

Where to Open an Italian Restaurant in Tokyo Metropolitan Area

It is important to choose the right location to set up your business

- **Toyo Metropolitan Area is a lively region with 23 districts and nearly 10 million residents.**
- **The business owner has decided to open an Italian restaurant in the area due to its large market reinforced by its well-developed infrastructures.**
- **It is helpful to have an overall understanding of business activities located in various districts in order to choose the most appropriate location.**
- **Foursquare API analysis is utilized to provide the solution.**

Data Acquisition and Cleaning

- Longitude and latitude data used in this analysis were downloaded from Geospatial Information Authority of Japan. A sample is shown in the following Table
- Number of residents by district published by Tokyo Metropolitan Office was also presented as a histogram.

Table 1 Longitude and latitude dataset processed for Foursquare Analysis

	District Name	Longitude	Latitude
0	Chiyoda	139.75361	35.69389
1	Chuo	139.77222	35.67083
2	Minato	139.75167	35.65806
⋮	⋮	⋮	⋮

Create a map with markers of 23 districts

Using latitude and longitude data of 23 districts a map was created with the districts shown as blue markers.



Find out the most popular venues in each district

A function was defined to explore and categorize top venues of all the 23 districts.

A sample result looks like following:

----setagaya----

	venue	freq
0	Convenience Store	0.15
1	Café	0.10
2	Ramen Restaurant	0.08
3	Bakery	0.05
4	Sake Bar	0.05

----shinagawa----

	venue	freq
0	Convenience Store	0.11
1	Ramen Restaurant	0.09
2	Italian Restaurant	0.05
3	Chinese Restaurant	0.05
4	Donburi Restaurant	0.05

----shibuya----

	venue	freq
0	Café	0.11
1	Record Shop	0.10
2	Ramen Restaurant	0.05
3	Rock Club	0.04
4	Clothing Store	0.04

----shinjuku----

	venue	freq
0	Bar	0.14
1	Sake Bar	0.11
2	Ramen Restaurant	0.07
3	Japanese Restaurant	0.04
4	BBQ Joint	0.04

Show the top 10 most popular venue types in all the 23 districts

A function was defined to explore and sort out the top 10 most popular venue types in all the 23 districts.

A sample result looks like following:

	district	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	adachi	Convenience Store	Bus Stop	Grocery Store	Intersection	Restaurant	Ramen Restaurant	Donburi Restaurant	BBQ Joint	Furniture / Home Store	Music Venue
1	arakawa	Convenience Store	Park	Bus Stop	Tram Station	General Entertainment	Café	Indian Restaurant	Intersection	Italian Restaurant	Chinese Restaurant
2	bunkyo	Baseball Stadium	Convenience Store	Ramen Restaurant	Coffee Shop	Café	Concert Hall	Italian Restaurant	Japanese Restaurant	BBQ Joint	Korean Restaurant
3	chiyoda	Convenience Store	Café	Ramen Restaurant	Coffee Shop	Chinese Restaurant	Historic Site	Japanese Curry Restaurant	Japanese Restaurant	Sake Bar	Dumpling Restaurant
4	chuo	Japanese Restaurant	Coffee Shop	Ramen Restaurant	Soba Restaurant	Sushi Restaurant	Italian Restaurant	Convenience Store	Hotel	Wine Bar	Kaiseki Restaurant

Create the clustered map

The districts were clustered into **5** groups based on popular venue types and then a map was created as the following:



Explore each cluster and find out the cluster for restaurant opening

Top 10 most popular venues were explored for each cluster and initial analysis found out two clusters as potential target areas since these two areas are populated with restaurants and café.

First Cluster

	district	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	chiyoda	0	Convenience Store	Café	Ramen Restaurant	Coffee Shop	Chinese Restaurant	Historic Site	Japanese Curry Restaurant	Japanese Restaurant	Sake Bar	Dumpling Restaurant
1	chuo	0	Japanese Restaurant	Coffee Shop	Ramen Restaurant	Soba Restaurant	Sushi Restaurant	Italian Restaurant	Convenience Store	Hotel	Wine Bar	Kaiseki Restaurant
2	minato	0	Japanese Restaurant	BBQ Joint	Chinese Restaurant	Convenience Store	Yoshoku Restaurant	Ramen Restaurant	Park	Coffee Shop	Tonkatsu Restaurant	Steakhouse
3	shinjuku	0	Bar	Sake Bar	Ramen Restaurant	BBQ Joint	Japanese Restaurant	Yakitori Restaurant	Soba Restaurant	Chinese Restaurant	Shabu-Shabu Restaurant	Rock Club
4	bunkyo	0	Baseball Stadium	Convenience Store	Ramen Restaurant	Coffee Shop	Café	Concert Hall	Italian Restaurant	Japanese Restaurant	BBQ Joint	Korean Restaurant
9	meguro	0	Japanese Restaurant	Café	BBQ Joint	Italian Restaurant	Ramen Restaurant	Coffee Shop	French Restaurant	Yakitori Restaurant	Thai Restaurant	Bakery
10	ota	0	Ramen Restaurant	Sake Bar	Japanese Restaurant	Chinese Restaurant	Bed & Breakfast	Tonkatsu Restaurant	Italian Restaurant	Sushi Restaurant	Steakhouse	Noodle House
12	shibuya	0	Café	Record Shop	Ramen Restaurant	Rock Club	Nightclub	Clothing Store	Japanese Restaurant	Furniture / Home Store	Chinese Restaurant	BBQ Joint
13	nakano	0	Ramen Restaurant	Sake Bar	Japanese Restaurant	Bar	Café	Italian Restaurant	Japanese Curry Restaurant	Theater	BBQ Joint	Convenience Store

Explore each cluster and find out the cluster for restaurant opening

Third Cluster

	district	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
5	daito	2	Convenience Store	Sake Bar	Ramen Restaurant	Hotel	Art Museum	Bookstore	Bath House	Café	Soba Restaurant	Cocktail Bar
6	sumida	2	Convenience Store	Japanese Restaurant	Unagi Restaurant	Soba Restaurant	Sake Bar	Café	Coffee Shop	Ramen Restaurant	Wagashi Place	Park
7	koto	2	Convenience Store	Coffee Shop	Ramen Restaurant	Sake Bar	Japanese Restaurant	Donburi Restaurant	Chinese Restaurant	Supermarket	Park	Japanese Curry Restaurant
8	shinagawa	2	Convenience Store	Ramen Restaurant	Donburi Restaurant	Chinese Restaurant	Italian Restaurant	Coffee Shop	Japanese Restaurant	Sake Bar	Diner	Theater
11	setagaya	2	Convenience Store	Café	Ramen Restaurant	Sake Bar	Tram Station	Park	Bakery	Bath House	Shanghai Restaurant	Beer Bar
18	itahashi	2	Convenience Store	Ramen Restaurant	Japanese Restaurant	Shopping Mall	Noodle House	Grocery Store	Indian Restaurant	Dessert Shop	Drugstore	Sake Bar
19	nerima	2	Ramen Restaurant	Convenience Store	Grocery Store	Café	Sake Bar	Italian Restaurant	Coffee Shop	BBQ Joint	Chinese Restaurant	Boutique

Explore each cluster and find out the cluster for restaurant opening

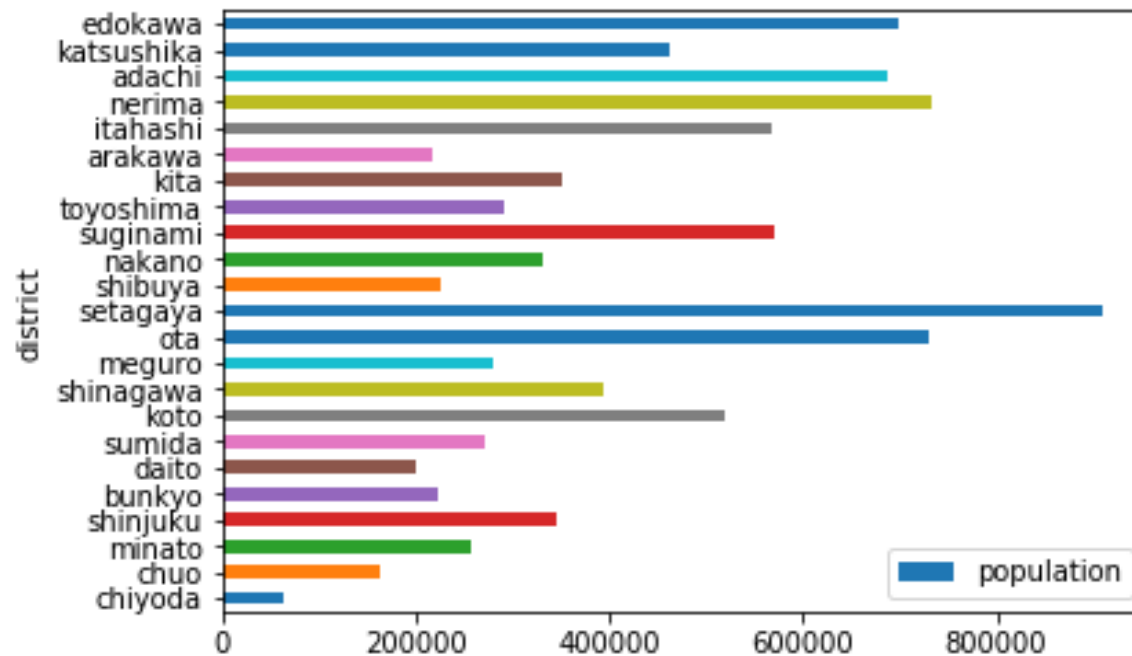
A further investigation reveals that the **first cluster** is better candidate because the No.1 most common venues in this cluster are almost all restaurants and bars while in the **third cluster** the No. 1 most common venues are mostly convenience store.

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Supplementary data

Finally, the histogram below was created showing number of residents in each district.

We can see that the most populated district is Setagaya with more than 800,000 residents followed by Ota and Nerima districts.



Conclusion: The Winner Is?

There are some interesting findings here:

1. The most populated district is Setagaya with more than 800,000 residents. However the most popular venue here is **Convenience Store**. This means maybe residents here prefer a quick grab-and-go than dining out!
2. Nerima is in the same cluster as Setagaya.
3. Ota is in the first cluster with All the top 10 most popular venues falling into restaurants and bars category. There are some serious dining-out people living here!

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10	ota	0	Ramen Restaurant	Sake Bar	Japanese Restaurant	Chinese Restaurant	Bed & Breakfast	Tonkatsu Restaurant	Italian Restaurant	Sushi Restaurant	Steakhouse	Noodle House
11	setagaya	2	Convenience Store	Café	Ramen Restaurant	Sake Bar	Tram Station	Park	Bakery	Bath House	Shanghai Restaurant	Beer Bar

Conclusion: The Winner Is?

So...

Bring a new elegant Italian restaurant to attract those convenience lovers

Or

Give those who love dining-out a new option to fill out their schedule?

I believe habits are hard to change so I will go for the second option.

What about you?

Conclusion: The Winner Is?

Thank you for reading this to the end!!!