

# The Battle of Neighborhoods

Pet grooming Service

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# Introduction

## Business Problem

Pet industry is exploding due to pandemic lockdown as people are looking for companionship.

Identify the best location for the Pet grooming service in Wake county.

# Data Acquisition

- The wake county data provide major townships, their population, latitude and longitude.
- The Geo coordinates need for the analysis will be sourced from the Wikipedia, google maps and geocode
- Top venues will be sourced using Four square.
- Median household income details will be sourced from statisticalatlas <https://statisticalatlas.com/>

# Data Preparation

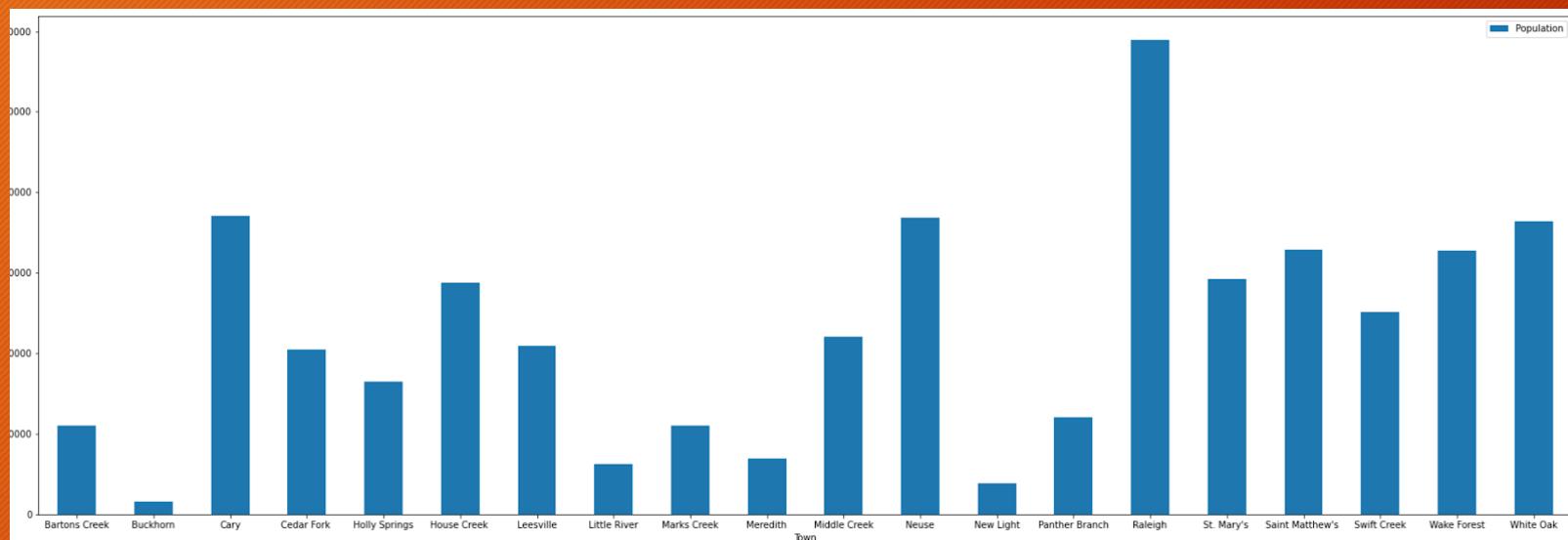
## Wake county Data

The unstructured data needs to be processed to create a structured data

	Town	Latitude	Longitude	Population
0	Bartons Creek	35.950664	-78.645547	22055
1	Buckhorn	35.655147	-78.940138	3251
2	Cary	35.791357	-78.781622	74074
3	Cedar Fork	35.861111	-78.814722	40841
4	Holly Springs	35.636988	-78.860912	33071
5	House Creek	35.866778	-78.668240	57439
6	Leesville	35.914125	-78.713608	41850
7	Little River	35.843485	-78.315941	12528
8	Marks Creek	35.809344	-78.406973	21932
9	Meredith	35.811332	-78.707938	13926
10	Middle Creek	35.585306	-78.770290	44136
11	Neuse	35.869952	-78.588795	73617
12	New Light	36.012532	-78.597331	7591
13	Panther Branch	35.627506	-78.645548	24019
14	Raleigh	35.766667	-78.633333	117838
15	St. Mary's	35.697611	-78.588795	58484
16	Saint Matthew's	35.818162	-78.497925	65731
17	Swift Creek	35.710555	-78.724947	50225
18	Wake Forest	35.947230	-78.497925	65491
19	White Oak	35.736724	-78.781006	72894

# Data Preparation

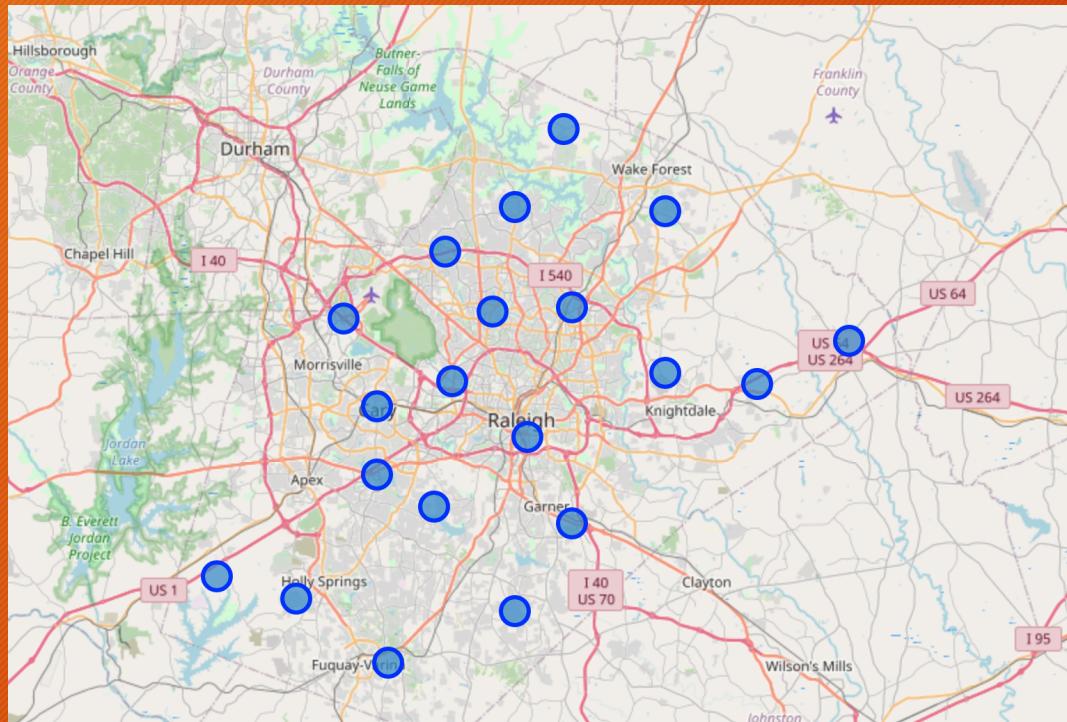
- Population Distribution



The population for the major townships in Wake county. The major cities are the ones that have the peak population i.e. tall bars

# Data Preparation

- Township spatial view



The Blue circles showing the geographic center of the each major township in Wake county

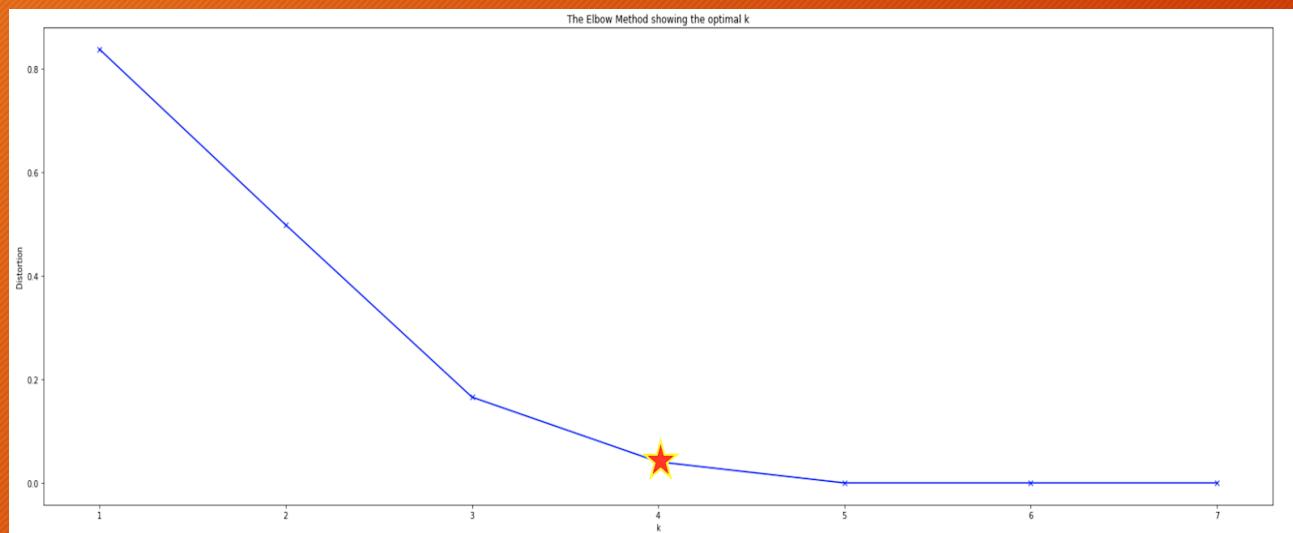
# Modelling

## K-means

K-means algorithm is one of the most common cluster methods of unsupervised learning. The K-means was run for 4 clusters. When the optimal elbow method showed 4 as the optimal k value.

# Modeling

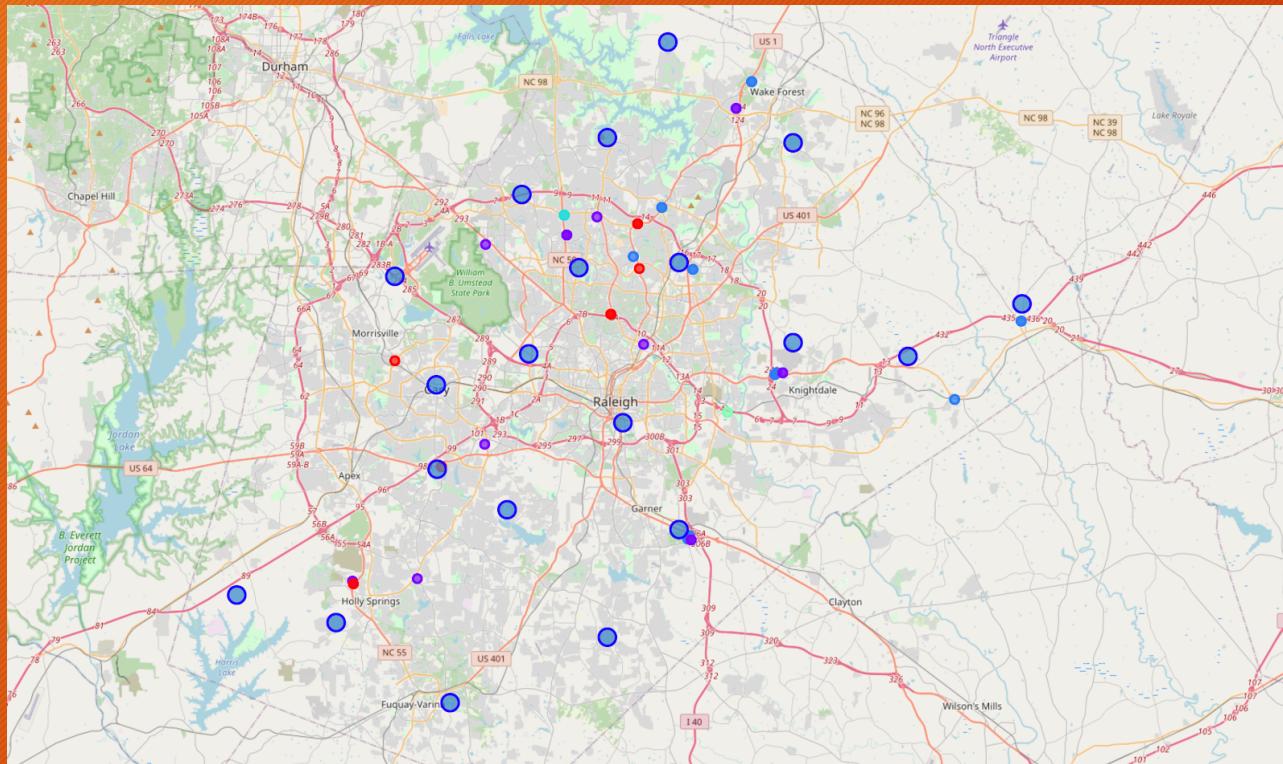
## Elbow analysis



Elbow Analysis shows the optional  $K = 4$  for the kmeans analysis. The line is pretty straight and no changes after  $K=4$  value

# Modelling

## Cluster analysis



Cluster analysis showing the clusters overplayed on the township centers.

# Results

- Based on the clustering analysis we can infer the following
- Small towns Panther Branch, buckhon, swift creek, New light , Barton creek doesnt have any services
- Cary one of the hightest population does not have any service
- Raleigh one of the hightest population does not have any service
- Cary shopping mall is an option
- Shopping malls and department stores are are high traffic areas

# Discussion

- Raleigh and Cary looks like a good option for the Standalone Pet grooming shops.
- Mall and department stores are the most popular venues These places attract lots of foot traffic. Having a pet
- The second best option for having a standalone location is in between Leesville and Neuse