



The battle of neighborhood, sushi restaurant, Houston

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Agenda

1. INTRODUCTION - PROBLEM STATEMEN
2. DATA REQUIREMENT
3. DATA ACQUISITION AND EXPLORATIONS
4. EXPLORATORY DATA ANALYSIS
5. RESULT
6. CONCLUSION

1. Problem Statement

- A Japanese Sushi Chain Restaurant Owner wants to increase the business outside of Japan.
- Houston has been selected to develop business opportunity.
- Houston is the fourth most populous city in the United States with the estimated population of 2,320,268 as of July 1st, 2019.
- Houston has been increasing the population growth rate 21.6% between 2010 through 2019 and expected to grow with the rate of 17.2% in 2020-2029.
- In 2019, Houston was ranked as the most diverse city in the United State according to the new report.
- As restaurant chain owners, it's potential opportunity to increase the numbers of their restaurants in this populous and the diverse city of Houston.



Figure 1 (Left) Traditional Sushi Restaurant, Figure 2 (Right) Evolving Sushi Restaurant in Houston

2. Data Requirement

- Foursquare API:
 - <https://api.foursquare.com> Extracting the venue information for restaurants in Houston, Foursquare API was used for this project. This data includes latitude and longitude information for each venue.
- Houston ZIP Code and latitude/longitude Information
 - This data was not easily obtained from websites. The data was extracted from several websites as shown below. "Houston_zip_lat_long.csv" file (Uploaded in Github) gathered and combined and evaluated for this project.
<https://public.opendatasoft.com/explore/dataset/us-zip-code-latitude-and-longitude/table/>
<https://cohweb.houstontx.gov/ZipCodePublic/>
- OPEN DATA HOUSTON
 - <http://data.houstontx.gov/>
 - <https://datausa.io/profile/geo/houston-tx#housing>
- List of Houston neighborhoods
 - This information contains many neighborhoods, ranging from planned community to historic wards. City of Houston recognize a lot of 88 super neighborhoods which encompass broadly recognize regions. According to the city, a super neighborhood is "geographically designated area where residents, civic organizations, institutions and businesses work together to identify, plan, and set priorities to address the needs and concerns of their community".
https://en.wikipedia.org/wiki/List_of_Houston_neighborhoods

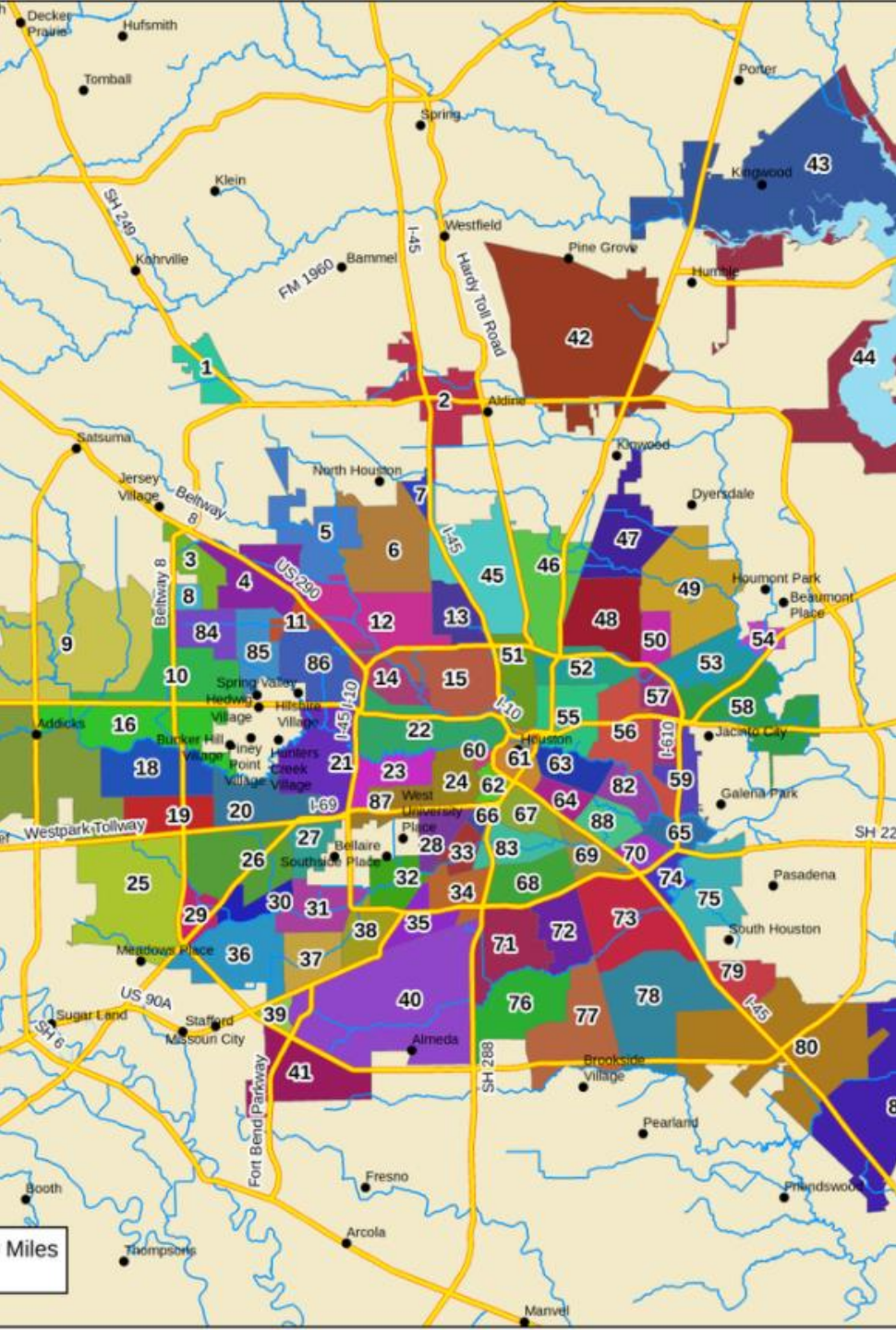
3. Data Acquisition and Explorations

Data Source

- The Open Data Portal is City of Houston's platform to host City-Wide open data.
- More than 200 datasets such as Zip Codes in the regions
- Houston Super Neighborhood boundaries
- Household Income information in neighborhood

Data Cleaning and Formatting

- Dealing with missing data
- Identified the locations of the sushi restaurants in Houston, limited to 5,000, within 100,000 meters away from the center of Houston official address
- Obtained the list of restaurants in general with the same criteria to check if anything outstands in comparison. Secondly, the venue data from Foursquare include 25 columns of information which includes useless data
- Coordination information (latitude and longitudes), address of the restaurants, cross streets and categories were filtered.
- Datasets which recognized as redundant, too obvious, unnecessary have been removed from this analysis.
- All NaN row of data was intentionally removed, since most of information was not numerical for this project.



4. Exploratory Data Analysis

- 88 neighborhoods (SNs) and historical wards
- The population is 2,320,268 as of 2019
- Total area of 637.4 square miles (1,651 km²).
- The approximate boundaries of each SN relative to Downtown Houston is extracted from Wikipedia as shown below.
- The center of Houston address:
 - 901 Bagby, Houston TX
 - Latitude: 29.760179, Longitude: -95.3693746509527

4. Continue...

- Figure 5 data was scraped from Wikipedia via beautifulsoupe.com

#		Neighborhoods	Location in Houston	Approximate boundaries
0	1	Willowbrook	Northwest	Along Texas State Highway 249 northwest of Bel...
1	2	Greater Greenspoint	North	Around the junction of Beltway 8 and Interstat...
2	3	Carverdale	Northwest	South of the junction of Beltway 8 and U.S. Ro...
3	4	Fairbanks / Northwest Crossing	Northwest	Along U.S. Route 290 between Interstate 610 an...
4	5	Greater Inwood	Northwest	North of Fairbanks / Northwest Crossing and ea...
...
83	84	Spring Branch North	Northwest	East of Beltway 8, south of Clay Road, west of...
84	85	Spring Branch Central	Northwest	Between Blalock Road and Bingle Road north of ...
85	86	Spring Branch East	Northwest	Enclosed by Blalock Road, Highway 290, Interst...
86	87	Greenway / Upper Kirby	Southwest	Along Interstate 69 between Bissonnet Road and...
87	88	Lawndale / Wayside	Southeast	Northeast of Interstate 45 along Brays Bayou b...

88 rows × 4 columns

Figure 5 The dataframe scraped from Wikipedia Houston Super Neighborhood Table

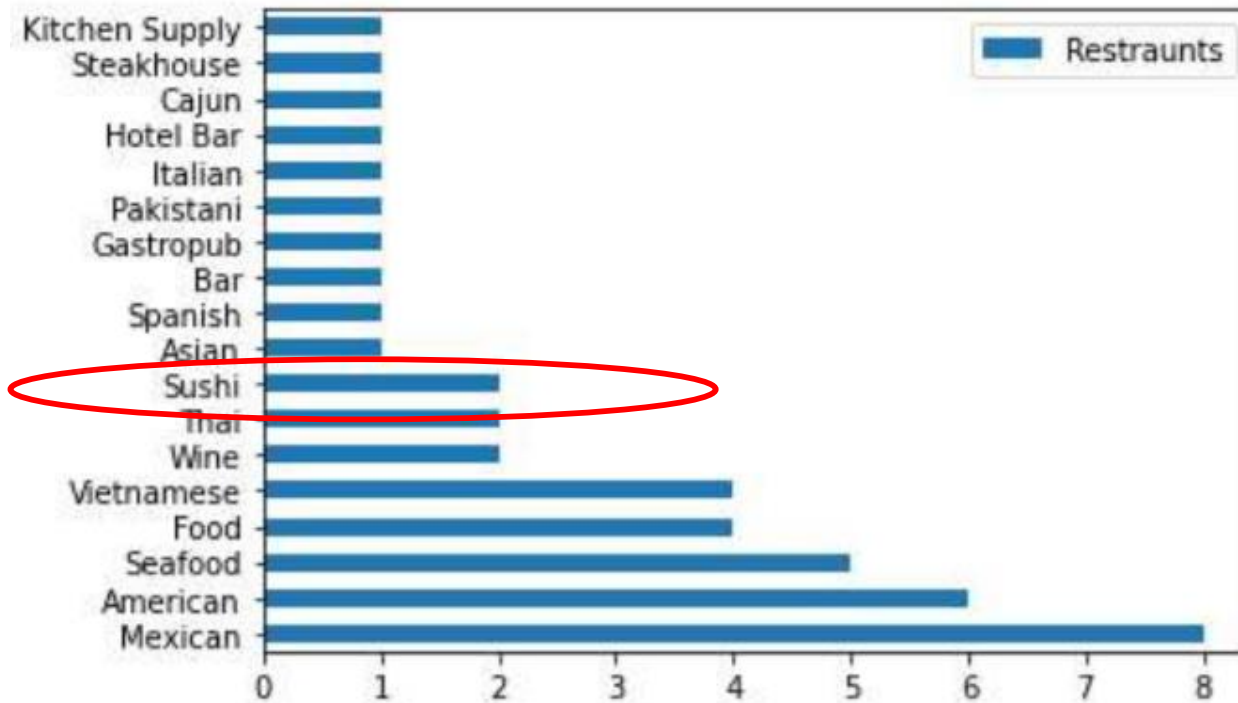
```
[2]: CLIENT_ID = '5TSQV2RFYETFWWILHHRYS4EP3NZRLUHWDXEFPOC1BWZXMMW' # your Foursquare ID
CLIENT_SECRET = 'RI2EKFYIORRBPYMLRX4YXLD21TZGKGPLRBCVV5C3K5ESVPKY' # your Foursquare Secret
ACCESS_TOKEN = 'H5DZDTVDJT0A1UPNRPDCTWXAGIVNBOBEYZSLV4AVXZN4EZBF' # your FourSquare Access Token
VERSION = '20180604'
LIMIT = 100000
print('Your credentials:')
print('CLIENT_ID: ' + CLIENT_ID)
print('CLIENT_SECRET:' + CLIENT_SECRET)

Your credentials:
CLIENT_ID: 5TSQV2RFYETFWWILHHRYS4EP3NZRLUHWDXEFPOC1BWZXMMW
CLIENT_SECRET: RI2EKFYIORRBPYMLRX4YXLD21TZGKGPLRBCVV5C3K5ESVPKY
```

Figure 6 Access to Foursquare.com for the venue information

- Foursquare.com
 - the venue data of any restaurants in Houston SN within 100,000 ft.
 - 901 Bagby, Houston TX

4. Continue...



- The total 50 responses (Foursquare limit)
- Sushi is Top 8 ranked
- Number of Sushi restaurant is 2 (4%).

```
[14]: 0 Spindletop Restaurant at Hyatt Regency Houston
      1 Andalusia Tapas Restaurant and Bar
      2 Kim Son Restaurant - Downtown
      3 Harry's Restaurant
      4 Cuchara Restaurant
      5 Mai's Restaurant
      6 Trofi Restaurant
      7 R.K.G. New Orleans Cajun Po-Boy Restaurant
      8 Njoy Thai Restaurant
      9 Dover's Restaurant
     10 Bouray's Burrito Bar and Vietnamese Restaurant
     11 Aquarium Restaurant
     12 Huynh Restaurant
     13 Restaurant Depot
     14 Padthai Thai Restaurant
     15 Ninfa's Restaurant
     16 Merida Mexican Restaurant
     17 Chin Tao Chinese Restaurant
     18 Lorenzo's Restaurant
     19 The Fish Restaurant & Sushi Bar
     20 Charlie's Restaurant and Lounge
     21 Spanish Flowers Mexican Restaurant
     22 Alma Latina Mexican Restaurant
     23 Metro Restaurant
     24 The Pearl Restaurant & Bar
     25 Oishii Japanese Restaurant & Sushi Bar
     26 Zula Restaurant
     27 Brazos Restaurant & Bar
     28 Picos Restaurant
     29 House of Blues Restaurant & Bar
     30 Brazos Restaurant (Crowne Plaza Hotel)
     31 Sage Event Center & Restaurant
     32 Quatro Bar & Restaurant
     33 New York Houston Restaurant
     34 Morningside Thai Restaurant
     35 51fifteen Restaurant and Lounge
     36 Monarch Restaurant
     37 American grill restaurant
     38 Connie's Seafood Market & Restaurant
     39 Tony's Mexican Restaurant
     40 Wasabi Japanese Restaurant
     41 Shiva Indian Restaurant
     42 Sonoma Wine Bar & Restaurant
     43 El Jardin Mexican Restaurant
     44 Juanita's Mexican Restaurant and Cantina
     45 Segari's Seafood Restaurant and Bar
     46 Himalaya Restaurant
     47 Aga's Restaurant & Catering
     48 Don Jose Mexican Restaurant
     49 Korea Garden Restaurant
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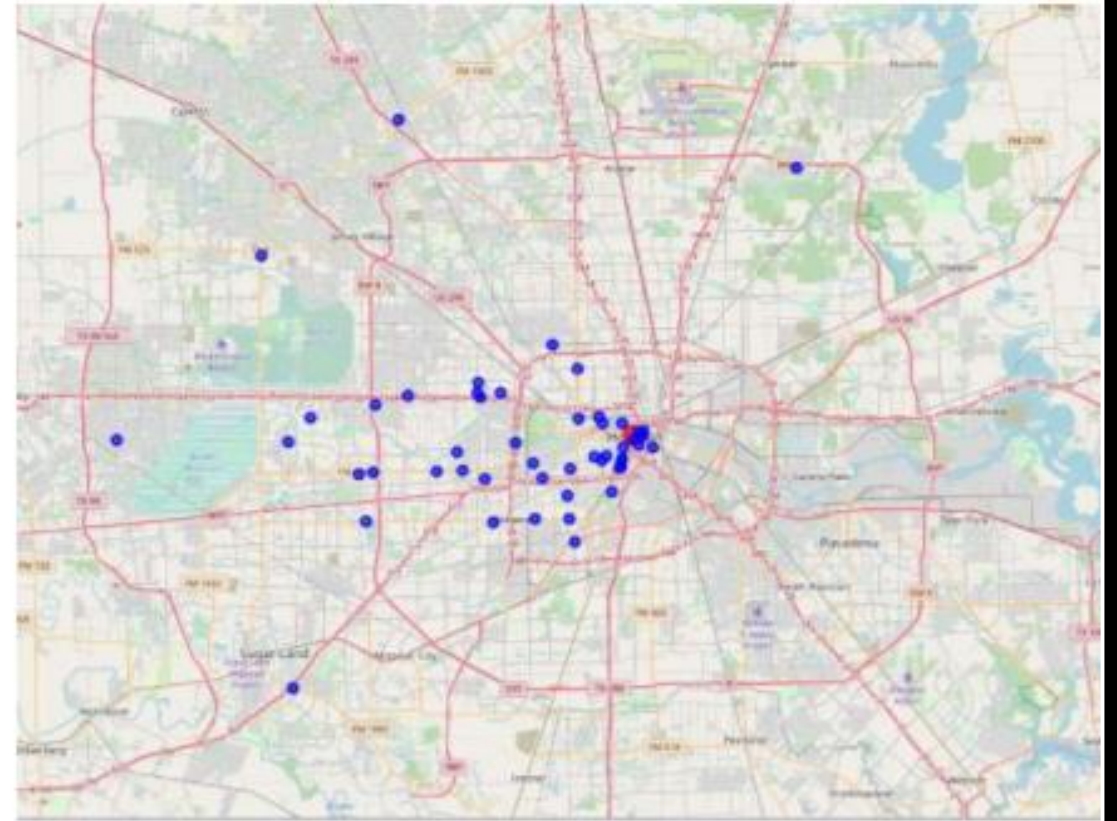
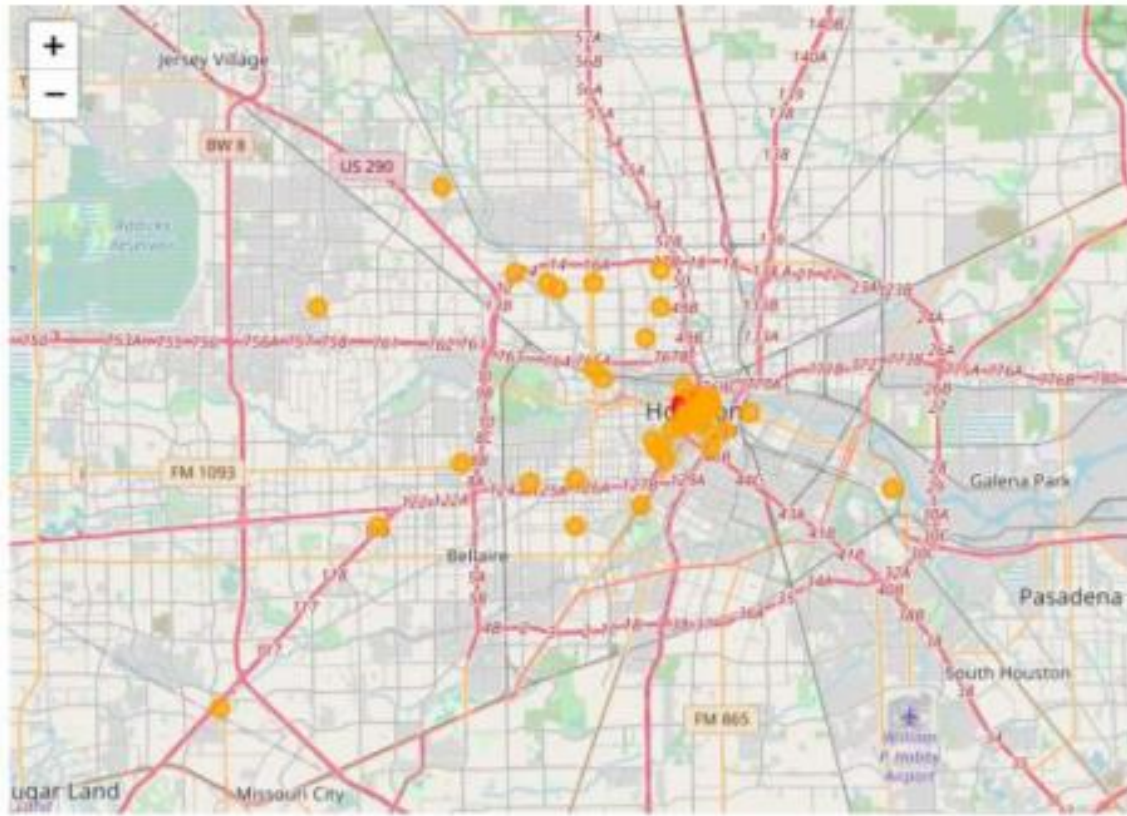



Figure 8 (Left) the location of restaurants in general, Figure 9 (right) the location of Sushi restaurants found Foursquare.com

4. Continue...

4. Exploratory Data Analysis

-Median Household Income

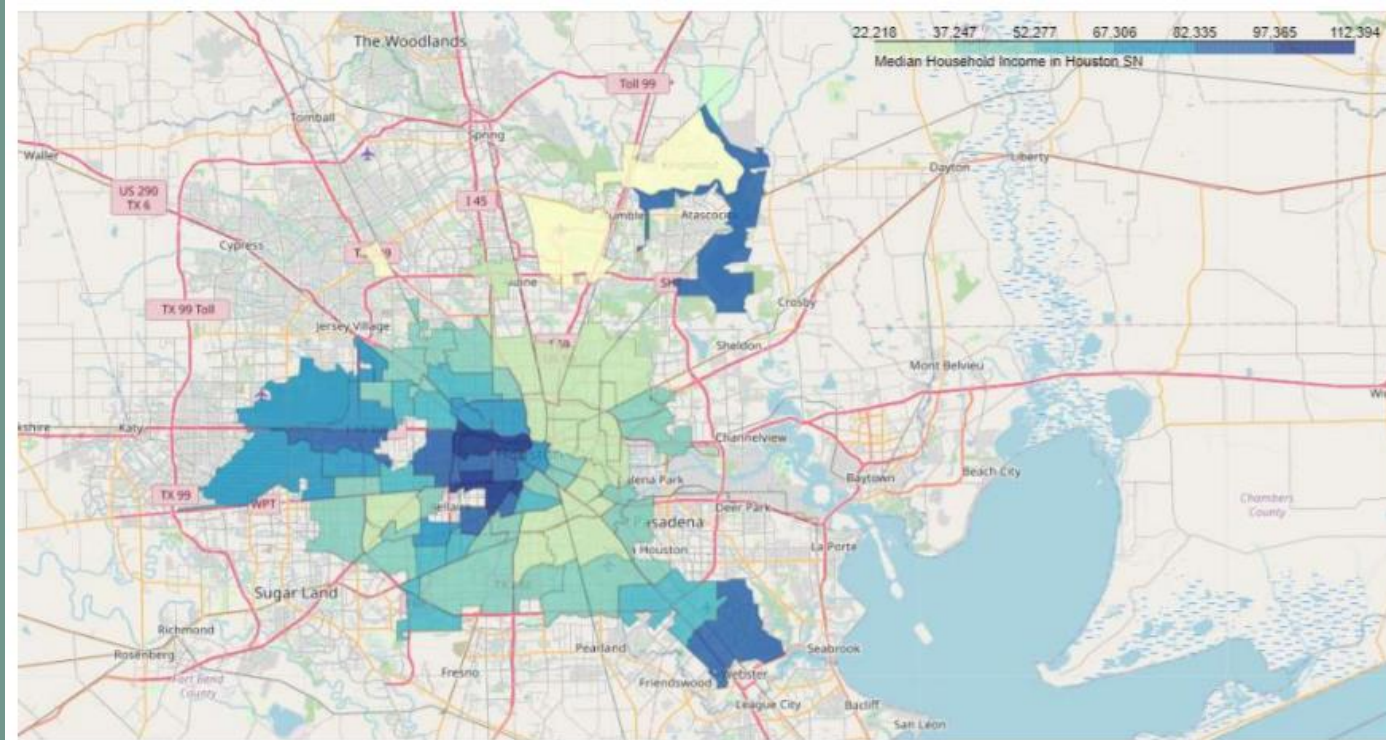


Figure 11 Median Household Income in Houston SNs

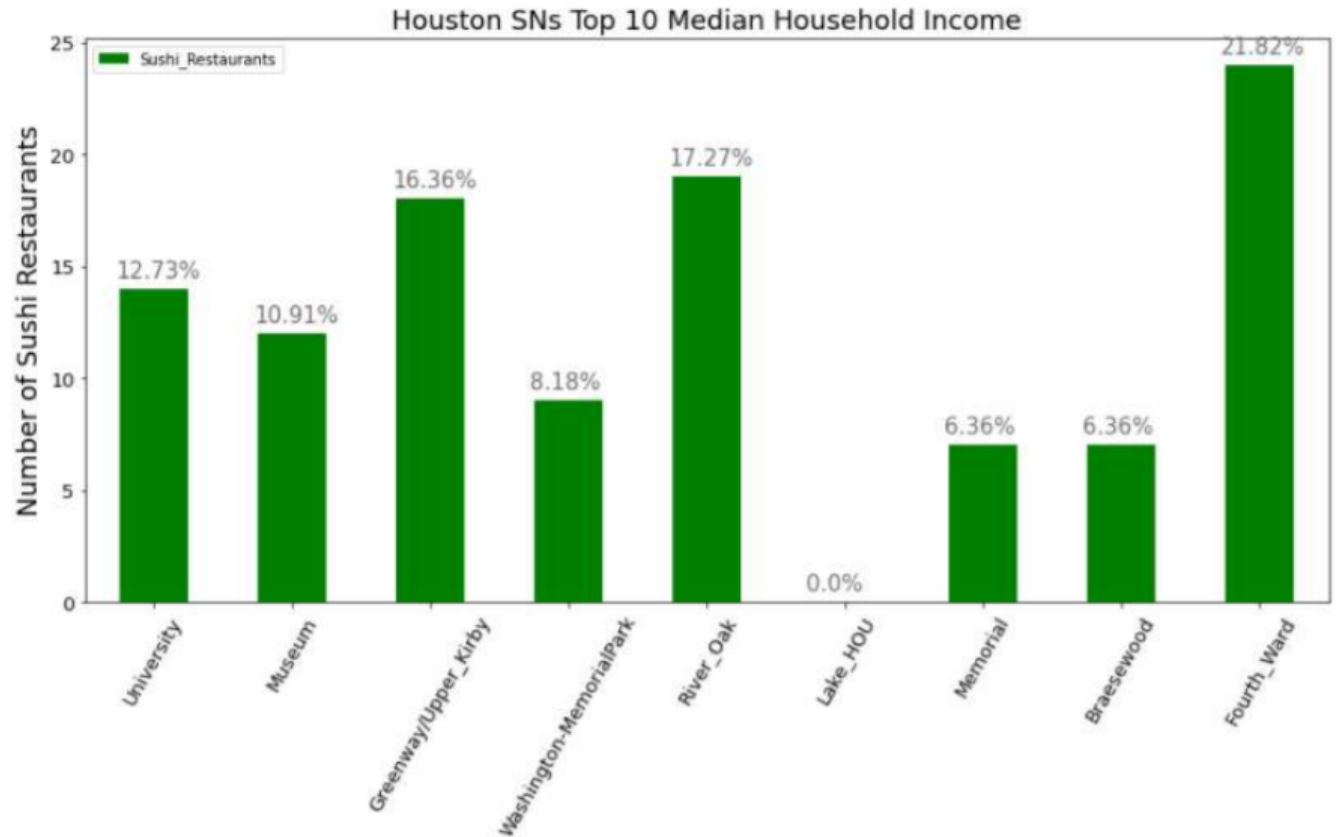
SNBNAME	population	income
UNIVERSITY PLACE	16342	111510
MUSEUM PARK	5509	101703
GREENWAY / UPPER KIRBY AREA	21120	100274
WASHINGTON AVENUE COALITION / MEMORIAL PARK	29033	99302
AFTON OAKS / RIVER OAKS AREA	14518	95682
LAKE HOUSTON	22280	95074
MEMORIAL	47604	94927
BRAESWOOD	21835	93748
FOURTH WARD	4085	88231
NEARTOWN - MONTROSE	31037	85296
CLEAR LAKE	620268	84710
GREATER UPTOWN	50731	83399
MEDICAL CENTER AREA	2717	82830
MEYERLAND AREA	21445	81408
WESTBRANCH	3633	81240
ADDICKS PARK TEN	19683	80584
GREATER HEIGHTS	41362	80048
LAZYBROOK / TIMBERGROVE	13099	80032
ELDRIDGE / WEST OAKS	72347	79787
MIDTOWN	8597	77261
BRIAR FOREST	43018	76462
DOWNTOWN	12088	71666
SPRING BRANCH WEST	31878	71534
CARVERDALE	3903	68107

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MEMORIAL	47604	94927
BRAESWOOD	21835	93748
FOURTH WARD	4085	88231
NEARTOWN - MONTROSE	31037	85296

Top 10 Median Household Income in Houston SN in 2015

Top 20 Median Household Income in Houston SN in 2015

Result and Conclusion



- Sushi restaurants were 8th popular restaurants in Houston
- The most of Sushi restaurants are located in westside of Houston (Northwest, West, and Southwest)
- BUT the restaurants in general matched with Sushi restaurant's locations
- Did not find anything significant areas where sushi restaurants are heavily located in this analysis.
- The median household income as another input of analysis
- Zero sushi restaurant was recognized in Lake Houston area.
- Top 3 potential location to open Sushi restaurants in Houston
 1. Fourth Quarter
 2. River Oak
 3. Greenway/ Upper Kirby
- Could be some tough competition and potentially monthly tenant rent could be significantly higher than other locations.