



# Project Proposal

Prepared for: Coursera, The battle of Neighbourhood.

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## EXECUTIVE SUMMARY

### **Objective**

ABC Limited is a chain of vegan restaurant and want to expand the foot print in New York and Toronto. Find best location for setting up a vegan restaurant either in New York or Toronto.

### **Goals**

Find best location for setting up a vegan restaurant either in New York or Toronto backed by the data.

### **Solution**

Using four square api gather data on neighbourhood in Toronto and New York. Perform analysis and inference. Provide recommended location and risk matrix to business.

## INTRODUCTION

In north America the popularity of vegan food is growing at large and people are showing more interest in vegan food. A recent study shows nearly 10 percent of Canadians consider themselves vegetarian or vegan while United States is at 2 percent, a significant shift in lifestyle is being observed. People are looking for more healthy food options.

ABC Limited share the ideology and focused on providing healthy food options through its chain of vegan restaurant. This project is to propose ideal location and neighbourhood to establish vegan restaurant in NewYork and Toronto.

## AUDIENCE

The audience are the stake holders of ABC Limited. This project is for the population interested in vegan food and looking for options in NewYork and Toronto.

## DATA

### **Description of the Data:**

The following data is required to answer the issues of the problem:

List of Boroughs and neighbourhood of Manhattan and Toronto with their geo-data (latitude and longitude )

Venues for each Manhattan and Toronto neighbourhood ( than can be clustered)

Venues for restaurant

List of Subway metro stations in Manhattan with their address location as needed

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# RESULT

We started with the analysis of Toronto where borough name contains Toronto.



## Get the Venues for Vegetarian/Vegan restaurant using Foursquare API [¶](#)

The Category ID for vegetarian/Vegan restaurant is mentioned on <https://developer.foursquare.com/docs/resources/categories> [¶](#)

Category ID Vegetarian / Vegan Restaurant **4bf58dd8d48988d1d3941735**

We are now ready to get the 15 recommendation within 500 meters of location using four square API

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Following is the sample Json output we get using foursquare API

```
{'meta': {'code': 200, 'requestId': '5d0fa3ed9ba3e5002cff9b1c'},  
 'response': {'confident': True,  
  'venues': [{"categories": [{"icon": {"prefix": "https://ss3.4sqi.net/img/categories_v2/food/vegetarian_",
     'suffix': '.png'}},
    'id': '4bf58dd8d48988d1d3941735',
    'name': 'Vegetarian / Vegan Restaurant',
    'pluralName': 'Vegetarian / Vegan Restaurants',
    'primary': True,
    'shortName': 'Vegetarian / Vegan'}],  
   'hasPerk': False,  
   'id': '4f5a855be4b0a4ba1ae0063',
   'location': {'address': '2188 Queen Street E',
    'cc': 'CA',
    'city': 'Toronto',
    'country': 'Canada',
    'crossStreet': 'Balsam Ave',
    'distance': 519,
    'formattedAddress': ['2188 Queen Street E (Balsam Ave)',
      'Toronto ON M431E6',
      'Canada'],
    'labeledLatLngs': [{"label": "display",
      'lat': 43.672113947269565,
      'lng': -79.29033140068843}],
    'lat': 43.672113947269565,
    'lng': -79.29033140068843,
    'postalCode': 'M431E6',
    'state': 'ON'},
    'name': "Tori's Bakeshop",
    'referralId': 'v-1561306093',
    'venuePage': {'id': '43778861'}}]}}}
```

Converting the json to Dataframe following is the sample Dataframe

| Toronto_venues |                                |                          |                                |                          |                                   |   |                    |         |           |            |
|----------------|--------------------------------|--------------------------|--------------------------------|--------------------------|-----------------------------------|---|--------------------|---------|-----------|------------|
|                | Neighbourhood                  | id                       | category                       | categoryID               | name                              | address   | postalcode         | city    | latitude  | longitude  |
| 0              | The Beaches                    | 4f5a855be4b0a4baa1ae0063 | Vegetarian / Vegan Restaurants | 4bf58dd8d48988d1d3941735 | Tori's Bakeshop                   | 2188 Queen Street E (Balsam Ave)                | Toronto ON M43E6   | Toronto | 43.672114 | -79.290331 |
| 1              | The Beaches                    | 4bd36093046076b0ecf17571 | Bars                           | 4bf58dd8d48988d116941735 | Castro's Lounge                   | 2116 Queen Street E (Wineva Ave.)               | Toronto ON M4E 1E2 | Toronto | 43.671104 | -79.295107 |
| 2              | The Danforth West, Riverdale   | 4ad9fe24f964a520ed1c21e3 | Breakfast Spots                | 4bf58dd8d48988d143941735 | Mocha Mocha                       | 489 Danforth Ave.                               | Toronto ON         | Toronto | 43.678078 | -79.349459 |
| 3              | The Danforth West, Riverdale   | 4feb68ece4b07864fce4d4e7 | Vegetarian / Vegan Restaurants | 4bf58dd8d48988d1d3941735 | Vegetarian Cafe in the Big Carrot | 348 Danforth Ave                                | Toronto ON         | Toronto | 43.677874 | -79.352939 |
| 4              | The Danforth West, Riverdale   | 4b6b6e30f964a5204c082ce3 | Pizza Places                   | 4bf58dd8d48988d1ca941735 | Magic Oven                        | 1450 Danforth Ave. (at Monarch Park Ave.)       | Toronto ON M4J 1N4 | Toronto | 43.679637 | -79.341752 |
| 5              | The Danforth West, Riverdale   | 5834707203cf257cba83f9c0 | Vegetarian / Vegan Restaurants | 4bf58dd8d48988d1d3941735 | Green Earth Vegan Cuisine         | 804 Danforth Ave                                | Toronto ON M4J 1L2 | Toronto | 43.679713 | -79.341331 |
| 6              | The Beaches West, India Bazaar | 4ae0c7a8f964a520638221e3 | Indian Restaurants             | 4bf58dd8d48988d10f941735 | Udupi Palace                      | 1460 Gerrard St E (Coxwell Ave)                 | Toronto ON M4L 2A3 | Toronto | 43.672480 | -79.321275 |
| 7              | The Beaches West, India Bazaar | 53d9133e498ef675684a0d50 | Vegetarian / Vegan Restaurants | 4bf58dd8d48988d1d3941735 | The Social Gardener               | 1326 Gerrard St E (btwn Glenside and Highfield) | Toronto ON         | Toronto | 43.671493 | -79.325764 |
| 8              | The Beaches West, India Bazaar | 538209be498ede0f52c34f7c | Food Trucks                    | 4bf58dd8d48988d1cb941735 | Portobello Burger                 |   | Toronto ON         | Canada  | 43.663849 | -79.314110 |
| 9              | Davisville North               | 521e0c6c04939a8ad55d93d3 | Vegetarian / Vegan Restaurants | 4bf58dd8d48988d1d3941735 | Fresh                             | 90 Yonge Avenue East (Yonge & Eglington)        | Toronto ON M4P 1A6 | Toronto | 43.707324 | -79.395649 |
| 10             | Davisville North               | 5bd1fc9bfb9a7002c331d1c  | Vegetarian / Vegan Restaurants | 4bf58dd8d48988d1d3941735 | Mad Radish                        | 2293 Yonge Street                               | Toronto ON M4P     | Toronto | 43.707672 | -79.398424 |
| 11             | Davisville North               | 59b9b3ed6f706a19eb901d3d | Vegetarian / Vegan Restaurants | 4bf58dd8d48988d1d3941735 | Freshii                           |   | Toronto ON M4P 2E7 | Canada  | 43.710371 | -79.398992 |
| 12             | Davisville North               | 54e4f304498e2fc0fc368bb  | Vegetarian / Vegan Restaurants | 4bf58dd8d48988d1d3941735 | The Vegan Duchess                 | 2354 Yonge Street (Yonge & Eglington)           | Toronto ON         | Toronto | 43.708674 | -79.398782 |
| 13             | Davisville North               | 52895d1911d2e7a5e457d68c | Vegetarian / Vegan Restaurants | 4bf58dd8d48988d1d3941735 | Bello bio                         | 511 Mount Pleasant road (Davisville)            | Toronto ON         | Toronto | 43.701896 | -79.387508 |
| 14             | North Toronto West             | 59b9b3ed6f706a19eb901d3d | Vegetarian / Vegan Restaurants | 4bf58dd8d48988d1d3941735 | Freshii                           |   | Toronto ON M4P 2E7 | Canada  | 43.710371 | -79.398992 |
| 15             | North Toronto West             | 5bd1fc9bfb9a7002c331d1c  | Vegetarian / Vegan Restaurants | 4bf58dd8d48988d1d3941735 | Mad Radish                        | 2293 Yonge Street                               | Toronto ON M4P     | Toronto | 43.707672 | -79.398424 |

Getting the counts for each neighbourhood.

| Toronto_venues.groupby('Neighbourhood').count()                   |             |          |            |      |         |            |      |          |           |               |
|---|-------------|----------|------------|------|---------|------------|------|----------|-----------|---------------|
|   | id          | category | categoryID | name | address | postalcode | city | latitude | longitude | Neighbourhood |
| Business Reply Mail Processing Centre                             | 969 Eastern | 3        | 3          | 3    | 3       | 3          | 3    | 3        | 3         | 3             |
| Cabbagetown, St. James Town                                       | 1           | 1        | 1          | 1    | 1       | 1          | 1    | 1        | 1         | 1             |
| Central Bay Street  | 34          | 34       | 34         | 34   | 34      | 34         | 34   | 34       | 34        | 34            |
| Church and Wellesley  | 9           | 9        | 9          | 9    | 9       | 9          | 9    | 9        | 9         | 9             |
| Davisville  | 6           | 6        | 6          | 6    | 6       | 6          | 6    | 6        | 6         | 6             |
| Davisville North  | 5           | 5        | 5          | 5    | 5       | 5          | 5    | 5        | 5         | 5             |
| Deer Park, Forest Hill SE, Rathnelly, South Hill, Summerhill West | 3           | 3        | 3          | 3    | 3       | 3          | 3    | 3        | 3         | 3             |
| Dovercourt Village, Dufferin                                      | 1           | 1        | 1          | 1    | 1       | 1          | 1    | 1        | 1         | 1             |
| Forest Hill North, Forest Hill West                               | 3           | 3        | 3          | 3    | 3       | 3          | 3    | 3        | 3         | 3             |
| Harbourfront, Regent Park   | 2           | 2        | 2          | 2    | 2       | 2          | 2    | 2        | 2         | 2             |
| High Park, The Junction South                                     | 3           | 3        | 3          | 3    | 3       | 3          | 3    | 3        | 3         | 3             |
| Moore Park, Summerhill East                                       | 1           | 1        | 1          | 1    | 1       | 1          | 1    | 1        | 1         | 1             |
| North Toronto West  | 3           | 3        | 3          | 3    | 3       | 3          | 3    | 3        | 3         | 3             |
| Rosedale  | 1           | 1        | 1          | 1    | 1       | 1          | 1    | 1        | 1         | 1             |
| Roselawn  | 1           | 1        | 1          | 1    | 1       | 1          | 1    | 1        | 1         | 1             |
| Runnymede, Swansea  | 1           | 1        | 1          | 1    | 1       | 1          | 1    | 1        | 1         | 1             |
| The Beaches   | 2           | 2        | 2          | 2    | 2       | 2          | 2    | 2        | 2         | 2             |
| The Beaches West, India Bazaar                                    | 3           | 3        | 3          | 3    | 3       | 3          | 3    | 3        | 3         | 3             |
| The Danforth West, Riverdale                                      | 4           | 4        | 4          | 4    | 4       | 4          | 4    | 4        | 4         | 4             |

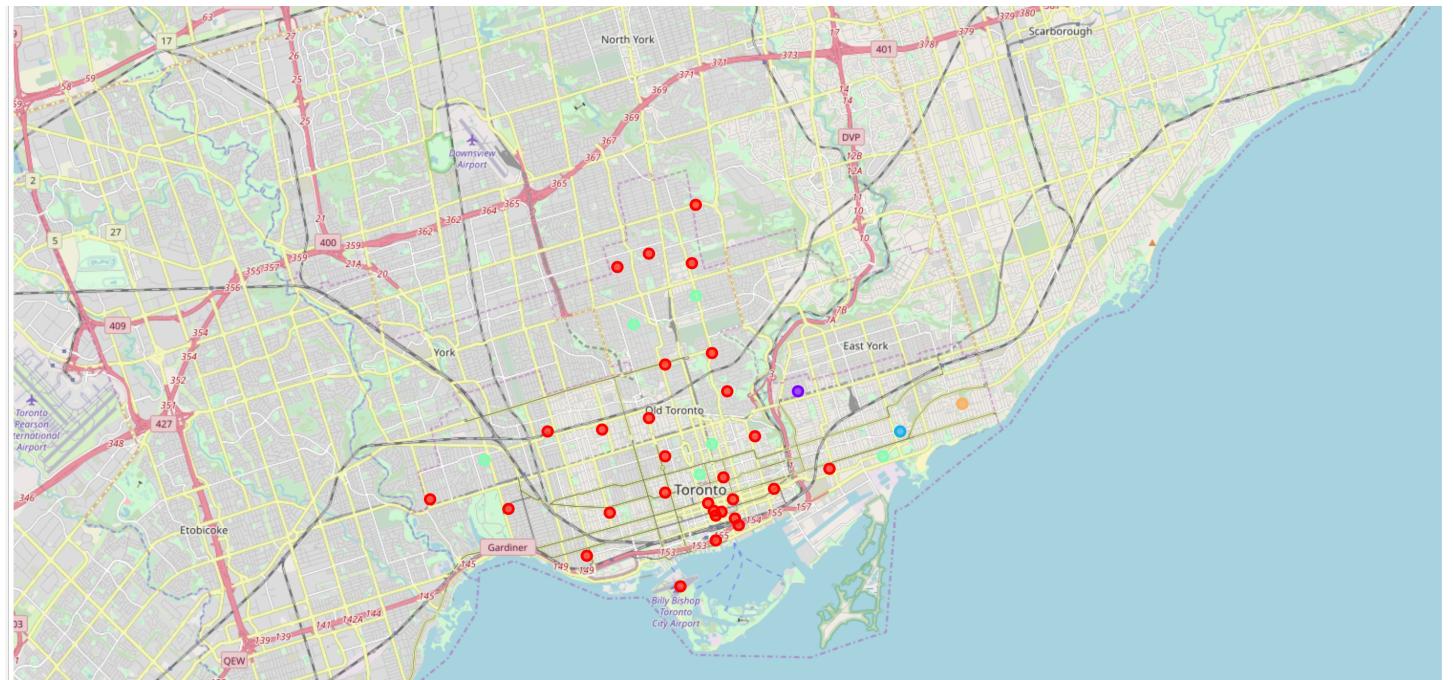
```
print('There are {} uniques categories.'.format(len(Toronto_venues['category'].unique())))

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There are 13 uniques categories.

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The following figure shows the cluster analysis



## Conclusion

After analyzing the cluster the best recommendation for starting another vegan restaurant in Toronto will be in Toronto East as there are few restaurant and has scope of potential growth.

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