

WHERE TO OPEN A NEW RESTAURANT IN MANHATTAN?

TING WANG



BUSINESS PROBLEM

- Where to open a new restaurant in Manhattan?
- Different cuisines may have different potential choices:
 - Chinese restaurant: Chinatown? No other choices?
 - Italian restaurant: Little Italy? Only?
- Other considerations:
 - Avenues around?
- Let's figure them out!

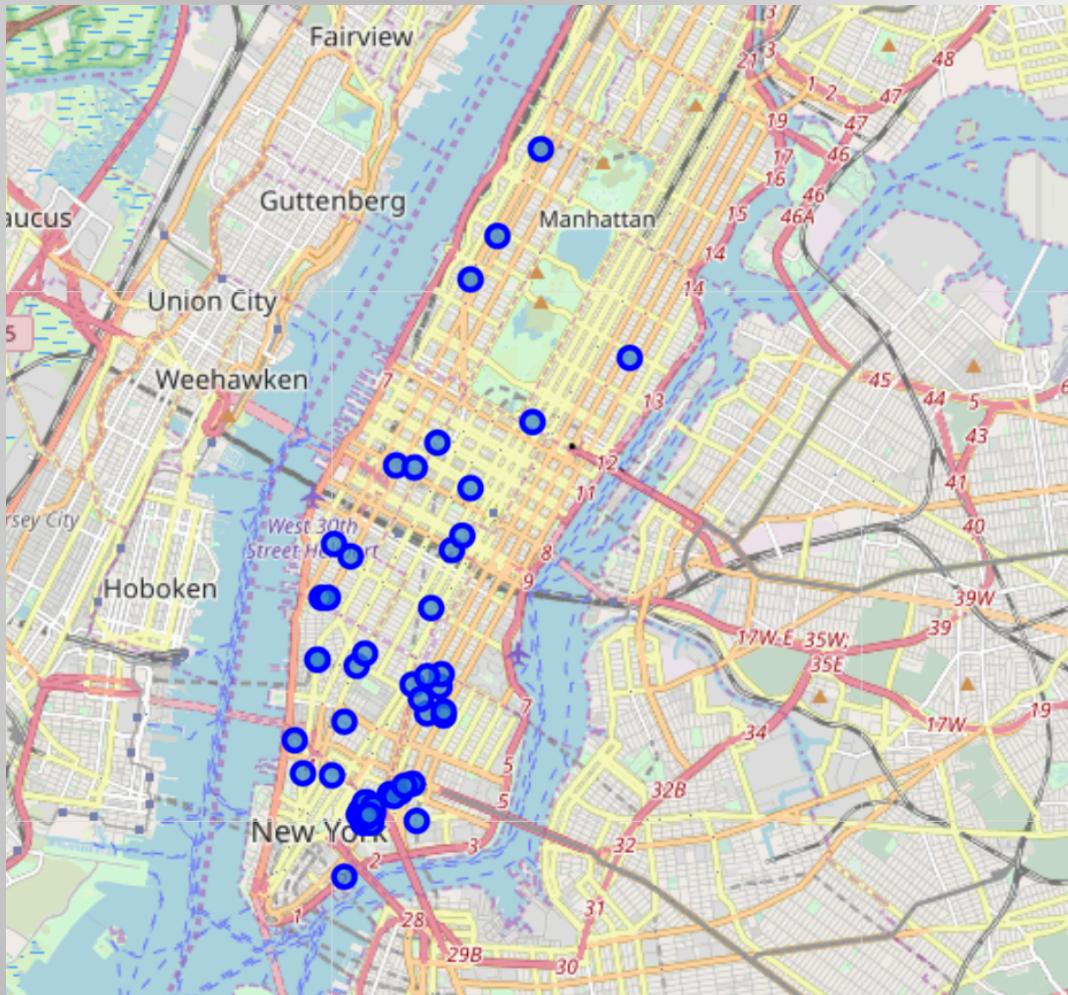
DATA RESOURCE

- Criterion:
 - Visits may be a good criterion
 - Rating number is related to visit number and rating score is related to the quality of the restaurant
- Factors:
 - Common venues around the restaurant
- Where to get above data?
 - Foursquare (rating numbers need premium calls)

DATA ACQUISITION AND CLEANING

- Download all Chinese restaurants:
 - Remove wrongly selected venues, such as Karaoke Bar, Cuban Restaurant, Lounge, etc.
 - Remove duplicates
 - 693 Chinese restaurants available
- Download rating numbers
 - Remove restaurant without rating numbers
 - 360 Chinese restaurants available

WHERE ARE THE TOP 60 WITH LARGEST RATING NUMBERS?



- Some centered in small regions:
 - Chinatown, East Village
- Neighborhood is not deterministic
- We should check their common venues around.

WHAT LOCATION FACTORS AFFECT?

- From most common venues of each restaurant, many possible location factors affect:
 - Chinese restaurant (Chinatown)
 - Cocktail Bar, Bar
 - Art Gallery, Theater
 - And more

----Buddakan----

	venue	freq
0	Bakery	0.07
1	Coffee Shop	0.05
2	Hotel	0.05
3	Seafood Restaurant	0.04
4	Nightclub	0.03

----Buddha Bodai 佛菩提素菜----

	venue	freq
0	Chinese Restaurant	0.13
1	Dim Sum Restaurant	0.07
2	Bakery	0.07
3	Bubble Tea Shop	0.04
4	Ice Cream Shop	0.04

----Café China----

	venue	freq
0	Korean Restaurant	0.06
1	Hotel	0.05
2	Japanese Restaurant	0.04
3	Coffee Shop	0.04
4	Bakery	0.04

----Cha Chan Tang 茶餐廳 (Cha Ch----

	venue	freq
0	Chinese Restaurant	0.13
1	Bakery	0.06
2	Dim Sum Restaurant	0.05
3	Dessert Shop	0.05
4	Bubble Tea Shop	0.05

----456 Shanghai Cuisine----

	venue	freq
0	Chinese Restaurant	0.14
1	Bakery	0.07
2	Italian Restaurant	0.05
3	Salon / Barbershop	0.04
4	Dessert Shop	0.04

----99 Favor Taste 99號餐廳----

	venue	freq
0	Chinese Restaurant	0.04
1	American Restaurant	0.04
2	Cocktail Bar	0.04
3	Bar	0.04
4	Bakery	0.03

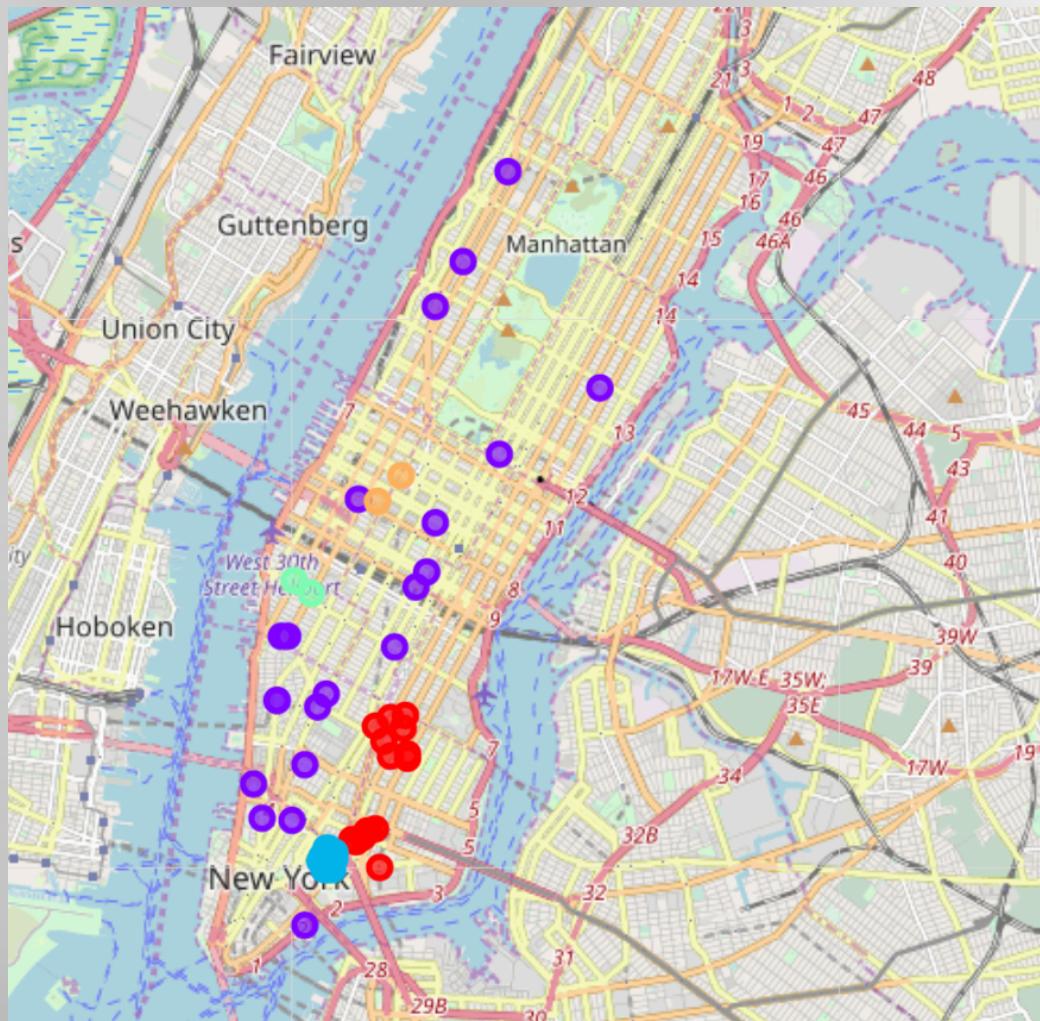
----Baohaus----

	venue	freq
0	Pizza Place	0.05
1	Japanese Restaurant	0.05
2	Dessert Shop	0.04
3	Ramen Restaurant	0.03
4	Sushi Restaurant	0.03

----Big Wong King 大旺----

	venue	freq
0	Chinese Restaurant	0.14
1	Bakery	0.07
2	Italian Restaurant	0.05
3	Salon / Barbershop	0.04
4	Dessert Shop	0.04

CLUSTERING



- Considering 5 clusters
- Using k-means method
- Shown in the map with 5 different colors

RESULTS

Cluster Labels	Restaurant	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	Wah Fung Number 1 Fast Food 華豐快飯店	Chinese Restaurant	Sandwich Place	Ice Cream Shop	Noodle House	Cocktail Bar	Vietnamese Restaurant	Dumpling Restaurant	American Restaurant	Hotpot Restaurant	Bakery
0	Shu Jiao Fu Zhou Cuisine 潭頭王福州小吃 (Shu Jiao Fu ...)	Cocktail Bar	Bar	Mexican Restaurant	Asian Restaurant	Pizza Place	Art Gallery	Sandwich Place	Ice Cream Shop	American Restaurant	Australian Restaurant
0	Hot Kitchen	Japanese Restaurant	Ice Cream Shop	Dessert Shop	Italian Restaurant	Gym	Seafood Restaurant	Mexican Restaurant	Grocery Store	Coffee Shop	Yoga Studio
0	Málà Project	Ice Cream Shop	Vegetarian / Vegan Restaurant	Cocktail Bar	Coffee Shop	Japanese Restaurant	Seafood Restaurant	Ramen Restaurant	Chinese Restaurant	Vietnamese Restaurant	Wine Bar
0	Tim Ho Wan 添好運	Japanese Restaurant	Yoga Studio	Ice Cream Shop	Vegetarian / Vegan Restaurant	Dessert Shop	Coffee Shop	Cosmetics Shop	Grocery Store	Café	Clothing Store
0	Mimi Cheng's	Japanese Restaurant	Dessert Shop	Pizza Place	Ice Cream Shop	Grocery Store	Italian Restaurant	Coffee Shop	Ramen Restaurant	Bar	Chinese Restaurant
0	99 Favor Taste 99號餐廳	American Restaurant	Cocktail Bar	Bar	Chinese Restaurant	Bakery	Pizza Place	Café	Furniture / Home Store	Boutique	Sandwich Place
0	Spicy Village	Chinese Restaurant	American Restaurant	Cocktail Bar	Optical Shop	Sandwich Place	Café	Bakery	Speakeasy	Pizza Place	Salon / Barbershop
0	Congee Village 粥之家	Bar	Pizza Place	Mexican Restaurant	Sandwich Place	Speakeasy	American Restaurant	Boutique	Asian Restaurant	Art Gallery	Italian Restaurant
0	The Bao	Japanese Restaurant	Ice Cream Shop	Coffee Shop	Grocery Store	Gym	Dessert Shop	Chinese Restaurant	Sushi Restaurant	Tea Room	Italian Restaurant

- Cluster 1 (Red in the map)

- Common venues: Café, NightClub, Cocktail Bar, Bar
- ---- Nightlife Area
- By checking the map, mainly in East Village, etc., indeed the nightlife areas.

RESULTS (CONT.)

Cluster Labels	Restaurant	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
1	Xi'an Famous Foods	American Restaurant	Gym	Italian Restaurant	Restaurant	Coffee Shop	Gym / Fitness Center	New American Restaurant	Yoga Studio	Café
1	Ollie's Sichuan Restaurant	Theater	Italian Restaurant	Hotel	Burger Joint	Gym / Fitness Center	Cocktail Bar	American Restaurant	Pizza Place	Lounge
1	Pinch Chinese	Italian Restaurant	Clothing Store	French Restaurant	Sushi Restaurant	Seafood Restaurant	Coffee Shop	Café	Dessert Shop	Cosmetics Shop
1	Fish Market	Italian Restaurant	Café	American Restaurant	Juice Bar	Seafood Restaurant	Salad Place	Restaurant	Vegetarian / Vegan Restaurant	Deli / Bodega
1	Very Fresh Noodles	Coffee Shop	Bakery	Hotel	Seafood Restaurant	Nightclub	Steakhouse	Art Gallery	Boutique	Italian Restaurant
1	Mr. Chow	American Restaurant	Italian Restaurant	Spa	Coffee Shop	Boutique	Park	Men's Store	Cocktail Bar	Playground
1	Philippe	Hotel	Boutique	French Restaurant	Jewelry Store	Italian Restaurant	Furniture / Home Store	Department Store	Spa	Art Gallery
1	Xi'an Famous Foods	Italian Restaurant	Sushi Restaurant	Thai Restaurant	Bar	Dessert Shop	Turkish Restaurant	Ice Cream Shop	Gym	Mexican Restaurant
1	Hao Noodle and Tea by Madam Zhu's Kitchen	Italian Restaurant	Jazz Club	Coffee Shop	Massage Studio	Café	Cocktail Bar	Wine Bar	American Restaurant	Gay Bar
1	Sammy's Noodle Shop	Italian Restaurant	Gym / Fitness Center	American Restaurant	Coffee Shop	Jazz Club	Massage Studio	Café	Arts & Crafts Store	Wine Bar

Cluster 2 (Purple in the map)

- Common venues: Clothing store, Cosmetics Shop, Department Store, Men's store
- ---- Shopping Area
- By checking the map, mainly in Fifth Avenue Midtown and SoHo.

RESULTS (CONT.)

Cluster Labels	Restaurant	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
2	Oriental Garden 福臨門海鮮酒家	Chinese Restaurant	Bakery	Dim Sum Restaurant	Dessert Shop	Salon / Barbershop	Italian Restaurant	Vietnamese Restaurant	Spa	Japanese Restaurant
2	Tasty Dumpling	Chinese Restaurant	Dim Sum Restaurant	Bakery	Dessert Shop	Bubble Tea Shop	Salon / Barbershop	Optical Shop	Vietnamese Restaurant	Malay Restaurant
2	Taiwan Pork Chop House 臺灣武昌好味道	Chinese Restaurant	Bakery	Dim Sum Restaurant	Bubble Tea Shop	Dessert Shop	Noodle House	Ice Cream Shop	Spa	Vietnamese Restaurant
2	Deluxe Green Bo Restaurant	Chinese Restaurant	Bakery	Dessert Shop	Dim Sum Restaurant	Salon / Barbershop	Noodle House	Vietnamese Restaurant	Malay Restaurant	Spa
2	456 Shanghai Cuisine	Chinese Restaurant	Bakery	Italian Restaurant	Dessert Shop	Salon / Barbershop	Vietnamese Restaurant	Bubble Tea Shop	Spa	Dim Sum Restaurant
2	Ping's Seafood	Chinese Restaurant	Bakery	Dim Sum Restaurant	Bubble Tea Shop	Dessert Shop	Spa	Cocktail Bar	Optical Shop	Ice Cream Shop
2	Buddha Bodai 佛菩提素菜	Chinese Restaurant	Bakery	Dim Sum Restaurant	Ice Cream Shop	Bubble Tea Shop	Dessert Shop	Vietnamese Restaurant	Cocktail Bar	Optical Shop
2	Cha Chan Tang 茶餐廳 (Cha Chan Tang)	Chinese Restaurant	Bakery	Dessert Shop	Dim Sum Restaurant	Bubble Tea Shop	Salon / Barbershop	Optical Shop	Vietnamese Restaurant	Malay Restaurant
2	Peking Duck House	Chinese Restaurant	Bakery	Dim Sum Restaurant	Dessert Shop	Bubble Tea Shop	Spa	Malay Restaurant	Optical Shop	Noodle House
2	Dim Sum Go Go	Chinese Restaurant	Bakery	Dim Sum Restaurant	Bubble Tea Shop	Dessert Shop	Ice Cream Shop	Noodle House	Cocktail Bar	Vietnamese Restaurant

- Cluster 3 (Blue in the map)
 - Most common venues: Chinese Restaurant
 - ---- Chinatown
 - By checking the map, indeed Chinatown.

RESULTS (CONT.)

Cluster Labels	Restaurant	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
3	Chop Shop	Art Gallery	Park	Coffee Shop	Chinese Restaurant	Hotel	Wine Shop	Bookstore	Italian Restaurant	Gym	Lounge
3	Grand Sichuan International	Art Gallery	Theater	Café	Pizza Place	Coffee Shop	Italian Restaurant	Grocery Store	Bakery	Bagel Shop	French Restaurant

- Cluster 4 (Green in the map)

 - Most common venues: Art Gallery

- Cluster 5 (Orange in the map)

 - Most common venues: Theater

 - ----- Art Area

Cluster Labels	Restaurant	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
4	Kung Fu Little Steamed Buns Ramen	Theater	Coffee Shop	Sandwich Place	Bar	Thai Restaurant	Italian Restaurant	Hotel	American Restaurant	Bakery	Performing Arts Venue
4	Hakkasan	Theater	Hotel	Italian Restaurant	Burger Joint	American Restaurant	Sandwich Place	Bakery	Indie Theater	Japanese Restaurant	Pizza Place

CONCLUSION AND DISCUSSION

- Using Foursquare data and through Clustering technique, we provide a method to help the stakeholders who want to open a new restaurant in Manhattan choose a potential good place.
- From the results, Chinatown is not the unique good place to open a new Chinese restaurant. Other good places such as locations near nightlife areas, art areas or shopping areas may also be considered.
- Helpful for who wants to open a new restaurant:
 - If there is already a similar restaurant in Chinatown, don't have to compete with it by opening the restaurant in the Chinatown and should choose other potential good places.
 - The method can be applied to a new restaurant with any cuisine and give the stakeholders some important factors to find the potential good places.

FUTURE DIRECTION

- This methodology can be improved by using a more powerful criterion if available. It is the first and the most important step for helping the stakeholders.
- A further step I consider may be once the stakeholder have some good potential places but are not sure which is the best, a regression model can be fitted with criterion as the outcome and venue factors as the covariates. The Lasso regression model can be used to reduce the factors numbers.
- Moreover, a more complicated model can also consider such as rent cost, safety, etc.