LIVE WHERE YOU WORK IN DC

COURSERA CAPSTONE PROJECT PRESENTATION

PROBLEM DEFINITION/BACKGROUND

- Washington DC is a very diverse city and the capital of the United States
- The city is broken up into 8 wards numbered 1-8, and is comprised of 131 neighborhoods
- Competitive job market - opportunities all over the city
- Business professionals often like to live within walking/biking distance of their job
- Washingtonians who accept new job opportunities in other parts of the city, need a way to find housing in a similar neighborhood close to their new work location

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DATA

- Wikipedia Page - https://en.wikipedia.org/wiki/Neighborhoods_in_Washington,_D.C
  - Lists the 8 wards of DC and the neighborhoods belonging to each ward

- Nominatim – Python library to enrich the neighborhood data with latitude and longitude

- Foursquare – Location-based service to gather data about popular venues in each neighborhood

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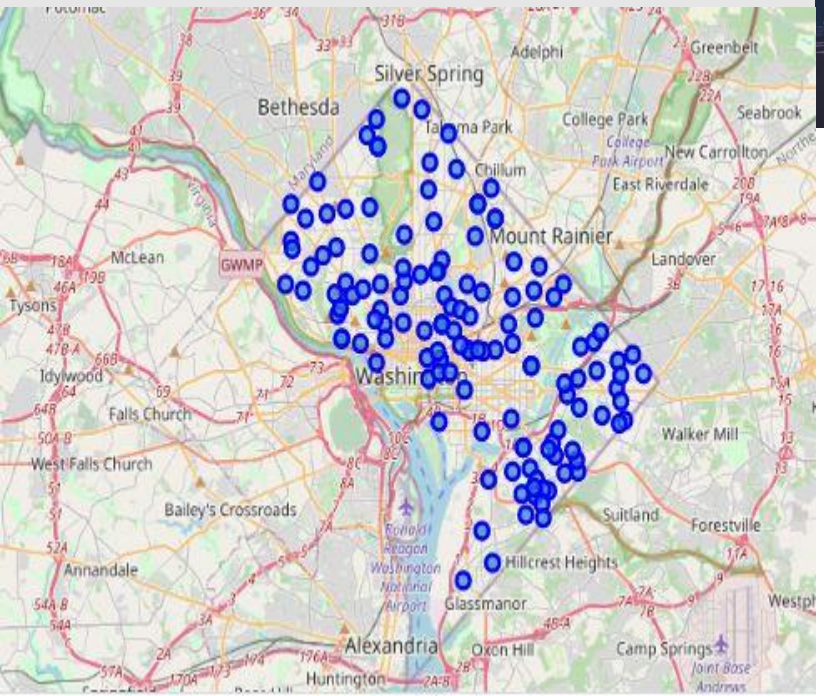
METHODOLOGY

- Obtain the data
- Wrangle the data into appropriate format
  - Drop rows missing key fields
  - Reformat neighborhood names to enable querying for geographic coordinates
  - Convert categorical variables to “dummy” variables
- Exploratory Data Analysis
  - Generate descriptive statistics
  - “Elbow” method to determine the optimal number of clusters for clustering algorithm
- Machine learning
  - K-Means clustering
  - Manually analyze cluster to determine the discriminating venue categories that distinguish each cluster

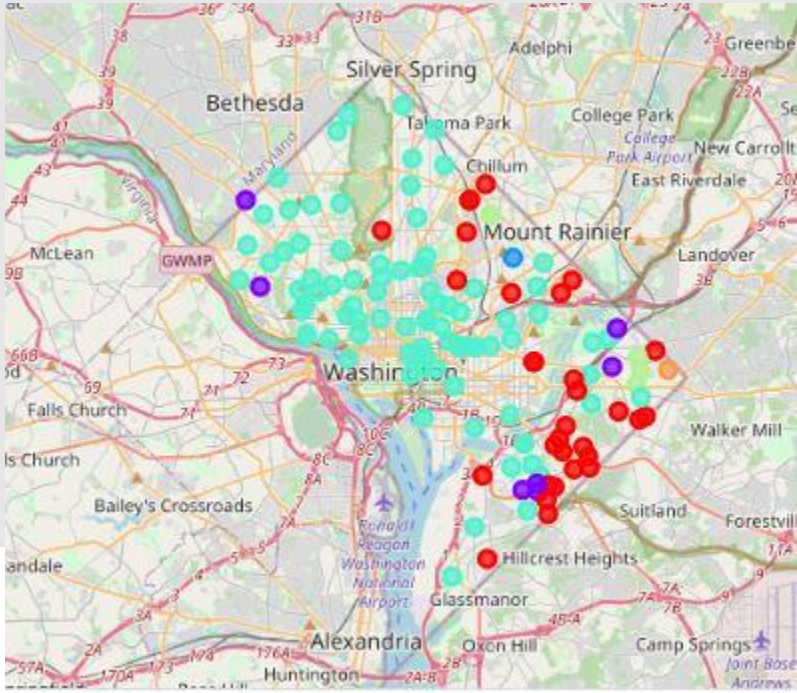
Contoso

RESULTS/DISCUSSION

WASHINGTON, DC



WASHINGTON, DC CLUSTERED



RESULTS/DISCUSSION

MOST NEIGHBORHOODS LIED IN ONE OF THREE CLUSTERS

- A cluster where convenience and liquor stores were the most popular
- A cluster where parks and playgrounds were very popular, and
- A cluster where coffee shops were very prevalent

- If a Washingtonian's current neighborhood was in one of those clusters, they could easily find similar neighborhoods in different parts of the city.

THE THREE CLUSTERS WERE GEOGRAPHICALLY DISPERSED

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CONCLUSION

- Unsupervised machine learning techniques, specifically clustering, is a viable technique to segment and cluster neighborhoods
  - Enables identifying similar neighborhoods in different locations throughout Washington, D.C.

- This information will be very useful for those business professionals who take new job opportunities across the city, but like to live within walking distance of their employer.

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THANK YOU !

HTTPS://GITHUB.COM/GLENYJ98/COURSERA_CAPSTONE