**BEST PLACE TO OPEN A JAZZ CLUB IN NY**

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**Introduction**

**Background**

New York City is a place of a great relationship with jazz music. The city was the epicenter of the genre when it was invented and by their prime years. Until today, NY has a lot of great places to listen to Jazz music and is absolutely one of the cities that is a must for people who have an intense relationship with the genre.

**Problem**

Acknowledging the prestige of NY City, a client wants to open a Jazz Club and needs to know what is the best neighborhood to open it. The client has some requests that need to be filled the best. These requests are modeled by a research that the client has done, showing the interests of people who like to go to a jazz club, as it follows:

Usually a people who goes to jazz venue likes:

* Arts
* Books
* Coffee places
* Music relationated places
* Plays an instrument

Another request is that the new place is not nearby any other Jazz Clubs, since they are already established and would be difficult to compete.

**Data**

To fulfill the needs of the client we will be working with three datasets. Two will be to know the locations of the neighborhoods , so we can make a call to the Foursquare API, which will be the source for the third dataset. The Foursquare dataset will be to see what venues has in which neighborhood

* NY JSON (show latitude and longitude by neighborhoods)
* Foursquare API (get venues names, category and locations)
* NY Boundaries (locations to visualize the limits of the neighborhoods )

**Methodology**

First we need to get all the neighborhoods of New York, as well its location data (latitude and longitude). Since we have all those locations we can search for venues on Foursquare API, but first we need to determine what kind of venues we want to extract.

Searching the Foursquare API we find the id codes to get specific kinds of venues. To match our client demand, the call will be made to get those venues in all neighborhoods of ny:

* Jazz Club
* Record Shop
* Recording Studio
* Music School
* Music Store
* Art Museum
* Art Gallery
* Outdoor Sculpture
* Bookstore
* Library
* Park
* Café

Next we will see which neighborhoods have those venues and will group them by a k-mean cluster to see the similarity by neighborhood. A folium map will be used to visualize all neighborhoods that will be colored by the cluster label. Will mark every jazz club, to see in what neighborhood they usually are placed.

By the moment we have some ideas where the new Jazz Club could be established but we will do a deep analysis. The first and probably the most important one, is to verify which neighborhood has more different kinds of venues on the client list.

After we determine the top neighborhoods on the previous analysis, I will be looking at how far the neighborhood is from other jazz clubs. Since this done, we will be able to define the best place to open a jazz club in New York City

**Discussion**

Applying our method we can see some interesting things right away. With the folium map, we can visualize that most of the Jazz Clubs are in the West Village neighborhood, because that place was important in the past and became a traditional area for the genre. It is easy to see that most of the clubs are placed in Manhattan.

Another topic that is easy to visualize with the map, is that the jazz clubs are placed only in three kinds of neighborhoods, labeled by the cluster. Addressing those observations we can have in mind that our place would benefit from the Manhattan public preference for jazz but have to be some distance from West Village that already has a couple of well established clubs.

Applying the code to see which neighborhood has more unique categories, we can see that a lot of neighborhoods are well qualified. The best would be the Noho neighborhood, fulfilling 10 of 12 categories. But there are others locations with at least 8 categories, so it is best to verify the third part of our methodology to make sure.

The third part is to verify how close a jazz club is from the neighborhood location. To do that, we use euclidean distance pairwise on scikit learn python’s library. So we will pick a neighborhood latitude and longitude and compare with each jazz club in the city. The closest one of each neighborhood is chosen and after that furthest will be picked. For our surprise, Noho as well is the most indicated neighborhood chosen by our algorithm.

**Conclusion**

According to the method established, the Noho neighborhood will be the best location for a new jazz club. The neighborhood doesn’t have that kind of venue and has a lot of categories of places that a person who likes jazz has interest. Also Noho is located in Manhattan and is not too far nor too close to west village, which is a great place to be a new club.

Searching on the internet you can easily find that Noho has an artistic aurea and is known for restaurants and pubs, which creates a great environment for a new jazz club.