BATTLE OF THE NEIGHBORHOODS CAPSTONE PROJECT

0.0 Introduction

A fast food franchise is trying to open a new restaurant in the US. They already have gotten a shop in most of the big cities, so this time they are looking for small cities. They found two candidates, Virginia Beach and Omaha. Now it's your job to compare the two cities to find out where to place the location based on neighborhood agglomeration. No need for competition because the restaurant is very popular in the other locations, and is known and renowned across the country for their unique food and exceptional quality, You just need to find the right neighborhood for each city, and from there which city is best to put the location.
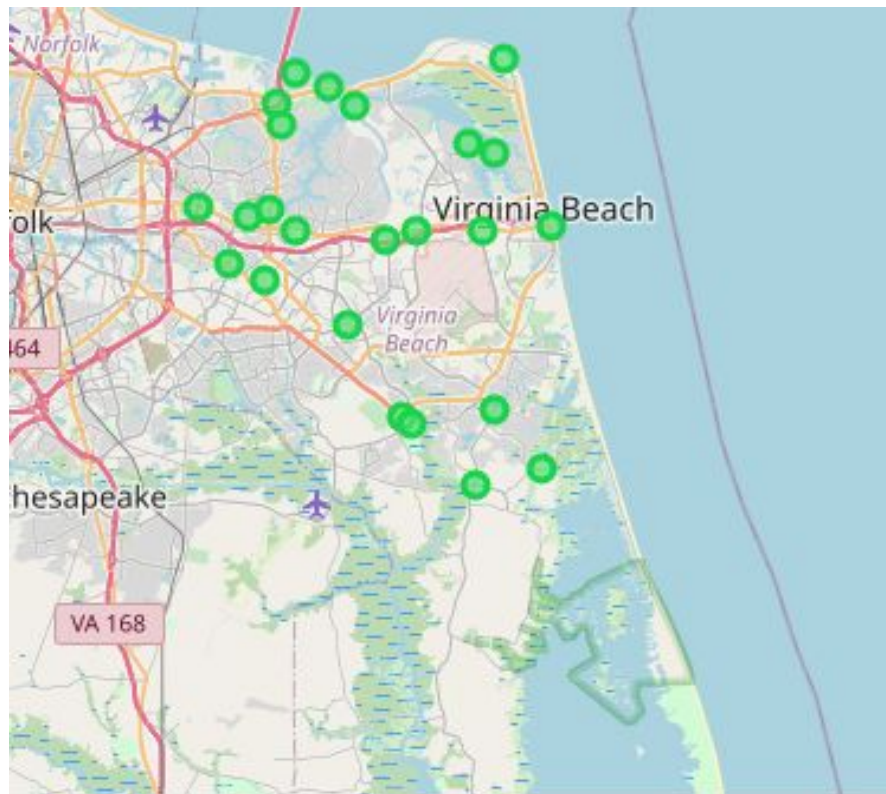
1.0 Data

1.1 Sources of Data

The data for this project is from Foursquare and Wikipedia to get information on the neighborhoods, venues, the specific coordinates and more, in addition to a variety of python packages including folium, geopy, numpy, Matplotlib, and sklearn. For the Wikipedia pages, they include: https://en.wikipedia.org/wiki/Neighborhoods_of_Omaha,_Nebraska for Omaha and https://en.wikipedia.org/wiki/Virginia_Beach,_Virginia for Virginia beach
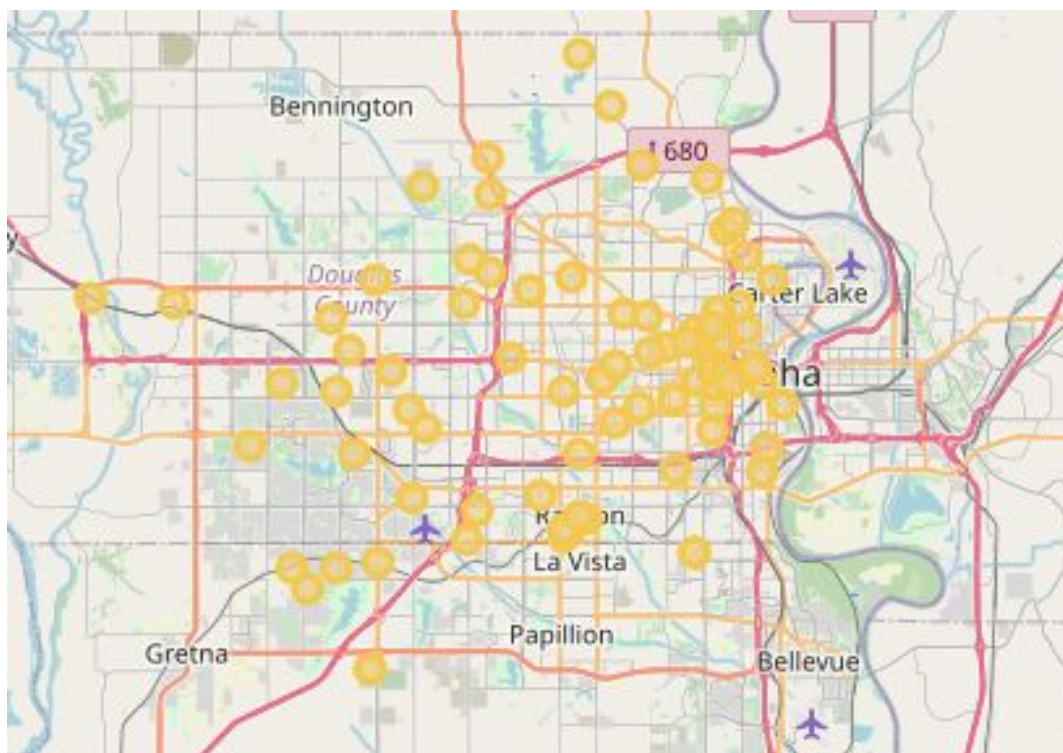
2.0 Methodology

2.1 Data Analysis

After getting the data from Wikipedia, the findings we had were that the 7 boroughs of Virginia Beach;Bayside, Blackwater, Kempsville, Lynnhaven, Princess Anne, Pungo, and Virginia Beach, has 25 neighborhoods, and Omaha has 87 neighborhoods.Virginia Beach is located in the coords: 36.8506, -75.9779 and Omaha is in 41.15,-96.0. I also created a map of the location of the neighborhoods.

Model 1: Map of Virginia Beach Neighborhoods

Model 2: Map of Omaha Neighborhoods

2.2 Clustering Venues

Before we decide the location of the new location, we need to find all the nearby stores and cluster them. Inherently, it needs to be in a popular place and near the city center. We also don't want too many other restaurants in the vicinity, because of competition. The Model's 3 and 4 below shows the top 10 most common values in each respectable neighborhood.

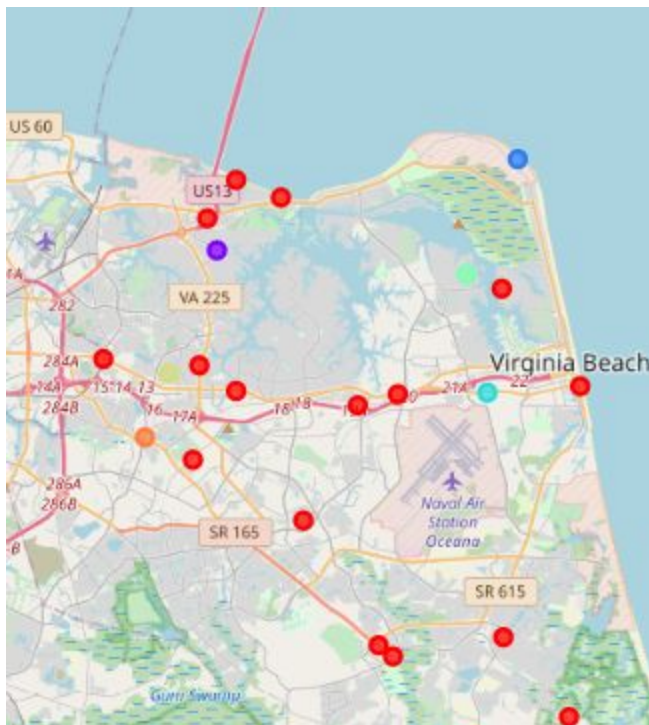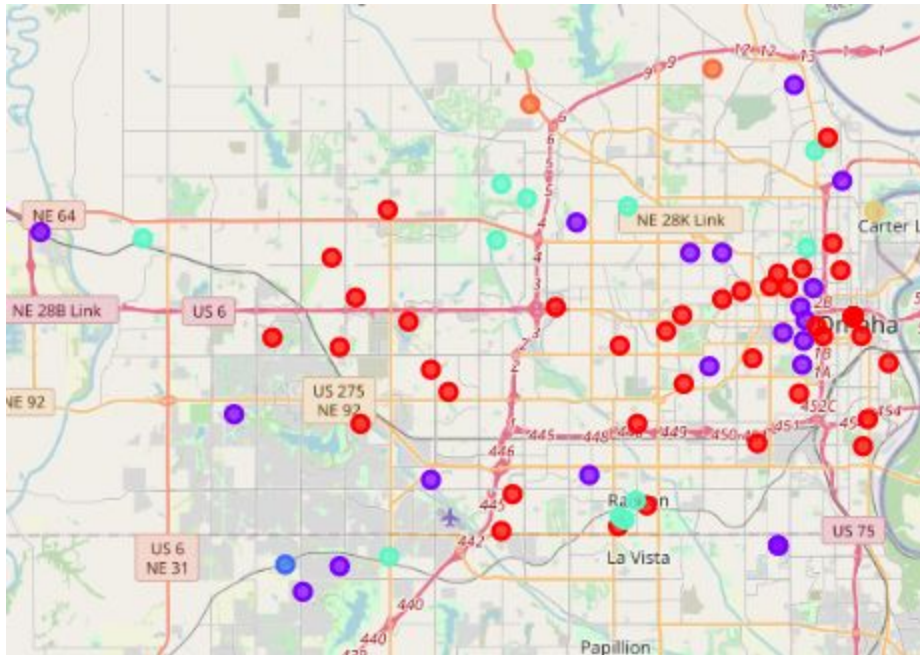|	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Alanton	Comedy Club	Yoga Studio	Food	Convenience Store	Cosmetics Shop	Cupcake Shop	Department Store	Dessert Shop	Diner	Discount Store
1	Aragona Village	Skating Rink	Storage Facility	Yoga Studio	Fast Food Restaurant	Concert Hall	Convenience Store	Cosmetics Shop	Cupcake Shop	Department Store	Dessert Shop
2	Bay Colony	American Restaurant	Harbor / Marina	Garden	Yoga Studio	Fast Food Restaurant	Convenience Store	Cosmetics Shop	Cupcake Shop	Department Store	Dessert Shop
3	Bayside	Breakfast Spot	Discount Store	Convenience Store	Video Store	Intersection	Asian Restaurant	Pizza Place	Shipping Store	Sandwich Place	Salon / Barbershop
4	Cape Henry	Campground	Public Art	Playground	Beach	Yoga Studio	Fast Food Restaurant	Cosmetics Shop	Cupcake Shop	Department Store	Dessert Shop
5	Chesapeake Beach	Surf Spot	Gift Shop	Convenience Store	Beach	Seafood Restaurant	Italian Restaurant	Diner	Drugstore	Donut Shop	Discount Store
6	Croatan Beach	Hotel	Pizza Place	Ice Cream Shop	Beach	Clothing Store	Seafood Restaurant	Jewelry Store	Sports Bar	Concert Hall	Dessert Shop
7	Green Run	Restaurant	BBQ Joint	Gym / Fitness Center	Ice Cream Shop	Scenic Lookout	Smoke Shop	Bakery	Hookah Bar	Auto Workshop	Convenience Store
8	Kempsville	Salon / Barbershop	Fried Chicken Joint	Fast Food Restaurant	Concert Hall	Convenience Store	Cosmetics Shop	Cupcake Shop	Department Store	Dessert Shop	Diner
9	Lago Mar	Fast Food Restaurant	Miscellaneous Shop	Smoothie Shop	Coffee Shop	Breakfast Spot	Supermarket	Food	Shipping Store	Salon / Barbershop	Convenience Store
10	Larkspur	Home Service	Pool	Baseball Field	Fast Food Restaurant	Convenience Store	Cosmetics Shop	Cupcake Shop	Department Store	Dessert Shop	Diner
11	London Bridge	Convenience Store	Intersection	Sandwich Place	Bar	Discount Store	American Restaurant	Restaurant	Greek Restaurant	Bike Shop	Breakfast Spot
12	Lynnhaven	Pizza Place	ATM	Convenience Store	Playground	Hookah Bar	Cosmetics Shop	Cupcake Shop	Department Store	Dessert Shop	Diner
13	Newtown	Thrift / Vintage Store	Sushi Restaurant	Pizza Place	Convenience Store	Fast Food Restaurant	Hot Dog Joint	Pharmacy	Smoke Shop	Japanese Restaurant	Food
14	Ocean Park	Beach	Sporting Goods Shop	Sushi Restaurant	Coffee Shop	Beach Bar	Breakfast Spot	BBQ Joint	Mexican Restaurant	Surf Spot	Farmers Market
15	Oceana	Auto Garage	Diner	Yoga Studio	Food	Convenience Store	Cosmetics Shop	Cupcake Shop	Department Store	Dessert Shop	Discount Store
16	Pembroke Manor	Pizza Place	Mediterranean Restaurant	American Restaurant	Donut Shop	Shopping Plaza	Sushi Restaurant	Yoga Studio	Discount Store	Drugstore	Dessert Shop
17	Princess Anne	Fast Food Restaurant	Italian Restaurant	Seafood Restaurant	Cupcake Shop	Rental Car Location	Gym / Fitness Center	Grocery Store	Drugstore	Concert Hall	Convenience Store
18	Pungo	Farmers Market	Gas Station	Sandwich Place	Pizza Place	New American Restaurant	Breakfast Spot	Board Shop	Racetrack	Convenience Store	American Restaurant
19	Red Mill Commons	Big Box Store	Seafood Restaurant	Italian Restaurant	Restaurant	Yoga Studio	Shopping Mall	Shipping Store	Discount Store	Salon / Barbershop	Buffet
20	Sandbridge	American Restaurant	Seafood Restaurant	Bath House	Farm	Yoga Studio	Fast Food Restaurant	Convenience Store	Cosmetics Shop	Cupcake Shop	Department Store
21	Thalia	American Restaurant	Furniture / Home Store	Pizza Place	Insurance Office	Burrito Place	Boutique	Shipping Store	Lighting Store	Sandwich Place	Intersection
22	Thoroughgood	Asian Restaurant	Yoga Studio	Food	Convenience Store	Cosmetics Shop	Cupcake Shop	Department Store	Dessert Shop	Diner	Discount Store

Model 3: Top 10 Venues in Virginia Beach

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Aksarben Village	Hotel	Lounge	Farmers Market	BBQ Joint	Cocktail Bar	Coffee Shop	Boutique	Taco Place	Sushi Restaurant	Bike Trail
1	Aksarben/Elmwood Park	BBQ Joint	Taco Place	Concert Hall	Historic Site	Bar	Farmers Market	French Restaurant	Football Stadium	Food Truck	Food Court
2	Applewood	Gym	Taco Place	Social Club	Golf Course	Bar	Martial Arts School	Park	Zoo Exhibit	Food Truck	Food Court
3	Baker Place	Gym	Home Service	Playground	Zoo Exhibit	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market	Financial or Legal Service
4	Bemis Park	Soccer Field	Intersection	Gym / Fitness Center	Convenience Store	Coffee Shop	Park	Brewery	Gas Station	Theater	Bakery
5	Bennington	Museum	Zoo Exhibit	Furniture / Home Store	French Restaurant	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market	Financial or Legal Service
6	Benson	Bar	Pub	Brewery	Lingerie Store	Music Venue	Diner	Noodle House	Taco Place	Bakery	Lounge
7	Bent Creek	Theme Park	Zoo Exhibit	Furniture / Home Store	French Restaurant	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market	Financial or Legal Service
8	Blackstone	Bar	Pizza Place	Cocktail Bar	Gastropub	Donut Shop	Brewery	Chinese Restaurant	Coffee Shop	Convenience Store	Record Shop
9	Boys Town	American Restaurant	Football Stadium	Concert Hall	Athletics & Sports	Baseball Field	Gym / Fitness Center	Zoo Exhibit	Fast Food Restaurant	Fried Chicken Joint	French Restaurant
10	Briar Hills	Pub	Soccer Field	Zoo Exhibit	Eye Doctor	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market	Financial or Legal Service
11	Bridlewood	Music Venue	Cosmetics Shop	Farmers Market	Fried Chicken Joint	French Restaurant	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market
12	Brookhaven	Dance Studio	Gym / Fitness Center	Furniture / Home Store	Motorcycle Shop	Soccer Field	Park	Medical Supply Store	Gym	Sporting Goods Shop	Hotel
13	Buena Vista	Gaming Cafe	Bar	Health & Beauty Service	Smoke Shop	Eye Doctor	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market
14	Burlington Road	Bowling Alley	Dive Bar	Country Dance Club	Korean Restaurant	Event Service	Mexican Restaurant	Film Studio	Furniture / Home Store	Fried Chicken Joint	French Restaurant
15	Burnt District	Sandwich Place	ATM	Hotel	American Restaurant	Gym / Fitness Center	Art Museum	Indie Theater	Café	Chinese Restaurant	Coffee Shop
16	Carter Lake	Golf Course	Zoo Exhibit	Furniture / Home Store	French Restaurant	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market	Financial or Legal Service
17	Cathedral Landmark District	Sandwich Place	ATM	Hotel	American Restaurant	Gym / Fitness Center	Art Museum	Indie Theater	Café	Chinese Restaurant	Coffee Shop
18	Chalco	Park	Intersection	Business Service	Shopping Plaza	Fried Chicken Joint	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market
19	Conestoga Place	Discount Store	Art Gallery	Paper / Office Supplies Store	Coffee Shop	Zoo Exhibit	Farmers Market	French Restaurant	Football Stadium	Food Truck	Food Court
20	Country Club	Intersection	BBQ Joint	Gaming Cafe	Fried Chicken Joint	French Restaurant	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market
21	Dahlman	Pizza Place	Recording Studio	Italian Restaurant	Coffee Shop	Event Space	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market
22	Deer Park	Zoo Exhibit	Park	Intersection	Sandwich Place	Sporting Goods Shop	Zoo	Hotel	Art Gallery	Burger Joint	Arts & Entertainment
23	Dundee	Deli / Bodega	Gas Station	Thai Restaurant	French Restaurant	Massage Studio	Coffee Shop	Pizza Place	Fast Food Restaurant	Convenience Store	Dive Bar
24	Elkhorn	Baseball Field	Park	Zoo Exhibit	Furniture / Home Store	French Restaurant	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market
25	Elmwood Park	Furniture / Home Store	Pizza Place	Hookah Bar	Paper / Office Supplies Store	Chinese Restaurant	Sandwich Place	Coffee Shop	Cosmetics Shop	Donut Shop	Pet Store
26	Fairacres	Intersection	Café	Arts & Entertainment	Theater	Lounge	Child Care Service	Music Venue	Film Studio	French Restaurant	Football Stadium
27	Field Club	Intersection	Historic Site	Garden	Social Club	Mexican Restaurant	Bar	Park	Brewery	Pool	Dog Run
28	First National Business Park	American Restaurant	Home Service	Automotive Shop	Fast Food Restaurant	Zoo Exhibit	Farmers Market	Fried Chicken Joint	French Restaurant	Football Stadium	Food Truck
29	Florence	Tourist Information Center	History Museum	Bar	Pharmacy	Park	Wine Shop	American Restaurant	Food Truck	Food Court	Flower Shop
30	Fountain Hills	Pizza Place	Coffee Shop	Video Store	Mexican Restaurant	Gas Station	Trail	Construction & Landscaping	Bank	Donut Shop	Vietnamese Restaurant
31	Gifford Park	Theater	Grocery Store	Hotel	Café	Mexican Restaurant	Bar	Zoo Exhibit	Fast Food Restaurant	Football Stadium	Food Truck
32	Hanscom Park	Italian Restaurant	Flower Shop	Construction & Landscaping	Dog Run	Scenic Lookout	Thrift / Vintage Store	Zoo Exhibit	Eye Doctor	Football Stadium	Food Truck
33	Happy Hollow	Pizza Place	Intersection	Athletics & Sports	Salon / Barbershop	Sculpture Garden	Tailor Shop	Bakery	Trail	Boutique	Italian Restaurant
34	Hillsborough	Pizza Place	Fast Food Restaurant	Salon / Barbershop	Intersection	Gym / Fitness Center	Multiplex	Chinese Restaurant	Discount Store	Breakfast Spot	Coffee Shop
35	Howard Street Apartment District	Gift Shop	Spa	Zoo Exhibit	Fried Chicken Joint	Football Stadium	Food Truck	Food Court	Flower Shop	Fish Market	Financial or Legal Service

Model 4: Top 10 Venues in Omaha

From these tables we can remove the neighborhoods that have too many restaurants.such as Blackstone in Omaha. If we cluster the neighborhoods with k-means and getting the optimal number of clusters with the elbow method we get these maps:

3.0 Results and Conclusion

With the deductive reasoning we can find out that Aragona Village in Virginia beach is closer to the city center and does not have many fast food restaurants so that is the candidate for VB and Fairacres is close to the business center and doesn't have fast food restaurants so that is the candidate for Omaha. Therefore we can conclude that Virginia beach would be the best place to put the restaurant because it's closer to town center, the city center.