

THE CAPSTONE PROJECT - BATTLE OF THE  
NEIGHBORHOODS

IDENTIFYING AREAS FOR REAL  
ESTATE INVESTMENT

BY  
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# INTRODUCTION

## BACKGROUND

- Real estate is one of the fastest growing markets in the United States As the residential real estate market grows, commercial real estate market follows suit
- Investing in growing cities guarantees a good return on investment

## PROBLEM

- It is a challenge for investors to identify the best geographical locations within a city unless an agent or someone has to physically canvas the area of interest

## INTEREST

- Individuals, group of individuals or companies that are looking for a remote investment opportunity in high growth markets



# DATA

## LOCATION

- Williamson county, one of the fastest growing counties in Texas

## DATA SOURCES

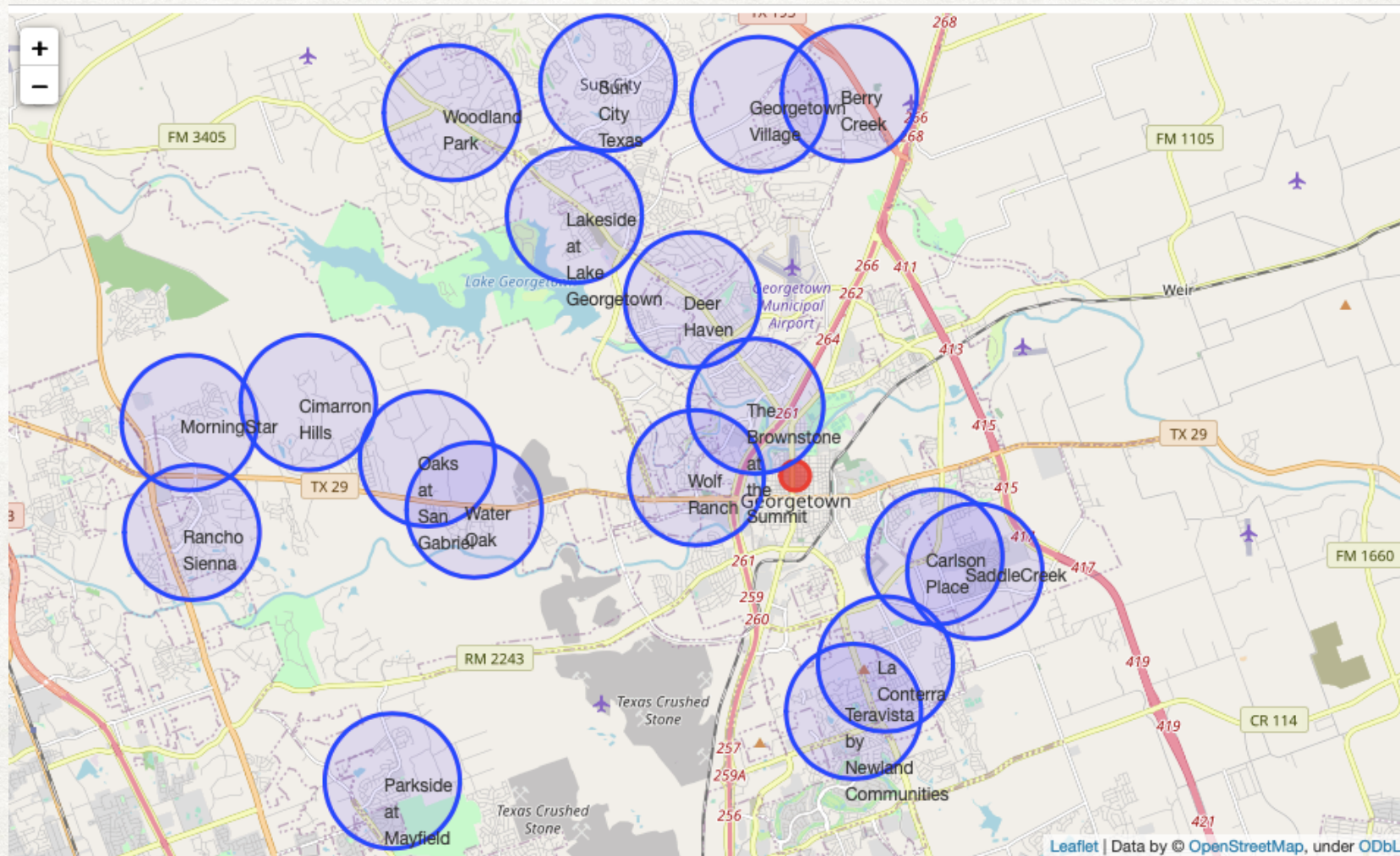
- Williamson County page on wikipedia
- [wclife.org](http://wclife.org) - Williamson county realtors Association webpage
- Foursquare API for Venue data

## PREPARING THE DATA

- The new housing community addresses are cleaned and the location information is obtained using Google API.
- The JSON venue data for each community from Foursquare is cleaned up and a dataframe is created.



# DATA



Map of new housing communities of Georgetown



# METHODOLOGY

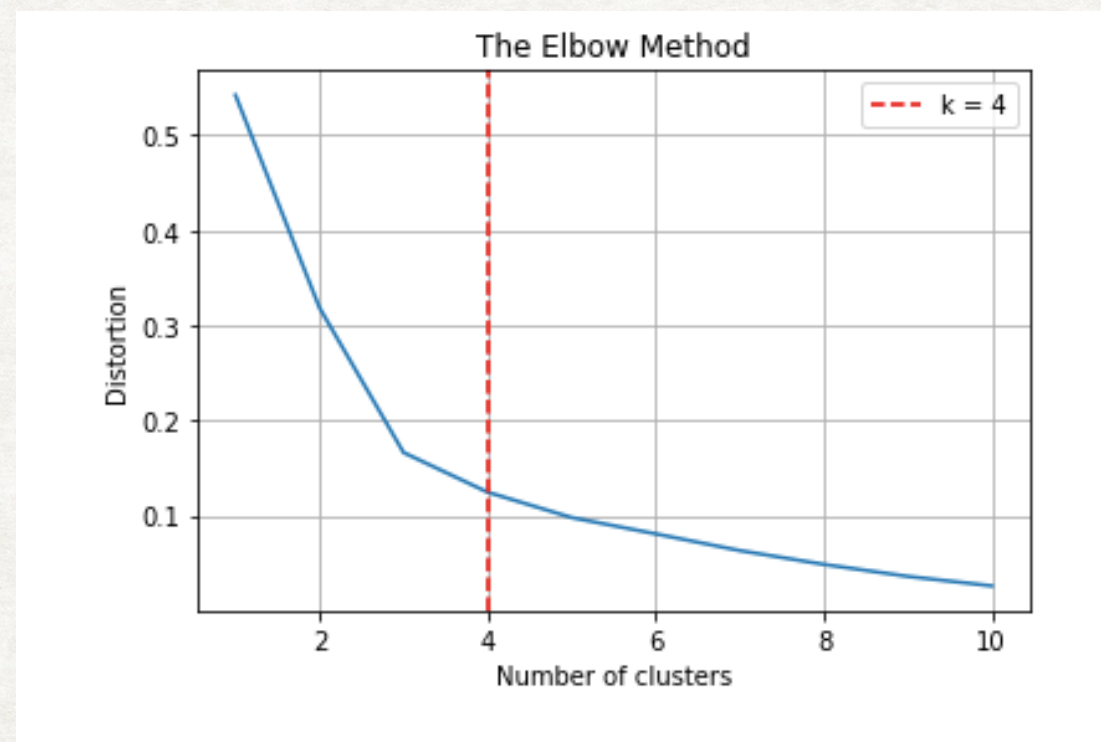
- To get a complete picture of Georgetown city, the downtown area was also even though it was not part of the new housing communities.
- All the venues in downtown are obtained to assess the opportunities in the downtown area. Further, the data for a specific business "Coffee Shop" was selected to explore the possibility of investing in a coffee shop or a cafe.
- The same method is applied to venues around new housing communities.
- All the venues near the housing communities are analyzed using K-means clustering and the clusters are mapped with the housing communities.
- Two specific business categories are picked to assess the growth possibilities.



# ANALYSIS

## K-MEANS CLUSTERING

- To make better sense of geographical mapping of investment opportunities, the venue data is classified using k-means clustering.
- Elbow method is applied to find the optimum "k" value. Based on the elbow method (as shown below) a "k" value of 4 is selected.

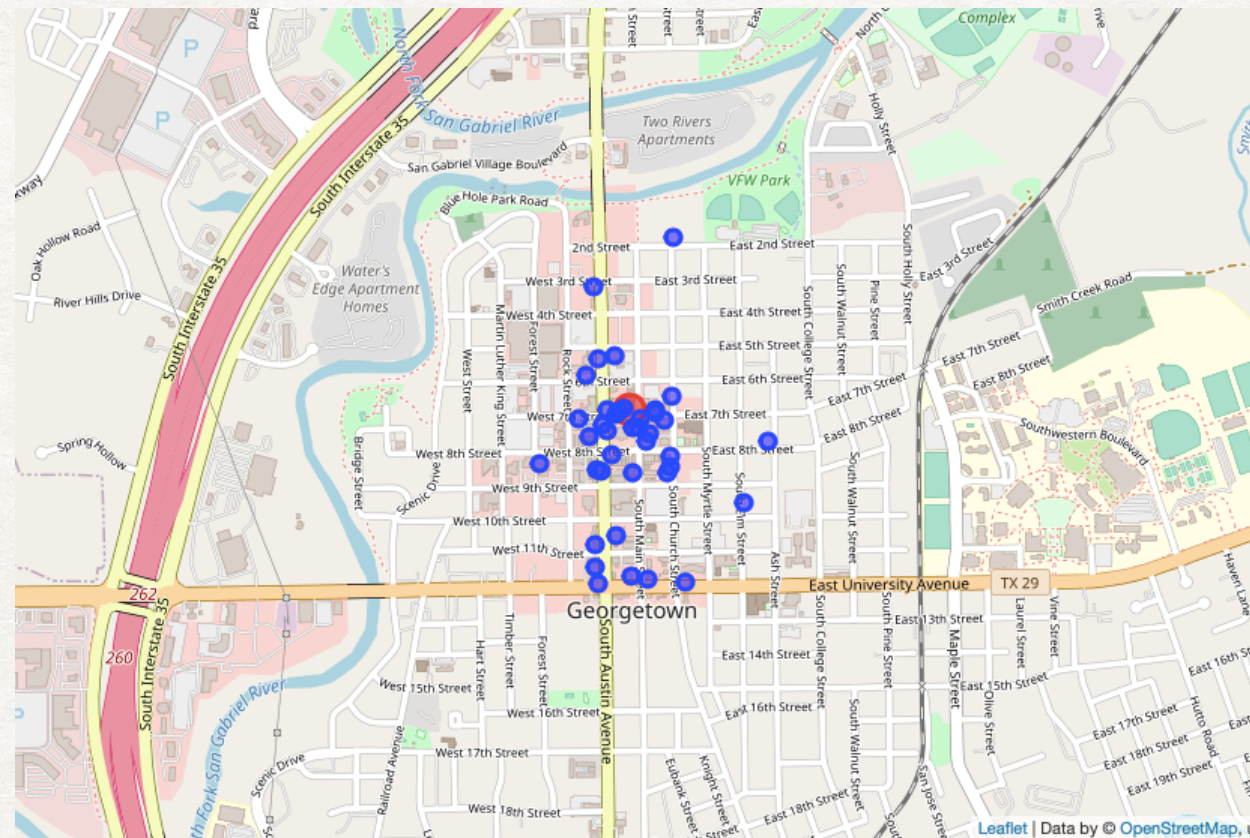




# RESULTS

## DOWNTOWN GEORGETOWN VENUES

- Below is the map of all the venues in downtown



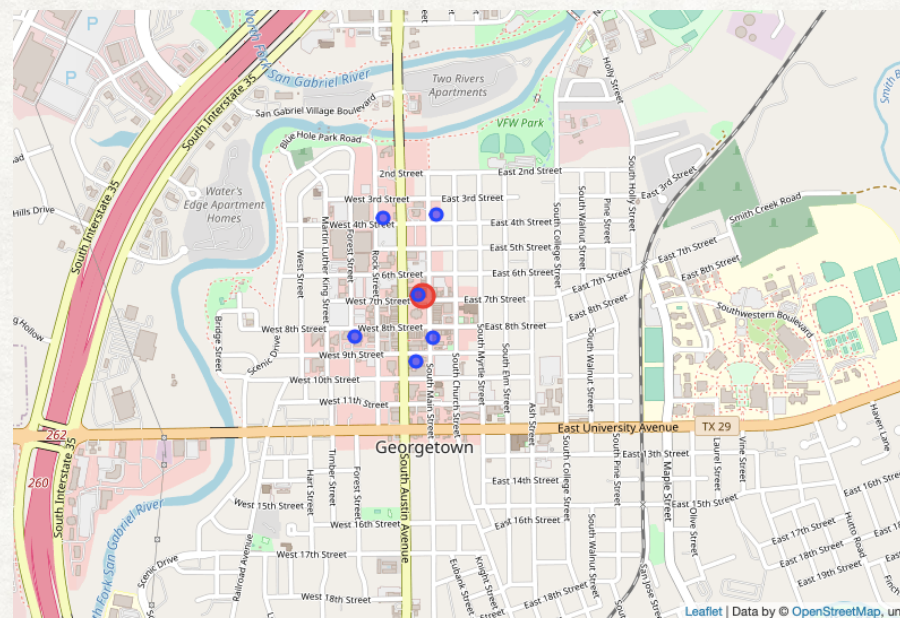
- As expected there might not be enough new developments in the downtown area but one can still invest in existing spaces



# RESULTS

## DOWNTOWN GEORGETOWN VENUES

- Below is the map of all 'Coffee Shops' in downtown and the list of coffee shops



```
0      Red Poppy Coffee Co.  
1      Cianfrani Coffeehouse  
2      Lamppost Coffee Georgetown  
3      Je Suis Coffee  
4      Jailhouse Coffee Shoppe  
5      309 Coffee  
Name: name, dtype: object
```

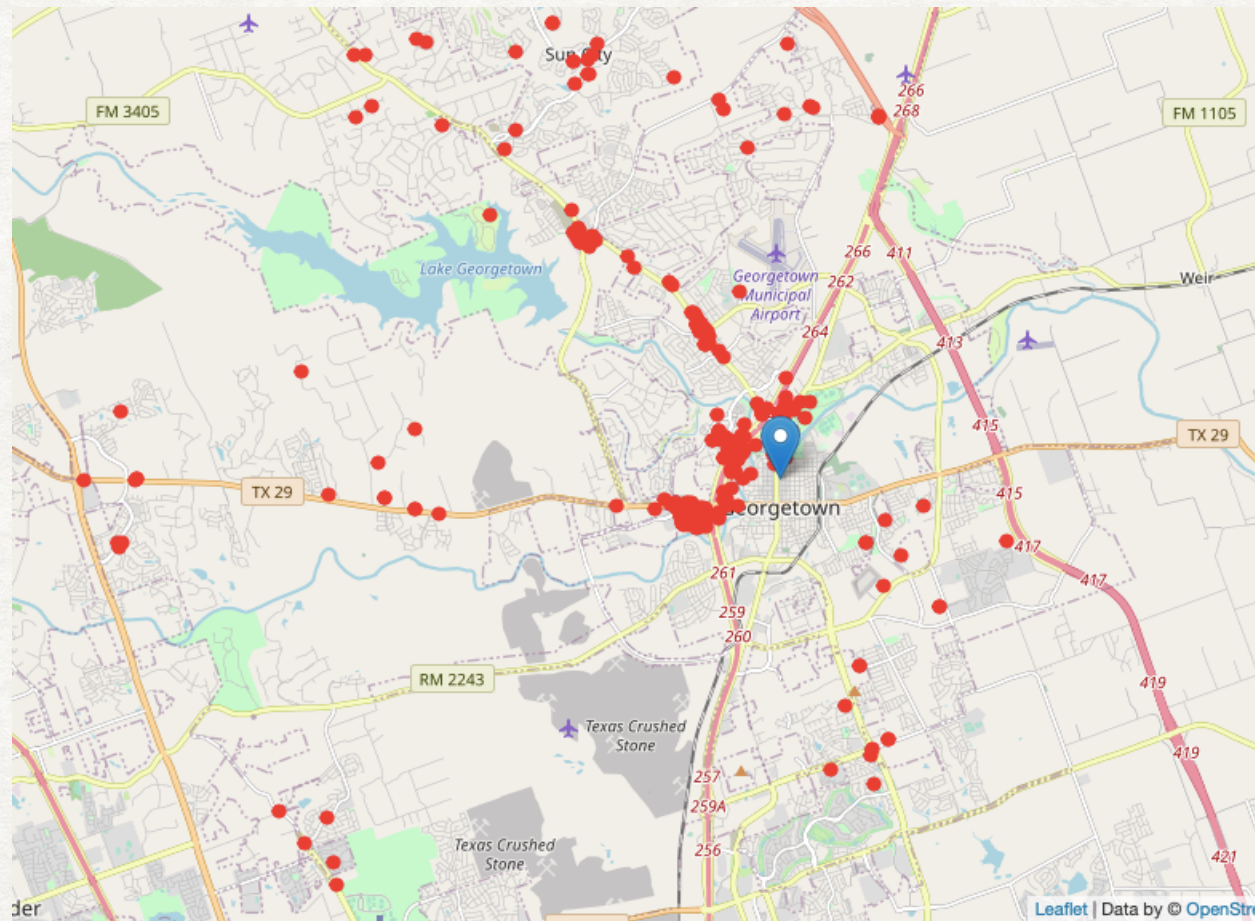
- There are a few coffee shops in downtown but there is still scope to open a new coffee shop assuming more growth will translate in high demand.



# RESULTS

## VENUES NEAR HOUSING COMMUNITIES

- A total of 263 venues were obtained from Foursquare API for new housing communities and located as shown below

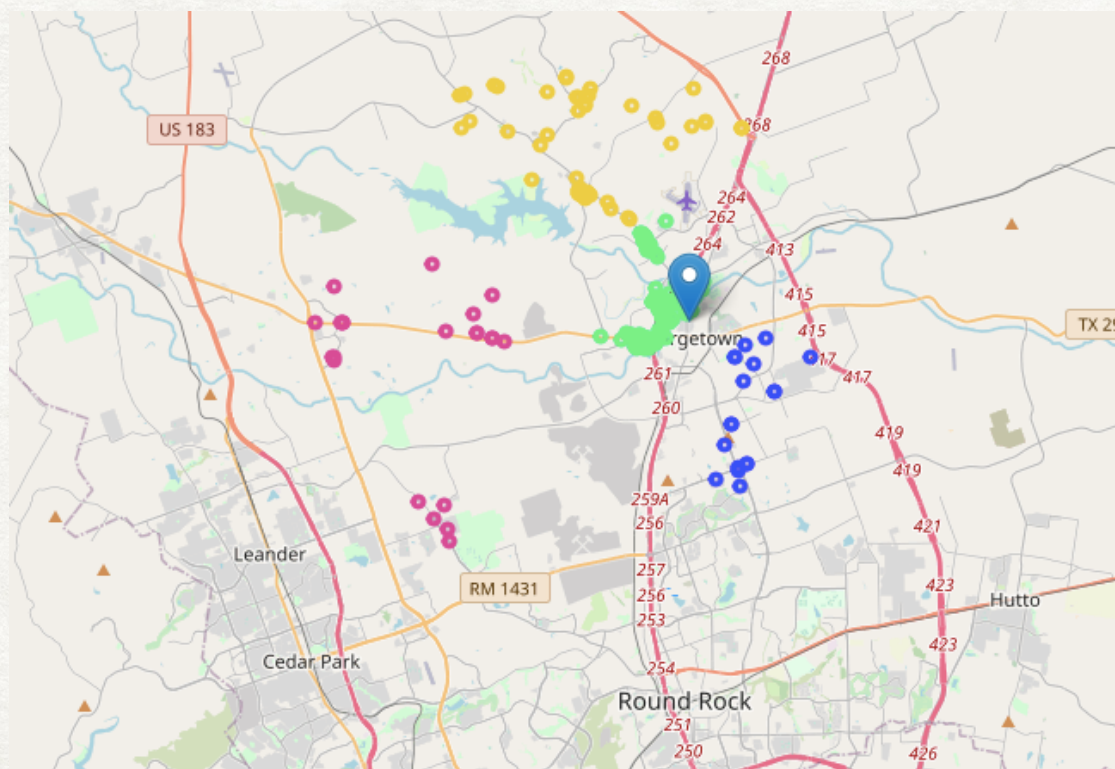




# RESULTS

## VENUES NEAR HOUSING COMMUNITIES

- K-means clustering of the venues with a  $k = 4$  resulted in the following clusters



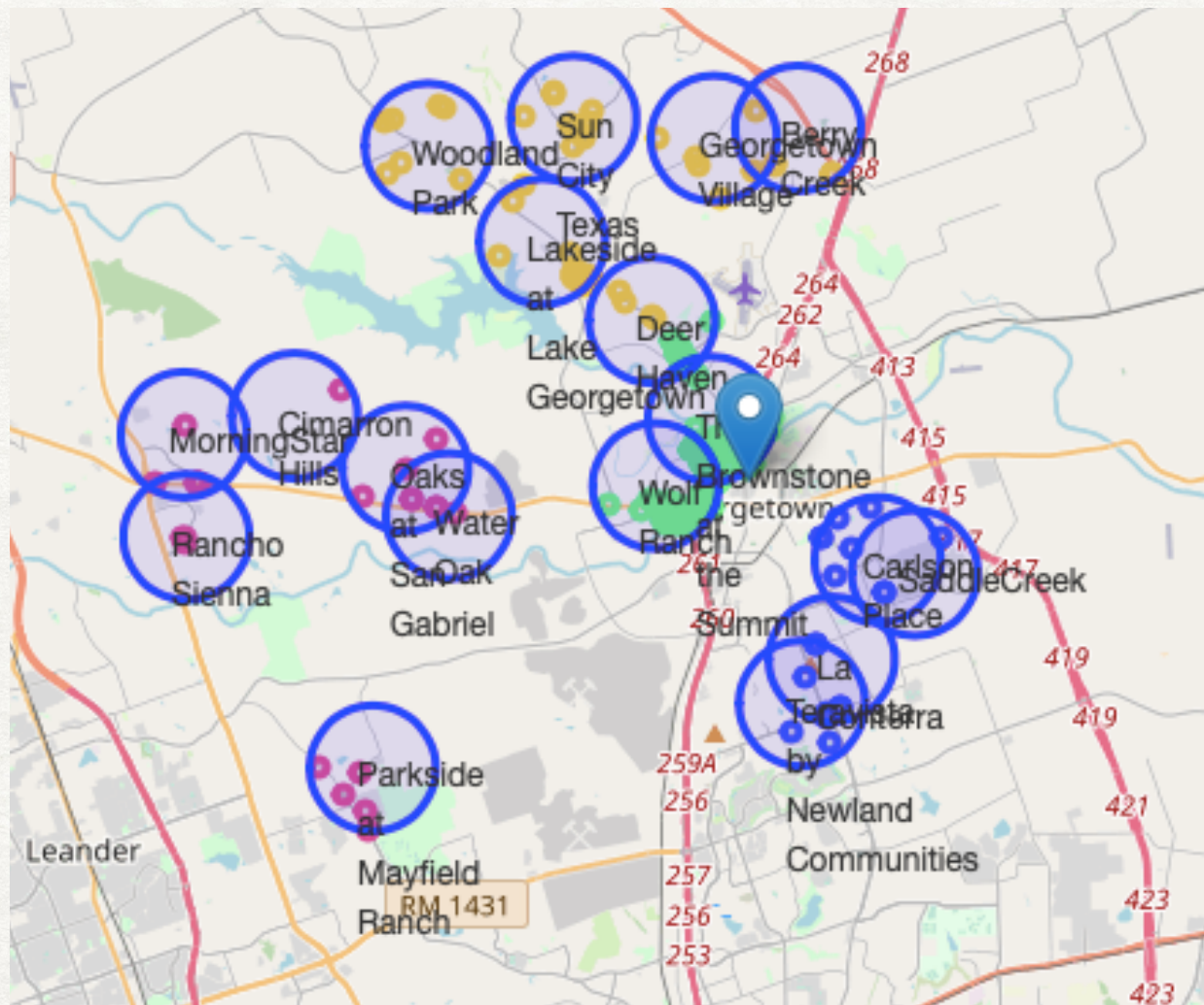
- As expected the cluster near downtown Georgetown (pin) is the most populated, making it the least favorable cluster for investment (with high growth potential).
- The "Sun city" area northwest of downtown (cluster in yellow) has relatively more venues compared to the other two clusters, showing that it is developing stage and there is still opportunity to invest.
- The other two clusters are sparsely populated making them the most favorable to invest for a good return on investment based on the growth projections.



# RESULTS

## VENUES NEAR HOUSING COMMUNITIES

- Mapping the housing community to the clusters as shown below



- Mapping of the housing communities and clusters give a good idea of which communities are favorable to invest in new developments.



# RESULTS

## TOP 25 BUSINESSES

- The venue data is sorted to list top 25 businesses around the new housing communities

Fast Food Restaurant	11
Pizza Place	10
Sandwich Place	9
Restaurant	8
Pharmacy	7
American Restaurant	6
Mexican Restaurant	6
Salon / Barbershop	6
Gas Station	5
Park	5
Cosmetics Shop	5
Convenience Store	5
Burger Joint	5
Construction & Landscaping	5
Gym	4
Seafood Restaurant	4
Department Store	4
Home Service	4
Asian Restaurant	4
Video Store	4
Ice Cream Shop	3
Golf Course	3
Fried Chicken Joint	3
Chinese Restaurant	3
BBQ Joint	3
Name: Cat, dtype: int64	

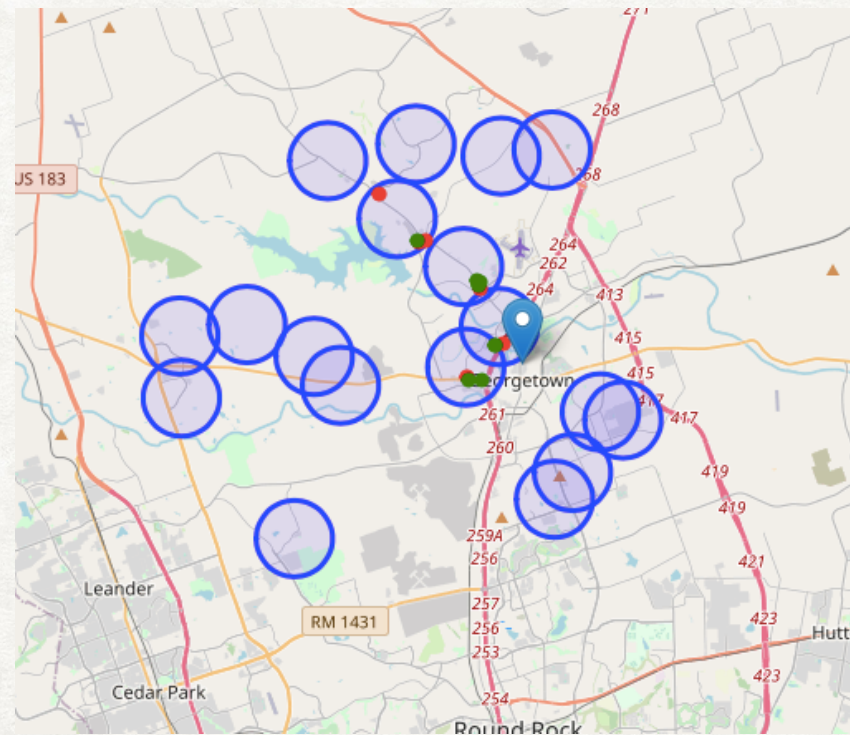
- The list shows that there are not many supporting businesses near the new and upcoming housing communities near the Georgetown city.
- This implies a good growth potential if someone invests in this area.
- Given the Georgetown area is still developing there will be availability of land to build new commercial developments.



# RESULTS

## PROSPECTS OF INVESTING IN A PHARMACY OR PIZZA PLACE

- Two sample businesses are selected to see if they are a good choice for investment.



- As seen from the map there is an abundant possibilities to invest in a pizza place or a pharmacy near the new housing communities as the existing businesses are mostly located near the downtown area.



# CONCLUSIONS

- The new housing communities of Georgetown has a very good growth potential for real-estate investment of any kind.
- This is a great place to invest in various kinds of real estate properties such as land, commercial establishment or a retail space.
- This study serves as a helpful tool in identifying the potential geographical locations without having to visit Georgetown.
- Based on the results it can be concluded that the area around the communities west and south of Georgetown have a lot of potential to grow.
- The "Sun city" north of Georgetown has more venues compared to other clusters but based on the nature of the business there might be some investment opportunities in 'Sun city' as well.
- In conclusion, Georgetown is a great city for real estate investments specially in new business developments as there are quite a few new and upcoming housing communities but not so many supporting businesses.



# FUTURE WORK

- An aspect that can enhance this analysis is office location data such as doctor's office, insurance etc. that is another major investment area in real estate market.
- Going forward to make the analysis more complete this information can be added.
- Another aspect that will make this analysis more meaningful is to add the commercial real estate listing data. So an investor can see the listings of available commercial spaces along with the businesses that are already present in a given area.