# Coursera IBM Capstone Project

## The Battle of Neighborhoods

Suitable location for a

sandwich shop in New Orleans, USA

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What will be on this report:

1. A description of the problem and a discussion of the background
2. A description of the data and how it will be used to solve the problem
3. Methodology and data analysis
4. Discussion and conclusions

## 1 - A description of the problem and a discussion of the background

People need to eat, someone said.
Mia loves to cook and her friends say that she makes "the greatest and best" sandwiches they ever had. She is happy to constantly ear about it, that she decided to try to open a small place.
She lives in New Orleans, USA and she is looking for a good location and cheap but more important, a place where she can be successful.
There are lots of factors that are in place that could tank really fast the business if she makes the wrong choices, so she decided to talk to some friends and asked for our help.
The goal is to look at the available data and help her to decide for the best location.
The task is to help to make a decision that makes sense for her, in this case to look for possible locations that are suitable.
The idea from Mia is to have a small sandwich shop in New Orleans, USA.

### Some info about New Orleans

According to the article on Wikipedia, https://en.wikipedia.org/wiki/New_Orleans, New Orleans has interesting characteristics for unique food experiences.
"With an estimated population of 391,006 in 2018, it is the most populous city in Louisiana. Serving as a major port, New Orleans is considered an economic and commercial hub for the broader Gulf Coast region of the United States.
New Orleans is world-renowned for its distinct music, Creole cuisine, unique dialect, and its annual celebrations and festivals, most notably Mardi Gras. The historic heart of the city is the French Quarter, known for its French and Spanish Creole architecture and vibrant night-life along Bourbon Street. The city has been described as the "most unique" in the United States."
The city is also unique in a sense because of the Hurricane Katrina on 2005. With the flooding of more than 80% of the city, thousands of deaths, there was a population decline of over 50%.

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## Criteria for the location

Again, from Wikipedia, New Orleans is world-famous for its food. There cuisine is unique that combines local Creole, haute Creole and New Orleans French cuisines. There local ingredients are French, Spanish, Italian, African, Native American, Cajun, Chinese, and a of Cuban to combine and produce a recognizable New Orleans flavour.
With all that in mind, Mia had no specific place she would like to be.
We will focus on the district options that would be benefit the restaurant, this is, where people are. This could be near other restaurants, near Universities, in the city center or the outskirts. It will depend on the data we have and what we do with it.

## Why use the data science approach

Without looking at the data to help to make the decision, Mia would spend some hours walking around the districts talking to many real estate agents and still ending up opening in a wrong place. Mia still has too do all that, but with the data hopefully she reduces time on that and that the presented solutions will be suitable to her needs.

## Outcome

The goal with this project is to identify the districts, look at the available data and the results will convey help to analyse the best locations for the business.

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# 2 - A description of the data and how it will be used to solve the problem

## Data requirements

In 1980 the New Orleans City Planning Commission divided the city into 13 planning districts and 72 distinct neighborhoods. After the Katrina and 50% less population, the reality is not reflected here.
The data regarding the districts in New Orleans needs to be researched and a usable source identified. If it is found but is not in a usable form, data wrangling and cleaning will have to be performed.
The data will be used as input for the Foursquare API. That data output from the Foursquare API will be used to explore or compare districts around New Orleans, identifying the high traffic areas where consumers go for shopping, dining and entertainment as the logical and possible areas where to open this kind of business.

## The data work flow

- **Outline from the initial data that is required:**
  - District data for New Orleans, USA, that includes neighborhood names and location data such as latitude and longitude

- **Obtaining the data:**
  - Rechearch and find sources for the neighborhood data for New Orleans
  - Access and explore the data for manipulation

- **Initial data wrangling and cleaning:**
  - Clean the data by removing unnecessary fields and convert the data into a dataframe

- **Data analysis and location data:**
  - Foursquare location data will be used to explore and compare neighborhoods in New Orleans
  - Data manipulation to derive conclusions or other subset of data from the initial data
  - Use of data visualisation and statistical analysis

- **Visualization**:
  - Plotting the results of a data set to better understand the data by visualisation

- **Conclusions**:
  - Recommendations based on the data analysis
  - Discussion of results, limitations and conclusions

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### Research of the data and preparation

### New Orleans neighborhoods

These days internet is used for research of the data and the old days of spending much time in the libraries reading relevant books are almost gone.

That said, for the research of the data, this particular wikipedia page was used for scrapping the data for the neighboorhoods and their latitude and longitude, https://en.wikipedia.org/wiki/Neighborhoods_in_New_Orleans.

The reason for the scrapping of some wikipedia webpage, that could be incorrect, is that otherwise we would to have to manually create some file, csv, excel or other, with all the required data, normalize it and then import that to the Jupiter notebook. If we had thousands of data input rows, that would take some time.

## 3 - Methodology and data analysis

The data will now be used as input for the Foursquare API. That data output from the Foursquare API will be used to explore or compare districts around New Orleans, identifying the high traffic areas where consumers go for shopping, dining and entertainment as the logical and possible areas where to open this kind of business.

- **Data analysis and location data:**
  - FourSquare location data will be used to explore and compare neighborhoods in New Orleans
  - Data manipulation to derive conclusions or other subset of data from the initial data
  - Use of data visualisation and statistical analysis
- **Visualization**:
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## 4. Discussion and conclusions

No matter what criteria was used, the data shows us the truth. It identifies us the neighborhoods that really would need investment in infrastructure and that any business is welcome.

That said, for Mia, what would be more sensible than opening a sandwich shop in a specific neighborhood, would make more sense to have a food truck and go for the venues that can atract more people, like Music venues when there is a show, outside hotels on weekends, parks and campgrounds during the day.

### Conclusions

Data is data and for sure with the same data, things could have being manipulated in a different way, with different set of data sources. The analysis made here was with my limited knowledge on the subject and lot of internet search to how to meet the wanted result.

But at the end learned new things, and that is always positive.