Exploring Potential Locations of New Franchises for Torchy's Tacos Food Chain

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Introduction

Background

Austin is the capital city of the U.S. state of Texas. It is the 11th-most populous city in the United States, the fourth-most-populous city in Texas, and the second-most-populous state capital city)[1]. Torchy's Tacos is a famous restaurant in Texas with more than 60 physical locations. It was founded in Austin in 2006 by former corporate chef Michael Rypka, who was inspired by a love for tacos and a passion for experimenting with food to bring an untraditional taco experience to the people of Texas. Today, Torchy's serves innovative, unconventional tacos to customers in over 50 locations across three states, offering a unique and edgy dining experience.[2]

Fig.1 Torchy's Taco Logo

Problem

This project focus on a hypothetical business plan. Assuming someone wants to open another franchise of Torchy's Tacos in Austin. Given the huge amount of investment involved, it becomes vital to determine the best location to get the highest rate of return in the investment. Since there are already 14 locations of this chain in Austin Texas, there would be sufficient data to explore the new location of the franchise.

Interested Audience

There are two groups of people who would be interested in this project and its outcome. First, any potential investors who plan to open a new franchise in Austin and want to adopt a data-driven

approach while making the decision. Second, the findings of this work could be used by existing owners of the chains to investigate why certain restaurants are performing better than others. Is it purely driven by the nearby popular venues or is it because of good food and service at certain locations? The project will try to explore these areas.

Data

The following sources were used to obtain the data for this project.

- **FourSquare API:** It offers real-time access to Foursquare's global database of rich venue data and user content. It was used to obtain information about nearby venues based on the geo (latitude and longitude) data.

- **Store Locations:** The store locations and addresses were accessed using the webpage of the food chain [3]. The web-scaping via python was not possible due to security features on the website. Since there are only 14 locations, the addressed were saved in the excel sheet manually as shown below.

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	Neighborhood	Address	Latitude	Longitude
0	Escarpment	5900 W Slaughter Ln, Austin, TX 78749	30.201690	-97.878780
1	Stone Hill	18817 LIMESTONE COMMERCIAL DRIVE, Pflugerville...	30.468910	-97.595570
2	Northshore	110 San Antonio Street, Austin, Texas, 78701	30.265000	-97.749280
3	Lakeway	1945 Medical Dr, Lakeway, TX 78734	30.346830	-97.968070
4	Cedar Park	1468 E Whitestone Blvd, Cedar Park, TX 78613	30.526660	-97.808810
5	Spicewood Springs	4211 Spicewood Springs Rd, Austin, TX 78759	30.370703	-97.756276
6	Guadalupe	2801 Guadalupe St, Austin, TX 78705	30.293745	-97.741711
7	Burnet	5119 Burnet Rd, Austin, TX 78756	30.323461	-97.739258
8	Belterra	166 Hargraves Dr, Austin, TX 78737	30.204425	-97.978874
9	Arbor Trails	4301 W William Cannon Dr, Austin, TX 78749	30.221531	-97.841139
10	Anderson Mill	11521 RR 620 N. E-1000, Austin, Texas, 78726	30.453097	-97.827640
11	Congress	1822 S Congress Ave, Austin, TX 78704	30.245492	-97.751569
12	South Lamar	3005 S Lamar Blvd, Austin, TX 78704	30.241509	-97.783729
13	Mueller	1801 E 51st St, Austin, TX 78723	30.301733	-97.699010

Fig.2 Dataframe showing the different locations

- **Google Maps:** The latitude and longitude data were obtained via google maps.

- **Yelp Rating:** The yelp rating of the food chain at different locations along with the number of reviews posted online was used to rate the performance of the different locations.

Methodology

Exploratory Data Analysis (EDA): EDA was performed to visualize the existing locations of the food chain- Torchy's Tacos in the Austin, TX region. The fourteen locations were visualized on the maps as shown below:

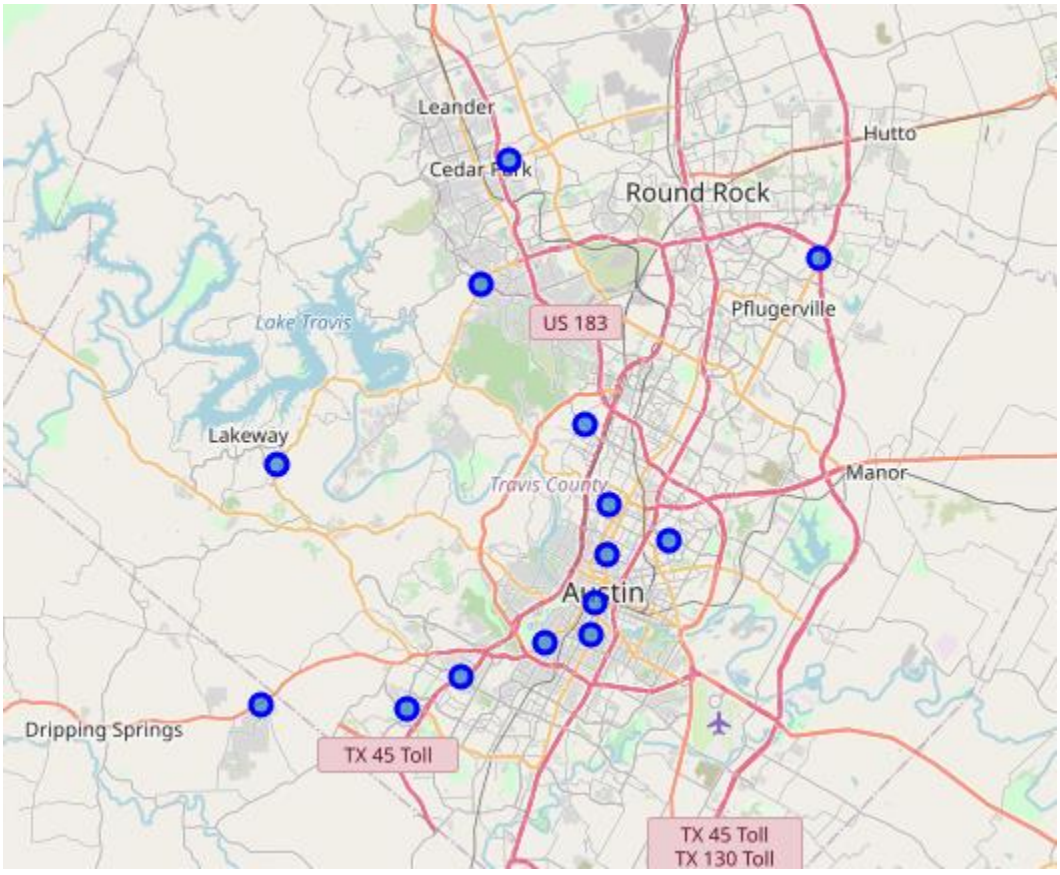

Fig.3 The visualization of existing locations

K-Mean Clustering: This is a method of vector quantization, originally from signal processing, that aims to partition n observations into k clusters in which each observation belongs to the cluster with the nearest mean (cluster centers or cluster centroid), serving as a prototype of the cluster. Python in-built function was used to create clusters encompassing the different locations based on the similarity of the different venues around them.

Clustering

The K-mean clustering was adopted to create five clusters based on the venue data generated from the four-square API. The result is shown below.

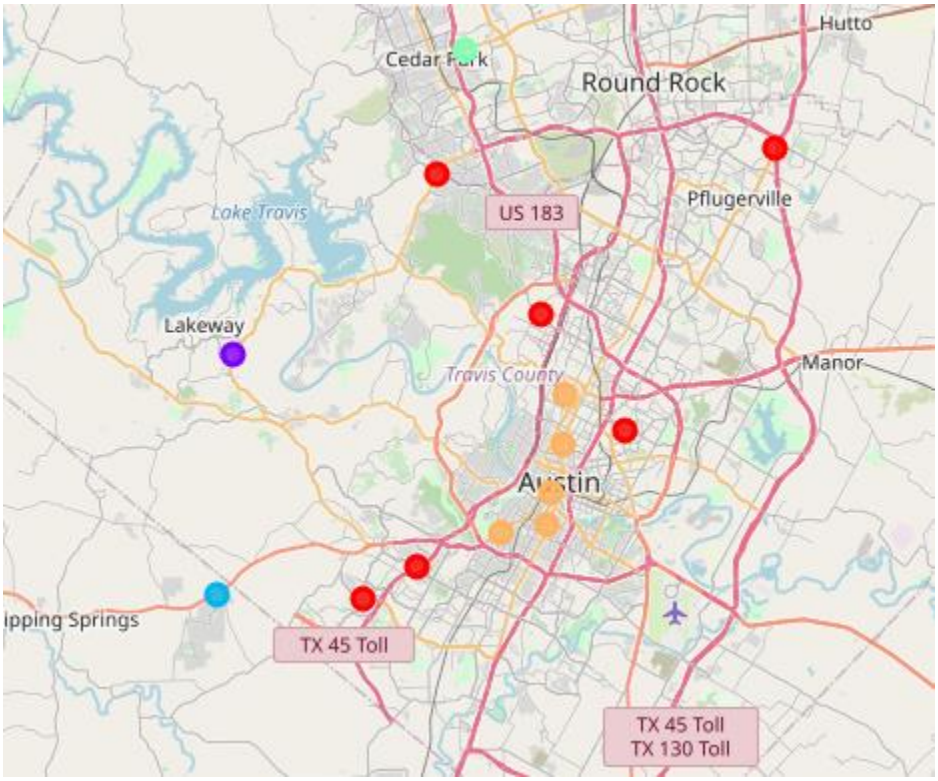

Fig.4 K-Mean Clustering of the different locations of Torchy's

Results & Discussion

In the above section, the five clusters were determined based on the similarity of the nearby venues for the different Torchy's locations. The next step is to determine which

cluster is performing best. Since the financial data of these stores are not available, I rely on the Yelp data (rating and reviews) of these locations which are publicly available. Let's plot the ratings vs the obtained cluster label.

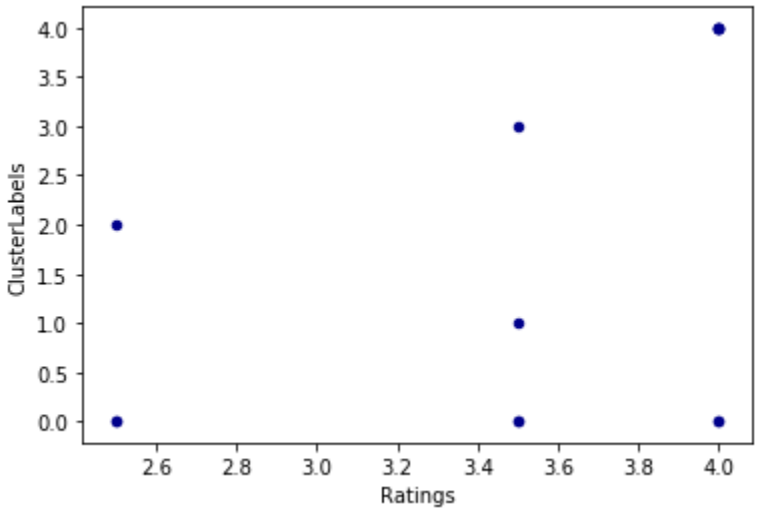

Fig.5 Plot of cluster label vs Ratings

It should be noted that the ratings of the restaurant are a much strong function of the service provided in that specific location. Thus, it may not be a good indicator while choosing a new location as service quality can be improved in the new location. Thus, the number of reviews was chosen as the success criteria under the assumption that a more popular location will gain more social engagement and hence, higher review. Let' plot the number of reviews and the determined clusters. It is difficult to analyze the data based on this plot alone.

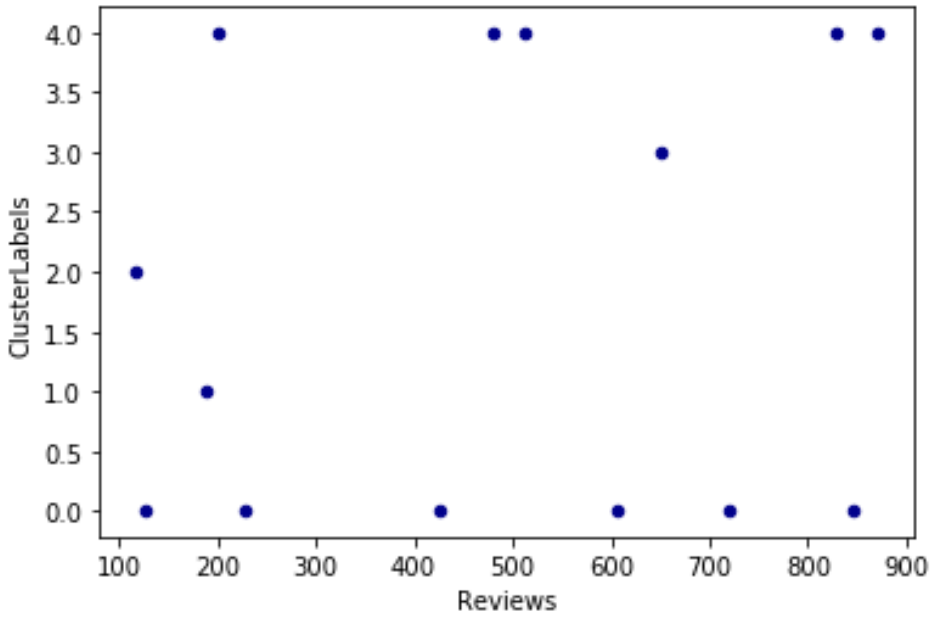

Fig.6 Plot of cluster label vs the number of reviews

Therefore, for each cluster location, an average cluster rating was determined based on the number of reviews and the following plot was obtained. It can be seen that cluster (label) 3 has the highest normalized reviews followed by cluster 4.

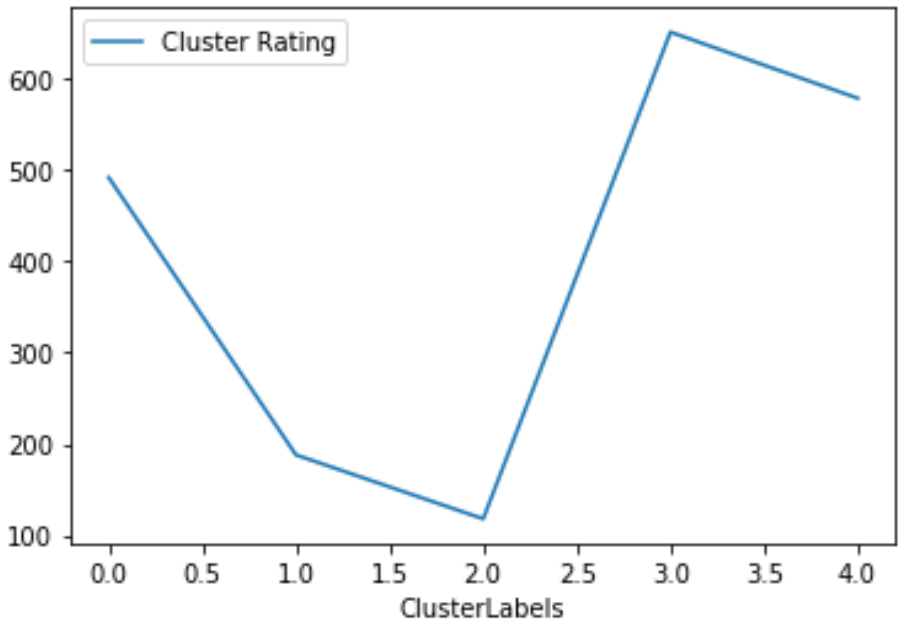

Fig.7 Plot of cluster label vs average review of clusters

Let's look at the cluster again to focus on these clusters. Cluster 3 gave the higher cluster rating so a nearby location in that region is a good candidate for the new franchise. However, the data to support this is limited as only one restaurant falls into this category. In contrast, Cluster 4 has 5 existing restaurants that are doing well based on social ratings. A new franchise in this cluster region can also be a good candidate. The existing locations can also look at these findings to investigate why certain locations have a higher rating than others and perhaps improve the underlying issues such as poor service, management etc.

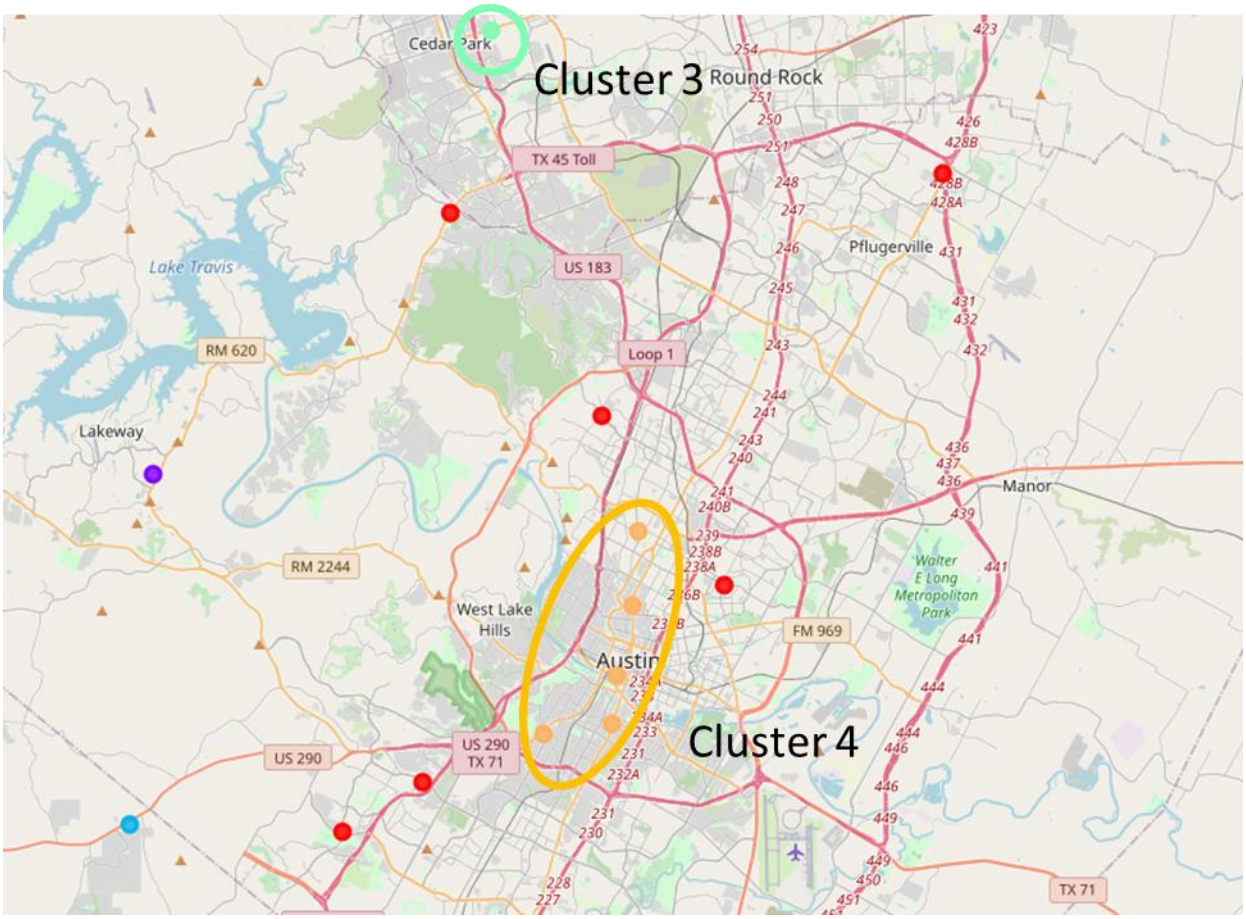

Fig.8 Optimal cluster location for the new franchise location

Conclusion

In this work, the various existing locations of a famous food chain- Torchy's Tacos in Austin area was investigated to determine the optimal location of a new franchise. Four Square API was used to get the information regarding the nearby popular venues and the top ten common venues were obtained for each location. Since the success of a business is strongly dependent on the nearby businesses, these nearby venues were used to determine different clusters in which existing location fits. The number of reviews on the Yelp was used to determine the successful location as more popular spots lead to higher social engagement. The best clusters were determined using higher average cluster ratings which can serve as a guide while opening a new franchise.

References

1. Wiki Page: https://en.wikipedia.org/wiki/Austin,_Texas
2. Torchy's Blog: https://torchystacos.com/blog/torchys-tacos-names-g-j-hart-as-chief-executive-officer/
3. Torchy's Location: https://torchystacos.com/locations/
4. Yelp Rating: https://www.yelp.com/search?ns=1&find_desc=Torchy%27s+Tacos&choq=0&find_loc=Austin%2C+TX