

The Battle of Neighborhoods

Washington Metropolitan Area

District of Columbia, DC; Calvert County, MD; Charles County, MD; Frederick County, MD; Montgomery County, MD; Prince George's County, MD; Arlington County, VA; Clarke County, VA; Fairfax County, VA; Fauquier County, VA; Loudoun County, VA; Prince William County, VA; Spotsylvania County, VA; Stafford County, VA; Alexandria city, VA; Fairfax city, VA; Falls Church city, VA; Fredericksburg city, VA; Manassas city, VA; and Manassas Park city, VA.

Project Description:

For those who are suffering from kidney disease, there are plenty of other things to manage besides receiving hemodialysis treatment every week. About 37 million people in the United States are struggling with chronic kidney disease (CKD).

Mr. McDreamy who is currently living and working as a consultant in New York City, has also been suffering from CKD for two years. Having once weekly hemodialysis treatment combined with low-protein diet led him to live in a district where all his daily needs can be met easily. For example, the Fresenius Kidney Care Dialysis Center he visits, is located only ten minutes' drive away from his house ; very close to vegan restaurants and Tesla supercharger stations where he leaves his Tesla charging while having lunch.

Last month, he accepted a new job offer in Washington DC that's why he decided to move there in two months. Fortunately, there are more than 70 Fresenius Dialysis Centers in Washington Metropolitan Area where he can receive his treatment without any change in his dialysis care plan.

Now, he desires to continue to live in a district where the Fresenius dialysis center, vegan restaurants and Tesla supercharger stations are located close to each other. This project would help Mr. McDreamy to explore 939 neighborhoods in Washington Metropolitan Area with above-mentioned locations and provides additional information on fair market rents so that he can compare rents in each neighborhood. Moreover, he can analyse the top most common venues in each of neighborhoods based on his own interests.

Datasets:

Foursquare Location Data:

Foursquare API is used to explore locations close to Fresenius Kidney Dialysis Centers in Washington Metropolitan Area, for example Vegan Restaurants and Tesla Supercharger Stations. This would especially help Mr. McDreamy to find above-mentioned locations that are around the dialysis center within a given radius.

Fair Market Rents(FMR) in Washington Metropolitan Area 2020 - The U.S. Department of Housing and Urban Development's (HUD's) Office of Policy Development and Research:

<https://www.huduser.gov/portal/datasets/fmr.html>

This project would use FMR Dataset of HUD's Office to provide information on fair market rents in Washington Metropolitan Area. This additional information would help Mr. McDreamy to compare rents in each neighborhood.

K-means clustering unsupervised machine learning algorithm will be applied to group the neighborhoods into clusters after applying explore function to get the locations like Vegan Restaurants and Tesla Superchargers around dialysis center.

Finally, Folium library will be used to visualize the neighborhoods in Washington Metropolitan Area and their clusters.

	name	categories	address	city	distance	formattedAddress	lat	lng	postalCode	state
0	Tesla Supercharger	EV Charging Station	NaN	Washington	2247	[Washington, D.C. 20007, United States]	38.915967	-77.067410	20007	D.C.
1	Tesla Supercharger - Riverdale Park, MD	Car Wash	6221 Woodberry St	Riverdale	11678	[6221 Woodberry St, Riverdale, MD 20737, United States]	38.982231	-76.944637	20737	MD
2	Tesla SuperChargers	EV Charging Station	NaN	Arlington	5021	[Arlington, VA 22201, United States]	38.887318	-77.092613	22201	VA
3	Tesla Supercharger	EV Charging Station	NaN	Oxon Hill	14071	[Oxon Hill, MD 20745, United States]	38.785427	-77.015780	20745	MD
4	Tesla Supercharger - Springfield	EV Charging Station	NaN	Springfield	18789	[Springfield, VA 22150, United States]	38.775276	-77.172970	22150	VA
5	Tesla Supercharger	EV Charging Station	14700 Baltimore Ave	Laurel	26046	[14700 Baltimore Ave, Laurel, MD 20707, United States]	39.095130	-76.858290	20707	MD

	name	categories	address	city	crossStreet	distance	formattedAddress	lat	lng	postalCode	state
0	Woodlands Vegan Bistro	Vegetarian / Vegan Restaurant	Changes every day- its a lunch truck!	Washington	NaN	1338	[Changes every day- its a lunch truck!, Washington, D.C.]	38.901681	-77.031548	NaN	D.C.
1	NuVegan Cafe	Vegetarian / Vegan Restaurant	2928 Georgia Ave NW	Washington	at Hobart Pl NW	2592	[2928 Georgia Ave NW (at Hobart Pl NW), Washington, D.C.]	38.927885	-77.023250	20001	D.C.
2	Evolve Vegan Restaurant	Vegetarian / Vegan Restaurant	341 Cedar St	Washington	NaN	7512	[341 Cedar St, Washington, D.C. 20012, United States]	38.974791	-77.017864	20012	D.C.
3	Sweet Sosumba Jamican Vegan Cafe	Vegetarian / Vegan Restaurant	3501 Georgia Ave NW	Washington	at Park Rd NW	3031	[3501 Georgia Ave NW (at Park Rd NW), Washington, D.C.]	38.933005	-77.023646	20010	D.C.
4	Vampire and Vegan	None	3806 37th St	Mount Rainier	NaN	7910	[3806 37th St, Mount Rainier, MD 20712, United States]	38.936868	-76.957970	20712	MD
5	NuVegan Cafe - Howard University	Vegetarian / Vegan Restaurant	2397 6th St NW	Washington	NaN	2563	[2397 6th St NW, Washington, D.C. 20059, United States]	38.924044	-77.019020	20059	D.C.

	ZIP_Code	One-Bedroom	Two-Bedroom	Three-Bedroom	Four-Bedroom
0	20001	1950	2220	2880	3520
1	20002	1320	1500	1950	2380
2	20003	2250	2560	3320	4060
3	20004	2250	2560	3320	4060
4	20005	2130	2430	3150	3850

	ZIP_Code	One-Bedroom	Two-Bedroom	Three-Bedroom	Four-Bedroom
count	939.000000	939.000000	939.000000	939.000000	939.000000
mean	21492.249201	1273.972311	1497.912673	1957.135250	2368.477103
std	933.490103	379.100725	412.570739	522.793254	632.010973
min	20001.000000	590.000000	710.000000	970.000000	1160.000000
25%	20741.500000	1030.000000	1210.000000	1560.000000	1845.000000
50%	21251.000000	1230.000000	1440.000000	1880.000000	2260.000000
75%	22213.500000	1535.000000	1790.000000	2320.000000	2790.000000
max	23117.000000	2250.000000	2560.000000	3320.000000	4060.000000

Python packages:

- Numpy - Library to handle data in a vectorized manner
- Pandas - Library for data analysis
- Sklearn - Python Machine Learning Library
- Json - Library to handle JSON files
- Geopy- to retrieve Location Data
- Matplotlib – Python Plotting Module
- Folium - Map rendering library
- Requests - Library to handle requests