

# Ottawa Restaurant Analysis

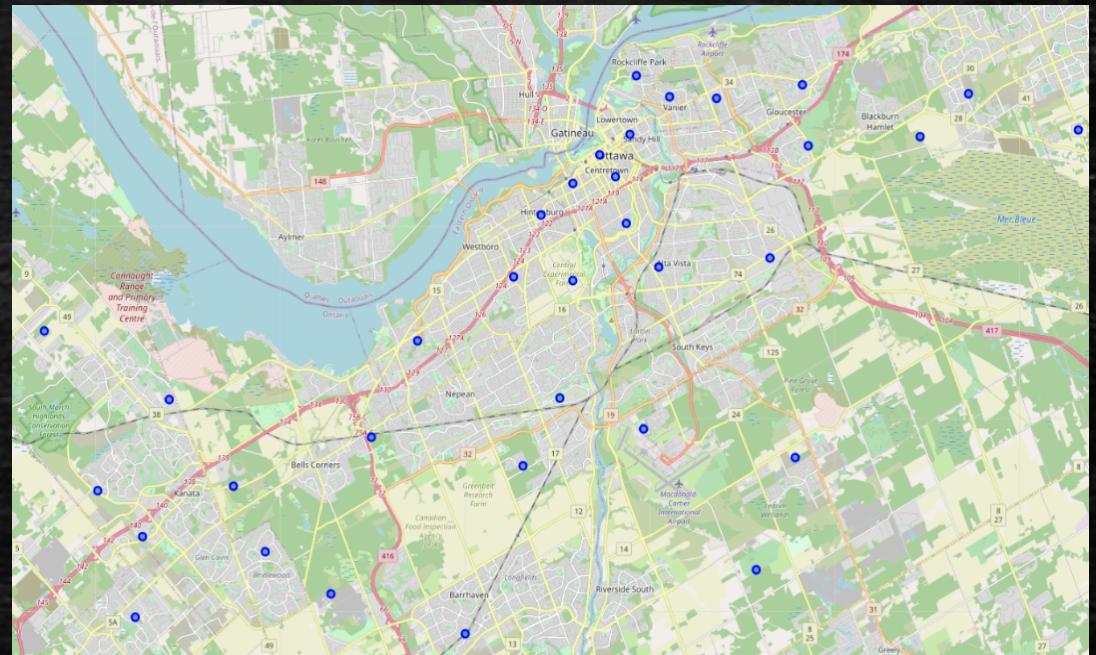
---

Xiren Ma

# Introduction

---

- Problem Background and Description
- Ottawa Overview for Opening a Restaurant
- Opening a Restaurant
  - Select a location
  - Determine the type of the Restaurant



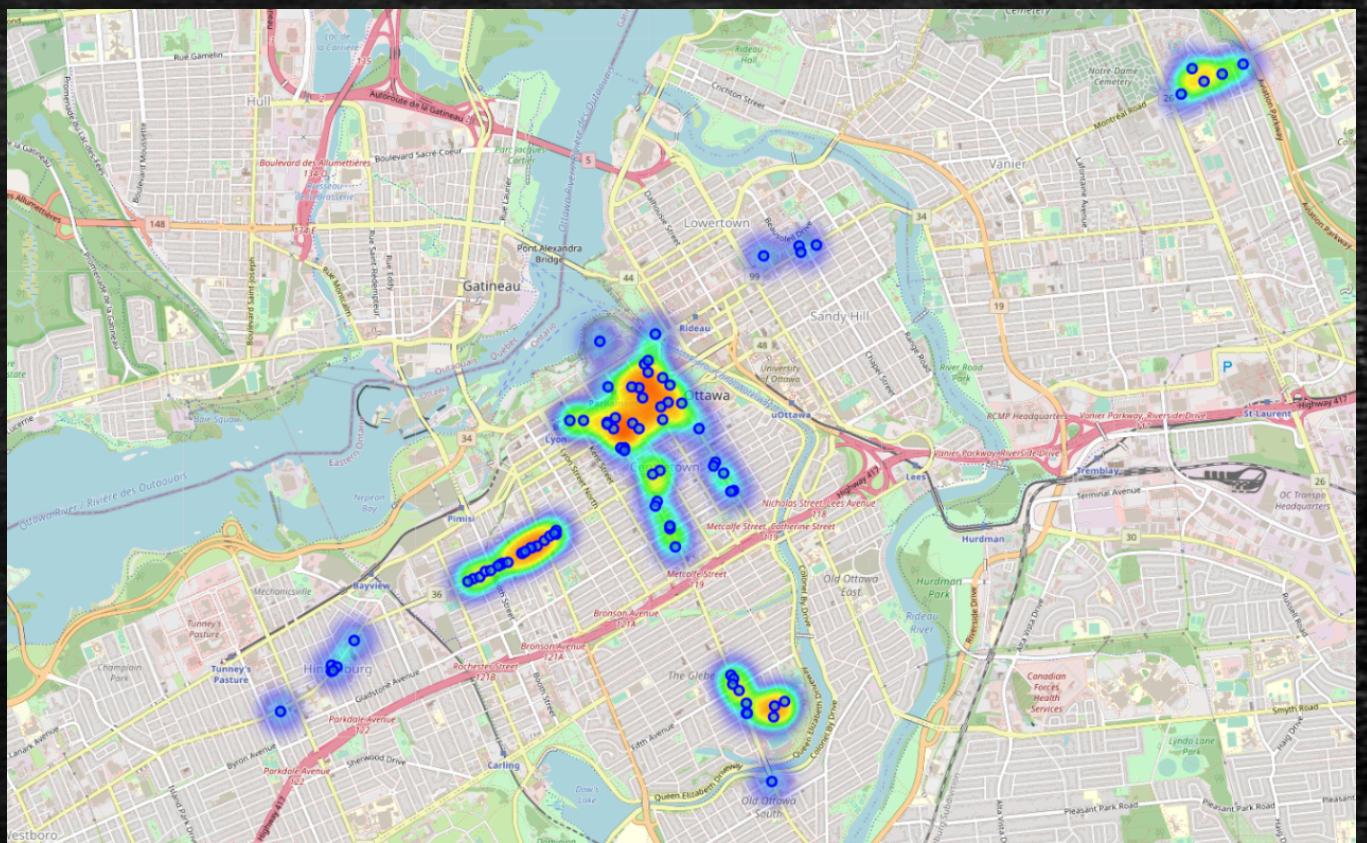
# Data Description

- Data source for this project
  - Wikipedia
  - Foursquare.com
- Data Feature
  - Neighborhoods in Ottawa
  - Venues in each neighborhood
  - Name, category, coordinates of each location
- Data Process:
  - Data clean
  - Data structure format

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Blackburn Hamlet / Pine View / Sheffield Glen	45.424293	-75.598500	Royal Oak	45.427109	-75.601272	Pub
1	Blackburn Hamlet / Pine View / Sheffield Glen	45.424293	-75.598500	Pineview Golf course	45.423598	-75.598886	Golf Course
2	Blackburn Hamlet / Pine View / Sheffield Glen	45.424293	-75.598500	Pineview Park	45.423603	-75.598869	Park
3	Blackburn Hamlet / Pine View / Sheffield Glen	45.424293	-75.598500	Circle K	45.426962	-75.600981	Convenience Store
4	Blackburn Hamlet / Pine View / Sheffield Glen	45.424293	-75.598500	Pineview Pizza	45.427197	-75.601278	Pizza Place
5	Britannia /Whitehaven / Bayshore / Pinecrest	45.361676	-75.784503	Dairy Queen	45.363599	-75.790115	Ice Cream Shop
6	Britannia /Whitehaven / Bayshore / Pinecrest	45.361676	-75.784503	Biagio's Italian Kitchen	45.364543	-75.788269	Italian Restaurant
7	Britannia /Whitehaven / Bayshore / Pinecrest	45.361676	-75.784503	Wendy's	45.363739	-75.786848	Fast Food Restaurant

# Methodology

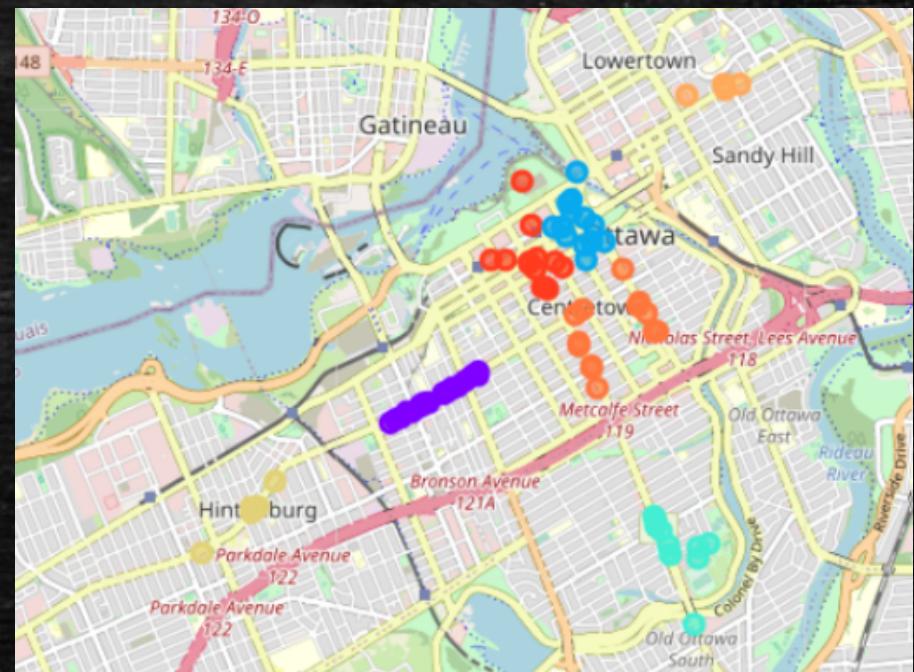
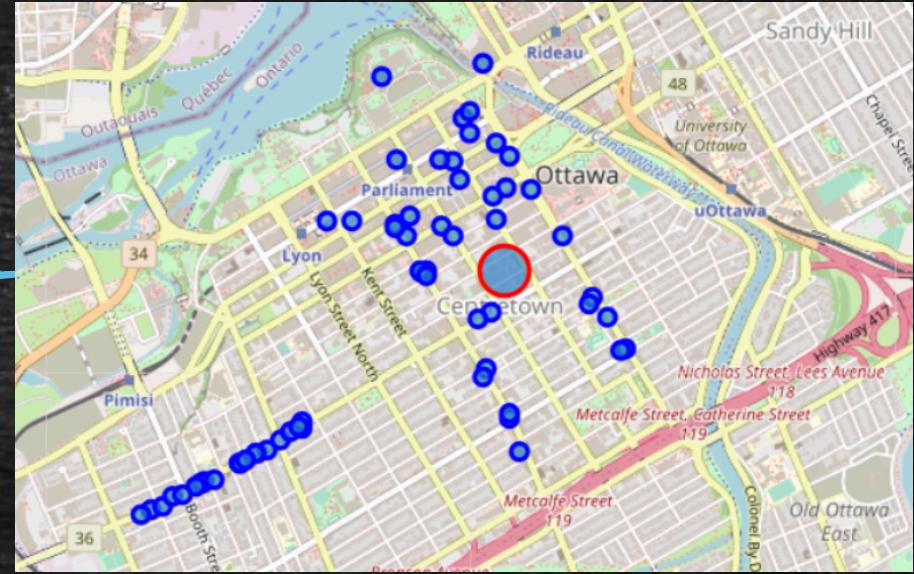
- Data Scrapping
  - Scrapping data from Wikipedia
  - Google geocoder API
  - Foursquare.com
- Visualization
  - Folium
  - Location visualization
  - Density visualization
  - Cluster visualization
- K-means clustering



# Result

- Candidate Location Selection
  - Select a location based on the restaurant density
  - downtown of Ottawa (latitude: 45.417623299, longitude: -75.694121)
  
- Restaurant Type Selection
  - Clustering the restaurant
  - Select a restaurant based on the number of restaurant ranking
  - Open a Japanese restaurant or Chinese restaurant

Cluster Labels	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
0	Overbrook, Forbes, Manor Park, Viscount Alexan...	Restaurant	Indian Restaurant	Greek Restaurant
1	Dalhousie Ward	Vietnamese Restaurant	Chinese Restaurant	Asian Restaurant
2	Bridlewood	American Restaurant	Restaurant	Asian Restaurant
3	Britannia /Whitehaven / Bayshore / Pinecrest	Fast Food Restaurant	Italian Restaurant	Vietnamese Restaurant
4	Downtown	Restaurant	Japanese Restaurant	American Restaurant
5	Blossom Park / Greenboro / Leitrim / Findlay C...	Fast Food Restaurant	Vietnamese Restaurant	Japanese Restaurant



# Discussion

---

- Open the same type of restaurant as the most popular restaurant in that area.
  - Open a Japanese restaurant according to cluster 4.
- Open a certain type of restaurant which does not exist in that area.
  - open a Chinese restaurant according to cluster 4, 13.

Cluster Labels	Neighborhood	Restaurant	Japanese Restaurant	American Restaurant	Middle Eastern Restaurant	Modern European Restaurant	Portuguese Restaurant	Sushi Restaurant	Theme Restaurant
4	Downtown	0.384615	0.153846	0.076923	0.076923	0.076923	0.076923	0.076923	0.076923

Cluster Labels	Neighborhood	Restaurant	Sushi Restaurant	Hawaiian Restaurant	Moroccan Restaurant	Indian Restaurant	Caribbean Restaurant	Italian Restaurant	Comfort Food Restaurant
13	Downtown	0.214286	0.142857	0.071429	0.071429	0.071429	0.071429	0.071429	0.071429

# Conclusion

---

- Collected and analyzed the restaurant distribution in Ottawa.
- Selected a candidate location based on restaurant density.
- Estimated two restaurant types based o the clustering and ranking result.
- Future, according to the category of other venues, determine a restaurant location.