Report

Business Problem

John is interested in opening a food truck in the Toronto area. The food will be a modern twist on American classics. His main question is which areas he should bring the food truck to. He has discerned through qualitative research that there are some ideal venues that support food truck success. John's question is therefore which areas have the most of these venues.

These venues are
1. Universities
2. colleges
3. parks
4. public libraries
5. event spaces.

The goal is to create a map that shows where clusters of these can occur so that John can go to the areas and have a successful food truck.

Data

The Foursquare API will be used to search for the venues listed above and find them in the Toronto downtown core. The report will focus on the downtown core because this has the highest population density.

The goal for the data is to obtain the
- name
- category
- latitude
- longitude
- state

The data will come with more information than this but will be processed into this format.

Methodology

The first step will be to gather the data from Foursqaure in these general categories.

1. universities/colleges
2. park
3. public libraries
4. event spaces.

The second step will involve cleaning the data frame so that it only contains the appropriate information
- Address, type of venue, name, latitude, longitude

The third step will be creating a data frame with all of this information in one.

The final steps are to run KNN regressions and visualize the outcome of the locations to see which areas would be the ideal for him to take the food truck to maximize customers.

Results

The results show that there are certain clusters that would be lucrative places for the food truck to frequent.

Here is the basic map showing the three major clusters of possible spots that would be good for the food truck business. There are three clear locations which is why I decided to run a KNN regression algorithm with three clusters.

The figure below outlines the breakdown of the three clusters into the locations that are best for the food truck to arrive at.

	Cluster Labels	name	categories	lat	lng	state
0	0	Knox College	College Academic Building	43.661561	-79.396528	ON
1	0	Emmanuel College	College Academic Building	43.666678	-79.393059	ON
19	0	University College	University	43.662695	-79.396061	ON
3	0	University of Toronto	University	43.662493	-79.395220	ON
18	0	University at St. Michael's College	University	43.665711	-79.389909	ON
17	0	University Eye Clinic	Doctor's Office	43.659280	-79.390281	ON
15	0	University of Toronto Engineering Society	Student Center	43.660097	-79.394644	ON
27	0	University of Toronto Arts Centre	Art Gallery	43.663605	-79.395159	ON
28	0	University College Art Centre	Art Gallery	43.663962	-79.395385	ON
29	0	University College Residence Office	University	43.663331	-79.397947	ON
26	1	University Centre Tenth Floor	Building	43.654099	-79.387895	ON
31	1	Toronto Public Library	Library	43.652631	-79.383295	ON
23	1	University Centre File Room	Building	43.654095	-79.387733	ON
32	1	LSUC Library	College Library	43.651884	-79.385499	ON
33	1	The Library Specialty Coffee	Coffee Shop	43.654413	-79.390902	ON
34	1	Dorothy H. Hoover Library - OCAD University	College Academic Building	43.653538	-79.389607	ON
35	1	E.P. Taylor Research Library & Archives (AGO)	Library	43.654317	-79.393175	ON
36	1	eat:Strategy Conference & Events	Event Space	43.654053	-79.391945	ON
37	1	The Fifth Events	Event Space	43.649250	-79.389534	ON
38	1	Grange Park	Park	43.652488	-79.392053	ON
30	1	University Club	Event Space	43.653145	-79.387711	ON
22	1	University & Wellington	Intersection	43.646385	-79.384878	ON
40	1	Butterfield Park	Park	43.652697	-79.391091	ON
39	1	Osgoode Hall Park	Park	43.651105	-79.386269	ON
4	1	University Avenue Plaza	Plaza	43.652695	-79.387218	ON
5	1	480 University Ave	Office	43.655099	-79.388648	ON
6	1	University Centre	Office	43.653907	-79.386764	ON
7	1	Ontario College of Art and Design University (...	University	43.652803	-79.391074	ON
8	1	438 University Ave	Office	43.654296	-79.388415	ON
9	1	505 University Ave.	Government Building	43.656177	-79.388549	ON
21	1	181 University Ave	Building	43.649282	-79.385788	ON
10	1	393 University Ave	Office	43.653752	-79.388150	ON
12	1	Queen & University	Intersection	43.650833	-79.386858	ON
14	1	Lakehead University Book Store	Bookstore	43.655428	-79.389002	ON
11	1	Dundas University Health Clinic	Medical Center	43.654196	-79.388166	ON
13	2	Ryerson University	University	43.657935	-79.380490	ON
16	2	Ryerson University Campus Store	College Bookstore	43.657500	-79.380041	ON
25	2	Simulation Lab @ Ryerson University	College Lab	43.659746	-79.382041	ON
24	2	Ryerson University Security Centre	Miscellaneous Shop	43.652961	-79.378340	ON
2	2	George Brown College - School of ESL	College Academic Building	43.651872	-79.365580	ON
20	2	Ryerson University Department of Architectural...	College Academic Building	43.659307	-79.378096	ON

Discussion

The Data will allow John to run a profitable small business but there is room for improvement.

John, will need to look at other data patterns that affect the traffic flow of his patrons. These could include seasonality, daytime foot traffic and many more.

Conclusion

Thank you for taking the time to grade this report. The goal of this was to use data science in order to answer a question about where a food truck should be located to maximize profitability. Ultimately, using a KNN regression algorithm allowed for this to happen and the business owner will benefit from this in the future.