

# Highly dense Indian cities of Pizzerias

## Introduction/Business Problem:

Pizza is a savory dish of Italian Origin. Modern pizza was invented in Naples, and the dish and its variants have since become popular in many countries. It has become one of the most popular foods in the world and a common fast food item in Europe and USA. Pizza is one of the universally loved dishes today and known to one and all. From Chicago's deep dish to thin crust, there are multiple options available. There is no one who is not familiar with pizzas today. It is a favorite with kids, as it is with adults. But the question arises, where does one find the best pizza? Well, if you are a true pizza lover and ready to travel lengths for your food love, then here are some of the Top Indian cities which are highly dense by Pizzerias, so that you get plenty of choice about Pizza: **Mumbai, Bangalore, Hyderabad, Delhi, and Chennai.** Now our goal is to find one of the highly dense city of pizzeria.

## Data Section:

In India there are several cities which are well known for their specialty. For this project I have selected top 5 Indian cities based on their population, education and economic development, metropolitan region and its food culture. From this parameter we got Mumbai, Bangalore, Hyderabad, Delhi and Chennai. Now out of these cities we have to choose only one highly dense city of pizzeria. For collecting data of location of pizzeria we have used Foursquare API. Now we hope we will get highly dense city of pizzeria.

## Methodology:

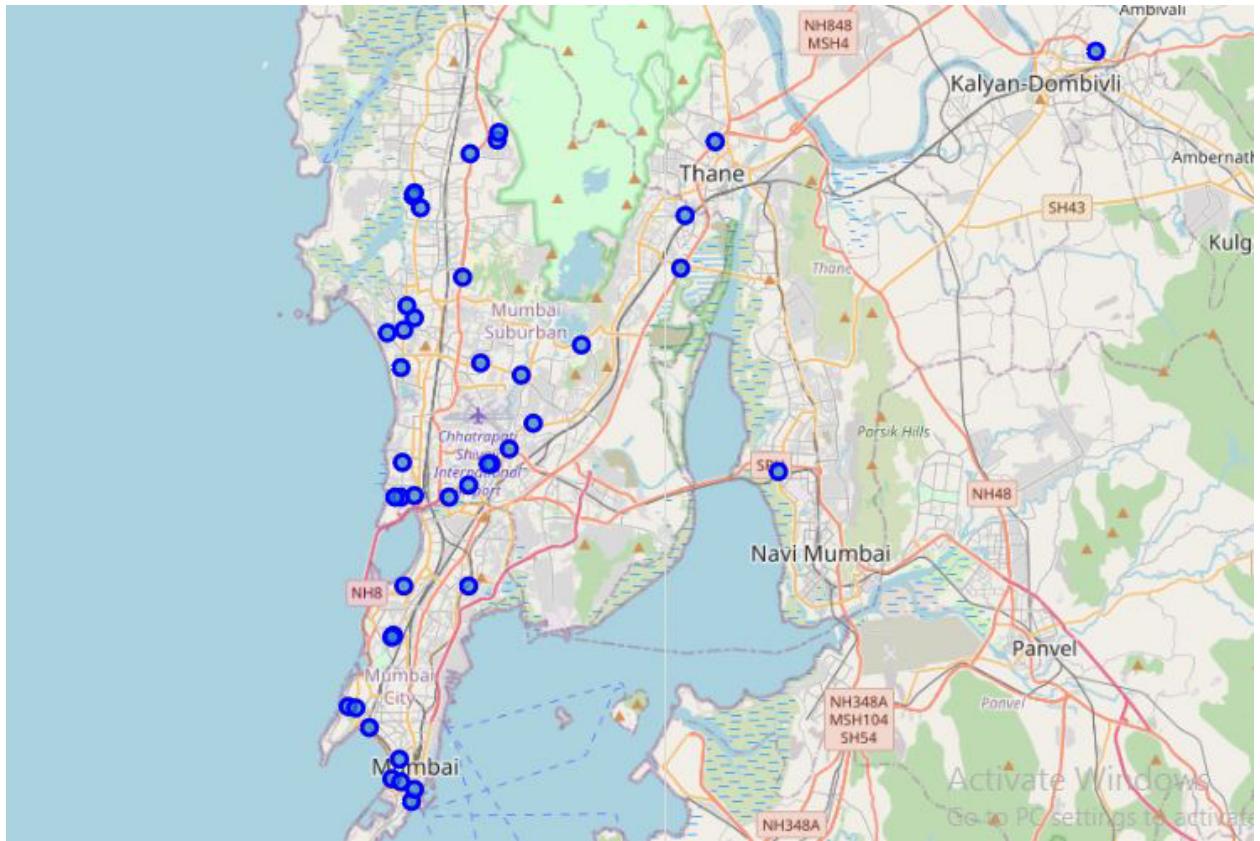
Our goal for this project is to search high dense city of pizzeria. For this I have used Foursquare API through the venues channel. I used the near query to get venues in the cities. Also I have use CategoryID to set it to show only Pizzerias. In my code you will see the format. That 4bf58dd8d48988d1ca941735 is the CategoryId of the Pizzeria. Also, Foursquare limits us to maximum of 100 venues per query.

Moreover, I repeated this request for the 5 studied cities and got their top 100 venues. I saved the name and coordinate data only from the result and plotted them on the map for visual inspection. Next, to get an indicator of the density of Pizza Places, I calculated a center coordinate of the venues to get the mean longitude and latitude values. Then I calculated the mean of the Euclidean distance from each venue to the mean coordinates. That was my indicator; mean distance to the mean coordinate.

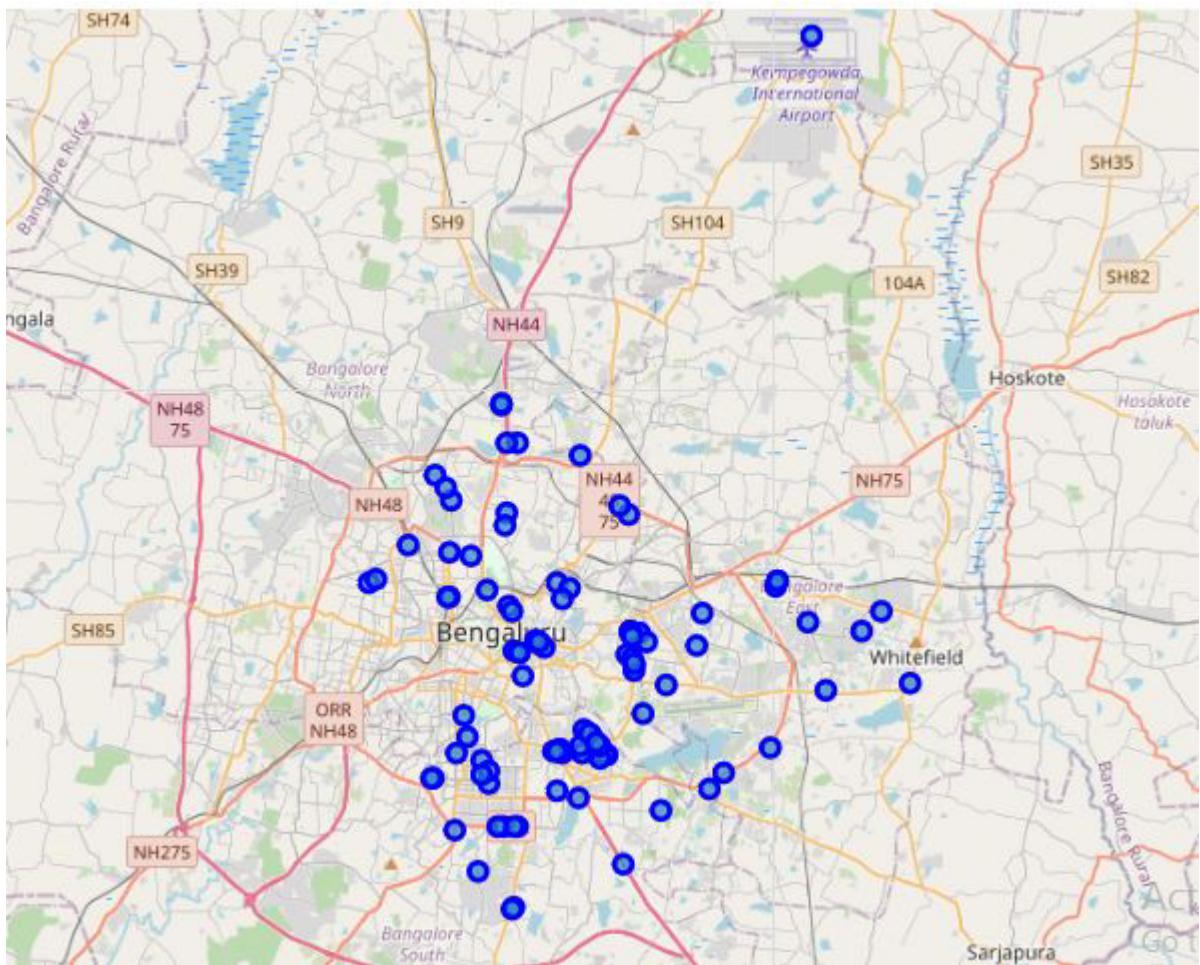
## Results:

For our initial visual inspection we see that they all have multiple pizza places and often more than Foursquare would like to supply us. The following here are the pictures of the geoplot generated with folium:

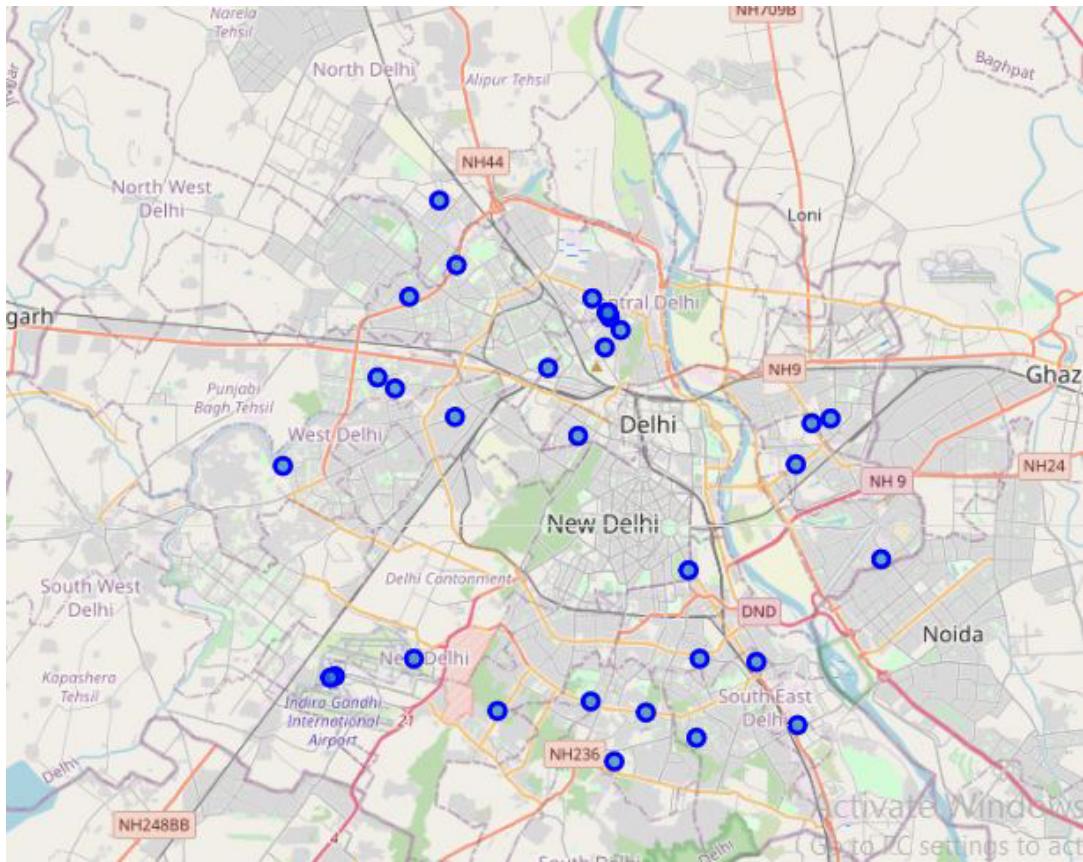
## Mumbai:



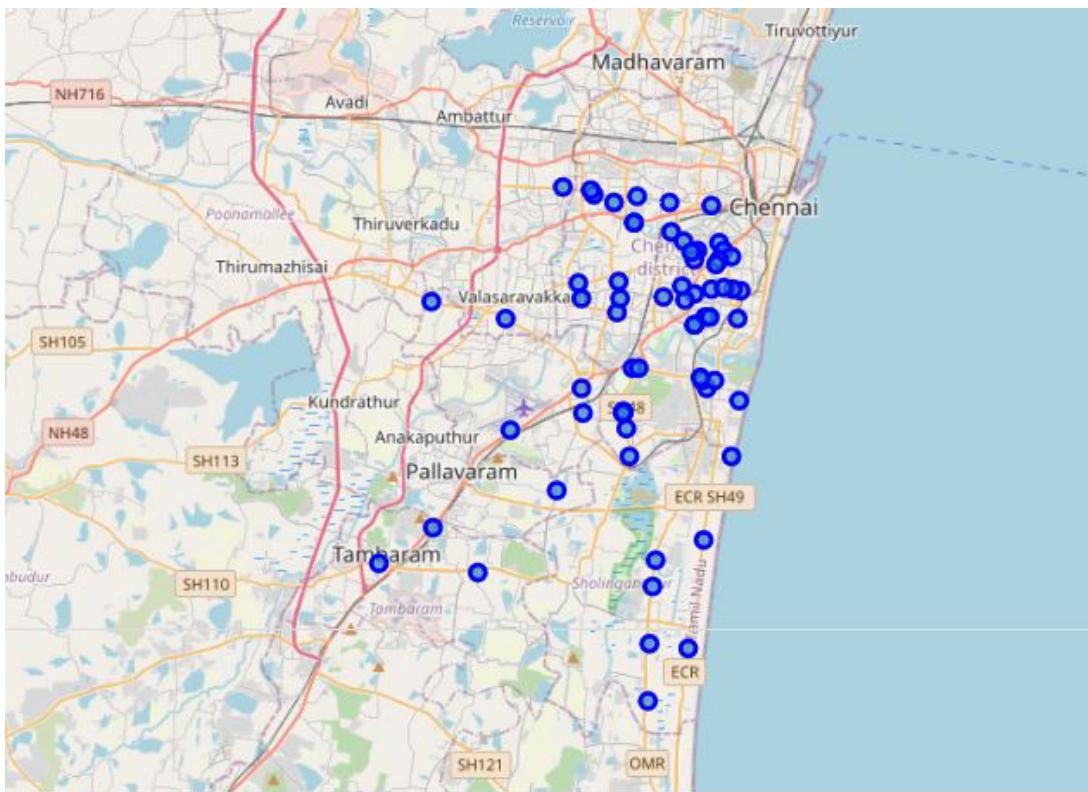
## Bangalore:



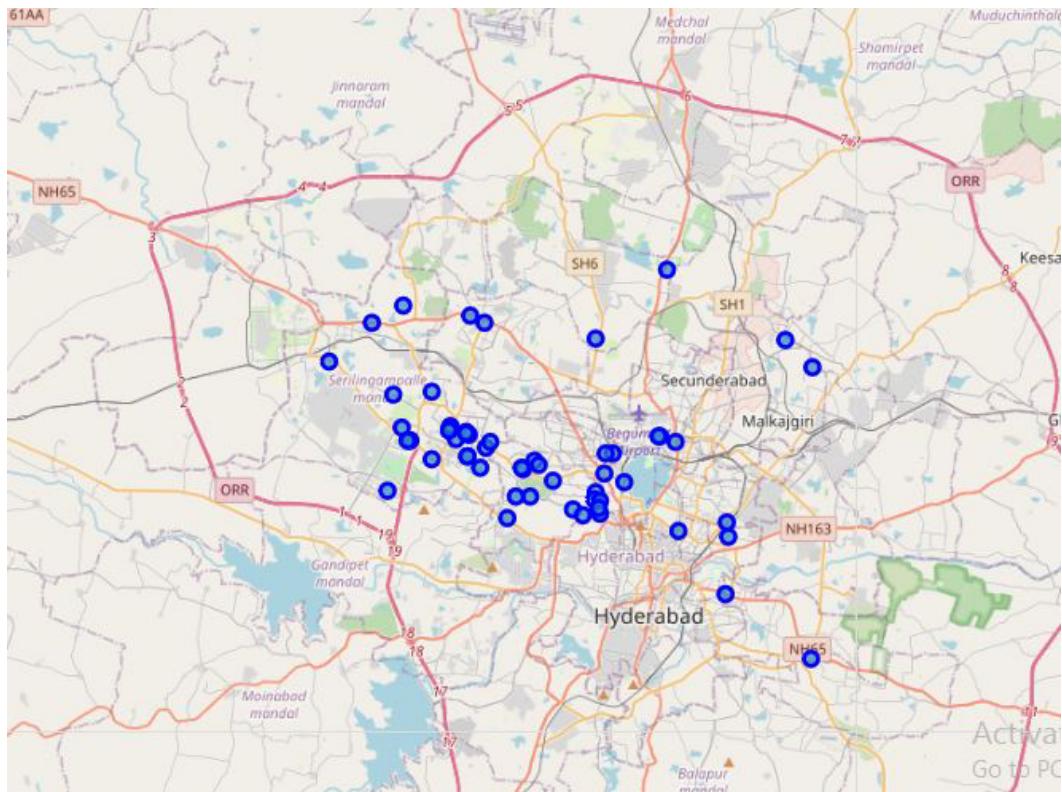
## Delhi:



## Chennai:



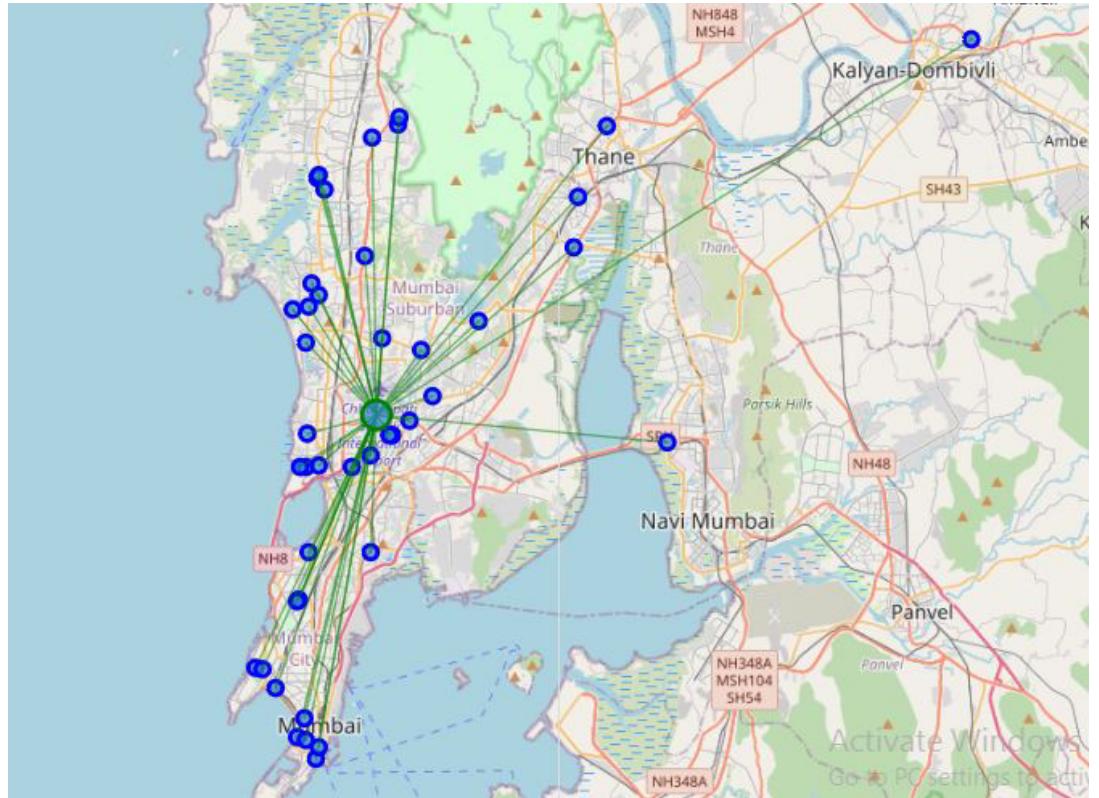
## Hyderabad:



From visuals we can see that Chennai, Bangalore & Hyderabad nearly same dense with pizza places. However, let's have a concrete measure of this density. For this I will use some basic statistics. I will get the mean location of the pizza places which should be near to most of them if they are really dense or far if not. In the next phase we Calculate the Mean coordinate and the mean distance to mean coordinate(MDMC). We represent the mean coordinate with a big green circle and distances with green lines

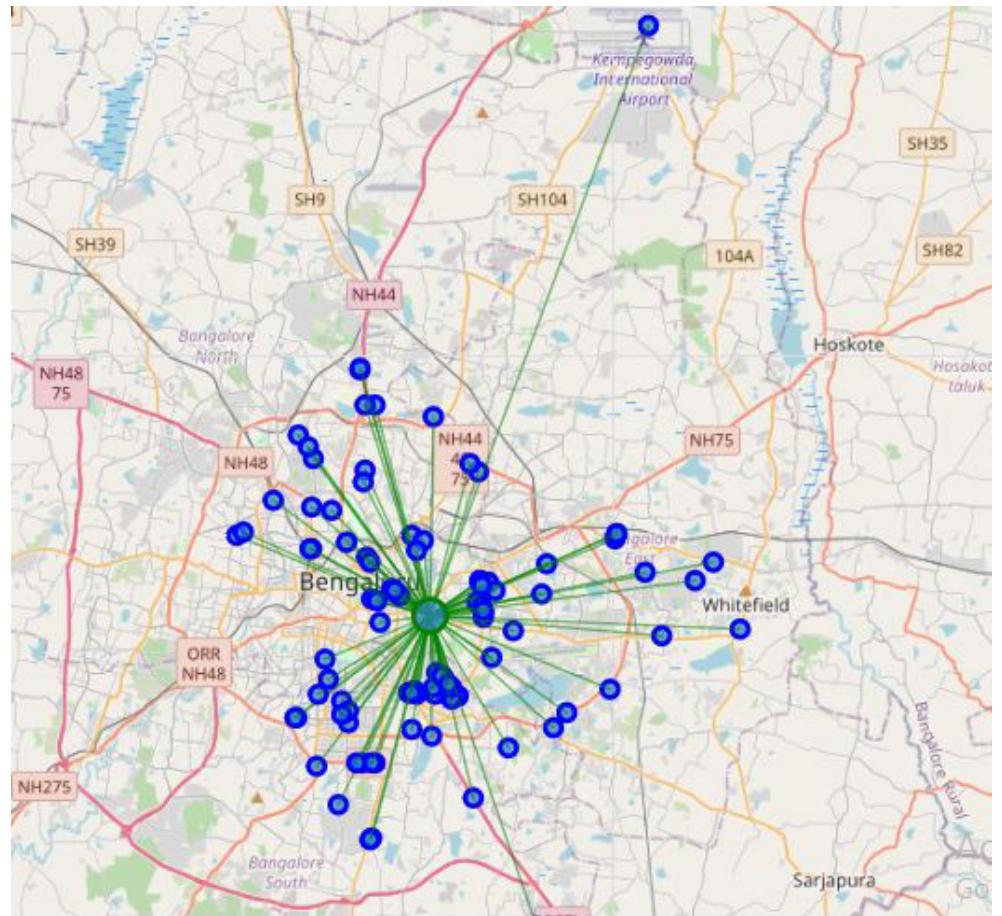
### Mumbai:

MDMC= 0.0911



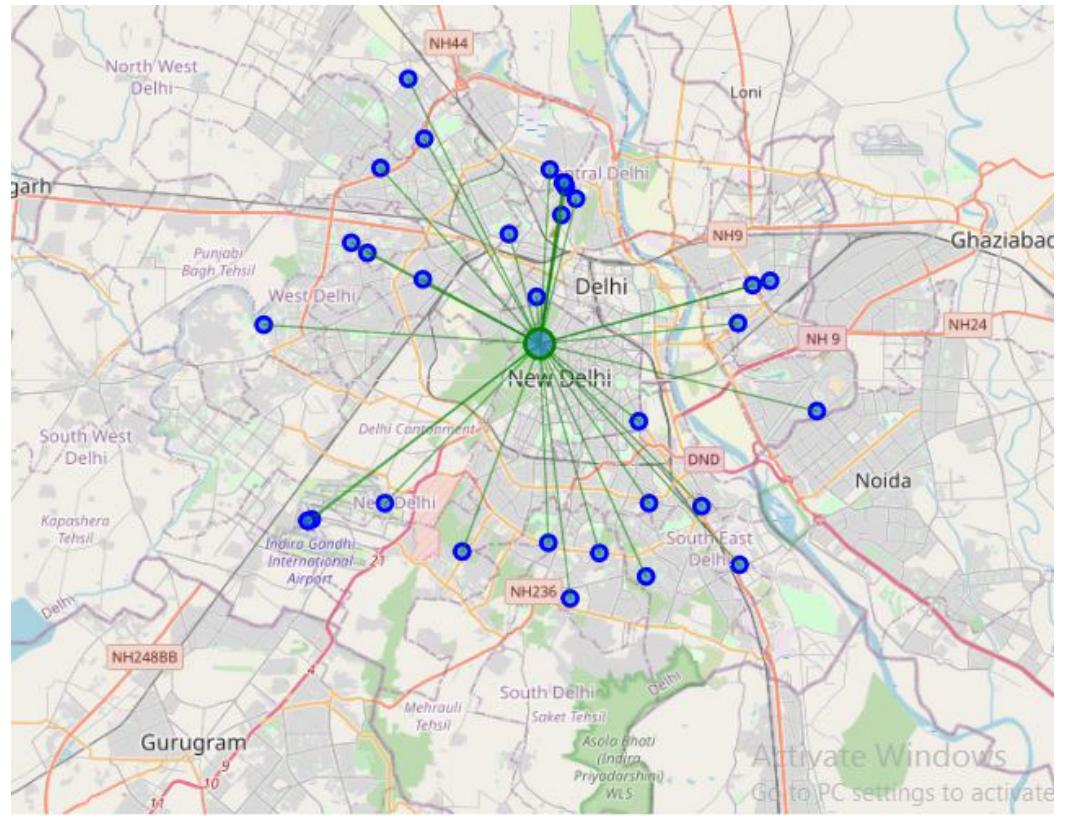
### Bangalore:

MDMC= 0.0550

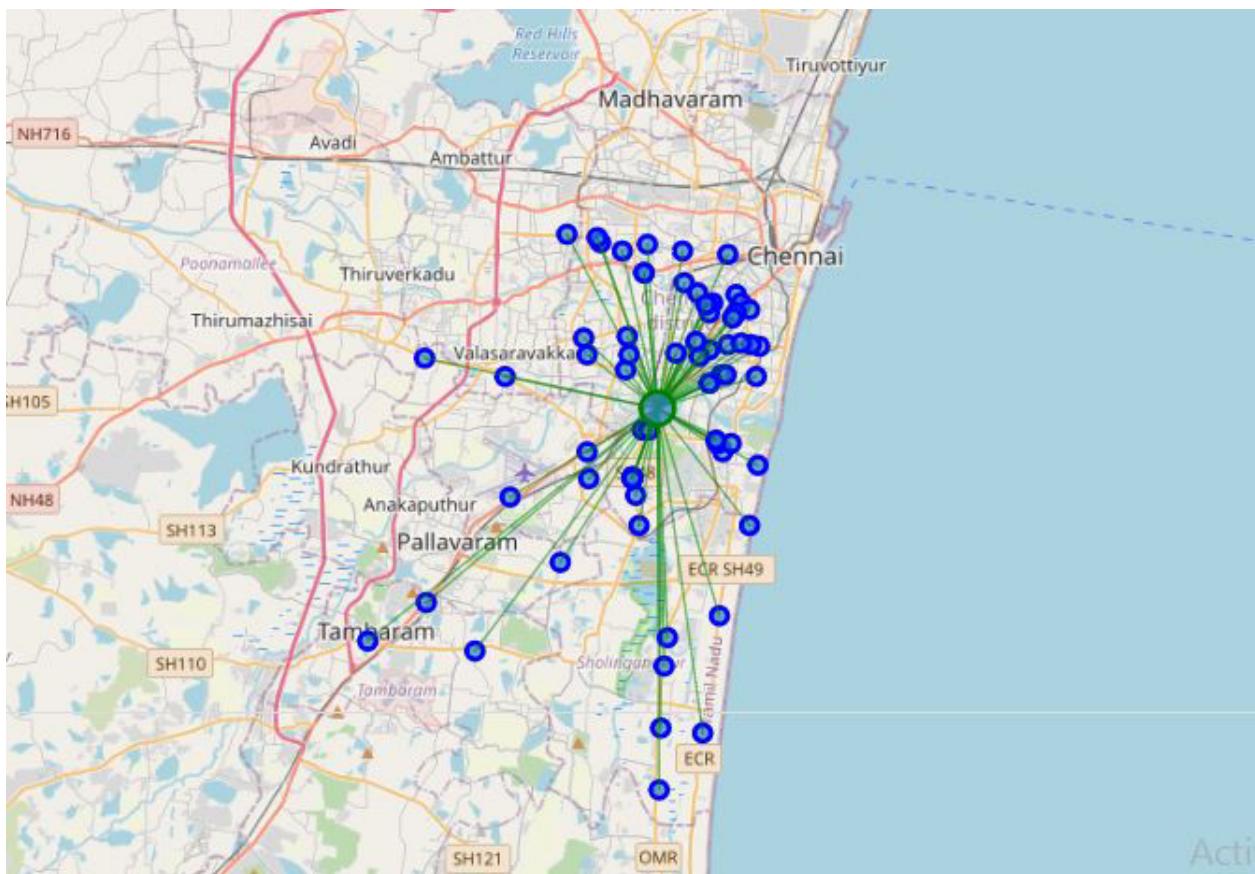


**Delhi:**

MDMC= 0.0902

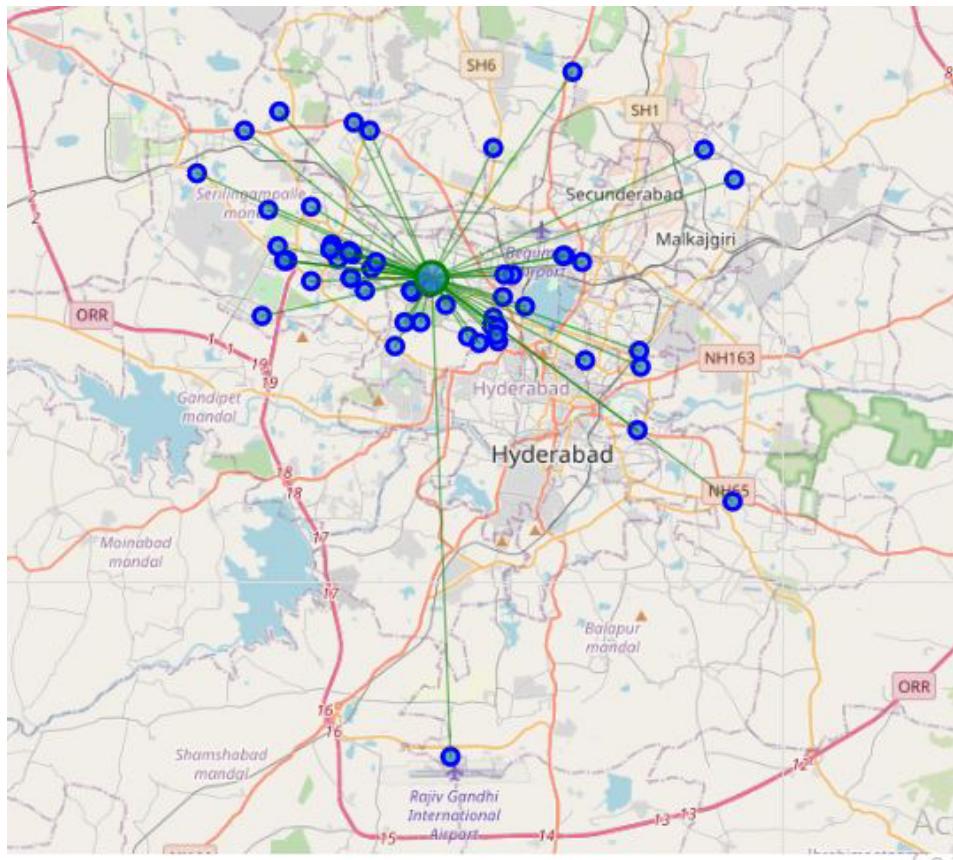


**Chennai:** MDMC= 0.0545



## Hyderabad:

MDMC= 0.0569



Therefore our results are:

- 1) Chennai
- 2) Bangalore
- 3) Hyderabad
- 4) Mumbai
- 5) Delhi

**Discussion:** One consideration to do further work on is to move the location of the Foursquare API query until we get all the pizza places in each city and do the calculations again.

**Conclusion:** Now there is no doubt that Chennai is highly dense place to try many Pizza Places in the India. Also, if our tourist is done with all the Chennai pizza places he can cross to Banglore and enjoy 99 more. Also, we would recommend that our tourist book a hotel close to the mean coordinate.