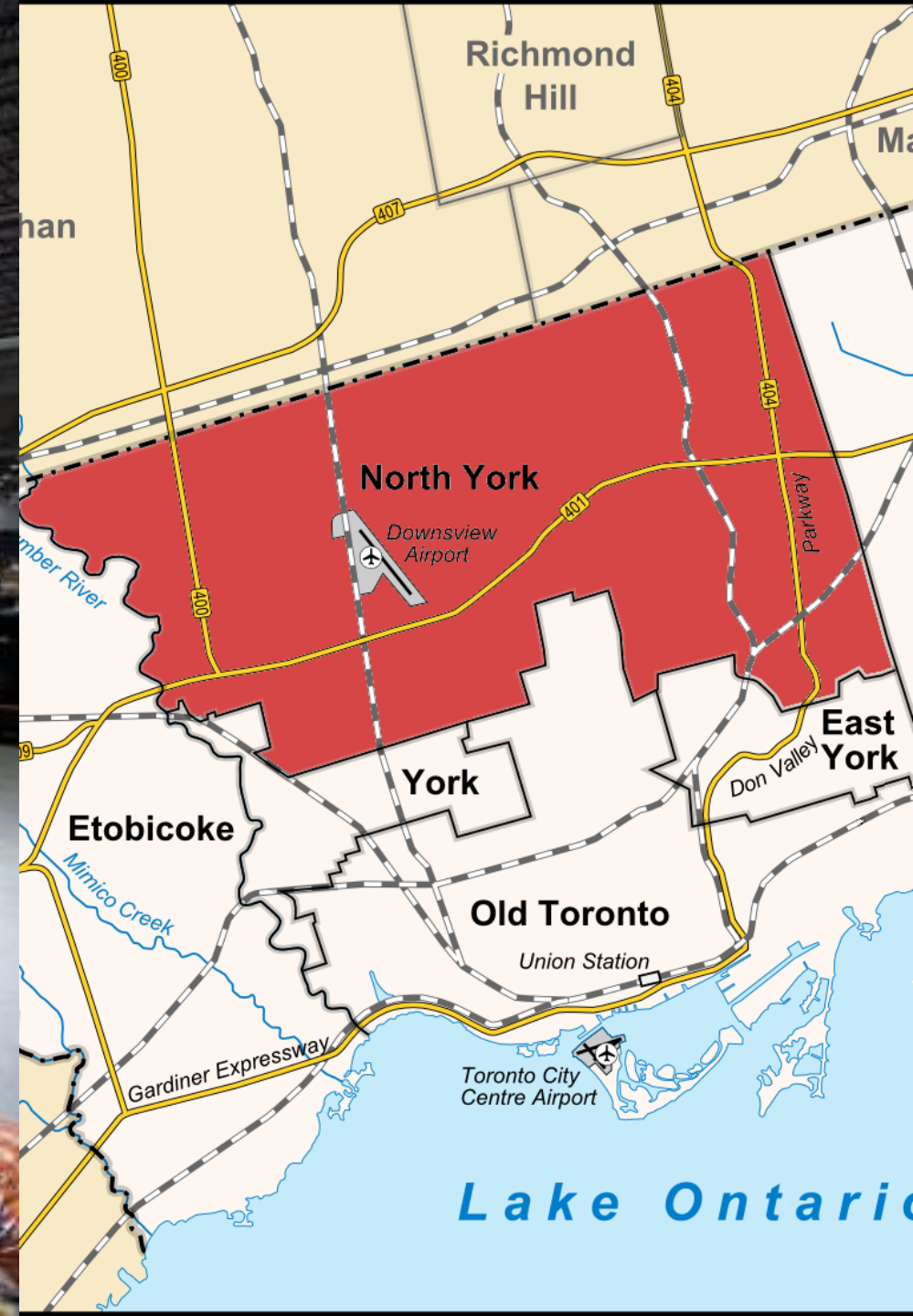


**IDENTIFYING THE  
OPTIMAL WAREHOUSE  
LOCATION FOR A  
RESTAURANT FOOD &  
BEVERAGE SUPPLIER IN  
NORTH YORK, TORONTO**



# INTRODUCTION/BUSINESS PROBLEM

- A small business owner in the **North York borough** of Toronto wants to enter a new market: **food & beverage supply for restaurants**;
- For that, he needs to find an **optimal location for a warehouse** to store food & beverage products and to deliver them to North York restaurants;
- **Shortest warehouse distance (and, subsequently, delivery lead time)** to the most restaurants in North York is the key determinant of the optimal location for that warehouse.



# DATA

**Three data sources** were used to collect relevant geographical information about the city of Toronto, the North York borough and its neighborhoods:

- **Wikipedia**'s list of Toronto postcodes, boroughs and neighborhoods;
- **IBM**-provided **.csv**-file containing Toronto postcodes and latitude/longitude;
  - To complement the Wikipedia data;
- **Foursquare** API giving information about Toronto venues and their geographical location.
  - To narrow the focus on restaurant-type venues, Foursquare-provided venue data was manually cleaned.



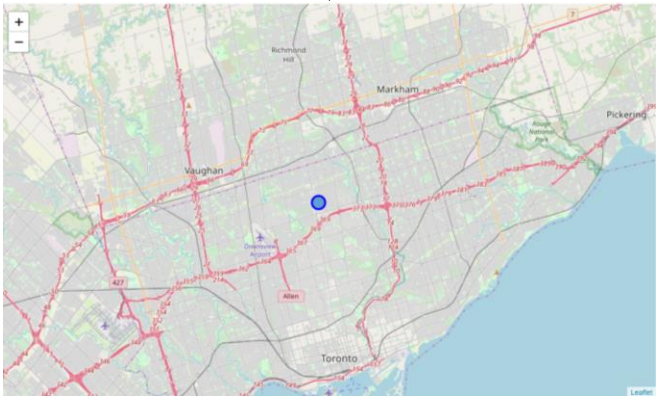
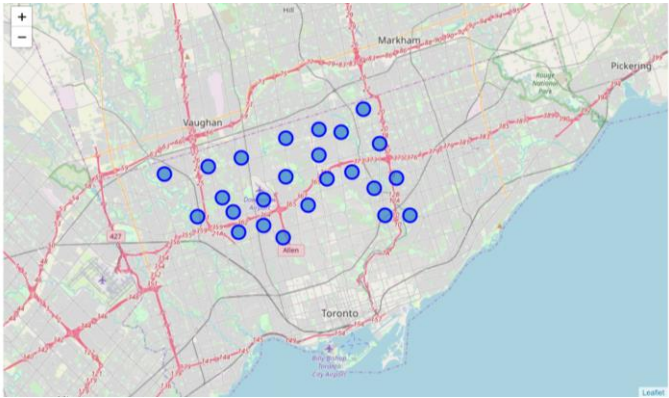


KMEANS CLUSTER ANALYSIS RANKS **WILLOWDALE SOUTH** AS THE MOST OPTIMAL LOCATION IN NORTH YORK...

	Neighborhood	Cluster
0	Bathurst Manor, Downsview North, Wilson Heights	4
1	Bayview Village	1
2	Bedford Park, Lawrence Manor East	2
3	CFB Toronto, Downsview East	1
4	Don Mills North	1
5	Downsview Central	1
6	Downsview Northwest	1
7	Downsview West	1
8	Downsview, North Park, Upwood Park	1
9	Emery, Humberlea	1
10	Fairview, Henry Farm, Oriole	5
11	Flemington Park, Don Mills South	4
12	Glencairn	1
13	Hillcrest Village	1
14	Humber Summit	1
15	Lawrence Heights, Lawrence Manor	1
16	Northwood Park, York University	1
17	Parkwoods	1
18	Victoria Village	1
19	Willowdale South	3
20	Willowdale West	1
21	York Mills West	1



	Neighborhood	Cluster
19	Willowdale South	3



# ...FOLLOWED BY 3 OTHER NORTH YORK NEIGHBOURHOODS: FAIRVIEW, HENRY FARM, ORIOLE

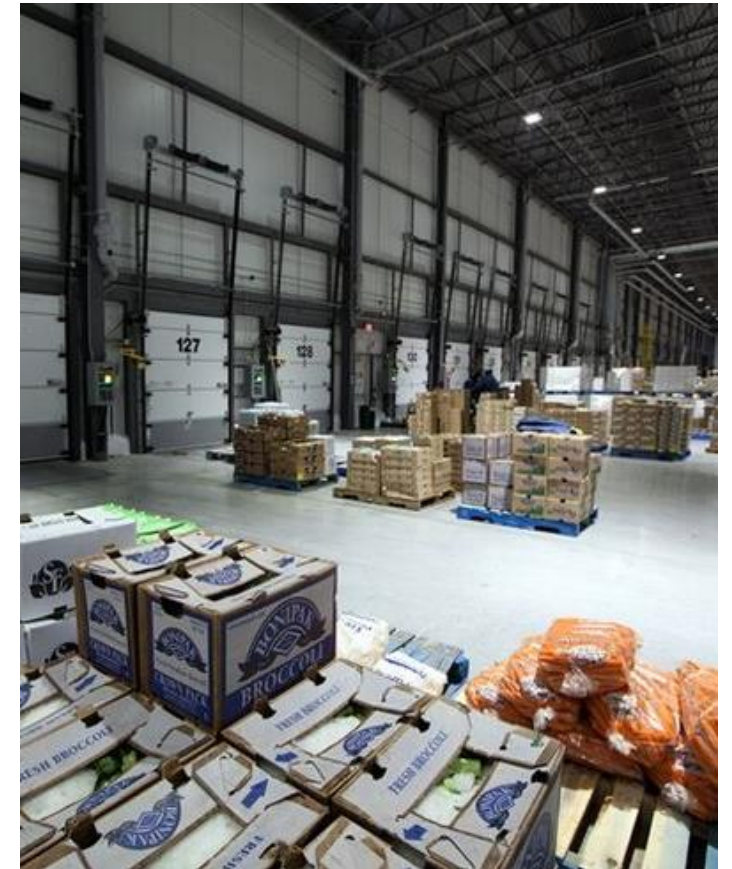


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# RECOMMENDATION TO LOOK FOR FOOD & BEVERAGE SUPPLY WAREHOUSE IN WILLOWDALE SOUTH NEIGHBORHOOD

- Willowdale South is indeed the neighborhood closest to most restaurants in North York;
- Operating a food & beverage supply warehouse there can **keep the distance (and delivery lead time) to North York restaurants shortest**, securing timely and fresh supplies.



# FURTHER CONSIDERATIONS BEYOND THIS PROJECT'S SCOPE

- Explore **Fairview, Henry Farm and Oriole** as location alternatives if:
  - *No warehouses available in Willowdale South;*
  - *Warehouse rents too high in Willowdale South;*
  - *Personal/subjective preference for another location.*
- **City development:** Toronto is a dynamic city and new developments in North York borough's restaurant landscape could structurally change what constitutes an optimal warehouse location.
- **Online food delivery, cloud kitchens, etc. disrupting urban restaurants:** observe city developments and industry trends and react accordingly with regards to supply locations.
- **Small business growth beyond local geographical markets:** location and warehousing needs could change with growth.

