

# Similarities Between Manhattan, New York, and Downtown, Toronto

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# Introduction

- ▶ Goal: To determine how similar Downtown Toronto, Canada and Manhattan, New York are when it comes to tourism.
- ▶ The results of this project will
  - ▶ Guide then potential tourists who are planning a trip to visit Manhattan, New York, or downtown Toronto.
  - ▶ Help them make a decision depending on their choice or priority.

# Data sources

- ▶ Toronto data:  
[https://en.wikipedia.org/wiki/List\\_of\\_postal\\_codes\\_of\\_Canada:\\_M](https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M)
- ▶ Manhattan, New York city data:  
[https://geo.nyu.edu/catalog/nyu\\_2451\\_34572](https://geo.nyu.edu/catalog/nyu_2451_34572)
- ▶ Geospatial data:  
[http://cocl.us/Geospatial\\_data](http://cocl.us/Geospatial_data)

# Methodology

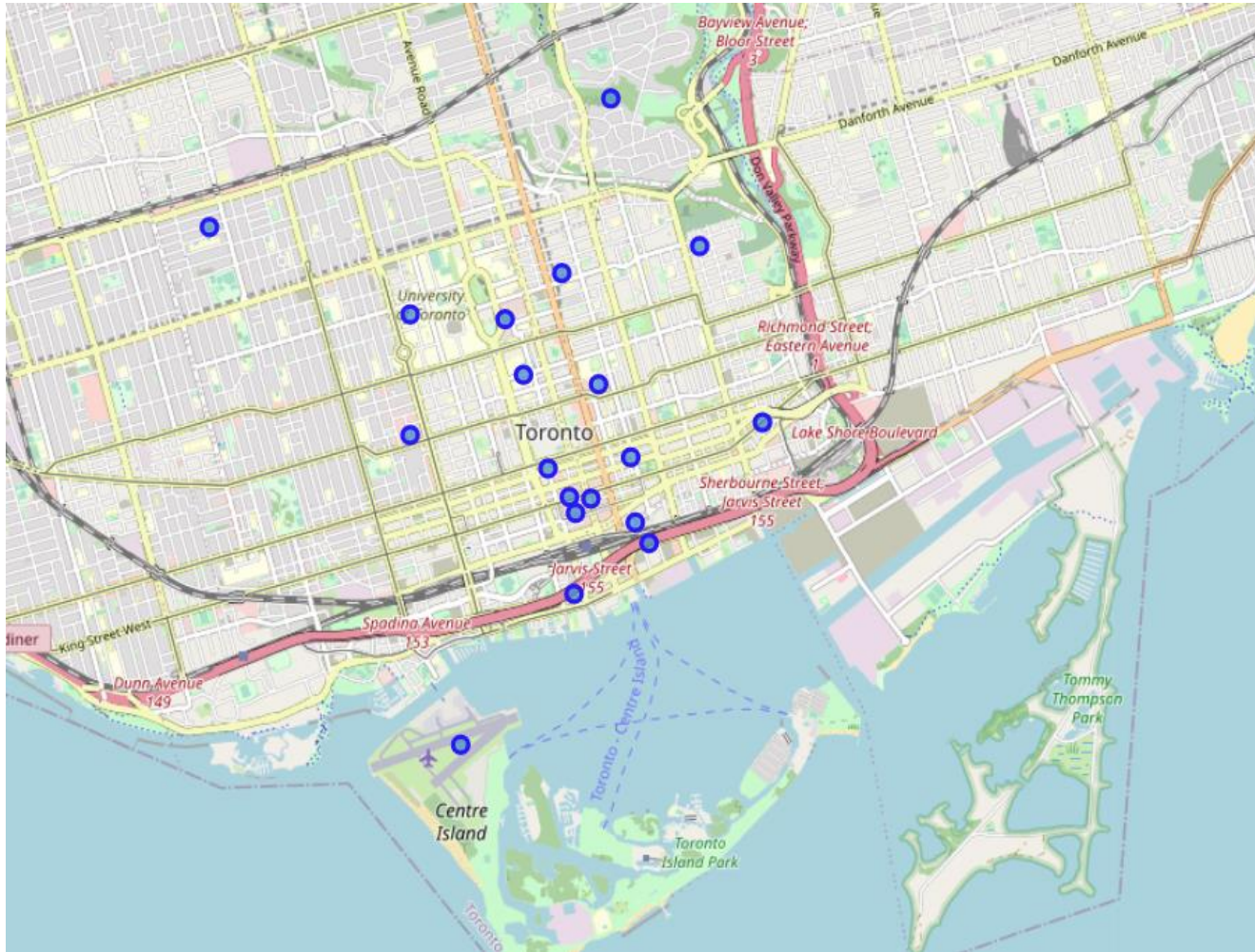
- ▶ Focus on Manhattan, New York, and Downtown Toronto from data extracted using the webpages and the Foursquare API services.
- ▶ K means Clustering machine learning algorithm to compare the two places Manhattan, New York, and Downtown, Toronto, and find the similarities.
- ▶ One hot encoding is used to calculate the mean of each neighborhood's frequency of occurrence in Downtown Toronto and Manhattan to measure the foot traffic in these places.



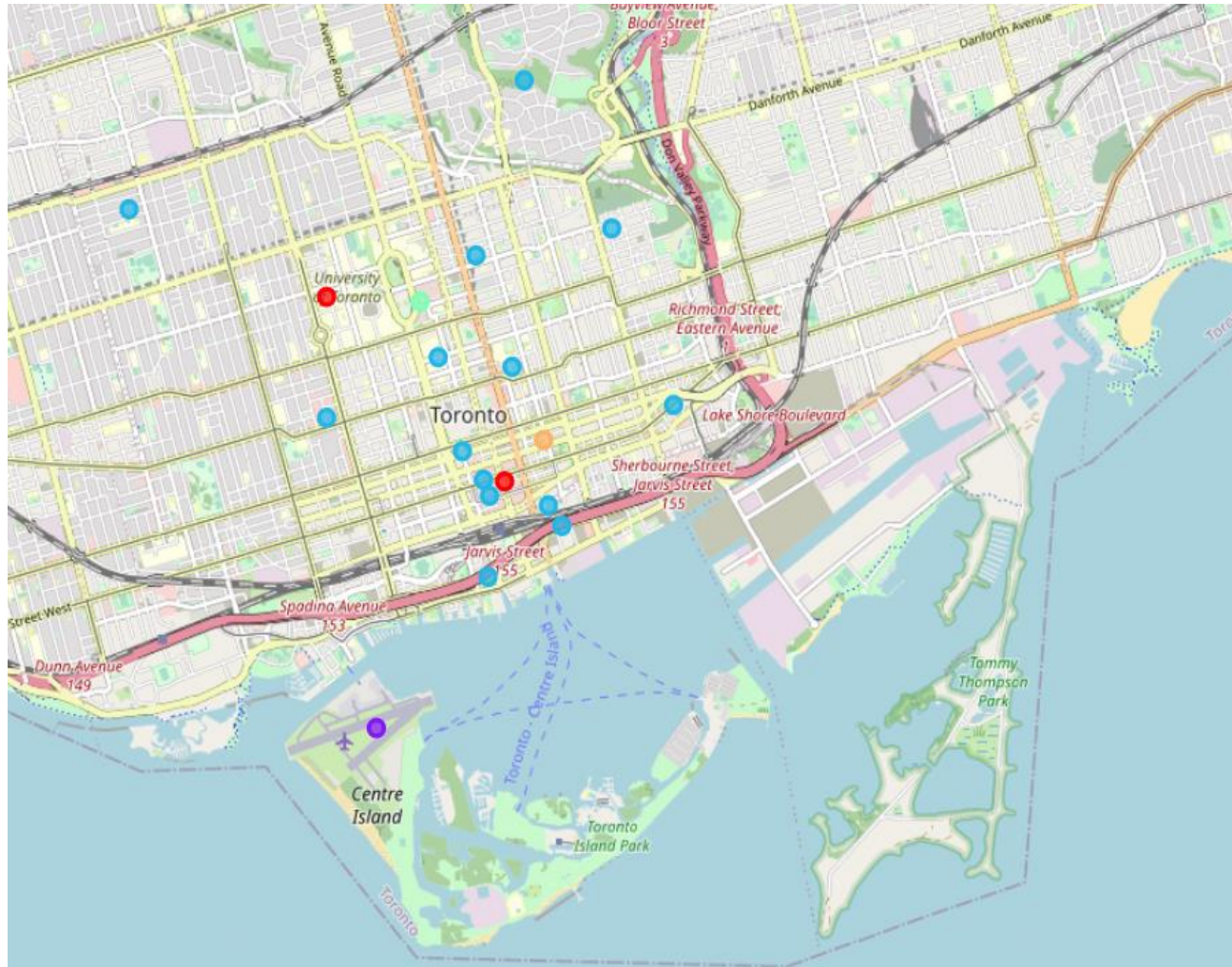
# Data Analysis

- ▶ Extract Data of Toronto from Wikipedia and New York from the New York University webpage.
- ▶ Combine neighborhoods of each dataframe that have the same geographical coordinates at each borough and sorted against the concerned borough.
- ▶ Use Foursquare API for data verification and to get the coordinates of Downtown Toronto and explore its neighborhoods.
- ▶ Characterize the neighborhoods as venues and venue categories.

# Downtown Toronto Before Clustering

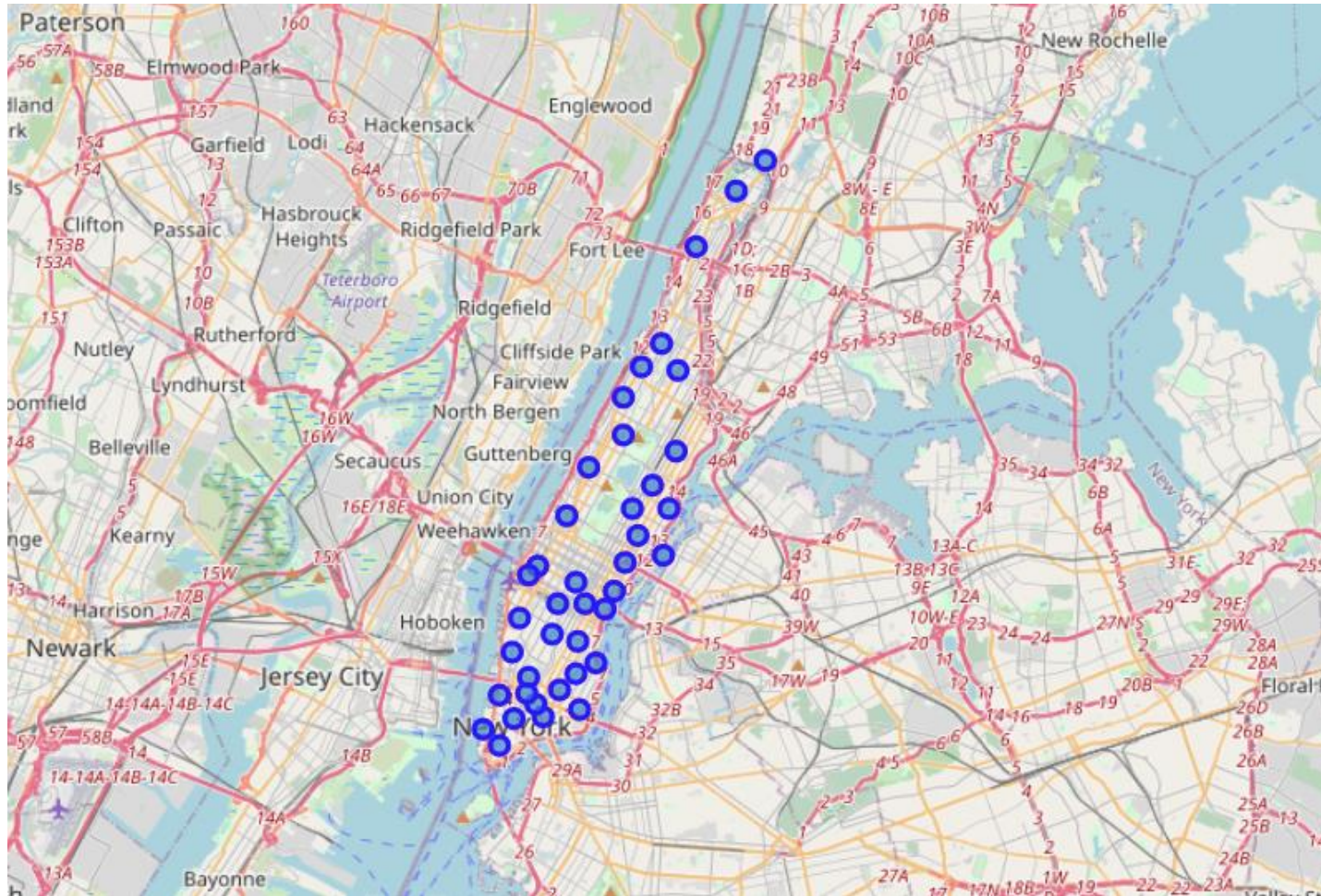


# Downtown Toronto After Clustering



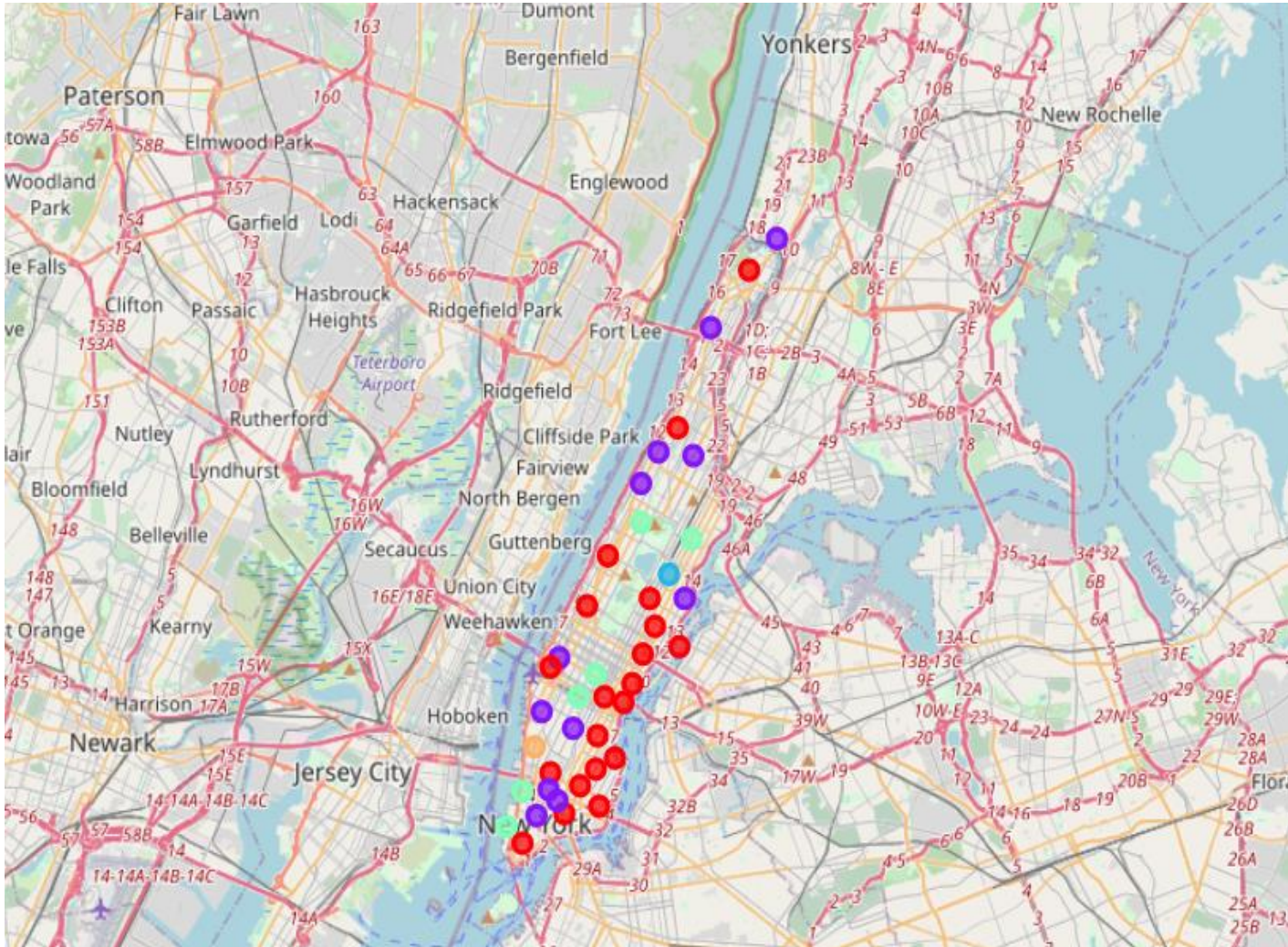


# Manhattan Before Clustering





# Manhattan After Clustering



# Results

- ▶ Downtown Toronto and Manhattan, New York both the places have venues that tourists would be attracted to explore
- ▶ The neighborhoods are similar to venues like Theaters, opera houses, food places, clubs, museums, parks, etc
- ▶ The only dissimilarity is that their unique historical places and monuments
- ▶ Downtown Toronto has Historical places and Airport facilities, a harbor, a Sculpture garden, and ferry services
- ▶ Manhattan has monument or landmark venues, Nightlife, Climbing gym, and Museums

# Conclusion

- ▶ Downtown Toronto and Manhattan neighborhoods have similar venues except the historical venues which are unique.
- ▶ For tourists with budget constraint, downtown Toronto will be a priority to visit. This is because the airport facility is available in Downtown Toronto which saves time but also saves money.