



Does Brampton Have Enough Parks?

May 19th, 2020

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Introduction



- Brampton is experiencing a large population growth, which is leading to an urban sprawl to house the incoming citizens
- This presents the need for community parks and open spaces as tools for better mental health and physical activity opportunities
- Evidence is abundant that obesity and living in the suburbs are linked (Oregon State University, 2005)
- Rates of being overweight and obese in the Peel Region are higher than in the rest of the Greater Toronto Area (Glazier, et al., 2014)
- In the Peel Region, the majority of neighborhoods with high rates of diabetes are located in Brampton (Glazier, et al., 2014)
- “Mental health is significantly related to residential distance from parks”. (Sturm & Cohen, 2014)

Introduction - Interest for the Project



This project can be used to inform City of Brampton planners, more specifically the Planning & Development section of city hall. The goal of the project is to inform these planners about the need for more parks for the people of the city and where specifically the need is the greatest.

Data acquisition and cleaning - Parks

- The Parks dataset was retrieved from Brampton's Open Data on Geohub. It contained a list of 839 of Brampton's parks.
- Manually found location of each park and removed parks that I felt did not fit the mandate of the project.
- Was able to form a list of 716 parks with their coordinates

	PARK_NAME	AREA_HECTARES	Latitude	Longitude
0	SUNCREST PARKETTE	0.370	43.693096	-79.790422
1	JORGEN JENSEN PARKETTE	0.091	43.727332	-79.791506
2	RC CHARLTON PARK	0.791	43.647689	-79.760273
3	PICKARD PARK	1.344	43.681801	-79.797636
4	GARBUTT PARKETTE	0.178	43.669562	-79.781612

Data acquisition and cleaning - Address Points

- The Address Points dataset was also retrieved from Brampton's Open Data on Geohub. It contained a list of 220,000 or so of Brampton's address points.
- I was able to remove the address points that were not labeled as residential. Unfortunately, many of the addresses, about 118,000 lacked a label and so were not removed.
- Converted coordinates of each address point to find latitude and longitude

	FULL_ADDRESS	POSTAL_CODE	PERMIT_TYPE	WARD	Latitude	Longitude
0	4 ANSBURY DR	L7A3S8	Repeat Residential	6.0	43.711492	-79.823719
1	6 ANSBURY DR	L7A3S8	NaN	6.0	43.711533	-79.823863
2	8 ANSBURY DR	L7A3S8	Repeat Residential	6.0	43.711575	-79.824015
3	142 BONISTEL CRES	L7A3H1	Repeat Residential	6.0	43.696703	-79.812413
4	21 LEAGATE ST	L7A1Z7	Repeat Residential	6.0	43.681749	-79.822541

Data acquisition and cleaning - Distance to nearest park

- For this project, I decided a key metric would be the distance to the closest park for each house. So I proceeded to calculate in kilometers the closest distance to one of the 700 or so parks for the 200,000 or so address points.

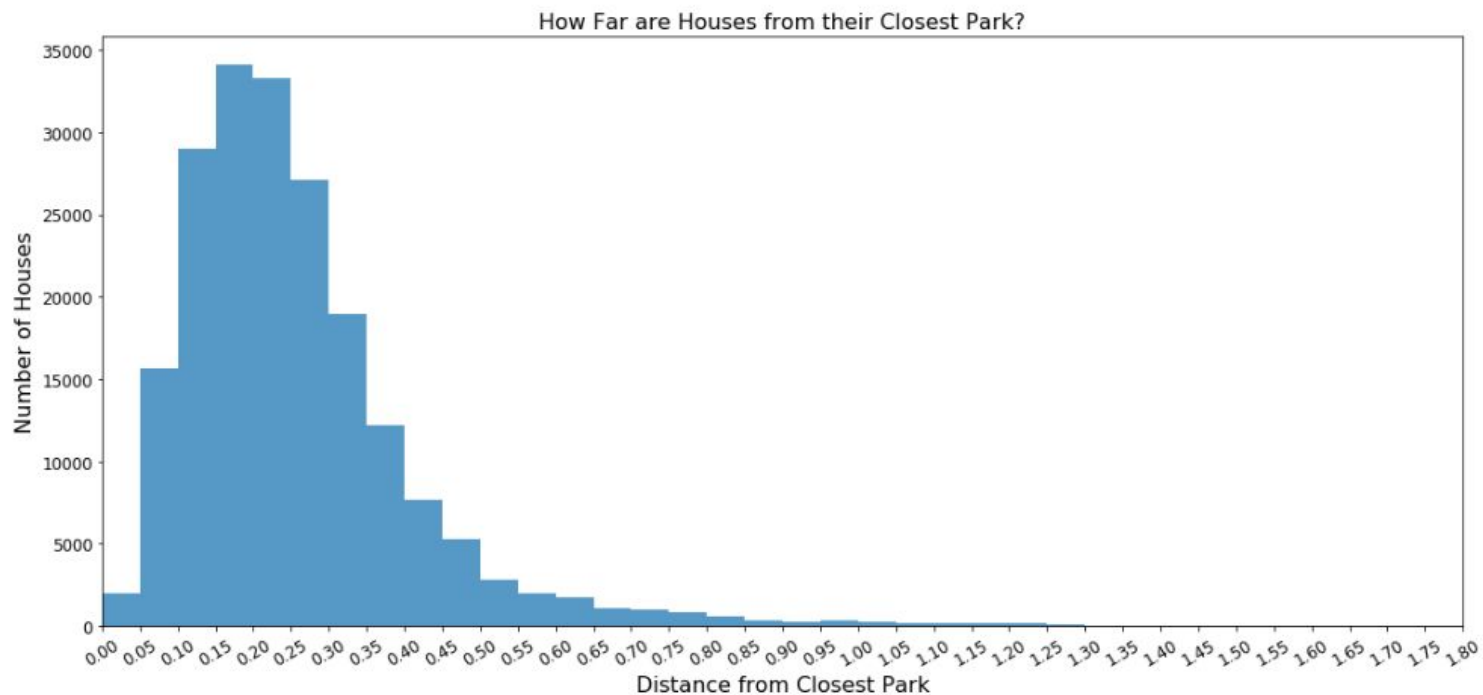
	FULL_ADDRESS	POSTAL_CODE	PERMIT_TYPE	WARD	Latitude	Longitude	nearest_park_distance
0	4 ANSBURY DR	L7A3S8	Repeat Residential	6.0	43.711492	-79.823719	0.177782
1	6 ANSBURY DR	L7A3S8	NaN	6.0	43.711533	-79.823863	0.169235
2	8 ANSBURY DR	L7A3S8	Repeat Residential	6.0	43.711575	-79.824015	0.160937
3	142 BONISTEL CRES	L7A3H1	Repeat Residential	6.0	43.696703	-79.812413	0.262320
4	21 LEAGATE ST	L7A1Z7	Repeat Residential	6.0	43.681749	-79.822541	0.232539

Methodology



On average, I found houses are about 261 meters away from a park. And 75% of houses are less than 318 meters away from a park.

Methodology - Histogram



Methodology - Continued

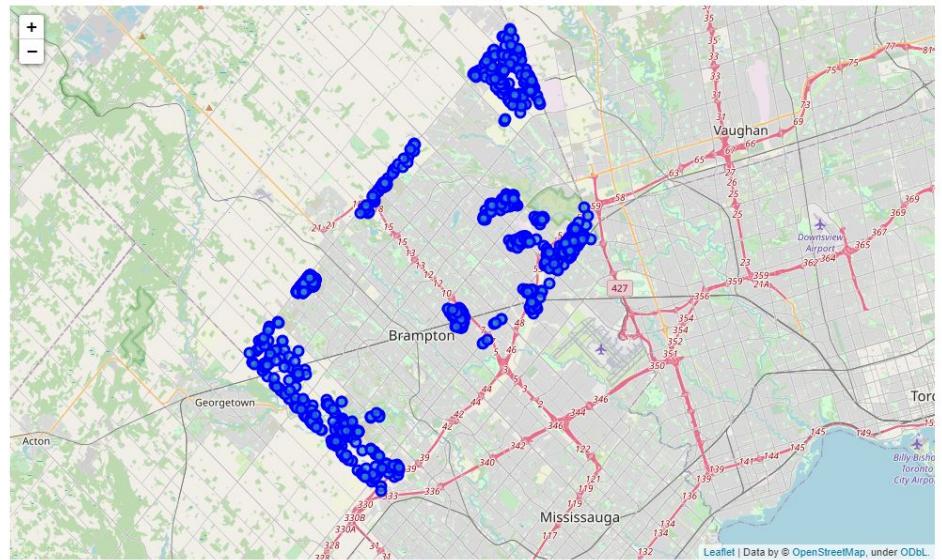


- There seem to be many houses that are a sufficiently small distance away from a park (again though, the smaller the better). However, one thing to note in the histogram is the steady decline in frequency after the peak. There are many houses that are disproportionately far from a park and this needs to be further looked into.
- I decided to use K Means clustering to group the houses by how far away they are from the nearest park. I used 4 clusters to group the houses. I then took a closer look at the cluster with houses furthest away from the nearest park. I would like to point out that it is also fruitful to look at the second cluster with houses furthest away from the nearest park. I carefully looked at one to show how the data can be used to inform decisions.

Results and Discussion

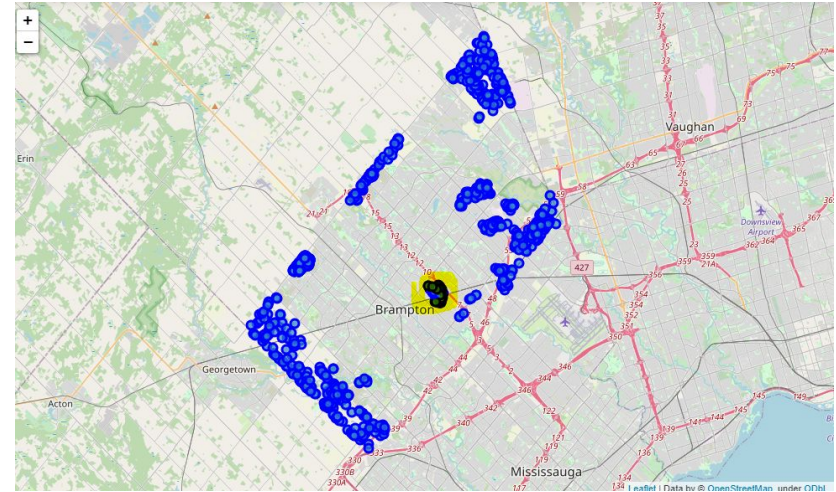
Plotting the houses of the cluster with houses furthest away from a park on a map of Brampton:

- This cluster had houses an average of 1.18 kilometers away from the nearest park.
- The first thing to note is that most of the houses far away from parks are on the outskirts of Brampton. This can be explained by the fact that since the data is looking at Brampton's parks, of course, the outskirts of Brampton will be the farthest away. This just presents the need to build more parks in these areas as they develop. These areas are already very green so setting up walkable pathways through the greenery could be fruitful or more land could be designated as parks.



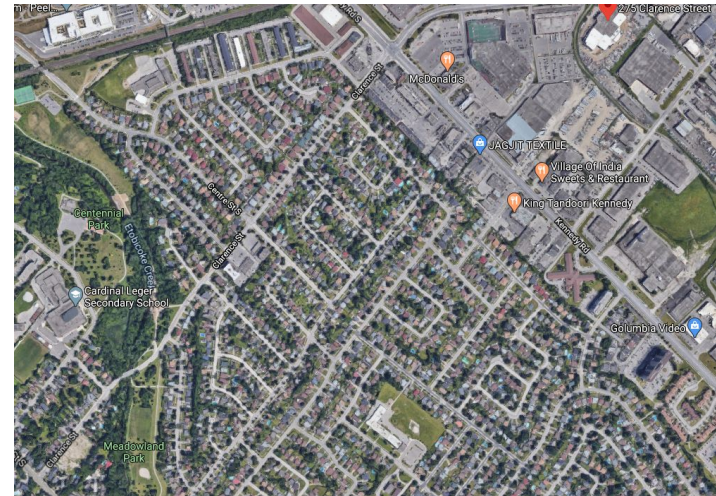
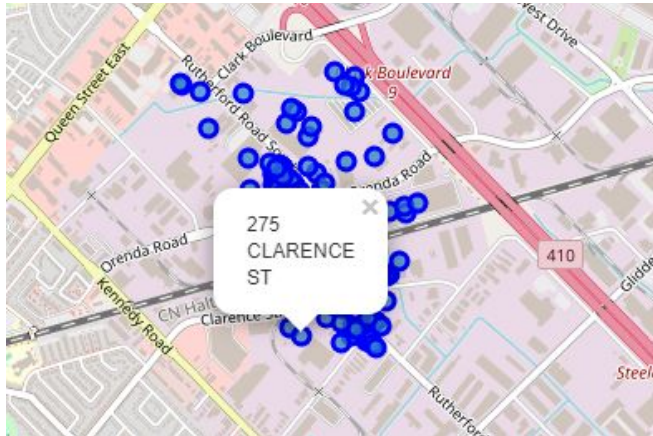
Results and Discussion

What else can be gained from the map are the handful of dense groupings within the city. Taking a closer look at the highlighted groups of houses...



Results and Discussion

The area is a problem area because of a lack of parks. It is important to recognize these areas, and provide solutions for their residents. It seems to be difficult to add any parks because of the densely built houses and buildings. City planners should look to add greenery to what looks like a grey mess from the satellite view. Maybe repurposing some of the space for recreation, planting more trees in any available space, or having initiatives for better lawns for the people who live there could be fruitful endeavours.



Conclusion



I hope that through this sort of analysis, vulnerable citizens of Brampton can be better provided with essential outdoor recreation space. Parks are great faucets for mental health and physical well being and such things should be built one hundred times over. The analysis in this project is helpful in identifying problem areas and at-risk citizens who are in need of more greenery. Again, I hope that the growing Flower City can effectively provide its citizens with essential parks.

Citations



City of Brampton. (2020). *Address Points*. Retrieved May 15, 2020 from

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