



Market Expansion using Data Science

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Business Use-case

- UP! Sports is a (hypothetical) retail company selling sporting goods, equipment, sports apparel, and much more, for various sporting activities, all under one roof.
- The company has decided to expand its operations.
- For the same, the company is looking to setup stores in Canada, starting with the city of Toronto, Ontario.
- Acknowledging the power of data and analytics, UP! Sports has decided to use a data science based approach to support their decision-making process for business expansion.

Task Description

- The task is to identify and group neighborhoods in the city of Toronto, Ontario that the company must target and setup their operations and stores in.
- Since the company specializes in sports-related consumer goods, the ideal neighborhood or groups of neighborhoods for the company would be neighborhoods with many sport-related facilities, such as gyms, yoga classes, soccer fields, and so on.
- Thus, the task is to identify such neighborhoods and present an analysis, outlining which neighborhood(s) should UP! Sports setup their retail stores in, as well as the rationale behind the same.

Data Description

- Data used: location data for neighborhoods in Toronto, Ontario, Canada.
- This data will be collected through Wikipedia, along with the Foursquare API.
- The final data will include the following:
 1. Neighborhood name
 2. Borough name
 3. Postal Code
 4. Latitude and longitude values
 5. Venues in each neighborhood
- This data will be analyzed to provide a solution to the discussed business problem.

Data Collection

- Begin with scraping the Wikipedia page “List of postal codes of Canada: M”.
- Information about 103 neighborhoods of Toronto.
- A sample of the data collected is shown below.

Postal Code	Borough	Neighborhood	Latitude	Longitude
M3A	North York	Parkwoods	43.75325	-79.32965
M4A	North York	Victoria Village	43.72588	-79.31557
M9A	Etobicoke	Islington Avenue	43.66785	-79.53224
M1B	Scarborough	Malvern, Rouge	43.80668	-79.19435

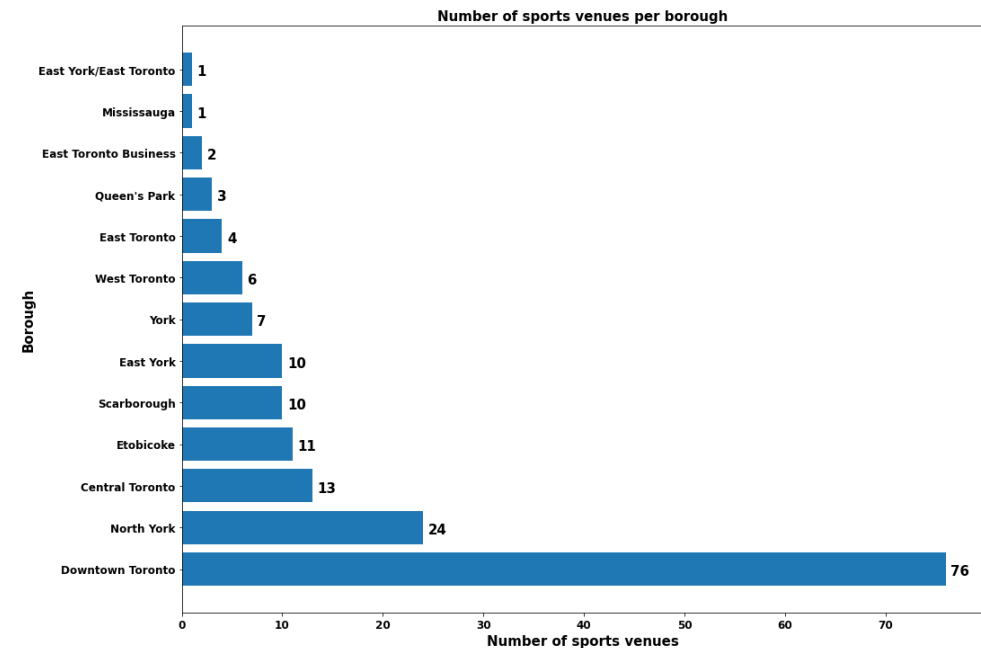
Data Collection

- Data about venues in and around Toronto is collected using the Foursquare Places API.
- The Foursquare API returns data about 2000 different venues across 263 categories of venues.
- Description of final data is given.

Column Name	Description
Neighborhood	Name of the neighborhood in which venue is located
Neighborhood Latitude	Latitude of the neighborhood
Neighborhood Longitude	Longitude of the neighborhood
Venue	Name of venue
Venue Latitude	Latitude of venue
Venue Longitude	Longitude of venue
Venue Category	Category to which venue belongs

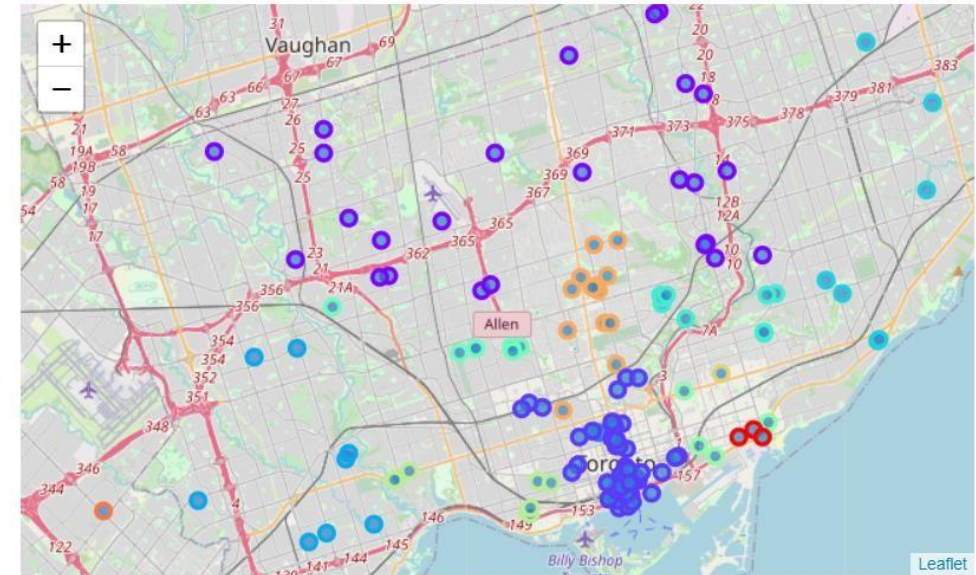
Analysis

- After filtering the gathered data to retain only sport related venues, some basic exploratory data analysis is done.
- There are a total of 168 sports related venues in and around Toronto, located in different boroughs.
- The given bar chart shows the number of sports related venues in each borough.



Analysis

- Downtown Toronto has the greatest number of sports related venues (76).
- North York ranks 2nd in terms of the number of sports venues in the borough.
- Targeting neighborhoods in Downtown Toronto can be a great starting point for the company to set up their first store in Toronto, Ontario.
- The given map shows the different sports venues, based on the data collected so far.

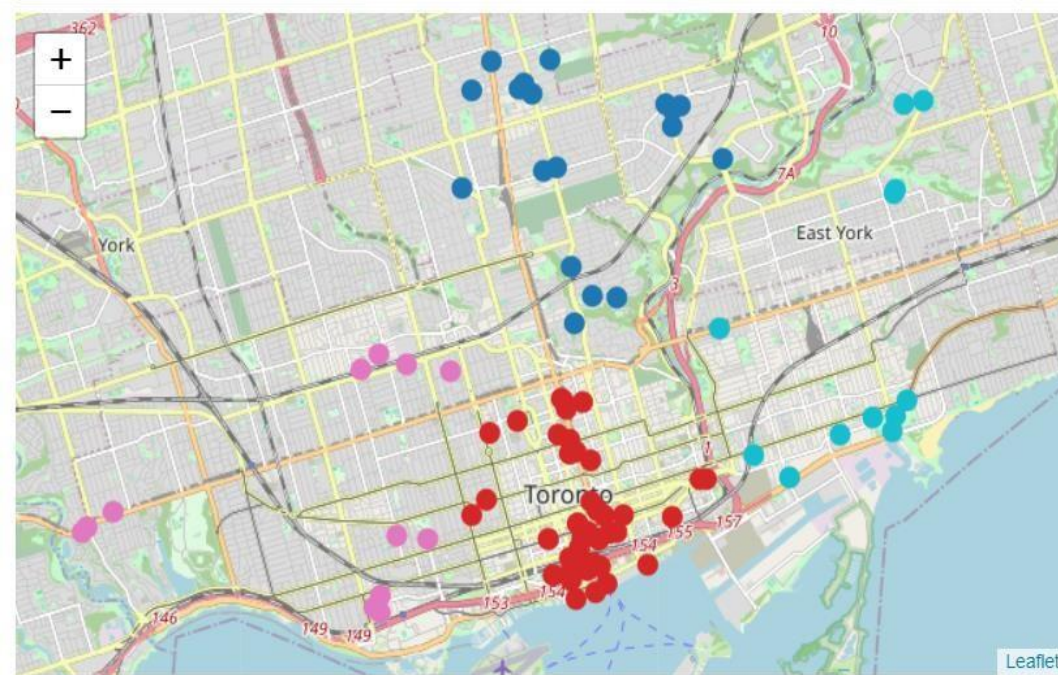


Analysis

- For further analysis, let's narrow down our focus to these selected boroughs having a high density of sports related venues and find some suitable neighborhoods in these boroughs.
- To select suitable neighborhoods in these boroughs, clustering is done based on the latitude and longitude values of each neighborhood.
- The cluster centroids will then correspond to the required suitable neighborhoods.
- The venues located in these boroughs are clustered into 4 groups, based on the venue coordinates, using k-means clustering algorithm.

Analysis

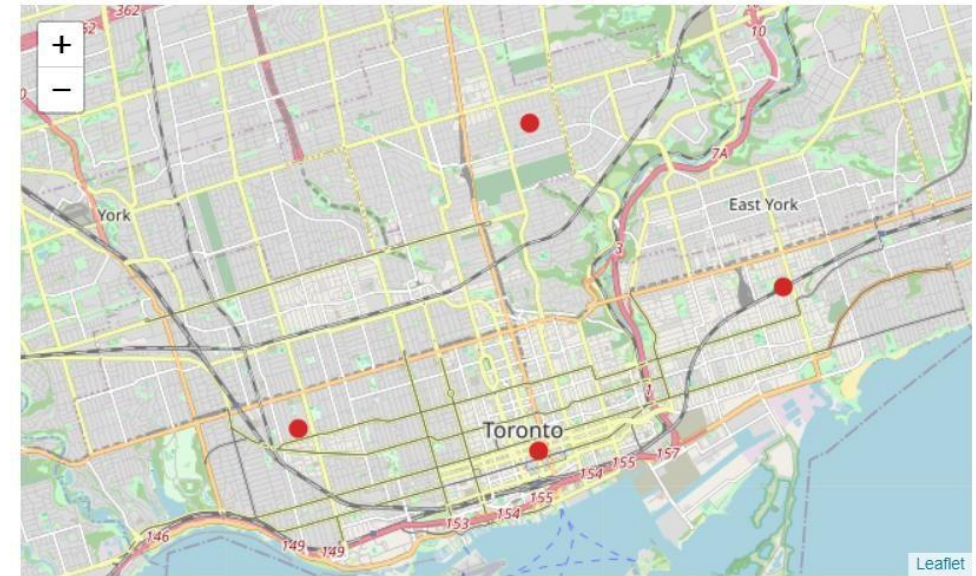
- Sports venues clustered into 4 groups are shown in the map below.



Results

- Hence, we have narrowed down to 4 locations that can be targeted by the company to setup their first retail store in Toronto, Ontario, Canada.
- These locations are:
 1. 382, Shaw Street, University—Rosedale, Old Toronto, Toronto, Golden Horseshoe, Ontario, M6G 1C5, Canada
 2. 12, Glebemount Avenue, Danforth Village, Beaches—East York, Old Toronto, Toronto, Golden Horseshoe, Ontario, M4C 1K9, Canada
 3. 357, Manor Road East, Davisville, Don Valley West, Old Toronto, Toronto, Golden Horseshoe, Ontario, M4S 1S3, Canada
 4. Tim Hortons, Grand Opera Lane, King East, Toronto Centre, Old Toronto, Toronto, Golden Horseshoe, Ontario, M5H, Canada

The target locations are shown with red markers in the map given.



Conclusion

- Hence, we have successfully identified 4 prime locations that can be targeted by UP! Sports as locations to setup their first retail store in Toronto, Ontario, Canada.