
Capstone Project

NEIGHBORHOODS WITH PLANT-BASED RESTAURANTS IN TORONTO

Marcia M M Jube

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BUSINESS PROBLEM

- **Veganism is on the rise**
 - **Toronto is amongst the world's top 10 vegan-friendly cities (according to Happy Cow)**
 - **Question: "Which neighborhoods in Toronto have most options of vegetarian/vegan restaurants?"**
 - **Target audience: plant-based diet tourists**
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DATA

- **List of Toronto's neighborhoods**
 - https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
 - **Toronto's neighborhoods geographical data (latitude and longitude)**
 - https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-DS0701EN-SkillsNetwork/labs_v1/Geospatial_Coordinates.csv
 - **Venue data for each neighborhood**
 - **Foursquare API**
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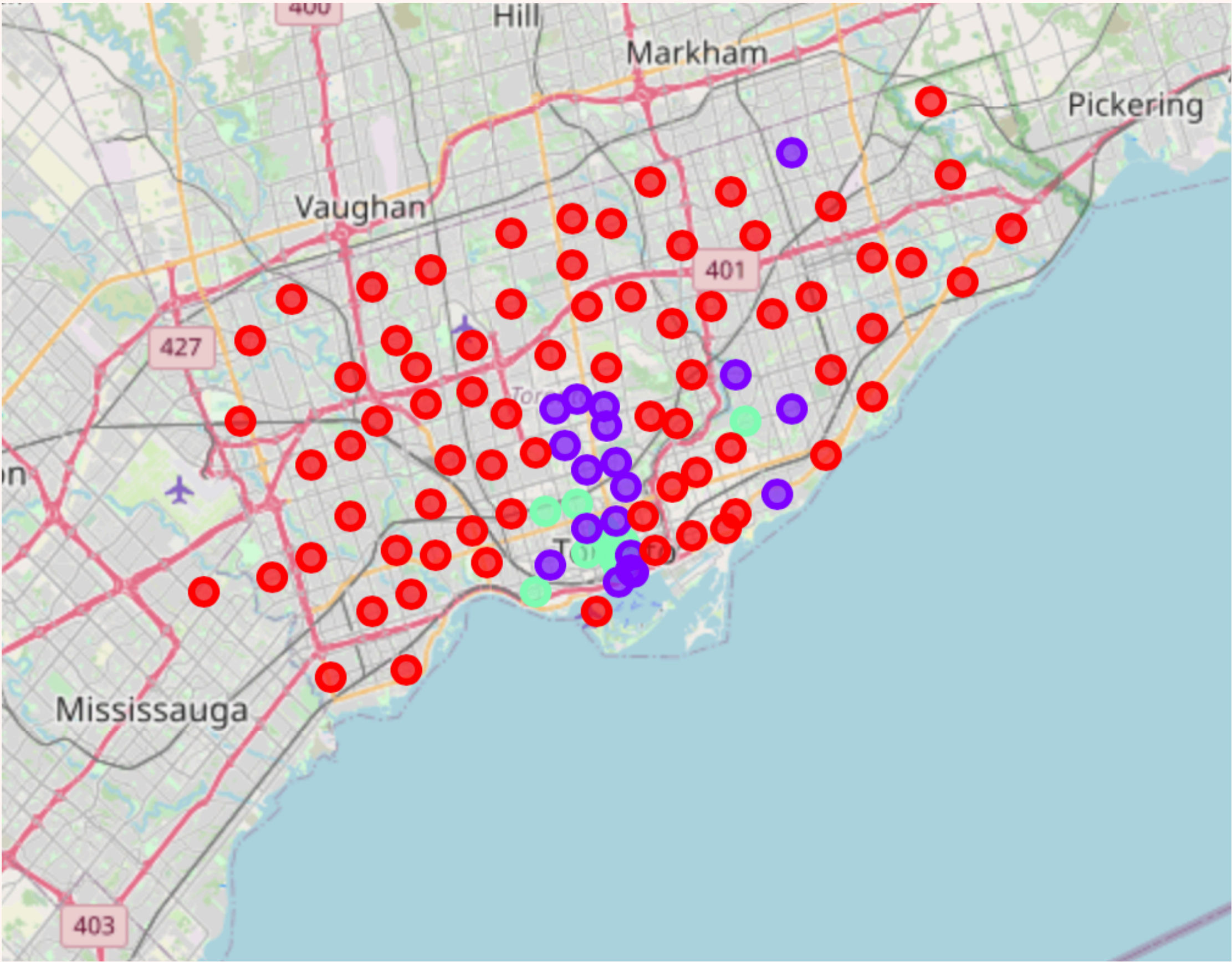
METHODOLOGY

- **Web scrape Wikipedia page for Toronto's neighborhood data**
 - **Aggregate latitude and longitude coordinates**
 - **Use Foursquare API for venue data**
 - **Calculate the mean frequency of each category by neighborhood, and filter only the category "vegetarian/vegan restaurant"**
 - **Cluster data using k-means clustering algorithm**
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RESULTS

➤ **Neighborhoods divided into 3 clusters:**

Cluster 0	neighborhoods where there aren't any vegetarian/vegan restaurants
Cluster 1	neighborhoods with some options of vegetarian/vegan restaurants
Cluster 2	neighborhoods with high concentration of vegetarian/vegan restaurants



Map of clusters

DISCUSSION

➤ **Christie and Ontario Provincial Government neighborhoods have more options for vegetarian/vegan restaurants**

➤ **Downtown Toronto has most of the neighborhoods with more options for vegetarian/vegan restaurants**

Cluster Labels	Neighborhood	Vegetarian / Vegan Restaurant	PostalCode	Borough	Latitude	Longitude
2	Christie	0.04	M6G	Downtown Toronto	43.669542	-79.422564
2	Ontario Provincial Government	0.03	M7A	Queen's Park	43.662301	-79.389494
2	Parkview Hill, Woodbine Gardens	0.02	M4B	East York	43.706397	-79.309937
2	The Annex, North Midtown, Yorkville	0.02	M5R	Central Toronto	43.672710	-79.405678
2	Garden District, Ryerson	0.02	M5B	Downtown Toronto	43.657162	-79.378937
2	Toronto Dominion Centre, Design Exchange	0.02	M5K	Downtown Toronto	43.647177	-79.381576
2	First Canadian Place, Underground city	0.02	M5X	Downtown Toronto	43.648429	-79.382280
2	Brockton, Parkdale Village, Exhibition Place	0.02	M6K	West Toronto	43.636847	-79.428191
2	Commerce Court, Victoria Hotel	0.02	M5L	Downtown Toronto	43.643198	-79.379817
2	Kensington Market, Chinatown, Grange Park	0.02	M5T	Downtown Toronto	43.653206	-79.400049
2	Richmond, Adelaide, King	0.02	M5H	Downtown Toronto	43.650571	-79.384568
2	Central Bay Street	0.02	M5G	Downtown Toronto	43.657952	-79.387383

CONCLUSION

- **Toronto, indeed, offers plenty of vegetarian/vegan restaurants options, especially in Downtown Toronto area, which favours tourists.**
 - **Interesting data discovery possible using only resources freely available and a simple machine learning algorithm.**
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Thank you!
