Finding a Similar Neighborhood to Move to in NYC and Toronto

Mark Polinkovsky

PROBLEM STATEMENT: WHICH NEIGHBORHOODS IN TORONTO AND NYC ARE MOST SIMILAR TO A PERSON'S CURRENT ADDRESS?

- When people move to another city, they often want to live in a similar neighborhood to the one they come from

- How can they choose a neighborhood to make sure it fits their familiar lifestyle?

- Using neighborhood data for Toronto and New York City, we can find neighborhoods most similar to the one where the customer is residing.

- This would be a valuable service for real estate agents to provide for their customers, to help them narrow down the neighborhood choices.

- It will make the customer happy by helping them find the ideal neighborhood for their lifestyle, and will help the real estate agent by improving the quality of service they offer, and by narrowing their focus to the desired neighborhoods.
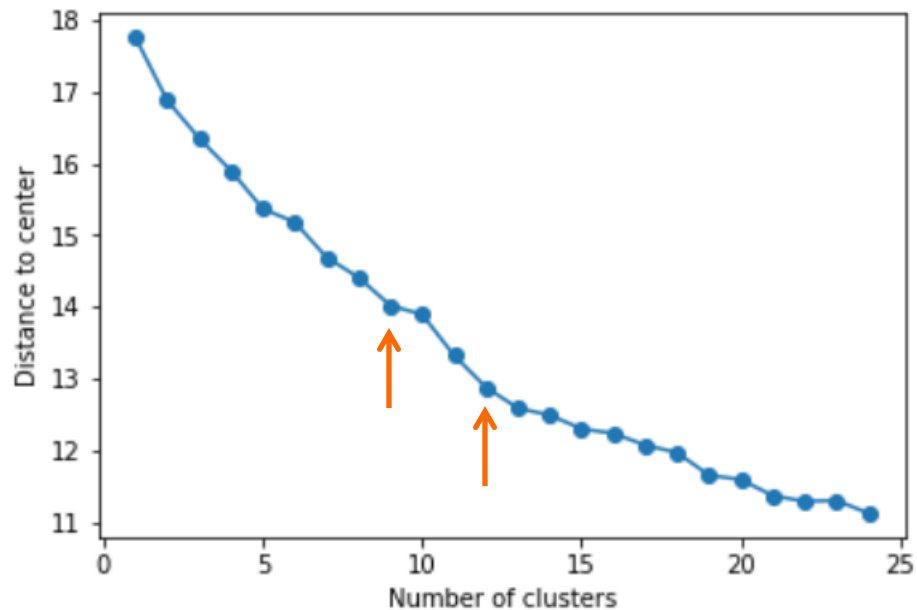
SOLUTION APPROACH

- Divide NYC and Toronto into neighborhoods
  - Find the Latitude and Longitude for each neighborhood
  - Use the Foursquare API to find data on the top venues in each neighborhood.
  - Use K-means clustering to separate the neighborhoods into groups
- Using the customer's current address
  - Find the Latitude and Longitude for the address
  - Use the Foursquare API to find data on the top venues around the address.
  - Use the trained K-means clustering models to predict which clusters in NYC and Toronto most closely match the customer's address
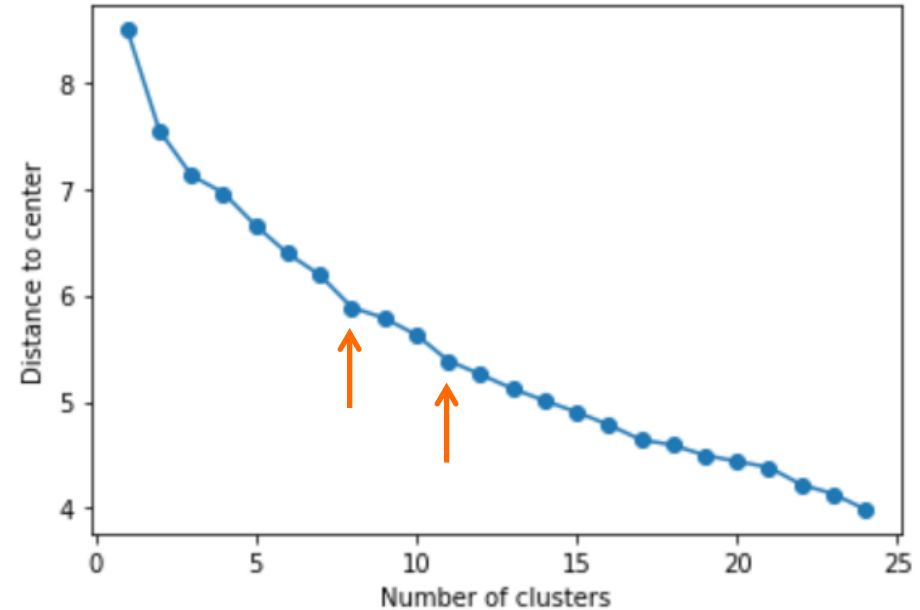
FINDING BEST K FOR CLUSTERING

Using the Elbow method to minimize cluster size, while minimizing complexity (lowest number of clusters)
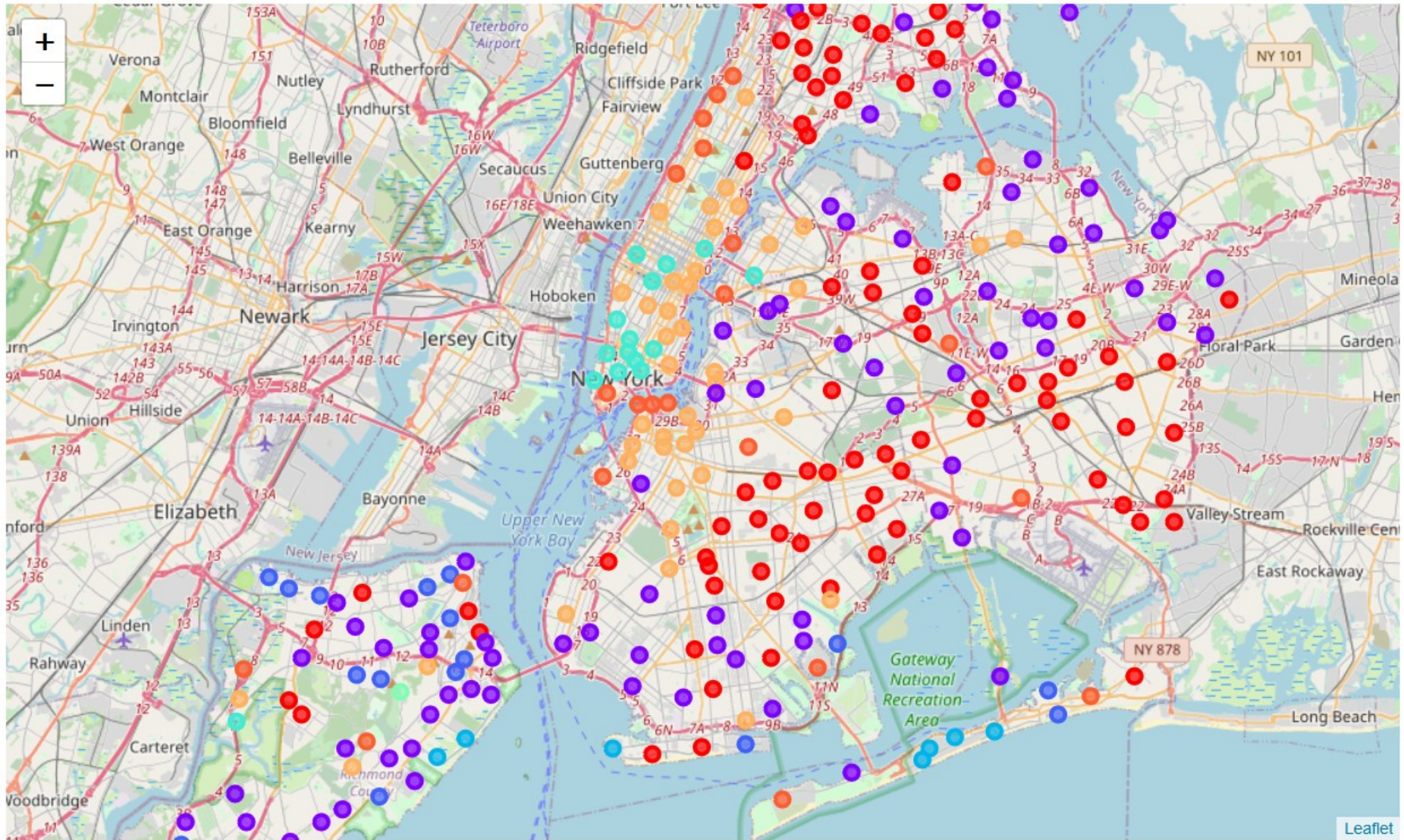

A reasonable choice of K looks like 9 or 12 for NYC

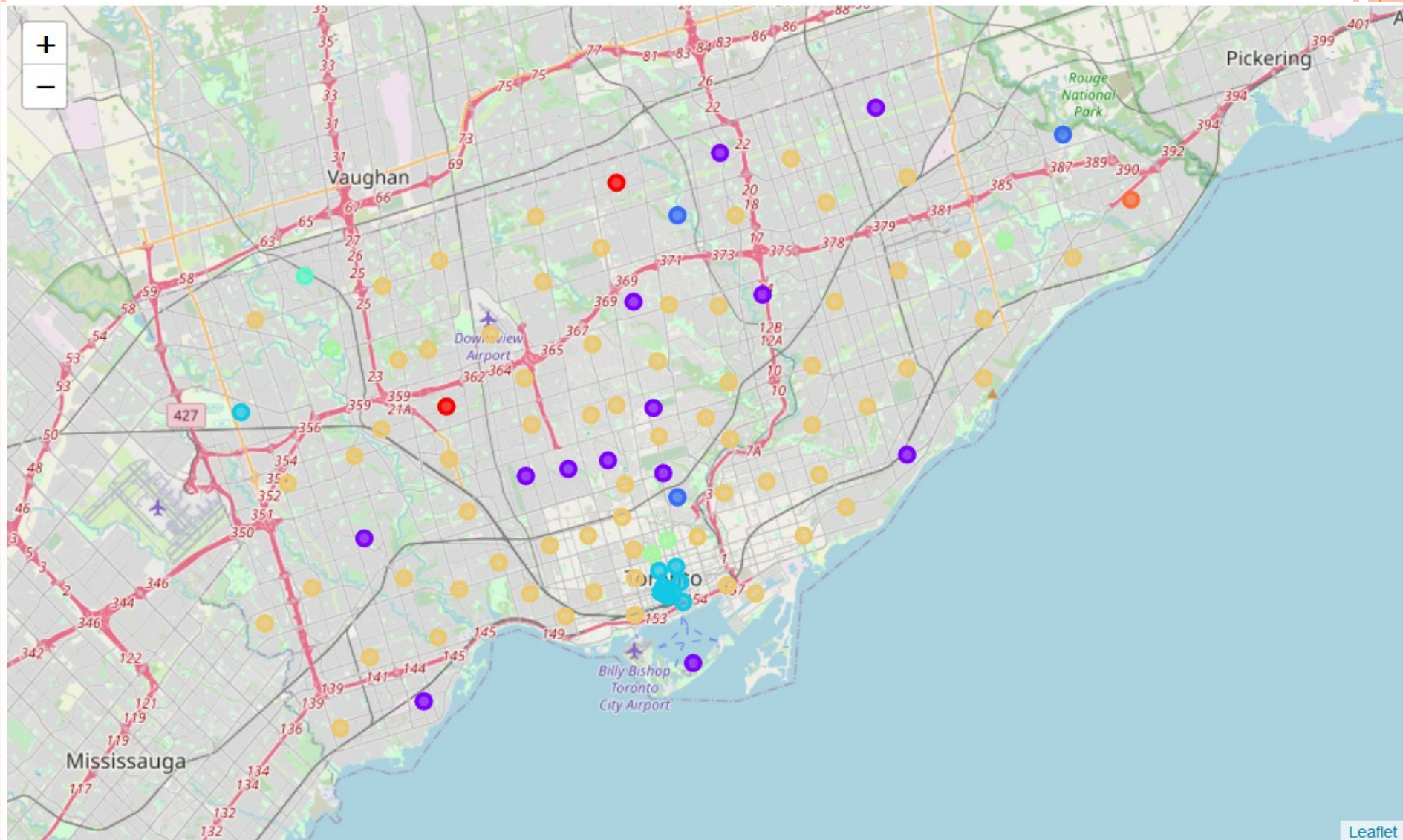A reasonable choice of K looks like 8 or 11 for Toronto.

Chose K=9 for NYC, K=8 for Toronto

CLUSTERING NYC NEIGHBORHOODS
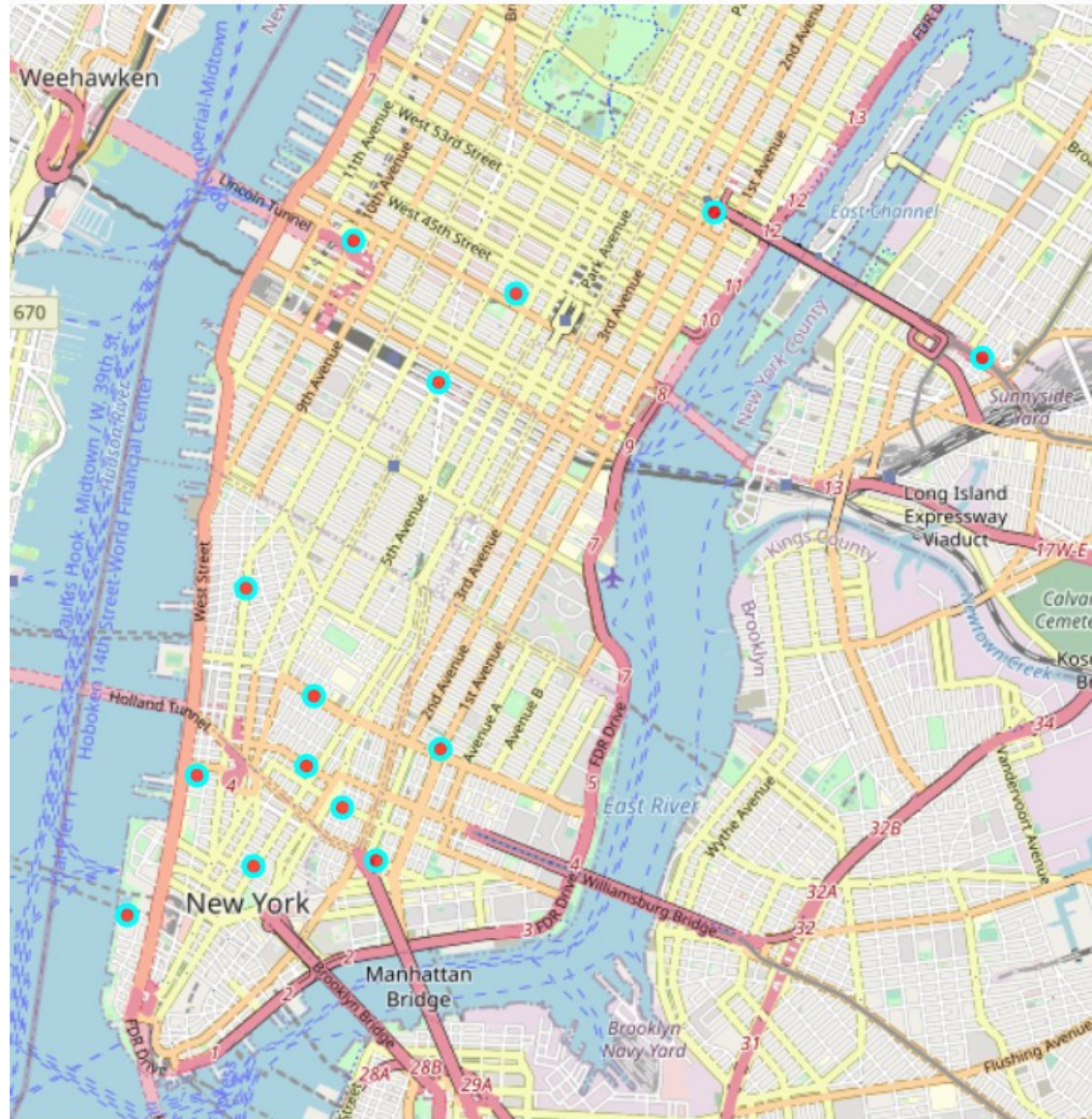
CLUSTERING TORONTO NEIGHBORHOODS

121 N LaSalle St, Chicago, IL 60602 Chicago City Hall

Matching NYC Neighborhoods:

- Battery Park City
- Chinatown
- Civic Center
- Clinton
- Greenwich Village
- Little Italy
- Long Island City
- Midtown
- Midtown South
- Noho
- Soho
- Sutton Place
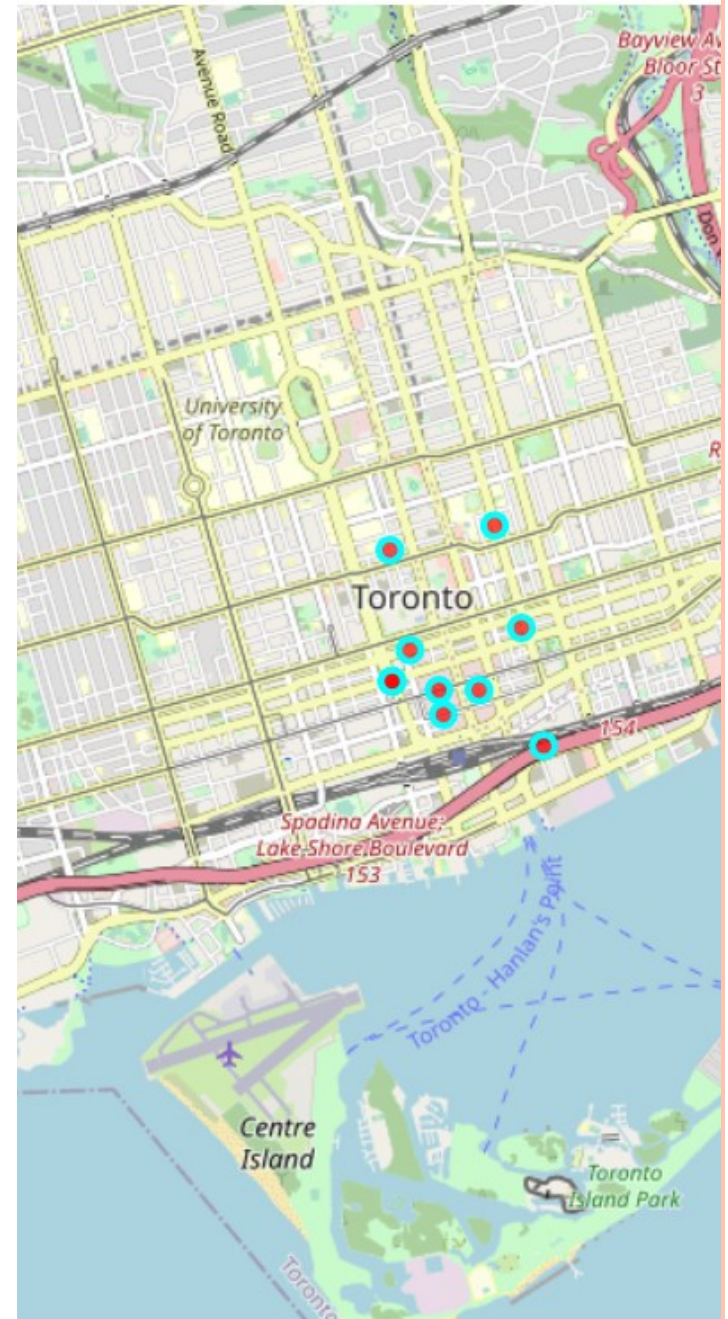- Travis
- Tribeca
- West Village

121 N LaSalle St, Chicago, IL 60602
Chicago City Hall

Matching Toronto neighborhoods:

- Berczy Park
- Central Bay Street
- Commerce Court, Victoria Hotel
- First Canadian Place, Underground city
- Garden District, Ryerson Northwest
- Richmond, Adelaide, King
- St. James Town
- Stn A PO Boxes
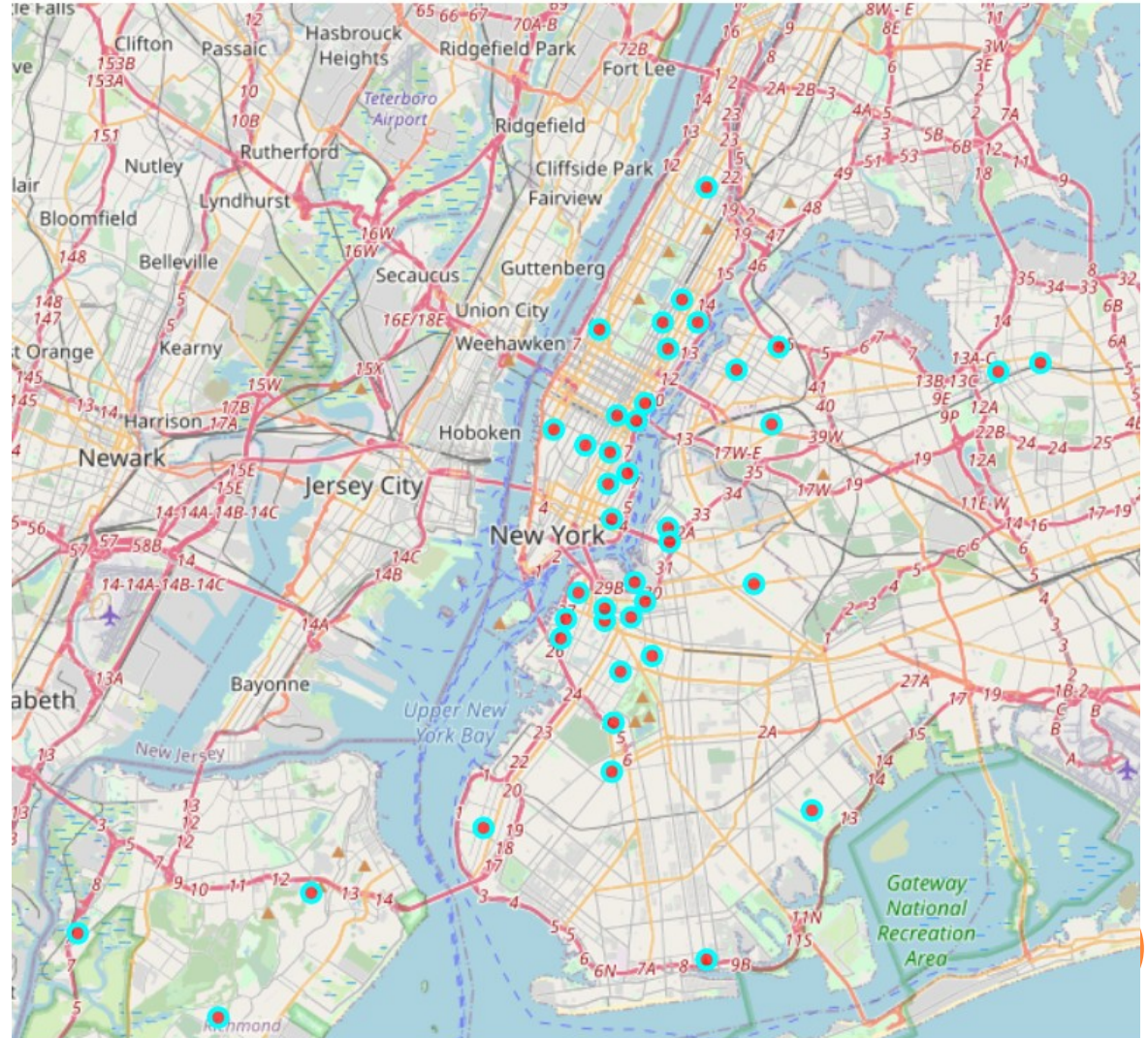- Toronto Dominion Centre, Design Exchange

1200 E California Blvd, Pasadena, CA California Institute of Technology

Some matching NYC Neighborhoods:

- Astoria
- Bay Ridge
- Boerum Hill
- Brooklyn Heights
- Bushwick
- Carnegie Hill
- Carroll Gardens
- Central Harlem
- Charleston
- Cobble Hill
- Downtown
- Flushing
- East Village
- Navy Yard
- Flatiron
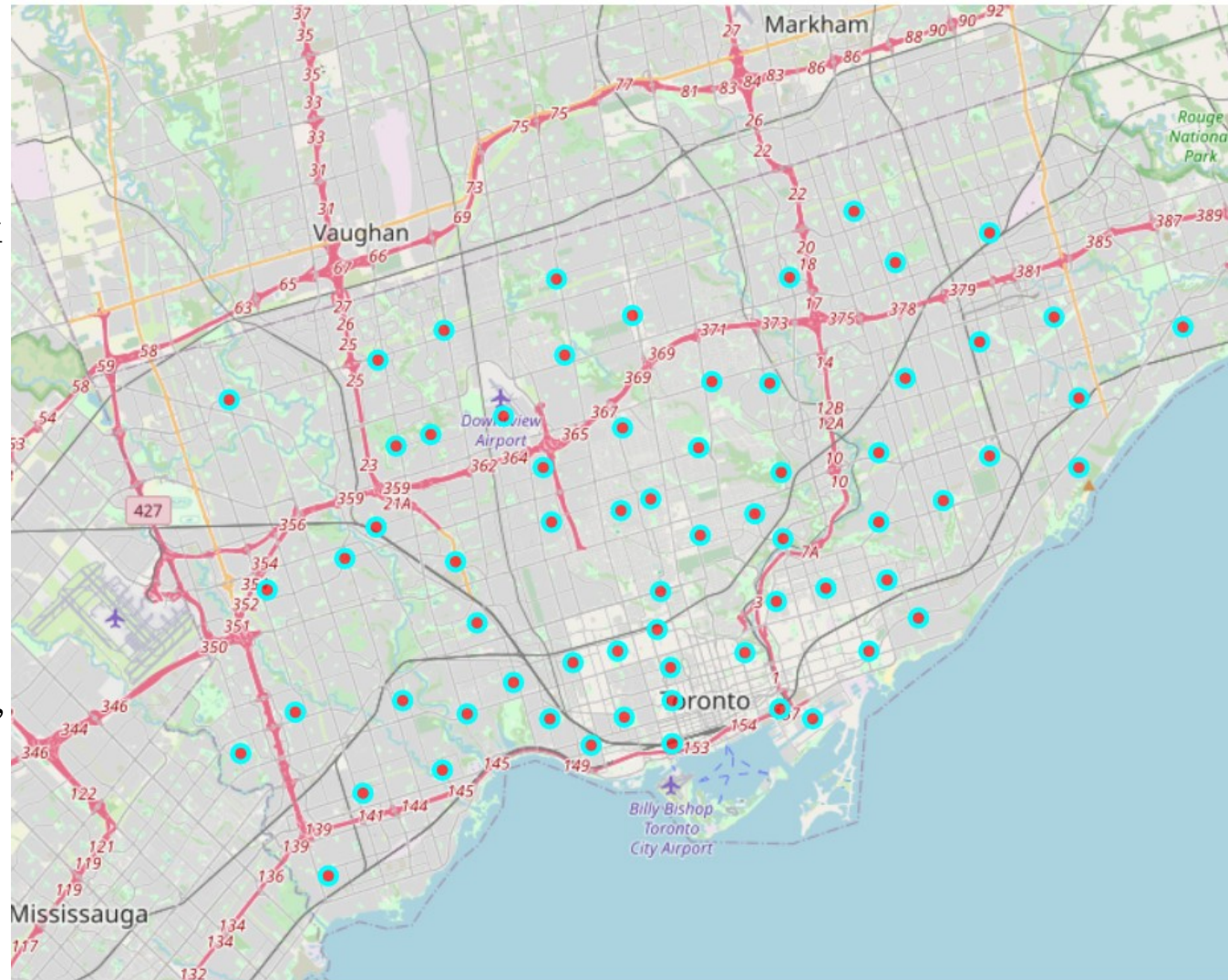- Sheepshead Bay
- Yorkville
- …

1200 E California Blvd, Pasadena, CA California Institute of Technology

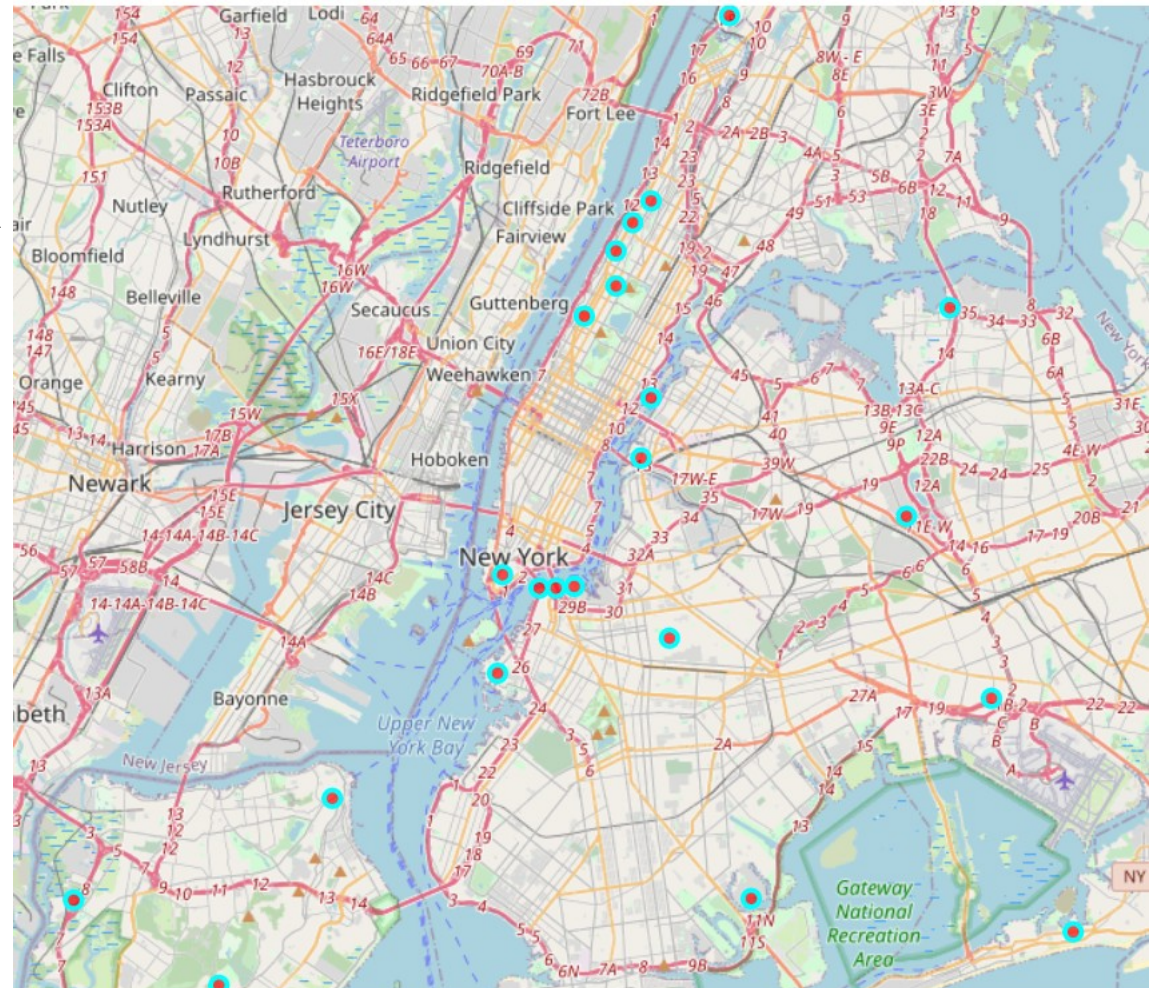Some matching Toronto neighborhoods:

- Agincourt
- Alderwood
- Bathurst Manor,
- North Bedford Park
- East Brockton
- CN Tower
- Cedarbrae
- West Davisville
- Downsview
- Golden Mile
- Kensington Market, Chinatown
- Runnymede
- St. James Town
- Willowdale
- …

47890, San Marino
Church in Santa Mustiola, San Marino

Matching NYC Neighborhoods:

- Bedford Stuyvesant
- Bloomfield
- Breezy Point
- Dumbo
- Edgemere
- Egbertville
- Fieldston
- Financial District
- Forest Hills
- Fulton Ferry
- Hamilton Heights
- Hunters Point
- Malba
- Manhattan Valley
- Manhattanville
- Mill Island
- Morningside Heights

- Red Hook
- Riverdale
- Roosevelt Island
- South Ozone Park
- Spuyten
- Duyvil
- Tompkinsville
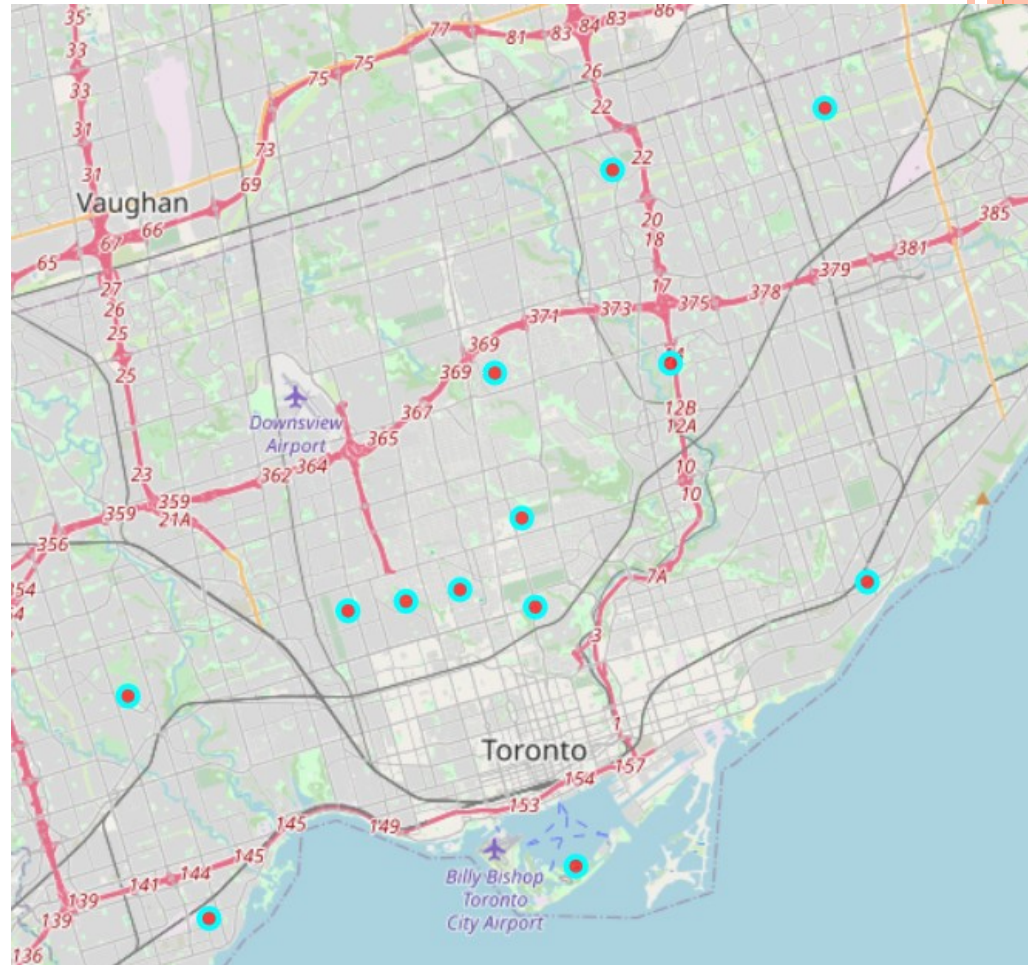- Upper West Side
- Vinegar Hill

47890, San Marino
Church in Santa Mustiola, San Marino

Matching Toronto neighborhoods:

- Birch Cliff, Cliffside
- West Caledonia-Fairbanks
- Davisville North
- Forest Hill North & West
- Harbourfront East, Union Station, Toronto Islands
- Hillcrest Village
- Humewood-Cedarvale
- Islington Avenue
- Milliken, Agincourt North, Steeles East
- Moore Park, Summerhill
- East New Toronto, Mimico South, Humber Bay Shores
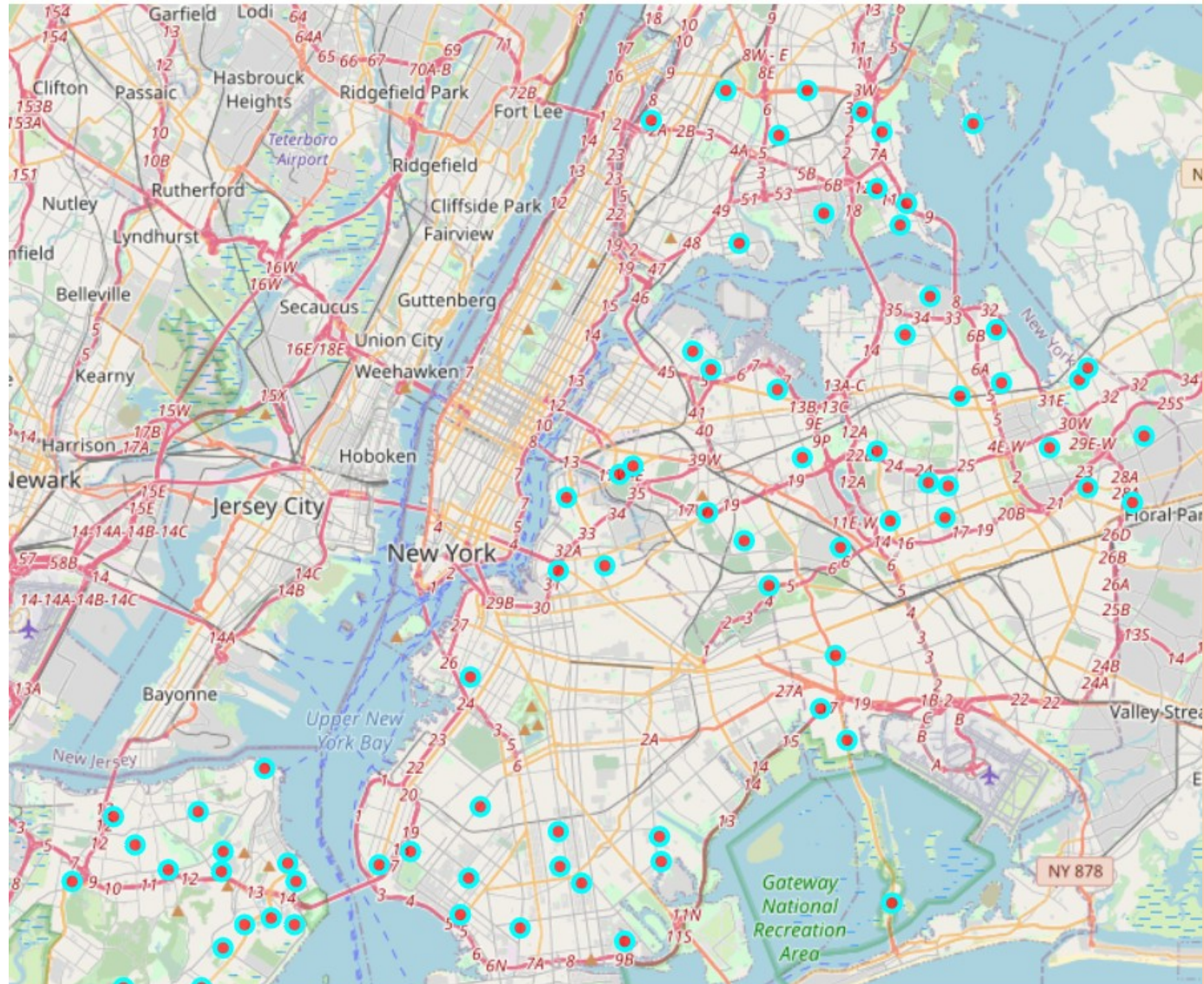- Parkwoods
- York Mills West

655 Mattaaq, Iqaluit, NU X0A 0H0, Canada
St. Jude's Anglican Cathedral, Nunavut, Canada

Some matching NYC Neighborhoods:

- Annadale
- Astoria Heights
- Bellaire
- Edgewater Park
- Gowanus
- Gravesend
- Huguenot
- Lighthouse Hill
- New Dorp Beach
- Queensboro Hill
- Ozone Park
- Pelham Bay
- Throgs Neck
- Utopia
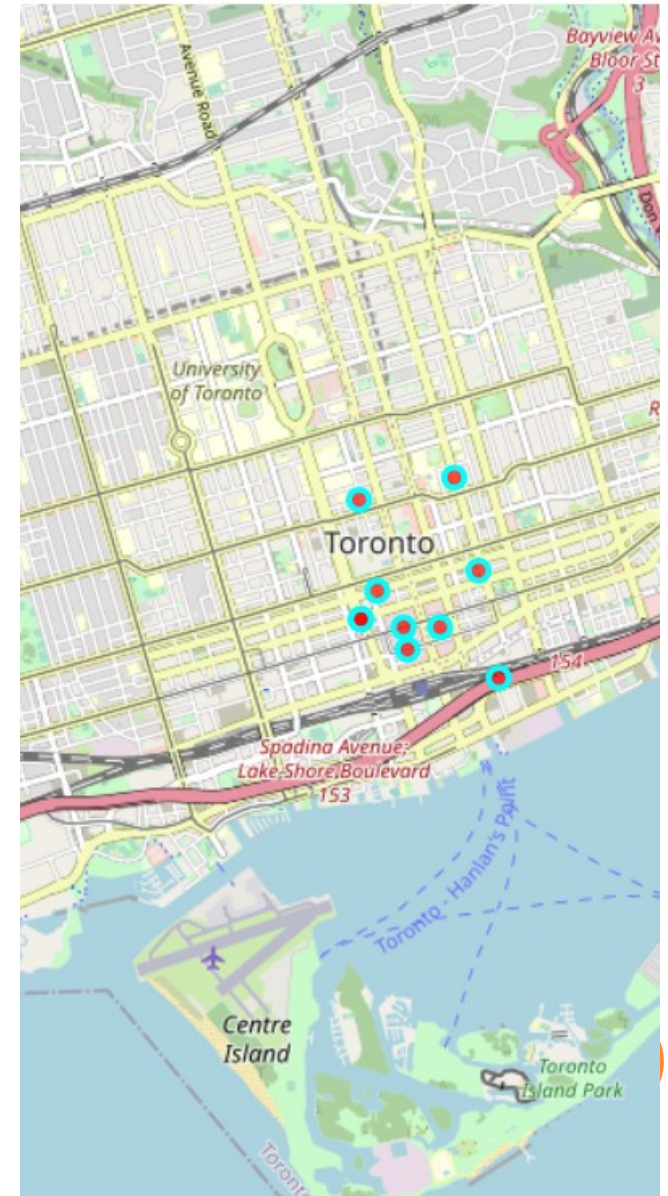- Whitestone
- Williamsburg
- Woodlawn
- …

655 MATTAAQ, IQALUIT, NU X0A 0H0, CANADA
ST. JUDE'S ANGLICAN CATHEDRAL, NUNAVUT, CANADA

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CONCLUSION

- Can match wide variety of addresses from around the world to neighborhoods in NYC and Toronto by similar venues

- Neighborhood clusters in NYC and Toronto were generated by K-means clustering

- Those trained K-means clustering models were used to fit addresses from around the world

- Different types of areas (rural, urban, suburban) fit to different clusters in the two cities