Where Are The Optimal Areas In Seattle For A New Restaurant?

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- Seattle city: 3328 Restaurants For 700,000+ people

- 1 restaurants/200+ people

- But which area are the most optimal?

- Two Method:

    - Intuitive method

    - Clustering method

Introduction

- Two Data Sources:

  – Scraped from search results

  The first data set: contains the zip codes, location(latitudes and longitudes), city, population, population/sq.mile, and population rank in the nation. The data was quite clean, so drop the unneeded columns(city and ranking).

  The second data set: contains zip codes, cities, neighborhoods, and sub regions in the Greater Seattle area, but they were sorted in three different manners, so there are 12 columns in total. And with missing values.

  Kept the first 4 columns, drop every row not Seattle, drop city. Used sub Region value for missing Neighborhood values, then drop sub Region column.

  – Acquired from Foursquare.com

  Use API to acquire the venues for each zip code, convert to one hot numerical values.

Data Acquisition And Cleaning

- ## Intuitive method:

Areas with the highest restaurant density (highest number of restaurants within the certain area)
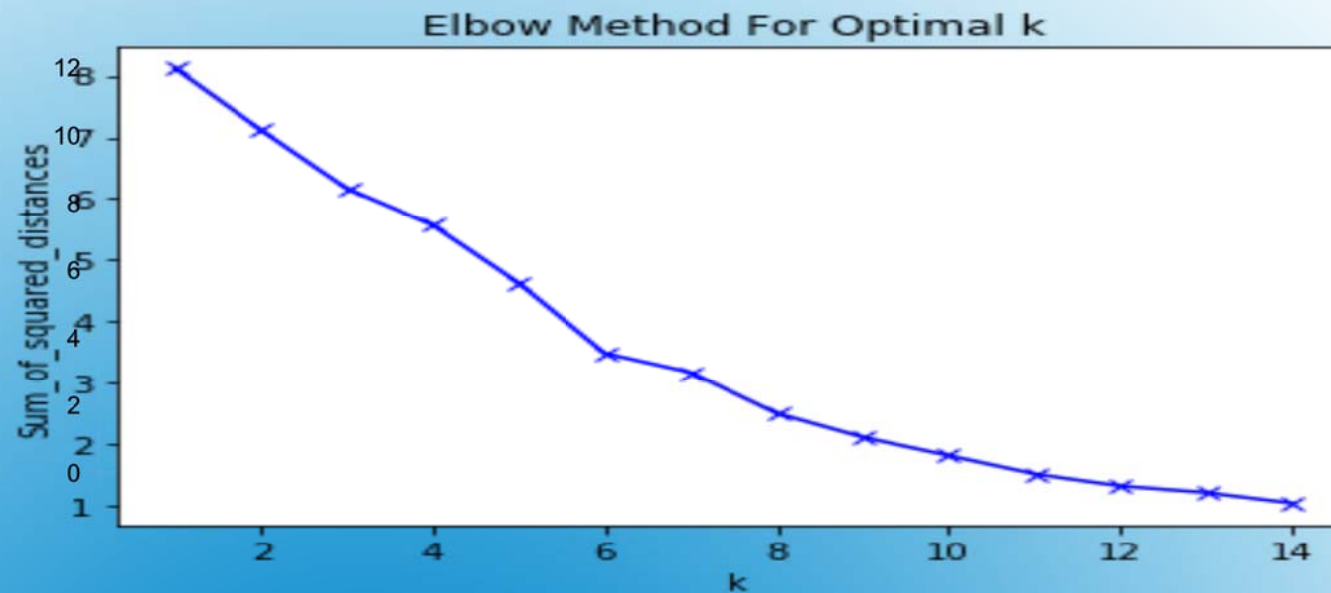
Zip Code	Restaurant	Population	People / Sq. Mile	Neighborhood
98133	0.400000	42896	6041.66	Bitter Lake
98118	0.333333	40791	6697.19	Southeast
98121	0.260000	8558	17894.56	Downtown
98154	0.260000	1	283.15	Downtown
98115	0.250000	43567	6603.13	Northeast

Methodology

- Clustering:

K Means:

Elbow method to Decide K=8

Elbow Method For Optimal k
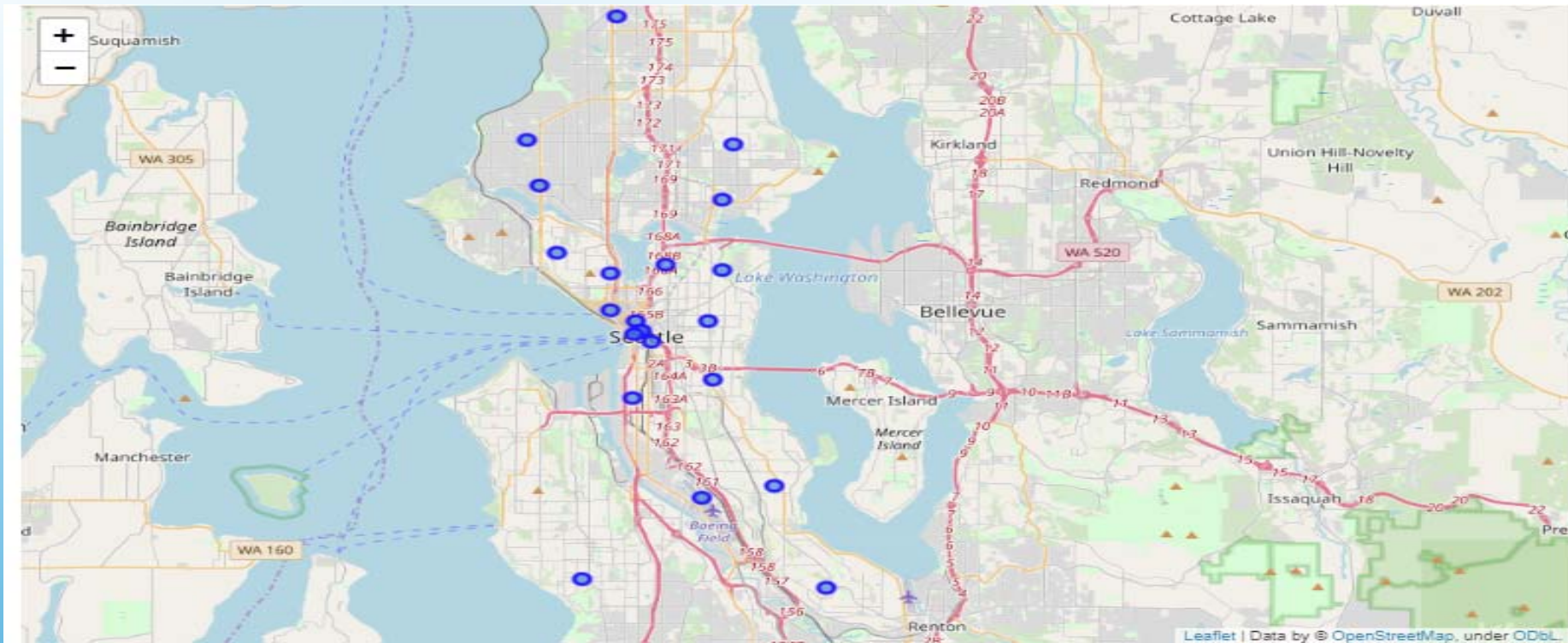
Methodology: Clustering

- 22 Areas cluster with the high restaurant freq. Areas:

Just to show a few

Zip Code	Population	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
98101	9010	Downtown	Restaurant	Coffee Shop	Hotel
98102	19424	Capitol Hill	Restaurant	Trail	Gym
98104	13095	Downtown	Restaurant	Coffee Shop	Cocktail Bar
98105	38963	Northeast	Restaurant	Clothing Store	Furniture / Home Store

Results

It is not surprising that there are 22 areas in Seattle city that are suitable for opening an restaurant, after all, it is one of the largest city in the U.S, but if a type of restaurant is specified, such as a Mexican restaurant or French restaurant, it should be able to narrow down.

Discussion

Results