Chinatowns Battle

Explore the Chinatowns in the United States

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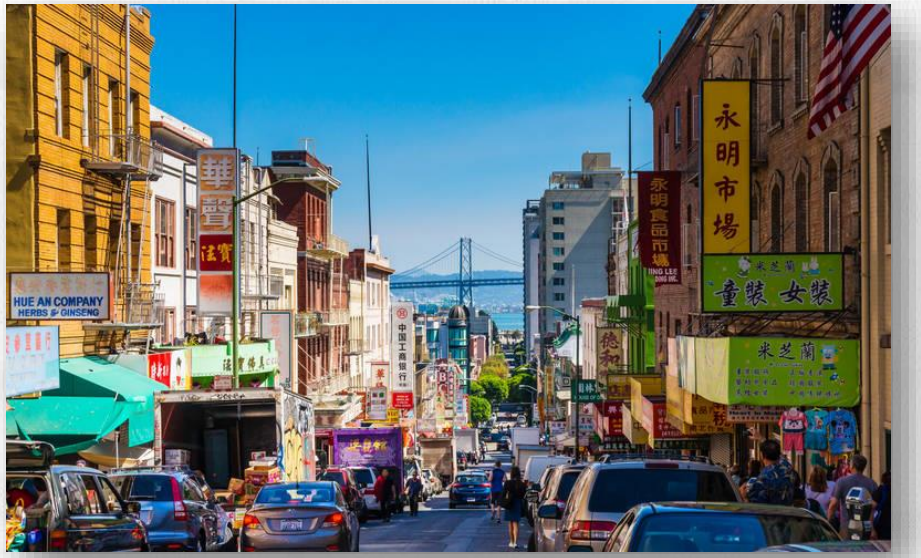
1 Introduction

Introduction



Chinatown is an ethnic enclave of Chinese people located outside mainland China, Hong Kong, Macau or Taiwan, most often in an urban setting. Many of these districts share their community with other immigrant cultures, making the sights, sounds and eating choices that much more exotic. In a neighborhood where English is not the primary language, a visitor can feel as though they've left the U.S. altogether — and now they are the foreigner, a tourist in their own city.

In order to compile my capstone, I will take a look at Top10 in America, and analysis the quality of authentic dining options, size, cultural experiences available, and whether a visitor will feel like they've left the United States as they explore the neighborhood.

2 Data

Data

There is a top10 list for Chinatowns in the United States. I will explore the all the Top 10 Chinatowns and compare them from all the aspects.

- San Francisco
- New York City
- Chicago
- Seattle
- Philadelphia
- Honolulu
- Boston
- Los Angeles
- Dallas
- Washington, D.C.

I will use the Geocoder Python package to get the latitude and longitude values data of Chinatown in each city.

Lastly, I will utilize the Foursquare API to explore the Chinatown neighborhoods and analysis them. I will get the top 100 venues that are in Chinatown within a radius of 1000 meters.

The list is from here: https://www.usatoday.com/story/travel/destinations/2014/03/08/chinatown-chinese-asian-food/6173601/

3 Methodology

Methodology - 1

- Load city list into Pandas data frame
- Use Geolocator to get Chinatown latitude and longitude in each city. Enter the Chinatown address in Geolocator, it will return the latitude and longitude value of Chinatown.
- After getting the latitude and longitude data, they will attach to the same data frame of previous.

	CityName	Chinatown_address	Lat	Lon
0	San Francisco	Chinatown, San Francisco	37.794301	-122.406376
1	New York City	Chinatown, New York City	40.716491	-73.996250
2	Chicago	Chinatown, Chicago	41.851658	-87.633138
3	Seattle	Chinatown, Seattle	47.599226	-122.323447
4	Philadelphia	Chinatown, Philadelphia	39.953446	-75.154622
5	Honolulu	Chinatown, Honolulu	21.312903	-157.862800
6	Boston	Chinatown, Boston	42.351329	-71.062623
7	Los Angeles	Chinatown, Los Angeles	34.063840	-118.235868
8	Dallas	Chinatown, Dallas	32.953118	-96.728050
9	Washington, D.C.	Chinatown, Washington, D.C.	38.900342	-77.021443

Methodology - 2

For next step, we use Folium package to display the Chinatown location. This help us to have a visual overview of distribution. Among those ten cities, nine of ten are locates in the US continent, and the other one is from Hawaii.

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Chinatown, San Francisco	37.794301	-122.406376	Blue Bottle Coffee	37.792771	-122.404833	Coffee Shop
1	Chinatown, San Francisco	37.794301	-122.406376	Red Blossom Tea Company	37.794643	-122.406379	Tea Room
2	Chinatown, San Francisco	37.794301	-122.406376	Hinodeya	37.794656	-122.404544	Ramen Restaurant
3	Chinatown, San Francisco	37.794301	-122.406376	Old Saint Mary's Cathedral (Old Cathedral of S...	37.792772	-122.405910	Church
4	Chinatown, San Francisco	37.794301	-122.406376	Yi Fang Taiwan Fruit Tea	37.795038	-122.407614	Bubble Tea Shop

Methodology - 3

We use four squares API to explore each Chinatowns. For each point, I explored the 100 venues within 1000 meters range. Typically, Chinatown is not a big neighborhood, so 1000 meters should be good enough to cover the area.

Methodology - 4

- We use one-hot encoding to analysis the frequency of venue in each city Chinatown. This is not only analysis the frequency of venue, but also prepare for further clustering.

- After using one-hot encoding, we use k-means to cluster the Chinatown into 3 clusters. The K-means algorithm identifies k number of centroids, and then allocates every data point to the nearest cluster, while keeping the centroids as small as possible.

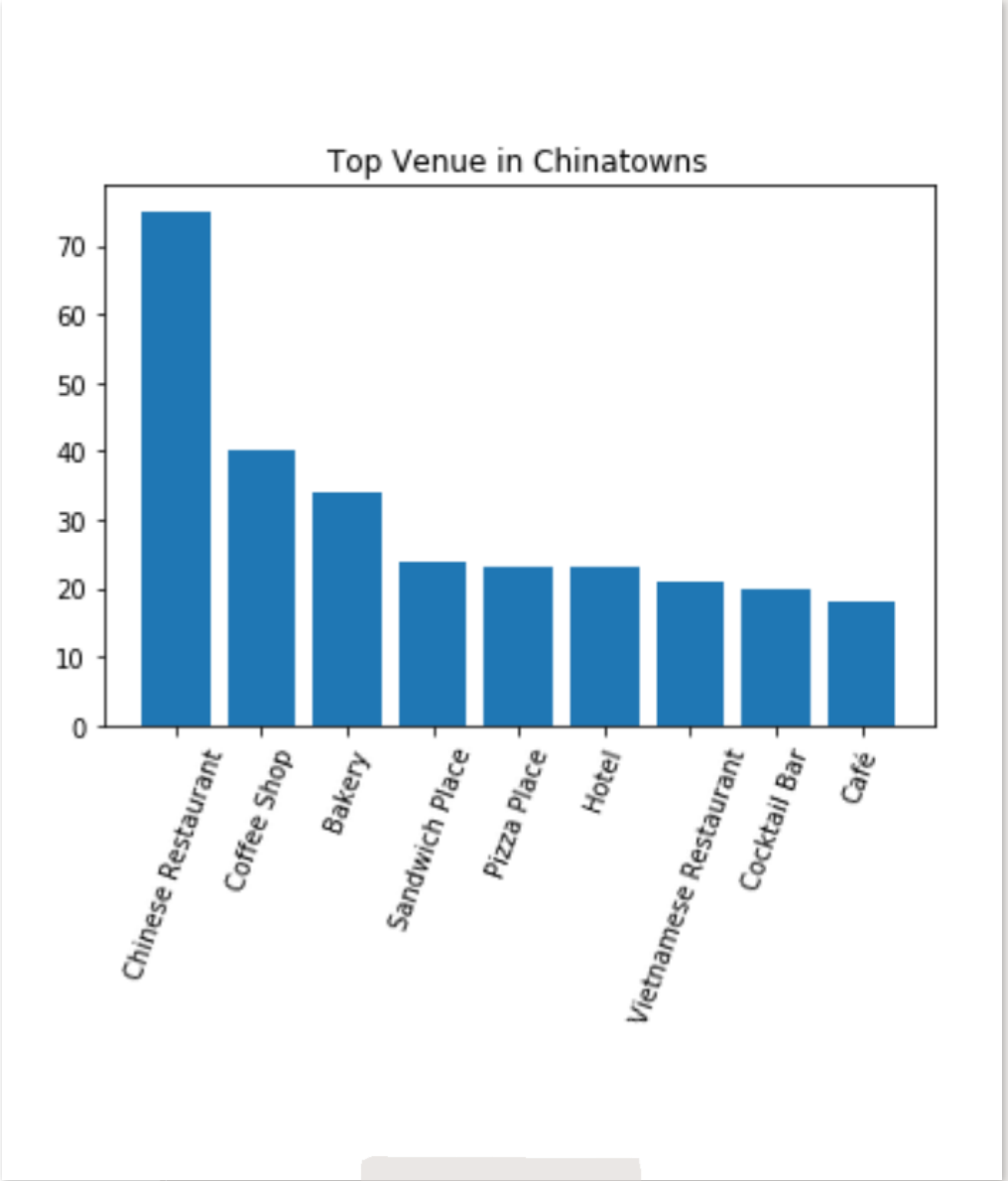
	Yoga Studio	American Restaurant	Art Gallery	Art Museum	Arts & Crafts Store	Asian Restaurant	Athletics & Sports	Australian Restaurant	Austrian Restaurant	Automotive Shop	...	Travel Lounge	Turkish Restaurant	Vegetarian / Vegan Restaurant	Video Game Store
0	0	0	0	0	0	0	0	0	0	0	...	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	...	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	...	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	...	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	...	0	0	0	0

	CityName	Chinatown_address	Lat	Lon	Cluster Label
0	San Francisco	Chinatown, San Francisco	37.794301	-122.406376	0
1	New York City	Chinatown, New York City	40.716491	-73.996250	2
2	Chicago	Chinatown, Chicago	41.851658	-87.633138	0
3	Seattle	Chinatown, Seattle	47.599226	-122.323447	0
4	Philadelphia	Chinatown, Philadelphia	39.953446	-75.154622	0
5	Honolulu	Chinatown, Honolulu	21.312903	-157.862800	1
6	Boston	Chinatown, Boston	42.351329	-71.062623	0
7	Los Angeles	Chinatown, Los Angeles	34.063840	-118.235868	1
8	Dallas	Chinatown, Dallas	32.953118	-96.728050	0
9	Washington, D.C.	Chinatown, Washington, D.C.	38.900342	-77.021443	1

4 Results & Discussion

Results & Discussion - 1

We plot overall venue catalog among these Chinatowns. The figure demonstrate that the majority of venues are relate to EAT. "Food is the first necessity of the people" is a famous Chinese old saying, which reflects that Chinese have had paid much attention to food since the ancient times.



Results & Discussion - 2

	Neighborhood	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	Chinatown, Boston	Chinese Restaurant	Bakery	Coffee Shop	Asian Restaurant	Sandwich Place	Performing Arts Venue	Park	Theater	Hotel	Seafood Restaurant
1	Chinatown, Chicago	Chinese Restaurant	Pizza Place	Asian Restaurant	Mexican Restaurant	Korean Restaurant	Rental Car Location	Thai Restaurant	Bakery	Bubble Tea Shop	Storage Facility
2	Chinatown, Dallas	Chinese Restaurant	Indian Restaurant	Coffee Shop	Mediterranean Restaurant	Burger Joint	Café	Thai Restaurant	Noodle House	Bubble Tea Shop	Convenience Store
3	Chinatown, Honolulu	Bakery	Coffee Shop	American Restaurant	Chinese Restaurant	Pharmacy	Café	Dessert Shop	Japanese Restaurant	Pizza Place	Shopping Mall
4	Chinatown, Los Angeles	Chinese Restaurant	Mexican Restaurant	Coffee Shop	Sandwich Place	Bakery	Historic Site	Vietnamese Restaurant	Plaza	Art Gallery	Café
5	Chinatown, New York City	Bakery	Cocktail Bar	Sandwich Place	Chinese Restaurant	Ice Cream Shop	Wine Bar	Mexican Restaurant	Coffee Shop	Thai Restaurant	Pizza Place
6	Chinatown, Philadelphia	Chinese Restaurant	Bakery	Sandwich Place	History Museum	Coffee Shop	Hotel	Tea Room	Restaurant	Shanghai Restaurant	Brewery
7	Chinatown, San Francisco	Coffee Shop	Pizza Place	Cocktail Bar	Hotel	New American Restaurant	Bakery	Chinese Restaurant	Men's Store	Sushi Restaurant	Restaurant
8	Chinatown, Seattle	Vietnamese Restaurant	Chinese Restaurant	Coffee Shop	Cocktail Bar	Japanese Restaurant	Pizza Place	Café	Thrift / Vintage Store	Bubble Tea Shop	Tea Room

With the table below, we got the top 10 common venue in each Chinatown specifically. Besides the Chinese restaurant, we also observed other type of restaurant, like Korean restaurant, Japanese restaurant, Indian restaurant etc. The table shows the diversity in Chinatown.

Results & Discussion - 3

Last but not least, we cluster all the Chinatown into 3 clusters by using the k-means algorithm. We cluster the majority of Chinatowns into group1. Los Angels , Honolulu, and Washington DC are in group2. Finally, Chinatown in New York city is the only one candidate in group3. The New York Chinatown is unique among all of them. So if you would like to go to a special Chinatown, don't miss the New York city one!

5 Conclusion

In this report, we use python to explore ten Chinatowns in the United States. Using the foursquare API to get the venues among those places. We discovered the most common venues in each Chinatown as well as overall venues study. Lastly, we clustered the Chinatown into 3 groups, and found the most unique Chinatown: New York City.

THANKS