

The background of the slide is a dense, repeating pattern of small, colorful origami cubes. The cubes are made of paper and are folded into a geometric shape with multiple triangular faces. They come in a variety of colors including blue, green, orange, red, yellow, and light green. The cubes are arranged in a way that they appear to be scattered and overlapping, creating a vibrant and textured background.

Analysis of Housing Price and Venues in Ontario

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Introduction – Helping Newcomers

- Ontario is Canada's second-largest province by area, covering more than one million square kilometers.
- Ontario covers all types of landscapes, from the forested Canadian Shield, southern fertile farmland, and over 250,000 lakes. Moreover, Ottawa is Canada's capital, in the east of southern Ontario, near the city of Montréal and the U.S. Ontario is a very diverse province.
- Ontario has a very diverse and inclusive environment which is a new home for many international people. It is important for newcomers to familiarize themselves with the community and settle down with convenience.

Main Factors

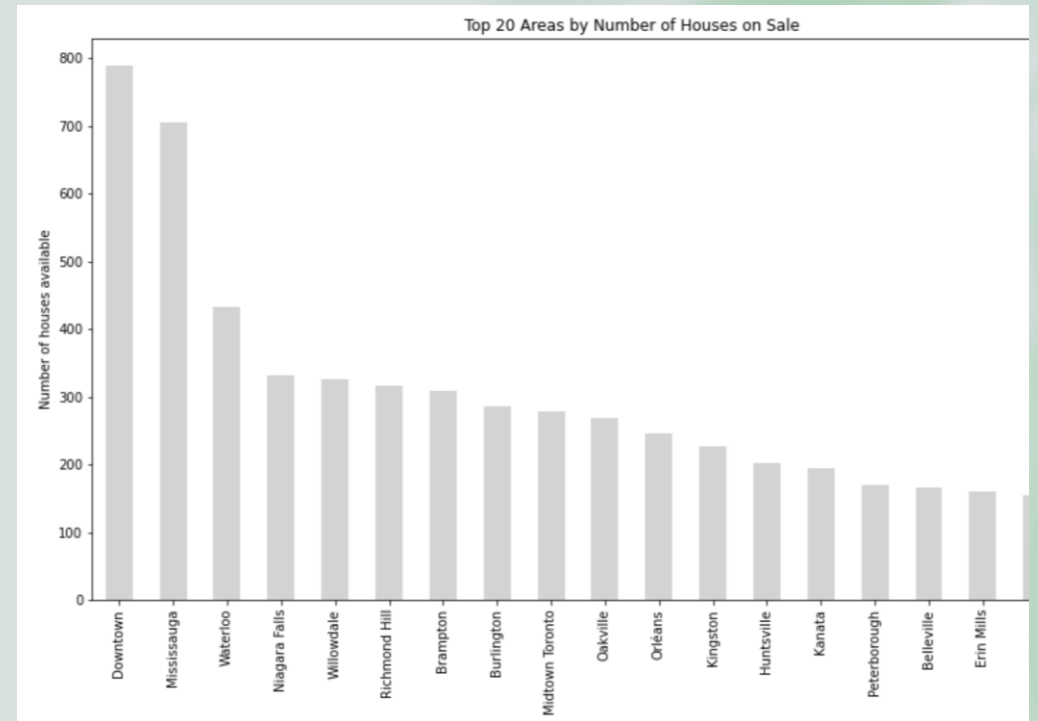
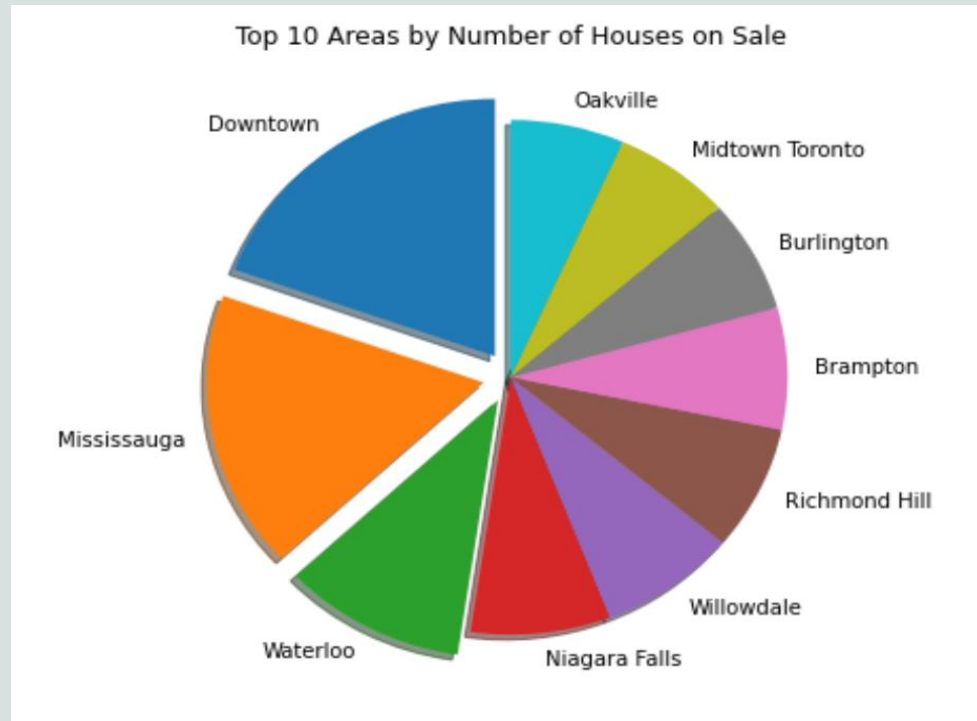
- 'Housing Prices' and 'Good Amenities'
- Analysis of housing price will provide newcomers a big picture and general idea of the range of the price and see the comparisons between different areas in Ontario.
- Good amenities will ensure the newcomers have the access to what they need including restaurants, cafes, gyms, libraries, grocery stores, and so on.

Data Description

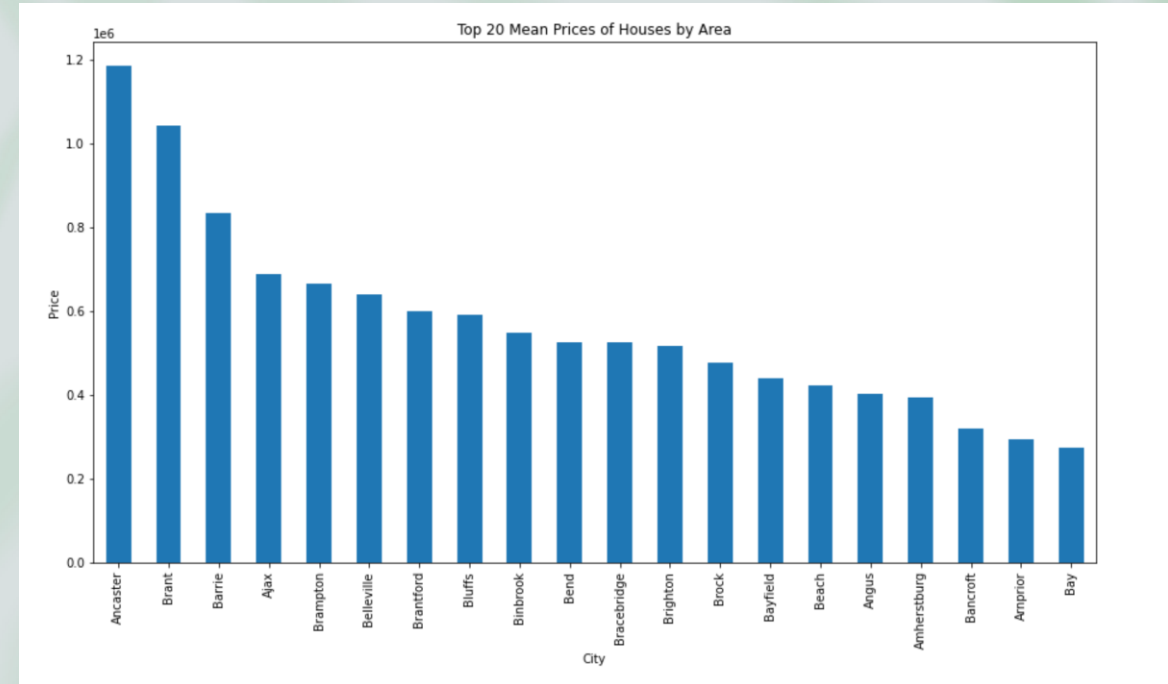
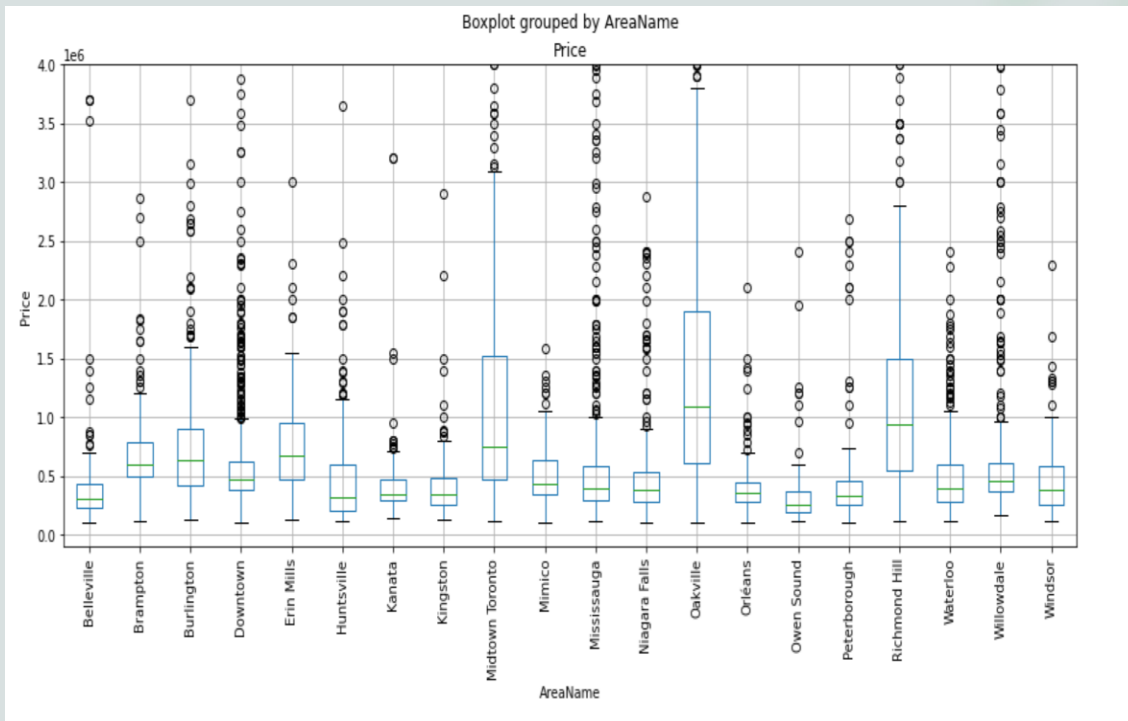
- The dataset regarding the housing prices in Ontario is from Kaggle dataset - House Sales in Ontario. This is a .csv file that includes the listing prices for the sale of properties (mostly houses) in Ontario. The dataset includes the following fields:
 - Price in dollars
 - Address of the property
 - Latitude and Longitude of the address obtained by using Google Geocoding service
 - Area Name of the property obtained by using Google Geocoding service
- In total, there are around 23500 houses in this dataset that will be cleaned and analyzed.


In addition to the housing price dataset, Foursquare API will be used to get the most common venues in Ontario.

Matplotlib is used to visualize the data



House Price Comparison



A map of the Greater Toronto Area and surrounding regions, including parts of Ontario and Quebec. The map shows major highways in red and orange, with labels such as 400, 401, 403, 407 ETR, 407 Toll, and 427. Various cities and towns are labeled, including Aurora, Stouffville, King City, Richmond Hill, Markham, Vaughan, Brampton, Mississauga, and Oshawa. Blue dots are scattered across the map, primarily along the major highways and in the urban areas. The text "Python Folium library is help with visualizing the maps" is overlaid on the right side of the map in a white, serif font.

Python Folium
library is help with
visualizing the
maps

Using Foursquare API – top venues were found

	AreaName	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Agincourt	Furniture / Home Store	Men's Store	Dessert Shop	Restaurant	Chinese Restaurant	Japanese Restaurant	Bubble Tea Shop	Shopping Mall	Arts & Crafts Store	Hotel
1	Alderwood	Discount Store	Pizza Place	Light Rail Station	Burrito Place	Convenience Store	Grocery Store	Shopping Mall	Skating Rink	Sandwich Place	Park
2	Bathurst Manor	Park	Men's Store	Escape Room	Bus Line	French Restaurant	Gas Station	Metro Station	Coffee Shop	Baseball Field	Bar
3	Bayview Village	Coffee Shop	Café	Clothing Store	Pharmacy	Chinese Restaurant	Bank	Furniture / Home Store	Gourmet Shop	Thai Restaurant	Gift Shop
4	Bendale	Clothing Store	Sandwich Place	Cosmetics Shop	Intersection	Fish & Chips Shop	Coffee Shop	Bus Station	Bar	Food Court	Movie Theater

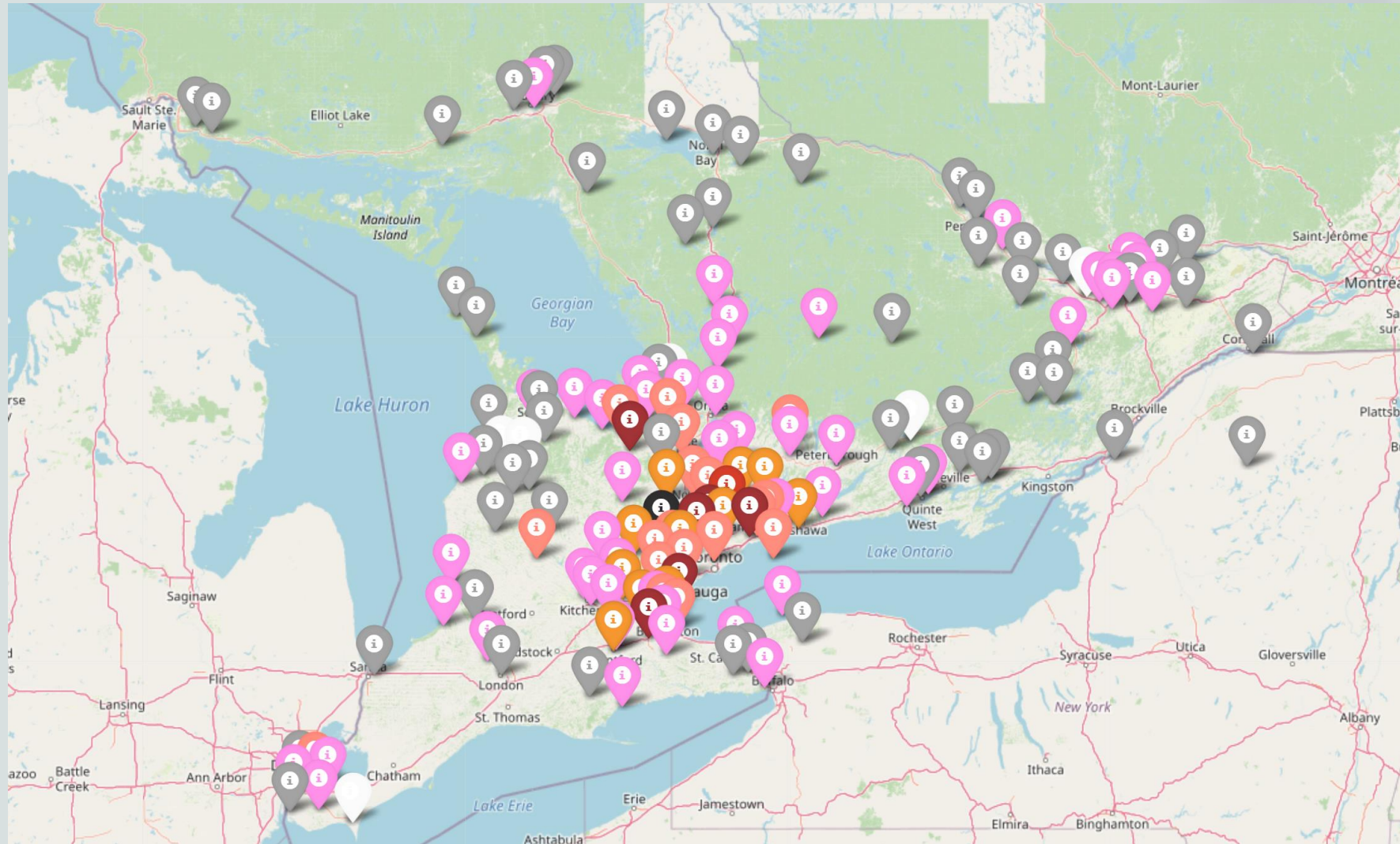
	ID	Address	AreaName	Price	lat	lng	City	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
1019	5915	4609 Kingston Rd Toronto, ON	West Hill	588000	43.774265	-79.181625	Toronto	5	Breakfast Spot	Automotive Shop	Discount Store	Liquor Store	Sandwich Place	Food & Drink Shop	Asian Restaurant	Athletics & Sports	Greek Restaurant	Chinese Restaurant
102	422	712 BROCK AVE Toronto, ON	Wallace Emerson	939000	43.661915	-79.439941	Toronto	5	Café	Bar	Bakery	Mexican Restaurant	Caribbean Restaurant	Cocktail Bar	Coffee Shop	Sandwich Place	Diner	Pizza Place
1987	34991	77 Dentonia Park Ave Toronto, ON	Old East York	415000	43.692848	-79.292099	Toronto	5	Ice Cream Shop	Convenience Store	Gym	Paper / Office Supplies Store	Park	Metro Station	Gas Station	Bank	Chinese Restaurant	Beer Store
73	178	592 The Queensway Toronto, ON	The Queensway	699900	43.628426	-79.493980	Toronto	1	Italian Restaurant	Coffee Shop	Flower Shop	Park	Ice Cream Shop	Bank	Eastern European Restaurant	Fish Market	Fast Food Restaurant	Field
1352	6257	#310 - 777 STEELES AVE W Toronto, ON	Newtonbrook	395000	43.792667	-79.443939	Toronto	5	Coffee Shop	Park	Bank	Chinese Restaurant	Korean Restaurant	Middle Eastern Restaurant	Discount Store	Grocery Store	Café	Food Court



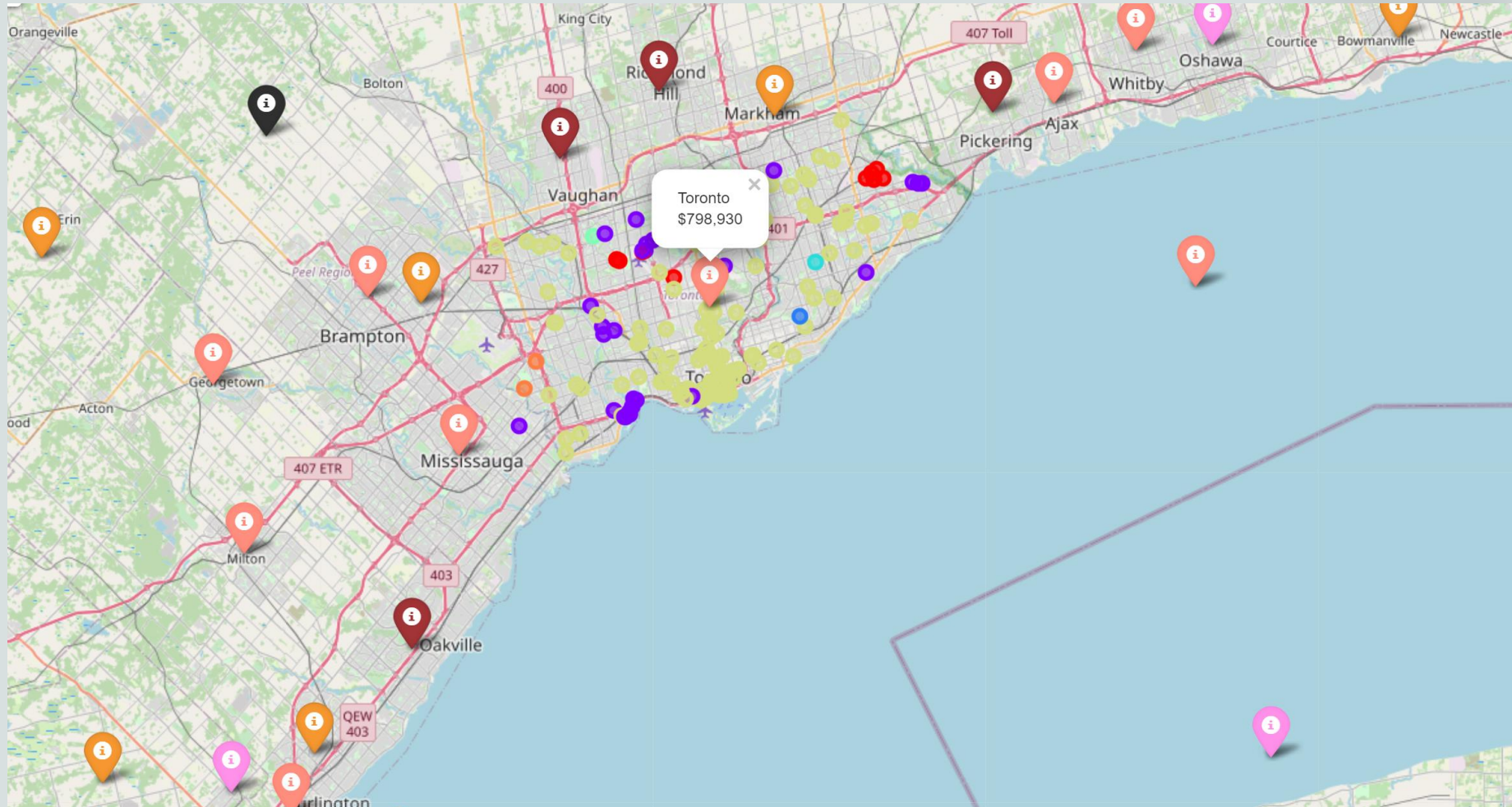
A map of the Greater Toronto Area (GTA) showing various locations and transportation routes. The map includes labels for Vaughan, Mississauga, Toronto, Downsview Airport, and Billy Bishop Toronto City Airport. Numerous colored dots (yellow, purple, red, blue, orange) are scattered across the map, representing data points for segmentation and clustering. The dots are concentrated in several areas, particularly around the airports and in the central urban areas. The map also shows major roads and highways, with route numbers like 427, 104, and 101 visible. The background is a light blue/grey map with green areas representing parks and water bodies.

Segmentation and Clustering

Housing Prices visualized on maps



Combining housing prices and venue locations



Discussion

- With the combination of house price and resources, it will be really hard for the newcomers to consider both at the same time. This analysis provides them sufficient information to make some decisions.
- The Foursquare API is used to determine the top venues around the area, then using the K-Means clustering algorithm to groups then into 7 different unique set. The Geo location from the Kaggle dataset was used to assist the performance of this step.

Conclusion

In conclusion, this analysis (including clustering and visualization) is valuable for newcomers who is decided to come to Ontario. This provides them details of housing price comparison and resources around the community area. With visualization of the maps, they could get the exact location of the available houses which is beneficial.