FINDING THE BEST LOCATION FOR AN APARTMENT BUILDING

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BUSINESS PROBLEM

- Apartments20, a Real Estate Development company, has decided on Toronto for its next apartment building, but needs to decide which neighborhood.

- The company is geared towards millennials and is looking for a location that will be attractive to them.

- The company has determined that millennials like to be within a close vicinity of a variety of restaurants, gyms, and nightlife options.

SOLUTION

- K means clustering will be used to cluster the neighborhoods of Toronto together based on similar features

- Then, the clusters will be examined to determine which cluster has attributes that most align with the preferences of millennials

DATA

- I will scrape the geographical coordinates of Toronto Neighborhoods from Wikipedia.

- I will then use FourSquare's API to gather the venue information for each neighborhood

K MEANS CLUSTERING RESULTS

- After running the K-means clustering analysis, the vast majority of the neighborhoods of Toronto were clustered into three groups

  - Cluster 0, Cluster 3, Cluster 5

- The goal is to find a cluster which best aligns with the preferences of millennials.

  - Variety of Restaurants

  - Close Vicinity to gyms

  - Nightlife

CLUSTER 0

Key
= Food
= Nightlife
= Gym / Health studio

- Cluster 0 had a lot of standard American food. It was lacking nightlife and access to health studios.

	Cluster Labels	Postal Code	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
2	0	M1E	Pizza Place	Fast Food Restaurant	Bank	Coffee Shop	Burger Joint	Greek Restaurant	Liquor Store	Sandwich Place	Supermarket	Juice Bar
3	0	M1G	Park	Coffee Shop	Mobile Phone Shop	Indian Restaurant	Fast Food Restaurant	Pharmacy	Chinese Restaurant	Ethiopian Restaurant	Dumpling Restaurant	Eastern European Restaurant
5	0	M1J	Ice Cream Shop	Convenience Store	Coffee Shop	Sandwich Place	Fast Food Restaurant	Pizza Place	Bowling Alley	Restaurant	Grocery Store	Train Station
7	0	M1L	Intersection	Coffee Shop	Bus Line	Convenience Store	Bakery	Park	Mexican Restaurant	Fast Food Restaurant	Sandwich Place	Beer Store
8	0	M1M	Pizza Place	Ice Cream Shop	Beach	Sports Bar	Cajun / Creole Restaurant	Burger Joint	Park	Hardware Store	Electronics Store	Elementary School

CLUSTER 5

Key
- ▭ = Food (yellow)
- ▭ = Nightlife (cyan)
- ▭ = Gym / Health studio (red)

▸ Cluster 5 consisted of many food options, especially Asian-themed, limited nightlife, and no gyms or health studios.

	Cluster Labels	Postal Code	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	5	M1B	Fast Food Restaurant	Trail	Coffee Shop	Bank	Restaurant	Chinese Restaurant	Bakery	Paper / Office Supplies Store	Caribbean Restaurant	Greek Restaurant
4	5	M1H	Coffee Shop	Bakery	Gas Station	Bank	Indian Restaurant	Athletics & Sports	Chinese Restaurant	Thai Restaurant	Fried Chicken Joint	Grocery Store
6	5	M1K	Chinese Restaurant	Coffee Shop	Fast Food Restaurant	Discount Store	Grocery Store	Bank	Asian Restaurant	Light Rail Station	Sandwich Place	Pharmacy
10	5	M1P	Restaurant	Coffee Shop	Pharmacy	Electronics Store	Chinese Restaurant	Furniture / Home Store	Fast Food Restaurant	Bakery	Asian Restaurant	Indian Restaurant
11	5	M1R	Pizza Place	Middle Eastern Restaurant	Intersection	Grocery Store	Burger Joint	Furniture / Home Store	Restaurant	Bar	Coffee Shop	Korean Restaurant

CLUSTER 3

▶ Cluster 3 contained a wide variety of food venues, a number of nightlife options, and a fair amount of gyms.

Key
= Food
= Nightlife
= Gym / Health studio

	Cluster Labels	Postal Code	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
9	3	M1N	Park	Restaurant	Café	Skating Rink	Thai Restaurant	General Entertainment	Diner	Dessert Shop	Gym	Photography Studio
29	3	M3K	Turkish Restaurant	Coffee Shop	Other Repair Shop	Sandwich Place	Chinese Restaurant	Liquor Store	Electronics Store	Italian Restaurant	Park	Gym
36	3	M4E	Pub	Coffee Shop	Beach	Pizza Place	Japanese Restaurant	Breakfast Spot	Caribbean Restaurant	Bar	Tea Room	Bakery
39	3	M4J	Coffee Shop	Café	Greek Restaurant	Pizza Place	Convenience Store	Park	Bar	Beer Bar	Fast Food Restaurant	Ethiopian Restaurant
40	3	M4K	Greek Restaurant	Coffee Shop	Café	Pub	Italian Restaurant	Pizza Place	Fast Food Restaurant	Furniture / Home Store	Ramen Restaurant	Bookstore
41	3	M4L	Indian Restaurant	Coffee Shop	Beach	Grocery Store	Café	Brewery	Park	Burrito Place	Bakery	Harbor / Marina
42	3	M4M	Coffee Shop	Bar	Café	Diner	Vietnamese Restaurant	Bakery	Brewery	American Restaurant	Italian Restaurant	French Restaurant
43	3	M4N	Park	Bookstore	Trail	Gym / Fitness Center	Coffee Shop	College Gym	Café	College Quad	Fast Food Restaurant	Farmers Market
44	3	M4P	Coffee Shop	Italian Restaurant	Dessert Shop	Café	Gym	Pizza Place	Pharmacy	Sushi Restaurant	Supermarket	Restaurant
45	3	M4R	Coffee Shop	Italian Restaurant	Skating Rink	Diner	Mexican Restaurant	Café	Park	Sushi Restaurant	Bakery	Jazz Club

CONCLUSION

▶ Based on the results of the clustering algorithm, Apartments20 should consider choosing a neighborhood in cluster 3 to build their new apartment building because the venues of this cluster most closely align with the preferences of their customer base.

▶ Before making a final decision, Apartments20 should consider additional factors, including price of real estate and amount of competition.