Plant-Based Planning

PROJECTPOLLO

Overview

The rise of plant-based meat alternatives marks a fundamental change in human diets and is growing fast. From April to May of 2020 alone plant-based meat substitutes saw a 35% increase in restaurant sales and a 53% increase in uncooked grocery sales.

The growing popularity of plant-based alternatives is not only great news for the health of our planet and animal welfare, it provides exciting new fast food options for consumers who begrudgingly abandoned Big Macs and McChicken sandwiches in the name of sustainability.

Project Pollo

“You can go slow and steady with a base, or you can go to market at 100 miles per hour and see what happens. Throw your pickles at a wall and see what sticks. I don’t know what’s going to stick, but that’s the beauty of it.”

- *Lucas Bradbury, owner of Project Pollo*

Task at Hand

Project Pollo is planning to open a new Austin, TX location and has enlisted the help of a data scientist to identify neighborhoods that could be a good fit.

Identify what (if any) relationships exist between categories of restaurants and the neighborhoods they're located in.

<u>Considerations:</u>

- Storefront availability
- Prevalence of vegan meat alternatives in the area
- Volume and categories of restaurants in the area

Data Sources

- City of Austin Open Data Portal
- Foursquare Restaurant API
- Impossible Foods, Beyond Meat and Oatly store locator tools

Approach

With each neighborhood's data organized into rows create 'clusters' with a ML model that analyzes the sum total of each restaurant category by neighborhood.

Analyze the neighborhood locations, restaurants and restaurant categories that comprise each 'cluster'.

This will give us a starting point for analyzing additional factors such as ease of access to location, residential v. commercial, fixed costs associated with store

Data Collection & Cleaning

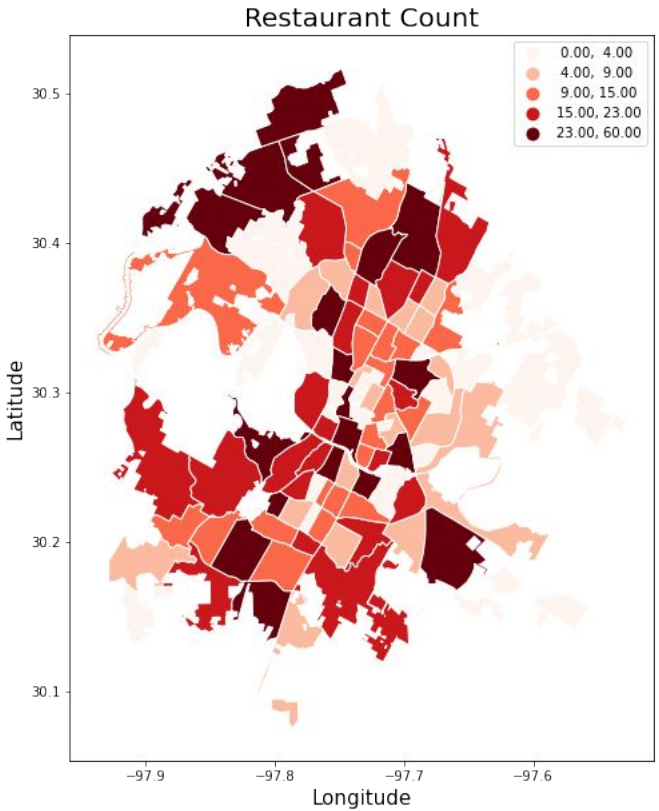
- City of Austin Open Data Portal
- Foursquare Restaurant API
- Impossible Foods, Beyond Meat and Oatly store locator tools

EDA Findings

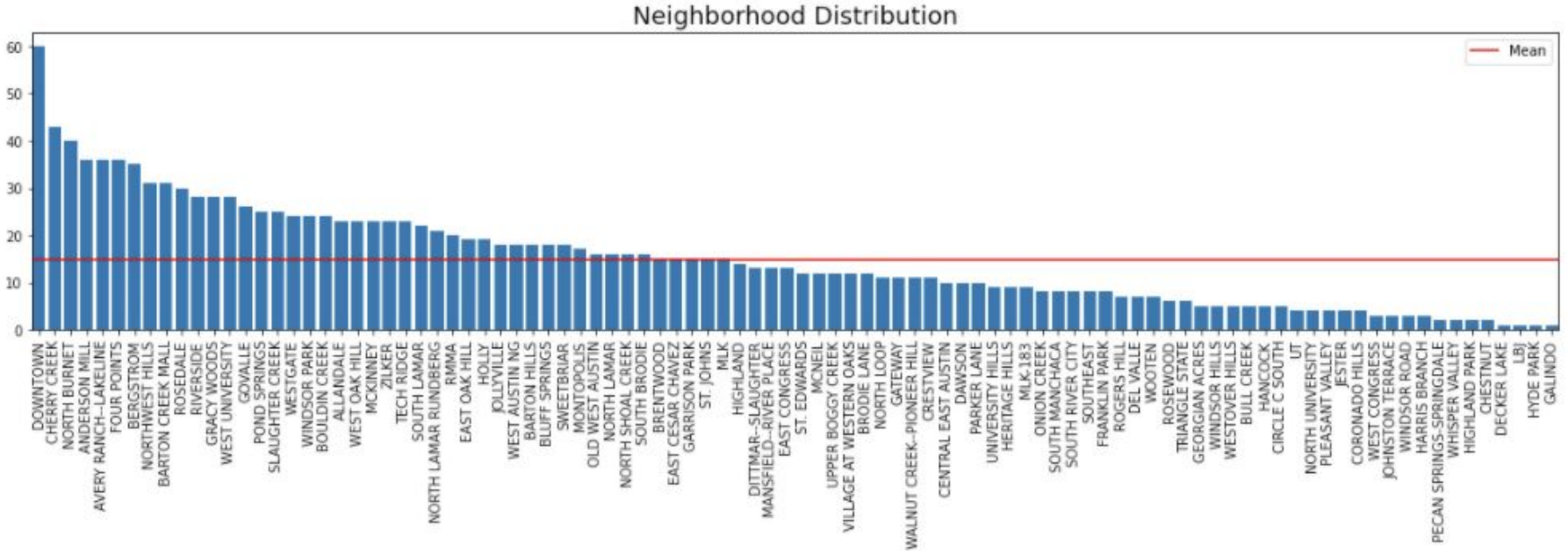
- Neighborhood distribution
- Category distribution
- Categories of interest

EDA - Neighborhood Distribution

Interestingly the neighborhoods with the highest restaurant count seem to be more on the outskirts. My intuition was that they'd be closer to downtown.



EDA - Neighborhood Distribution



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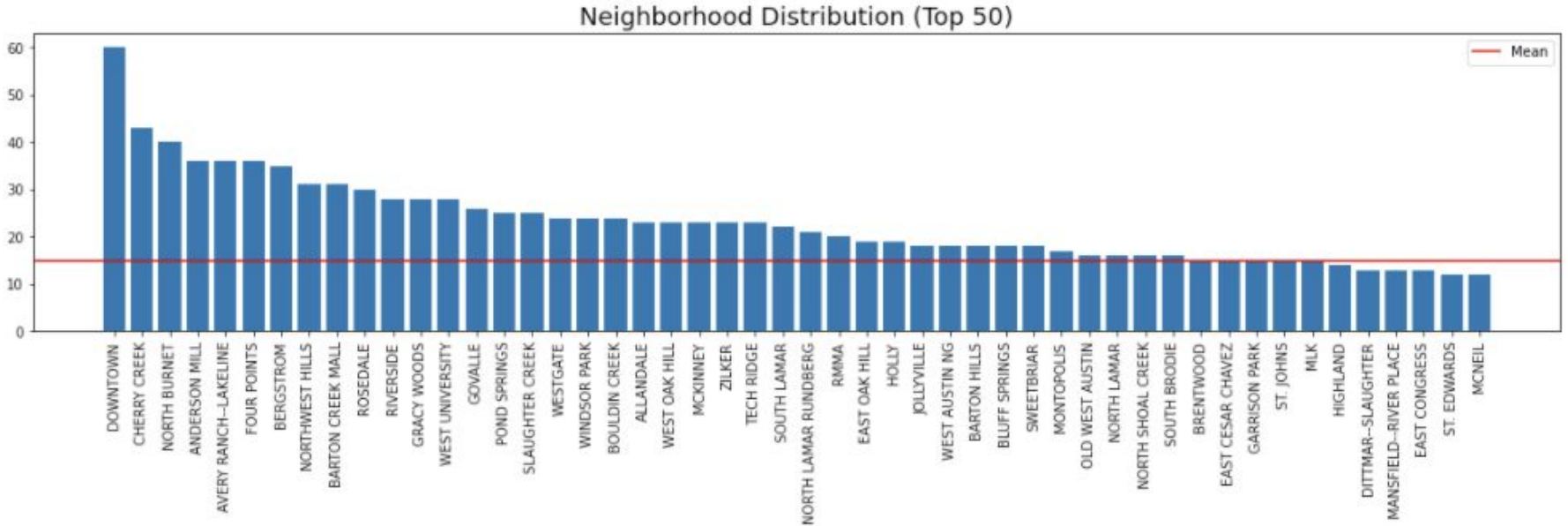
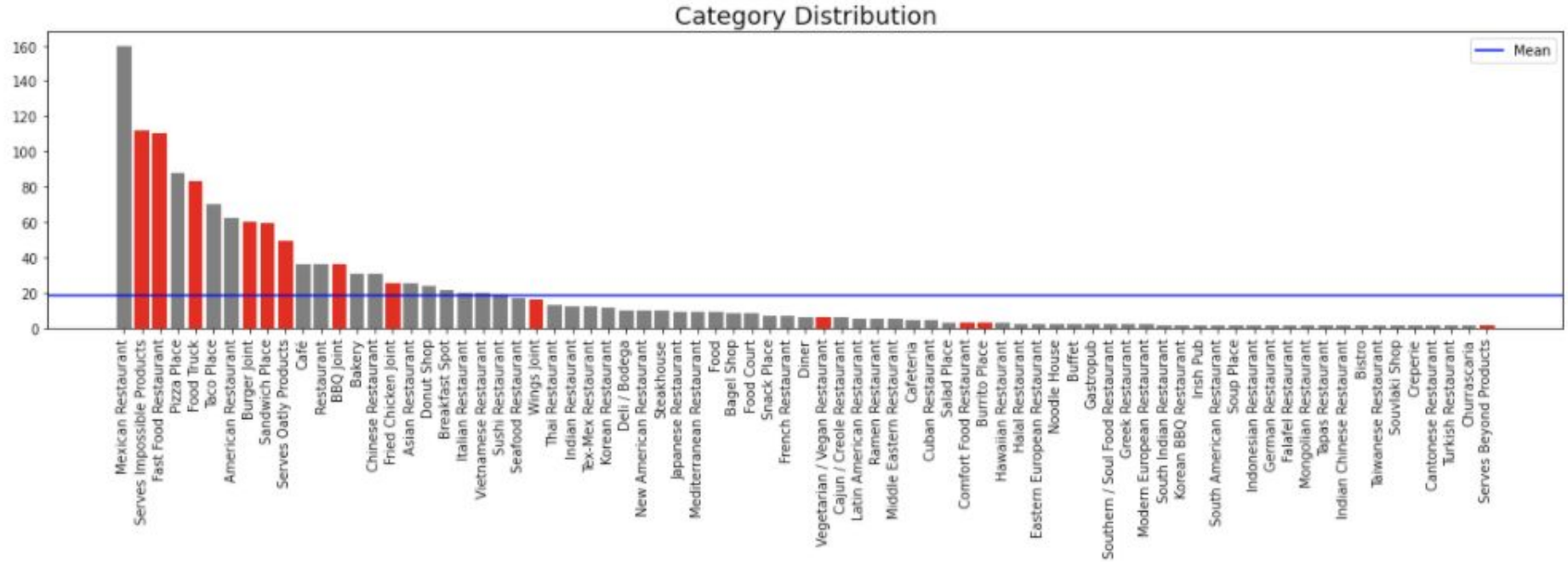


EDA - Category Distribution



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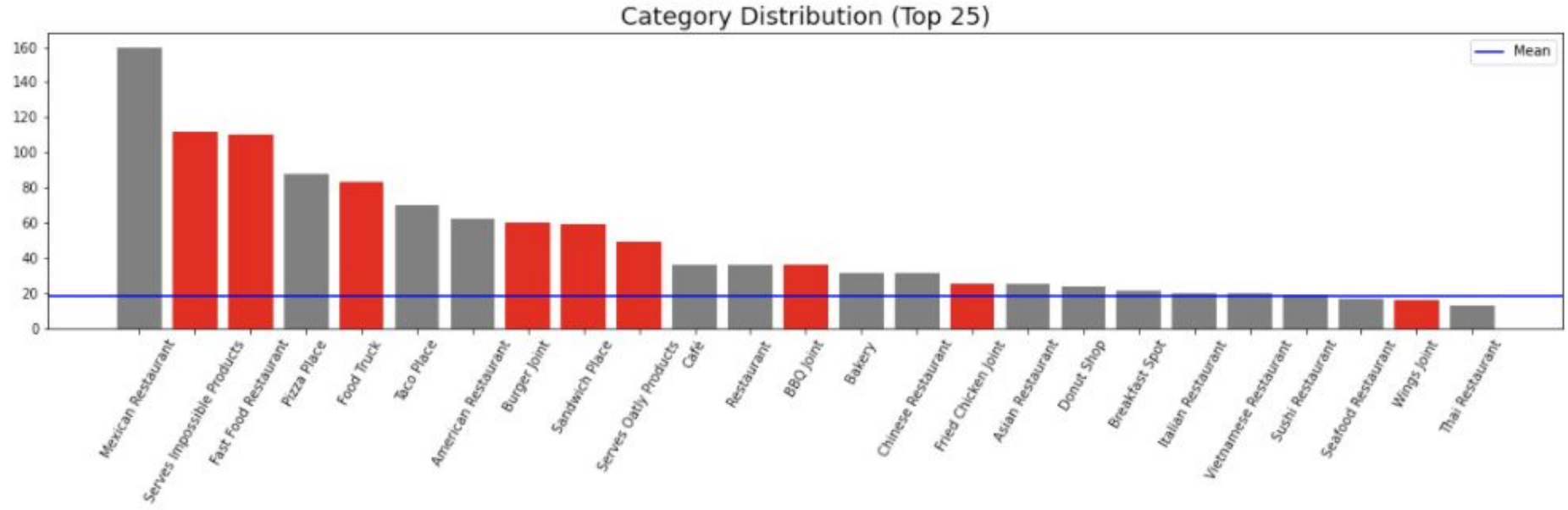
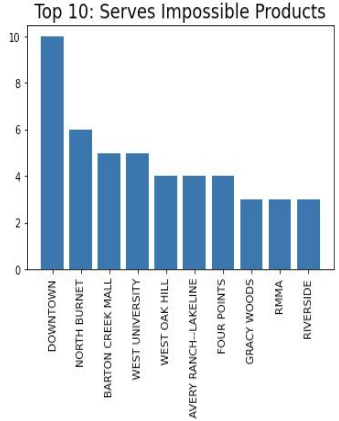
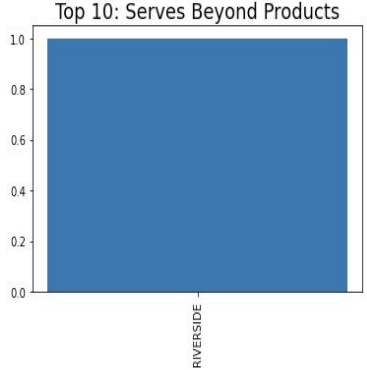
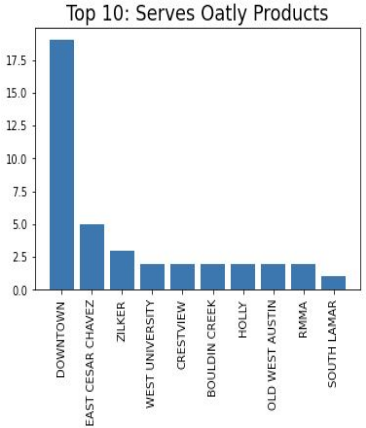


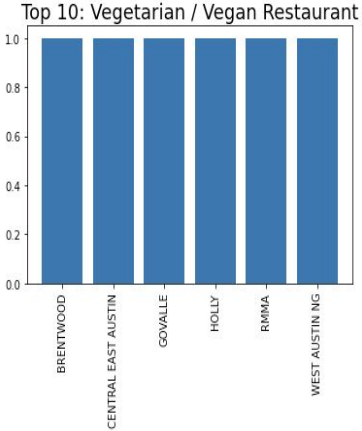
EDA - Categories of Interest

- Serves Impossible Products
- Serves Beyond Products
- Serves Oatly Products
- Fast Food Restaurant
- Burger Joint
- Wings Joint
- Sandwich Place
- BBQ Joint
- Fried Chicken Joint
- Vegetarian / Vegan Restaurant
- Burrito Place
- Food Truck
- Comfort Food Restaurant









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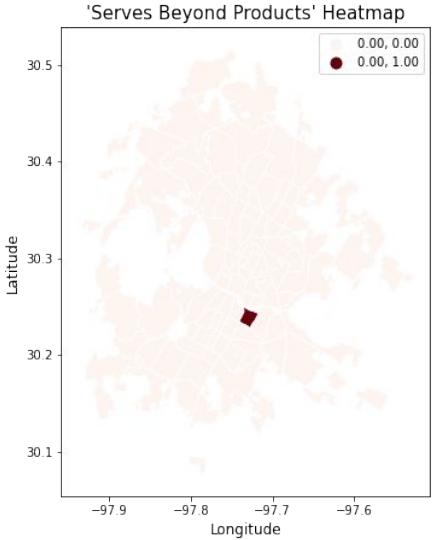
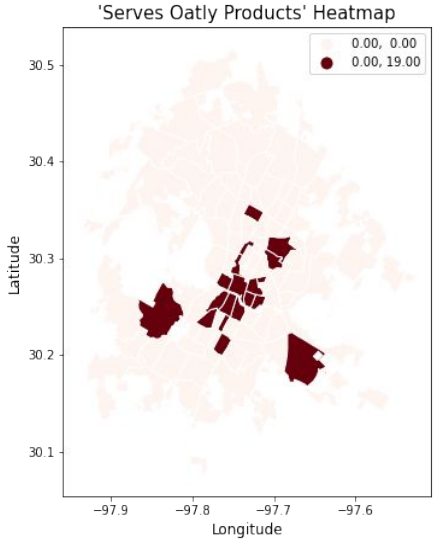
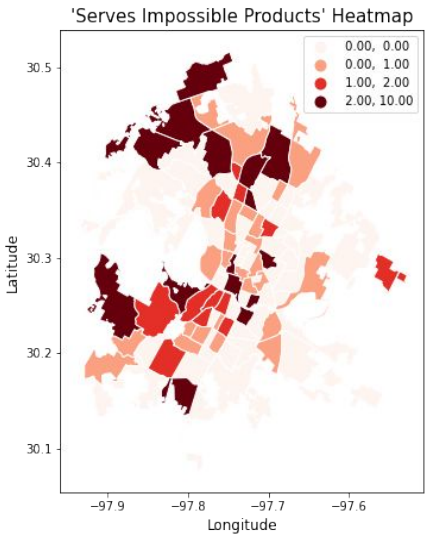
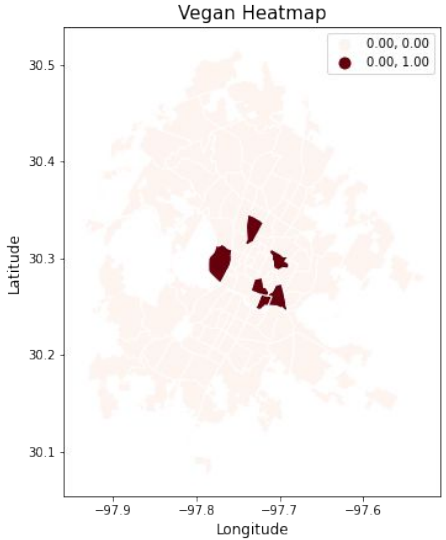








Venues

851 of the 985 venues only have 1 location

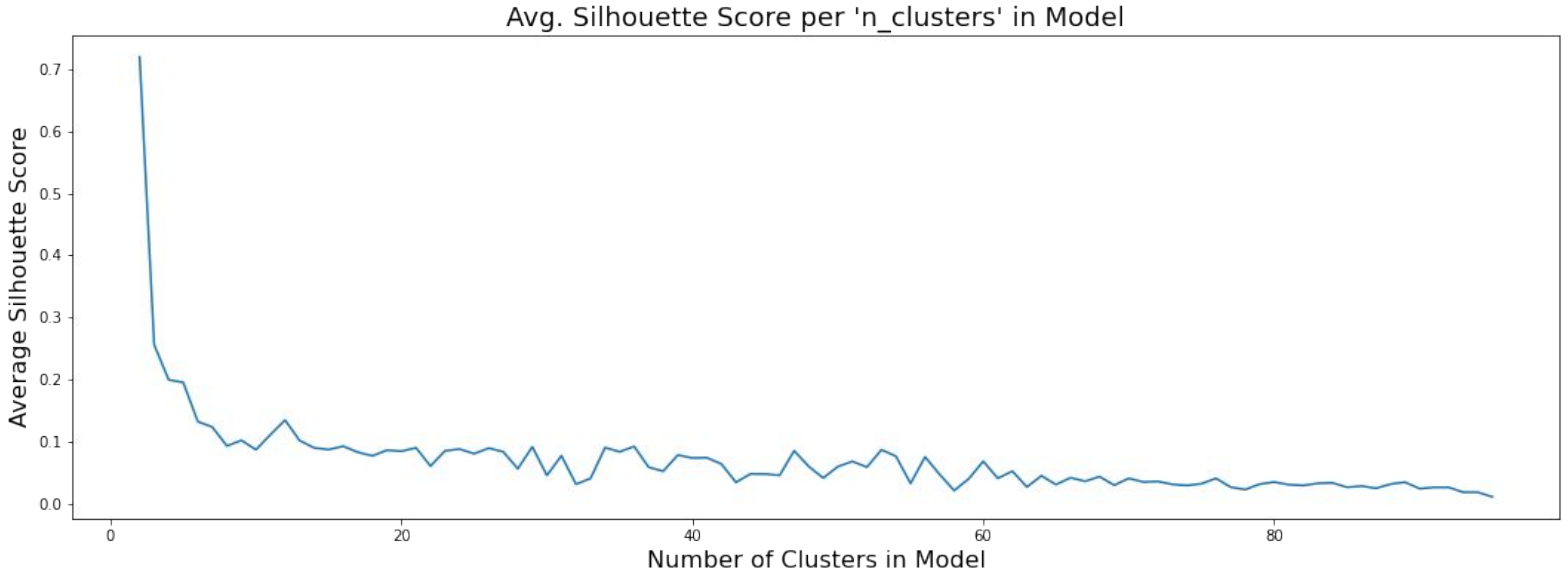
68 have 2 locations

27 have 3 locations

39 have 4 or more

Modeling & Insights

- Downtown was the consistent outlier among neighborhoods, other than that they're fairly similar. Therefor the more clusters in the model, the less distinct they become. We'll settle on 3 for this analysis.



Modeling & Insights - Top 10 Categories

Cluster	Most Common Category	2nd Most Common Category	3rd Most Common Category	4th Most Common Category	5th Most Common Category	6th Most Common Category	7th Most Common Category	8th Most Common Category	9th Most Common Category	10th Most Common Category
0	Mexican Restaurant	Fast Food Restaurant	Serves Impossible Products	Food Truck	Pizza Place	Burger Joint	Restaurant	Taco Place	Sandwich Place	Cafe
1	Mexican Restaurant	Fast Food Restaurant	Serves Impossible Products	Pizza Place	Taco Place	Food Truck	Sandwich Place	Burger Joint	BBQ Joint	Donut Shop
2	Serves Oatly Products	Serves Impossible Products	Mexican Restaurant	BBQ Joint	Pizza Place	Fried Chicken Joint	Italian Restaurant	Breakfast Spot	Taco Place	Steakhouse

Shared Categories and Venues

Categories:

- Taco Place
- Breakfast Spot
- Mexican Restaurant
- American Restaurant
- Restaurant
- Donut Shop
- Fast Food Restaurant
- Burger Joint
- BBQ Joint
- Pizza Place
- Fried Chicken Joint
- Italian Restaurant
- New American Restaurant
- Mediterranean Restaurant
- Sushi Restaurant
- Steakhouse
- Indian Restaurant
- Serves Impossible Products
- Serves Oatly Products

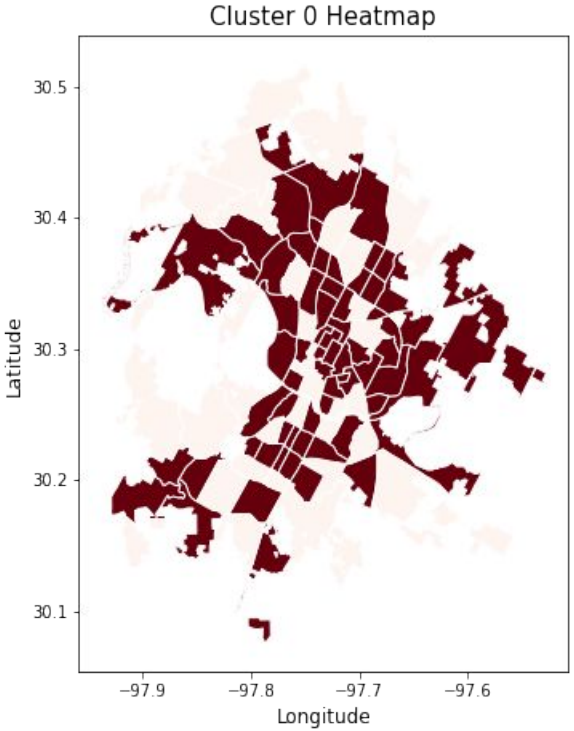
Venues:

- Chick-fil-A
- Veracruz All Natural
- IHOP
- Starbucks
- Caffe Medici

Modeling & Insights - Cluster 0

Unique to Cluster:

- Irish Pub
- Comfort Food Restaurant
- Halal Restaurant
- Bistro
- Churrascaria
- Eastern European Restaurant
- Cantonese Restaurant
- Taiwanese Restaurant
- Buffet
- Tapas Restaurant
- South Indian Restaurant
- Cafeteria
- German Restaurant
- Soup Place
- Korean BBQ Restaurant

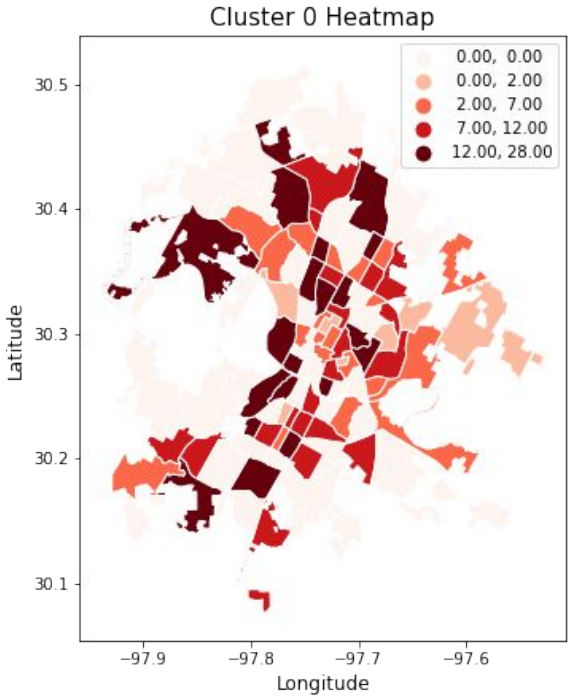


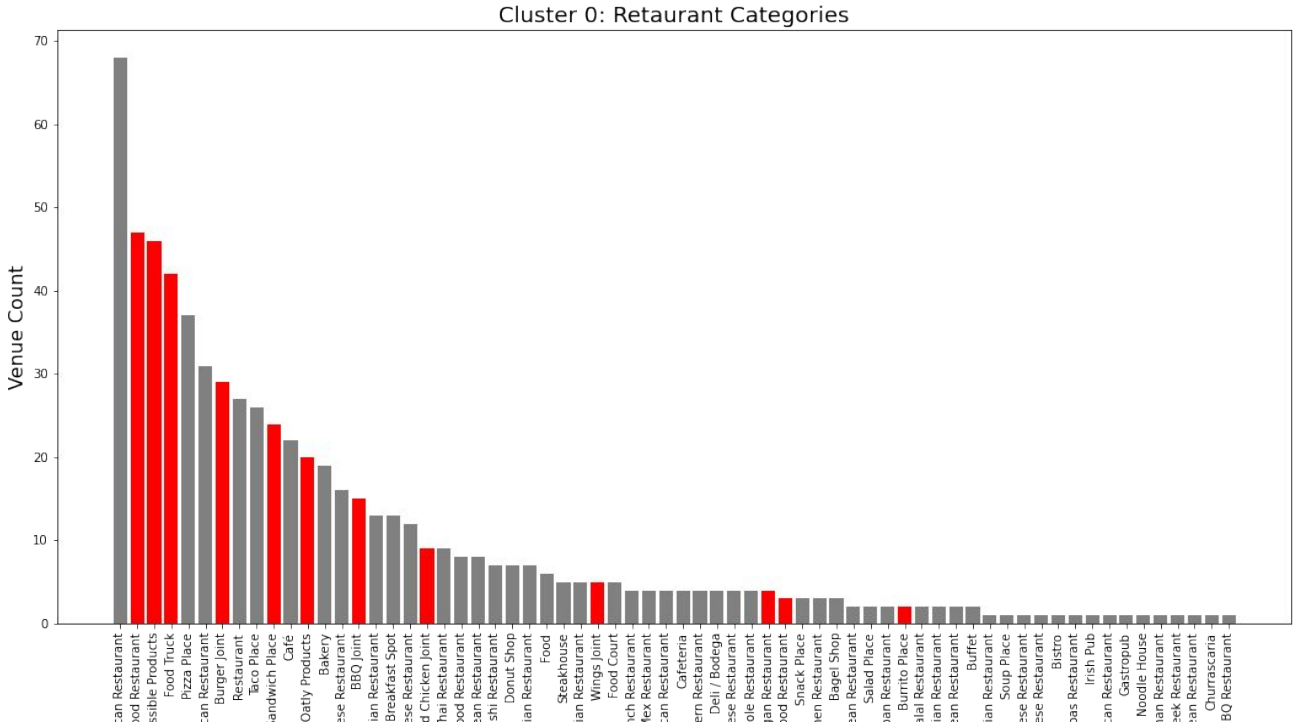
68 total neighborhoods

667 total restaurants:

- Of interest: 246
  - 47 fast food (19%)
  - 46 serve Impossible products
  - 20 serve Oatly
  - 4 categorized as Vegetarian / Vegan Restaurant

Modeling & Insights - Cluster 0

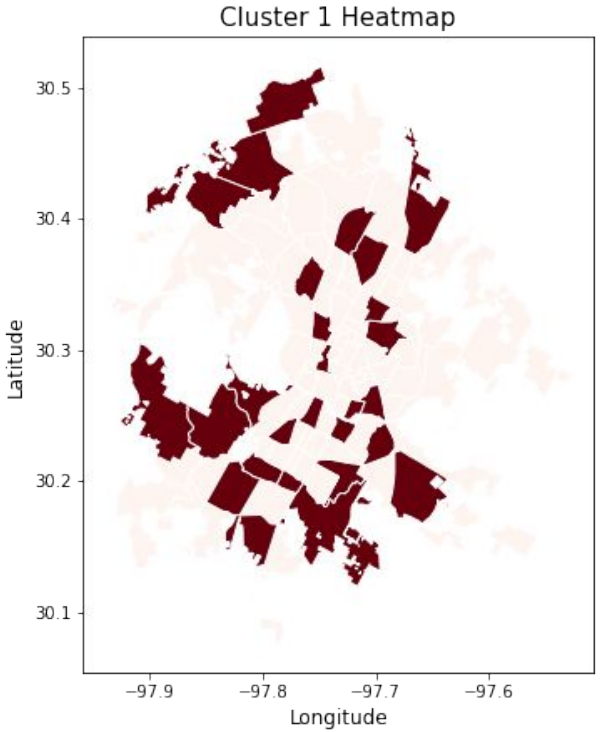




Modeling & Insights - Cluster 1

Unique to Cluster:

- Diner
- Turkish Restaurant
- Creperie
- Souvlaki Shop
- Mongolian Restaurant
- Indian Chinese Restaurant
- Southern / Soul Food Restaurant
- Indonesian Restaurant
- South American Restaurant
- Falafel Restaurant
- Serves Beyond Product

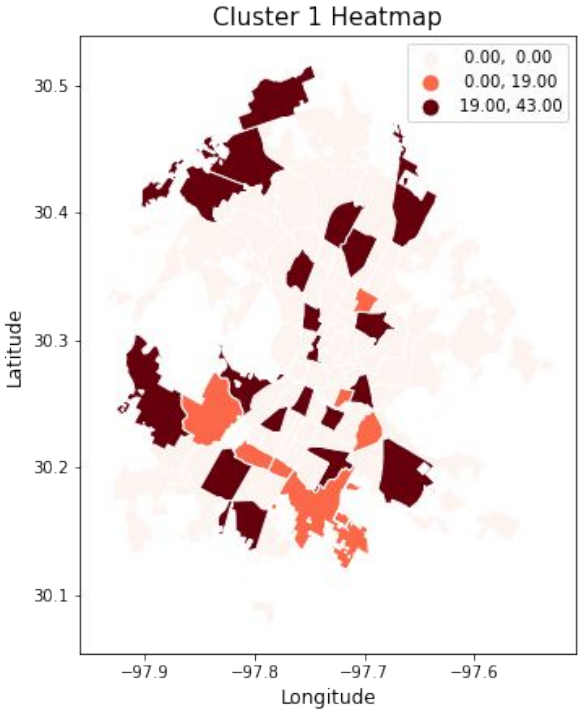


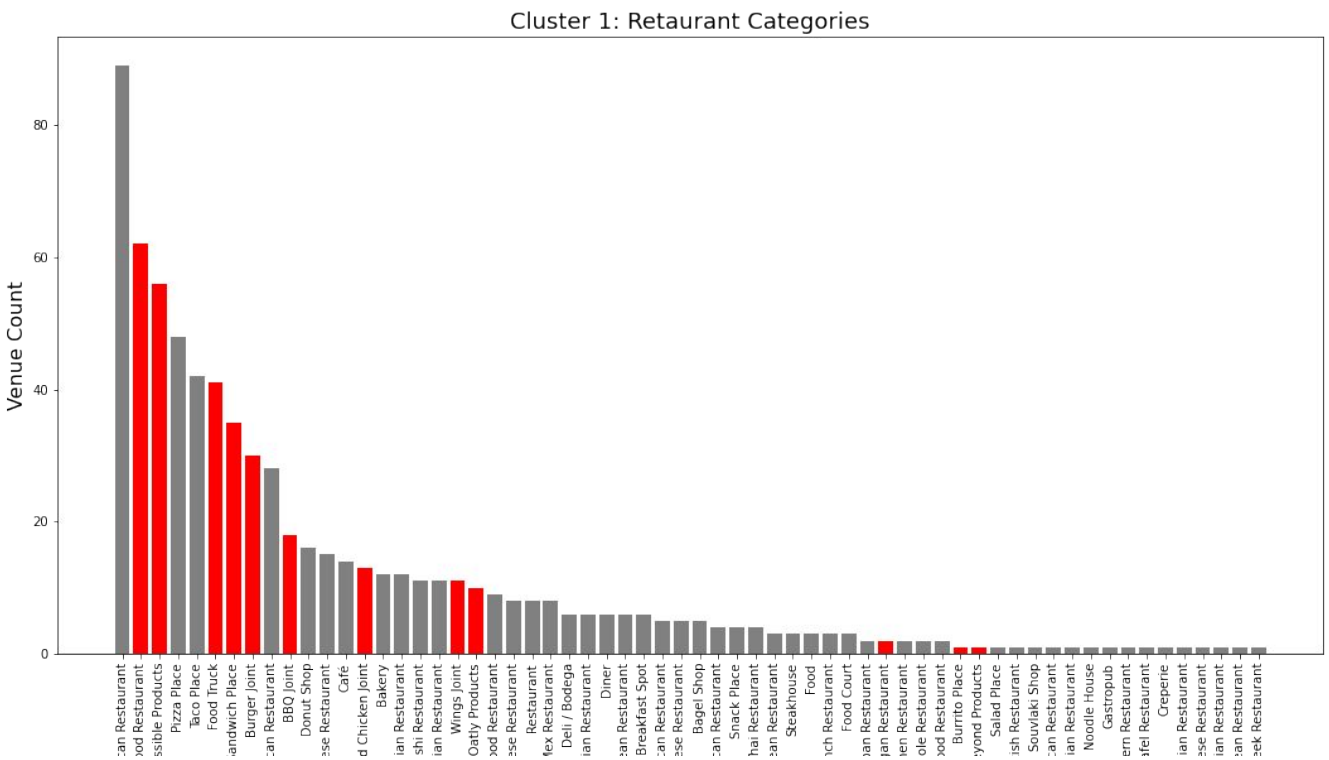
27 total neighborhoods

706 total restaurants:

- Of interest: 280
  - 62 fast food (22%)
  - 56 serve Impossible products
  - 10 serve Oatly
  - 2 categorized as Vegetarian / Vegan Restaurant

Modeling & Insights - Cluster 1





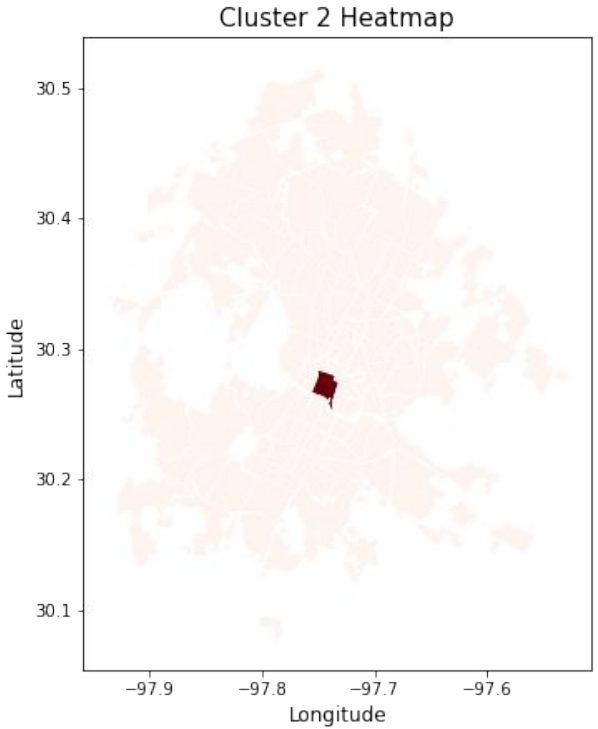
Modeling & Insights - Cluster 2

No categories unique to cluster

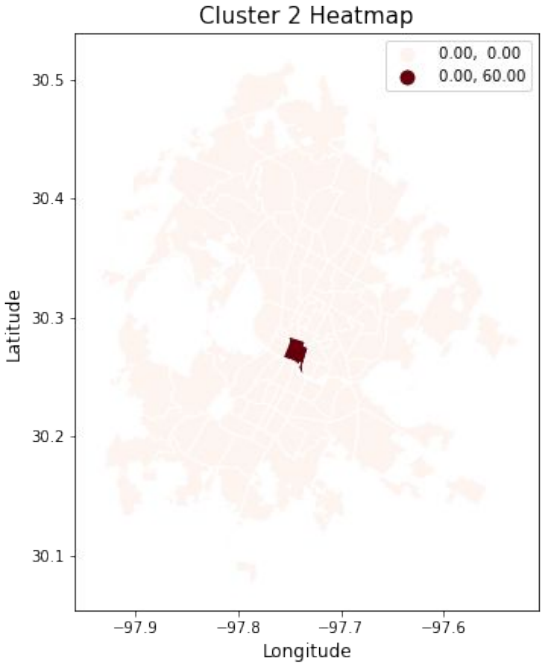
1 Neighborhood

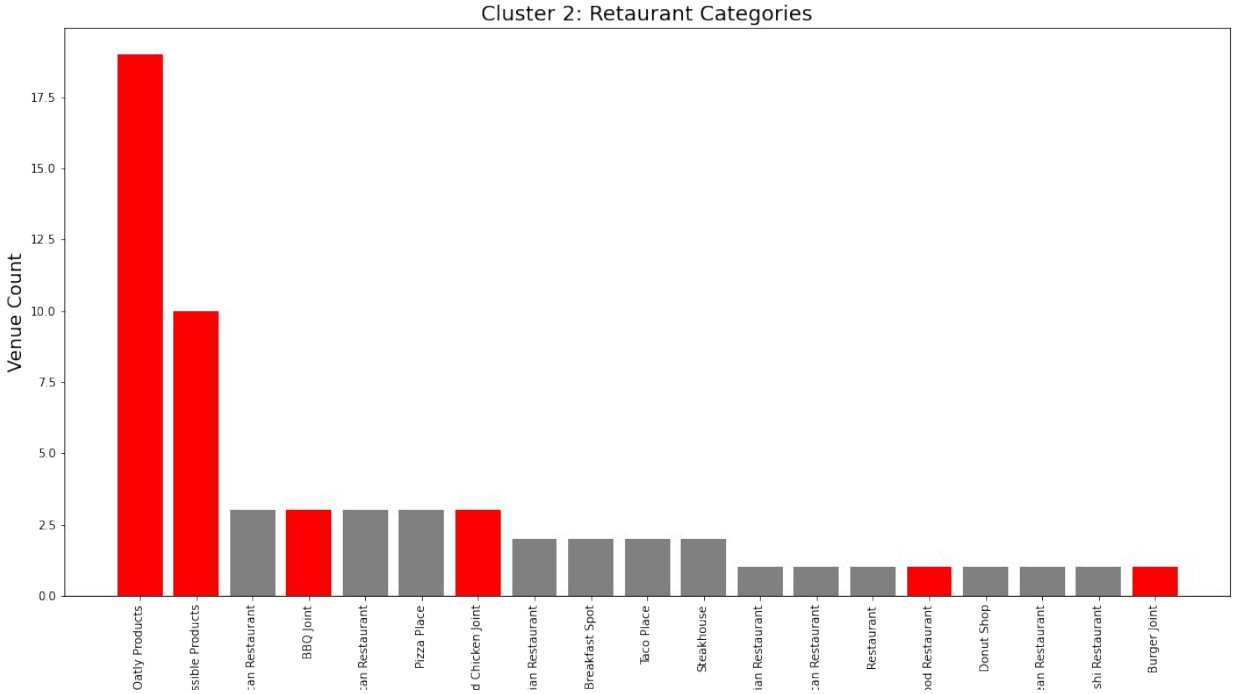
60 total restaurants:

- Of interest: 37
  - 19 serve Oatly products
  - 10 serve Impossible products



Modeling & Insights - Cluster 2





Key Learnings & Next Steps

- Reliability and consistency of data is key
  - With the current data and model parameters, ‘Cluster 2’ (which accounts for just Downtown) is the only cluster with notably different traits.
  - Examining the results of a model with more clusters and a lower silhouette score and may reveal more granular trends among specific restaurants or categories.
- Our Vegan and meat-alternative categories are clustered more towards the downtown area, whereas the more traditional categories ‘of_interest’ are either spread across town or in greater number in the outskirt neighborhoods