# Capstone project – Battle of the neighborhoods – part 1

## 1. Introduction

Curaçao is a relatively small (444km2) island located in the southern Caribbean and although a souverein state, part of the Kingdom of the Netherlands. In 2011, Curaçao had a population of about 150.000 people and steadily growing over recent years. In 2019 Curacao reported to have a population of over 164.000 people[1]. The population growth is mainly induced by immigration. A large portion has Dutch roots but also Columbia and Haiti have a fair share in the population growth.

About 90 percent of Curaçao's population had the Dutch nationality in 2011. Varying shares of foreign-born persons have obtained the Dutch nationality, ranging from almost 20 percent of Haitian-born persons to about 76 percent of Surinamese-born persons. The share of the population that has never lived abroad decreased from almost 70 percent in 2001 to 56 percent in 2011.[2]

Curacao mainly has a strong tourism economy, roughly 20% of it's GDP and is heavily depended on it's foreign travels. On average Curacao has over 400.000 stayover arrivals and well over 3,5 million visitor night per year. The top markets are The Netherlands, United States, Venezuela, Germany, Canada, Columbia and Brazil.[3]

This unique combination of multicultural tourism and population on a sunny, tropical island, could make for a splendid location of an Italian restaurant. Question is though; *Where on the island would be a good place to open up such an Italian restaurant?* For both the Tourism Board Curacao aswell as any entrepeneur looking for a great opportunity this is very relevant information.

In order to answer this question, one should also take into account that the average household income on Curacao fluctuates heavily per neighborhood. People below a certain averga income are less likely to go to an Italian restuarant. And since the infrastructure does not accomodate large volumes of traffic, location is most likely a key to the possible performance of the restaurant.

Also the neighborhoods with the most foreign-born population might be of severe importance as the Curacao-born population tends to eat more local Creol food instead of forein food such as Italian.

1 https://www.macrotrends.net/countries/CUW/curacao/population
2 http://www.caribbeanelections.com/eDocs/statistics/cw_stats/cw_population_housing_census_2011.pdf
3 https://issuu.com/curacaotouristboard/docs/ctb-annual-2017-digital

So in order to find the best possible spot for an Italian restaurant we'll have to take the location into account with respect to the average income and clusters of foreign-born population. Lastly, we'll have to look at competition. Whether or not an Italian restaurant is already located there.

# 2. Data

In order to find the best location for an Italian restaurant on the island of Curacao, we'll need a couple of resources. Firstly we'll use data of the Curacao Census 2011[4], which is an extensive research at the population indexes, such as household population, fertility rates, poverty rates, marital status, migrant population and much more made by the Central Bureau of Statistics Curacao. This large dataset containing 291 rows and and 34 columns will be loaded as a CSV file and referred to as 'Census'.

Specifically the data on average household income (column 'meanHHinc') per neighborhood is used in this report as wel as the percentage of foreign-born population (column 'forborn') in a certain area versus the Curacao-born (column 'curborn') population. To find the optimal location for the Italian restaurant we have to maximize both the average household income levels as well as the percentage foreign-born population in each neighborhood.

For displaying that information on a map, we need the appropriate neighborhoods in a Json file. As this was not readily available, this report makes use of a parsed set of Polygons depicting the neighborhood sizes, derived from OpenStreetMap, and loaded as a GeoJson file[5]. However OpenStreetMap only recognizes 65 different neighborhoods, whereas the Census files knows 291 different subneighborhoods.

In order to minimize dataloss and missing values, part of the original Census file was adjusted, i.e. the neighborhood "Brievengat Zuid" (Brievengat South) was grouped together with "Brievengat". Also different methods of writing the same neighborhoods were adjusted, for example "Aciento" was spelled as "Asiento". Lastly, the data in Census was formatted, in this case capitalized, to make a match with the GeoJson file.

Finally, the Foursquare API[6] is used to pull location information of the chosen neighborhood, in terms of other available restaurants to find out whether there is another competitor in the form of an Italian restaurant. Also the density of nearby restaurants is a factor to take into account.

4 https://cbscuracao.maps.arcgis.com/apps/webappviewer/index.html?id=6ed83880519f40ddb5d98d8b73671bcd
5 https://github.com/Jaikej/Data-Science-Assignments/blob/master/Curacao_AL8.GeoJson
6 https://foursquare.com/