

Battle of the Neighborhoods

Rome Versus Paris

Comparing two major gastronomy capitals

- Both capitals are known to be major tourist destinations worldwide as well places famous for their cuisine and gastronomy.
- Ranked 2nd (Paris) and 3rd (Rome) on worldatlas.com in cities attracting the highest number of tourists in Europe in 2017

- Similar in size

	Rome	Paris	Source
Official population (city limits)	2,857,321	2,140,526	(Wikipedia)
Tourists (international arrivals 2017)	9.5 million	14.26 million	(worldatlas.com)
Number of restaurants	13,721 (2017)	44,896 (2017)	(worldcitiescultureforum.com)

- 3 questions:
 1. How similar are the neighborhoods of Paris and Rome and if they are dissimilar, what distinguishes them?
 2. Which of the two cities has the most diverse food scene?
 3. Which of the two cities has the best ratings (both in total and for their national cuisine)?

Data acquisition and methodology

- List of neighborhoods (arrondissements in Paris and Municipi in Rome) from Wikipedia pages
- GPS coordinates of the neighborhoods from www.coordinatesmarker.com
- Obtention of list of venues nearby neighborhoods and their categories using Foursquare API.
- Obtention of restaurants ratings in both cities via Foursquare API.
 - Reduction of the scope of the ratings comparative analysis to diminish the number of API calls to perform to only restaurants in the 5 most central neighborhoods in both cities and to only 'French restaurant' category in Paris and 'Italian Restaurant' category in Rome.
- KMeans Clustering for the analysis of the similarity of neighborhoods across both cities.

1. Similarity of neighborhoods (1/2)

Using a KMeans clustering analysis, the 6 clusters formed are the following:

	Neighborhood	Neighborhood_Name	1stMost common venue	2ndMost common venue
0	Municipio Roma I	Centro Storico	Plaza	Ice Cream Shop
1	Municipio Roma II	Parioli/Nomentano	Plaza	Ice Cream Shop
3	Municipio Roma IV	Tiburtina	Ice Cream Shop	Italian Restaurant
4	Municipio Roma V	Prenestino/Centocelle	Ice Cream Shop	Historic Site
7	Municipio Roma VIII	Appia Antica	Ice Cream Shop	Historic Site
11	Municipio Roma XII	Monte Verde	Italian Restaurant	Ice Cream Shop

Cluster 0

	Neighborhood	Neighborhood_Name	1stMost common venue	2ndMost common venue
26	Paris arrondissement XII	Reuilly	Bus Stop	Hotel

Cluster 2

	Neighborhood	Neighborhood_Name	1stMost common venue	2ndMost common venue
16	Paris arrondissement II	Bourse	French Restaurant	Italian Restaurant
18	Paris arrondissement IV	Hôtel-de-Ville	French Restaurant	Art Gallery
19	Paris arrondissement V	Panthéon	French Restaurant	Bakery
20	Paris arrondissement VI	Luxembourg	French Restaurant	Hotel
21	Paris arrondissement VII	Palais-Bourbon	Hotel	French Restaurant
23	Paris arrondissement IX	Opéra	French Restaurant	Hotel
24	Paris arrondissement X	Entrepôt	French Restaurant	Coffee Shop
25	Paris arrondissement XI	Popincourt	French Restaurant	Pizza Place
29	Paris arrondissement XV	Vaugirard	French Restaurant	Japanese Restaurant
32	Paris arrondissement XVIII	Butte-Montmartre	French Restaurant	Bar
33	Paris arrondissement XIX	Buttes-Chaumont	French Restaurant	Bar
34	Paris arrondissement XX	Ménilmontant	French Restaurant	Bar

Cluster 1

	Neighborhood	Neighborhood_Name	1stMost common venue	2ndMost common venue
2	Municipio Roma III	Monte Sacro	Italian Restaurant	Pizza Place
5	Municipio Roma VI	Roma delle Torri	Italian Restaurant	Pizza Place
6	Municipio Roma VII	Appio-Latino/Tuscolana/Cinecittà	Pizza Place	Historic Site
8	Municipio Roma IX	Eur	Pizza Place	Café
9	Municipio Roma X	Ostia/Acilia	Beach	Italian Restaurant
10	Municipio Roma XI	Arvalia/Portuense	Pizza Place	Ice Cream Shop
12	Municipio Roma XIII	Aurelia	Italian Restaurant	Hotel
13	Municipio Roma XIV	Monte Mario	Italian Restaurant	Café
14	Municipio Roma XV	Cassia/Flaminia	Italian Restaurant	Pizza Place

Cluster 3

1. Similarity of neighborhoods (2/2)

Using a KMeans clustering analysis, the 6 clusters formed are the following:

	Neighborhood	Neighborhood_Name	1stMost common venue	2ndMost common venue
15	Paris arrondissement I	Louvre	French Restaurant	Hotel
17	Paris arrondissement III	Temple	French Restaurant	Hotel
22	Paris arrondissement VIII	Élysée	Hotel	French Restaurant
28	Paris arrondissement XIV	Observatoire	French Restaurant	Hotel
30	Paris arrondissement XVI	Passy	French Restaurant	Hotel
31	Paris arrondissement XVII	Batignolles-Monceau	French Restaurant	Italian Restaurant

Cluster 4

	Neighborhood	Neighborhood_Name	1stMost common venue	2ndMost common venue
27	Paris arrondissement XIII	Gobelins	Vietnamese Restaurant	Asian Restaurant

Cluster 5

As we can see, no cluster groups neighborhoods from both cities based on the frequencies of venues categories.

2. Food scene diversity

Summing the number of restaurants in the different categories we are able to get an estimation of the diversity of the food scene.

	Rome	Paris
Total number of restaurants	379	863
Number of restaurants types	28	72
Number of national restaurants types	4	11
Total number of restaurants of national restaurants types	251	309
Number of restaurants types outside of national restaurants types	24	61
Total number of restaurants outside of national restaurants types	128	554

3. Restaurant ratings in Paris and Rome

As can be shown in the table below, with the restrictions to the scope (only the 5 most central neighborhoods in Rome and in Paris, only the French restaurants in Paris, only the Italian restaurants in Rome, only restaurants with ratings), we have a small but comparable sample size of restaurants taken into account.

	Rome	Paris
Number of restaurants in the scope	41	47
Average rating of the restaurants withing that scope	8.21	8.29

The average ratings on these scopes are quite similar, with a slightly higher one in Paris.

Discussion and conclusion

- Dissimilar neighborhoods in Rome and Paris
 - Higher diversity in Paris's Food scene than in Rome's
 - Average rating higher in Paris than in Rome
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- Results of the analysis limited by the number of API calls that can be performed, forcing us to reduce the scope of the analysis
 - Categorisation of venues on Foursquare is not homogeneous and robust enough to enable precise comparison.
 - Ratings are subjective and not available for all places.