



Finding Suitable Neighbourhoods For Opening A Grocery Store In Toronto

Capstone Project - The Battle of the Neighborhoods (Week 2)



Introduction: Business Problem

- To identify three most suitable neighborhoods in Toronto to open a new grocery store
- Selling high quality foods, personal care products and home utility
- Target people who are willing to spend on more premium products
- According to the statistics in 2019, the median household income in Toronto is 71,631 dollars.
- **Find out neighbourhoods with household income of 70,000 dollars or above and their percentage is greater than that of all households in Toronto.**



Introduction: Business Problem

- Less competition is better
- **Further narrow down to five of the neighbourhoods the least number of grocery stores per capita**
- Safety and security are also concerns for running a stable business
- **Final three out of the five neighbourhoods with the least crime rates per capita related to Break and Enter, Robbery and Theft**



Data

Based on the criteria mentioned above to tackle our business problem, the following data sources will be used to help us make the decision:

1. Household income of neighbourhoods in Toronto
Source: Neighborhood Profiles from City of Toronto's Open Data Portal
<https://open.toronto.ca/dataset/neighbourhood-profiles/>
2. Number of grocery stores per capita in neighbourhoods in Toronto
Source: Foursquare API
3. Crime rates per capita of neighbourhoods in Toronto
Source: Neighborhood Crime Rates 2014-2019 from Toronto Police Service
<https://data.torontopolice.on.ca/datasets/neighbourhood-crime-rates-boundary-file->



Data

- Household income of of neighbourhoods in Toronto
- Only number of household with income over \$70,000 in each neighbourhood and the whole city was extracted.
- The percentage of households with income over \$70,000 in each neighbourhood and in the whole city of Toronto was found out.

	total	70000-79999	80000-89999	90000-99999	over 100000	Total over 70k	Percentage_over_70k
City of Toronto	1112930.0	75120.0	63360.0	51570.0	263465.0	453515.0	0.407496
Agincourt North	9115.0	695.0	640.0	500.0	1920.0	3755.0	0.411958
Agincourt South-Malvern West	8140.0	630.0	500.0	405.0	1500.0	3035.0	0.372850
Alderwood	4620.0	365.0	310.0	265.0	1520.0	2460.0	0.532468
Annex	15940.0	820.0	750.0	620.0	4755.0	6945.0	0.435696



Data

- Crime rates per capita of neighbourhoods in Toronto
- Only crime rates of Break and Enter, Robbery and Theft Over in each neighbourhood was used.
- They are added up as total crime rate to find out the total crime rate per capita

	Neighbourhood	Population	BreakandEnter_AVG	Robbery_AVG	TheftOver_AVG	Total_crime_rate	Total_crime_rate_per_capita
0	Yonge-St.Clair	12528	23.3	5.7	4.3	33.3	0.002658
1	York University Heights	27593	113.2	75.8	36.3	225.3	0.008165
2	Lansing-Westgate	16164	38.8	14.7	7.0	60.5	0.003743
3	Yorkdale-Glen Park	14804	63.3	31.5	22.5	117.3	0.007924
4	Stonegate-Queensway	25051	52.8	20.7	6.0	79.5	0.003174



Data

- Number of grocery stores per capita in neighbourhoods in Toronto
- Utilized the location data from Foursquare API to find out the number of grocery stores in each neighbourhood
- By dividing the population, the number of grocery stores per capita was found out.

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Methodology

With the data collected, we will find out the top three neighbourhoods based on the criteria we have mentioned in the introduction section:

1. Find out all the neighbourhoods where the percentage of households with incomes over 70,000 dollars greater than that of the whole city of Toronto (0.407496)
2. Among these neighbourhoods, we will find out five of them with the lowest number of grocery stores per capita
3. Select three out of these five neighbourhoods with the least crime rate per capita as our choices

Results and Discussion

- **Agincourt North, High Park-Swansea and Birchcliffe-Cliffside** are the top three choices of neighbourhoods in Toronto for opening our grocery store
- They have a higher percentage of households with income over 70,000 dollars compared to the average percentage of Toronto, low number of grocery stores and low crime rate per capita

	Neighbourhood	Percentage_over_70k	Population	Total_crime_rate	Total_crime_rate_per_capita	Latitude	longitude	Number_of_grocery_stores	grocery_stores_per_capita
0	Agincourt North	0.411958	29113	88.4	0.003036	43.808038	-79.266439	1	0.000034
26	High Park-Swansea	0.500000	23925	81.5	0.003406	43.653867	-79.466864	1	0.000042
6	Birchcliffe-Cliffside	0.461371	22291	99.5	0.004464	43.711170	-79.248177	1	0.000045
14	Clairlea-Birchmount	0.425866	26984	146.9	0.005444	43.708823	-79.295986	1	0.000037
74	West Humber-Clairville	0.440233	33312	281.8	0.008459	43.735781	-79.625865	1	0.000030



Results and Discussion

Some limitations:

1. No information about the customer's background and their choices on products in these neighbourhoods.
2. No data for the locations in which more people go for shopping



Conclusion

- Top 3 neighbourhoods to open the grocery store matching our criteria:
Agincourt North, High Park-Swansea and Birchcliffe-Cliffside
- Further researches on customer's choice on products and the exact locations suitable for opening the store within these neighbourhoods is recommended