

# Paris's battle of neighborhoods

*Submitted By: Youssra Saadeddine*

# Business Problem:

- ▶ The objective of this capstone project is to analyze and select the best locations in Paris to open a hotel. Using data science methodology and machine learning techniques like clustering.
- ▶ if someone is looking to open a new hotel in the city of amour, where would you recommend that they open it?

## Target Audience of this project

This project is useful to property developers or investors looking to open a hotel in Paris.

## Data required:

- List of neighborhoods in Paris
- Latitude and Longitude coordinates of the neighborhoods
- Venue data, particularly data related to hotels

# Sources of data

This Wikipedia page ([https://en.wikipedia.org/wiki/Quarters\\_of\\_Paris](https://en.wikipedia.org/wiki/Quarters_of_Paris)) contains a list of neighborhoods in Paris.

# Quarters of Paris

From Wikipedia, the free encyclopedia

*This article is about Paris' administrative 'quartier' subdivisions. For info about Paris' historical quarters, see Historical quarters of Paris.*

Each of Paris' 20 administrative districts (or *arrondissements*) are officially divided into 4 *quartiers*,<sup>[1]</sup> outside administrative use (census statistics and other government services), they are very rarely referenced by Parisians themselves, and have no specific administration or political representation.

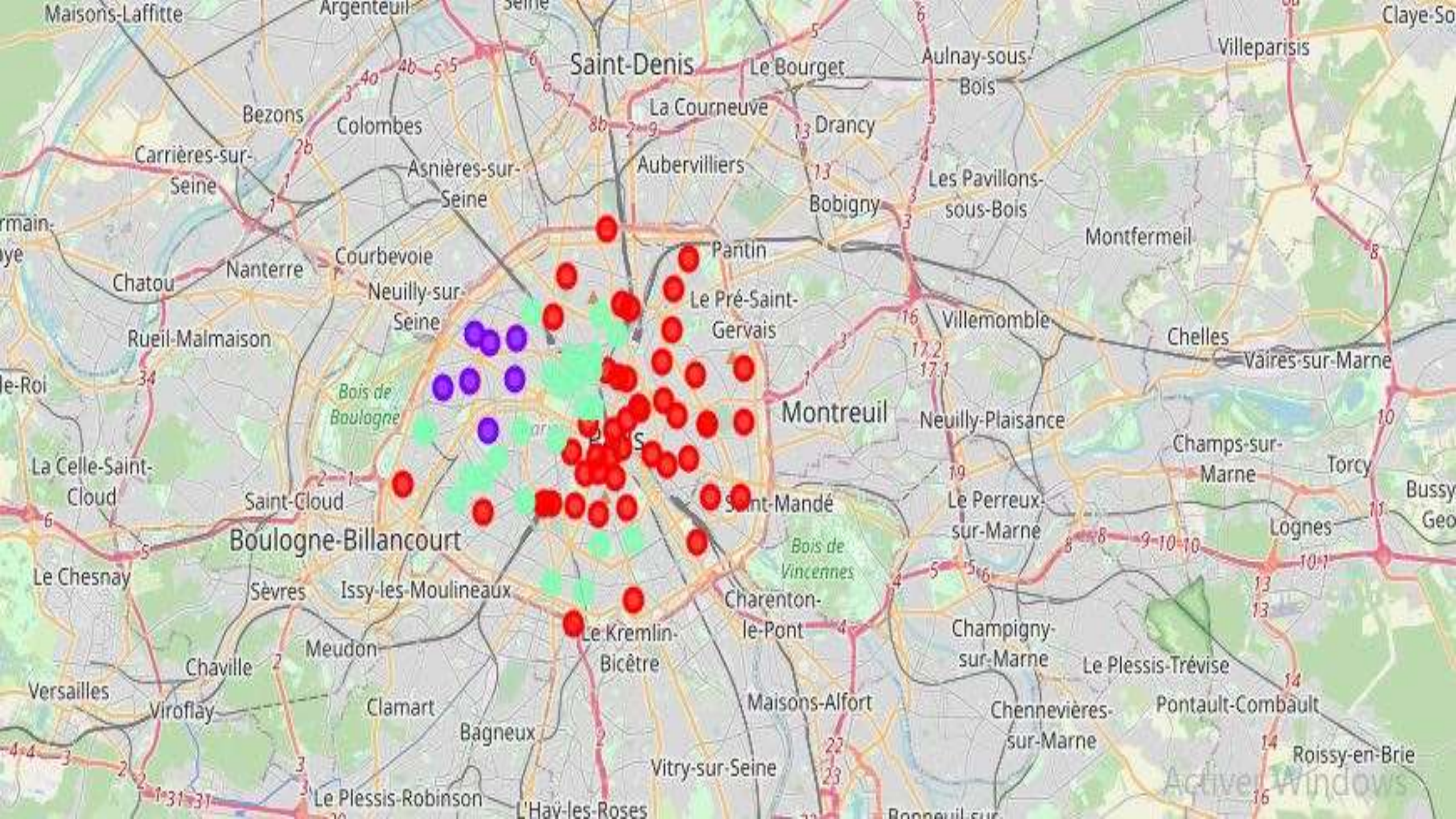
Arrondissement (Districts)	Quartiers (Quarters)		Population in 1999 <sup>[3]</sup>	Area (hectares) <sup>[3]</sup>	Map
1st arrondissement (Called "du Louvre")	1st	Saint-Germain-l'Auxerrois	1,672	86.9	
	2nd	Les Halles	8,984	41.2	
	3rd	Palais-Royal	3,195	27.4	
	4th	Place-Vendôme	3,044	26.9	
2nd arrondissement (Called "de la Bourse")	5th	Gaillon	1,345	18.8	
	6th	Vivienne	2,917	24.4	
	7th	Mail	5,783	27.8	
	8th	Bonne-Nouvelle	9,595	28.2	
3rd arrondissement (Called "du Temple")	9th	Arts-et-Métiers	9,560	31.8	
	10th	Enfants-Rouges	8,562	27.2	
	11th	Archives	8,609	36.8	
	12th	Sainte-Avoye	7,501	21.3	

# Methodology

- ▶ Web scraping Wikipedia page for neighborhoods list
- ▶ Get latitude and longitude coordinates using Geocoder
- ▶ Use foursquare API to get the venue data
- ▶ Group data by neighborhood and taking the mean of the frequency of occurrence of each venue category
- ▶ Filter venue category by hotels
- ▶ Perform clustering on the data by using k-means clustering
- ▶ Visualize the cluster in a map using Folium

# Results and discussion







# Results:

The results from the k-means clustering shows that we categorize the neighborhood into 3 clusters based on the frequency of occurrence for “hotels”:

- Cluster 0: Neighborhoods with the high number of Hotels.
- Cluster 1: Neighborhoods with the low number of Hotels.
- Cluster 2: Neighborhoods with the moderate number of Hotels.

# Discussion and recommendations :

- ▶ most of the hotels are concentrated in the central area of Paris city, with the highest number in cluster 0 and moderate number in cluster 2, cluster 1 has no hotel in the neighborhood (central area).
- ▶ Cluster 2 represent a great opportunity and high potential area to open new hotels as there is very little competition from existing hotels in **the west side**, Meanwhile, hotels in cluster 0 are likely suffering from the of intense competition in the central area of Pairs due to oversupply and high concentration of hotels ,but in the **Eastern side**, having an hotel in cluster 0 is the best choice.
- ▶ From another perspective, the result also shows the oversupply of hotel mostly happened in the central area of the city, with the west area still have the few hotel. Therefore, this project recommends property developers to capitalize on these new finding's tom open a new hotel in cluster 2 with the little to no competition.

# Conclusion:

- Answer to business question: The neighborhoods in cluster 2 are the most prefer locations to open a new hotel.
- Findings of this project will help the relevant stakeholders to capitalize on the opportunities on high potentials location will avoiding overcrowded areas in their decisions to open a new hotels.