VETERINARY SEARCH

A Project made by:

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**INTRODUCTION**

This Project was made thinking about the problems that many pet owners find themselves in quite often. One of these problems is the one they are trying to find veterinaries in a given area for many reasons, emergencies when they are not home, buy any goods related to pets and so on. The aim of this project is to facilitate a quick search of nearby veterinaries.

**DATA**

The data used for this project was obtain entirely from the Foursquare API, using different search methods and combined with various data science techniques, it was possible to obtain a solid data set for further analysis.

**METHODOLOGY**

First a base city was chosen to run the different tests on, the chosen city was Miami. This choice was made because Miami is a very well known city and chances of getting more complete data were higher.

Then a search of the category 'id' for veterinaries was conducted giving as a result a category id = *'4d954af4a243a5684765b473'.*

After obtaining this ID, a search of the 20 nearest veterinaries was made around a random point in Miami whose coordinates were: latitude= 25.809967 ,longitude=-80.311378. On a radius of 10KM.

These results were obtained successfully and the next thing that was intended to be done is to check for each of these place's rating, but when the search was conducted, it was noted that very few of the places was rated so this feature was not taken into account for further analysis.

The next analysis was to obtain how many near parking spots there were and how far they were located from each veterinary, the results were obtained and stored in a new dataframe.

With the information collected a cluster algorithm was implemented to see how the different places could be segmented.

**RESULTS**

Figure 1. First data frame obtained with the attributes of the 20 closer veterinaries from our base point.

| | name | categories | city | distance | formattedAddress | lat | lng | id |
|---|---|---|---|---|---|---|---|---|
| 0 | USDA Veterinary Services | Veterinarian | Miami | 1518 | [6300 NW 36 th Street, Miami, FL 33166, United... | 25.806696 | -80.296666 | 4bd58af129eb9c749c6b93e1 |
| 1 | Knowles Animal Clinics | Veterinarian | Miami | 7816 | [1000 NW 27th Ave, Miami, FL 33125, United Sta... | 25.782310 | -80.239690 | 4bac14d5f964a520fee23ae3 |
| 2 | Silver Bluff Animal Clinic | Veterinarian | Miami | 10307 | [2515 SW 27th Ave, Miami, FL 33133, United Sta... | 25.745206 | -80.237882 | 4ba0e796f964a520008637e3 |
| 3 | Mueller Animal Hospital | Veterinarian | Hialeah | 7148 | [4148 E 8th Ave, Hialeah, FL 33013, United Sta... | 25.860256 | -80.267007 | 4d30abe5f986a09332dbfe66 |
| 4 | Doral Pet Resort | Veterinarian | NaN | 4176 | [Florida, United States] | 25.812941 | -80.352926 | 4e32959462e12985fd631401 |

Figure 2. Results obtained after fetching the rating of each place ( Only 1 out of 20 had a rating, so this was discarded for further analysis)

| | name | categories | city | distance | formattedAddress | lat | lng | id | rating |
|---|---|---|---|---|---|---|---|---|---|
| 0 | USDA Veterinary Services | Veterinarian | Miami | 1518 | [6300 NW 36 th Street, Miami, FL 33166, United... | 25.806696 | -80.296666 | 4bd58af129eb9c749c6b93e1 | None |
| 1 | Knowles Animal Clinics | Veterinarian | Miami | 7816 | [1000 NW 27th Ave, Miami, FL 33125, United Sta... | 25.782310 | -80.239690 | 4bac14d5f964a520fee23ae3 | None |
| 2 | Silver Bluff Animal Clinic | Veterinarian | Miami | 10307 | [2515 SW 27th Ave, Miami, FL 33133, United Sta... | 25.745206 | -80.237882 | 4ba0e796f964a520008637e3 | None |
| 3 | Mueller Animal Hospital | Veterinarian | Hialeah | 7148 | [4148 E 8th Ave, Hialeah, FL 33013, United Sta... | 25.860256 | -80.267007 | 4d30abe5f986a09332dbfe66 | None |

Figure 3. Results after requesting the info regarding near parking spots from each of the location, radius = 1500 limited to up to 30 results. Average distance from parking spot to veterinary was computed, also the maximum and minimum distance.

| | name | categories | city | distance | formattedAddress | lat | lng | id | rating | Number of parking spots | Average distance of parking spots | Minimun distance | Maximum distance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | USDA Veterinary Services | Veterinarian | Miami | 1518 | [6300 NW 36 th Street, Miami, FL 33166, United... | 25.806696 | -80.296666 | 4bd58af129eb9c749c6b93e1 | None | 1 | 1306.0 | 1306 | 1306 |
| 1 | Knowles Animal Clinics | Veterinarian | Miami | 7816 | [1000 NW 27th Ave, Miami, FL 33125, United Sta... | 25.782310 | -80.239690 | 4bac14d5f964a520fee23ae3 | None | 3 | 1686.0 | 1508 | 1942 |
| 2 | Silver Bluff Animal Clinic | Veterinarian | Miami | 10307 | [2515 SW 27th Ave, Miami, FL 33133, United Sta... | 25.745206 | -80.237882 | 4ba0e796f964a520008637e3 | None | 1 | 704.0 | 704 | 704 |
| 3 | Mueller Animal Hospital | Veterinarian | Hialeah | 7148 | [4148 E 8th Ave, Hialeah, FL 33013, United Sta... | 25.860256 | -80.267007 | 4d30abe5f986a09332dbfe66 | None | 2 | 992.0 | 362 | 1623 |

Figure 4. Map of the obtained veterinaries location without clustering.

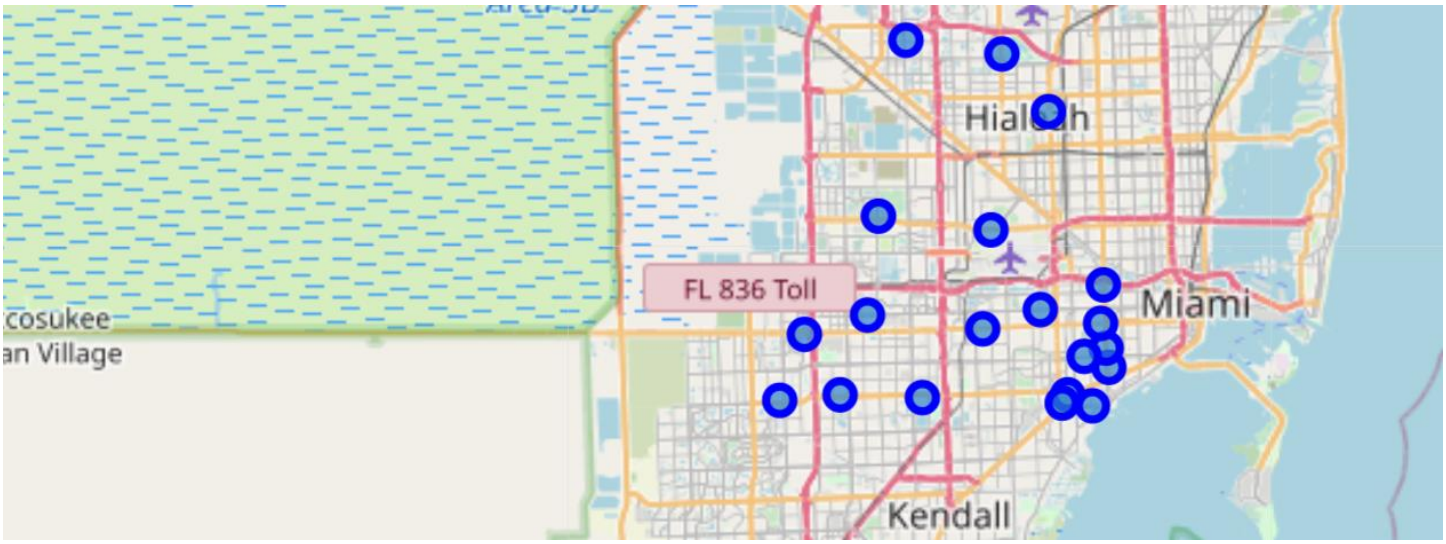
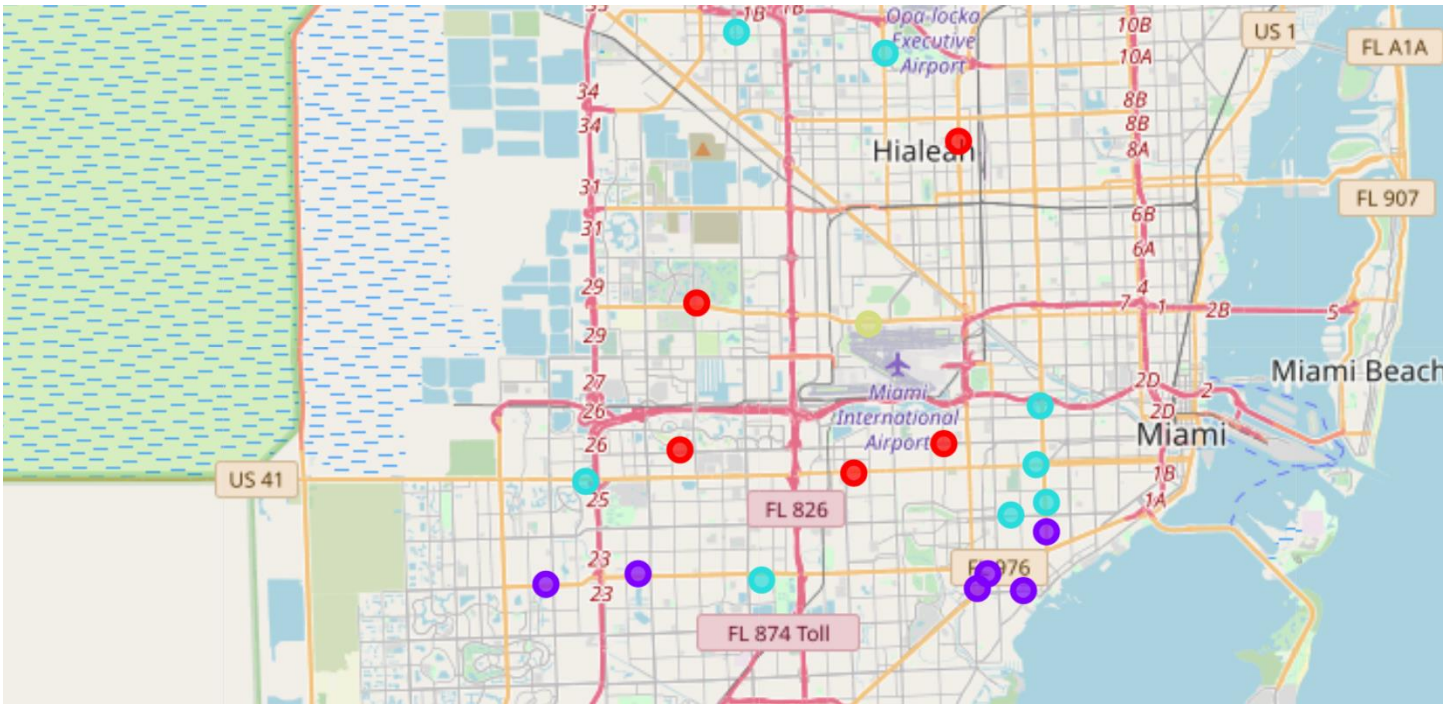



Figure 4. Map of the obtained veterinaries location after clustering. K=4



**CONCLUSIONS**

- Foursquare is a very flexible tool that allows for a wide variety of analysis with a proper data processor on hand.
- Rating was not a good variable since it was not something that could be found for most of the members of the date set.
- Parking spots was a good variable because the info was readily available and in real life is a very important feature to take into account and there is room to make further analysis around this feature.
- The algorithm divided our data set into 4 different clusters, when analyzing these divisions, it is noted that the main variable taken into account followed by the distance from the veterinary to the nearest parking spot.