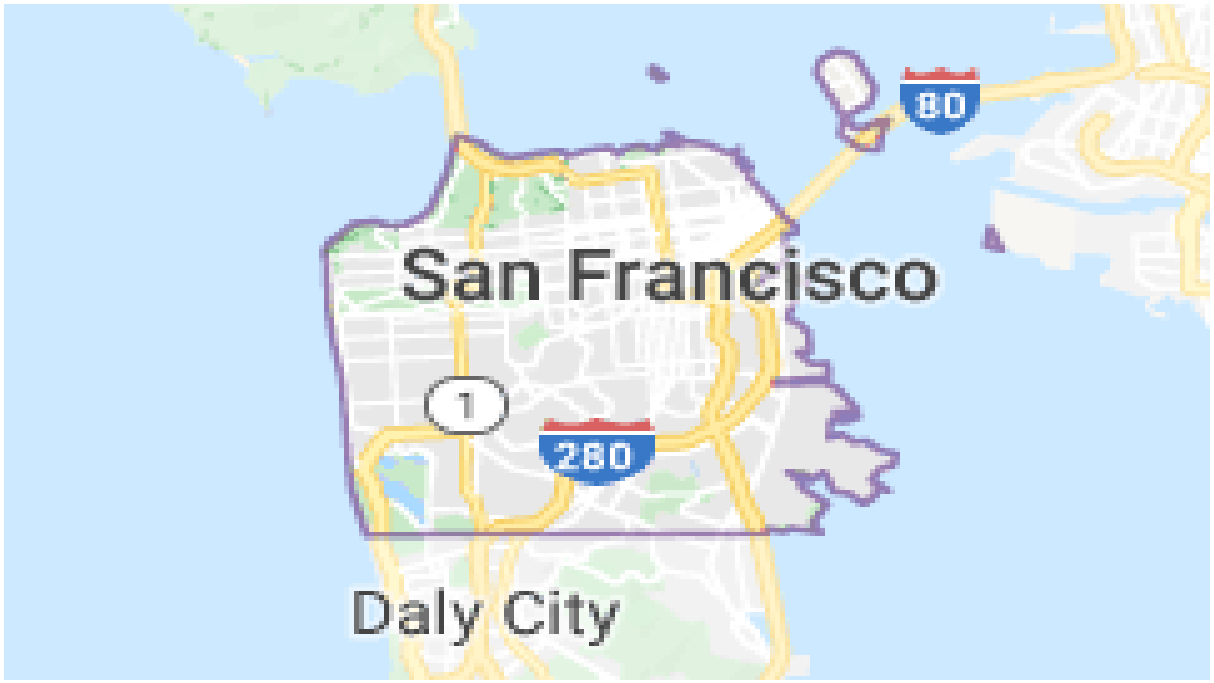
# ***Coursera capstone***

## *IBM data science*

Where to open a restaurant in San Francisco

By : issam.na



## Introduction:

Location can also influence a business's ability to market itself, the competition it faces from businesses, the total cost of operation, taxes the business owner has to pay and the regulations they must follow.

Location also matters for marketing. The importance of location goes beyond your business' physical location and your website rank in Google search results. It extends to the placement of your advertisements.

## Business problem:

When deciding where to open a new location, there are a few business location advantages and disadvantages to consider. As previously noted, identifying a well-trafficked area can be critical to getting a business off the ground.

Consistent traffic is the key to driving daily revenues and can help generate the money necessary to pay back debts, such as business loans.

On the other hand, the same high-traffic areas may be expensive to locate in. The cost of paying the building's rent may only add further to existing debt. Business owners will often try to locate a store in a more affordable part of town as a result.

However, the disadvantage of locating in less costly parts of town may include low traffic, sometimes owing to a lack of surrounding amenities that would otherwise help attract business.

## Audience:

Location data can reveal a trove of information about a customer's daily travel routines (such as commutes), recurring shopping habits (like grocery shopping or gas station stops), restaurant preferences, and even online-to-storefront purchasing behavior. The data allows for more personalized targeting for the products and services customers might care about and enables more efficient ad targeting and budget allocation for marketers.

The goal is to offer to anyone who wants to start a new restaurant in San Francisco an idea about the demographics of the area.

This project is based on a previews project already done by a data scientist.

## Data

The demographics by neighborhood data are from San Francisco Planning Department.

https://default.sfplanning.org/publications_reports/SF_NGBD_SocioEconomic_Profiles/2012-2016_ACS_Profile_Neighborhoods_Final.pdf

The restaurant data are to be compiled from Foursquare API.

## Methodology

This project offers an infographic view of the demographics and restaurant competitions in each neighborhood of San Francisco. Anyone who wants to start a new restaurant in San Francisco can use the report or the interactive tool on the Jupyter Notebook as a guide to find the optimal place to start a restaurant based on the two elements. We started with describing the data, afterward we did perform more exploratory data analysis after compiling the restaurant data from Foursquare. In order to use the Foursquare API to find restaurant data, we need to first find the longitude and latitude for each neighborhood. Most of the neighborhoods have 100 data points. Then an exploratory analysis as the project is focused on creating a visualization for demographics and restaurant competition information for each neighborhood, there is less need to draw insights from the datasets by its own. But it is still quite interesting to examine them especially the demographics dataset. Couple things of interest are the distribution of population, distribution of median household income, and whether there's a correlation between median household income and percentage of each race. we use a box plot to see the distribution of median household income and whether there's any outliers. And finishing with mapping.

## Results:

The line of our concern is Median Household Income vs the races. We can see that higher percentage of White household corresponds with higher median household income, while the high percentage of any other race household responses negatively with median household income.

## Conclusion:

We can see the relationship between household income and the races.