DimSum—Chinese style Breakfast

# Asian Breakfast Shop

*Neighborhood Battles in Edison Township, NJ*

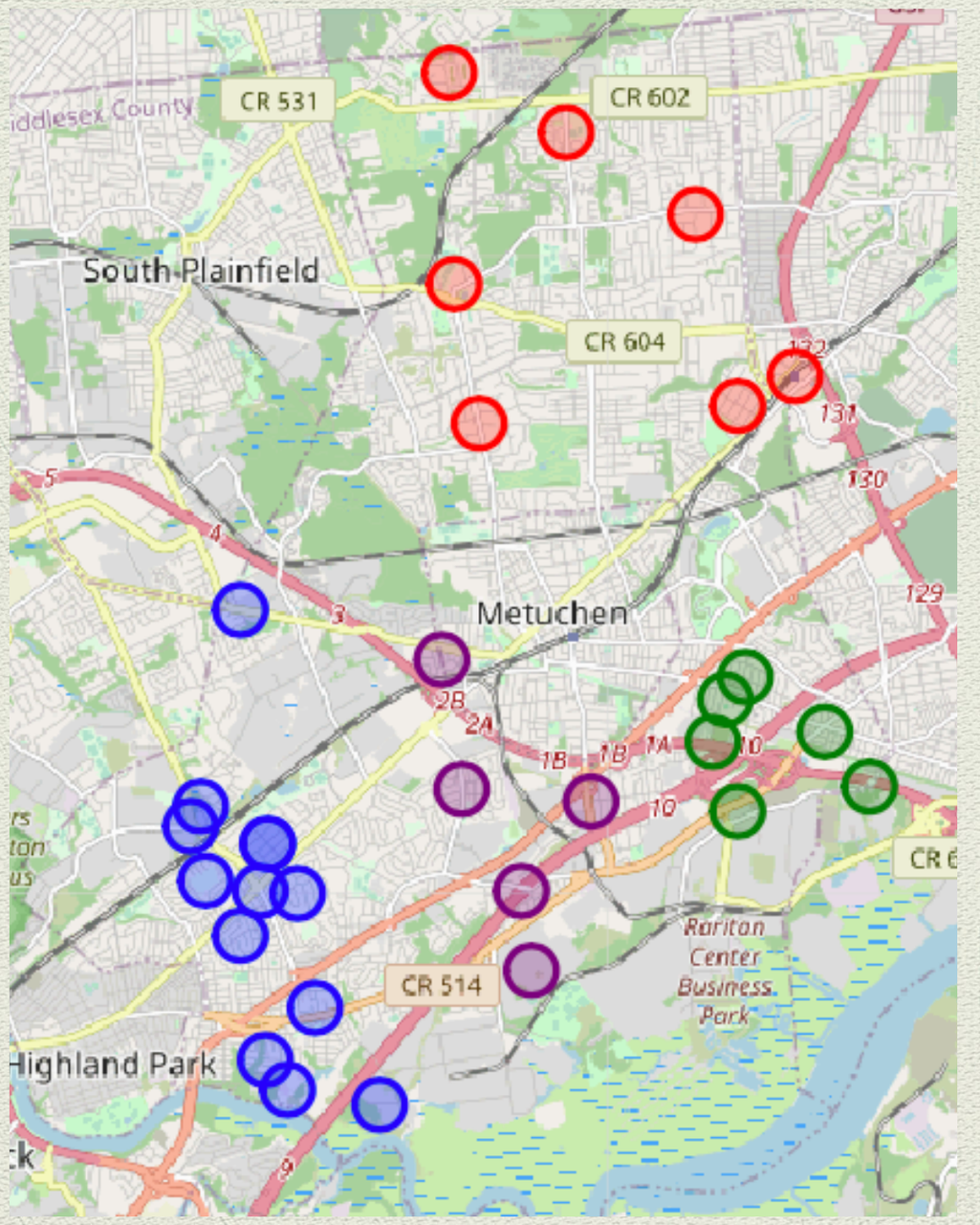
*Nan Feng*

# Background

- A friend wants to open an DimSum style restaurant in NJ
- She hired me as the data scientist to find out which town/neighborhood for the business
- Edison is the fifth-most popular municipality in NJ, with population of a little more than 100K and 29.27% Asian residents.
- Edison is a big town with a total area of 79.42 square km and 31 neighborhoods. We want to select the best neighborhood for the dim sum business.

# 31 Neighborhoods in Edison

- Using web scraping, get the 31 neighborhoods names, latitude, longitude
- Using unsupervised KMEANS clustering method can divide Edison into 4 regions (purely by geographic difference)
- We need more research on existing venues in each neighborhood for serious business decision.



| | Neighborhood | Notes | Latitude | Longitude |
|---|---|---|---|---|
| 0 | Bonhamtown | The neighborhood began as colonial village tha... | 40.523330 | -74.357780 |
| 1 | Camp Kilmer site | Abutting the Livingston Campus (Rutgers Univer... | 40.520830 | -74.413060 |
| 2 | Clara Barton | Named for Clara Barton. Located in the eastern... | 40.534170 | -74.339440 |
| 3 | Greensand | Site of the Kin-Buc Landfill, where Edmonds Cr... | 40.491670 | -74.387220 |
| 4 | Haven Homes | NaN | 40.509440 | -74.406390 |
| 5 | Lahiere | Lahiere is a neighbohood in the Stelton sectio... | 40.518890 | -74.402500 |
| 6 | Lincoln Park | For other places named Lincoln Park, New Jerse... | 40.518890 | -74.402500 |
| 7 | Lindenau | Lindenauis a neighborhood of the Stelton secti... | 40.515000 | -74.411110 |
| 8 | Martins Landing | Located on the northern banks of the Raritan R... | 40.493060 | -74.399720 |
| 9 | Menlo Park | Menlo Park is where, in 1876, Thomas Edison se... | 40.565000 | -74.337500 |
| 10 | Menlo Park Mall | Super regional shopping mall on U.S. Route 1 a... | 40.538330 | -74.378610 |
| 11 | Metropark | Largely located in neighboring Iselin, the off... | 40.568080 | -74.329795 |
| 12 | Middlesex County College | Sited 159 acres (64 ha) of the former Raritan ... | 40.505830 | -74.366110 |
| 13 | New Dover | The neighborhood began as colonial village tha... | 40.585000 | -74.343330 |
| 14 | New Durham | NaN | 40.543610 | -74.406110 |
| 15 | Nixon | NaN | 40.514170 | -74.367500 |

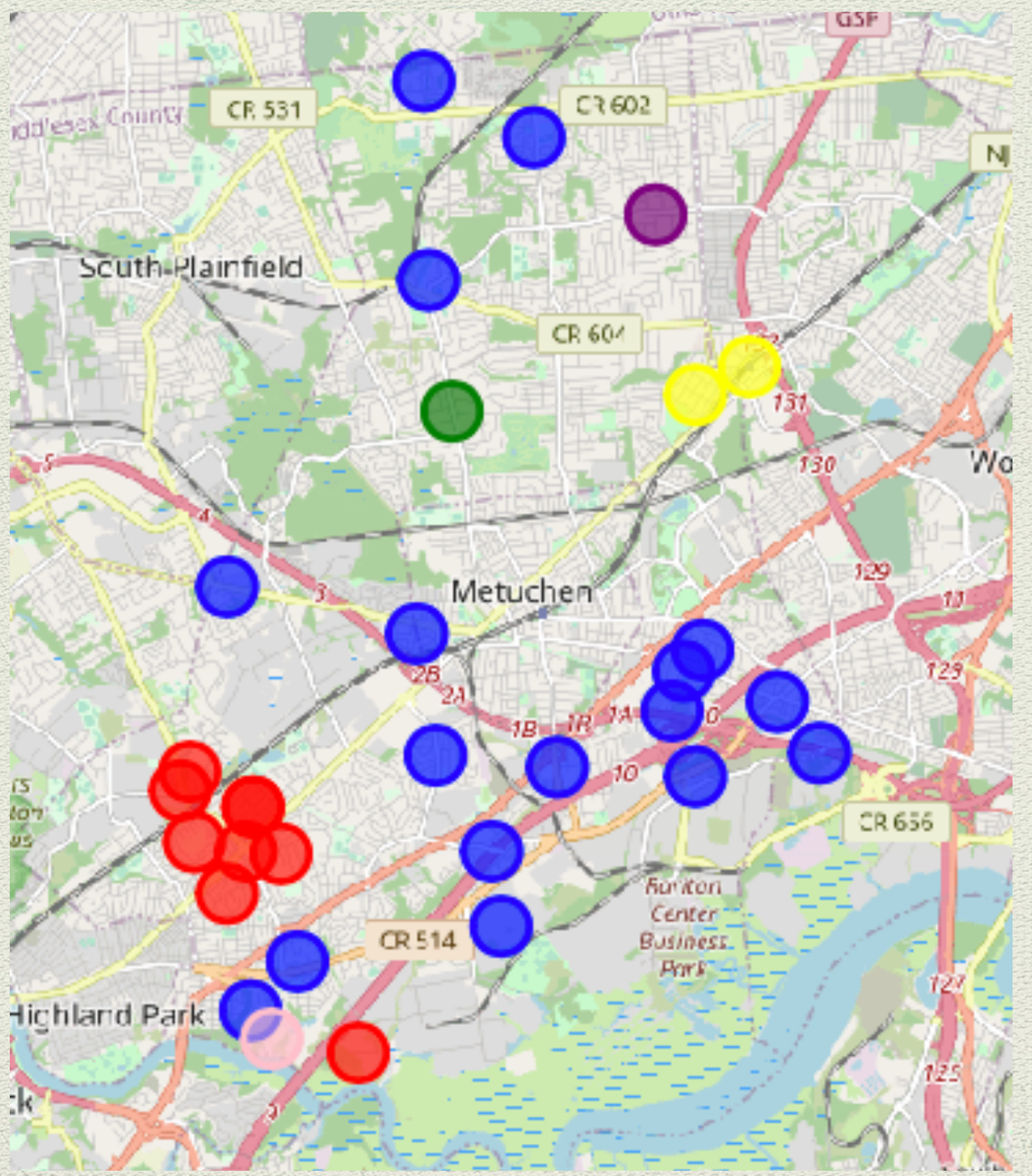
| | | | | |
|---|---|---|---|---|
| **15** | Nixon | NaN | 40.514170 | -74.367500 |
| **16** | North Edison | NaN | 40.600000 | -74.377500 |
| **17** | Oak Tree | An area of the battlefield of the Oak Tree Eng... | 40.577780 | -74.376670 |
| **18** | Oak Tree Road | Shopping strip runs through Edison and neighbo... | 40.522964 | -74.411674 |
| **19** | Phoenix | Located in the eastern part of the township, P... | 40.529720 | -74.341110 |
| **20** | Piscataway | This is the oldest neighborhood in Edison. Alo... | 40.501670 | -74.395830 |
| **21** | Potters | In the northern part of the township Potters w... | 40.593610 | -74.361390 |
| **22** | Pumptown | Pumptown is a residential neighborhood with a ... | 40.563060 | -74.373330 |
| **23** | Raritan Center | Sited on part if the former Raritan Arsenal,[4... | 40.522500 | -74.337780 |
| **24** | Raritan Manor | NaN | 40.536390 | -74.336670 |
| **25** | Sand Hills | Sand Hills is a neighborhood straddling Edison... | 40.525000 | -74.319440 |
| **26** | Silver Lake | A small lake of same name borders the neighbor... | 40.496209 | -74.402813 |
| **27** | Stelton | One the oldest parts of Edison. | 40.514170 | -74.403610 |
| **28** | Valentine | Valentine is adjacent to the Fords section of ... | 40.530830 | -74.325560 |
| **29** | Vineyard Village | Adjacent to former Edison Assembly. Edward Ant... | 40.524728 | -74.375613 |
| **30** | Washington Park | Washington Park is to the east of Stelton. | 40.513890 | -74.398330 |

# Top Venues in Each Neighborhood

- Make calls to Four Square APIs to find nearby popular venues in the neighborhood
  - radius = 1000m
  - limit = 100 venues
- For each neighborhood find the top 10 popular venues.

# KMEANS Clustering on Venues

- Using KMEANS clustering to divide Edison neighborhoods based on the venues
  - n_clusters = 6
  - n_init = 12
  - algorithm = “auto”
- Note: different from KMEANS based on lat/lon, clustering based on venues are not necessarily clustered geographically!



# Top Venues for Cluster 1-4

- Cluster 1: American Restaurant; Italian Restaurant; Bar, Deli
- Cluster 2: Pizza;  Cluster 3: Indian Restaurant
- Cluster 4: Park

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phoenix | 1 | Hotel | American Restaurant | Chinese Restaurant | Pizza Place | Convenience Store | Pharmacy | Sandwich Place | Farmers Market | Hotel Pool | Miscellaneous Shop |
| Silver Lake | 1 | Pharmacy | Mexican Restaurant | Bar | Noodle House | Hookah Bar | Deli / Bodega | Donut Shop | Mobile Phone Shop | Miscellaneous Shop | Sandwich Place |
| Sand Hills | 1 | Pizza Place | Chinese Restaurant | Hotel | Donut Shop | Convenience Store | Italian Restaurant | Bar | Clothing Store | Liquor Store | Sports Bar |
| Raritan Manor | 1 | American Restaurant | Pizza Place | Pharmacy | Farmers Market | Fast Food Restaurant | Convenience Store | Fried Chicken Joint | Sandwich Place | Restaurant | Café |
| Raritan Center | 1 | Hotel | Furniture / Home Store | Hotel Pool | Deli / Bodega | Mobile Phone Shop | Coffee Shop | Clothing Store | Sandwich Place | Cafeteria | Shipping Store |
| Potters | 1 | Pizza Place | Sandwich Place | Bank | Chinese Restaurant | Ice Cream Shop | Fast Food Restaurant | Shipping Store | Construction & Landscaping | Golf Course | Cosmetics Shop |
| Piscataway | 1 | Pharmacy | Farmers Market | Video Game Store | Chinese Restaurant | Bagel Shop | Deli / Bodega | Massage Studio | Optical Shop | Rental Car Location | Pub |
| Bonhamtown | 1 | Furniture / Home Store | Park | Pizza Place | Sandwich Place | Hotel | Gym / Fitness Center | Pet Store | Salon / Barbershop | Chinese Restaurant | Rental Car Location |
| North Edison | 1 | Gymnastics Gym | Gym / Fitness Center | Pizza Place | Intersection | Italian Restaurant | Restaurant | Bagel Shop | Food & Drink Shop | Food | Fast Food Restaurant |
| Vineyard Village | 1 | Home Service | Warehouse Store | Vietnamese Restaurant | Video Store | Pizza Place | Korean Restaurant | Cosmetics Shop | Convenience Store | Shipping Store | Sandwich Place |
| New Durham | 1 | Pharmacy | Lawyer | Other Repair Shop | Pizza Place | Distribution Center | Convenience Store | Donut Shop | Clothing Store | Sandwich Place | Chinese Restaurant |
| Middlesex County College | 1 | Pizza Place | Park | Deli / Bodega | Brewery | Food & Drink Shop | Chinese Restaurant | Sandwich Place | Bakery | Convenience Store | Ice Cream Shop |
| Menlo Park Mall | 1 | Train | Auto Workshop | Burger Joint | Convenience Store | Shopping Plaza | Soccer Field | Big Box Store | Basketball Court | Intersection | Bar |
| Clara Barton | 1 | Deli / Bodega | Pharmacy | Pizza Place | Convenience Store | Farmers Market | American Restaurant | Grocery Store | Mobile Phone Shop | Café | Chinese Restaurant |
| Oak Tree | 1 | Pharmacy | Bank | Breakfast Spot | Indian Restaurant | Donut Shop | Deli / Bodega | Cosmetics Shop | Convenience Store | Salon / Barbershop | Optical Shop |
| Nixon | 1 | Chinese Restaurant | Sandwich Place | Convenience Store | Korean Restaurant | Pizza Place | Bubble Tea Shop | Warehouse Store | Donut Shop | Shoe Store | Burger Joint |
| Pumptown | 2 | Pizza Place | Steakhouse | Golf Course | Bakery | Falafel Restaurant | Frozen Yogurt Shop | Fried Chicken Joint | Food & Drink Shop | Food | Fast Food Restaurant |
| Metropark | 3 | Indian Restaurant | Train | Pizza Place | Grocery Store | Jewelry Store | History Museum | Café | Chinese Restaurant | Asian Restaurant | Convenience Store |
| Menlo Park | 3 | Indian Restaurant | Pizza Place | Grocery Store | History Museum | Fast Food Restaurant | Train | Market | Gas Station | Donut Shop | State / Provincial Park |
| New Dover | 4 | Yoga Studio | Coffee Shop | Park | Art Gallery | Hobby Shop | Mobile Phone Shop | Fried Chicken Joint | Food & Drink Shop | Food | Fast Food Restaurant |

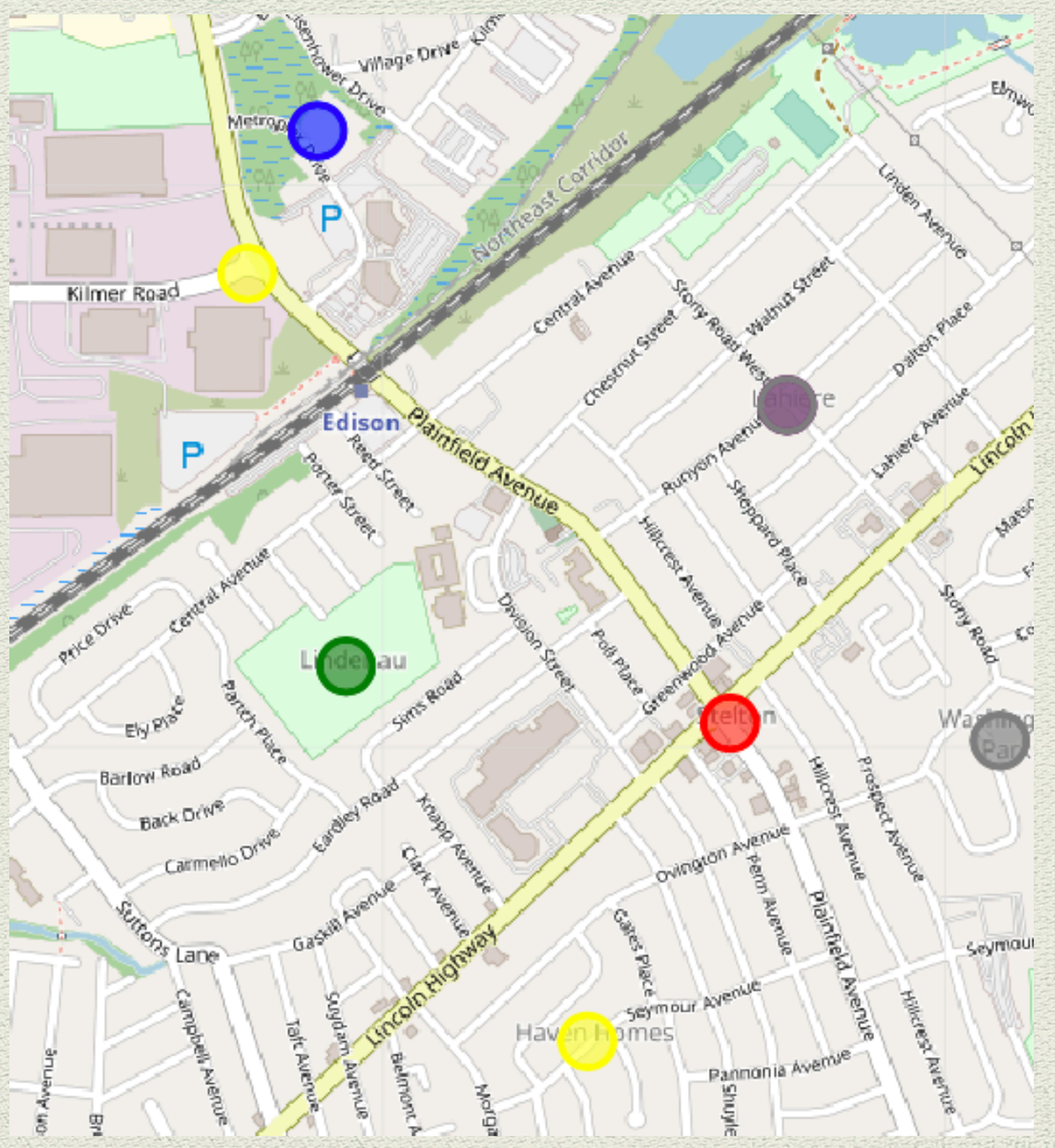
# Cluster Analysis - Cluster 0

- 9 Neighborhoods: Washington Park, Lindenau, Lincoln Park, Lahiere, Stelton, Greensand, Camp Kilmer site, Haven Homes, Oak Tree Road
- Top Venues:
  - Chinese Restaurant, Korean Restaurant, Asian Restaurant
  - Bakery, Bubble Tea, Dessert shop
  - Deli / Bodega
- The area is referred as “Chinatown in Edison”. We will focus on this cluster

| Neighborhood | Venue Label | 1st Most Popular Venue | 2nd Most Popular Venue | 3rd Most Popular Venue | 4th Most Popular Venue | 5th Most Popular Venue | 6th Most Popular Venue | 7th Most Popular Venue | 8th Most Popular Venue | 9th Most Popular Venue | 10th Most Popular Venue |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Washington Park | 0 | Chinese Restaurant | Bakery | Korean Restaurant | Dessert Shop | Asian Restaurant | Bubble Tea Shop | Pharmacy | Farmers Market | Fast Food Restaurant | Sandwich Place |
| Lindenau | 0 | Chinese Restaurant | Spa | Dessert Shop | Bakery | Indian Restaurant | Bubble Tea Shop | Construction & Landscaping | Korean Restaurant | Asian Restaurant | Bank |
| Lincoln Park | 0 | Chinese Restaurant | Korean Restaurant | Asian Restaurant | Dessert Shop | Bakery | Bank | Fast Food Restaurant | Malay Restaurant | Lawyer | Bubble Tea Shop |
| Lahiere | 0 | Chinese Restaurant | Korean Restaurant | Asian Restaurant | Dessert Shop | Bakery | Bank | Fast Food Restaurant | Malay Restaurant | Lawyer | Bubble Tea Shop |
| Stelton | 0 | Bakery | Dessert Shop | Chinese Restaurant | Korean Restaurant | Indian Restaurant | Sandwich Place | Spa | Fast Food Restaurant | Bank | Supermarket |
| Greensand | 0 | Business Service | Lake | Auto Garage | Rental Service | Fast Food Restaurant | Yoga Studio | Farmers Market | Frozen Yogurt Shop | Fried Chicken Joint | Food & Drink Shop |
| Camp Kilmer site | 0 | Spa | Korean Restaurant | Bakery | Hotpot Restaurant | Indian Restaurant | Dentist's Office | Deli / Bodega | BBQ Joint | Playground | Chinese Restaurant |
| Haven Homes | 0 | Chinese Restaurant | Korean Restaurant | Bakery | Dessert Shop | Bubble Tea Shop | Wings Joint | Spa | Pharmacy | Hookah Bar | Supermarket |
| Oak Tree Road | 0 | Business Service | Dentist's Office | Playground | Indian Restaurant | Deli / Bodega | Convenience Store | Spa | Lawyer | Yoga Studio | Farmers Market |

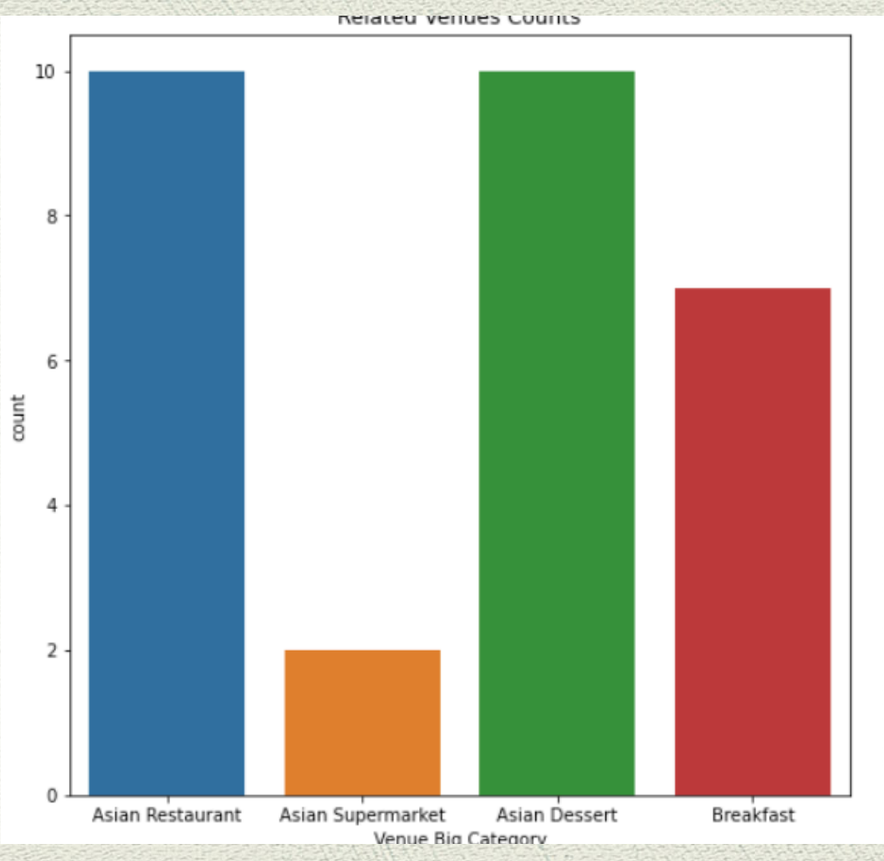
# Further Analysis of Cluster 0

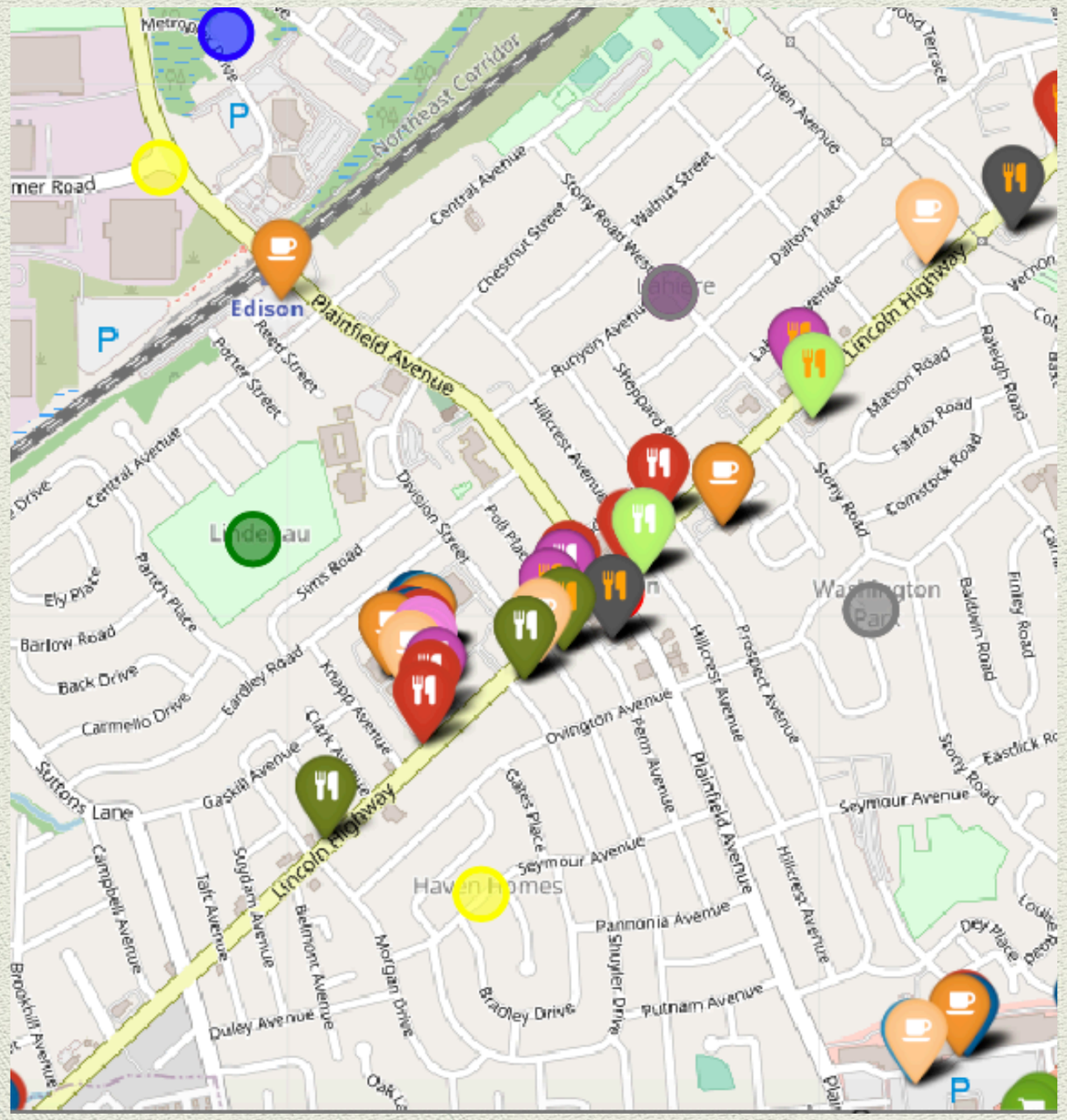
- Cluster 0 can be regarded as Chinatown of Edison
- Using KMEANS Clustering again based on venues on cluster 0, the neighborhood of Stelton (red circle) is center of this cluster regarding to Asian Food related venues



# Stelton: Related Venues

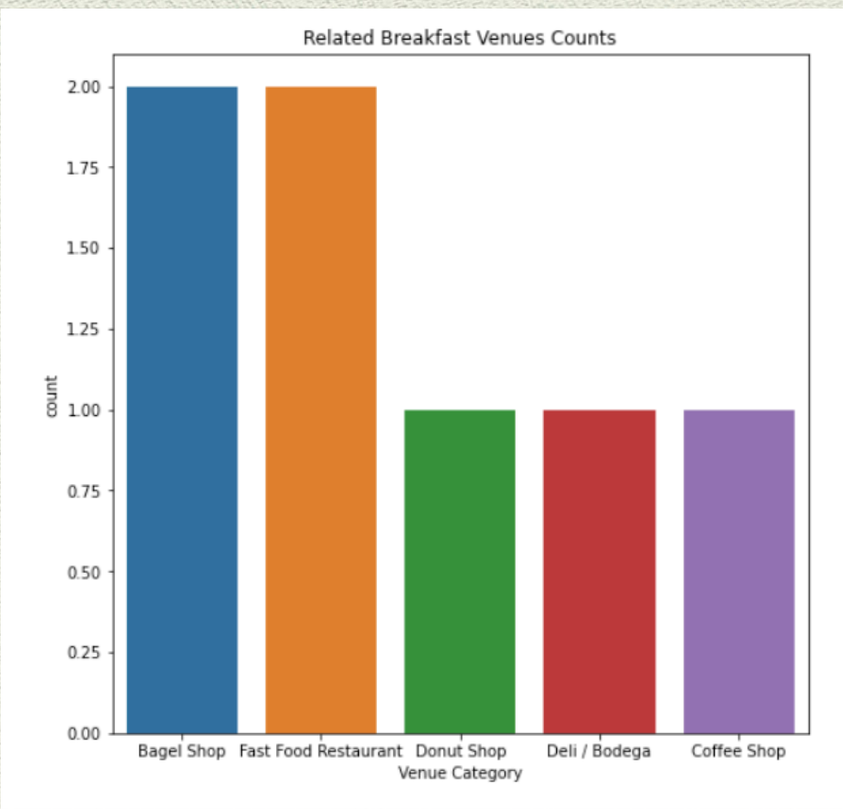
- Aisan Supermarket: 2
- Asian Restaurants: 10
- Asian Dessert: 10
- Breakfast Places: 7 (Are they Asian breakfast type?)

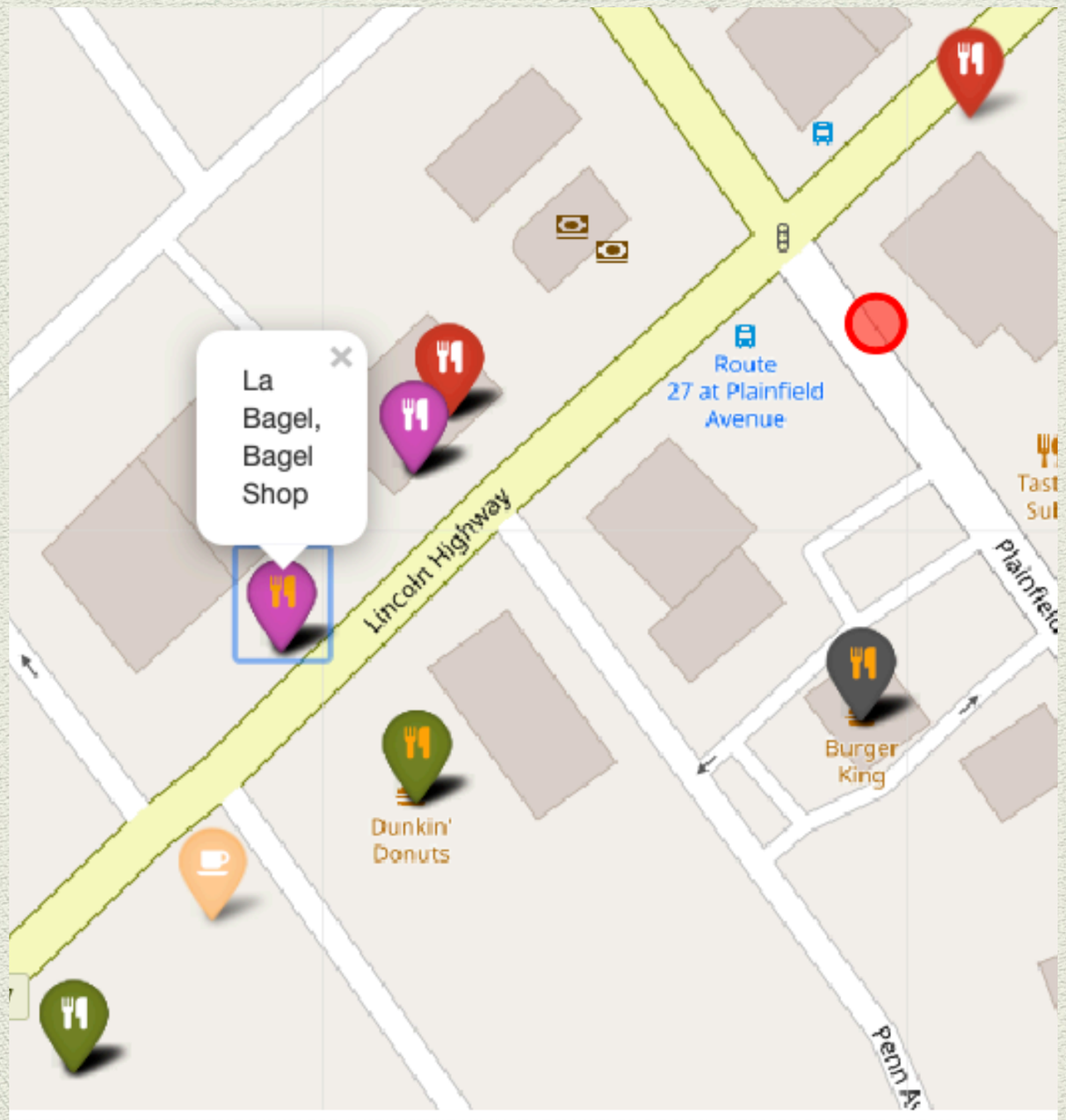


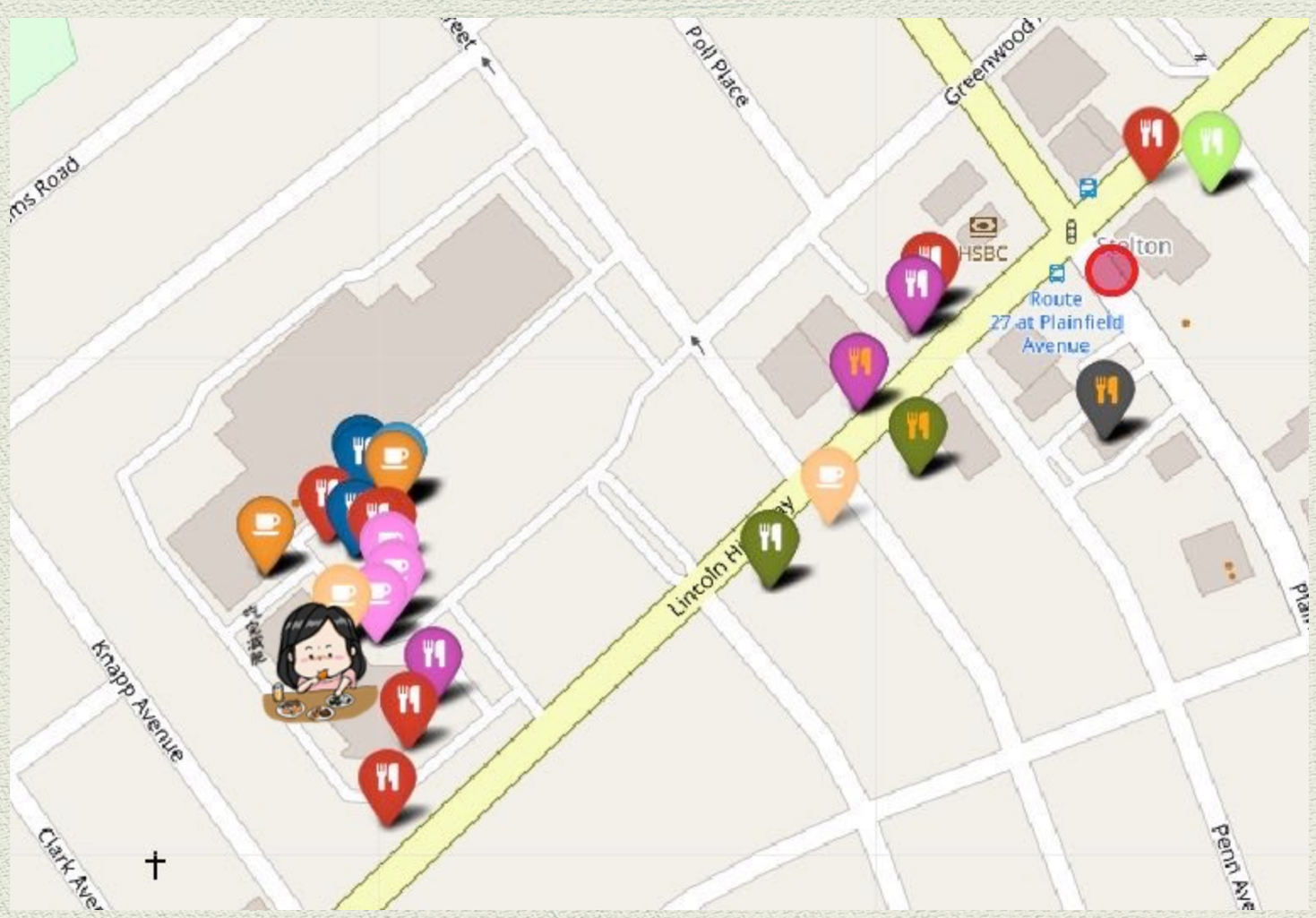



# Stelton Breakfast: No Asian Style

- Bagel Shops: 2
- Fast Food Restaurant: 2
- Donut Shop : 1
- Deli/Bodega: 1
- Coffee Shop : 1



# Suggested Dim Sum Location

- Neighborhood: Stelton
- Venue: Dim Sum (Asian Style Breakfast)
- Location: H Mart Mall in Edison
- Reason:
  - No Asian Breakfast competitors in the neighborhood
  - Asian supermarket, Asian Restaurant, Asian Dessert Shop all within walking distance