

Determining the Best Location and Cuisine for a New Restaurant in Miami

Data Science Capstone Project: Battle of the Neighborhoods (Part 1)

INTRODUCTION

Background

Before the coronavirus pandemic hit, it was already increasingly common for people in the United States to move across state lines. Recently, because many people are working from their homes for the foreseeable future, it is becoming even more common for people to weigh various factors when deciding where to be based.

Many people have a preconceived notion as to where to open a restaurant. I think it is important to have an open mind. The first step I took was to decide which location to delve deeply into. Below I will introduce some sources from my preliminary research to illustrate why I narrowed my search down to Florida and then pinpointed Miami. Later in the report (Methodology Section) I will go into even more detail to determine which district in Miami to open a restaurant, ultimately deciding upon a cuisine and more specific location within that neighborhood.

Why Florida? Why Miami?

An article on *The Hill* states that Florida's population has more than doubled since 1990, and is the top destination for former New Yorkers. "Thanks to its judicious use of tax dollars and wealth of resources, Florida is now the third most populous state in the nation."

A pre-pandemic *Business Insider* article from June 2019 highlights a few key points to give us an overview of why wealthy New Yorkers move to Miami in droves:

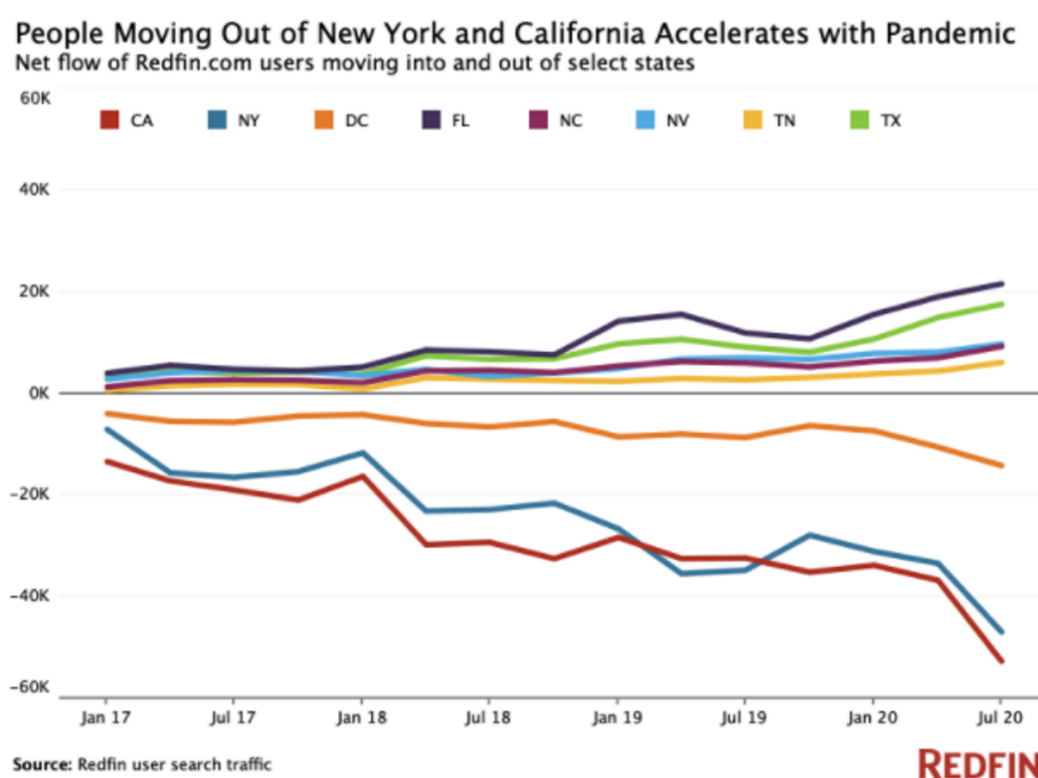
- More and more rich New Yorkers are ditching the northeast for sunny Miami.
- Millionaires from New York can save more than \$1 million in taxes by relocating to Florida.
- Beyond the tax benefits, luxury homebuyers get more bang for their buck in Miami than in New York City.

This past June, amidst the pandemic, *Forbes* published an article that illustrate stories of many people (such as successful business owners) who recently moved to Miami. One such example is Armando Codina, an unhappy New Yorker who said that “New Yorkers used to come to Florida to buy a second home. Now they are coming down here to live.” In short, you can save money in Florida.

The *Forbes* article also states: “In 2018, the New York metropolitan area was losing 100 people per day on average, most of it to Florida. Now it is closer to 270 per day.... It’s not just the high end earners moving. The lower to middle class income earners are also leaving New York, and the costly northeast in general.”

“New York’s loss is Florida’s gain,” Redfin economist Taylor Marr said. “When the pandemic hit the U.S. in March, remote workers started leaving New York City and its ultra-expensive housing in search of wide-open spaces, sunshine and affordable homes—all of which you can find in Florida, with the bonus of no state income tax.”

During the third quarter of 2020, nearly 22,000 more Redfin.com users looked to move into Florida than out, almost double the figure of the third quarter last year. New Yorkers represented 27% of home searches in Florida. “The trend has intensified as people feel more certain of their remote work and school plans” added Taylor Marr.



According to *Bloomberg*, “Florida is reeling in new residents—and their wealth—while states like New York, New Jersey, and Connecticut experience a net loss. In fact, Florida came out on top, attracting \$17.2 billion more than it lost—the recipient of a ‘wealth exodus’ from many states, including New York, which contributed about \$8 billion to Florida’s income base.”

Anthony Guerriero of Manhattan Miami Real Estate, a New York and Florida-based real estate brokerage that helps New Yorkers purchase primary or secondary residences in South Florida, says:

For our New York clients, many of New York's wealthiest counties like Manhattan, Westchester, and Nassau, South Florida and especially Miami checks all the boxes. Our clients are drawn to the lifestyle and weather, the cost of living, their real estate purchasing power and, for those who make Florida their primary residence, the incredible tax savings.

And that was before the coronavirus pandemic hit.

Our agents are seeing an uptick in interest among New Yorkers who expect their jobs to remain highly mobile, enabling them to spend much more time at a primary or secondary home in Florida than they would have been able to in the past. Many are looking for single-family 'safe' homes and outdoor-centric lifestyles.

The New York Times reports that "mail-forwarding requests reveal that during the pandemic, a good number of Manhattanites have fled New York City for sunny Miami."

The 8 biggest reasons New Yorkers are moving to Florida, according to *Brick Underground*, are:

1. Florida residents don't pay state and city personal income taxes
2. New tax law favors low tax states
3. Cost of living in Miami is half that of NYC
4. No capital gains tax in Florida
5. No estate tax in Florida
6. Easier bankruptcy laws than many other states
7. Miami's rapid growth
8. Lifestyle and weather

Following up on point #7 above as it pertains to Miami in particular, the article states:

Miami has recently become a global city, one of the fastest growing major cities in the U.S., with easy access to North America, Latin America, Europe, and the rest of the world via the enormous Miami Airport. According to CityLabs, from 2012 to 2017, Miami had the fastest growing job market, increasing 24.1 percent over 5 years. The same study reported that Miami's population grew by 12 percent, fourth in the nation, during the same five-year period.

This section of the article goes into more details about a certain neighborhood in Miami, which will be relevant later on. I will reference more from this article in the Methodology Section when narrowing down the neighborhood. While narrowing down the ideal neighborhood, I will also share additional research about in what areas will restaurants be more successful (foot traffic is just one of many factors).

Up until now, based on this preliminary research we have learned that even before COVID-19 there was already a mass migration from New York to Miami, and it is apparent that Miami will just keep growing in the near future. Therefore, now would be a good opportunity to open a restaurant. Due to the pandemic, there have been more people moving Miami from different backgrounds, which also gives way to more opportunities when determining what cuisine the restaurant should be.

Business Problem

It is well known that it is expensive to open and run a restaurant—especially in a big city—and many restaurants fail within the first couple years. According to a CNBC article in 2016:

Around 60 percent of new restaurants fail within the first year. And nearly 80 percent shutter before their fifth anniversary.

Often, the No. 1 reason is simply location — and the general lack of self-awareness that you have no business actually being in that location.

Unfortunately, that hip new part of town with cool shops and lots of foot traffic also comes with a price tag. And while it might be nice to sell meatballs right in the heart of everything, those meatballs had better be spectacular. Because the landlord doesn't care if it's your grandmother's recipe. The landlord cares about rent — specifically that you pay it.

Before someone wants to open a restaurant, it is essential to do ample research to best position the restaurant (and its owner and key stakeholders) for success and to be the one of every five restaurants to reach its 5-year anniversary.

The objective of this capstone project is to analyze and select the best neighborhood in Miami to open a new restaurant, and to suggest a cuisine. Using data science methodology, Foursquare location data, and machine learning techniques like clustering, this project will aim to determine a solution to the following two questions:

- (1) Where is the ideal neighborhood in Miami to open a restaurant?
- (2) Which cuisine(s) should the restaurant owner most consider?

Target Audience

This project will be useful to potential restaurant owners and investors ideally looking to open a restaurant in the first half of 2021. As we come out of the COVID lockdown in the coming months, there is likely to be a wave of new restaurants because people will want to finally eat outside. Also, because many retail business shut down in 2020, there are likely to be many vacant spaces that will be available for cheaper prices.

This study will analyze the best location for our restaurant in Miami so potential stakeholders will be successful and profitable.

The neighborhood, specific location within the neighborhood, and type of restaurant are all key factors to success. I will present my reasons in my analysis so both restaurant owners and potential investors in the business will make an informed decision and be confident about the success of the business.

THE DATA SET

Data Description

To solve the problem, we will need the following data:

- List of neighborhoods in Miami, Florida. This defines the scope of the project, which is confined to the city of Miami, one of the fastest growing cities in the U.S.
- Latitude and longitude coordinates of those neighborhoods. This is required to plot the map and also to get venue data.
- Venue data, particularly related to restaurants. I will use this data to perform clustering on various neighborhoods.

The first steps of pre-processing and data cleaning involve web scraping Miami neighborhood data, and extracting population, population density, latitude and longitude of neighborhoods. Once we have pinpointed the most desirable neighborhood(s) and have their corresponding coordinates, we will use Foursquare API to scrape venues based on geographical coordinates in a variety of ways to help make the best recommendation.

Some questions that I will need to answer include:

1. What is/are the most dense neighborhood/s in Miami (to maximize foot traffic)?
2. Based on the demographics of this/these neighborhood/s, can we make any assumptions about cuisines that will be popular?
3. What are restaurants in the area that will be seen as competition (both their specific locations and ratings)?
4. Where should we specifically locate our restaurant to maximize profit?

Below are the following steps to follow:

Step 1. Web scrape Miami neighborhood data. Clean the dataframe. Explore the population distributions. Explore venue categories in the neighborhoods. Produce maps and plots about both the Population Density and Venues.

Step 2. Determine the best location(s) to open a restaurant. Do some research online to learn more about the demographics (mainly age and income).

Step 3. Explore Miami venues with data wrangling techniques (such as one-hot encoding) to see whether there are any trends or opportunities that jump out.

Step 4. Use any relevant inferential statistical learning or machine learning techniques (i.e. Linear Regression, K-means Clustering) to

Step 5. Wrangle Data with Foursquare API to analyze venues in the vicinity to determine the best opportunity.

Step 6. Use visualization techniques throughout the process to help potential restaurant owners, investors, and stakeholders clearly understand our recommendation.

Data Source

I will obtain all the information about Miami neighborhoods including their population, population density, longitude and longitude from Wikipedia's "List of neighborhoods in Miami" (https://en.wikipedia.org/wiki/List_of_neighborhoods_in_Miami).

I will be using web scraping techniques to extract data from the Wikipedia page, with the help of Python requests and BeautifulSoup packages. I will wrangle the data with *pandas*, and use libraries such as Matplotlib, Seaborn and Folium for visualization.

I will use data from a variety of sources (such as <https://www.niche.com/places-to-live/n/brickell-miami-fl/residents/> and <http://www.city-data.com/neighborhood/Brickell-Miami-FL.html>) to learn more about age distribution, median household income, and other relevant demographic information in the neighborhood I defined as ideal (teaser: it's Brickell). This will help my analysis.

Additionally, I am going to use Foursquare API (<https://developer.foursquare.com/docs>) to extract information about various venue data for Miami neighborhoods. Only relevant information will be analyzed. I am most interested in existing restaurants in the Brickell/Downtown area to help find the solution to the business problem.

Finally, I might use appropriate GeoSpace data (https://datahub-miamigis.opendata.arcgis.com/datasets/2f54a0cbd67046f2bd100fb735176e6c_0/data) "City of Miami GIS Open Data: Miami Neighborhoods", to visualize Choropleth Maps if it will help my analysis.

This is a project that will make use of many data science skills, from web scraping (Wikipedia), working with API (Foursquare), data cleaning and data wrangling, to machine learning (k-means clustering) and map visualization (Folium). In the next section I will present my methodology and the actual data analysis for this project.

URLs of referenced articles in the Introduction section:

<https://thehill.com/opinion/finance/442210-moving-from-new-york-to-florida-saves-much-more-than-just-taxes>

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<https://www.forbes.com/sites/kenrapoza/2020/06/11/new-york-realestate-miami-exodus-pandemic-and-protests/?sh=7c8e34ad55dc>

<https://www.mansionglobal.com/articles/more-people-are-migrating-from-new-york-to-florida-220730>

<https://www.brickunderground.com/escape/manhattan-miami-real-estate-eight-reasons-why-new-yorkers-are-moving-to-florida>

<https://www.cnn.com/2016/01/20/heres-the-real-reason-why-most-restaurants-fail.html>