**The Battle of the Neighborhoods**

# Introduction

Sometimes we have to change our location because of many reasons: work, study, family… This project will help someone to understand how similar two areas from different cities are. As an example, we will try to compare two areas of two cities: Moscow and New York. Similarity of two areas can help to make a decision about migration from one city to another or about business expansion or just can provide some interesting information about two areas from different sides of the globe.

# Data

Most of initial information will be scraped from Wikipedia - free and open data source. Most detailed information about every location will be obtained using Foursquare API.

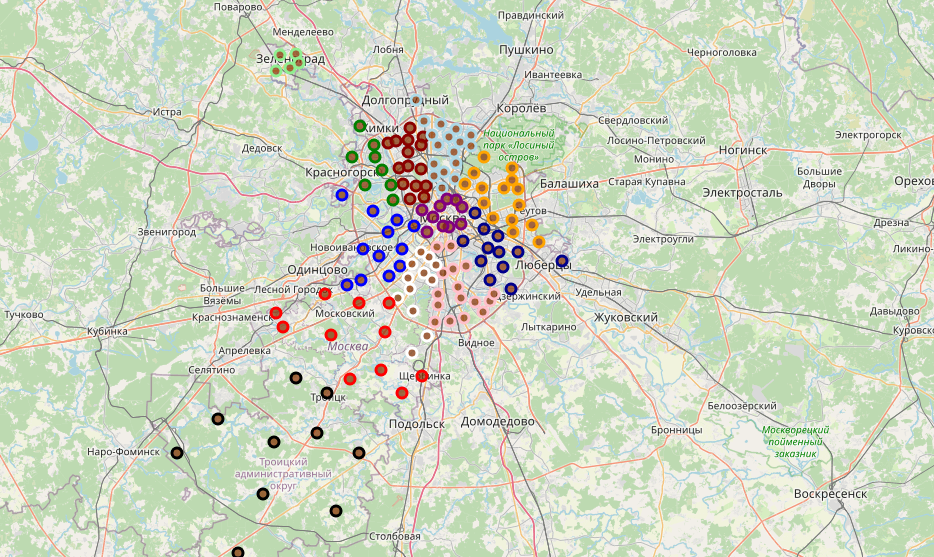
Based on definition of our problem following data sources will be needed to extract/generate the required information:

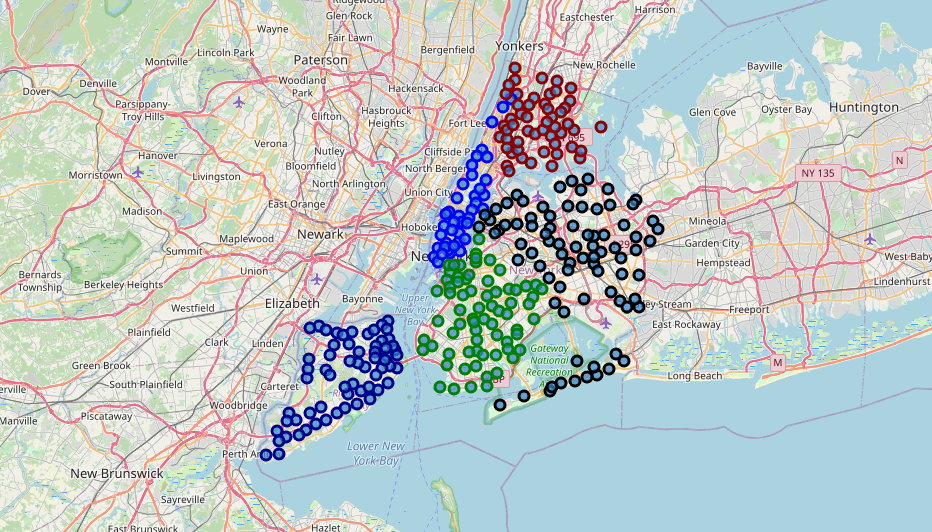
* geographical coordinates of the studied cities
* territory division
* initial information about every area

New York City (NYC) is the most populous city in the United States. With an estimated 2018 population of 8,398,748 distributed over a land area of about 302.6 square miles (784 km2), New York is also the most densely populated major city in the United States. A global power city, New York City has been described as the cultural, financial, and media capital of the world, and exerts a significant impact upon commerce, entertainment, research, technology, education, politics, tourism, art, fashion, and sports. Situated on one of the world's largest natural harbors, New York City consists of five boroughs, each of which is a separate county of the State of New York. The five boroughs – Brooklyn, Queens, Manhattan, The Bronx, and Staten Island – were consolidated into a single city in 1898.

Moscow is the capital and most populous city of Russia, with approximately 12.6 million residents within the city limits. Moscow is the northernmost and coldest megacity on the Earth. Moscow is a major political, economic, cultural, and scientific center of Russia and Eastern Europe. It is the second-most populous city in Europe, the most populous city entirely within Europe, as well as the largest city (by area) on the European continent. Moscow has been ranked as the ninth most expensive city in the world and has one of the world's largest urban economies, being ranked as an alpha global city, and is also one of the fastest growing tourist destinations in the world. Moscow is home to the third-highest number of billionaires of any city in the world, and has the highest number of billionaires of any city in Europe. The city of Moscow is divided into twelve administrative okrugs. By its territorial expansion on July 1, 2012 southwest into the Moscow Oblast, the area of the capital more than doubled, going from 1,091 to 2,511 square kilometers (421 to 970 sq mi), resulting in Moscow becoming the largest city on the European continent by area; it also gained an additional population of 233,000 people.

First, we have to understand territory division of two cities to understand which areas should be explored. Then every area should be explored to define initial criteria of similarity. In the end - detailed exploration of chosen areas. Let’s look at two maps of Moscow and NYC with territory division (different colors – different Administrative Okrug (in Moscow) and boroughs (in NYC):





Now let’s have a look at numbers, which describes colored areas:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Borough | Land area km² | % of all area | Place by area | Population | % of all population | Place by population | Density pers/km² | Place by density |
| 0 | The Bronx | 109.04 | 13.91 | 4 | 1418207 | 17.01 | 4 | 13006 | 3 |
| 1 | Brooklyn | 183.42 | 23.40 | 2 | 2559903 | 30.71 | 1 | 13957 | 2 |
| 2 | Manhattan | 59.13 | 7.54 | 5 | 1628706 | 19.54 | 3 | 27544 | 1 |
| 3 | Queens | 281.09 | 35.86 | 1 | 2253858 | 27.03 | 2 | 8018 | 4 |
| 4 | Staten Island | 151.18 | 19.29 | 3 | 476143 | 5.71 | 5 | 3150 | 5 |
| 5 | City of New York | 783.83 | 100.00 |  | 8336817 | 100.00 |  | 10636 |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Administrative Okrug | Land area km² | % of all area | Place by area | Population | % of all population | Place by population | Density pers/km² | Place by density |
| 0 | Central | 66.18 | 22678 | 11 | 783886 | 43252 | 9 | 11845.56 | 5 |
| 1 | Northern | 113.73 | 18354 | 7 | 1188312 | 13759 | 7 | 10448.90 | 7 |
| 2 | North-Eastern | 101.88 | 43894 | 9 | 1434842 | 11994 | 4 | 14083.23 | 1 |
| 3 | Eastern | 154.84 | 41426 | 3 | 1527316 | 43963 | 2 | 9864.12 | 8 |
| 4 | South-Eastern | 117.56 | 23833 | 6 | 1433828 | 11628 | 5 | 12196.59 | 4 |
| 5 | Southern | 131.77 | 44682 | 5 | 1796267 | 14.17 | 1 | 13631.54 | 2 |
| 6 | South-Western | 111.36 | 15067 | 8 | 1448130 | 15646 | 3 | 13003.78 | 3 |
| 7 | Wester | 153.03 | 43988 | 4 | 1397114 | 43872 | 6 | 9129.42 | 9 |
| 8 | North-Western | 93.28 | 25263 | 10 | 1012949 | 36342 | 8 | 10859.11 | 6 |
| 9 | Zelenogradsky | 37.20 | 17168 | 12 | 250453 | 35796 | 11 | 6732.63 | 10 |
| # | Troitsky | 1084.34 | 42.92 | 1 | 130812 | 43891 | 12 | 120.64 | 12 |
| # | Novomoskovsky | 361.36 | 14.30 | 2 | 274140 | 42401 | 10 | 758.63 | 11 |
| # | All Moscow | 2526.53 | 100.00 |  | 12678079 | 100.00 |  | 4993.10 |  |

If we will use such features as land area, population and density to find similar areas, then we will stot on two candidates for further study:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name | Land area km² | % of all area | Place by area | Population | % of all population | Place by population | Density pers/km² | Place by density |
| South-Eastern | 117.56 | 23833 | 6 | 1433828 | 11628 | 5 | 12196.59 | 4 |
| The Bronx | 109.04 | 13.91 | 4 | 1418207 | 43847 | 4 | 13006.00 | 3 |

But here we will face with another problem: South-Eastern area in Moscow has 12 districts and Bronx Area from New York has 52 neighborhoods. Comparison of 12 and 52 areas will not be fair. So, let's use postal offices coordinates from these 12 districts. It will let us to increase number of points inside study area. Let's take some data from <https://data.mos.ru/opendata/1095>. Now we have 56 points, which is close to number of neighborhoods in New York. Now we will show them on map