

Battle of Neighborhood

Fitness center for Gold's Gym

Introduction

- Optimal location for new fitness center in Toronto.
- Find neighborhood to open the gym.
- Best neighborhood: near to the city center, low competition.



Toronto



Toronto: facts

- Financial capital of Canada.
- Contains head office of top five biggest banks of Canada.
- A lot of industries.

Business Plan

- Location: place where people will take the subscription.
- Target people: potential client for the fitness center.
- Competition: if existing gym in the neighborhood.

Dataset 1

- Data: description of the neighborhoods of Toronto and their geographical coordinates (latitude, longitude).
- Link to the dataset without geographical coordinates : https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M.
- Latitude and longitude provided by Coursera Data Science course.

| | Postal Code | Borough | Neighbourhood | Latitude | Longitude |
|----------|--------------------|------------------|---|-----------------|------------------|
| 0 | M3A | North York | Parkwoods | 43.753259 | -79.329656 |
| 1 | M4A | North York | Victoria Village | 43.725882 | -79.315572 |
| 2 | M5A | Downtown Toronto | Harbourfront | 43.654260 | -79.360636 |
| 3 | M6A | North York | Lawrence Heights, Lawrence Manor, Lawrence Heigh... | 43.718518 | -79.464763 |
| 4 | M7A | Downtown Toronto | Queen's Park | 43.662301 | -79.389494 |

Dataset 2

- Data: description of the Toronto's venues and their geographical coordinates. From Foursquare API.
- Link to dataset: <https://developer.foursquare.com/docs/data>.

| | Neighborhood | Neighborhood Latitude | Neighborhood Longitude | Venue | Venue Latitude | Venue Longitude | Venue Category |
|---|--------------|-----------------------|------------------------|-----------------------------|----------------|-----------------|----------------------|
| 0 | Parkwoods | 43.753259 | -79.329656 | Allwyn's Bakery | 43.759840 | -79.324719 | Caribbean Restaurant |
| 1 | Parkwoods | 43.753259 | -79.329656 | Donalda Golf & Country Club | 43.752816 | -79.342741 | Golf Course |
| 2 | Parkwoods | 43.753259 | -79.329656 | Brookbanks Park | 43.751976 | -79.332140 | Park |
| 3 | Parkwoods | 43.753259 | -79.329656 | Graydon Hall Manor | 43.763923 | -79.342961 | Event Space |
| 4 | Parkwoods | 43.753259 | -79.329656 | Galleria Supermarket | 43.753520 | -79.349518 | Supermarket |

Dataset 4

- Data: contain the 10 most common venues per neighborhood.
- Obtained by combining the previous datasets.

| | Neighborhood | 1 most common venue | 2 most common venue | 3 most common venue | 4 most common venue | 5 most common venue | 6 most common venue | 7 most common venue | 8 most common venue |
|---|---|---------------------|----------------------|---------------------|----------------------|---------------------|---------------------|---------------------|-----------------------|
| 0 | Adelaide,King,Richmond | Coffee Shop | Restaurant | Hotel | Theater | Beer Bar | Pizza Place | Cosmetics Shop | Japanese Restaurant |
| 1 | Agincourt | Chinese Restaurant | Coffee Shop | Pharmacy | Restaurant | Sandwich Place | Indian Restaurant | Sushi Restaurant | Bank |
| 2 | Agincourt North,L'Amoreaux East,Milliken,Steel... | Chinese Restaurant | Coffee Shop | Park | Gas Station | Pizza Place | Dessert Shop | Bakery | Vietnamese Restaurant |
| 3 | Albion Gardens,Beaumont Heights,Humbergate,Jam... | Coffee Shop | Pizza Place | Indian Restaurant | Fast Food Restaurant | Grocery Store | Convenience Store | Park | Skating Rink |
| 4 | Alderwood,Long Branch | Coffee Shop | Fast Food Restaurant | Department Store | Pizza Place | Clothing Store | Burger Joint | Pharmacy | Restaurant |

Dataset 5

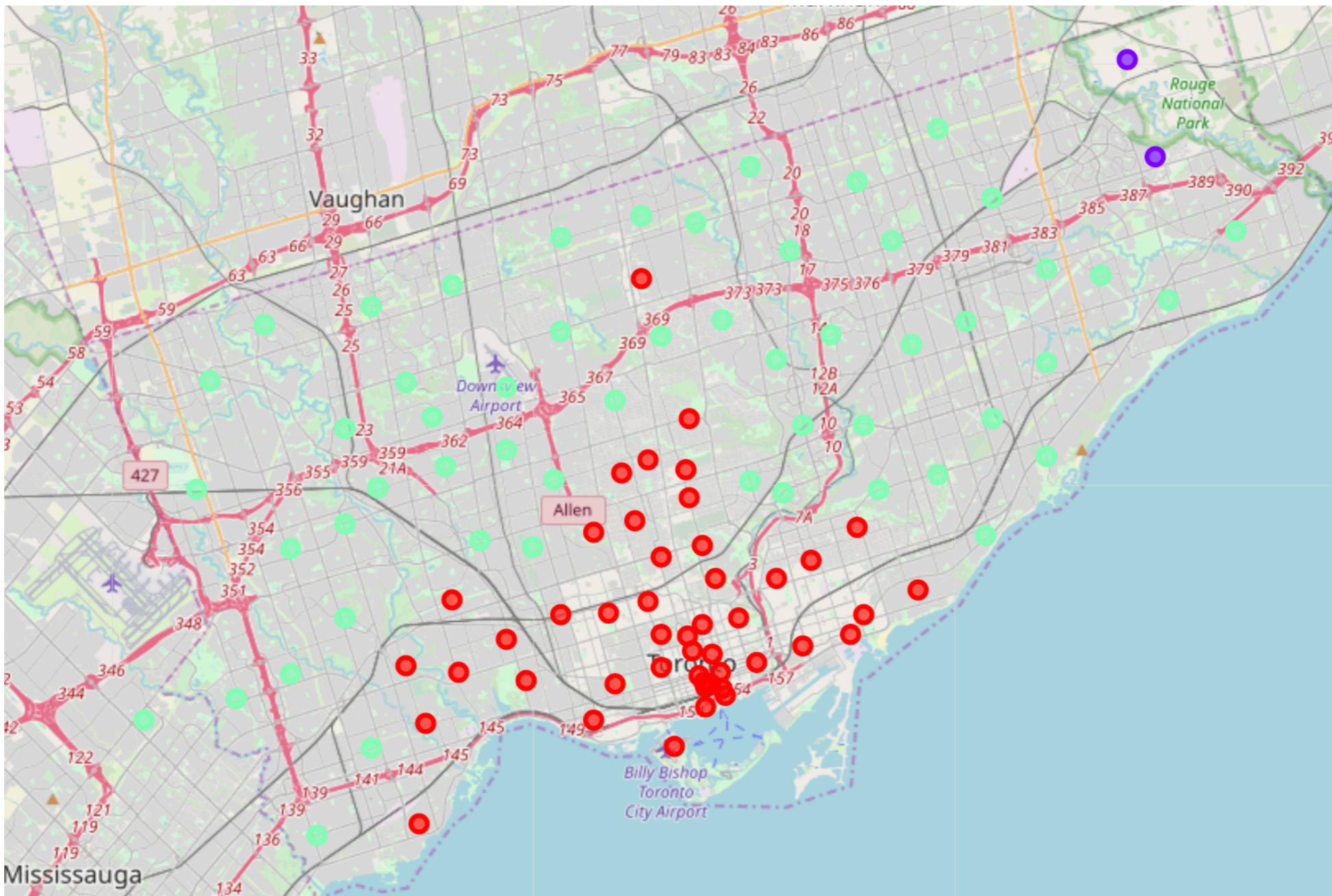
- Data: compute the mean amount of each venue per neighborhood.
- Obtained by combining the previous data.

| Neighborhood | Zoo Exhibit | Accessories Store | Afghan Restaurant | African Restaurant | Airport | Airport Lounge | American Restaurant | Amphitheater | Animal Shelter |
|---|-------------|-------------------|-------------------|--------------------|---------|----------------|---------------------|--------------|----------------|
| Adelaide,King,Richmond | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.02 | 0.0 | 0.0 |
| Agincourt | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.01 | 0.0 | 0.0 |
| Agincourt North,L'Amoreaux East,Milliken,Steel... | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.0 | 0.0 |
| Albion Gardens,Beaumont Heights,Humbergate,Jam... | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.0 | 0.0 |
| Alderwood,Long Branch | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.01 | 0.0 | 0.0 |

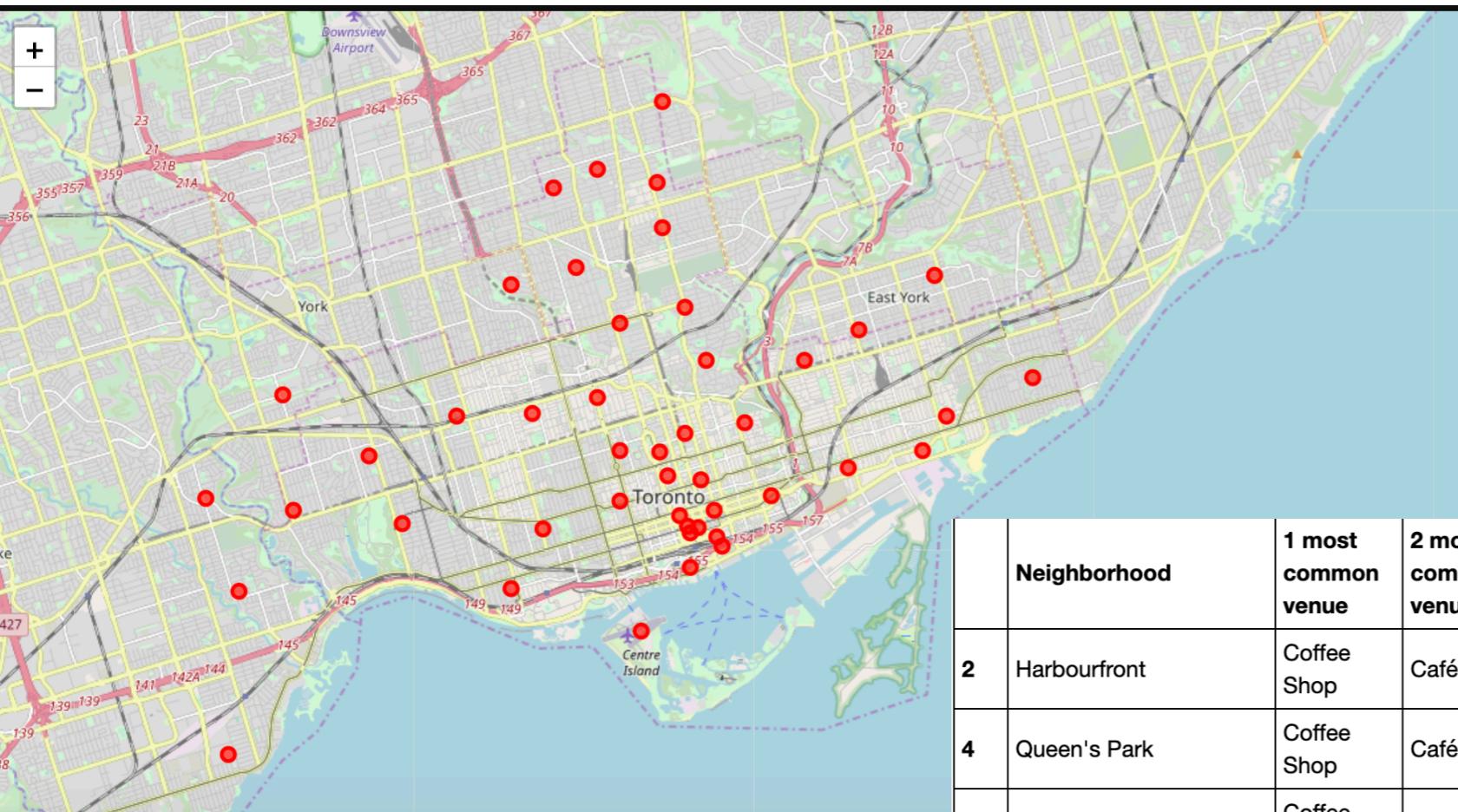
Methodology

- Use the k-means clustering method to mark the clusters on Toronto's map where each cluster is marked by a majority of venues.
- We choose to build three clusters.
- Segment the neighborhoods of Toronto with the k-means method.

Toronto's map

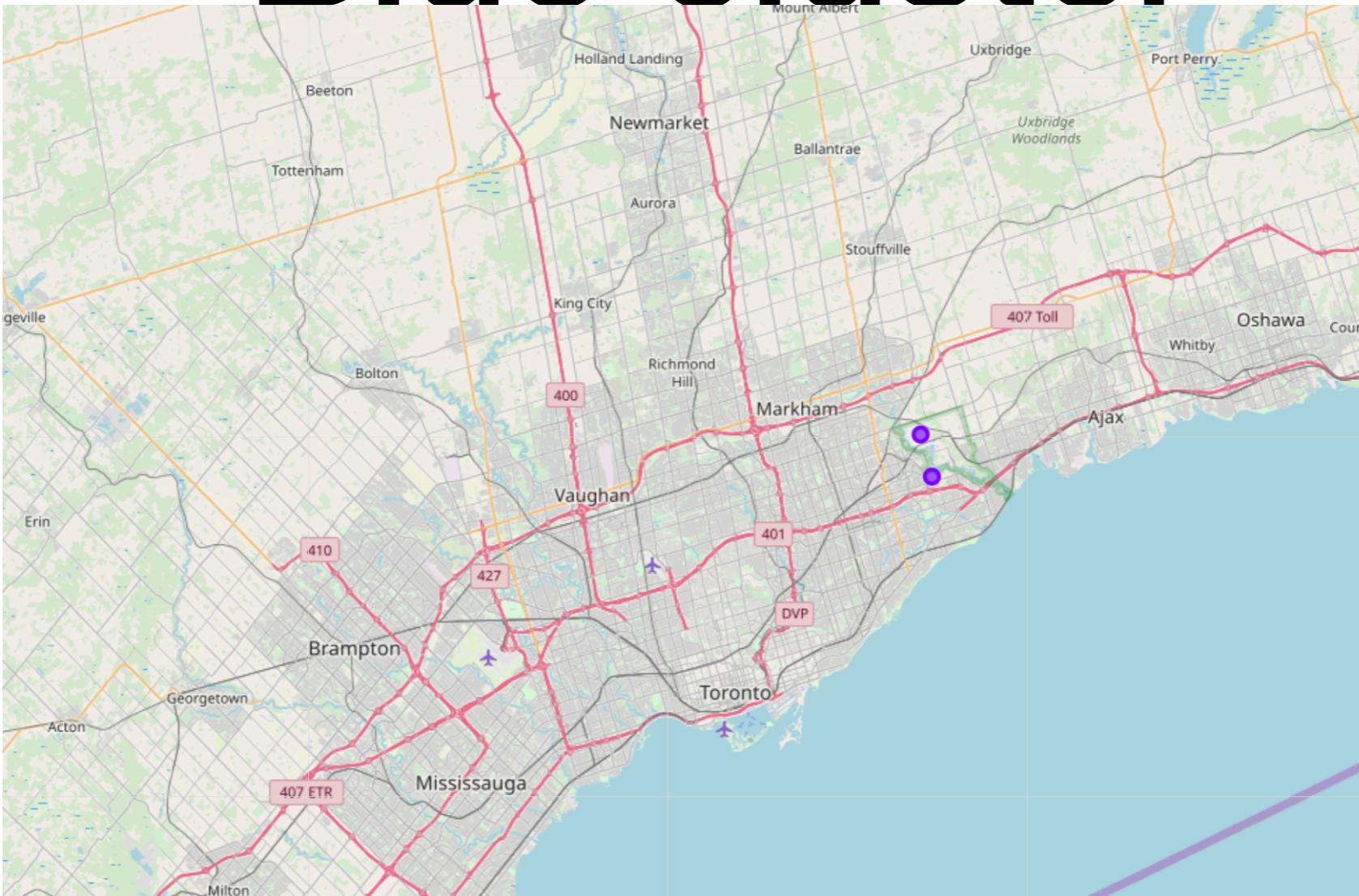


Red Cluster



| | Neighborhood | 1 most common venue | 2 most common venue | 3 most common venue | 4 most common venue | 5 most common venue | 6 most common venue | 7 most common venue | 8 most common venue |
|----|-------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|
| 2 | Harbourfront | Coffee Shop | Café | Park | Theater | Restaurant | Japanese Restaurant | Bakery | Gastropub |
| 4 | Queen's Park | Coffee Shop | Café | Japanese Restaurant | Park | Mexican Restaurant | Breakfast Spot | Gastropub | Restaurant |
| 9 | Ryerson,Garden District | Coffee Shop | Café | Restaurant | Gastropub | Japanese Restaurant | Park | Italian Restaurant | Pizza Place |
| 14 | Woodbine Heights | Park | Coffee Shop | Pizza Place | Thai Restaurant | Café | Gastropub | Ethiopian Restaurant | Pharmacy |
| 15 | St. James Town | Coffee Shop | Café | Restaurant | Hotel | Italian Restaurant | Farmers Market | Japanese Restaurant | Gastropub |
| 16 | Humewood-Cedarvale | Italian Restaurant | Coffee Shop | Bank | Café | Bakery | Park | Caribbean Restaurant | Indian Restaurant |
| 19 | The Beaches | Coffee Shop | Pub | Breakfast Spot | Beach | Bakery | Thai Restaurant | BBQ Joint | Bar |
| 20 | Berczy Park | Coffee Shop | Hotel | Café | Japanese Restaurant | Restaurant | Farmers Market | Beer Bar | Gastropub |

Blue cluster



| | Neighborhood | 1 most common venue | 2 most common venue | 3 most common venue | 4 most common venue | 5 most common venue | 6 most common venue | 7 most common venue | 8 most common venue |
|-----------|---------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| 6 | Rouge, Malvern | Zoo Exhibit | Fast Food Restaurant | Restaurant | Gas Station | Other Great Outdoors | Pizza Place | Zoo | Mediterranean Restaurant |
| 95 | Upper Rouge | Sculpture Garden | Golf Course | Grocery Store | Trail | Playground | Farm | Empanada Restaurant | Doner Restaurant |

Green cluster



| Neighborhood | 1 most common venue | 2 most common venue | 3 most common venue | 4 most common venue | 5 most common venue | 6 most common venue | 7 most common venue |
|--|---------------------|----------------------|------------------------|---------------------|----------------------|----------------------|----------------------|
| Parkwoods | Coffee Shop | Japanese Restaurant | Gas Station | Pizza Place | Supermarket | Sandwich Place | Chinese Restaurant |
| Victoria Village | Coffee Shop | Fast Food Restaurant | Gym | Sandwich Place | Gym / Fitness Center | Japanese Restaurant | Grocery Store |
| Lawrence Heights, Lawrence Manor | Clothing Store | Coffee Shop | Furniture / Home Store | Restaurant | Fast Food Restaurant | Dessert Shop | Grocery Store |
| Islington Avenue | Pharmacy | Coffee Shop | Bank | Park | Shopping Mall | Golf Course | Liquor Store |
| Don Mills North | Coffee Shop | Japanese Restaurant | Restaurant | Pizza Place | Italian Restaurant | Supermarket | Bank |
| Woodbine Gardens, Parkview Hill | Pizza Place | Sandwich Place | Park | Coffee Shop | Skating Rink | Pharmacy | Fast Food Restaurant |
| Glencairn | Clothing Store | Coffee Shop | Furniture / Home Store | Restaurant | Sushi Restaurant | Fast Food Restaurant | Fried Chicken Joint |
| Cloverdale, Islington, Martin Grove, Princess Gar... | Coffee Shop | Convenience Store | Fish & Chips Shop | Sandwich Place | Restaurant | Pizza Place | Pharmacy |
| Highland Creek, Rouge Hill, Port Union | Coffee Shop | Breakfast Spot | Pizza Place | Pharmacy | Pet Store | Sandwich Place | Hotel |

Results

- Cluster 0: near to the sea. Restaurants, pub, café as dominant venues.
- Cluster 1: neighborhood of the National Park. Zoo, garden as dominant venues.
- Cluster 2: neighborhood in the city center. Restaurants, banks, gym, store, supermarket, shop.

Discussion

- Where to open a new fitness center.
- In cluster 0 or 2 in the proximity of the city center.
- In the neighborhood of supermarket or working place.