# Areas of high criminality in Mexico City

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## Introduction

Mexico city is one of the most populous cities in the world. With a population of about 8 918 653 people [1], the capital of Mexico represents a very important cultural and financial centre in the world. Despite this condition, one of the main problems in Mexico city is the high rates of criminality that affects virtually every person living in it. Being the most important financial centre of the country, it is fundamental to identify areas with high rates of criminality and a huge influx of people. On the one hand, criminal activities such as homicides, robbery or kidnapping are a major concern for people moving to these areas because of the need to get to their workplaces, on the other hand, activities like extortion might force business owners to close or entrepreneurs to avoid these areas leading to a decrease in economic activity.

In this report we analyze neighborhoods with high rates of criminality and their most common venues using the Foursquare API. With the information obtained, a clustering algorithm is applied to find the type of crimes that are associated to a particular category of venues. Temporal patterns are also studied in order to determine the hours and days with higher rates of criminality.

The results obtained are intended to help people working in these places to avoid hours with high criminal activity, also, investors willing to open new businesses might benefit from this information by locating the best areas for a particular type of venue.

## Data

The dataset used in this study was obtained from the web page of Mexico City data [2] and consists of records of crimes under investigation in Mexico city from years 1973 to 2019, in this report we only focus in the last four years. Since not all crimes are reported to the police, the dataset is only a sample of the total number of crimes, therefore it is assumed that the sample is a representative one.

Information about crime category, date and time of occurrence, borough and neighborhood in which crimes occur and location coordinates (latitude and longitude) are provided in the dataset. Further filtering of data was made to restrict the crime categories considered, specifically to those related to the criminal activities mentioned in the previous section. The Foursquare API [3] was used to collect data about the ten most common venues in each neighborhood.

Finally, geojson data for boroughs in Mexico City was downloaded from the same web page [2] and used to create maps in Folium library to gain visual insight.

## Methodology

## Results

## Discussion

## Conclusion