The Battle of Neighborhoods Report

Applied Data Science Capstone Project

How do I find a good neighbourhood in the greater Dallas county to start my Asian restaurant?

1. Introduction

1. Background

U.S. has long been viewed as the land of opportunity and has attracted lots of fresh talent into that country. As Asians from the far east (e.g. Hong Kong, Singapore) with exposure to both Western and Asian culture, migrates to the U.S., a transferable skill would be in the food hospitality industry. It is quite safe to say that Asian cuisine is almost everywhere in the U.S. of A from a small Chinese takeaway all the way to fine dining Chinese restaurant.

2. Problem Description

The fundamental law of Economics is that of demand and supply. Is there a demand for Asian cuisine and is there a supply, and what is the magnitude of the demand vs the supply. To start a restaurant, there has to be a market for that cuisine market segment share for the business to be successful. Hence, an analysis needs to be done for this purpose

This is further complicated by a few things, the first being the term Asian cuisine. It is used loosely here to cover the wide range of cuisines found in the greater Asia and can include fusion for variety and to increase the offering. The definition of Asian cuisine encompasses a wide range of cooking practises and traditions and there is no enforcement on how the term is being used. Just in the Asia region alone, there is Chinese cuisine which varies greatly in taste and flavor at different locations, to exotic Japanese, the spicy Koreans, the countries in South Asia, and to western parts including India. As such, the definition of Asian cuisine will depend strictly on how it is defined by the source of the data.

This project attempts to analyse the from various sources for a given location to derive the statistics for various cuisine for the purpose of understanding opportunities of starting up an Asian cuisine by understanding the current volume of the targeted cuisine, such as a Chinese restaurant, and its competition, is it in saturation or in growth mode or just penetrating the market.

For this project, we will analyse the greater Dallas area (or Dallas county) to derive the statistics for various cuisine for the purpose of understanding opportunities of starting up an Asian cuisine. Dallas was pick for the study for the following reasons:

1. It has a large white racial makeup, about 50% and while Asian constitutes about 6%.
2. It has mild weather with summer in the mid 30s and its dry, while winter is in the teens with at worse 1 inch of snow or so.
3. While it has issues with tornado, the inland where Dallas is, is less vulnerable.

4. The current unemployment rate is about 10% below the nationwide numbers and it is at its lowest since 2002.

In this exercise, we will attempt to understand the statistics around the frequency of various categories of venues and the ratio to the Asian venues for the cities that falls within the Dallas greater area.

1.3 Interest

For one interested in starting up a restaurant business, this project is a simple starting point on types of data that can be utilized and the various methods to gather them, and how to perform some data analysis to derive the statistics of the various categories of venues and the ratio to the Asian venues for the cities that falls within the Dallas greater area.

2. Data description & how it will be used to solve the problem

1. Data Terminology

Firstly, the term Asian cuisine is used loosely here to cover the wide range of cuisines found in the greater Asia and can include fusion for variety and to increase the offering. The definition of Asian cuisine encompasses a wide range of cooking practises and traditions and there is no enforcement on how the term is being used. Just in the Asia region alone, there is Chinese cuisine which varies greatly in taste and flavor at different locations, to exotic Japanese, the spicy Koreans, the countries in South Asia, and to western parts including India. As such, the definition of Asian cuisine will depend strictly on how it is defined by the source of the data.

Dallas county refers to the Dallas greater area or borough and it has within it 20 cities and towns, including one called Dallas. For the purpose of this article, Dallas county will be also referred to as Dallas city, and all the towns and cities will be referred to as neighborhoods.

The terminology zip code is used in the U.S. and it is synonymous with postal codes. Each zip code will have a corresponding latitude and longitude value assigned. Unfortunately, a city, by virtue of its size, can have multiple zip codes, and the results have to be grouped by city/town which will be referred to as neighborhoods.

2. Data sources and description of the data

There are 3 types of data has been identified:

1. It is logical to assume that neighborhoods/towns/cities are not homogeneous. An assumption is made that food preference can be influence by different population size demographics profile by neighborhood. Hence, data will need to be sourced from U.S. Census Bureau 2013-2017 American Community Survey 5-Year Estimates (ACS) and the Center for Public Policy Priorities.

2. The next data set will be the venue data. Details on the venues will be derived from Foursquare.com website via an API call to the application. Foursquares provides a count on the types of cuisine according to a predefined set of categories as documented on its website https://developer.foursquare.com/docs/resources.

   The latitude and longitude of all the neighbourhoods in Dallas county will be passed to Foursquare along with a search for the given category, and a radius the application is to search within. Hence, it has to be assumed that the latitude and longitude passed to Foursquare will be close to the center of that neighbourhood it represents and that the bulk of the cuisine in that neighbourhood does fall within a few kilometres from

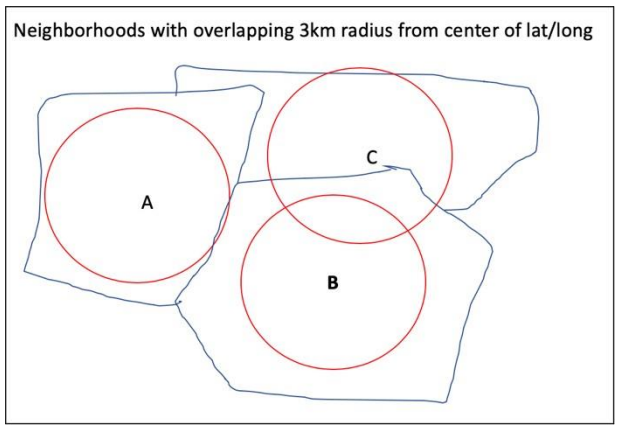
that latitude and longitude. Foursquare will then return all the venues it finds matching the category within the specified radius of the neighbourhood's latitude and longitude

3. The next set of data will be the Dallas Zip codes which will provide the list of neighborhoods in the Dallas county along with the postal codes or zip codes as they are called in the U.S. Each neighbourhood in the data will come with its corresponding longitude and latitude. This data of US Zip Codes database can be sourced from https://simplemaps.com/data/us-zips.

2.3 Data cleaning and processing

The first set of data to be processed will be the zip code. Dallas county has 20 neighborhoods, and 84 zip codes. The lat/long of all 84 zip codes will be passed to Foursquares and the venues returned will be grouped by neighborhoods. This is because when people talk about places, they normally refer to the neighbourhood name as opposed to zip codes.

Foursquare returns the venues' frequency by neighborhoods which is defined by their zip codes and their respective latitude and longitude. This information can only be used as a rough guide as Foursquare returns the findings based on a specified radius from that given latitude and longitude. This already assumes that all neighborhoods are circular and of a fixed size with its latitude and longitude in the centre of the circle. It is also not capable of limiting its search within the boundaries of a given city or town or neighbourhood. Hence, if a search radius is too large, Foursquare can return venues from another neighbourhood. That being said, if the neighboring neighbourhood is small, then there is a chance that it will return duplicates. And if the town center of the neighbourhood is big, then it will miss a few venues. Furthermore, it has to be assumed that if a neighbourhood has more than one zip code, such as Garland and Irving, then the lat/long of each zip code is in the town center of the zip code and it has a minimum radius of 3 km or that any overlapping will be insignificant. Hence, a radius of 3 km is picked, assuming that most eateries fall within that radius for any one given neighbourhood.



Based on the drawing, it can be seen that the circle B has an overlap with circle C. Any venue meeting the search category in the overlapped area will be retrieved twice

Furthermore, the venue data set that Foursquare provides is only a rough guide on the types of cuisine according to a predefined set of categories as Foursquare has documented. It can be seen from their website that bubble tea and dumpling, which is predominantly Asian, is not classified under the Asian category. Also, categories such as Chinese and Japanese are defined as subcategory under Asian by Foursquare, but they have food venues in the Asian category that has no subcategory.

A useful feature set will be demographics, mainly the distribution of White and Asians as it has been observed that Whites fascination with Asian food has resulted in the "Explosion of White-Owned Dallas Asian-Fusion Restaurants" in Dallas. However, census in the U.S. is done once every 10 years, and the next census will be in 2020, the data used can be up to 10 years old. There are census being done by ACS as recent as 2017, hence it will be used as is to provide guidance. This exercise can be repeated after the 2020 census results are released if deemed necessary.

2.4 Feature selection

The first set of data to be processed will be the zip code. Dallas county has 20 neighborhoods, and 84 zip codes. The zip code data will be sourced from this website https://simplemaps.com/data/us-zips

The first category to be queried via Foursquare will be Food, and the second will be Asian. This will return the frequencies of all venues and Asian venues from which we can determine its concentration. Also, depending on how the data behaves, such as the definition of Asian venues vs. Korean venues or Chinese venues or Szechuan or Curry house or ramen shop. As a free developers account is used for this project, ratings of the venues will not be a feature.

Next we will look at the demographics and the distribution. The U.S. census is about 10 years old, and the numbers have to be taken with a pinch of salt. The feature will be the populations size of Whites and Asians in Dallas county, and identification of neighborhoods where there is a higher concentration of Asians above the Dallas county average.

5. Analytical Methods

The basic "Demand and Supply of the market segment" economic model will be used. To achieve this we will decompose it into two approaches:

1. Understanding of how the Asian cuisine market segments itself such as a generic Chinese restaurant vs a Sushi or Peking Duck restaurant. As Chinese forms the greatest land mass in Asia, and the highest population count, understanding will have

to be derived from how Foursquare defines this. Certain assumptions will have to be made after the data has been retrieved

2. Statistical analysis has to be performed on the types of venues and its frequency by neighborhoods. The ratio of the cuisine and the ratio of the White and Asian demographics can be reviewed. There is insufficient data to draw that correlation but the frequency of venue and demographics can be observed as an initial guide before doing actual field exercises in exploring the various venues in the 20 different neighborhoods.

3. Exploratory Data Analysis

1. Demographics of Neighborhoods in Dallas county

The population of Dallas county is approximately 2.4M, with White being 1.56M which is 61% and Asians forming 153K which translates to 6%.

#	Race		Estimate
1	White		1,565,175
2	Black		572,491
3	Asian Total		153,214
	Asian Indian	54,697	
	Chinese	16,879	
	Filipino	10,306	
	Japanese	2,388	
	Korean	9,242	
	Vietnamese	32,610	
	Asian Others	27,092	
4	American Indian		8,310

The table shows a snippet of the census data from ACS which shows the breakdown of what constitutes Asian where Vietnamese forms 21% of the Asian race. Chinese forms only 11%. Asian Indian form 36%

Hence, any neighbourhood with higher than 6% Asian population is worth noting.

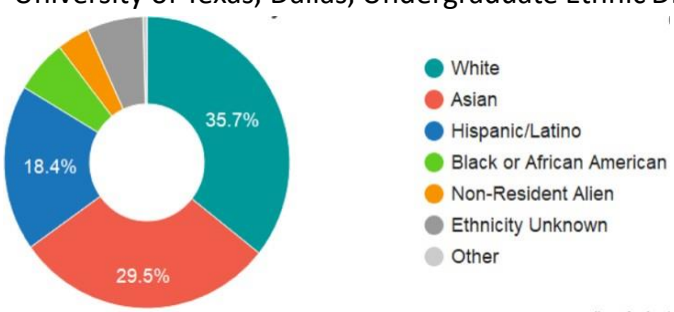
No.	Neighborhood	Population	% of Asians
1	Addison	12414	11.22
2	Balch Springs	23031	
3	Carrollton	46364	14.37
4	Cedar Hill	45373	
5	Coppell	38666	23.58
6	Dallas	1190205	
7	Desoto	48877	
8	Duncanville	38530	
9	Garland	226892	10.93
10	Grand Prairie	169322	7.29
11	Hutchins	5374	
12	Irving	217883	18.52
13	Lancaster	38269	
14	Mesquite	140703	
15	Richardson	78165	16.39
16	Rowlett	54963	7.7
17	Sachse	20328	
18	Seagoville	18339	
19	Sunnyvale	5118	
20	Wilmer	3956	

Also, most of the neighbourhood with higher percentage of Asian population such as, Addison, Coppell, Garland, Sachse, Richardson, and Rowlett are all to the North side (between North East to North West) of Dallas.

No Asian population numbers were found for Dallas which is a very large cosmopolitan city, but it is not uncommon that new migrants tend to gravitate towards the suburbs away from the inner city.

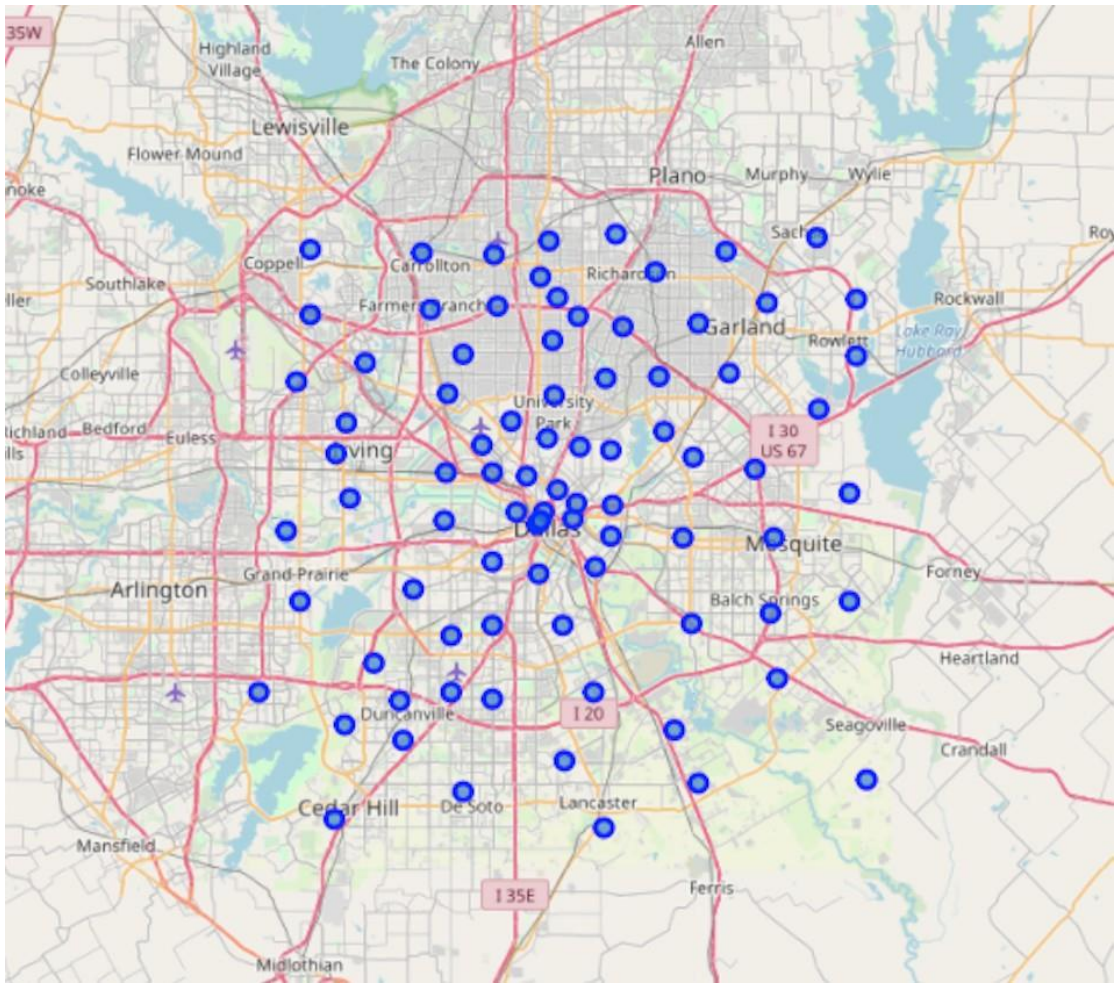
Another thing to call out will be that Richardson is the home to University of Texas, Dallas. The university has reported that 29.5% of its undergrads are Asians

University of Texas, Dallas, Undergraduate Ethnic Diversity



3.2 Zip Code distribution across Dallas county

From folium map, we can see that the zip codes around Dallas central is quite close together. This can be cause for concern with the radius of 3 km that we will be passing to Foursquare. However, those zip code zones might not actually have a ‘town centre’ if it is too small, so, it may not have venues of interest.



3.3 Foursquare all and Asian venue data

The Foursquare has two dimensions, one being the count of venues, and the other being the frequency. The venue count from Foursquare was tabulated below for all venues and Asian (collectively all venues in the subcategory of the Asian category) venues. The returned values were grouped by neighbourhood as there would otherwise be 84 zip codes as opposed to 20 neighborhoods.

It can be observed from the table of venue from Foursqare that there are no venues in Seagoville which has a population of 18k. From the folium map above, it can be seen that there are no lat/longs (blue dots) right on Seagoville, hence it could mean that the zip code lat/longs are not necessarily at the centre of the neighbourhood.

Likewise, Foursquare did not return any count for Asian venues at Wilmer, but this should not be a concern because that neighbourhood has the lowest population count.

No.	Neighborhood	Population	% of Asians	Venues Frequency	
				All	Asian
1	Addison	12414	11.22	100	38
2	Balch Springs	23031		40	5
3	Carrollton	46364	14.37	100	65
4	Cedar Hill	45373		50	3
5	Coppell	38666	23.58	75	9
6	Dallas	1190205		3506	1235
7	Desoto	48877		40	3
8	Duncanville	38530		117	20
9	Garland	226892	10.93	321	70
10	Grand Prairie	169322	7.29	136	15
11	Hutchins	5374		10	2
12	Irving	217883	18.52	481	98
13	Lancaster	38269		30	3
14	Mesquite	140703		187	16
15	Richardson	78165	16.39	200	134
16	Rowlett	54963	7.7	79	15
17	Sachse	20328		17	4
18	Seagoville	18339			
19	Sunnyvale	5118		7	1
20	Wilmer	3956		7	

Hence it can be seen from Foursquare venue data that places with percentage of Asian population above the 6% average also tend to have a higher ratio of Asian venues.

Interestingly, 35% of Dallas venues are Asian (including all its subcategory). Finally, Richardson which has 67% venues being Asian is the home of the University of Texas, Dallas as discussed earlier on.

3.5 All Venues Frequencies in Dallas County from Foursquare

	Neighborhood	1st Most Common	2nd Most Common	3rd Most Common	4th Most Common	5th Most Common	6th Most Common	7th Most Common	8th Most Common	9th Most Common	10th Most Common	11th Most Common	12th Most Common	13th Most Common	14th Most Common	15th Most Common	16th Most Common	17th Most Common	18th Most Common	19th Most Common	20th Most Common
0	Addison	Mexican Restaurant	Italian Restaurant	American Restaurant	Burger Joint	Steakhouse	Pizza Place	Sandwich Place	Sushi Restaurant	Diner	Restaurant	Seafood Restaurant	Wings Joint	Chinese Restaurant	Asian Restaurant	Breakfast Spot	Deli / Bodega	Bakery	Fried Chicken Joint	BBQ Joint	Thai Restaurant
1	Balch Springs	Fast Food Restaurant	Fried Chicken Joint	Pizza Place	Chinese Restaurant	Food	Mexican Restaurant	Taco Place	Bakery	Bagel Shop	Burger Joint	Sandwich Place	Diner	CafvC	Asian Restaurant	Seafood Restaurant	Ethiopian Restaurant	Fondue Restaurant	Fish & Chips Shop	Dumpling Restaurant	Donut Shop
2	Carrollton	Mexican Restaurant	Fast Food Restaurant	Pizza Place	Korean Restaurant	Sandwich Place	Sushi Restaurant	Fried Chicken Joint	Indian Restaurant	Chinese Restaurant	Asian Restaurant	Vietnamese Restaurant	Burger Joint	Thai Restaurant	Diner	Donut Shop	CafvC	BBQ Joint	Breakfast Spot	Bakery	Caribbean Restaurant
3	Cedar Hill	Fast Food Restaurant	American Restaurant	Pizza Place	Mexican Restaurant	Fried Chicken Joint	Burger Joint	Donut Shop	Seafood Restaurant	Italian Restaurant	Breakfast Spot	Chinese Restaurant	Sandwich Place	Food	CafvC	Wings Joint	Southern / Soul Food Restaurant	Sushi Restaurant	Tex-Mex Restaurant	Bakery	BBQ Joint
4	Coppell	Pizza Place	Fast Food Restaurant	American Restaurant	Sandwich Place	Mexican Restaurant	Bakery	Tex-Mex Restaurant	Burger Joint	Donut Shop	Indian Restaurant	Food	CafvC	BBQ Joint	Italian Restaurant	Japanese Restaurant	Mediterranean Restaurant	Vietnamese Restaurant	Middle Eastern Restaurant	Diner	Greek Restaurant
5	Dallas	Mexican Restaurant	Fast Food Restaurant	American Restaurant	Pizza Place	Sandwich Place	Burger Joint	Fried Chicken Joint	Taco Place	Italian Restaurant	Seafood Restaurant	BBQ Joint	Restaurant	Chinese Restaurant	Bakery	Steakhouse	New American Restaurant	Donut Shop	Breakfast Spot	Thai Restaurant	Diner
6	Desoto	Pizza Place	Donut Shop	Fast Food Restaurant	American Restaurant	Sandwich Place	Seafood Restaurant	Fried Chicken Joint	Burger Joint	Fish & Chips Shop	Mexican Restaurant	Wings Joint	Chinese Restaurant	Tex-Mex Restaurant	Bakery	Restaurant	Ethiopian Restaurant	Diner	Dumpling Restaurant	Food	Fondue Restaurant
7	Duncanville	Fast Food Restaurant	Pizza Place	American Restaurant	Fried Chicken Joint	Mexican Restaurant	Chinese Restaurant	Wings Joint	Seafood Restaurant	BBQ Joint	Italian Restaurant	Sandwich Place	Food	Donut Shop	Diner	Restaurant	Bagel Shop	Taco Place	Sushi Restaurant	Bakery	Burger Joint
8	Garland	Fast Food Restaurant	Mexican Restaurant	Pizza Place	Burger Joint	Chinese Restaurant	American Restaurant	Sandwich Place	Donut Shop	Fried Chicken Joint	Taco Place	Seafood Restaurant	Wings Joint	BBQ Joint	Restaurant	Vietnamese Restaurant	Italian Restaurant	Breakfast Spot	Food	Bakery	Sushi Restaurant
9	Grand Prairie	Fast Food Restaurant	Mexican Restaurant	Pizza Place	Fried Chicken Joint	Sandwich Place	Bakery	American Restaurant	Taco Place	BBQ Joint	Donut Shop	Wings Joint	Chinese Restaurant	Burger Joint	Restaurant	Italian Restaurant	Seafood Restaurant	Diner	Steakhouse	Food Stand	Food Court
10	Hutchins	Fast Food Restaurant	Food	American Restaurant	Sandwich Place	Truck Stop	Fried Chicken Joint	Wings Joint	Diner	Donut Shop	Dumpling Restaurant	Ethiopian Restaurant	Fish & Chips Shop	Fondue Restaurant	Food Stand	Food Court	Deli / Bodega	Food Truck	French Restaurant	Gastropub	German Restaurant
11	Irving	Mexican Restaurant	Fast Food Restaurant	Sandwich Place	Indian Restaurant	Pizza Place	American Restaurant	Fried Chicken Joint	Burger Joint	Asian Restaurant	Bakery	Restaurant	Chinese Restaurant	Breakfast Spot	Italian Restaurant	Deli / Bodega	Donut Shop	Japanese Restaurant	Brazilian Restaurant	Latin American Restaurant	Food
12	Lancaster	Fast Food Restaurant	Pizza Place	Wings Joint	Chinese Restaurant	CafvC	Fried Chicken Joint	Food	Mexican Restaurant	Food Truck	Burger Joint	Donut Shop	Taco Place	Italian Restaurant	Bakery	BBQ Joint	Asian Restaurant	American Restaurant	Gastropub	German Restaurant	Greek Restaurant
13	Mesquite	Fast Food Restaurant	Mexican Restaurant	American Restaurant	Pizza Place	Burger Joint	Sandwich Place	Fried Chicken Joint	Chinese Restaurant	BBQ Joint	Taco Place	Breakfast Spot	Donut Shop	Greek Restaurant	Italian Restaurant	Steakhouse	Diner	Restaurant	Deli / Bodega	Wings Joint	Seafood Restaurant
14	Richardson	Mexican Restaurant	Sandwich Place	Chinese Restaurant	Bakery	Burger Joint	American Restaurant	Mediterranean Restaurant	Fast Food Restaurant	Vietnamese Restaurant	Indian Restaurant	BBQ Joint	Pizza Place	Taco Place	CafvC	Italian Restaurant	Asian Restaurant	Donut Shop	Fried Chicken Joint	Breakfast Spot	Wings Joint
15	Rowlett	Fast Food Restaurant	Mexican Restaurant	Pizza Place	Sandwich Place	Chinese Restaurant	Fried Chicken Joint	Deli / Bodega	Restaurant	Burger Joint	Italian Restaurant	Greek Restaurant	Seafood Restaurant	Wings Joint	Asian Restaurant	BBQ Joint	American Restaurant	Thai Restaurant	Breakfast Spot	Vietnamese Restaurant	Donut Shop
16	Sachse	Burger Joint	Sandwich Place	Fast Food Restaurant	Fried Chicken Joint	Mexican Restaurant	Wings Joint	Breakfast Spot	Pizza Place	CafvC	Donut Shop	Food Truck	French Restaurant	Diner	Food Court	Gastropub	Food	Fondue Restaurant	Fish & Chips Shop	German Restaurant	Ethiopian Restaurant
17	Sunnyvale	American Restaurant	Sandwich Place	Italian Restaurant	Donut Shop	Food Truck	Mexican Restaurant	Sushi Restaurant	Wings Joint	Fondue Restaurant	Diner	Dumpling Restaurant	Ethiopian Restaurant	Fast Food Restaurant	Fish & Chips Shop	Food Stand	Food	Food Court	Deli / Bodega	French Restaurant	Fried Chicken Joint
18	Wilmer	Fast Food Restaurant	American Restaurant	Diner	Truck Stop	Sandwich Place	Pizza Place	Wings Joint	Food	Donut Shop	Dumpling Restaurant	Ethiopian Restaurant	Fish & Chips Shop	Fondue Restaurant	Food Court	Deli / Bodega	Food Stand	Food Truck	French Restaurant	Fried Chicken Joint	Gastropub

The table above from Foursquare was built using “Food” as venue category. Foursquare breakdowns the Asian venue into its subclassifications such as Chinese, Asian, Thai, Indian, Japanese, and Korean. Hence, this tables cannot be reconciled with the count table that Foursquare produced earlier on. Furthermore, Coppell which has a 23.58 % Asian population, does not have an Asian or Chinese top 20 most common. However, it does have a Japanese and Vietnames restaurant in the top 20 most common. Likewise, Carrollton which has a 14.37% Asian population has more Korean, Japanese (Sushi) and Indian restaurants than Chinese and Asian.

Sachse has a large population of 20K and have a lower than average Asian population. Also, it is in the NE of Dallas.

3.6 Asian Venues Frequencies in Dallas County from Foursquare

Neighborhood	1st Most Common	2nd Most Common	3rd Most Common	4th Most Common	5th Most Common	6th Most Common	7th Most Common	8th Most Common	9th Most Common	10th Most Common	11th Most Common	12th Most Common	13th Most Common	14th Most Common	15th Most Common	16th Most Common	17th Most Common	18th Most Common	19th Most Common	20th Most Common
Addison	Asian Restaurant	Chinese Restaurant	Thai Restaurant	Sushi Restaurant	Japanese Restaurant	Vietnamese Restaurant	Korean Restaurant	Noodle House	Food Truck	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Wings Joint	Filipino Restaurant	Fast Food Restaurant	Dim Sum Restaurant	Burmese Restaurant	Buffet	Bakery	Diner
Balch Springs	Chinese Restaurant	Asian Restaurant	Wings Joint	Filipino Restaurant	Karaoke Bar	Japanese Restaurant	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Fast Food Restaurant	Vietnamese Restaurant	Diner	Dim Sum Restaurant	Burmese Restaurant	Buffet	Bakery	Korean Restaurant	Mongolian Restaurant	New American Restaurant
Carrollton	Korean Restaurant	Asian Restaurant	Chinese Restaurant	Vietnamese Restaurant	Sushi Restaurant	Thai Restaurant	Ramen Restaurant	Japanese Restaurant	Karaoke Bar	Soup Place	Noodle House	Filipino Restaurant	Fried Chicken Joint	Food Truck	Wings Joint	Fast Food Restaurant	Himalayan Restaurant	Dim Sum Restaurant	Burmese Restaurant	Buffet
Cedar Hill	Asian Restaurant	Chinese Restaurant	Sushi Restaurant	Wings Joint	Filipino Restaurant	Japanese Restaurant	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Diner	Fast Food Restaurant	Korean Restaurant	Dim Sum Restaurant	Burmese Restaurant	Buffet	Bakery	Karaoke Bar	Mongolian Restaurant	Vietnamese Restaurant
Coppell	Vietnamese Restaurant	Chinese Restaurant	Japanese Restaurant	Asian Restaurant	Thai Restaurant	Sushi Restaurant	Peking Duck Restaurant	Filipino Restaurant	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Wings Joint	Fast Food Restaurant	Karaoke Bar	Dim Sum Restaurant	Burmese Restaurant	Buffet	Bakery	Diner
Dallas	Asian Restaurant	Chinese Restaurant	Sushi Restaurant	Thai Restaurant	Japanese Restaurant	Vietnamese Restaurant	Korean Restaurant	Ramen Restaurant	Noodle House	Food Truck	Fast Food Restaurant	Seafood Restaurant	Taiwanese Restaurant	Fried Chicken Joint	Sandwich Place	New American Restaurant	American Restaurant	Vegetarian / Vegan Restaurant	Poke Place	Szechuan Restaurant
Desoto	Chinese Restaurant	Thai Restaurant	Wings Joint	Fast Food Restaurant	Japanese Restaurant	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Filipino Restaurant	Diner	Korean Restaurant	Dim Sum Restaurant	Burmese Restaurant	Buffet	Bakery	Asian Restaurant	Karaoke Bar	Mongolian Restaurant	Vietnamese Restaurant
Duncanville	Chinese Restaurant	Asian Restaurant	Vietnamese Restaurant	Sushi Restaurant	Mongolian Restaurant	Burmese Restaurant	Buffet	Bakery	Dim Sum Restaurant	Korean Restaurant	Fast Food Restaurant	Filipino Restaurant	Food Truck	Fried Chicken Joint	Himalayan Restaurant	Indian Restaurant	Japanese Restaurant	Karaoke Bar	Diner	Wings Joint
Garland	Chinese Restaurant	Vietnamese Restaurant	Asian Restaurant	Sushi Restaurant	Thai Restaurant	Korean Restaurant	Tianjin Restaurant	Filipino Restaurant	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Wings Joint	Fast Food Restaurant	Diner	Japanese Restaurant	Burmese Restaurant	Buffet	Bakery	Dim Sum Restaurant
Grand Prairie	Chinese Restaurant	Asian Restaurant	Japanese Restaurant	Filipino Restaurant	Sushi Restaurant	Wings Joint	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Diner	Fast Food Restaurant	Korean Restaurant	Dim Sum Restaurant	Burmese Restaurant	Buffet	Bakery	Karaoke Bar	Mongolian Restaurant	Vietnamese Restaurant
Hutchins	Asian Restaurant	Sushi Restaurant	Wings Joint	Fast Food Restaurant	Japanese Restaurant	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Filipino Restaurant	Diner	Korean Restaurant	Dim Sum Restaurant	Chinese Restaurant	Burmese Restaurant	Buffet	Bakery	Karaoke Bar	Mongolian Restaurant	Vietnamese Restaurant
Irving	Asian Restaurant	Chinese Restaurant	Thai Restaurant	Japanese Restaurant	Sushi Restaurant	Korean Restaurant	Vietnamese Restaurant	Indian Restaurant	Himalayan Restaurant	Sandwich Place	Bakery	Wings Joint	Dim Sum Restaurant	Diner	Fast Food Restaurant	Filipino Restaurant	Food Truck	Fried Chicken Joint	Burmese Restaurant	Buffet
Lancaster	Chinese Restaurant	Asian Restaurant	Wings Joint	Filipino Restaurant	Karaoke Bar	Japanese Restaurant	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Fast Food Restaurant	Vietnamese Restaurant	Diner	Dim Sum Restaurant	Burmese Restaurant	Buffet	Bakery	Korean Restaurant	Mongolian Restaurant	New American Restaurant
Mesquite	Chinese Restaurant	Japanese Restaurant	Asian Restaurant	Thai Restaurant	Sushi Restaurant	Wings Joint	Filipino Restaurant	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Dim Sum Restaurant	Fast Food Restaurant	Diner	Korean Restaurant	Burmese Restaurant	Buffet	Bakery	Karaoke Bar	Mongolian Restaurant
Richardson	Asian Restaurant	Chinese Restaurant	Vietnamese Restaurant	Thai Restaurant	Japanese Restaurant	Sushi Restaurant	Korean Restaurant	Noodle House	Ramen Restaurant	Dim Sum Restaurant	Vegetarian / Vegan Restaurant	Buffet	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Wings Joint	Food Truck	Filipino Restaurant	Fast Food Restaurant	Burmese Restaurant
Rowlett	Chinese Restaurant	Asian Restaurant	Vietnamese Restaurant	Thai Restaurant	Filipino Restaurant	Karaoke Bar	Japanese Restaurant	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Wings Joint	Fast Food Restaurant	Korean Restaurant	Dim Sum Restaurant	Burmese Restaurant	Buffet	Bakery	Diner	Mongolian Restaurant
Sachse	Japanese Restaurant	Chinese Restaurant	Sushi Restaurant	Korean Restaurant	Wings Joint	Filipino Restaurant	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Diner	Fast Food Restaurant	Dim Sum Restaurant	Burmese Restaurant	Buffet	Bakery	Asian Restaurant	Karaoke Bar	Mongolian Restaurant	Vietnamese Restaurant
Sunnyvale	Sushi Restaurant	Wings Joint	Fast Food Restaurant	Japanese Restaurant	Indian Restaurant	Himalayan Restaurant	Fried Chicken Joint	Food Truck	Filipino Restaurant	Diner	Korean Restaurant	Dim Sum Restaurant	Chinese Restaurant	Burmese Restaurant	Buffet	Bakery	Asian Restaurant	Karaoke Bar	Mongolian Restaurant	Vietnamese Restaurant

The Asian venues frequency is built using the “Asian Restaurant” as venue category. Notice that all the neighborhoods that have Chinese and Asian restaurants below top 5, which is Desoto, Hutchins, Grand Prairie, Sachse, and Sunnyvale, all have a below average % of Asian populations.
Noticed that Foursquare returns Asian restaurant as a category and also Chinese restaurant which is a subcategory and also Dim Sum Restaurant which is a sub-subcategory.

A logical conclusion would be the way the individual venues classify themselves, and Foursquare stores that self-classification as a category in its database which does not align to its venue category hierarchy.

4. Interpreting the results

1. Classifications and definitions affects interpretation of results

Firstly, the term Asian cuisine is used loosely here to cover the wide range of cuisines found in the greater Asia and can include fusion for variety and to increase the offering. The definition of Asian cuisine encompasses a wide range of cooking practises and traditions and there is no enforcement on how the term is being used. Just in the Asia region alone, there is Chinese cuisine which varies greatly in taste and flavor at different locations, to exotic Japanese, the spicy Koreans, the countries in South Asia, and to western parts including India. As such, the definition of Asian cuisine will depend strictly on how it is defined by the source of the data.

However, if classification of the venue is dependent on interpretation of the venue owners or reviewers, then Asian venues could mean a venue that prepares and servers Asian food which could include curry, some sushi rolls, dim sum, spicy noodles and bbq beef. Then this would mean that there is a high amount of venues that falls under this category serving a wide range of Asian cuisine resulting in a higher frequency for Asian and Chinese venues.

2. Demographics

1. Most of the areas with an above average Asian population are located N, NE and NW of Dallas, and has a higher volume of Asian venues with respect to the overall venues count. The neighbourhood that has the highest ratio of Asian venues of 67%, Richardson, is also the home of the University of Texas Dallas which has reported that 30% of its 18,000 undergraduate students are Asian. These areas are worth exploring.

2. If an area has a very low population count, it will have a low count of venues and naturally a lower count of Asian venues, too. These areas can be considered low opportunity a high risk.

3. Specialty restaurants, especially Japanese, Korean and Vietnamese are generally lower in frequency except in certain areas which could potentially have more of such Asian population.

3. Conclusion

It appears that the Asian and Chinese venues do follow a demographics pattern. Neighbourhood with higher percentage of Asians population such as Addison, Coppell, Garland, Sachse, Richardson, and Rowlett are worth exploring.

The trend is for a restaurant to serve a wide range of Asian cuisines and classify itself Asian or Chinese restaurant.

Again, the data cannot be interpreted strictly and it should only be used as guide