

Coursera Capstone Project

Most Dog Friendly Neighbourhoods in Toronto

Business Problem:

- Having a dog is a serious responsibility and it definitely alters your lifestyle in order to provide the proper care for your pup. Even the smallest dogs should be going outside and it makes life easier for dog owners if their neighbourhood caters to that.
- With this project we had to use Foursquare API to solve a problem and I wondered where in Toronto would be good place to live with a dog?

Data Sources:

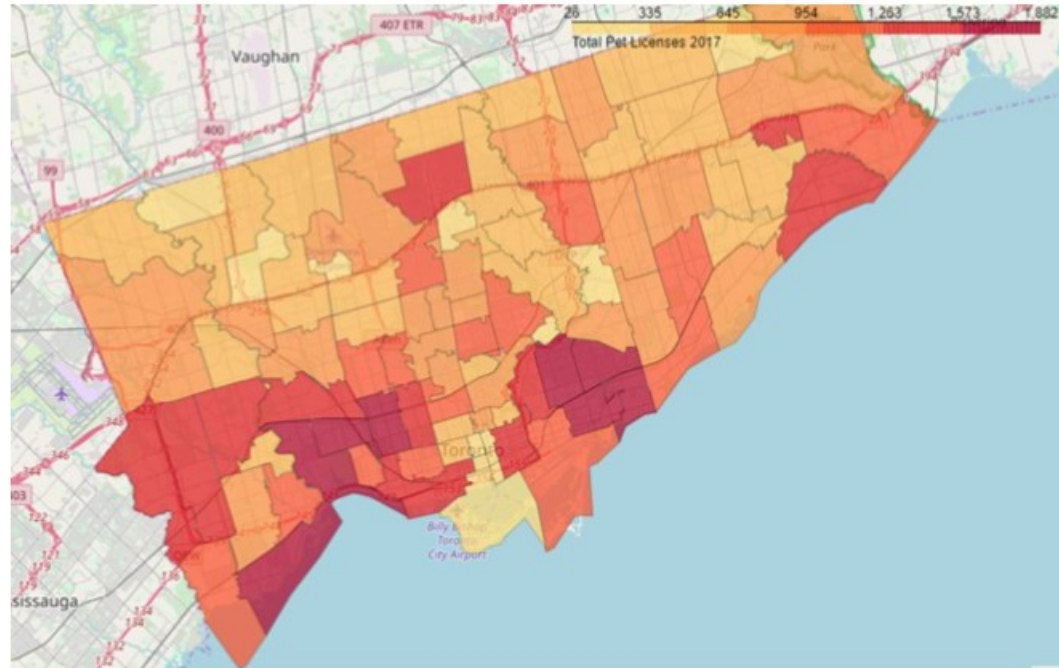
- To do this analysis, we will use the following information:
 - the number of pets in each area in Toronto (using Forward Sortation Areas (FSAs)) (estimated by the number of new dog/cat licenses issued per FSA)
 - the neighbourhood name of each FSA (retrieved from Wikipedia)
 - the population of each each FSA from the 2016 census
 - the Foursquare api to retrieve the current number of pet stores/services and dog-runs per FSA

Exploratory Data Analysis

Details of calculated new columns:

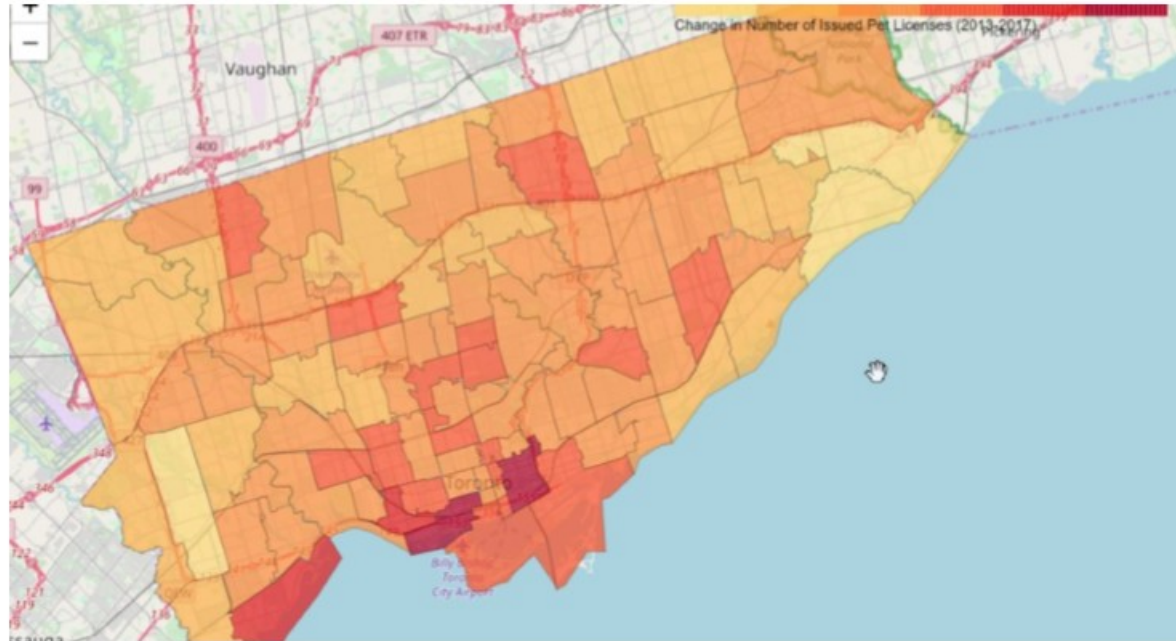
- **PropTotal_2017:** proportion of the licenses granted in Toronto in 2017 that were granted to this FSA
- **PropDogs:** of the licenses granted in this FSA, what percentage were granted for Dogs vs Cats?
- **PetChange:** Total Pets 2017 - Total Pets 2013
- **PropTotal_2013:** proportion of the licenses granted in Toronto in 2013 that were granted to this FSA
- **PetChange_Prop:** PropTotal_2017 - PropTotal_2013 (change in proportion of pets belong to this FSA)
- **PerCapitaPetsTotal:** pets/pop in FSA (number of new pets registered in FSA per person)
- **Venues:** retrieved from 4sq API (total pet stores/services and Dog-Runs in FSA)
- **PetServicesPerPerCapitaPet:** Venues/PerCapitaPetsTotal rough estimate of how many services exist per PerCapitaPet

Total Pet Licenses Issued per FSA in 2017

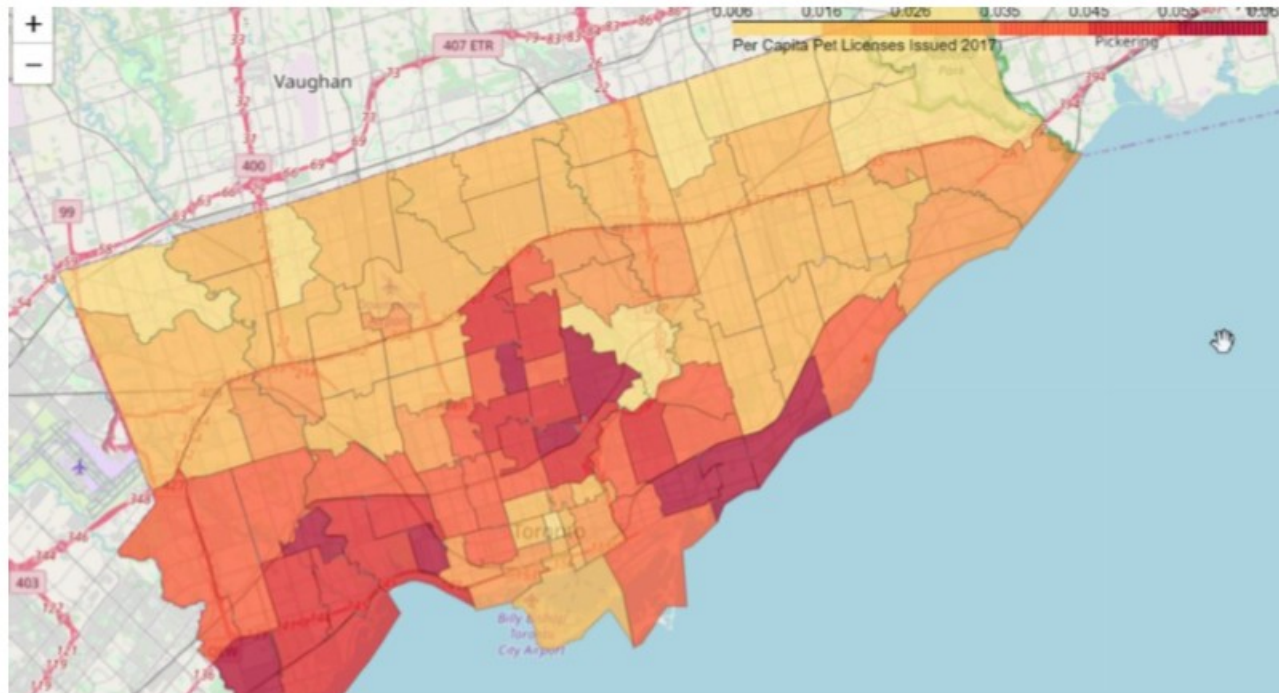


- **Highest number of licenses :** East York (M4C) and Etobicoke (M8V)
- **Lowest number of licenses :** M5C, M5H and M5W

Changes in Pet Licensing over the past 5 years (2013– 2017)



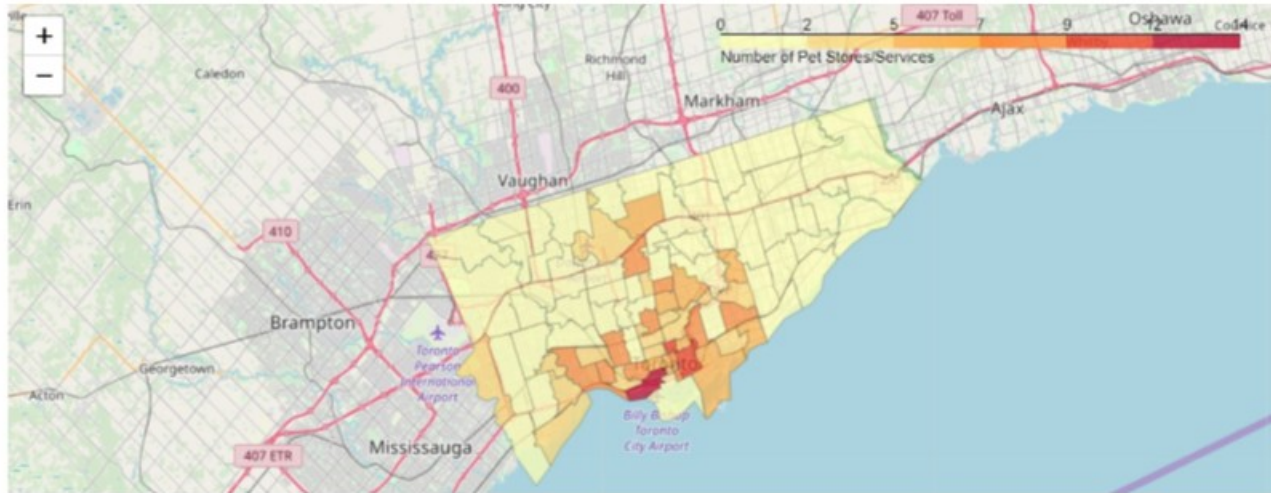
Per Capita Pet Licensing



- Highest per capita licensing : M4E , M6R , M8W

Existing Venues

Existing Venues

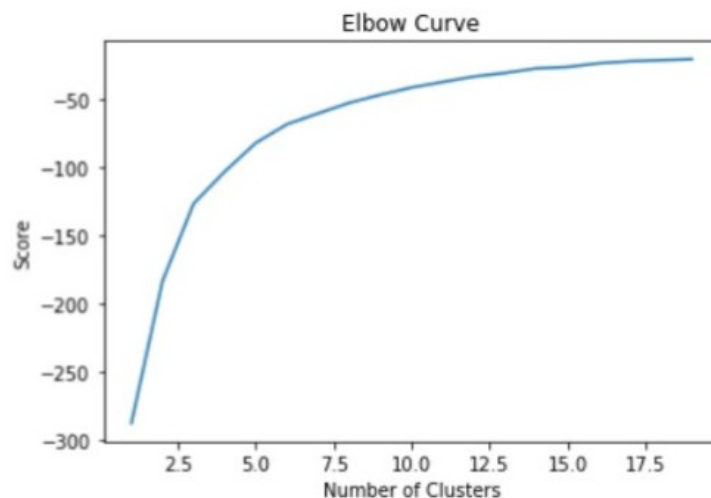


- **Highest existing Venues :** M1B (14) , M1C(11) , M1E(11)

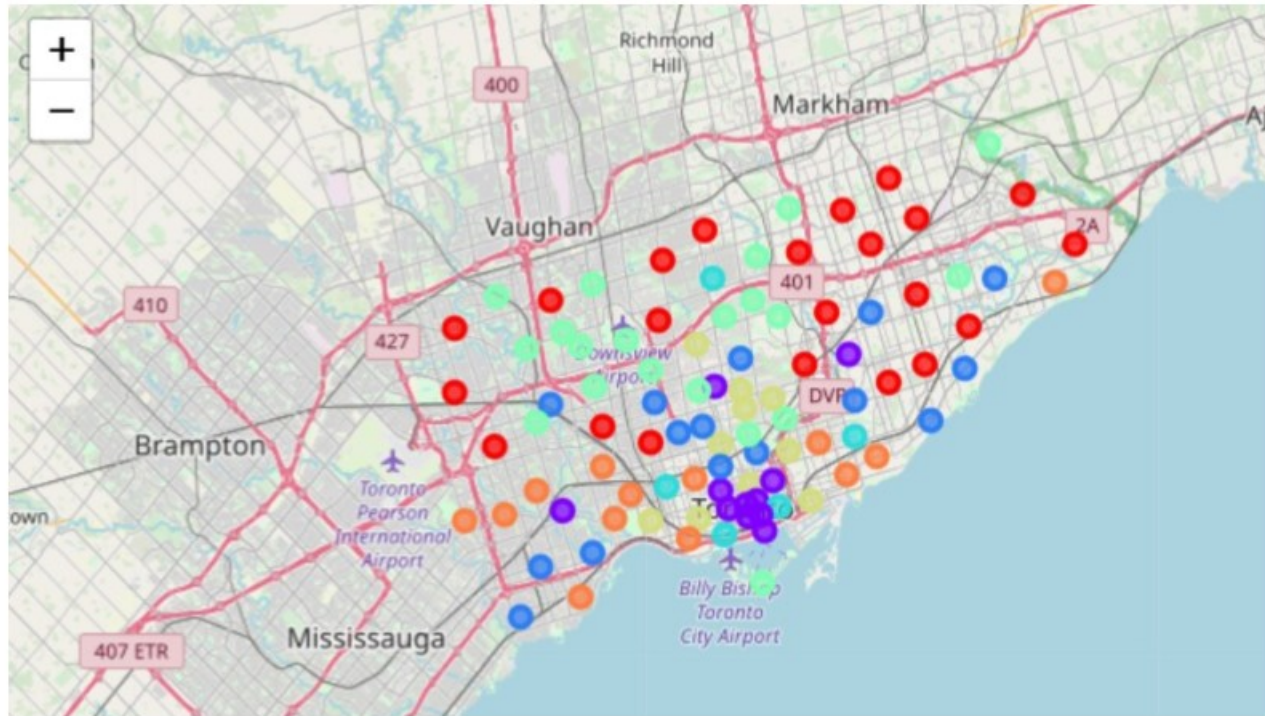
Cluster Analysis

- I used the KMeans algorithm to attempt to cluster FSA areas based on three factors:
 - Population
 - Total Pets registered in 2017
 - Number of Existing Venues

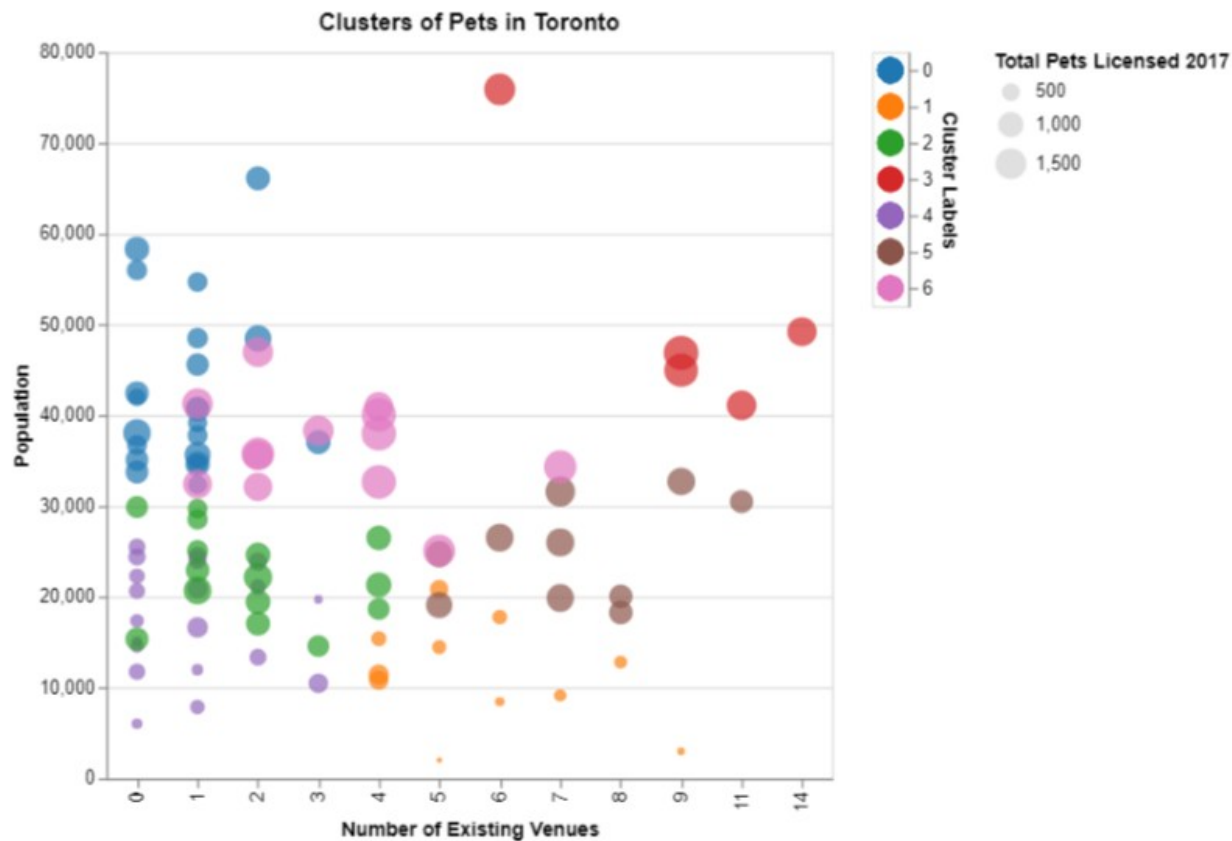
I used Elbow Curve to find the number of clusters and found that 7 clusters looked to be correct for this problem.



Clusters



Clusters of Pets in Toronto



Recommended Neighbourhoods for Dog Lovers



Examining with charts and maps possible candidates are:

- Cluster#1 : M5B
- Cluster#3 : M5V
- Cluster#5 : M4Y