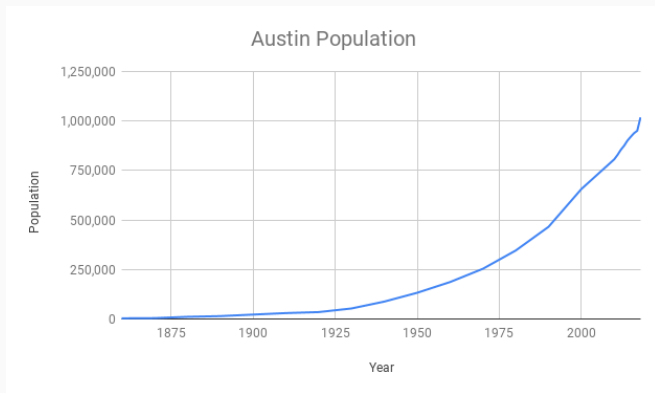# The Battle of Neighborhoods:
Exploration of Austin Food Venues

The city of Austin, TX

Demographics of Austin:

✳ one of *the most rapidly growing cities* in the United States;
✳ steady job growth, stable housing market, desirable lifestyle and *booming tech industry*.

Austin Population

It's Official: Austin is America's Next Great Food Town

A renegade wave of talented chefs with Texas-size ambitions and rock-and-roll swagger is turning Austin into the country's next next seat for great food—and, as Peter Jon Lindberg reports, barbecue is just the beginning.

BY PETER JON LINDBERG | UPDATED: FEBRUARY 22, 2018

* synonymous with barbecue, as well as killer bars, and all manner of food trucks;
* is now becoming *one of the top food destination* in the US.
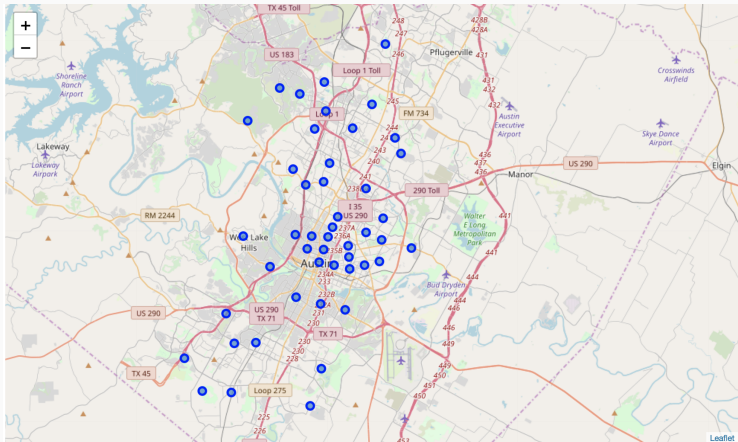
Suggestion for a new business

Open a restaurant, which would feature a more elegant selection of food and drinks, comparing to BBQ, tacos and beer, that at the same time would be interesting and attractive for both locals and tourists.

Conduct the analysis of Austin food venues and suggest the best unusual category for a new restaurant, together with the optimal location, based on the additional analysis of the city's neighborhoods, using:

✳ data, describing the current food venues available in the city;
✳ data, summarizing the city's neighborhoods.

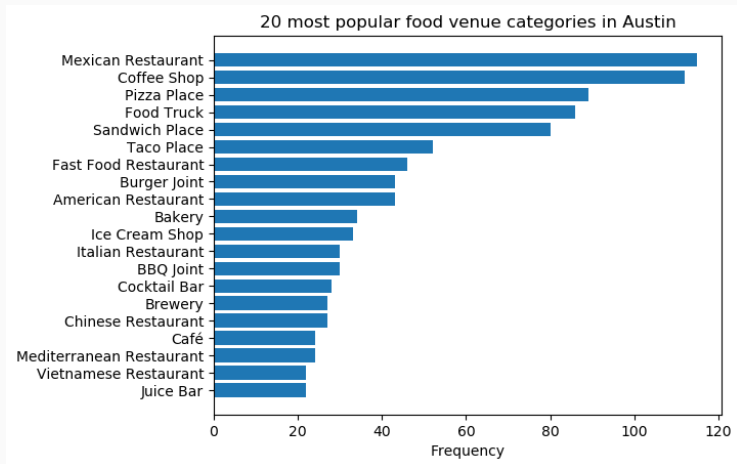The city is split into 48 neighborhoods:

Top 20 most frequent food places in Austin:
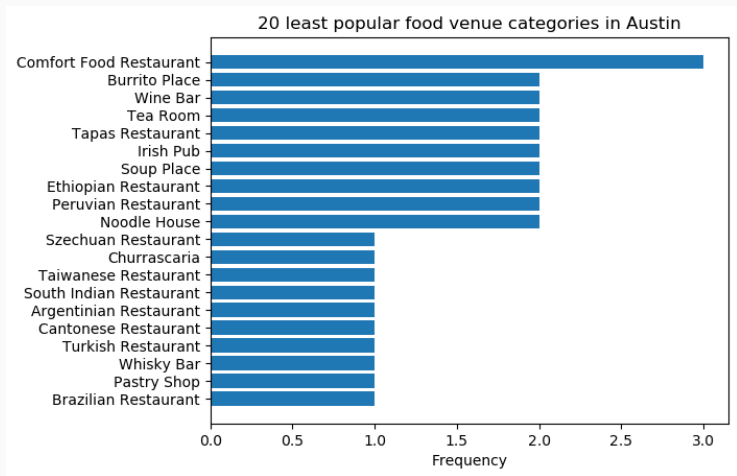

20 most popular food venue categories in Austin

Bottom 20 most frequent food places in Austin:

Conclusions of top/bottom split:

✳ Not surprisingly, Mexican Restaurants, Coffee Shops and Pizza Places are very popular.

✳ There are interesting underrepresented categories, e.g., Wine Bars, Tapas Restaurants and Tea Rooms.

Focus on bottom 20 to choose the best unusual category.

Venues from rare categories

Filter out low rated venues and venues with only few likes.

Scatter plot of rating and likes

Tapas Restaurant
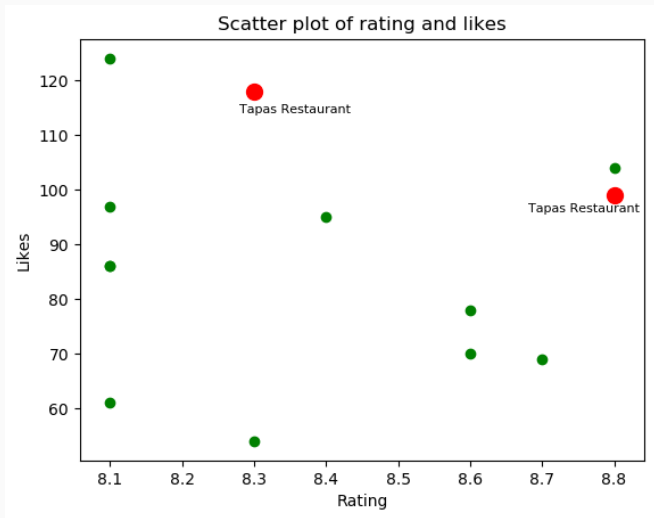
Tapas Restaurant

The best category

Tapas Restaurant is the best choice because:

✳ one out of two available restaurants has the highest rating;

✳ the other one has the second to largest amount of likes;

✳ fits into description: *unusual restaurant with elegant food*.

Location of existing Tapas Restaurants

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue ID	Venue Latitude	Venue Longitude	Venue Category	Rating	Likes
678	Auditorium Shores, Barton Springs, Bouldin Cre...	30.2440	-97.7630	Winebelly	52169f0711d26dd8be94f30a	30.241435	-97.758936	Tapas Restaurant	8.8	99
575	Bryker Woods, Old Enfield, Windsor Road	30.2930	-97.7490	Cabo Bob's	5261db9511d2b9ed254233d6	30.295861	-97.744015	Burrito Place	8.8	104
687	Auditorium Shores, Barton Springs, Bouldin Cre...	30.2440	-97.7630	Soup Peddler Real Food & Juice Bar	4ff0f46a011c9ad2fa340562	30.246298	-97.756045	Soup Place	8.7	69
2830	North Burnet	30.3925	-97.7355	Cru Wine Bar	49e71bedf964a52079641fe3	30.401997	-97.726415	Wine Bar	8.6	70
2445	Georgian Acres, Heritage Hills, North Lamar, W...	30.3710	-97.6720	New Fortune Chinese Seafood Restaurant	5468ecfe498e87b191079be1	30.377848	-97.688096	Cantonese Restaurant	8.6	78
2238	Hyde Park, North Loop, Triangle State	30.3080	-97.7250	Vino Vino	49bed457f964a520e5541fe3	30.306973	-97.735281	Wine Bar	8.4	95
1916	Southeast Austin (SE Austin)	30.1575	-97.7500	Teapioca Lounge	4f348c3f7bebf16206886b93	30.160661	-97.791289	Tea Room	8.3	54
719	Auditorium Shores, Barton Springs, Bouldin Cre...	30.2440	-97.7630	Barlata	519523f1498ec02c62bb194a	30.252468	-97.764229	Tapas Restaurant	8.3	118
1269	Upper Boggy Creek	30.2960	-97.6990	Xian Sushi & Noodle	525d8fa5498e73e322f6ebe0	30.302841	-97.699082	Noodle House	8.1	86
1310	Oriens Park, Pecan Springs-springdale, Rmma, U...	30.3070	-97.6830	Xian Sushi & Noodle	525d8fa5498e73e322f6ebe0	30.302841	-97.699082	Noodle House	8.1	86

✳ both existing Tapas places are located in the same neighborhood;

✳ to avoid unnecessary competition, find *the most similar neighborhood*.

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Segmentation of Austin's neighborhoods

Perform clustering analysis, using k-means algorithm.

✳ features include:
  - frequencies of all popular venue categories (not limiting to restaurants);
  - populations and ares of the neighborhoods;

✳ $k = 7$;

✳ rescale the features before applying the algorithm for stability.

Cluster of interest (with the neighborhood in which there are Tapas restaurants) contains three neighborhoods:
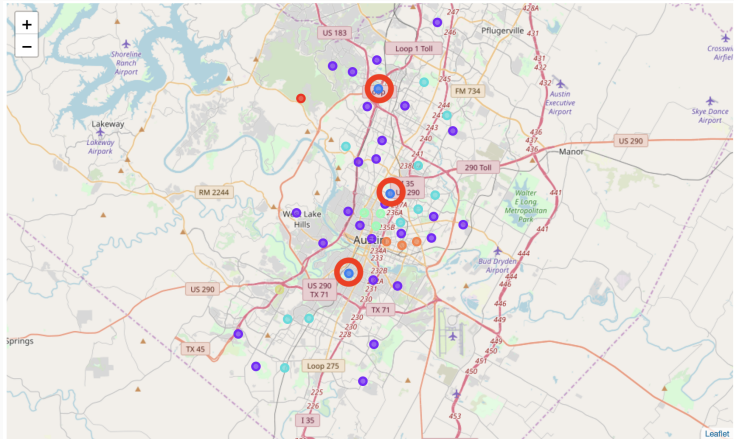
The best location

The optimal possible locations are the two neighborhoods in the cluster of interest, not including the one that already has Tapas Restaurants:

✳ – **Hyde Park***
    – **North Loop***
    – **Triangle State***

✳ **North Burnet**

*Note that some neighborhoods contain small sub-nieghborhoods sharing the same zipcodes.

Observation: both of neighborhoods have Wine Bars, which is a similar venue category, so a new Tapas Restaurant should fit nicely in such a neighborhood.

Conclusions

✳ We performed the analysis of Austin's neighborhoods and available restaurants to suggest a new unusual restaurant and the optimal location.

✳ The best category turned out to be a **Tapas Restaurant** and the best locations:
- **Hyde Park**
- **North Loop**
- **Triangle State**
- **North Burnet**

- Possible improvement of clustering accuracy – gather more data about nieghborhoods' population.