RIGA AND TORONTO. COMPARATIVE ANALYSIS.

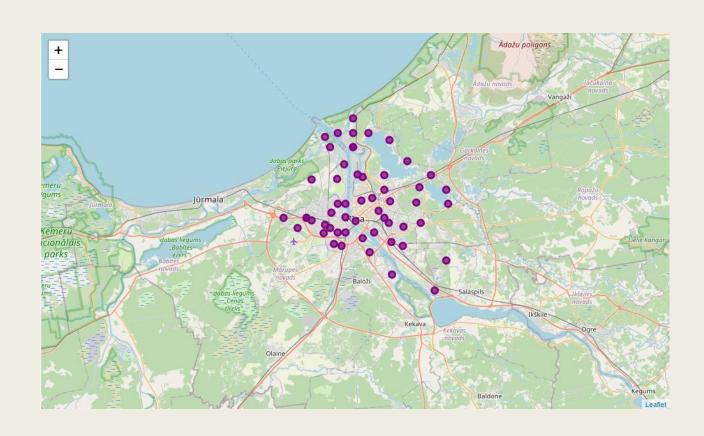
Introduction

- Riga is the capital of Latvia and through the years there has been emigration to many countries, including Canada
- The goal is to compare Toronto and Riga and see how are they different.
- This information might be useful for those who seek to relocate to Toronto or Riga or those who plan to visit either of these cities
- Cities boroughs were compared using data about venues and geographical coordinates

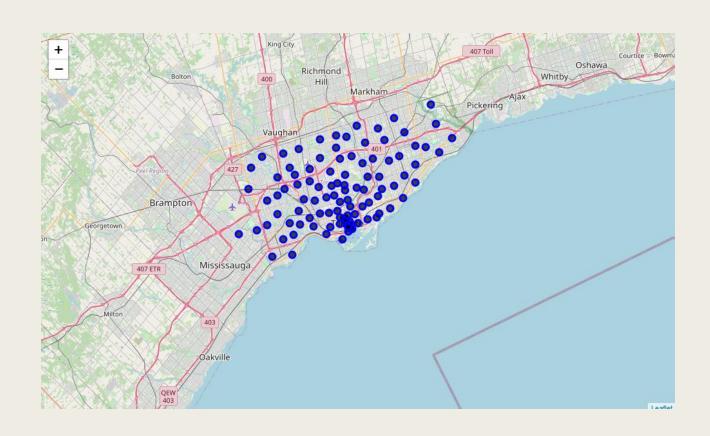
Data

- Data about boroughs was obtained from Wikipedia
- Data about Toronto borough coordinates was obtained from csv provided by Coursera
- Data about Riga borough coordinates was gathered and validated manually as one table with correct latitudes and longitues was not found. The results were transformed into json object which was processed later on
- Data about venues and venue types was gathered from Foursquare API service
- Folium maps were used to visualize the gathered data

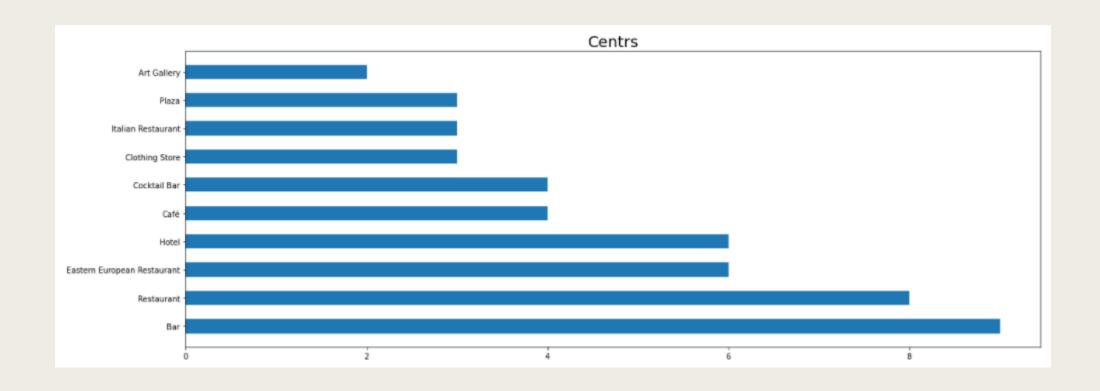
Map of Riga using folium



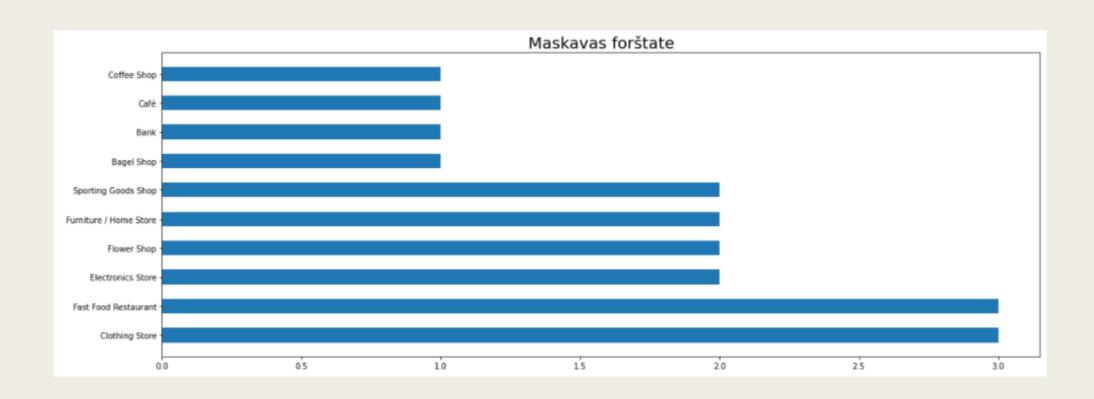
Map of Toronto using folium



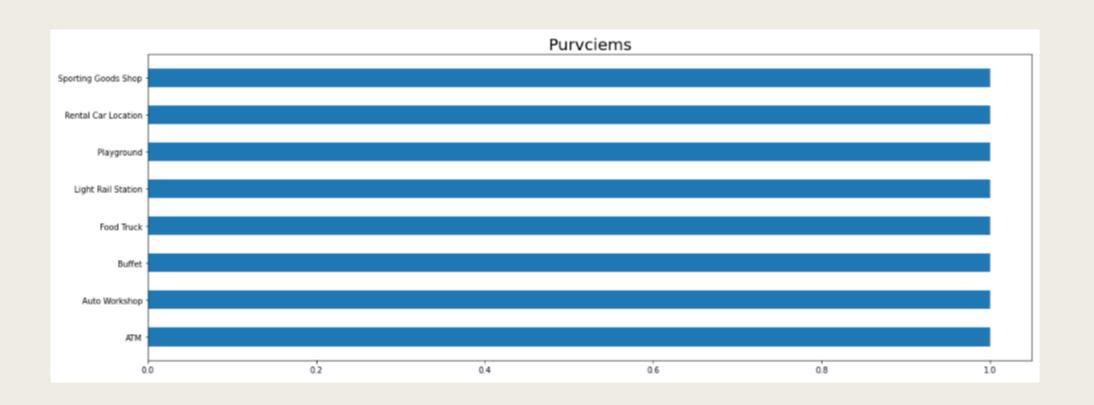
Venue data in Riga city center



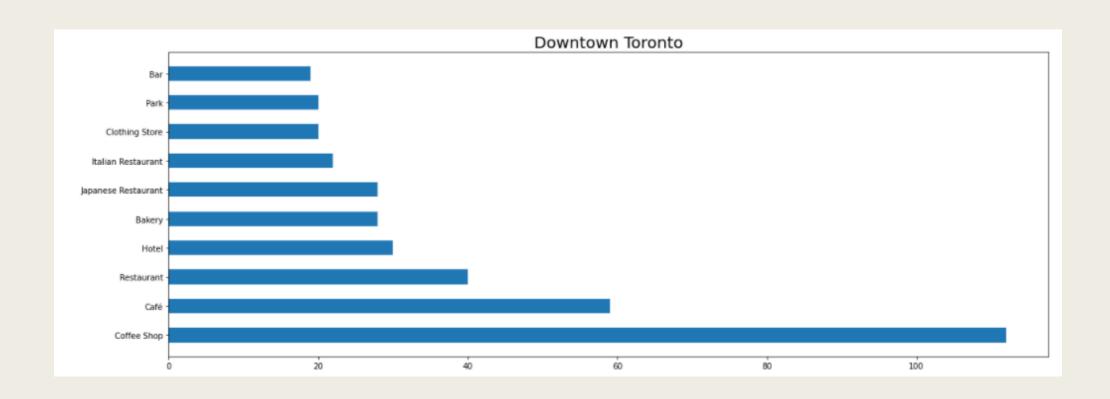
Venue data in borough close to Riga center



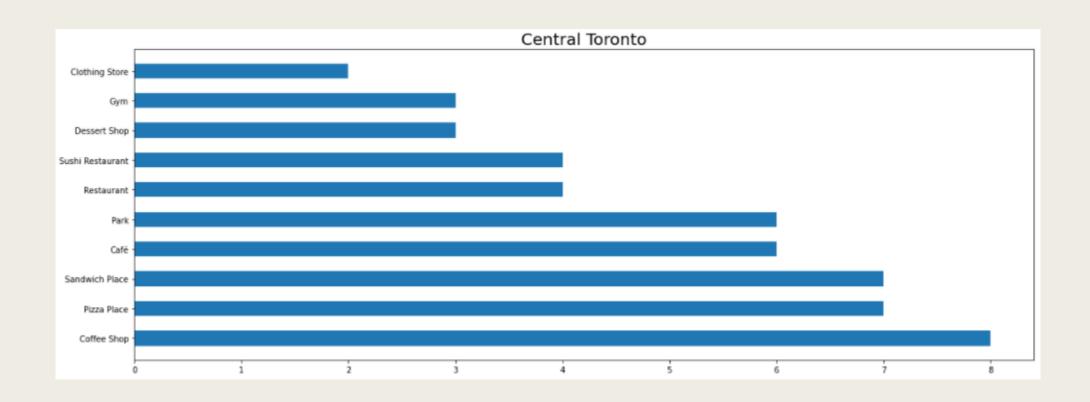
Venue data in borough which is farther from center and is the most populated one



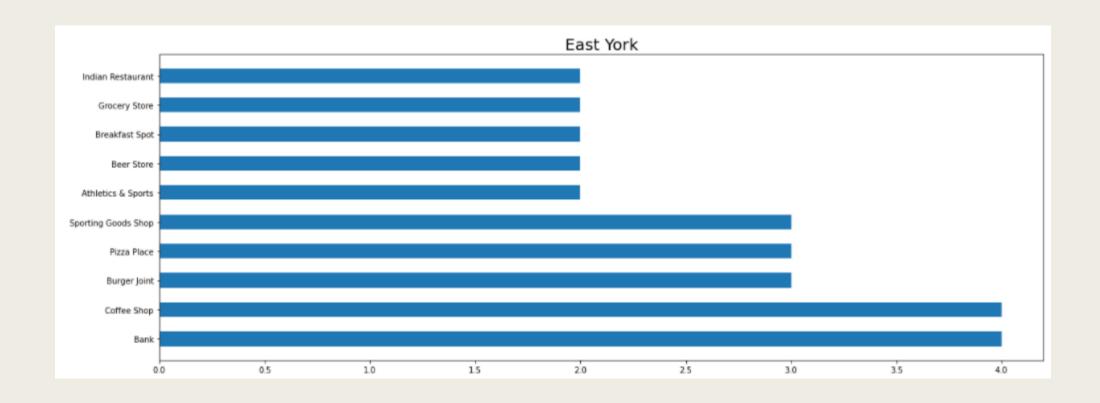
Venue data Downtown Toronto



Venue data Central Toronto



Venue data East York



Example of the most common venues in some Riga boroughs

	Cluster Labels	Borough	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 Mo: Commc Venu
29	1	Purvciems	АТМ	Sporting Goods Shop	Playground	Rental Car Location	Food Truck	Auto Workshop	Light Rail Station	Buffet	Diner	Farm
50	1	Ķengarags	Bus Stop	Train Station	Electronics Store	Shopping Mall	Lounge	Grocery Store	Pedestrian Plaza	Gym / Fitness Center	Clothing Store	Convenienc Store
16	1	Imanta	Casino	Tennis Court	Hockey Arena	Gym	Photography Studio	Café	Cosmetics Shop	Motel	Light Rail Station	Playground
31	1	Pļavnieki	Grocery Store	Electronics Store	Café	Farmers Market	Food & Drink Shop	Park	Bank	Gym	Fast Food Restaurant	Casino
9	1	Centrs	Bar	Restaurant	Eastern European Restaurant	Hotel	Café	Cocktail Bar	Plaza	Italian Restaurant	Clothing Store	Modern European Restaurant
46	1	Ziepniekkalns	Casino	Tennis Court	Hockey Arena	Gym	Photography Studio	Café	Cosmetics Shop	Motel	Light Rail Station	Playground
23	1	Maskavas forštate	Fast Food Restaurant	Clothing Store	Electronics Store	Flower Shop	Sporting Goods Shop	Furniture / Home Store	Café	Cosmetics Shop	Sushi Restaurant	Shopping Mall
38	1	Teika	Café	Pizza Place	Clothing Store	Arts & Crafts Store	Bed & Breakfast	Dessert Shop	Bar	Yoga Studio	Dive Spot	Fish Market
48	1	Āgenskalns	Bakery	Hotel	Bus Stop	Spa	Fast Food Restaurant	Bookstore	Farmers Market	Eastern European Restaurant	Café	Medical Center
19	1	Jugla	Bus Stop	Pizza Place	Kebab Restaurant	Fast Food Restaurant	Fish Market	Beach	Café	Bakery	Recreation Center	BBQ Joint
17	1	Iļģuciems	Spa	Market	Gym / Fitness Center	Café	Bakery	Fast Food Restaurant	Farmers Market	Farm	Event Space	Electronics Store
42	1	Vecmīlgrāvis	Bus Stop	Pizza Place	Pharmacy	Park	Dance Studio	Bakery	Farmers Market	Café	Scenic Lookout	Performing Arts Venue
47	1	Zolitūde	Pool	Supermarket	Food & Drink Shop	Soccer Field	Bus Line	Comedy Club	Comfort Food Restaurant	Farm	College Cafeteria	Event Spac

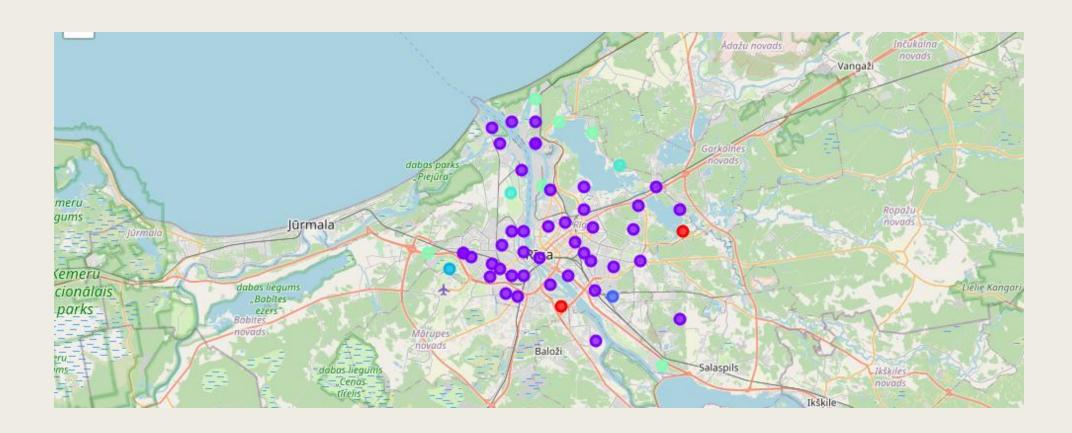
Example of the most common venues in some Toronto boroughs

	Borough	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	Central Toronto	Coffee Shop	Pizza Place	Sandwich Place	Park	Café	Sushi Restaurant	Restaurant	Gym	Dessert Shop	Italian Restaurant
1	Downtown Toronto	Coffee Shop	Café	Restaurant	Hotel	Bakery	Japanese Restaurant	Italian Restaurant	Park	Clothing Store	Bar
2	Downtown Toronto Stn A	Coffee Shop	Seafood Restaurant	Italian Restaurant	Japanese Restaurant	Restaurant	Pub	Café	Bakery	Creperie	Cheese Shop
3	East Toronto	Coffee Shop	Greek Restaurant	Italian Restaurant	Ice Cream Shop	Brewery	Café	American Restaurant	Bakery	Pub	Bookstore
4	East Toronto Business	Light Rail Station	Comic Shop	Farmers Market	Restaurant	Brewery	Auto Workshop	Garden	Garden Center	Burrito Place	Fast Food Restaurant
5	East York	Coffee Shop	Bank	Burger Joint	Sporting Goods Shop	Pizza Place	Intersection	Park	Beer Store	Athletics & Sports	Skating Rink
6	East York/East Toronto	Intersection	Park	Convenience Store	Eastern European Restaurant	Distribution Center	Dog Run	Doner Restaurant	Donut Shop	Drugstore	Dumpling Restaurant
7	Etobicoke	Pizza Place	Sandwich Place	Coffee Shop	Grocery Store	Bakery	Fast Food Restaurant	Café	Gym	Pharmacy	Liquor Store
8	Etobicoke Northwest	Truck Stop	Garden Center	Rental Car Location	Bar	Drugstore	Donut Shop	Discount Store	Distribution Center	Dog Run	Doner Restaurant

Clustering analysis

- Clustering analysis using the k-Means algorithm was performed in order to categorize similar boroughs into clusters.
- This algorithm needs to know the number of clusters it should form. It is hard to determine appropriate number of clusters
- Using elbow method, number of clusters was chosen as 6

Clusters for Riga



Clusters for Toronto



Conclusions

- Analysis of city data was performed using Webscraping, visualizations and data summaries
- Data about venues was obtained from Foursquare API. Clustering analysis was performed on the gathered data using k-Means algorithm.
- One can conclude that if you travel from Riga to Toronto, you can expect to see a lot of coffee shops, different kinds of restaurants and a densely populated city compared to Riga.
- If you choose a hotel that is not in the center of Toronto, you shouldn't be worried that there won't be any places to go to get coffee or dinner.
- For travelers from Toronto to Riga it is advised to look for hotels near city center, as it would be more convenient in terms of entertainment and going out.
- Regarding relocation, compared to Toronto, a lot of boroughs in Riga are not that densely populated.
- Overall, these conclusions are very broad and high-level rather than a detailed report, but from the data we can make sense of overall tendency in both cities.
- More data should be gathered in order to conclude concrete statements data about income, population, transportation structure, economy, rent etc.