IBM Coursera Capstone Project – The Battle of Neighbourhoods

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Introduction – Business Case

A newly immigrated family to Toronto would like to open a French/Vietnamese bakery cafe where they would offer French pastries and Banh Mi sandwiches. Back in their home country, they operated a bakery successfully but being new to Canada, they need advice on the best location for their new venture.

Toronto is a dynamic city with an amazing food culture allowing many restaurants and coffee shops to thrive. There are plenty of Asian food businesses offering everything from Japanese sushi to noodle soups such as Vietnamese pho. There are well-established neighborhoods such as Yorkville but also up-and-coming ones such as Distillery District.

The family's bakery will offer coffee, pastries and banh mi sandwiches for take-outs with some seatings available. They know their clientele - young urbanites who want delicious banh mi sandwiches, coffee and pastries convenient and fast! The family also feel that they can deliver on volume sales to maximize profit so being in a young neighborhood with population density will be a plus.

Picking the right location with a middle-class population density will ensure the family's chance of success. So, I will use Data Science to analyze Toronto's neighborhoods to help the family make the decision.

Foursquare Location Data will be used in this project to gather information on bakeries. I will also gather other pertinent data about the neighbourhoods of the City of Toronto from Wikipedia.

Data

Wikipedia - Information on Toronto neighbourhoods

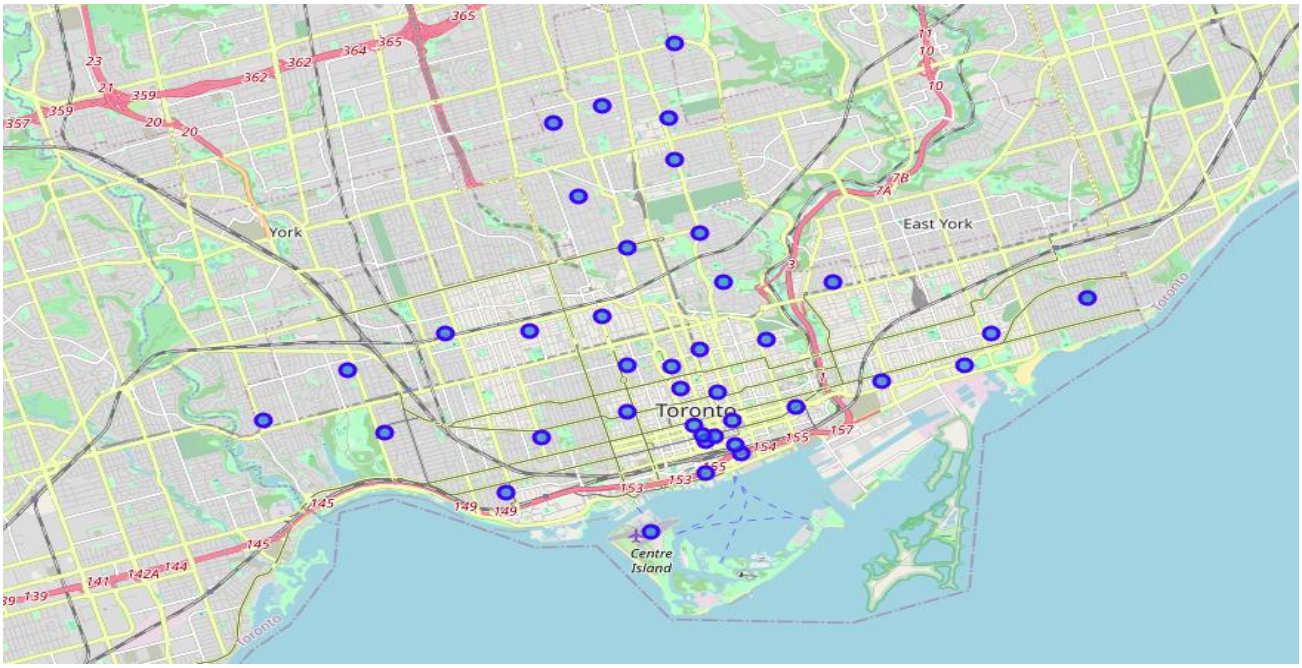
Produce map of Toronto with different neighbourhoods

```
address = 'Toronto, ON'
geolocator = Nominatim(user_agent="foursquare_agent")
location = geolocator.geocode(address)
latitude = location.latitude
longitude = location.longitude

print('Toronto coordinates are {}, {}.'.format(latitude, longitude))

map_toronto = folium.Map(location=[latitude, longitude], zoom_start=11)
for lat, lng, label in zip(to_data['Latitude'], to_data['Longitude'], to_data['Neighborhood']):
    label = folium.Popup(label, parse_html=True)
    folium.CircleMarker(
        [lat, lng],
        radius=5,
        popup=label,
        color='blue',
        fill=True,
        fill_color='#3186cc',
        fill_opacity=0.7,
        parse_html=False).add_to(map_toronto)

map_toronto
```



Foursquare API - Collect information on bakeries in the neighborhoods of Toronto.

```
search_query = 'Bakery'
radius = 500
print(search_query + ' around Toronto')
```

```
Bakery around Toronto
```

```
url = 'https://api.foursquare.com/v2/venues/search?client_id={}&client_secret={}&ll={},{}&v={}&query={}&radius={}&limit={}'.format(CLIENT_ID, CLIENT_SECRE
url
```

```
'https://api.foursquare.com/v2/venues/search?client_id=O3S1RC0NPPA31104YY5LYRMPY45AOYN5WFDL5MENXK4D014K&client_secret=CGA4KJUTTTIYLQIS5SIKQZ0I12GTXJGR0
NYV4AWOOKYLMHLK&ll=43.6534817,-79.3839347&v=20200420&query=Bakery&radius=500&limit=30'
```

```
results = requests.get(url).json()
results
```

```
{'meta': {'code': 200, 'requestId': '5e9e7a9d0de0d90028611f80'},
```

	name	categories	address	cc	city	country	crossStreet
0	Bakery 18	Bakery	595 Bay St.	CA	Toronto	Canada	at Dundas St. W
1	The Bakery Communications	Office	100 King Street West suite 5700	CA	Toronto	Canada	Bay Street
2	Paris Croissant Bakery Cafe	Bakery	595 Bay St	CA	Toronto	Canada	Dundas St West
3	Bakery & Kaffee Haus	Bakery	238 Queen Street West	CA	Toronto	Canada	NaN
4	Kin-Kin Bakery & Bubble Tea	Bakery	595 Bay St.	CA	Toronto	Canada	NaN
5	Artisan Bakery and Foods	Café	1 King Street West	CA	Toronto	Canada	Yonge
6	Prairie Girl Bakery	Cupcake Shop	100 King St. W	CA	Toronto	Canada	in First Canadian Place (Concourse Level)
7	O&B Artisan	Dessert Shop	176 Yonge St.	CA	Toronto	Canada	NaN
8	Fresh Start Coffee Co.	Café	655 Bay St	CA	Toronto	Canada	at Elm St
9	Furama	Bakery	100 King St. W	CA	Toronto	Canada	at First Canadian Place

Methodology

To find the most suitable neighbourhood for the family's bakery, we explore the different areas of Toronto and its demographic data such as population and density.

Data Analysis - Data is filtered and neighbourhoods are sorted by descending population. We can see that Old East York has the highest population and one of the highest density.

```
demo_data = pd.DataFrame(l, columns=["Neighbourhood", "FM", "Census", "Population", "Land Area", "Density", "Po

demo_data = demo_data[demo_data.Neighbourhood != 'Toronto CMA Average']
demo_data = demo_data.drop('FM', 1)
demo_data = demo_data.drop('Census', 1)
demo_data = demo_data.drop('Renters', 1)
demo_data = demo_data.drop('2nd Language', 1)
demo_data = demo_data.drop('2nd Language %', 1)

demo_data['Population'] = demo_data['Population'].str.replace(',','')
demo_data['Population'] = demo_data['Population'].apply(pd.to_numeric)

demo_data
```

	Neighbourhood	Population	Land Area	Density	Population %	Income	Commuting	Latitude	Longitude	Population Score
113	Old East York	52220	7.94	6577	-4.6	33,172	22.0			2.161626
170	Woburn	48507	13.34	3636	-1.5	26,190	13.3			2.007928
50	Elia (Jane and Finch)	48003	7.66	6267	-10.0	22,691	13.0			1.987065
86	L'Amoreaux	45862	7.15	6414	0.9	26,375	13.4			1.898439
1	Agincourt	44577	12.45	3580	4.6	25,750	11.1			1.845247
98	Malvern	44324	8.86	5003	1.5	25,677	13.6			1.834774
168	Willowdale	43144	7.68	5618	62.3	39,895	15.6			1.785929
44	Downsview	36613	16.13	2270	-5.0	26,751	14.4			1.515581
108	Newtonbrook	36046	8.77	4110	0.3	33,428	16.6			1.492110
139	Smithfield	34996	6.45	5426	-7.2	24,387	12.8			1.448645
52	Fairbank	34121	4.42	7720	-3.6	28,403	21.6			1.412425

Results

Based on the family's requirement for a neighbourhood with high population also the bakeries around Toronto, two options stand out:

Old East York neighbourhood which has biggest population of 52,220. It also has few bakeries which offer French pastries and banh mi!

Discussion

As the family insists on selling their baked goods on volume, the recommendation would be to set up their bakery cafe in Old East York neighbourhood.

Conclusion

This analysis is not conclusive as of today (April 21, 2020) due to the Covid-19 pandemic situation. Many small businesses will not survive, including bakeries. This means that the family may have more options for their business, including buying an existing one.