

Exploring housing alternatives within the Dallas-Fort Worth- Arlington metropolitan area

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January 10, 2021**



Introduction

- The Dallas-Fort Worth-Arlington metropolitan area is the most populous metropolitan area in Texas
- Is home for 24 Fortune 500 companies with a prosperous economy based on banking, commerce, medical care and research and logistics among other areas.
- Also the area has an important number of public and private Universities, sports scenarios and one of the largest airports of the country, the Dallas-Fort Worth International Airport.

Arlington vs. Dallas and Fort Worth

- Rent Prices in Dallas are 51.13 % higher than in Arlington.
- Restaurant Prices in Dallas are 21.55 % higher than in Arlington.
- Groceries Prices in Dallas are 19.63 % lower than in Arlington.
- Average Monthly Net Salary (After Tax) is 60.77 % higher in Dallas.
- Rent Prices in Fort Worth are 6.61 % higher than in Arlington.
- Restaurant Prices in Fort Worth are 29.21 % higher than in Arlington.
- Groceries Prices in Fort Worth are 19.63 % lower than in Arlington.
- Price per Square Meter to Buy Apartment Outside of Centre is 21.22 % lower in Fort Worth.

Question

- Which are the best neighborhoods to live within the Dallas-Fort Worth-Arlington metropolitan area?
- This exercise will consider a family composed by two adults, a young son and a dog in order to have some criteria to evaluate the options that we found in the analysis of data.

Data sources

Name of neighborhoods and average rent cost:

- Arlington:
<https://www.rentcafe.com/average-rent-market-trends/us/tx/arlington/>
- Dallas:<https://www.rentcafe.com/average-rent-market-trends/us/tx/dallas/>
- Fort Worth:
<https://www.rentcafe.com/average-rent-market-trends/us/tx/fort-worth/>

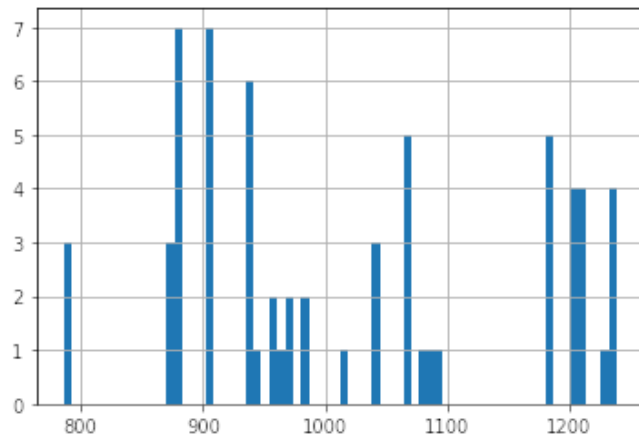
Data sources

- Safe zones in each city:

| Fort-Worth | | Dallas | | Arlington | |
|---------------|---------------|----------------------|---------------|------------------------|---------------|
| Zone | Lat, Long | Zone | Lat, Long | Zone | Lat, Long |
| Far SouthWest | 32.74, -97.36 | Far North | 32.98, -96.80 | Southeast | 32.64, -97.10 |
| Downtown | 32.75, -97.33 | Arts District | 32.79, -96.80 | West | 32.70, -97.15 |
| West Cliff | 32.69, -97.36 | Winnetka Heights | 32.74, -96.84 | Pantego | 32.72, -97.15 |
| Far North | 32.93, -97.30 | Highland Park | 32.83, -96.80 | Dalworthington Gardens | 32.69, -97.16 |
| Far NorthWest | 32.88, -97.41 | Main Street District | 32.78, -96.79 | Southwest | 32.65, -97.16 |
| Wedgwood | 32.65, -97.40 | Northeast Dallas | 32.85, -96.75 | Central | 32.74, -97.11 |
| Far South | 32.60, -97.31 | University Park | 32.85, -96.80 | North | 32.78, -97.09 |
| | | City Center District | 32.78, -96.80 | East | 32.72, -97.08 |
| | | North Dallas | 32.96, -96.79 | | |
| | | Love Field Area | 32.83, -96.85 | | |
| | | m Streets | 32.82, -96.77 | | |

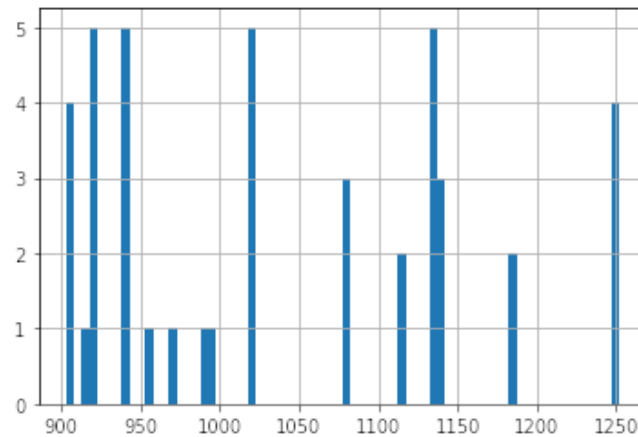
Table 1: Safest zones reference coordinates

Rent cost distribution



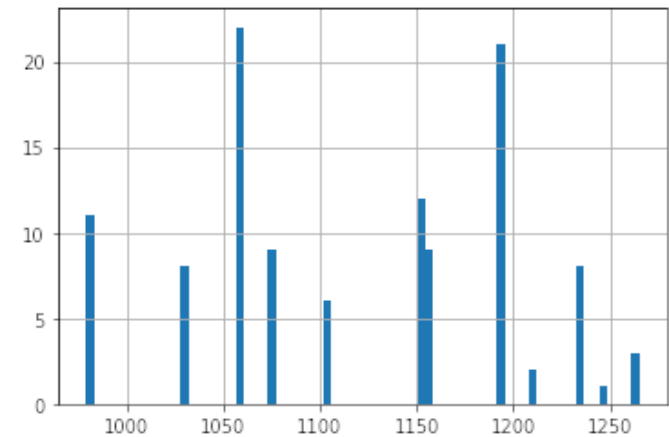
Average Rent Cost

Fort Worth



Average Rent Cost

Dallas

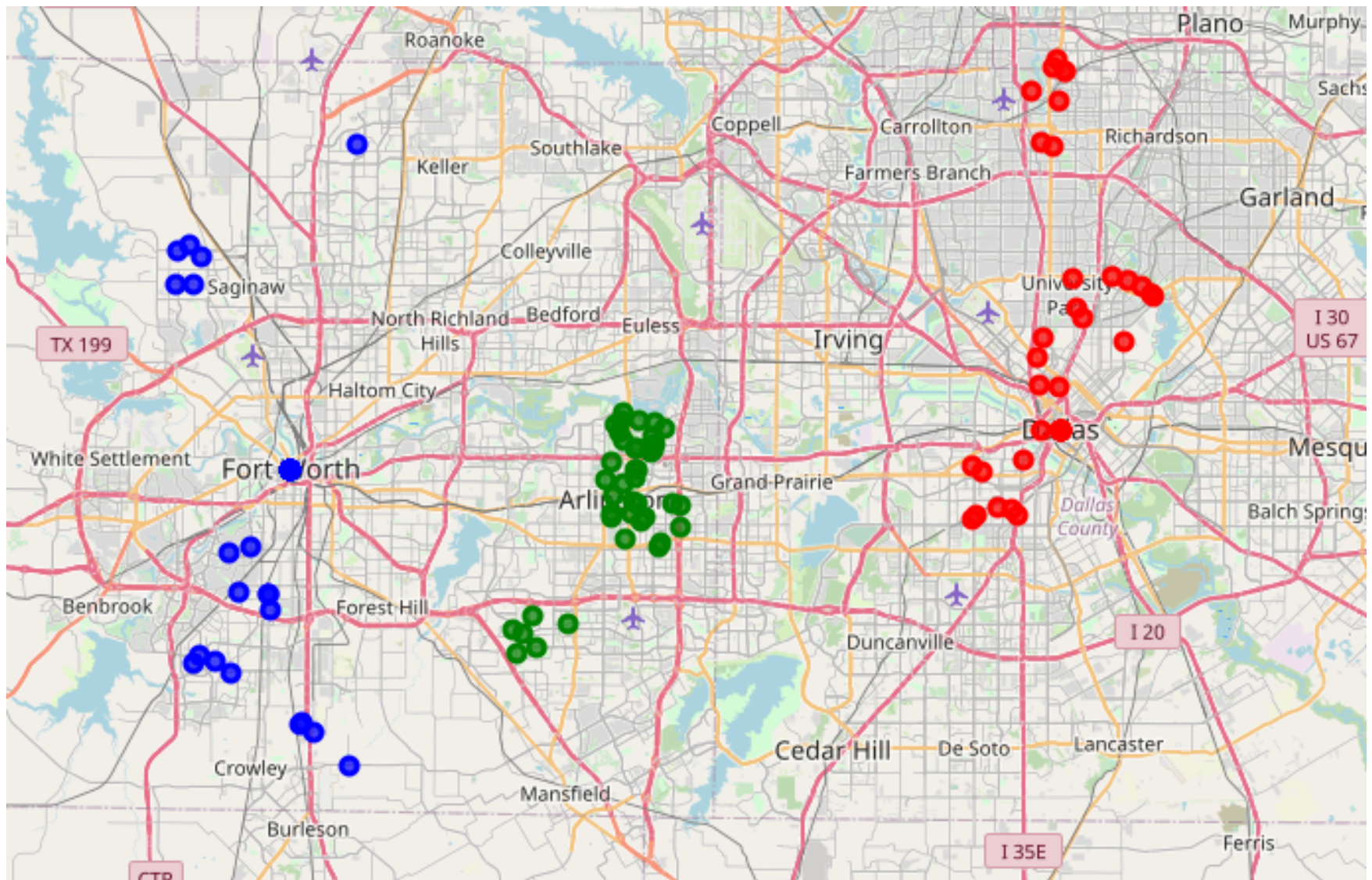


Average Rent Cost

Arlington

- After selecting the safest neighborhoods in each city, we compare the rent cost distribution for each city. We choose the price range \$900 - \$1265 from the histogram above in order to compare neighborhoods of the three cities with similar 'average rent cost'.

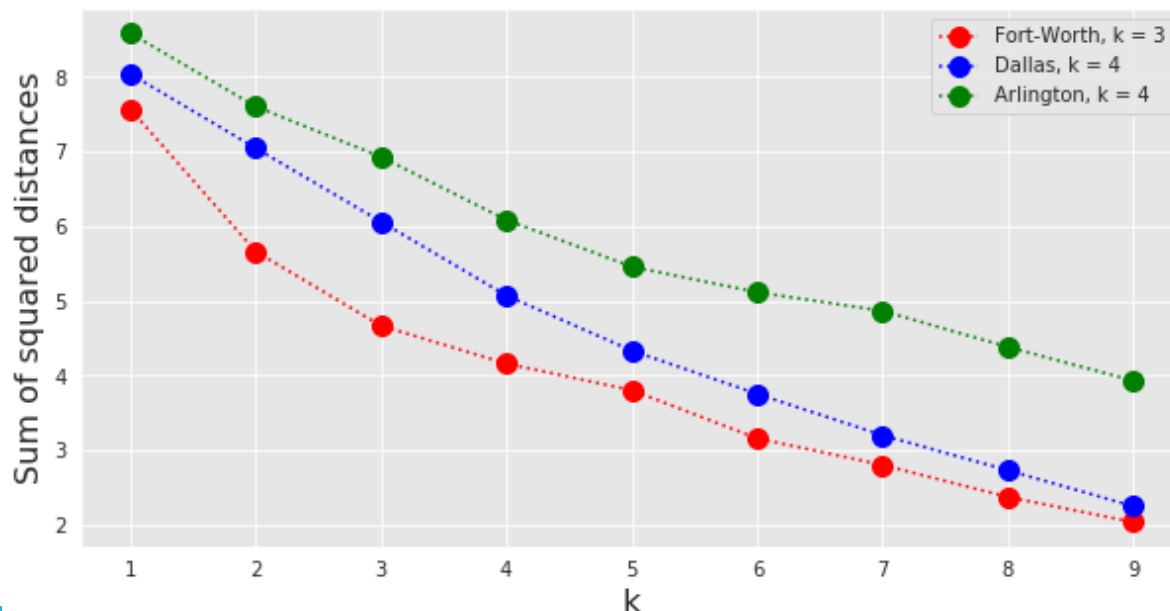
Map of the selected neighborhoods



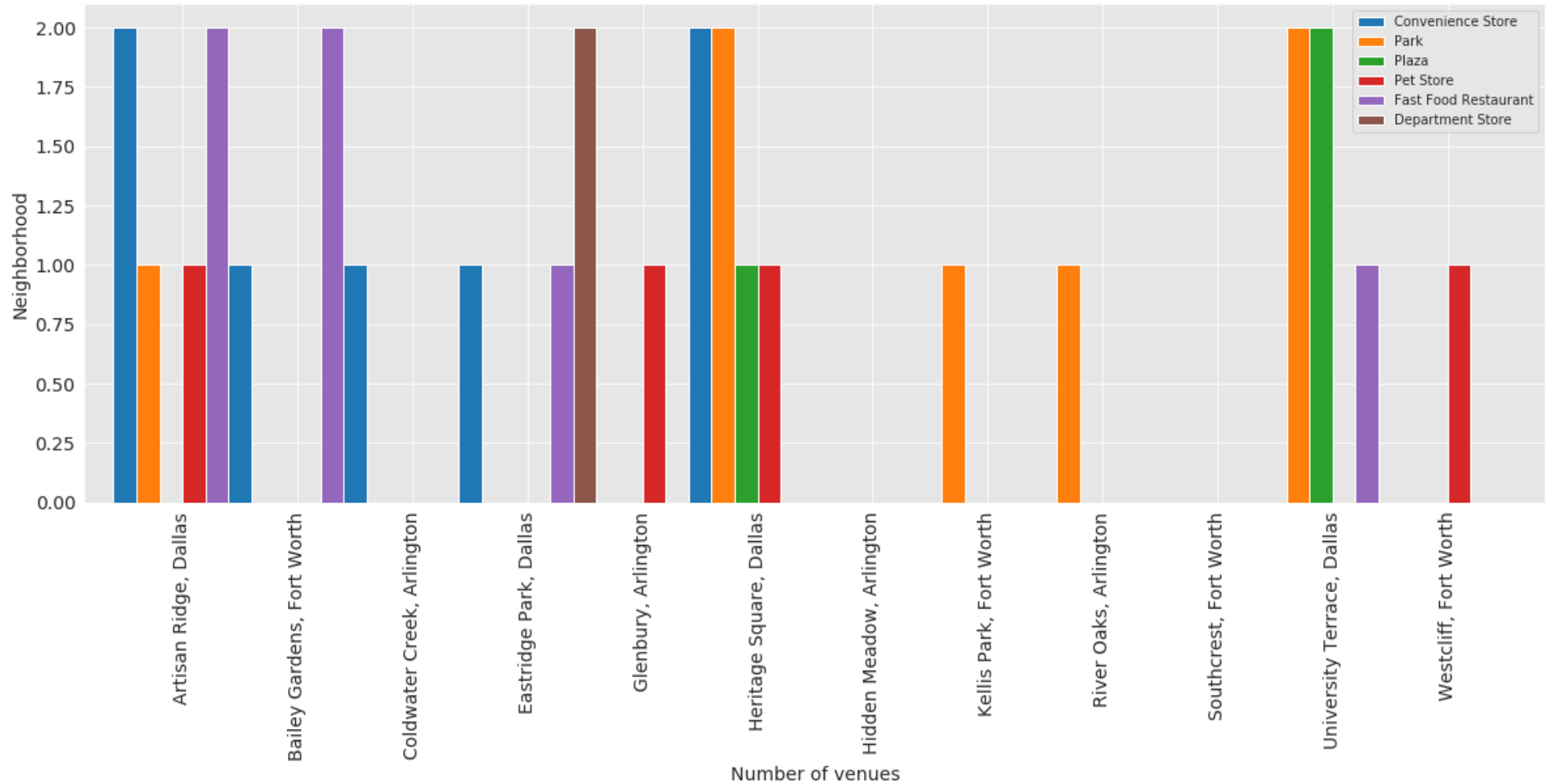
Methodology

- With 40 neighborhoods for each city, we find the venues of each neighborhood using the Foursquare API in a radius of 500m. In the case of Fort Worth, we obtain 109 unique venues categories while for Dallas and Arlington we found 143 and 104 respectively.
- To apply the k-means algorithm, it was necessary to find the appropriate number of clusters (k) using the Elbow method. Our optimal k is 3 in the case of Fort-Worth, and k = 4 in the case of Dallas and Arlington.

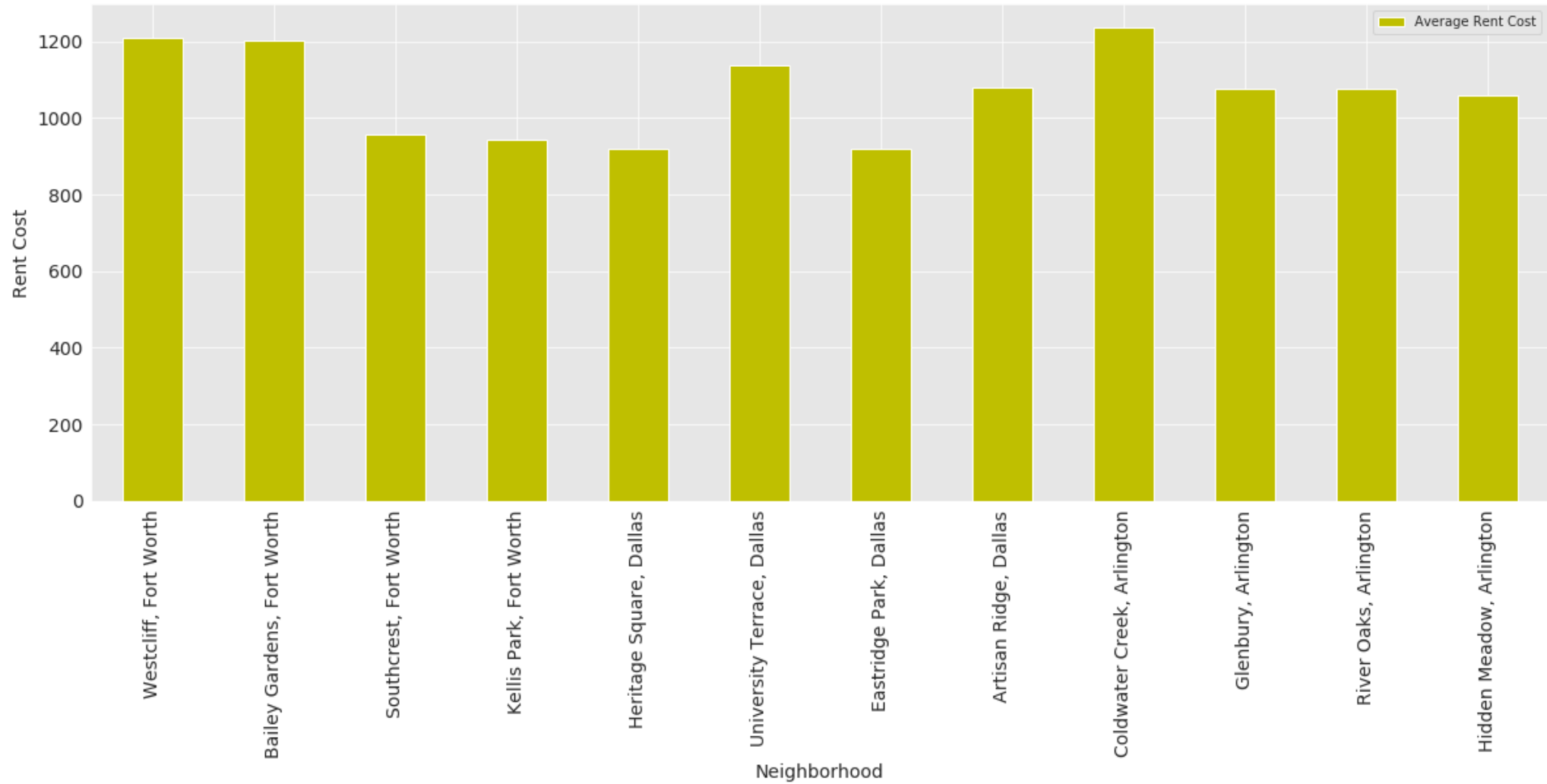
Elbow method to find k



Results: Distribution of venues



Results: Rent cost



Discussion

- With the criteria applied in the analysis of the data for each city, the selected neighborhoods in Dallas seem to be the closest to what we expect in terms of rental price, security and nearby amenities for a family of two adults, a child and a dog as a pet:
 - We can see that there are more parks, fast food restaurants and convenience stores in Dallas than those in Fort-Worth and Arlington.
 - For the selected neighborhoods, it seems that rent cost is a little bit lower in Dallas with a price between \$900 and \$1150.

Discussion: Perspectives

For a more complete future analysis we would have to consider other variables such as:

- Consider whether family members will use a car or public transportation to get around. This will allow to examine the alternatives that could be close by according to the neighborhood they choose to live in.
- Which school might be most suitable for the young family member.
- Examine the quality of health services in each city and how close the hospitals are to the area of residence.
- Consider the type of employment that adults in the family will have to examine the salary they will receive according to the city where they work. This will determine the family budget for rent cost.

Conclusions

- The Dallas-Fort-Worth-Arlington metropolitan area offers several housing alternatives for a family that wants to move to this area. There are many criteria that must be considered when deciding to find a city to settle but from this analysis we can establish that in this metropolitan area it is possible to obtain a comfortable home with a rental cost of less than \$1200 with recreation areas, schools and nearby stores.

References

- [1] https://en.wikipedia.org/wiki/Dallas–Fort_Worth_metroplex
- [2] https://www.numbeo.com/cost-of-living/compare_cities.jsp?country1=United+States&country2=United+States&city1=Arlington%2C+TX&city2=Dallas%2C+TX
- [3] https://www.numbeo.com/cost-of-living/compare_cities.jsp?country1=United+States&country2=United+States&city1=Arlington%2C+TX&city2=Fort+Worth%2C+TX
- [4] <https://blog.cambridgespark.com/how-to-determine-the-optimal-number-of-clusters-for-k-means-clustering-14f27070048f>