Finding a rental apartment in a new city

Capstone Project in Data Science

Data science as a tool for real estate agencies

Many people move from their home country every year for different reasons, some of them because are starting a new job or a new business, others for a semester of study and other for love.

All these people have something in common, they are locking for a place that is comparable to the current home.

In big cities such as Rome, Paris or London, with huge population of renters, it's common to use a real estate agent to find a rental property.

The mainly requests that real estate agency receive from customers are :

- Find a house in a neighborhood that is as similar as possible to the one they come from;
- That the new neighborhood meets a list of requirements such as parks, traditional restaurants, and so on.

Data acquisition and cleaning

Average cost of a rental house in Paris: This information is gathered from this webpage 'https://www.seloger.com/prix-de-l-immo/location/ile-de-france/paris.htm'. The dataset consists of the district number and the average monthly cost of a rented apartment in that district.

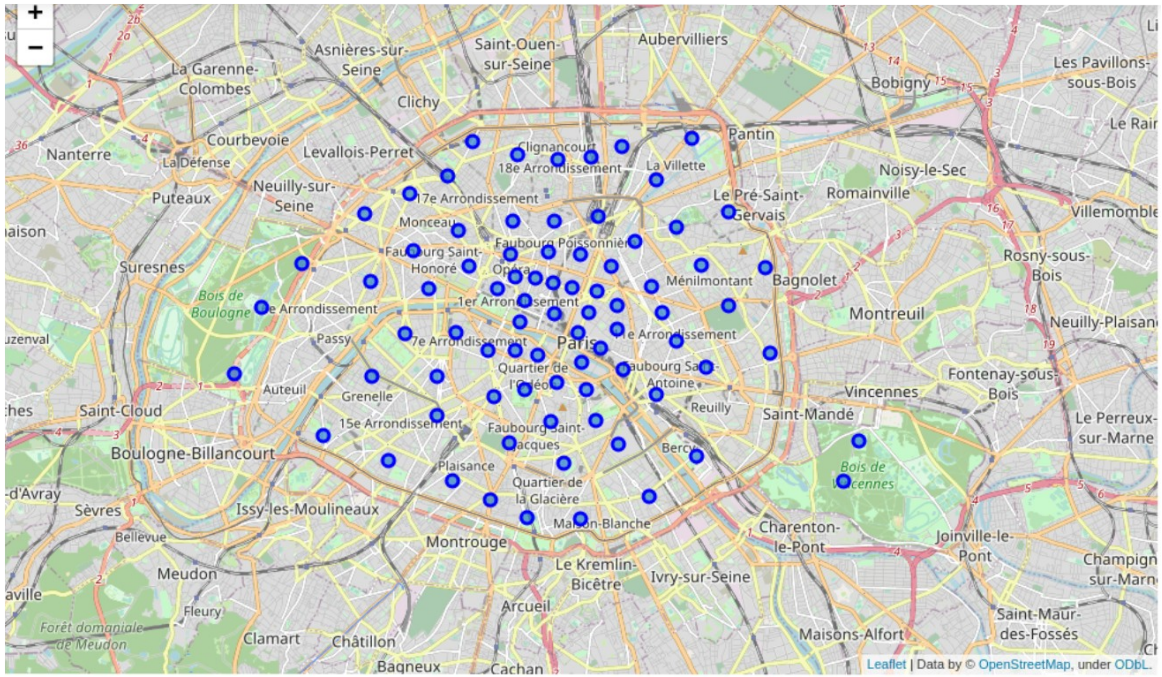
Average burglary in the borough of Paris: This information is gathered from this webpage 'https://www.bfmtv.com/societe/carte-delinquance-a-paris-quels-sont-les-arrondissements-ou-l-on-recense-le-plus-de-delits_AN-201910180103.html'. The dataset is composed of the district number and the number of annual burglaries in that district.

Information about the venues in Paris neighboroods : This information is gathered through FourSquare API. The dataset contains Paris neighborhood information. It consists of the district number, the neighborhood name and all the premises that are present within a 750 meter radius from the neighborhood center.

Information about the venues in home town neighborood : This information is gathered through FourSquare API. The dataset contains home town neighborhood information. It consists of the district number, the neighborhood name and all the premises that are present within a 750 meter radius from the neighborhood center.

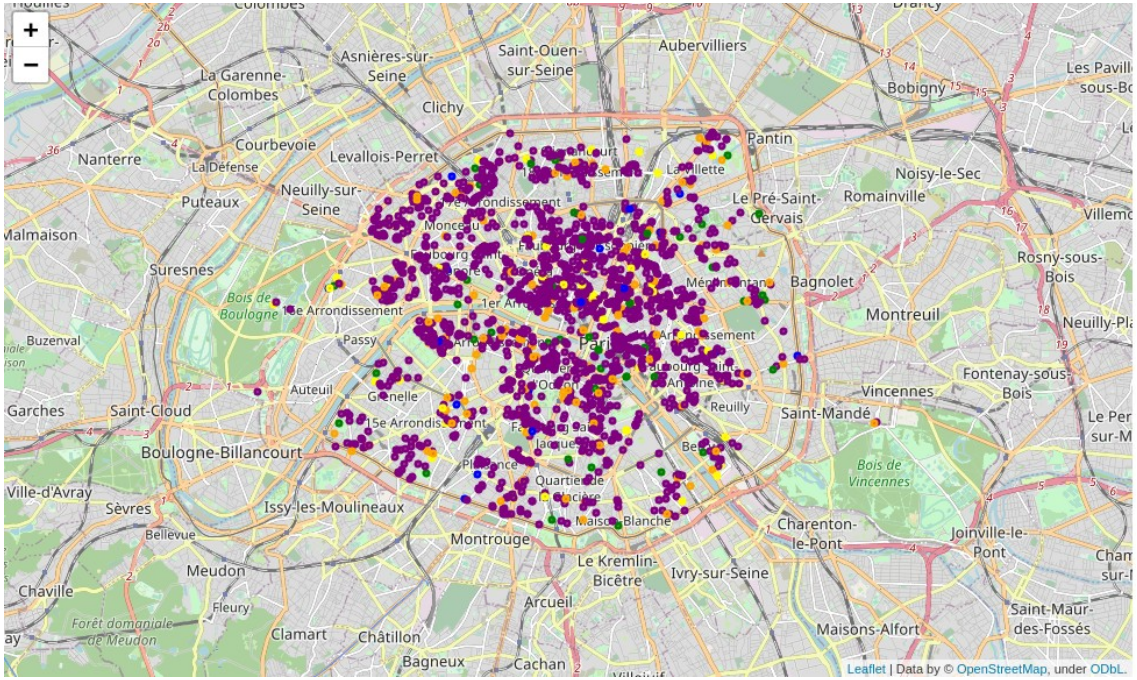
The names of all Paris neighboroods : This information is gathered from this webpage 'https://opendata.paris.fr/explore/dataset/quartier_paris'.

Paris neighborhood



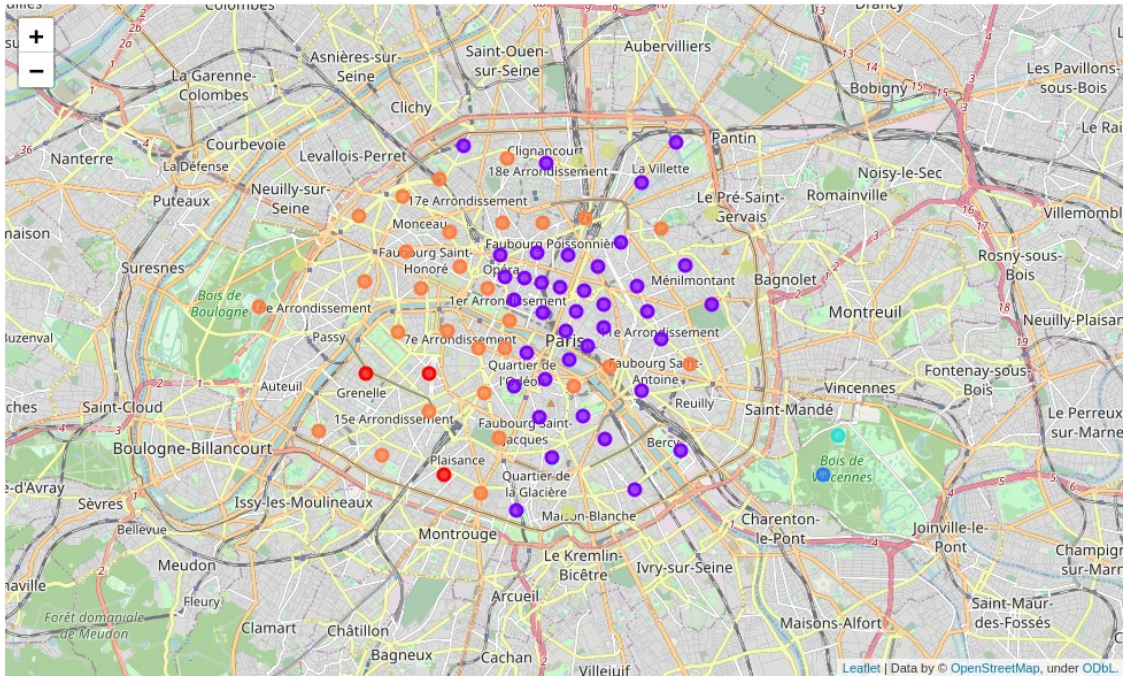
Paris has in total 20 boroughs (called arrondissements in French) and are divided in 80 neighborhoods.

Favorite customer places



Customer likes to have in his neighborhood restaurants, parks, gyms, cafè and grocery store

Paris clustered neighborhood



Neighborhoods are divided in cluster according to venues distribution

Results

We found four neighborhoods that had all the features the customer requested. Using the K-means clustering algorithm we found 38 neighborhoods that are similar to customer hometown neighborhood. The intersection of the two previous results gives only two neighborhoods.

Using the information from cost and crime rate we can summarize the result in the following table :

Neighborhood	Cost per sqm	Burglary Rate
Hôpital-Saint-Louis	32.3	790
Palais-Royal	37.9	302

Conclusion and Future directions

- The aim of this project was to identify a neighborhood similar to the client's current one and which, at the same time, also had venues that were important to him.

- We have succeeded in demonstrating that data science methodologies can be used for the solution of this type of problem.

- As a future development, the use of recommendation systems could be investigated to get further information on choosing the apartment to rent.