

Applied Capstone Foursquare Final Project: Exploring crime data in neighbourhoods in Mexico City

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In this report will be justified and explicated the task of exploring crime data in Mexico City (aka CDMX) using the knowledge acquired in this course and others.

1. Introduction

1.1. Background

The crime is a phenomenon present since beginning of the times and everywhere. A few years ago the crimes just could be solved, but currently crimes also could be predicted. Traditionally the *modus operandi* of crime prediction it is use historical patterns (empirical knowledge), geographic information systems and demographic variables e.g. sex, income, age, profession, but these variables only change slowly in the time. Nevertheless this *modus operandi* ignores other short-term variations of factors which are relevant to the occurrence in crime events.

These factors that provided a new and interesting standpoint to *modus operandi* are inside of the city dynamics i.e. human mobility across a city, e.g. "...some neighbourhood is very popular, what is people looking for? What is in there that is not anywhere else? Is there a route with high density people?", currently the repository of data and social media allow to analyse the mentioned factors.

1.2. Problem

For the purpose of make an analysis between city dynamics and crime behaviour and discover all of this new standpoint can offer, it will be described the process to explore crime data in CDMX with libraries of Python to manage data as *pandas*, visualization data as *folium*, the Foursquare API to get data about venues and their categories around the crime locations, and exploring the relationship between the number of crimes, type of crimes and their location, in ultimate stage the neighbourhoods will be studied with a unsupervised machine learning methods, K means clustering.

1.3. Interested sectors

The crime analysis would be a business problem for distinct justice organizations in Mexico City, national authorities, security private companies, data science consultancy as a task given by restaurants or hotels that would want to be established in security zones.