Capstone Project - Residential Area For Education

Applied Data Science Capstone by IBM / Coursera

Introduction: Business Problem

In this project we will try to find an optimal location for a better education options available in Miami. Specifically, this report will be targeted to stakeholders interested in selecting a **residence location** in **Miami**, Florida, USA which has maximum **Education institution**.

There are lots educational institutes available in Miami and we will try to detect **locations that has more options for Education**.

We will use our data science powers to generate a few most promising neighborhoods based on this criteria. Advantages of each area will then be clearly expressed so that best possible final location can be chosen by stakeholders.

Data

Based on definition of our problem, factors that will influence our decision are:

- Number of existing education institution available in the neighborhood

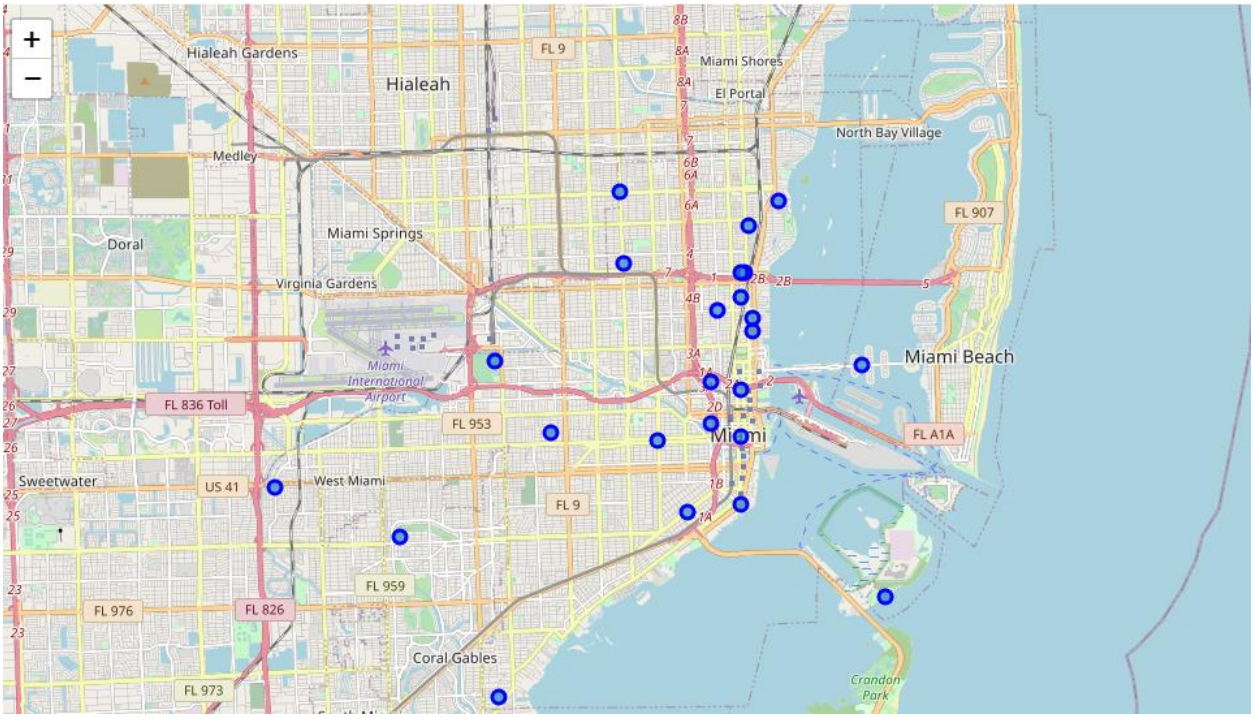
Following data sources will be needed to extract/generate the required information:

- Neighborhoods in Miami and its Co-ordinates. This data will be extracted from the following web page. https://en.wikipedia.org/wiki/List_of_neighborhoods_in_Miami
- Number of educational institutes and their type and location in every neighborhood will be obtained using **Foursquare API**

Download and Explore Dataset

Miami has a total of 24 neighborhoods. In order to segment the neighborhoods and explore them, we will essentially need a dataset that contains the neighborhoods well as the latitude and longitude coordinates of each neighborhood.

Neighborhoods in Miami



Top 10 Neighborhood based on Educational Density

Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	Number Of Institutes
Downtown	School	Elementary School	Language School	Preschool	Music School	37
Lummus Park	School	Elementary School	High School	Music School	General College & University	28
Wynwood	School	Elementary School	High School	Language School	Preschool	26
Brickell	School	Preschool	Language School	Private School	Nursery School	25
Edgewater	School	Elementary School	High School	Language School	Miscellaneous Shop	24
Midtown	School	Elementary School	High School	Language School	Preschool	21
Arts & Entertainment District	School	Elementary School	Language School	High School	Miscellaneous Shop	20
Park West	School	High School	Elementary School	Language School	Daycare	19
Design District	School	Elementary School	High School	Language School	Art Gallery	18
Buena Vista	School	Elementary School	High School	Language School	Art Gallery	17

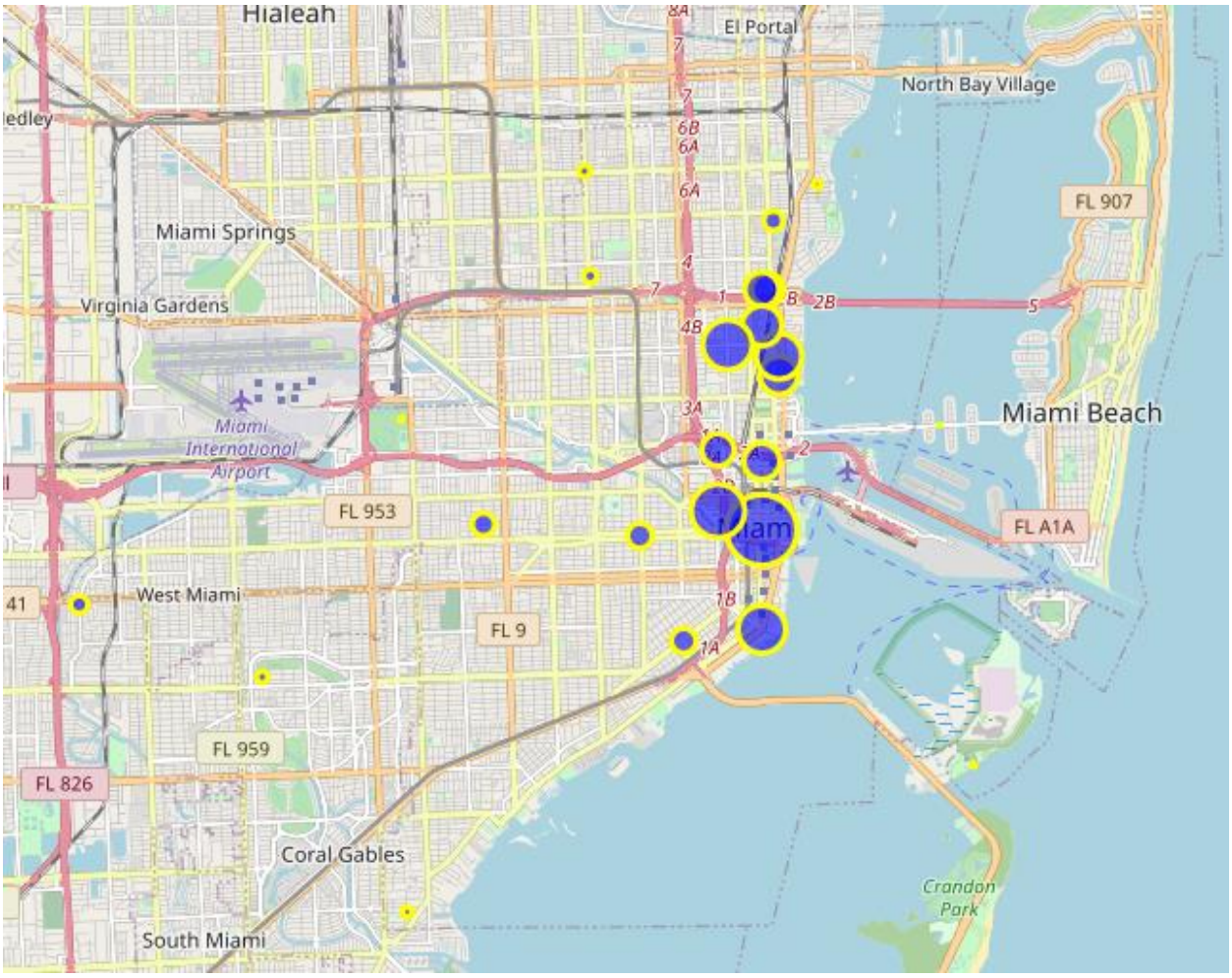
Top 10 Neighborhood along with the top 5 most common Educational Institutes

Neighborhood	Institution Type	Frequency %
Downtown	School	27
	Elementary School	14
	Language School	11
	Preschool	8
	Private School	5
Lummus Park	School	32
	Elementary School	18
	High School	11
	Language School	7
	General College & University	7
Wynwood	School	46
	Elementary School	23
	High School	8
	Adult Education Center	4
	Miscellaneous Shop	4
Brickell	School	20
	Preschool	20
	Language School	12
	Private School	8
	Adult Education Center	4
Edgewater	School	42

	Elementary School	17
	High School	12
	Language School	8
	Adult Education Center	4
Midtown	School	48
	Elementary School	14
	High School	10
	Adult Education Center	5
	Miscellaneous Shop	5
Arts & Entertainment District	School	40
	Elementary School	20
	High School	10
	Language School	10
	Adult Education Center	5
Park West	School	42
	Elementary School	16
	High School	16
	Language School	11
	University	5
Design District	School	33
	Elementary School	22
	High School	17
	Miscellaneous Shop	6
	Art Gallery	6
Buena Vista	School	35

	High School	18
	Elementary School	18
	Miscellaneous Shop	6
	Art Gallery	6

Neighborhoods based on Educational Density



Results and Discussion

Our analysis shows that although there is a great number of educational institutes in Miami, when moving away from city center its density is reducing. Highest concentration of educational institutes was detected near to the coastal area especially souther area of the city. So we focused our attention to areas northern & costal area .

By considering data and exploring the map we can see that area near to Midtown neighborhood is most suitable for requirement.

We are also providing 1st Most Common institute type 2nd Most Common institute type, so other than educational institutes density user can also select residence based on institute type also.

Conclusion

Purpose of this project was to identify Miami areas with high number of educational institutions in order to aid stakeholders in narrowing down the search for optimal location for their residence. By calculating educational institutions density distribution from Foursquare data we have identified.

By considering data and map we can see that area near to Midtown neighborhood is most suitable for requirement.