Opening a Donut Shop in Washington DC, US

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Business Problem

- Donuts are a staple in American culture - how can we take advantage of this?
- Location is vital in success or failure of donut shop
- **OBJECTIVE:** To select the best neighborhoods in Washington DC for opening a donut shop

- **Business Question:** In Washington DC, if a business owner is looking to open a new donut shop, which neighborhood should they consider?

Data

Data Required

- List of neighborhoods in Washington DC
- Geographical coordinates of these neighborhoods
- Venue data related to donut shops

Sources

- Wikipedia page for neighborhoods
  - https://en.wikipedia.org/wiki/Category:Suburbs_of_Washington,_D.C.
- Geocoder package for coordinates
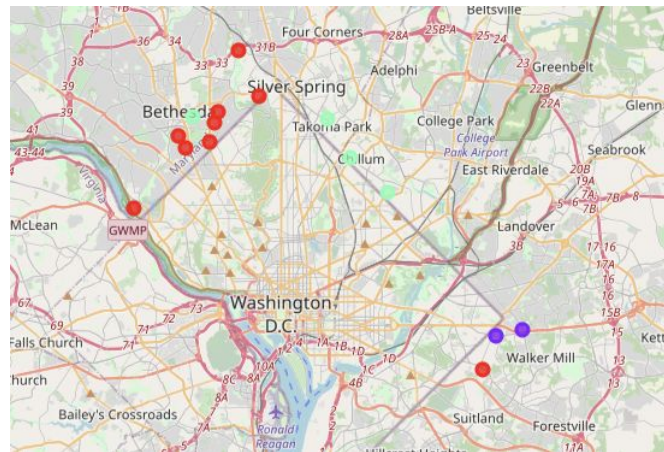- Foursquare locations API endpoints

Methodology

- Scrape the data off the wikipedia list and transfer it to a data frame
- Get geographical coordinates using Geocoder library
- Use Foursquare locations API for venue data
- Group data by neighborhood and taking mean frequency of occurrence of each category
- Filter venue to show only donut shops
- Utilize the k-means algorithm to cluster neighborhoods
- Visualize the clusters in a Folium map

Results

Clustered the neighborhoods into 3 different clusters

- Cluster 0 (red): low frequency of donut shops
- Cluster 1 (purple): high frequency of donut shops
- Cluster 2 (green): moderate frequency of donut shops

Discussion

- Neighborhoods with the same clusters are quite close to each other
- Cluster 0 has a low number of donut shops
- Highest number in cluster 1 and moderate number in cluster 0
- May have to do with some external factor such as social class or donut popularity in a certain neighborhood
  - However this will not be in the scope of this exploration

Recommendations

- Open new donut shops in cluster 2 to strike balance between competition and donut popularity
- Avoid cluster 0 for low donut popularity
- Avoid cluster 1 for intense competition from high concentrations

Conclusion

Cluster 1 neighborhoods are the recommended locations for opening a new donut shop

Thank You