Compare Global Cities

New York City | Toronto | London | Paris

Introduction

New York City, Toronto, London, Paris:

- Large population
- Diverse cultures
- Important in economics

Find similarities and dissimilarities:
- To enjoy more if had the chance to travel

Data Source

❖ New York City

- Json file: https://cocl.us/new_york_dataset

❖ Toronto

- Postal codes list: https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
- Postal codes coordinates: http://cocl.us/Geospatial_data

❖ London

- Boroughs list: https://en.wikipedia.org/wiki/List_of_London_boroughs
- Postcode districts : https://en.wikipedia.org/wiki/London_postal_district
- Postcode districts coordinates: https://www.doogal.co.uk/london_postcodes.php

❖ Paris

- Arrondissement list: https://en.wikipedia.org/wiki/Arrondissements_of_Paris
- Arrondissement info: http://zip-code.en.mapawi.com/france/1/arrondissement-de-paris/3/150/

Data Preprocess

Aggregate all the four cities' sub-district data into one dataframe.
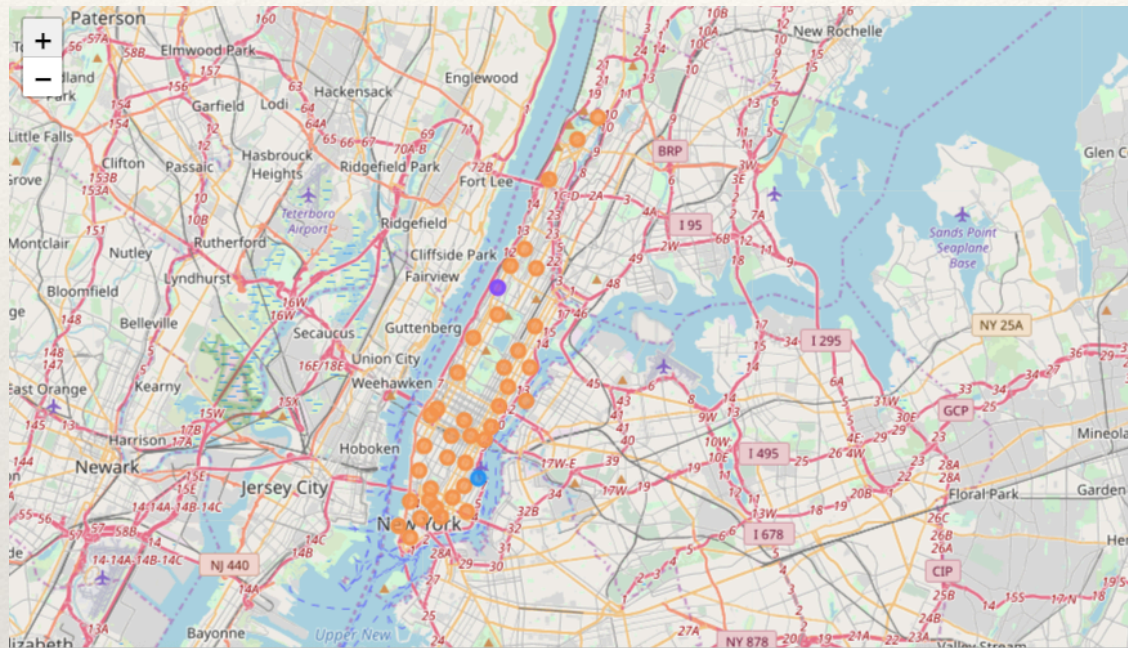
(Only use "city_part" sub-districts.)

City	District	Sub-district	Latitude	Longitude
New York City	Manhattan	Marble Hill	40.876551	-73.910660
New York City	Manhattan	Chinatown	40.715618	-73.994279
New York City	Manhattan	Washington Heights	40.851903	-73.936900
New York City	Manhattan	Inwood	40.867684	-73.921210
New York City	Manhattan	Hamilton Heights	40.823604	-73.949688

Collect the top 10 popular venue categories into one dataframe.
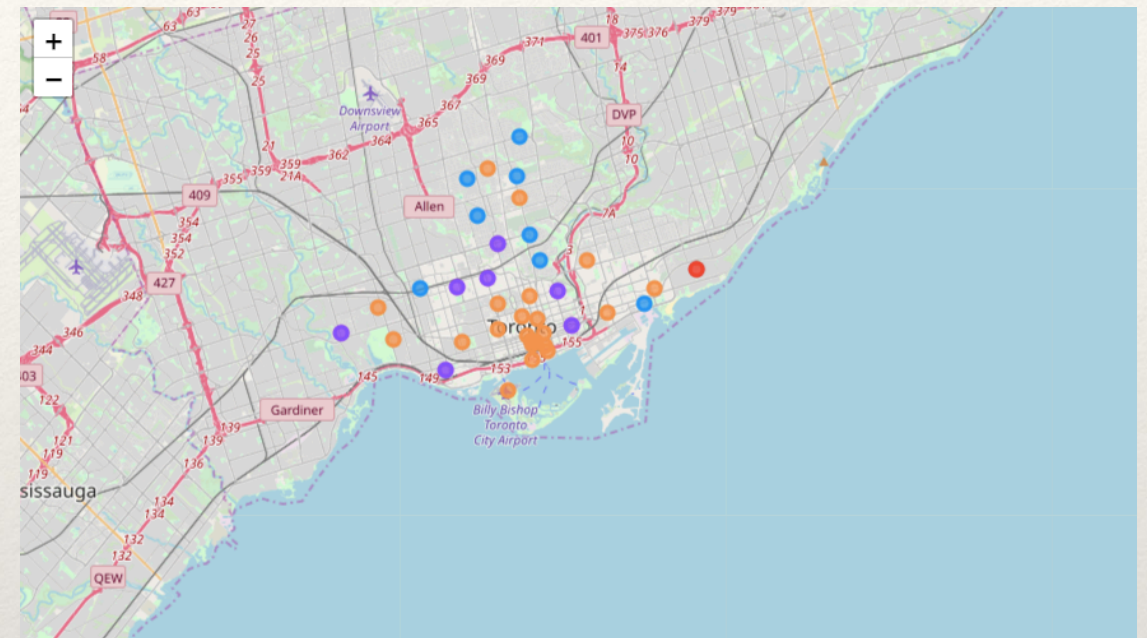
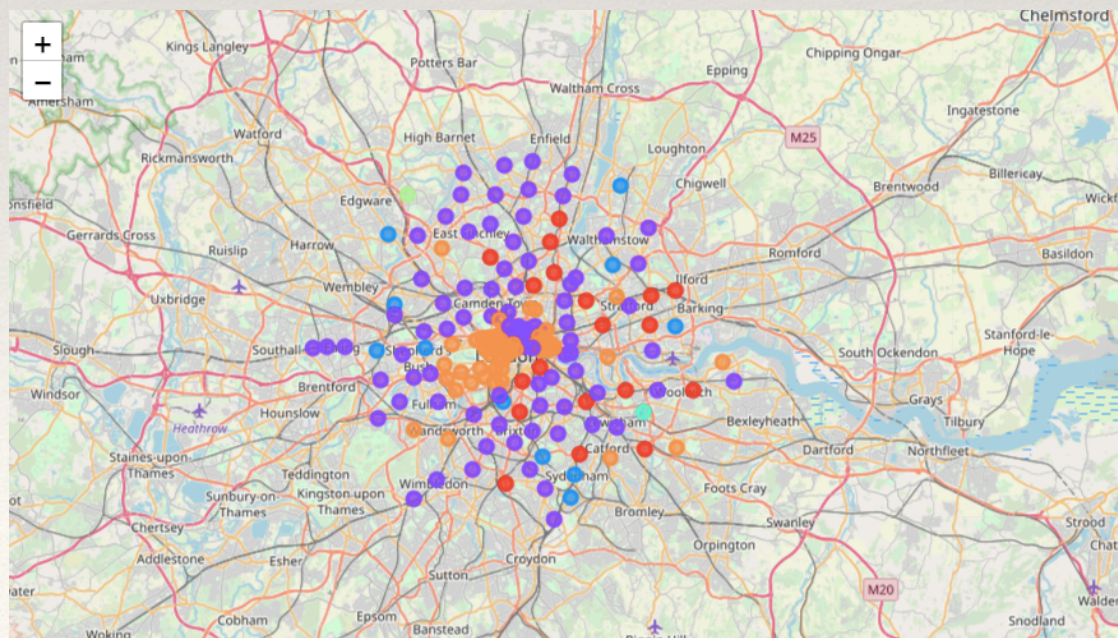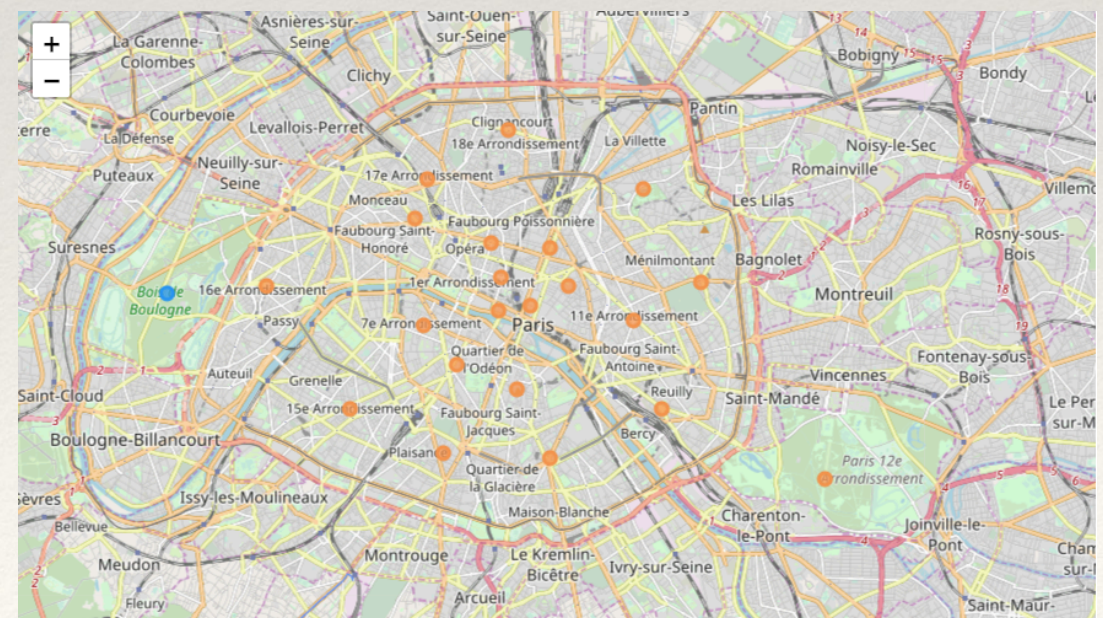| Sub-district	1st popular category	2nd popular category	3rd popular category	4th popular category	5th popular category	6th popular category	7th popular category	8th popular category	9th popular category	10th popular category
Batignolles-Monceau	French Restaurant	Bar	Wine Bar	Hotel	Restaurant	Italian Restaurant	Thai Restaurant	Vietnamese Restaurant	Bakery	BBQ Joint
Battery Park City	Park	Coffee Shop	Hotel	Memorial Site	Wine Shop	Gym	Italian Restaurant	Clothing Store	Ice Cream Shop	Sushi Restaurant
Bois-de-Boulogne	Park	Forest	French Restaurant	Garden	Yoga Studio	Falafel Restaurant	Duty-free Shop	Eastern European Restaurant	Electronics Store	Empanada Restaurant
Bois-de-Vincenne	Music Venue	Forest	Farmers Market	Duty-free Shop	Eastern European Restaurant	Electronics Store	Empanada Restaurant	English Restaurant	Ethiopian Restaurant	Event Service
Bourse	French Restaurant	Bistro	Cocktail Bar	Wine Bar	Hotel	Italian Restaurant	Café	Pizza Place	Boutique	Burger Joint

Cluster with K-means

Mahattan

Old Toronto

Inner London

Paris

- Cluster 1 --- red points

These points surround with lots of pubs/bars, cafes/coffee shops and restaurants, might be very cozy places to visit. Most in London, one in Toronto. Maybe living in Toronto postcode M4E area would be somewhat like living in those London parts.

- Cluster 2 --- purple points

One in New York Manhattan, several in Old Toronto, and lots in London. Very close to center downtown. Surrounded with lots of pubs and cafes, having numbers of restaurants, most of which are fast food and foreign cuisines.

- Cluster 3 --- blue points

These are park areas. Out of parks, you can visit a lot of nice restaurants in styles of Japanese, Eastern European, English, or Ethiopian.

- Cluster 4 --- cyan blue points

This particular point only exist in London. Top 3 categories are furniture/home store, yoga studio and farm. And also we can find multi cultural flavor restaurants.

- Cluster 5 --- green points

This point also only exist in London. Similarly to cluster 4, we can find multi cultural flavor restaurants. The difference might because of the top 2 categories, park and pharmacy.

- Cluster 6 --- orange points

Apparently these are city center parts. Almost all parts of Manhattan and Paris are belong to this genre.

Conclusion

Manhattan and Paris are highly centered, with obviously city characteristics. They are very "city". But we all know that this two place look quite different. Furthermore research has to be done to distinguish them.

I have never been to London, but now I know that London is much bigger than Paris, much centered than New York, and may be a little bit like Toronto since this two cities share more clusters and used to divide by post code or postal code.

London also has some very special places that the other cities don't have, where you can enjoy more east-European and north-African foods. London is very diversity.

Toronto might be more cozy to live, where I can find cafe centered areas or park area.

Furthermore

- Paris can be divided into more small districts to compare with other city districts on a same level. This might take some work even manual work. Smaller districts help to outstanding characteristics.

- Toronto should do the same as Paris. Dividing by postal code is not enough.

- Expand to the whole city and their outer areas. Big cities are always influence deeply to their conjunction parts, like great London and great Paris.