



Best location to open a Vegan Restaurant in Rio de Janeiro

Presented by Felipe Maia
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Agenda

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Executive Summary

The following methodologies were used to analyze data:

Acquisition of Geolocation Data from the establishments of interest using the Foursquare API.

Exploratory Data Analysis (EDA), including data wrangling, data visualization with Folium Open Street Map and Seaborn Plots ;

Unsupervised algorithm K-mean

Summary of all results:

Exploratory Data Analysis Results

Clustering Result Using K-mean

Introduction

Rio de Janeiro is internationally known as the "Cidade Maravilhosa" for its incredible beauty, incomparable beaches, New Year's Eve and Carnival parties.

In terms of gastronomy, the city offers options for all tastes and pockets, from mate and crackers that are famous on the beach to starred restaurants.

According to research from Google Trends, Food Revolution, Vegan Society, among others, veganism was one of the main trends in the world market, with exponential growth every year.

In Brazil, especially on the Rio-São Paulo axis, this growth is no different and it is increasingly common to find establishments and services focused on meeting these needs.



Vegan and Vegetarian Market

14%

of brazilians declare themselves as vegetarians.

In Rio de Janeiro this percentage **rises to 16%**. The statistic represents a **growth of 75%** compared to 2012. In 2018, this represented **almost 30 million Brazilians** who declared themselves adept at this food option.

Source: Ibope (april 2018)

Goal:



Open a vegan restaurant in the best location in Rio de Janeiro.

Questions:



Where are the competitor located?

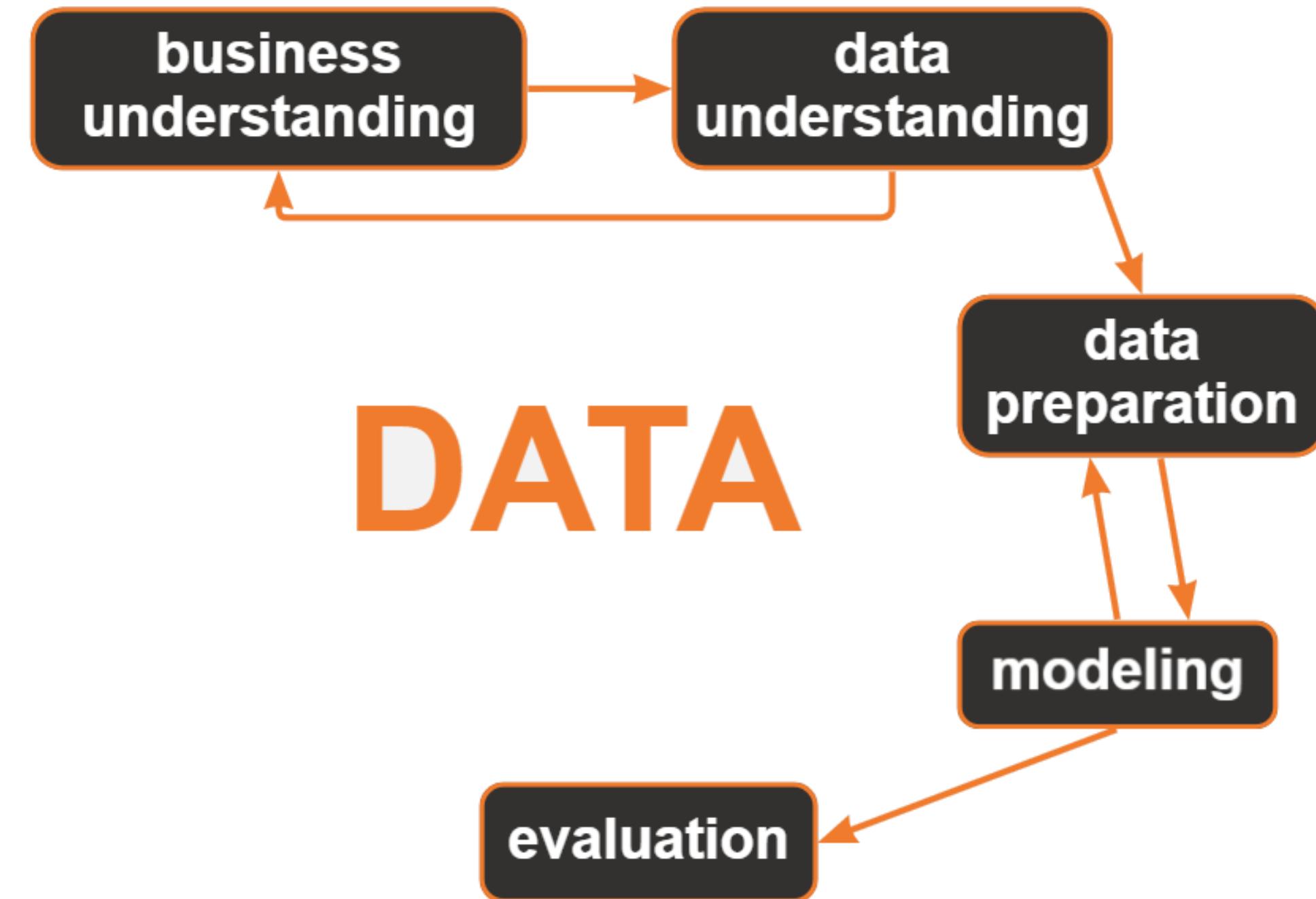
- Who are the competitors?
- Where are my target market?



Open a restaurant near homes, offices and hotels. Where is it convenient?

- Is there any hotels around?
- Is there any offices in the neighborhood?
- Is there any market or mall near by?

Methodology



Methodology

Data collection methodology:

- Use Foursquare API to search for geolocated data from the neighborhoods of Zona Sul and Center of Rio de Janeiro, and the categories of interest for analysis.
- Understanding geolocated data.
- Due to the small geolocation dataset of the neighborhoods of interest, there was no need to do Web scraping.

Perform data wrangling:

- Data cleaning of null values and irrelevant columns.
- Removal of duplicate data.
- Generation of graphs and maps to understand the data.

Unsupervised algorithm K-mean:

- StandardScaler to normalize the data.
- Finding the best K with the silhouette and elbow method.
- evaluate the model

Data Collection

Latitude and longitude data were collected from the **South Zone and Center** neighborhoods of Rio de Janeiro.
(total 17 neighborhoods)

9 specific categories of establishments were used, with a **radius of 1000m, returning 3462 records.**

- Vegan and Vegetarian Restaurants - **target**
- Japanese Restaurants - **direct competition** (fish is a vegetarian option)
- Italian Restaurants - **direct competition** (pasta is a vegan option)
- Various Restaurants - **indirect competition**
- Cafes, Snack bars, Sweets - **indirect competition**

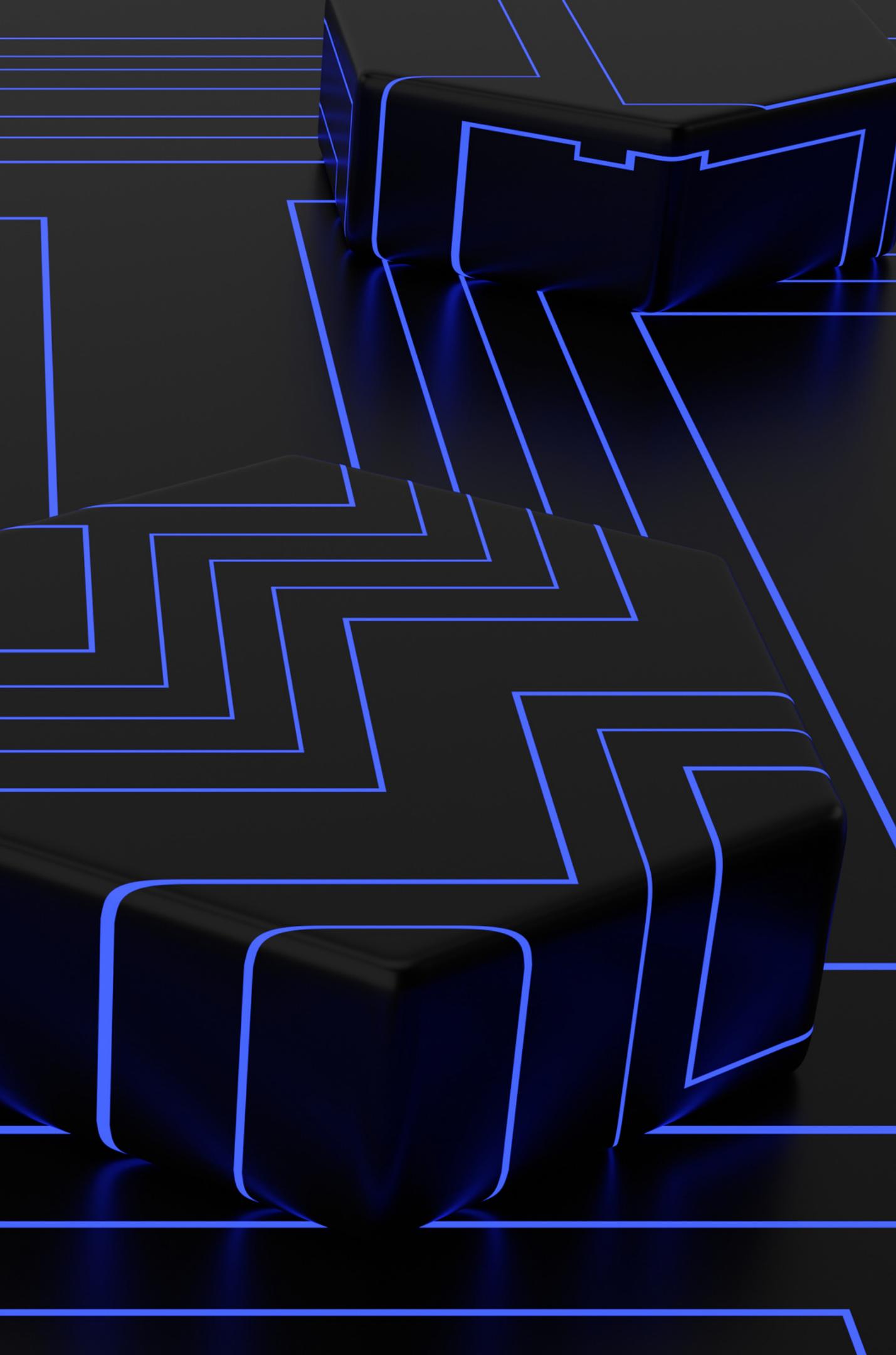
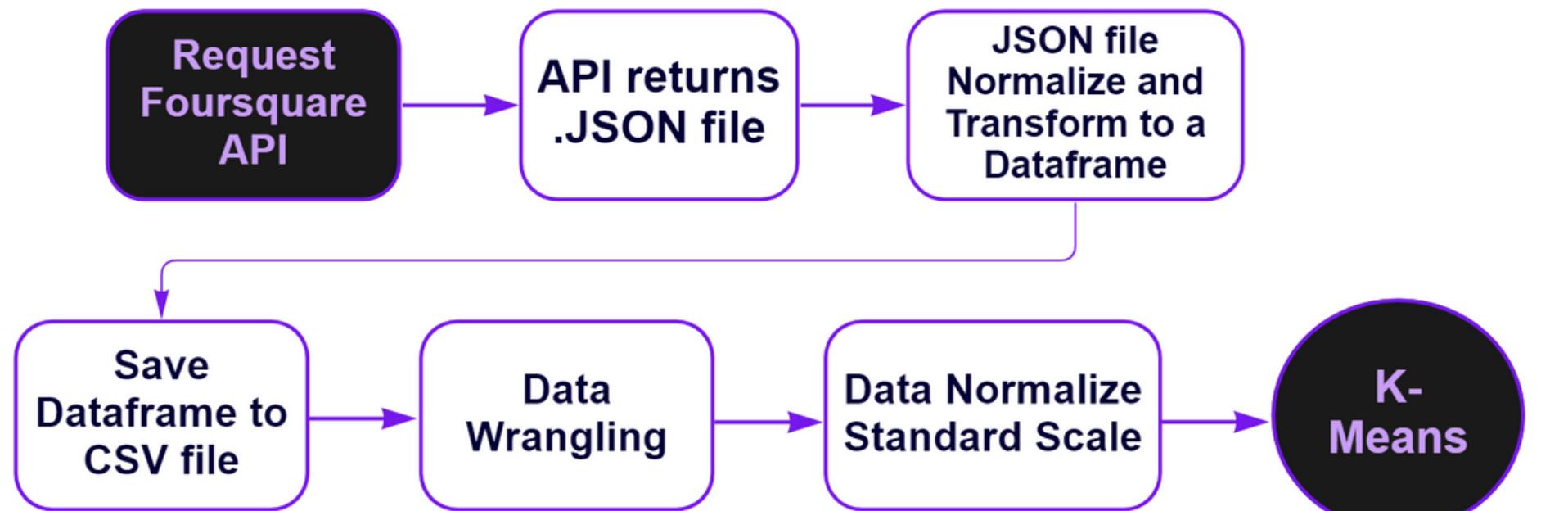
Places with a **high concentration of people.**

- Retail, Professional Services
- Hotels;
- Mall and Galleries.

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(window).scrollTop() > header1.css('padding-top', parseInt(header1.css('padding-top'), 10) + window.innerHeight)) {
    header1.css('padding-top', '' + (header1.css('padding-top', '') * 2));
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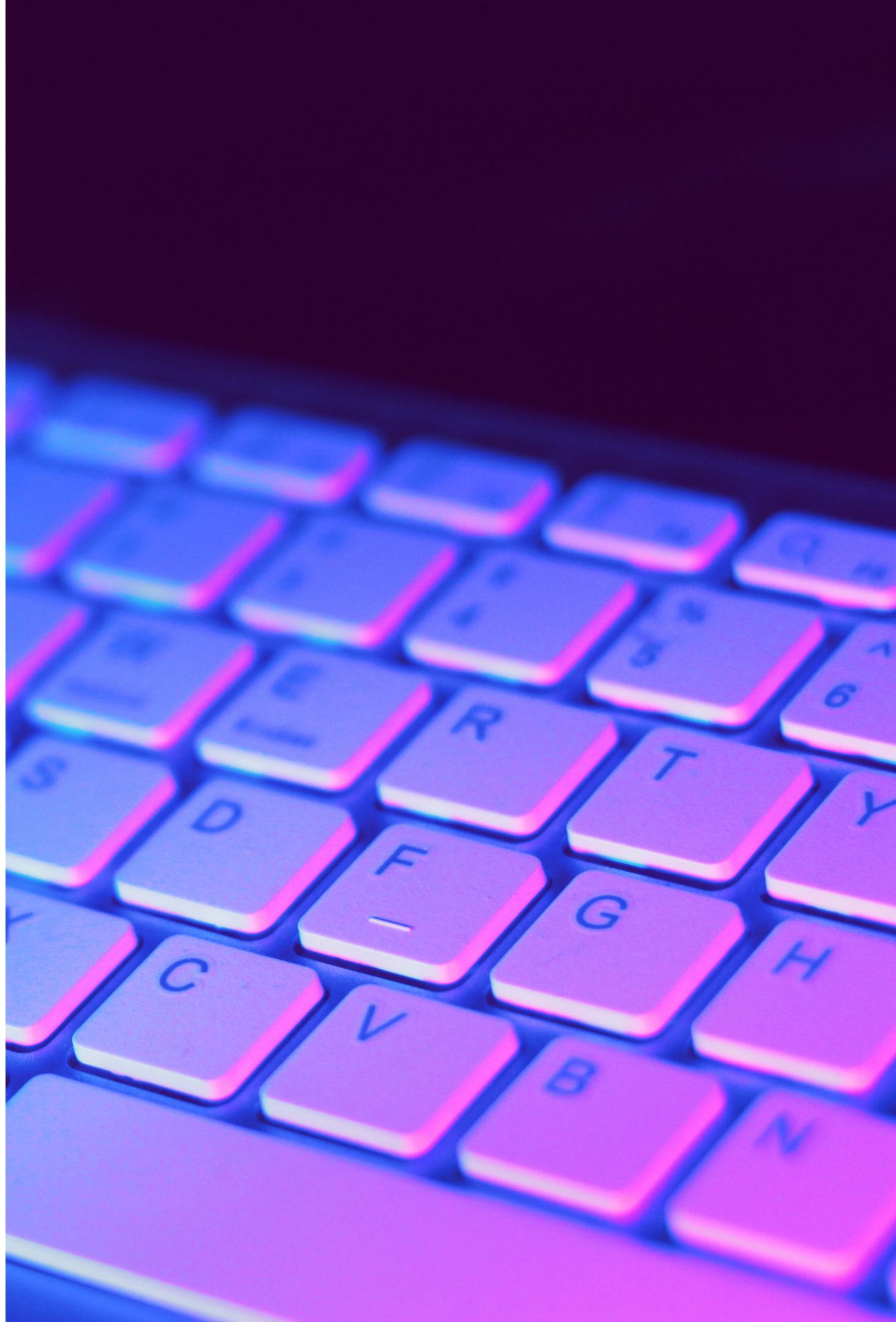
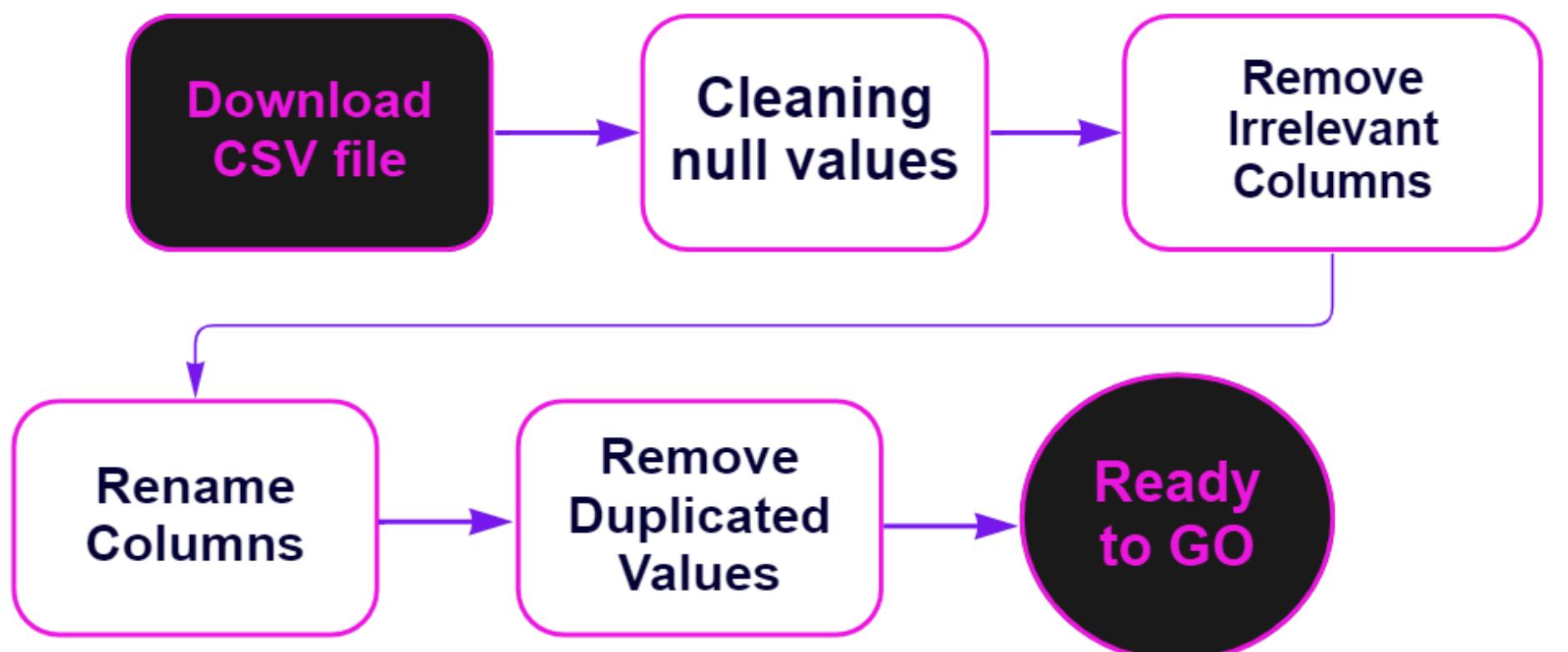
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}
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Solution Architecture



Data Wrangling

To clean the data, the following resources were used:



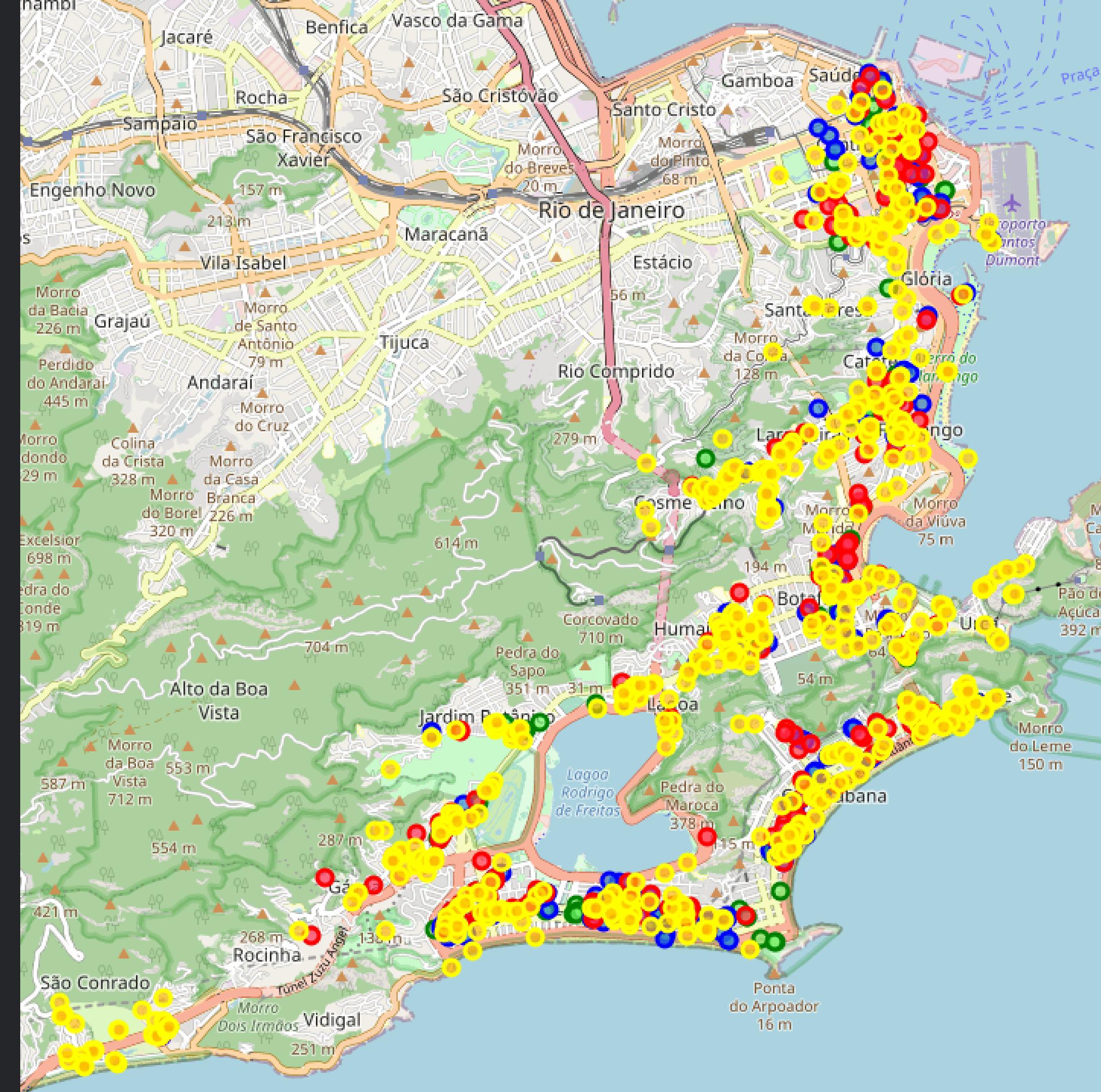
Exploratory Analysis

Vegan and Vegetarian Restaurants per Neighborhood



Restaurants in the South Zone and Center of the city

- Vegan and Vegetarian
- Italian
- Japanese
- Various



Clusterization

K-Means

Data Modelling

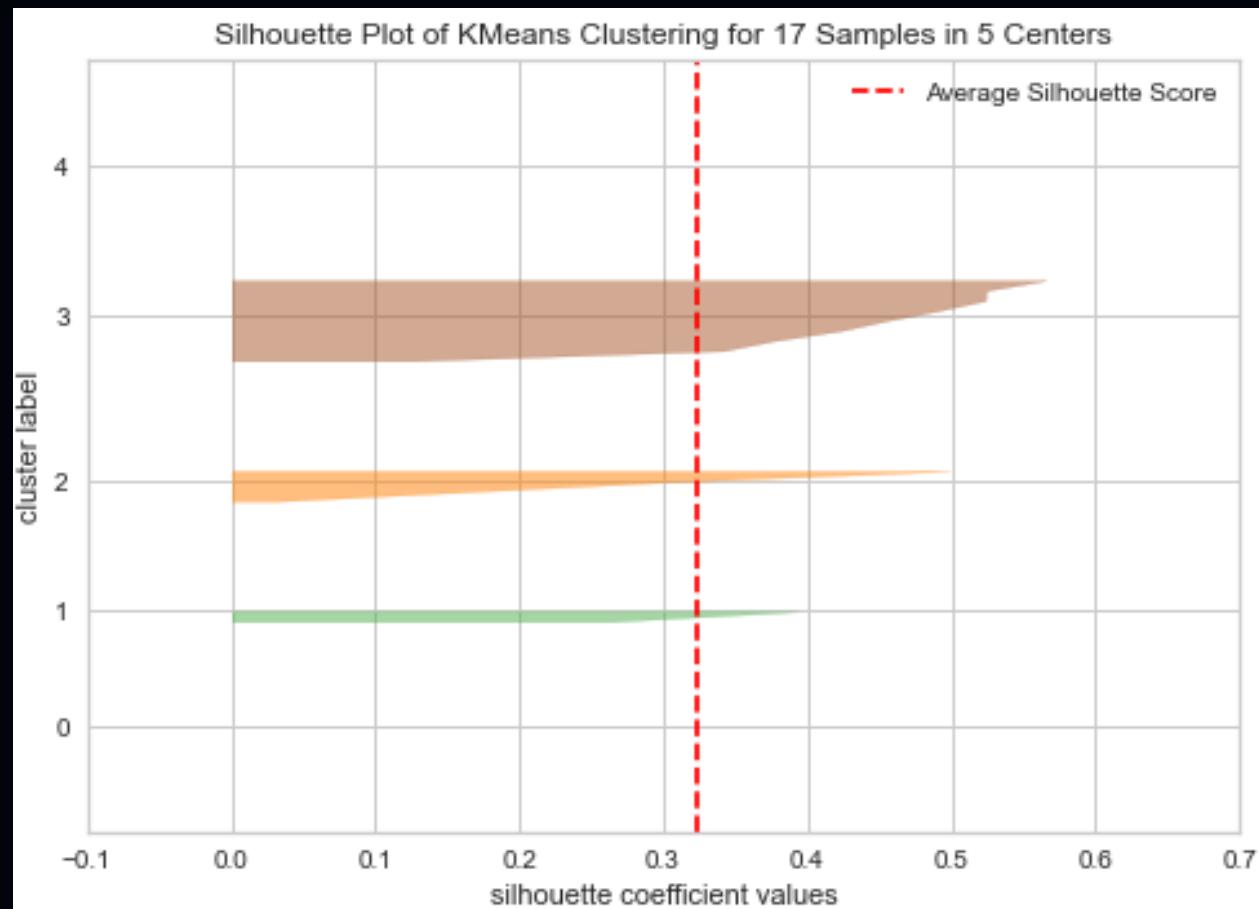
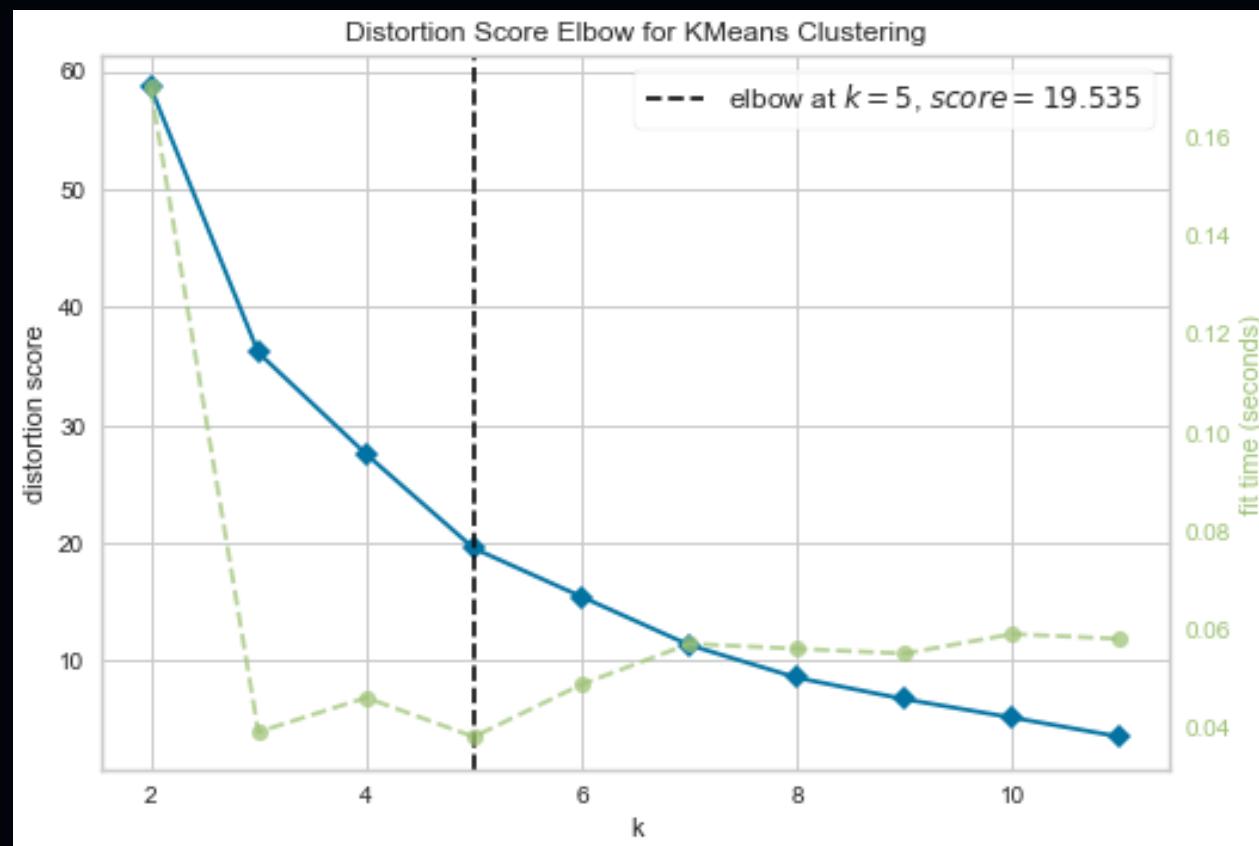
StandardScaler

The data was pre-processed using StandardScaler to normalize the data and maintain the aspect ratio.

Using K-Means

To be able to predict the best place to open a **Vegan Restaurant** in the neighborhoods of interest, the algorithm was used unsupervised K-Means from the Scikit-learn library.

To find the best K, the **silhouette** and **elbow** method was used and the value found was **5 clusters**.



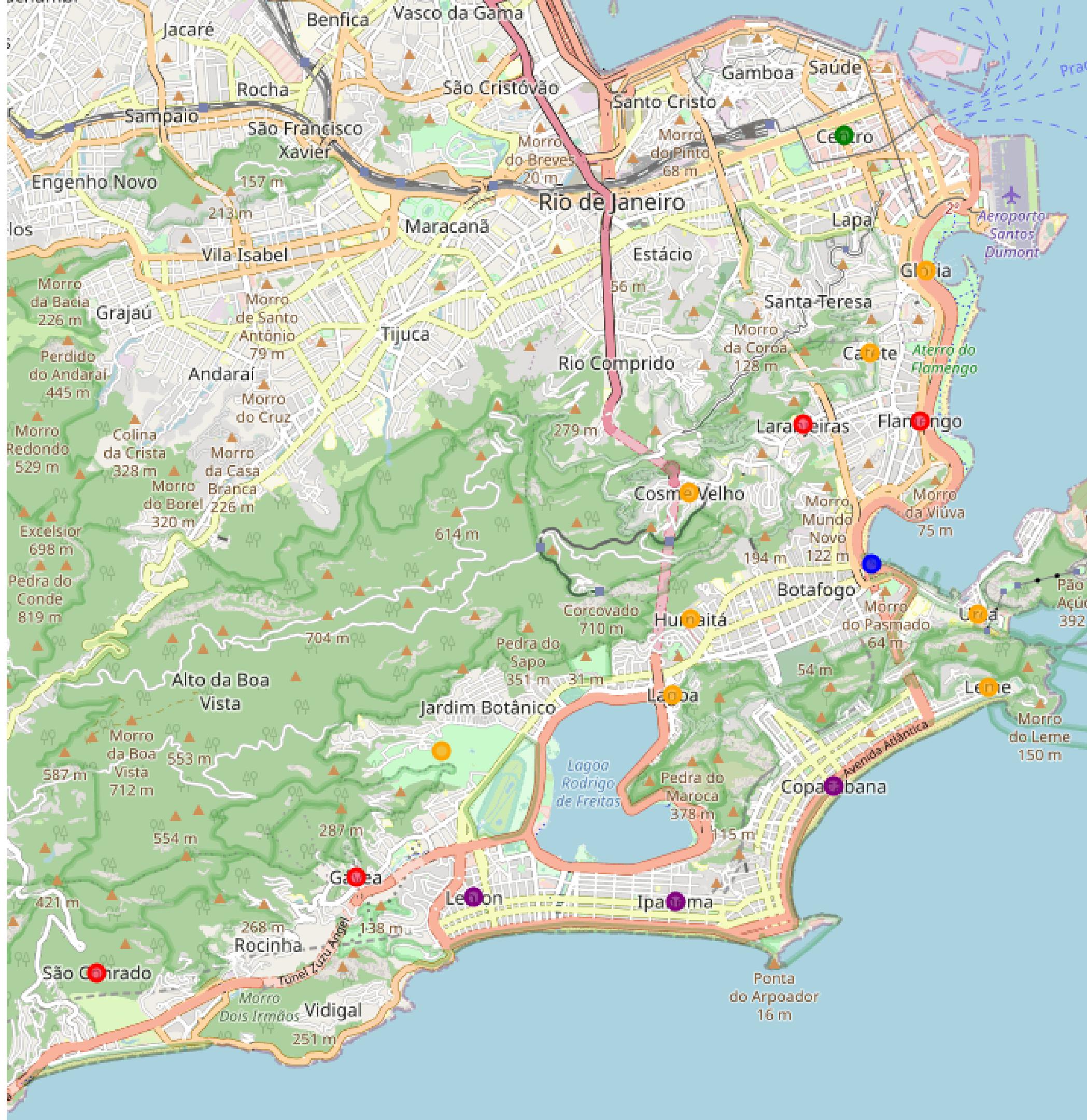
Results

Clusterization

After the k-means clusterization, we got the following results presented in this map.

The points that appear on the map are represented as:

- low concentration of people | few direct competition | few indirect competition.
- high concentration of people | medium direct competition | medium indirect competition.
- very high concentration of people | much direct competition | much indirect competition.
- medium concentration of people | few direct competition | medium indirect competition.
- very high concentration of people | medium direct competition | much indirect competition.



Discussion

We should open a Vegan Restaurant in places that have more concentration of people. So we wont consider the **Orange** and **Red** clusters.

Now we remained with three options: **Blue**, **Purple** and **Green** clusters.

We will analyse the competitors according to the business strategy and also aligned with the target market it will achieve.



Main Competitors

Top 9 Vegan
Restaurants
per neighborhoods.

Restaurant	Neighborhood	Rating
Teva	Ipanema	93
Spazziano	Ipanema	88
Refeitório Orgânico	Botafogo	85
Delírio Tropical	Gávea, Ipanema, Centro	85
Vegana Chácara	Botafogo	85
Metamorfose	Centro	85
Prana Vegetariano	Jardim Botânico	83
Naturalie Bistrô	Botafogo	83
Veggie Govinda	Centro	80

Conclusions

It's important to take into consideration that Foursquare in Brazil is **not up to date** and we also needed to **add some complementary data** in order to **understand the city and its economics**.

According to the study, the only thing that will now determine where the vegan restaurant will be opened is **based on the business strategy**:

Purple Cluster - In Ipanema, Leblon and Copacabana, we can find an audience with **more power purchases** and the **competition in this area is not too high**, on the other hand, it **requires more investment** because it is an expensive region to invest.

Blue Cluster - Botafogo has **more concentration of people** than in the purple zone, and it'll be **cheaper to open a 4-stars restaurant** and the **competition is not as high** as it is in Centro (Green Cluster).

Green Cluster - Centro will be an **ideal place to open a 3-stars restaurant** since the **competition is really high** and the **concentration of people also**. The area is the **less expensive** of the three options.

References

Veganism and the food industry - pesquisas diversas sobre o veganismo

<https://www.vegansociety.com/get-involved/research/research-news/sustainable-food-transitions-and-veganism-social-movement>

Crescimento Veganismo Mundo

<https://trends.google.com.br/trends/explore?date=today%205-y&q=veganismo>

Crescimento Vegetarianismo Brasil

<https://www.svb.org.br/vegetarianismo1/mercado-vegetariano>

SEBRAE - Como escolher o melhor ponto comercial

Sebrae - <https://www.sebrae.com.br/sites/PortalSebrae/artigos/como-escolher-melhor-ponto-comercial-para-seu-negocio,d9d89e665b182410VgnVCM100000b272010aRCRD>

Pesquisas de melhor ponto para o varejo

Noon Labs https://www.noonly.com.br/varejo?gclid=CjwKCAjw6dmSBhBkEiwA_W-EoABhZKjuPNDzxsTTlJm5fShj25lzCvkDcHiK544Os3aWCA0qs7attxoCy-0QAvD_BwE

Thank You!

