



Coursera Capstone

Opening a Restaurant in
Austin, TX



Introduction



- Austin, TX has been one of the fastest growing cities in the United States, by population growth ([Quicken Loans](#))
- It has a laid-back culture and an entrepreneurial spirit that makes it a great place to start a new business
- The food scene has been one of the benefactors of this atmosphere



Problem

- What are currently the most common restaurants in Austin, TX?
- Where is the best place to open a new restaurant?
 - Popular neighborhood with plenty of foot traffic
 - No similar restaurants nearby that would cause direct competition



Target Audience

- This analysis would be ideal for burgeoning restaurateurs
- By identifying hotspots around the city and the most common restaurants the stakeholders can tease out the prime location for their restaurant
- Knowing where the nearest competitor is helps to minimize direct competition and optimize success
 - e.g. in a city known for their American barbecue it would be difficult to stand out in such a highly competitive market

Data – Zip Code Data

zip		type	primary_city	acceptable_cities	state	county	country	latitude	longitude
34702	78701	STANDARD	Austin	Austin	TX	Travis County	US	30.26	-97.74
34703	78702	STANDARD	Austin	Austin	TX	Travis County	US	30.26	-97.71
34704	78703	STANDARD	Austin	Austin	TX	Travis County	US	30.29	-97.77
34705	78704	STANDARD	Austin	Austin	TX	Travis County	US	30.24	-97.77
34706	78705	STANDARD	Austin	Austin	TX	Travis County	US	30.29	-97.74

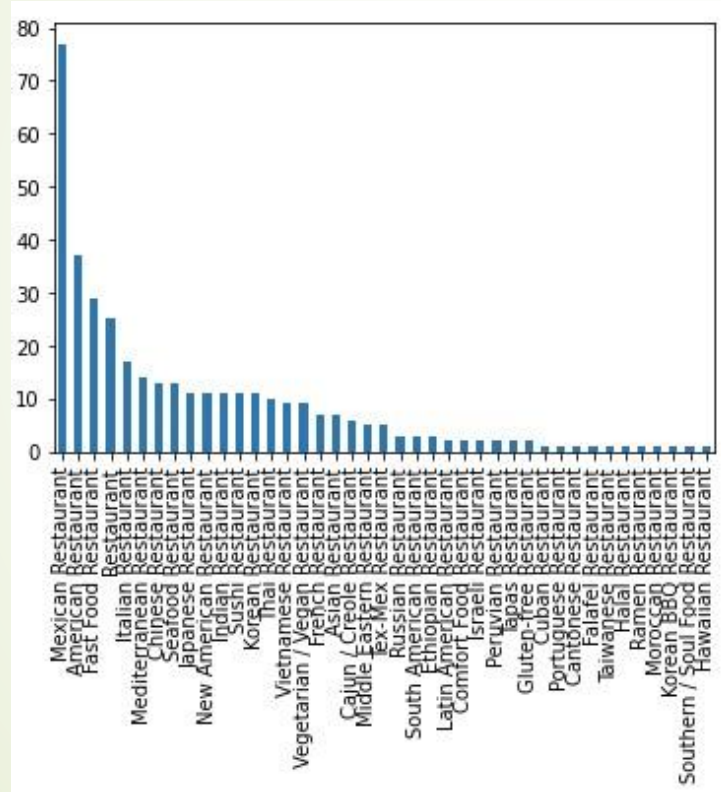
- Zip code data was pulled from unitedstatszipcode.org
 - Data set was cleaned of columns not necessary for this analysis
 - Missing “acceptable_cities” were filled in with “primary_city” values
 - Business and PO Box zip code “type” were dropped

Data – Foursquare Data

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
11	Austin1	30.26	-97.74	Geraldine's	30.260043	-97.739126	American Restaurant
14	Austin1	30.26	-97.74	Anthem	30.260758	-97.738108	American Restaurant
16	Austin1	30.26	-97.74	Emmer & Rye	30.256840	-97.739380	Restaurant
20	Austin1	30.26	-97.74	Moonshine Patio Bar & Grill	30.263827	-97.738132	American Restaurant
21	Austin1	30.26	-97.74	G'Raj Mahal Cafe	30.258324	-97.738793	Indian Restaurant

- Using the Foursquare API and the zip code data, venues were pulled for Austin, TX
 - Restaurant venues were identified by neighborhood
 - Data was cleaned to include only restaurants for the purposes of this analysis
 - Data set includes restaurant latitude and longitude

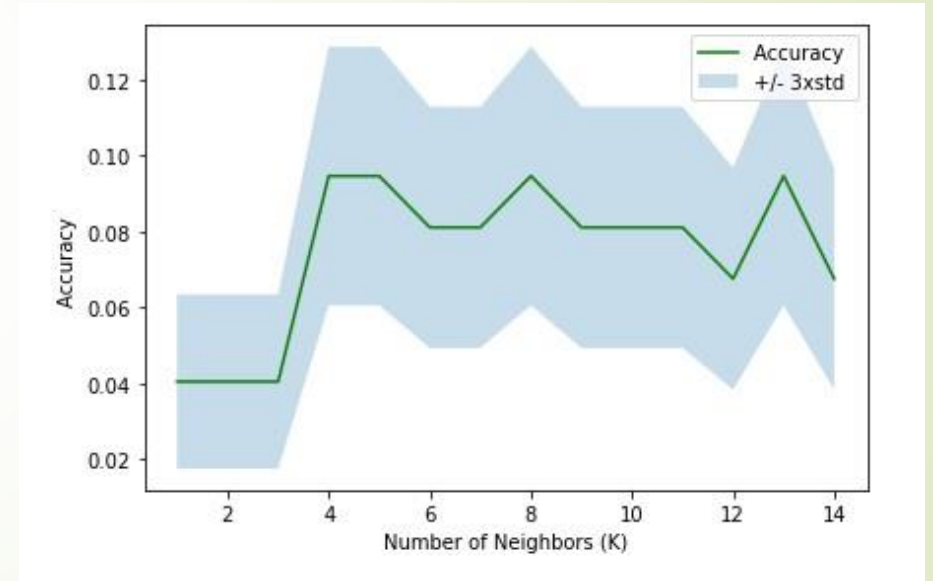
Methodology – Exploratory Data Analysis



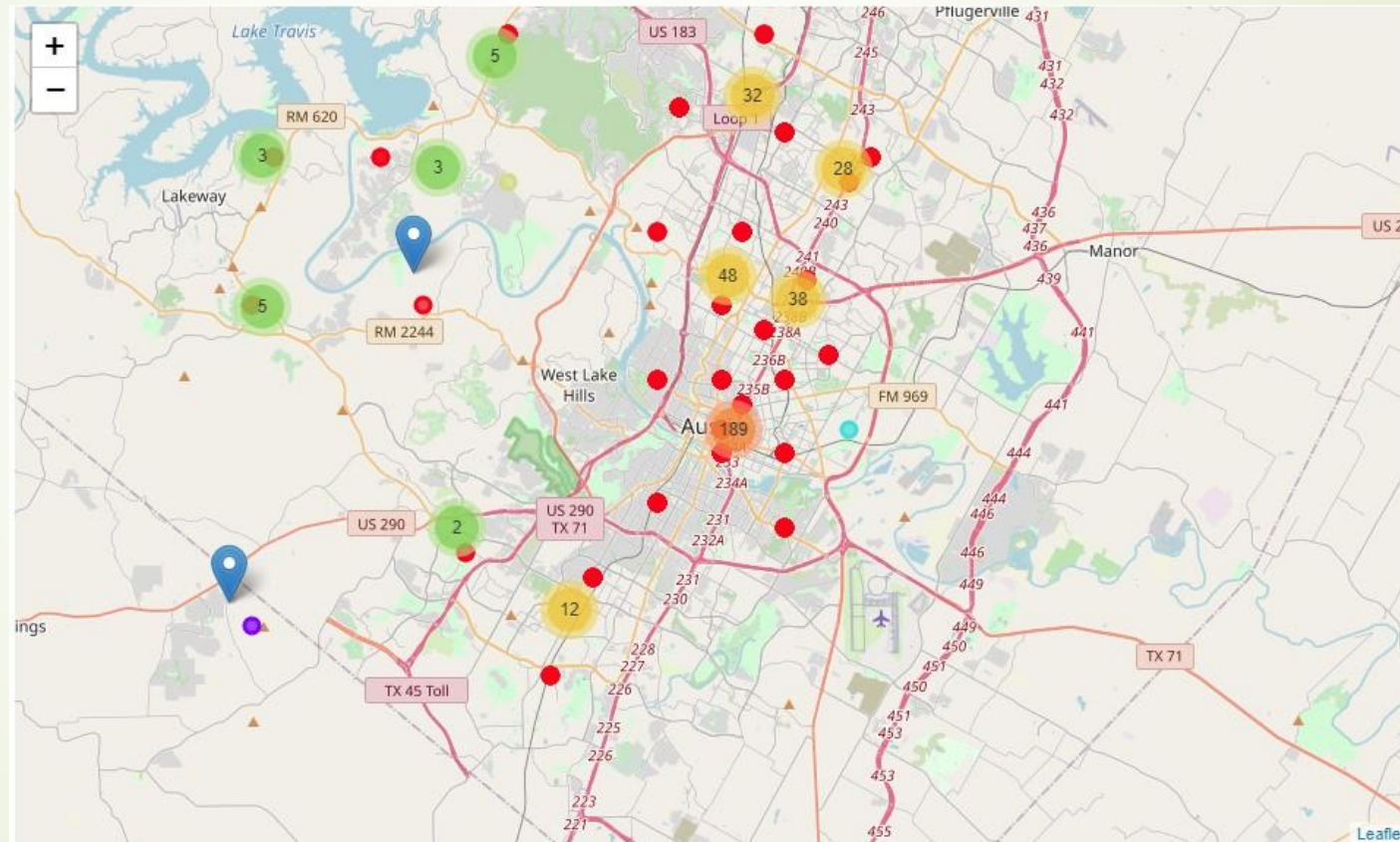
- The most common restaurants in Austin, TX
 - Mexican restaurants are by far the most prevalent, so it would not be advised to open a Mexican restaurant in Austin given the high competition
 - Korean BBQ restaurants are less common and would make a good new entry in Austin, given the right location

Methodology – Machine Learning

- Splitting the data into training and testing samples, and iteratively select the K with the highest accuracy prediction
- Using this method, a K value of 4 was identified as the best K for KNN analysis



Methodology – Visualizing Clusters



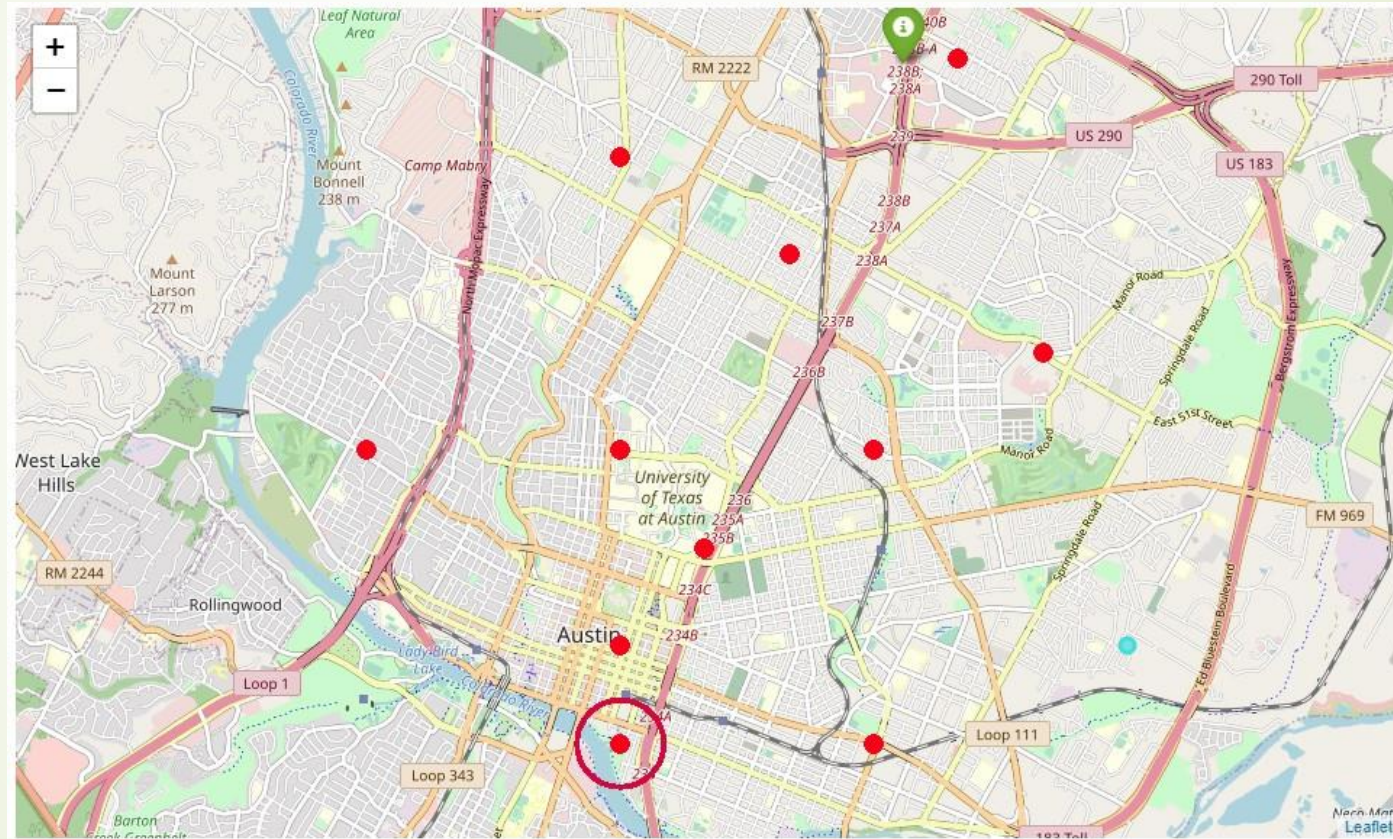


Results



- From reviewing the exploratory data analysis, it was clear to see that Mexican restaurants were by and far the most common type of restaurant in Austin, TX
- American restaurants and fast food rounded out the top three types of venues, which accounted for over a third of the different restaurants available
- Korean BBQ restaurants are severely underrepresented and are a golden opportunity to capitalize on

Discussion





Discussion



- Only one other Korean BBQ restaurant was located in the Austin area
 - Cho Sun Gal Bi Korean BBQ & Sushi Bar is located in Cluster 0
- Austin2 (Rainey Street Historic District) was identified as the ideal location to open a new restaurant
 - It is a popular neighborhood with plenty of foot traffic
 - There are many bars, restaurants and food trucks in the area
 - There were no direct competitors within the vicinity
 - Additionally, there were no Asian restaurants identified in the neighborhood



Conclusion

- Pulling zip codes from unitedstateszipcode.org, 47 neighborhoods were identified in the Austin, TX area
- Using the latitude and longitude coordinates for each neighborhood, 370 restaurants were pulled in from the Foursquare API
- Of the 370 total restaurants, there were 41 unique restaurant categories
- Mexican, American, and Fast Food restaurants accounted for more than a third of all restaurants
- There was only one Korean BBQ restaurant in Austin, TX
- Korean BBQ would be a fantastic opportunity as a new restaurant in Austin
 - Texas is known for their barbecue so the transition to Korean BBQ would be easy
 - Austinites would marvel at the idea of gathering around a tabletop grill and cooking their own food
- Rainey Street would be a great location to open the new restaurant
 - It is a popular destination for residents and tourists alike
 - There were 29 restaurants in the neighborhood
 - There was no direct competitors in the area (no Asian restaurants identified)