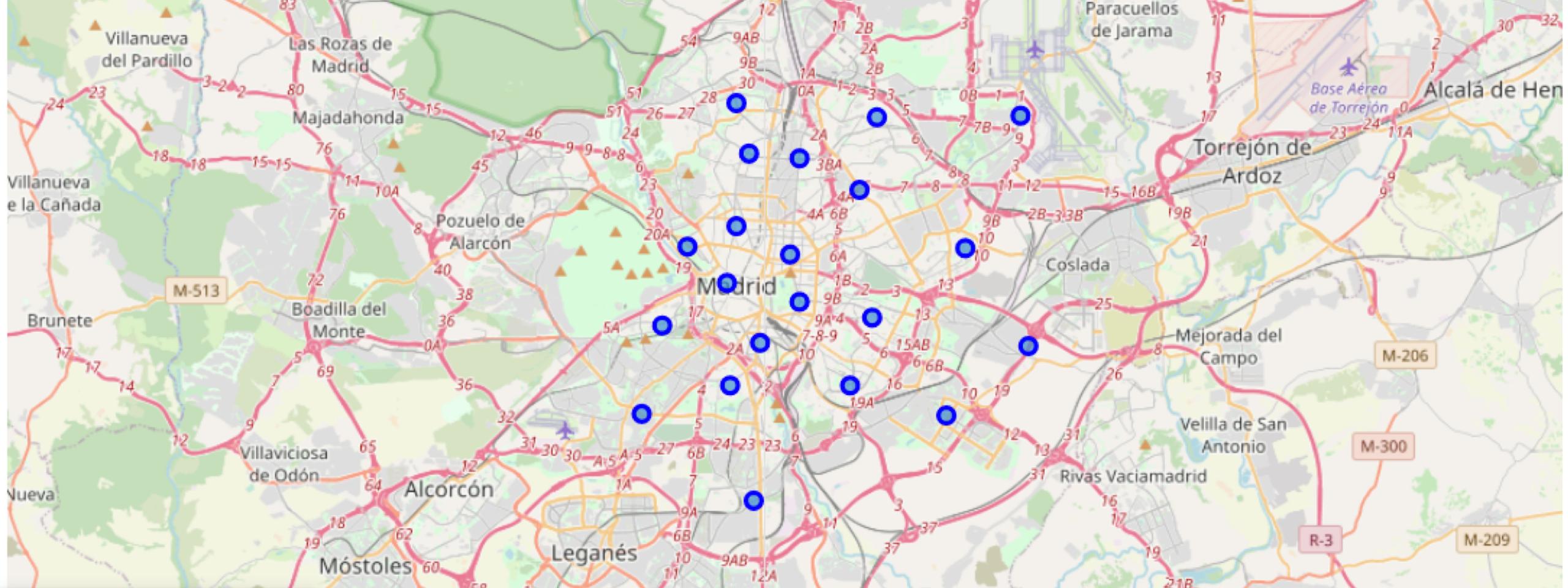
PER CAPITA INCOME

The borough with the highest income are Chamartin and Salamanca.



GEOGRAPHIC DETAILS OF MADRID

Map of Madrid with boroughs superimposed on top



FOURSQUARE API

- The limit as 200 venue and the radius 2000 meter for each borough from their given latitude and longitude informations.
- 998 venues and **89** unique categories were returned by Foursquare

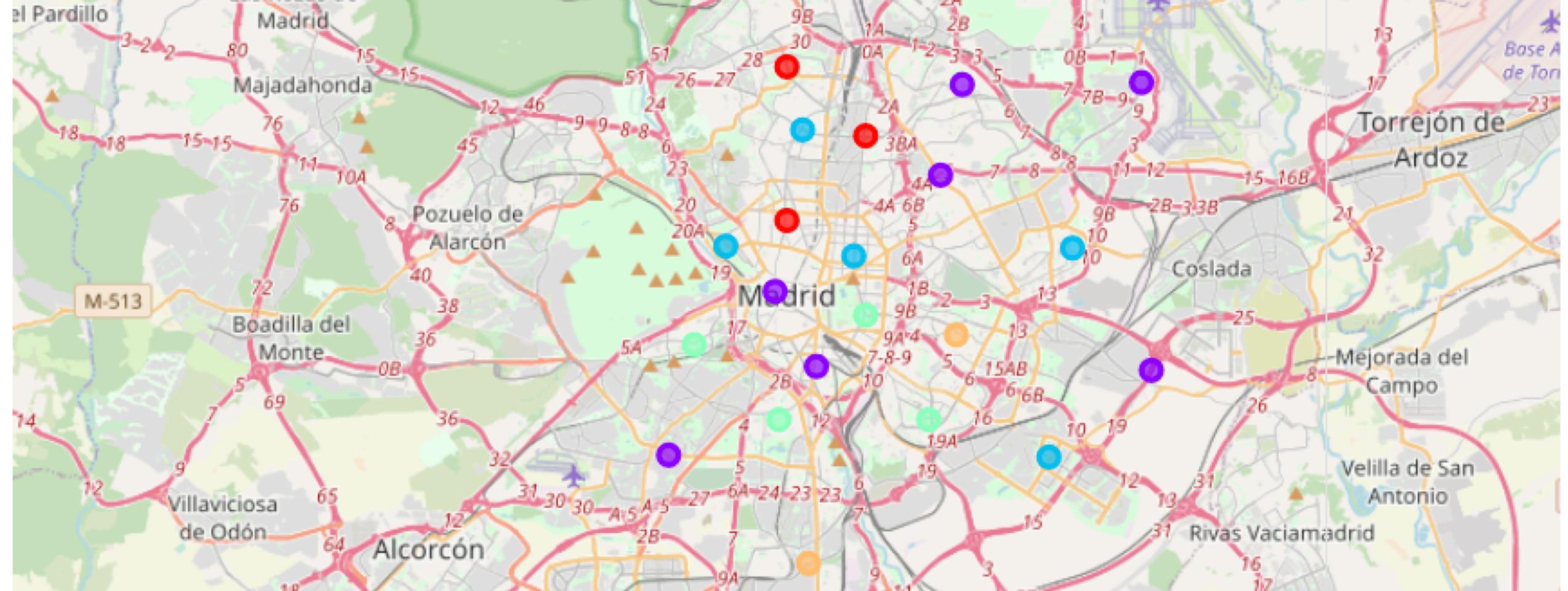
	Borough	Borough Latitude	Borough Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Centro	40.417653	-3.707914	Chocolatería San Ginés	40.416754	-3.707079	Chocolate Shop
1	Centro	40.417653	-3.707914	Churrería Los Artesanos 1902	40.417581	-3.707029	Coffee Shop
2	Centro	40.417653	-3.707914	Five Guys	40.420526	-3.705540	Burger Joint
3	Centro	40.417653	-3.707914	Starbucks	40.424975	-3.684107	Coffee Shop
4	Centro	40.417653	-3.707914	Mallorca	40.421205	-3.688435	Bakery

Venue Category
American Restaurant 8
Argentinian Restaurant 10
Asian Restaurant 13
BBQ Joint 4
Bagel Shop 1
. . .
Udon Restaurant 1
Vegetarian / Vegan Restaurant 6
Venezuelan Restaurant 1
Vietnamese Restaurant 3
Wine Bar 2
Name: Borough, Length: 89, dtype: int64

CLUSTERING

After a proces of One hot encoding, grouping by borough, adding datas and transforming the dataset by scaling each feature, we run K-Means algorth to cluster the boroughs in 5 groups.

The variables that took into account for de algorthm were:
Population, AvgHousePrice and all venues carateristics.



CLUSTER THE BOROUGHS IN 5 GROUPS

- Cluster 1
- Cluster 2
- Cluster 3
- Cluster 4
- Cluster 5

RESULTS

- This project offers some guidelines to decide the type of premises and the most suitable neighbourhood to open it.
- On the basis of the results, for an investor with money, the most suitable place to set up a restaurant is in group 1.
- Group 1 consists of boroughs in the northern part of the city with a medium population level and a high income. Areas where premises have high purchase prices and therefore a high initial investment would be necessary.

CONCLUSION

- Socio-economic variables of the different borough of Madrid, per capita income, the average house price and some specific characteristics of the most common food premises in each borough only provide us a superficial overview.
- Results could be the starting point to analyse new variables.
- New variables depending on the interests and possibilities of each investor (initial capital, financial situation, socio-economic situation, availability of premises, etc.)