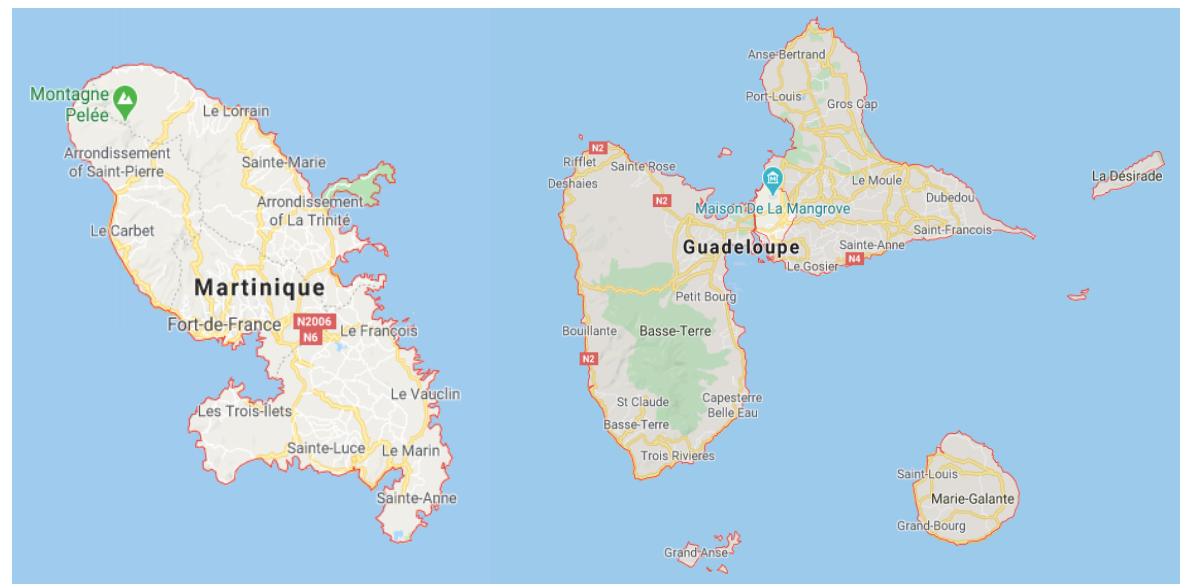# BATTLE OF THE SISTER ISLANDS

Author: Caroline Jean-Pierre

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MADININA VERSUS KARUKERA

I INTRODUCTION

I.1. BACKGROUND

Martinique and Guadeloupe are two French Islands located in the heart of the Caribbean.

In PR Columbus era, the Arawak and the Caribs populated both Islands, the indigenous called Martinique "Madinina" which means "Islands of flowers" and Guadeloupe "Karukera, which means "Islands of beautiful waters".

The French settled in the Islands rapidly in the 17th century and occupied these territories for an almost uninterrupted period until their full integration as French Republic as oversea departments in 1946.
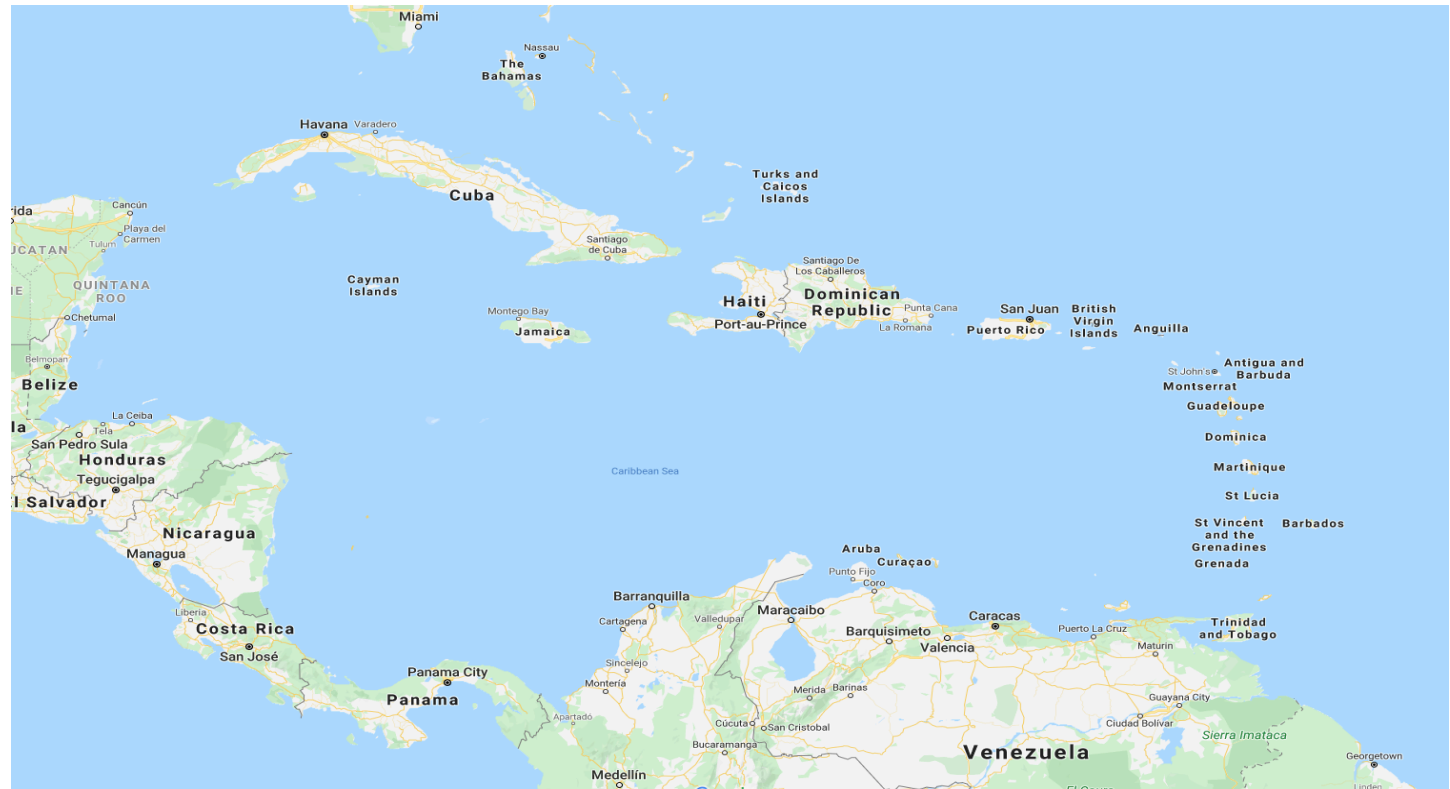
The history, culture and geography of the Martinique and Guadeloupe present many similarities, their inhabitants are used to call them the "sister islands". From the broader French population perspective, the two territories are seen as almost identical and often collectively referred as French west indies.

I.2. BUSINESS PROBLEM AND INTEREST

Although Madinina and Karukera are often perceived as almost identical nowadays, they do present some dissimilarities.

This distinction that the first inhabitants made was based on the distinctive pattern of the landscape, and it may not be relevant in our modern economies. That being said, from an investment perspective the Sister Islands may not be interchangeable.

It could be interested to analyze what characteristics make the difference and can influence a choice of a business in one of the two territories.

The analysis aims to help potential entrepreneurs in the food industry to make a choice of opening a business in Martinique or Guadeloupe considering the existing markets (for example the density of and the type of existing restaurants) and the key economical constraint in each of the island.

II DATA COLLECTION AND PREPROCESSING

II.1. DATA SOURCES

For market analysis, I used Foursquare to identify existing restaurants and their location in each of the Islands.

For key economical constraints, I used the French government data related to real estate transactions for last 3 years (i.e. 2017, 2018, 2019). These data are available for download in the website https://cadastre.data.gouv.fr/data/etalab-dvf/latest/csv/ and can be download per department (971 for Guadeloupe and 972 for Martinique)

As the source data was labeled in French, I changed the name of the columns from French to English.
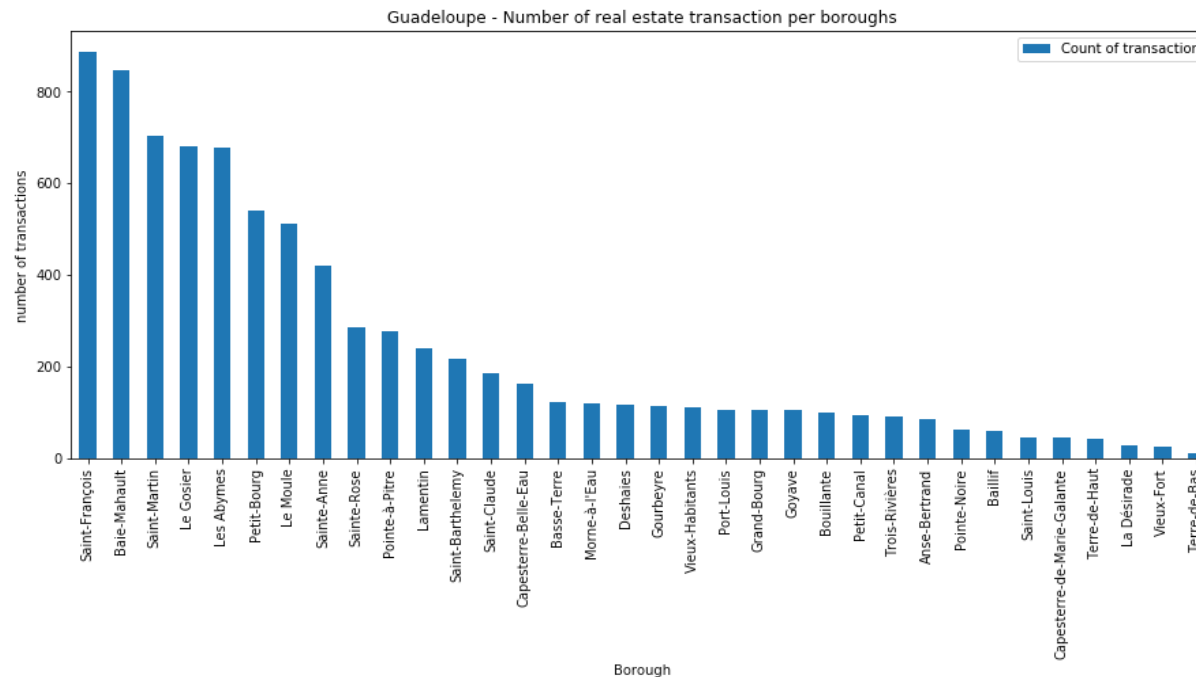
III ANALYSIS OF BOROUGHS AND REAL ESTATE MARKET

- Guadeloupe and Martinique both have 34 boroughs and a very similar number of neighborhoods (respectively 2314 and 2055)

- Over the period 2017-2019, there have been 8266 real estate transactions in Guadeloupe against 6551 transactions in Martinique.

- The housing sale price per meter square is higher in Guadeloupe with 2493.91 EUR/m2 against 2158.1 EUR/m2 in Martinique

III.1. REAL ESTATE DYNAMISM

### III.1.1. GUADELOUPE - REAL ESTATE TRANSACTIONS PER BOROUGHS OVER 2017-2019

The four most dynamic boroughs of Guadeloupe are Saint-François, Baie-Mahault, Le Gosier and Les Abymes with more than 600 hundred transactions

Guadeloupe - Number of real estate transaction per boroughs

The four most dynamic boroughs of Martinique are Fort de France, Le Lamentin, Schoelcher, Les Trois îlets with more than 500 hundred transactions over the period 2017-2019

We note that Fort de France is by far the most dynamic borough in Martinique with 1500 transactions over the period 2017-2019
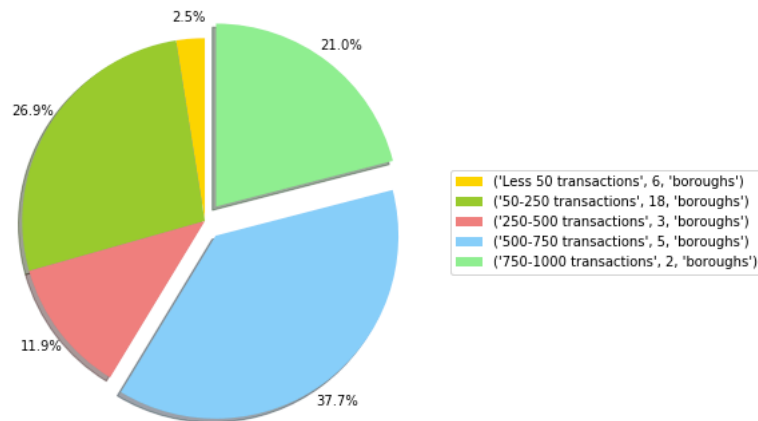
Martinique - Number of real estate transactions per boroughs
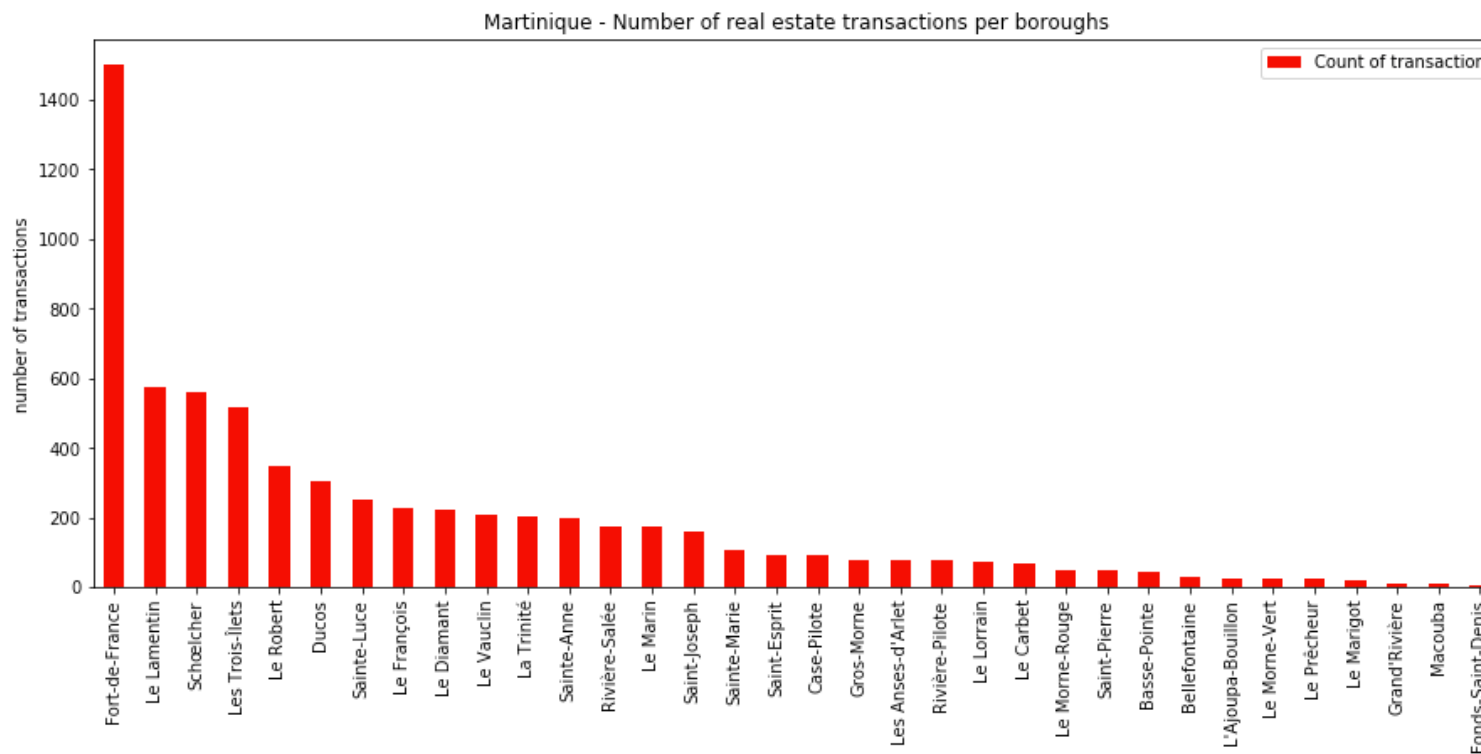
In both islands the real estate market is highly concentrated:

- In Guadeloupe 20% of the boroughs (i.e. 7 boroughs) gather 58.7 % of the market.
- In Martinique 20% of the boroughs (i.e. 7 boroughs) gather 61.8 % of the market
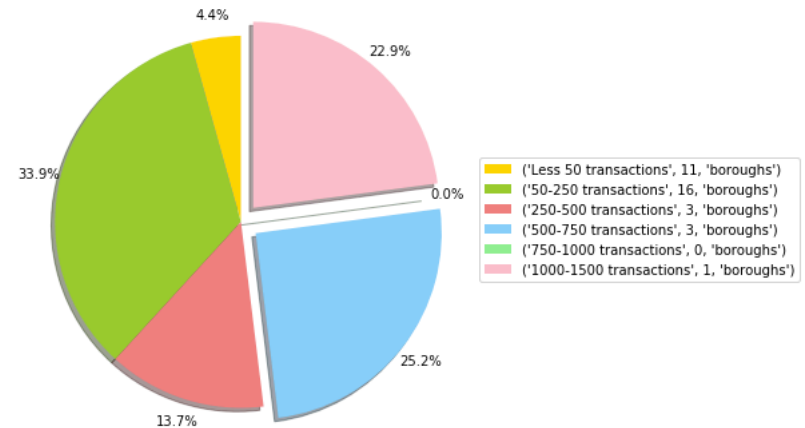
However, in Martinique we notice a big gap between the capital Fort de France with 1500 transactions and the rest of the boroughs. The second, third and fourth most dynamic boroughs of Martinique only gathered between 500 and 750 transactions that is less than a half of Fort-de France real estate transactions.

In Guadeloupe, there are less disparities within boroughs than in Martinique: number of real estate transactions in the most dynamic boroughs of Guadeloupe are similar


Concentration of real estate market in Guadeloupe

- ('Less 50 transactions', 6, 'boroughs')
- ('50-250 transactions', 18, 'boroughs')
- ('250-500 transactions', 3, 'boroughs')
- ('500-750 transactions', 5, 'boroughs')
- ('750-1000 transactions', 2, 'boroughs')

Concentration of real estate marketin Martinique

- ('Less 50 transactions', 11, 'boroughs')
- ('50-250 transactions', 16, 'boroughs')
- ('250-500 transactions', 3, 'boroughs')
- ('500-750 transactions', 3, 'boroughs')
- ('750-1000 transactions', 0, 'boroughs')
- ('1000-1500 transactions', 1, 'boroughs')

The maps of the neighborhoods of the 4 most dynamic boroughs of Guadeloupe and Martinique are as follows:
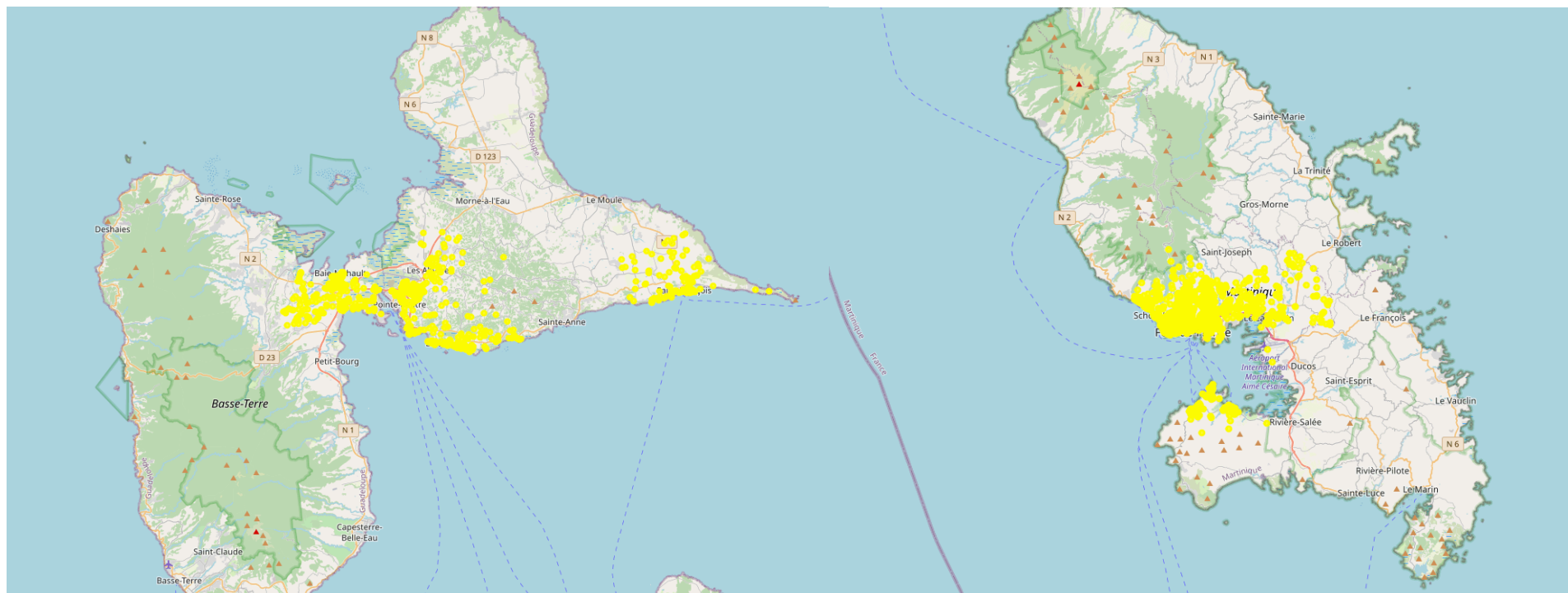
IV EXPLORE NEIGHBORHOODS OF THE MOST DYNAMIC BOROUGHS

Based on Foursquare data, in average the four most dynamic boroughs of Martinique count 60% more venues per neighborhood than Guadeloupe's four most dynamic boroughs.
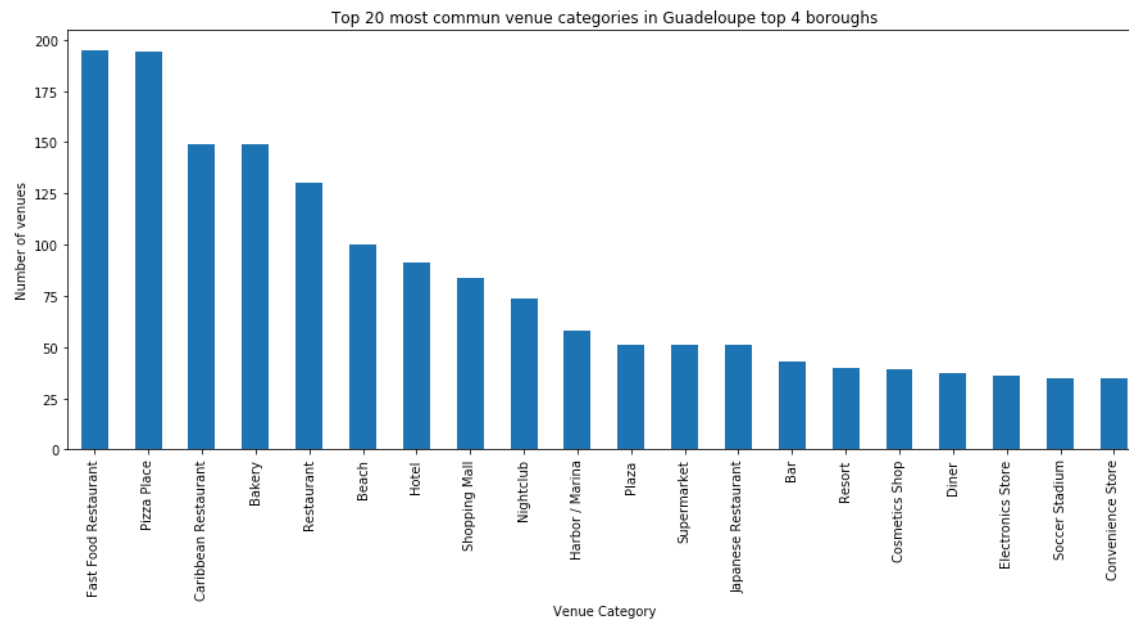
- 7073 venues for 796 neighborhoods in Martinique four most dynamic boroughs
- 2790 venues for 520 neighborhoods in Guadeloupe four most dynamic boroughs

IV.1. MOST COMMON VENUE CATEGORIES

IV.1.1. GUADELOUPE TOP MOST COMMON VENUE CATEGORIES

There are 148 venue categories in Guadeloupe data.

Almost 20% of the venues are Fast Food restaurants pizza places and Caribbean restaurants.

There are 181 venue categories in Martinique data.

Like Guadeloupe, Pizza place, Fast Food and Caribbean restaurants are amongst the most common venues, however their relative weight is lower as these categories account for less than 13% of the venues.

There seems to be more diversity in Martinique venues as we note pharmacies as the 7th most common venues, spa and ice-cream shops are in the top 20 most common venues in Martinique.

Top 20 most common venue categories in Martinique top 4 boroughs
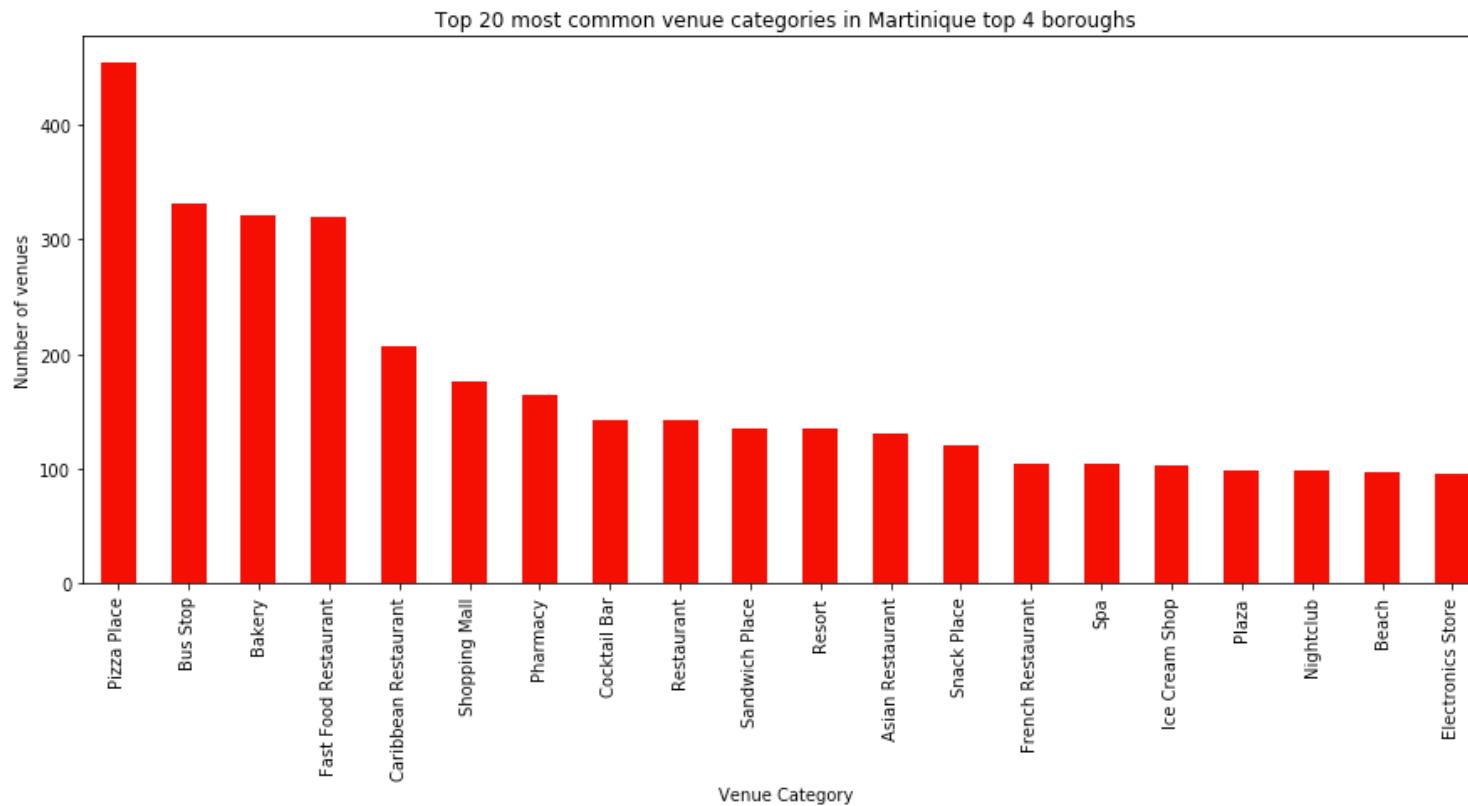
V CLUSTER AND SEGMENT NEIGHBORHOODS

V.1. K-MEAN CLUSTERING

The combined foursquare data for Martinique and Guadeloupe counts 9863 venues spread in 222 venue categories and 1316 neighborhoods

I applied unsupervised machine learning k-mean clustering to segment the neighborhoods in 5 clusters based on the frequency of their venues.

The number of neighborhoods per clusters and the weight of each island in each cluster are as follows:

Cluster Labels	Neighborhood
0	148
1	706
2	260
3	65
4	137

Cluster Labels	% of Martinique	% of Guadeloupe
0	39.19	60.81
1	59.77	40.23
2	63.85	36.15
3	98.46	1.54
4	62.77	37.23

Excepted the cluster 3 which is almost exclusively composed of neighborhoods of Martinique, all clusters are mostly balanced with a ration of 60-40 % of neighborhood per island.

V.2. IDENTIFY SIMILARITIES IN THE NEIGHBORHOODS OF THE TWO ISLANDS

V.2.1. VISUALIZATION OF CLUSTERS
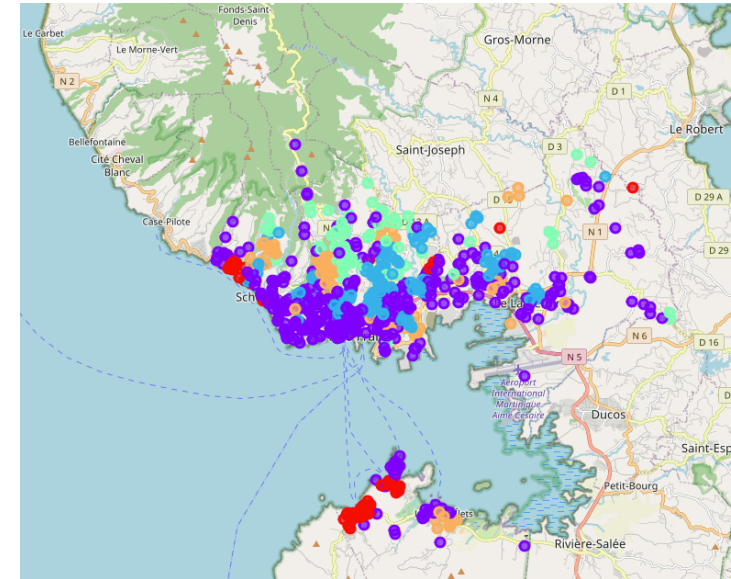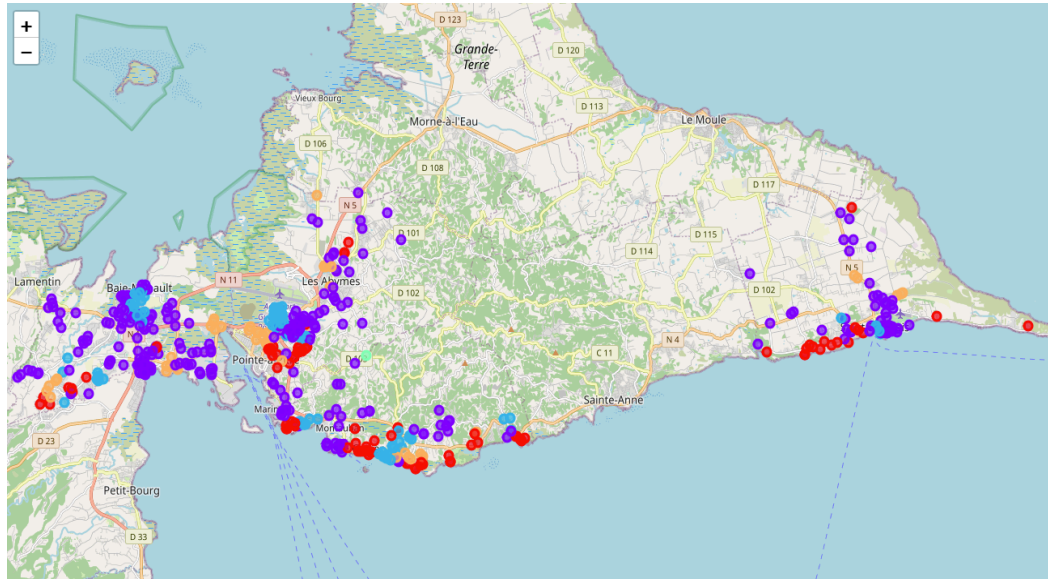
The cluster 0 in red count 148 neighborhoods and is more present in Guadeloupe, it is mostly located in the coastal areas of the islands

The cluster 1 in purple is by far the biggest cluster with 706 neighborhoods that is 54% of the total neighborhoods, it is mostly located in the center of the islands

The cluster 2 in blue is the second biggest cluster with 260 neighborhoods, it is more present in Martinique and is mostly located toward the center of the islands

The cluster 3 in light green is almost exclusively located in Martinique and only count 65 neighborhoods. It is located mostly in the inner land, further from the coastal areas.

The cluster 4 in orange with 137 neighborhoods is more present in Martinique and mostly located in peripheries of the cluster 1

V.2.2. CLUSTER 0 ANALYSIS– TOURISTIC AND LEISURE VENUES

With 148 neighborhoods, Cluster 0 seem to be mostly characterized by coastal, touristic and leisure activities:
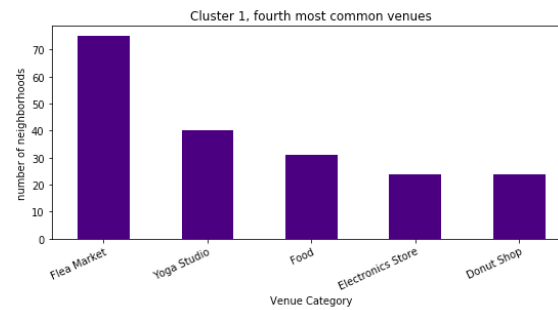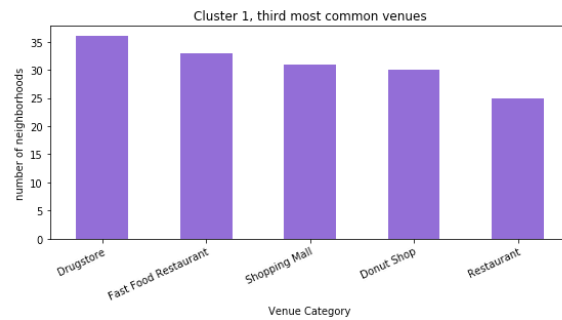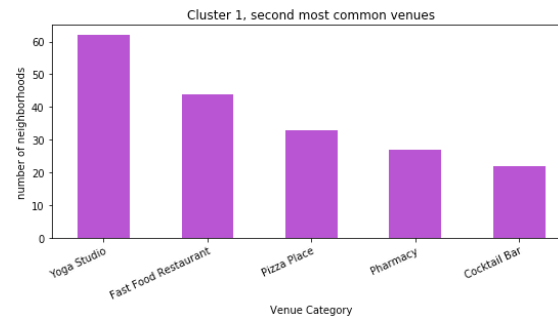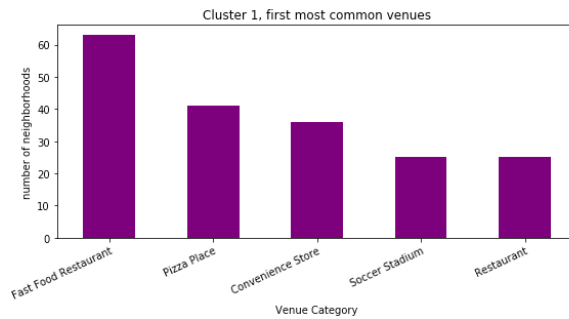
The neighborhoods of this cluster are surrounded by Caribbean restaurants, beaches and Yoga studios
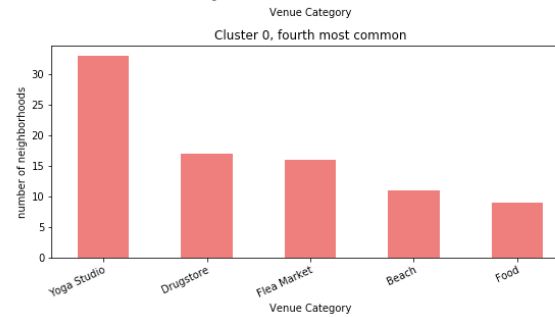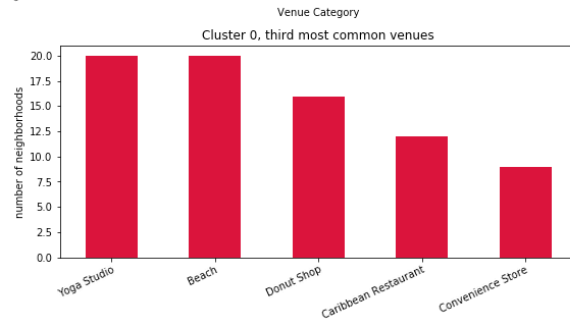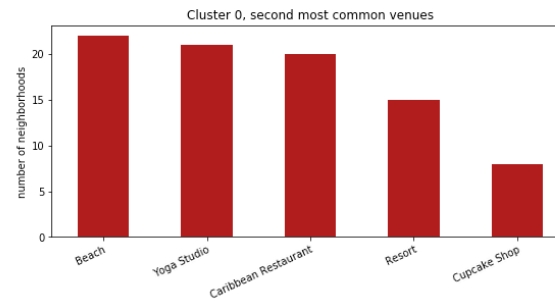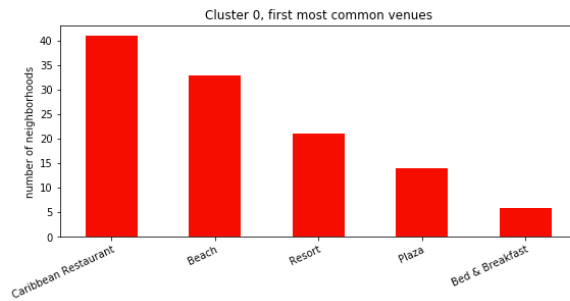
V.2.3. CLUSTER 1 – ANALYSIS – CITY AND ACTIVE LIFESTYLE ACTIVITIES

Cluster 1 neighborhoods seems to be characterized by city and active lifestyle activities:

The 706 neighborhoods of this cluster are surrounded mostly by Fast Food restaurants, Pizza places, Yoga studios, markets and shopping venues.
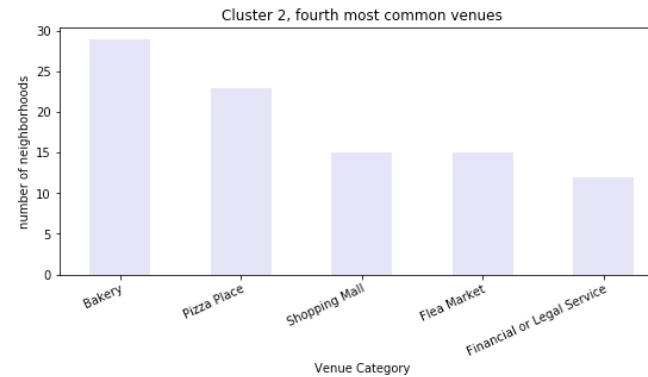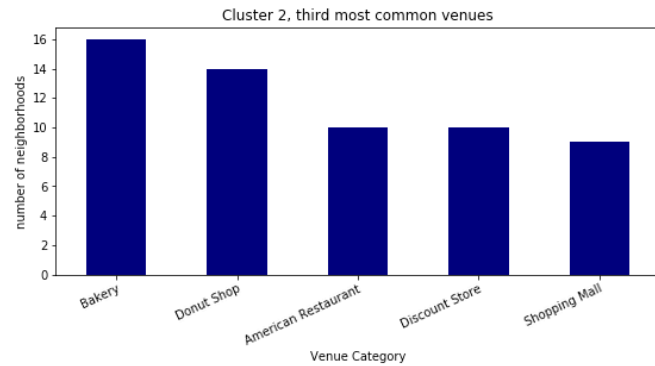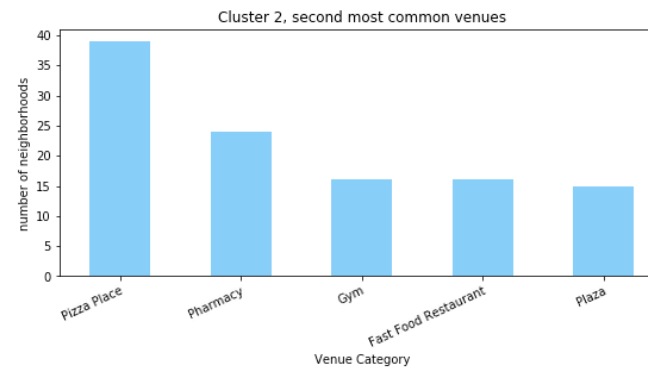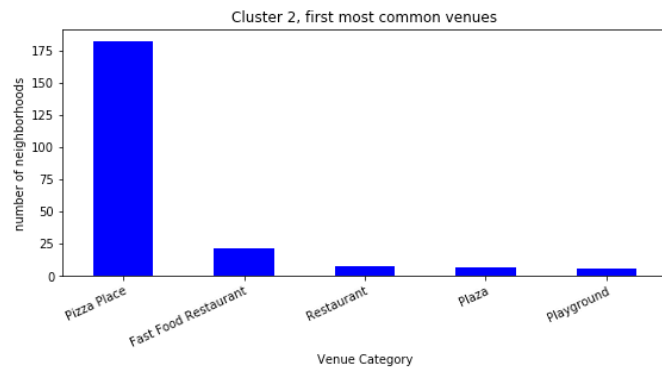
Cluster 2 neighborhoods seem to be characterized by family or residential activities:

The neighborhoods of this cluster are invaded by Pizza place :175 out of 260 neighborhoods of the cluster has a pizza place as most common venue.
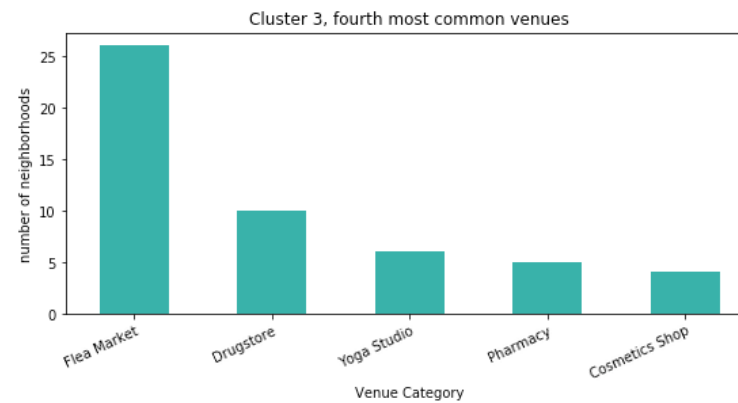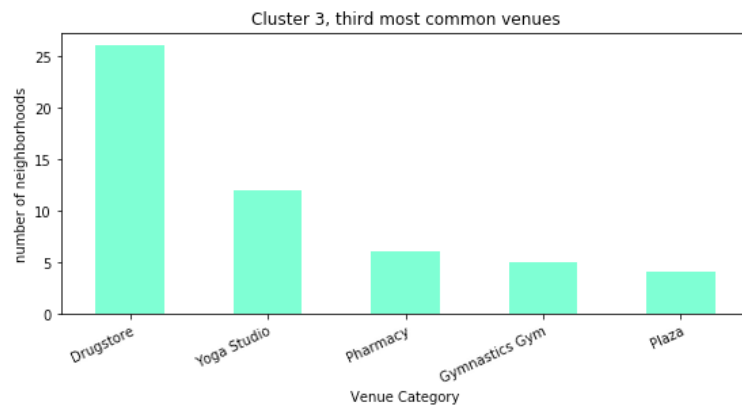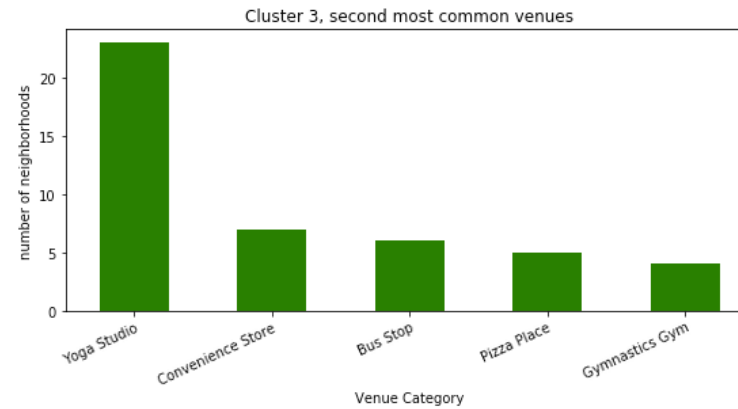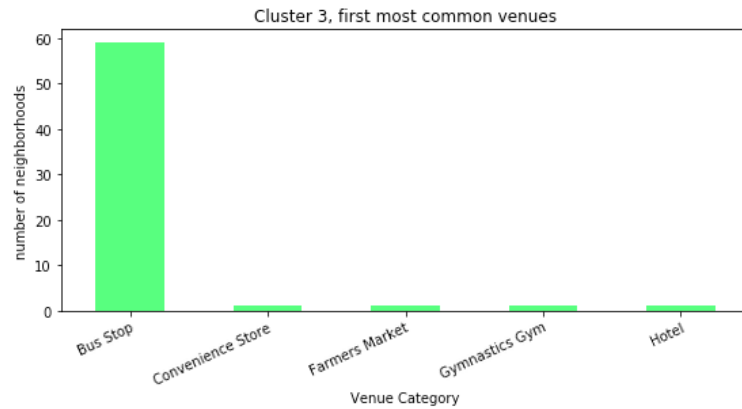
Pharmacies and Bakery are also very common in the neighborhoods of the second cluster.

V.2.5. CLUSTER 3 – ANALYSIS – RURAL AND LIMITED BUSINESS LANDS

Cluster 3 count only 65 neighborhoods and only one in Guadeloupe, this cluster seems to be characterized by rural and very limited business activities:

The neighborhoods of these clusters are characterized by almost no restaurants, the first most common venue being related to public transportation business activities are limited to Yoga Studio, drugstores

Cluster 4 counts 137 neighborhoods which seem to be characterized by convenience stores, supermarkets and shopping activities:

The neighborhoods of this clusters are surrounded by bakeries, supermarkets, medical centers.
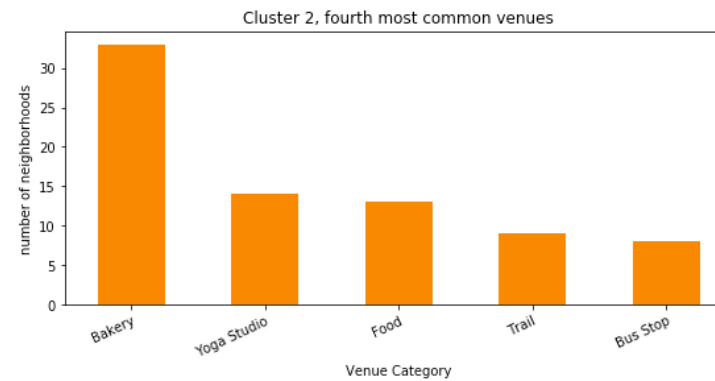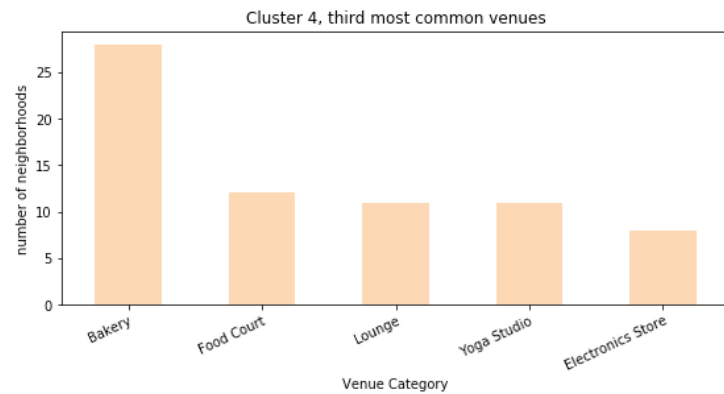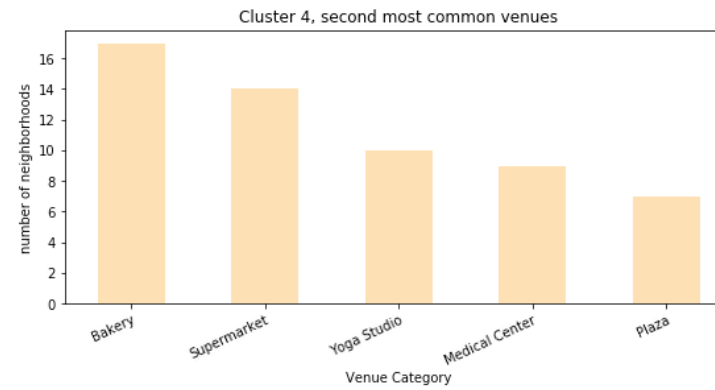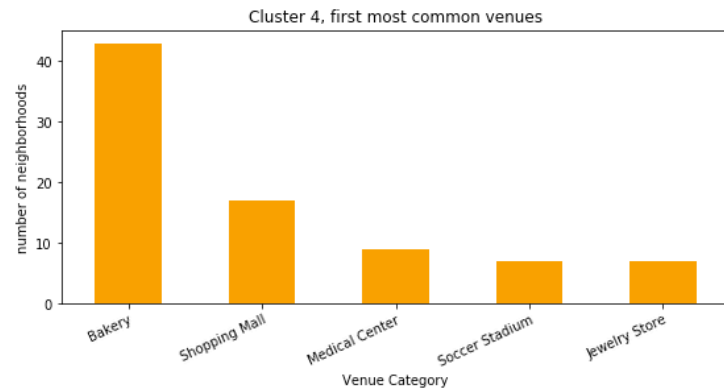
VI CONCLUSION

Our analysis identified both similarities and dissimilarities in the sister islands.

Over the period 2017-2019 Guadeloupe real estate market has been more dynamic and the housing sale price is more expensive than Martinique's.

Both Islands have a concentrated real estate market with a fifth of the boroughs gathering half of the transactions. However, Martinique market shows a huge gap between the capital Fort-de-France and the rest of the territory. In Guadeloupe, there is more balance and continuity between the different boroughs.

From a geography perspective, the most dynamic boroughs of Martinique are highly concentrated in the center of the island. In Guadeloupe, the most dynamic boroughs are spread in the center and the north Est and cover a bigger part of the territory.

Despite the less expensive housing sale price, business implantations in Martinique are much higher and diverse than in Guadeloupe. In average the four most dynamic boroughs of Martinique count 60% more venues per neighborhood than Guadeloupe's four most dynamic boroughs.

Both islands food industries are largely dominated by Fast Food restaurants and pizza places, there seems to be room for opportunities in this area of business in both islands.

In the health sector, it is interesting to note that pharmacies are amongst the top 10 most common venues in Martinique whereas there are not even included in the top 20 most common venues of Guadeloupe.

The neighborhoods segmentation reveals that both Martinique and Guadeloupe present a very large number of neighborhoods mostly located in the center of the island in urban areas that are surrounded mainly by Fast Food restaurants, Pizza places, Yoga studios, and shopping venues.

Close to these urban areas are more residential neighborhood characterized by very high concentration of pizza places followed by bakeries and pharmacies.

The costal neighborhoods of the boroughs of Martinique and Guadeloupe are mainly characterized by Caribbean restaurants and Yoga studios close to beaches although there are more neighborhoods of this type in Guadeloupe boroughs.

Finally, both islands also have neighborhoods dedicated to retail and shopping activities.

To conclude, both islands presents business opportunities. However, competition in Guadeloupe seem to be less fierce as the economic implantation is much lower than Martinique. That being said, the fixed cost of installation that is related to real estate is higher in Guadeloupe.