

House Price Index and Venue Based Location Selection

Capstone Project for Applied Data
Science course by IBM/Coursera

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Introduction: Business Problem

Retiree Needs:

- Place similar to current living place
- Based on individual preferences
- Cost of living
- Ease of moving out, if needed
- House Price Index (HPI)

HPI can be used to evaluate whether place is worth moving in without incurring a huge financial loss. The project tries to cluster Richmond area neighborhoods with Northern Virginia neighborhoods, based on Venues. Then, show areas with HPI and Venue along with cluster information, for making a informed decision about where to move within Richmond.

DATA

- NOVA_city_richmond_selected.csv

Zip	City	State	Latitude	Longitude
22334	Alexandria	VA	38.815762	-77.09005

- HPI_AT_BDL_ZIP5_2018_VA.csv

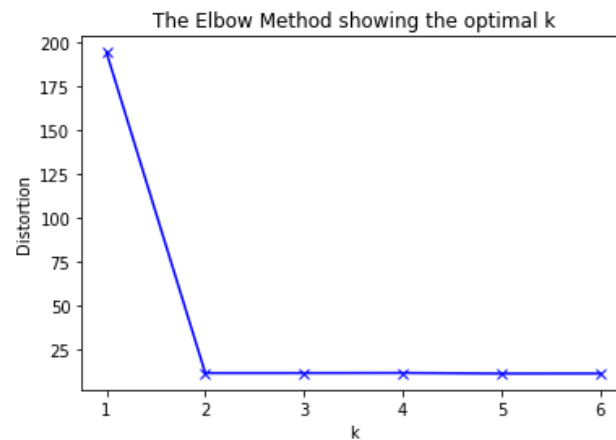
Five-Digit ZIP Code	Year	Annual Change (%)	HPI
20001	2018	5.24	1255.38

Methodology

- Using nova_data, call FourSquare API to get Venue details for each Zip Code.
- Once Venue data is obtained, do following steps:
 - 1. Identify top 10 Venues for each Neighborhood.
 - 2. Normalize the data,
 - 3. Use K-Mean clustering to cluster the data
 - 4. Show cluster on a folium map.
 - 5. Create range for HPI

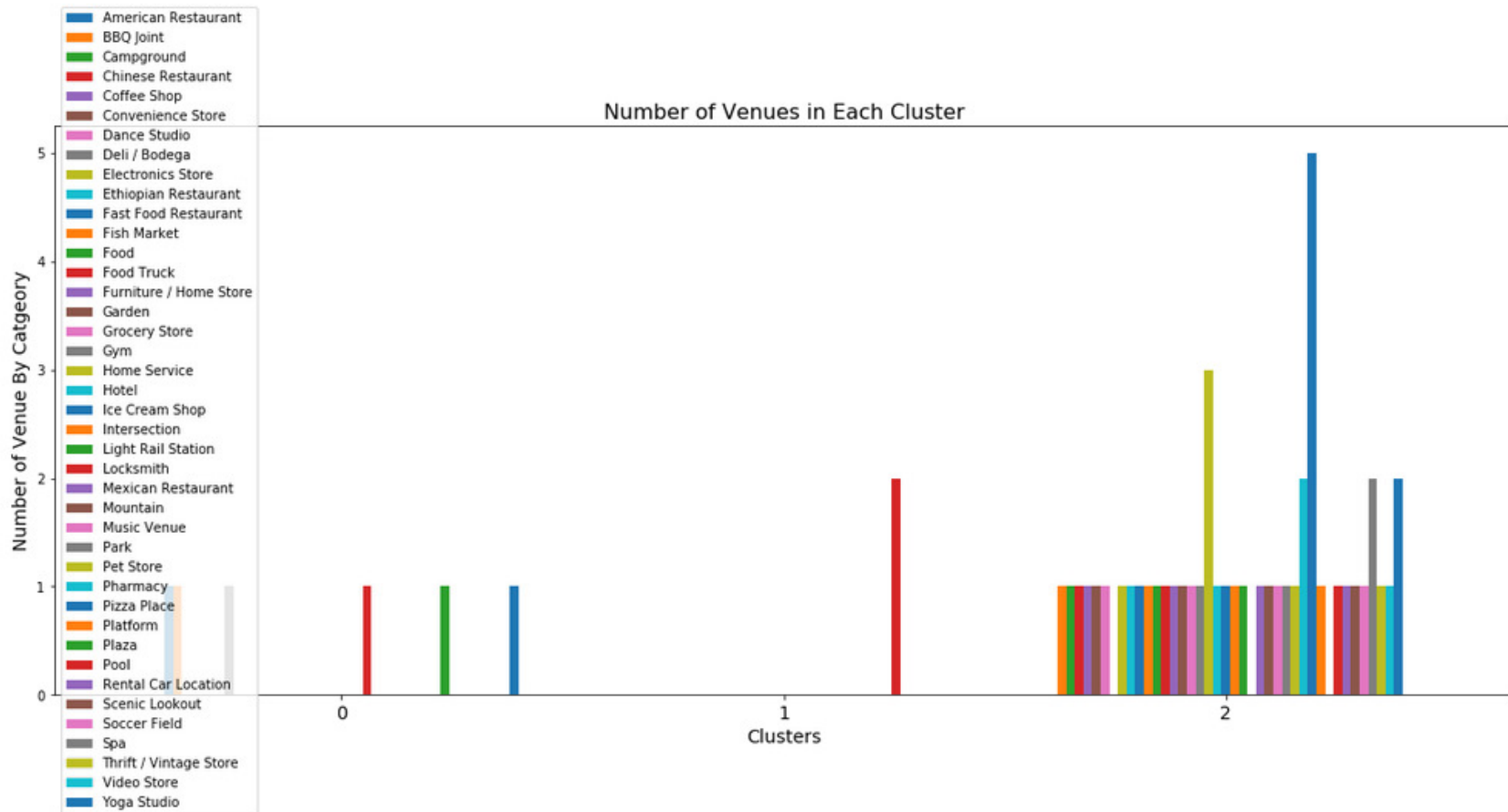
Result

- Elbow Method:

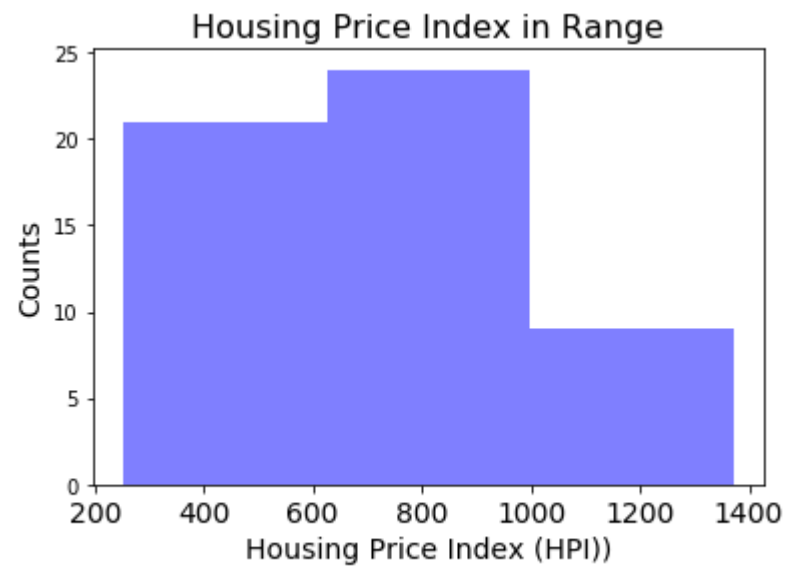


Above chart shows that cluster size of **2** is good enough. Running K-Mean with clusters=3 will clearly shows the outliers.

Result

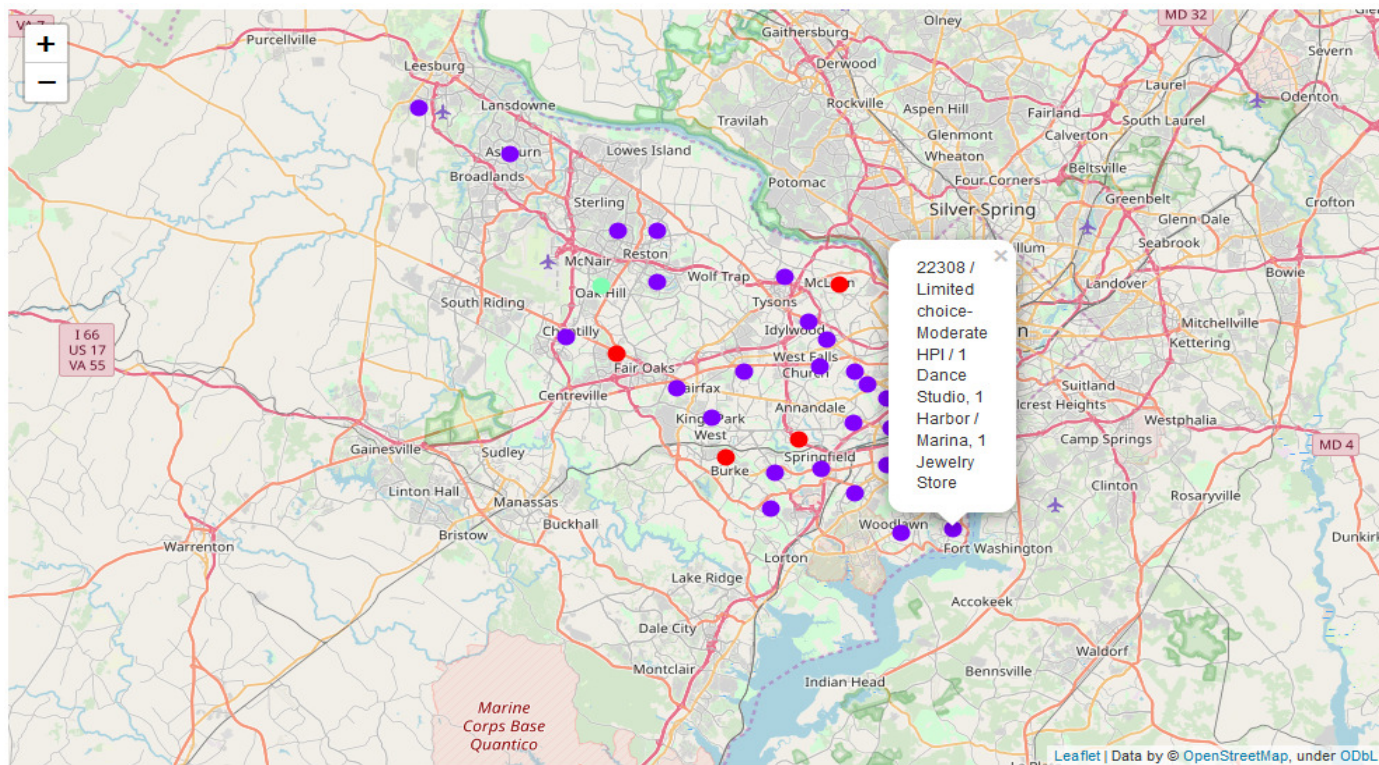


Result



Result

Folium map with cluster and labels overlayed



Discussion

- Similarity in neighborhood of Richmond and NoVA
- Shows, it is easier for people in Northern Virginia to retire in Richmond as similar amenities are available in Richmond.
- Many areas in Richmond have positive price change and higher HPI.
- Additional attributes like house price, specific amenities like transit services, night life, golf courses etc.. can be considered, based on individual preferences.
- The result clearly shows that clustering techniques can be easily and accurately used to identify the place to retire.

Conclusion

- Moving to closer place which meets the needs is one option. For people in NoVA area, Richmond, VA ,seems to match the criteria mentioned.
- The NoVA and Richmond area resemble each other. This is shown by the optimum cluster value being just 2. It also within 100 miles from NoVA. Retirees can get best of both places.
- Methodology as a backend for web page
- The criterion of retirement place selection varies from individual to individual.

Reference

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