

# The Problem

Bogotá, Colombia's capital city, is one of the country's most crowded and multicultural cities, and it keeps growing and receiving more people from around the world. For this reason, Bogotá needs to offer a wide variety of environments and settings for all its population, especially around the city's historic center, where lies the most touristic, business, and university centers.

This project aims to study the offer of some restaurants, specifically, **Italian restaurants around Bogotá's historic center**. To achieve the proposed goal, we will research restaurant offer around Bogotá's downtown and identify areas that may need more restaurants to improve its diversity.

## Data

Some of the data that we want to explore is:

- Restaurants near Bogotá's historic center.
- Italian restaurants in this area
- Distances between restaurants

We will use Google Maps and Foursquare APIs to get desired data. The city's cathedral "Catedral Primada de Bogotá" will represent Bogotá's historic center.

The data will be extracted as follows:

- Geocoding API will provide the longitude and latitude of a given point in Bogotá – "Catedral Primada de Bogotá".
- Foursquare retrieved data will give restaurants' locations and their categories.

## Methodology

This project looks for the best area to place an Italian restaurant near Bogotá's downtown. The first step was to get Bogotá's coordinates using google maps API; then, equidistant points were distributed around the area to get the restaurants' information using foursquare data. Finally, we will present all restaurants' locations graphically and specify which Italian restaurants use different colors. This representation will identify possible spots to place a new Italian restaurant in the desired area.

After creating a heatmap, we can see that the density of Italian restaurants around the area is very low, so placing one in this area might be a great opportunity. Finally, we use a clustering algorithm to generate 15 centers where Italian restaurant offer is low. These 15 centers are the best possible locations to place a new Italian restaurant.

## Results

Our analysis shows that although there are some restaurants in Bogotá, there are pockets of low restaurant density close to the city's downtown.

To analyze the area, we first created a dense grid of location candidates. We filtered these locations, so we removed those with more than two restaurants in a radius of 250m or with an Italian restaurant closer than 400m.

We created clusters using all location candidates to create zones of interest that contain a significant number of location candidates. We also generated the addresses of the centers using reverse geocoding to use them as markers/starting points for more detailed local analysis based on other factors.

The result of all this is 15 centers contains some potential Italian restaurant locations based on number and distance to existing ones. However, this result doesn't imply that those zones are optimal locations for a new restaurant.

The purpose of this analysis was to provide information on areas close to Bogota's center with existing Italian restaurants. Therefore, recommended zones should be considered only a starting point for more detailed analysis, which could eventually result in a location with no nearby competition.

## **Conclusion**

In conclusion, after the analysis, the stakeholders can make better decisions based on data collected from different sources and a better understanding of Bogotá's dynamics.