

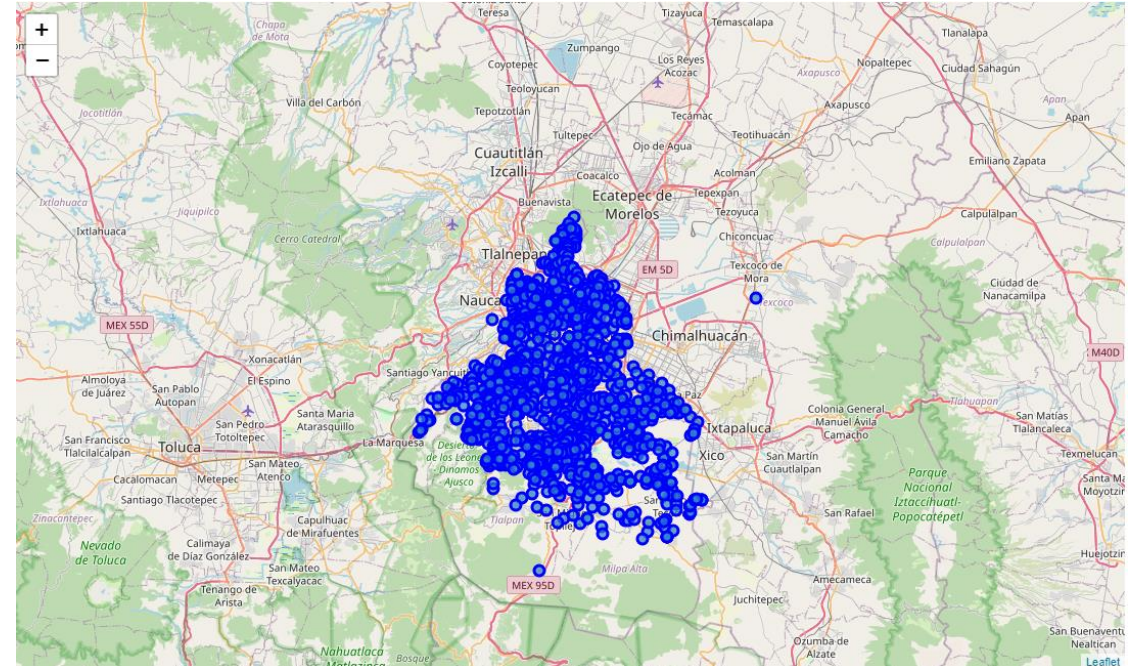


Finding feasible locations to open a sea food restaurant in Miguel Hidalgo borough in Mexico City

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Business Problem

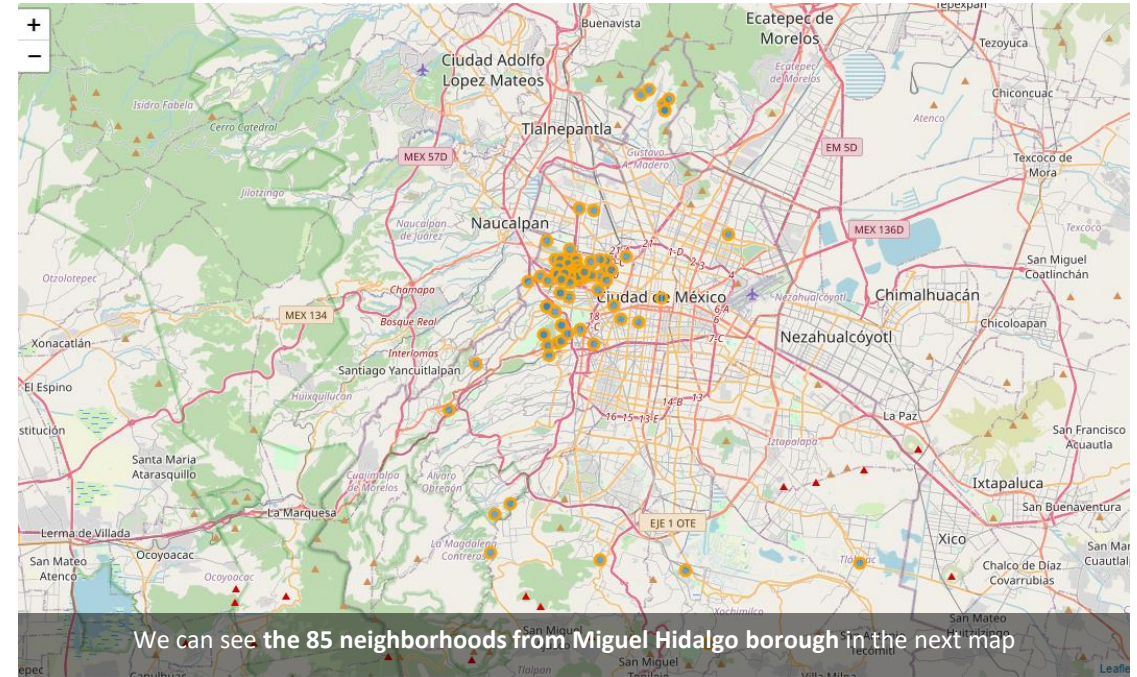
- **Business problem**
- Mexico City zone is considered one of the most multicultural places in Latino America. You may find people from diverse nationalities that make business, study, or go for vacations. Restaurants in Mexico City are full of competitors that offer different types of food and are usually concentrated in specific neighborhoods, especially those where Business offices from multinational companies are settled.



We have 16 boroughs and 1367 neighborhoods in Mexico City.

Business Problem

- Sea food* is one of the most attractive types of food that customer looks for in Miguel Hidalgo Borough. This data science project looks to provide information to franchises or entrepreneurs looking to understand how the different types of restaurants are distributed in Miguel Hidalgo borough neighborhoods. The research will allow to get different clusters that allow us to identify the most common venues in the borough and we expect to identify if there are neighborhoods where sea food and different types of restaurants are located.



Data Source

- **Data Source:** We will use the data from Mexican Postal service to get the Postal codes, boroughs, and neighborhoods in Mexico City. The data are in a CSV file that was loaded to Jupiter lab. This file required data wrangling tasks that we did by dropping data without information or dropping those rows with duplicated information.

We installed **Geocoder** to get the latitudes and longitudes in our notebook in **Jupyter Lab**.

Once we had the latitudes and longitudes for each neighborhood, we created a *dataframe* that was converted into a **CSV file**

```
[83]:
```

	PostalCode	Borough	Type of Neighborhood	Neighborhood	Latitude	Longitude
0	1857	Álvaro Obregón	Colonia	Lomas de Chamontoya	19.32585	-99.25724
1	1859	Álvaro Obregón	Colonia	Tlacoyaque	19.31489	-99.27014
2	1860	Álvaro Obregón	Colonia	Lomas de La Era	19.32225	-99.26505
3	1863	Álvaro Obregón	Colonia	Lomas del Capulín	19.31747	-99.26494
4	1870	Álvaro Obregón	Colonia	Lomas de los Cedros	19.30533	-99.27068



```
dfCDMX=pd.read_csv("CodigosPostalesCDMX.csv")  
dfCDMX.head()
```

	Codigo Postal	Estado	Municipio	Ciudad	Tipo de Asentamiento	Asentamiento	Clave de Oficina
0	1857	Ciudad de México	Álvaro Obregón	Ciudad de México	Colonia	Lomas de Chamontoya	1001
1	1859	Ciudad de México	Álvaro Obregón	Ciudad de México	Colonia	Tlacoyaque	1001
2	1860	Ciudad de México	Álvaro Obregón	Ciudad de México	Colonia	Lomas de La Era	1001
3	1863	Ciudad de México	Álvaro Obregón	Ciudad de México	Colonia	Lomas del Capulin	1001
4	1870	Ciudad de México	Álvaro Obregón	Ciudad de México	Colonia	Lomas de los Cedros	1001

Exploratory Analysis

- **Identification of neighborhoods and venues in Mexico City**
- As we discussed before, we create a file with the boroughs, neighborhoods, latitudes, and longitudes in Mexico City. Since we have this data, we create a table that allow us to identify that **we have 16 boroughs and 1367 neighborhoods in Mexico City.**

	PostalCode	Borough	Neighborhood	Latitude	Longitude
count	1515.000000	1515	1515	1515.000000	1515.000000
unique	NaN	16	1367	NaN	NaN
top	NaN	Álvaro Obregón	San Miguel	NaN	NaN
freq	NaN	222	8	NaN	NaN
mean	8543.928053	NaN	NaN	19.376632	-99.150321
std	4909.859519	NaN	NaN	0.355640	0.500013
min	1000.000000	NaN	NaN	16.286210	-116.635340
25%	4260.000000	NaN	NaN	19.306595	-99.200615
50%	8910.000000	NaN	NaN	19.364240	-99.143810
75%	13099.500000	NaN	NaN	19.441475	-99.101855
max	16900.000000	NaN	NaN	31.890930	-93.096720

Exploratory Analysis

- Analysis of Miguel Hidalgo Neighborhoods:
- With the whole table we were able to define 253 categories of venues in the neighborhoods from the borough Miguel Hidalgo. One interesting insight we found in this table is that the Top category in one of the neighborhoods was **Mexican restaurant**.
- We created too a table to identify the Top 10 venues for each neighborhood. We showed a sample of such a table as well as a table with descriptive statistics. Once again we found that in the top od the 10 most common venues the Mexican Restaurant Category appear as the 1st and 2nd most common venue, followed by Café, Taco Place, Pharmacy, Burger Joint, Pizza Place , Ice Cream Shop and Bakery. So We clearly can state that Miguel Hidalgo Neighborhoods can be considered as a borough where food sector is quite relevant

	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	10 de Abril	Convenience Store	Mexican Restaurant	Taco Place	Pharmacy	Food Truck	Burger Joint	Park	Pizza Place	Cafe	Sandwich Place
1	16 de Septiembre	Fast Food Restaurant	Farmers Market	Health & Beauty Service	Pool	Lounge	Dry Cleaner	Yoga Studio	Electronics Store	Donut Shop	Drive-in Theater
2	5 de Mayo	Mexican Restaurant	Taco Place	Burger Joint	Gym	Coffee Shop	Breakfast Spot	Dessert Shop	Snack Place	Food & Drink Shop	Metro Station
3	Agricultura	Restaurant	Breakfast Spot	Ice Cream Shop	Coffee Shop	Food Truck	Gym	Snack Place	Electronics Store	Mexican Restaurant	Burger Joint
4	Ahuehuetes Anáhuac	Taco Place	Mexican Restaurant	Convenience Store	Bakery	Breakfast Spot	Farmers Market	Bar	Coffee Shop	Shipping Store	Seafood Restaurant

```
miguelh_venues_sorted.describe()
```

	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
count	85	85	85	85	85	85	85	85	85	85	85
unique	85	20	27	36	43	43	48	45	49	45	55
top	Ampliación Popo	Mexican Restaurant	Mexican Restaurant	Cafe	Taco Place	Pharmacy	Burger Joint	Pizza Place	Mexican Restaurant	Ice Cream Shop	Bakery
freq	1	27	17	7	10	7	6	6	6	7	7

FOURSQUARE FOR DEVELOPERS

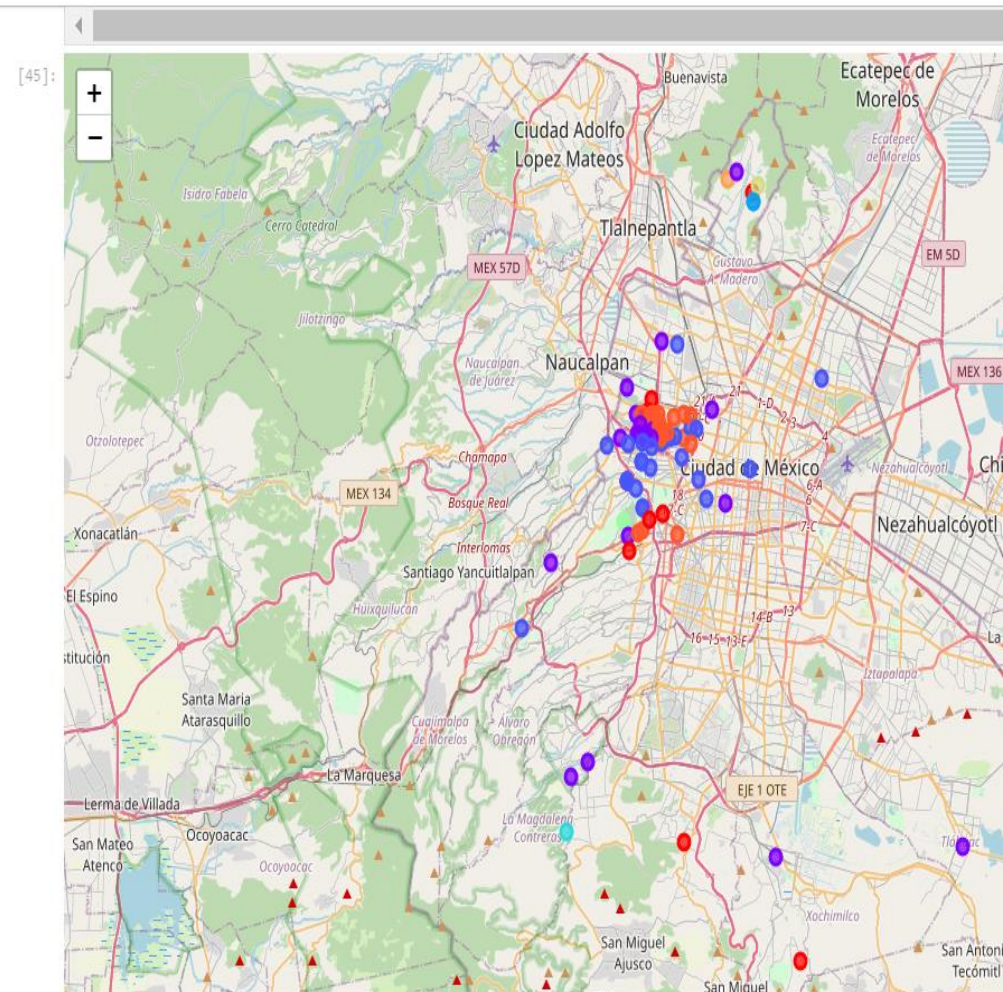
codepoc.io

Foursquare API

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
count	2956	2956.000000	2956.000000	2956	2956.000000	2956.000000	2956
unique	85	NaN	NaN	1690	NaN	NaN	253
top	Campo Militar 1	NaN	NaN	Starbucks	NaN	NaN	Mexican Restaurant

Machine Learning algorithm used

- Because we are looking to understand how the neighborhoods in Miguel Hidalgo borough can be grouped by clusters, we will use the K means machine learning algorithm.
- K-Means can group information/entities into **clusters** that have similarities and are dissimilar to the entities belonging to another cluster. The term 'K' refers to the number of clusters we want to create to our data. Given that we have 253 venues categories, we have defined $K=9$.



Results

Cluster 1: 8 neighborhoods
where the most common
place where: Taco Place,
Mexican Restaurant,

Cluster 2: 20 neighborhoods
with Mexican Restaurant,
Taco Place, Plaza,
restaurant, cafe

Cluster 3: 28 neighborhoods
with coffeeshops, **Seafood
restaurants**, Tacos, ice
creams, bakeries

Cluster 4: 2 neighborhoods
with Farmers market,
mountain, health and
beauty services, pool,
Falafel Restaurant, Eastern
European restaurant

Cluster 5: 1 neighborhood
with farm, creperie,
pharmacies

Cluster 6: 2 neighborhoods
with soccer fields, forests,
Seafood restaurant, Casino,
Yoga, Drive-in Theater

Cluster 7: 1 neighborhood
with snack place and
shopping mall, sake bar,
yoga

Cluster 8: 1 neighborhood
with Mountain, housing
department, food court
park, cycle studio

Cluster 9: 21 neighborhoods
with Taco place, Mexican
Restaurant, coffee shops,
restaurants

Discussion

- **We have 3 possible recommendations**

- 1) **Seafood cluster:** A feasible option is to open the restaurant in the **cluster 3** where Seafood restaurants are the 2nd most common place. In 8 of the neighborhoods there are seafood restaurants, so there is a potential location in the neighborhoods of this cluster. People in business might call this cluster as *Red Ocean*, where a fierce competency by price, quality, differentiation happens day by day. Of course, this implies to have a differentiation business strategy to overcome the competitors in the cluster.
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- 1) **Mexican restaurants: The cluster 2** where most restaurants are Mexicans can be an opportunity to open a seafood restaurant, because there are only a few competitors with seafood, and it can represent an opportunity to find and to attract a potential market of customers who look for alternatives to Mexican food restaurants.
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- 1) **Clusters without restaurants or minimal food vendors:** This can be an interesting alternative given that **Cluster 9** does not have Seafood as a common place in its neighborhoods, however there are Taco place, Mexican Restaurant, coffee shops, restaurants. People in business discipline might take this cluster as a *Blue Ocean*, but it does imply further research to find if there are potential consumers .

Conclusion



Our project provides important input that can be integrated into Market feasibility study for a Seafood restaurant.



Marketing specialists now can focus their market analysis on the clusters of neighborhoods recommended in our project for Miguel Hidalgo borough.



Market are population as well as socioeconomic lifestyle analysis can be integrated with the clusters data we defined and find clusters of potential customers that can provide yet more information.



Further research should be done to complete a whole feasibility study and having a possible location from this project is a key step to start with a clear focus and perspective of the food sector in Miguel Hidalgo borough.