

A group of young people are dancing in a large, well-lit studio. The central figure is a young woman with dark hair, wearing a white crop top with the word 'Aerobics' and black shorts, captured in a dynamic pose with her head tilted back and arms outstretched. To her left, a young man is also in motion. To her right, another young woman in a red tank top and black leggings is dancing. The background shows other people in the studio, some blurred, and large windows letting in natural light. The overall atmosphere is energetic and vibrant.

The Battle of the Neighborhoods

Where to place a new dance studio in Moscow?



Problem Background

The best place for a dance studio

Key facts that should be considered:

- Moscow is a large city with a developed infrastructure. This means that the market is highly competitive.
- As it is highly developed city so cost of doing business is also one of the highest.

Studio should satisfy the following criteria:

1. Not located next to other studios. (gyms, yoga centers are allowed)
2. Located in a fairly populated area (that is, it will be convenient for people to visit the studio)
3. Free buildings can be taken from the cian website, in the absence of suitable places, just look at the areas
4. The place should be nearby metro (subway station, as subway is a key transport)



Data

Data description

1

Borough (Neighborhoods) of Moscow

- Moscow has a total 125 neighborhoods and its shape in GEOJSON format. In order to explore neighborhoods, we will essentially need a dataset that contains the as well as the the latitude and longitude coordinates of each neighborhood.
- List of Moscow District and they Boroughs were downloaded from the page [Moscow Boroughs](#)

2

Shape of every Borough

- Shape of the each Moscow Borough in GEOJSON format was downloaded from the page [Moscow Boroughs GEOJSON](#)

3

Density of every Neighborhood

- Second data which will be used is the density of population dataset. We will use the data from Wikipedia ([link](#)).

4

Available places for rent

- The data was taken from a popular in Russia web-site cian. It includes data about price, time from this place to nearby metro-station, area of a place, address ([link](#))

5

List of venues placed nearby places for rent

- Places for rent geographical coordinates data will be utilized as input for the Foursquare API, that will be leveraged to provision venues information for each potential place for rent. We will use the Foursquare API to explore neighbor of a place for rent in Moscow.

6

Name for type of Dance venues

- In order not to open a new dance studio nearby existing studios we should filter available places for the absence of dance clubs nearby. From Foursquare I found venues_types dedicated to dance.

Data examples

ID объявления	Тип	area	Возможное назначение	Класс	metro	address	Здание	Этаж	Высота потолков, м	Сетка колон	Цена	
0	205915663	Аренда помещения свободного назначения	755.4	Ателье одежды, Бытовая техника, Шоурум, Швейны...	NaN	м. Владыкино (13 мин пешком)	Москва, Сигнальный проезд, 3С1	Офисно-складской комплекс, в Сигнальном проезд. .	2/4	5.48	NaN	437503 руб./ За месяц, Срок аренды - Длительны...
1	230431228	Аренда помещения свободного назначения	177.4	Свободное назначение, Офис, Клиентский офис, С...	NaN	м. Дмитровская (12 мин пешком)	Москва, Складочная улица, 1С10	Бизнес-центр, на ул. Складочная, 1с10, Действу...	1/2	4.7	NaN	259004 руб./ За месяц, Срок аренды - Длительны...
2	215234277	Аренда помещения свободного назначения	203.9	Офис, Клиентский офис, Шоурум, Салон красоты, ...	NaN	м. Ленинский проспект (0 мин пешком)	Москва, Ленинский проспект, 37А	Действующее	1/8	5.04	NaN	350012 руб./ За месяц, Срок аренды - Длительны...
		Аренда	Офис, Торговая		Москва							750000 руб.






Places for rent

	WKT	NAME	OKATO	OKTMO	NAME_AO	OKATO_AO	ABBREV_AO	TYPE_MO
0	MULTIPOLYGON (((36.8031012 55.4408329,36.80319...	Киевский	45298555	45945000	Троицкий	45298000	Троицкий	Поселение
1	POLYGON ((37.4276499 55.7482092,37.4284863 55....	Филёвский Парк	45268595	45328000	Западный	45268000	ЗАО	Муниципальный округ
2	POLYGON ((36.8035692 55.4516224,36.8045117 55....	Новофёдоровское	45298567	45954000	Троицкий	45298000	Троицкий	Поселение
3	POLYGON ((36.9372397 55.2413907,36.9372604 55....	Роговское	45298575	45956000	Троицкий	45298000	Троицкий	Поселение
4	POLYGON ((37.4395575 55.6273129,37.4401803 55....	"Мосрентген"	45297568	45953000	Новомосковский	45297000	Новомосковский	Поселение
5	POLYGON ((36.9700765 55.3548495,36.9703153 55....	Вороновское	45298553	45943000	Троицкий	45298000	Троицкий	Поселение
6	POLYGON ((37.0527376 55.3947315,37.0548294 55....	Михайлово-Ярцевское	45298564	45951000	Троицкий	45298000	Троицкий	Поселение
7	POLYGON ((37.0869749 55.5000000,37.0869000 55....	Марушкинское	45297562	45949000	Новомосковский	45297000	Новомосковский	Поселение

Boroughs list

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	215234277	55.708584	37.586483	Новый Арт Театр	55.708529	37.586596	Indie Theater
1	215234277	55.708584	37.586483	Simplewine	55.710328	37.584530	Wine Bar
2	215234277	55.708584	37.586483	Reebok Парки	55.712195	37.582484	Outdoor Gym
3	215234277	55.708584	37.586483	Творческая лаборатория "СРЕДА"	55.704595	37.590111	Camera Store
4	215234277	55.708584	37.586483	Смотровая площадка РАН	55.712413	37.578108	Scenic Lookout
5	215234277	55.708584	37.586483	Stereotunes	55.711082	37.590534	Music Venue
6	215234277	55.708584	37.586483	Площадка для воркаута	55.713130	37.582745	Outdoor Gym
7	215234277	55.708584	37.586483	ARTBOX	55.706950	37.591483	Gift Shop
8	215234277	55.708584	37.586483	Площадь Гагарина	55.708617	37.582718	Plaza
9	215234277	55.708584	37.586483	Мастерская чудесных вещей	55.705891	37.578781	Jewelry Store

Venues examples

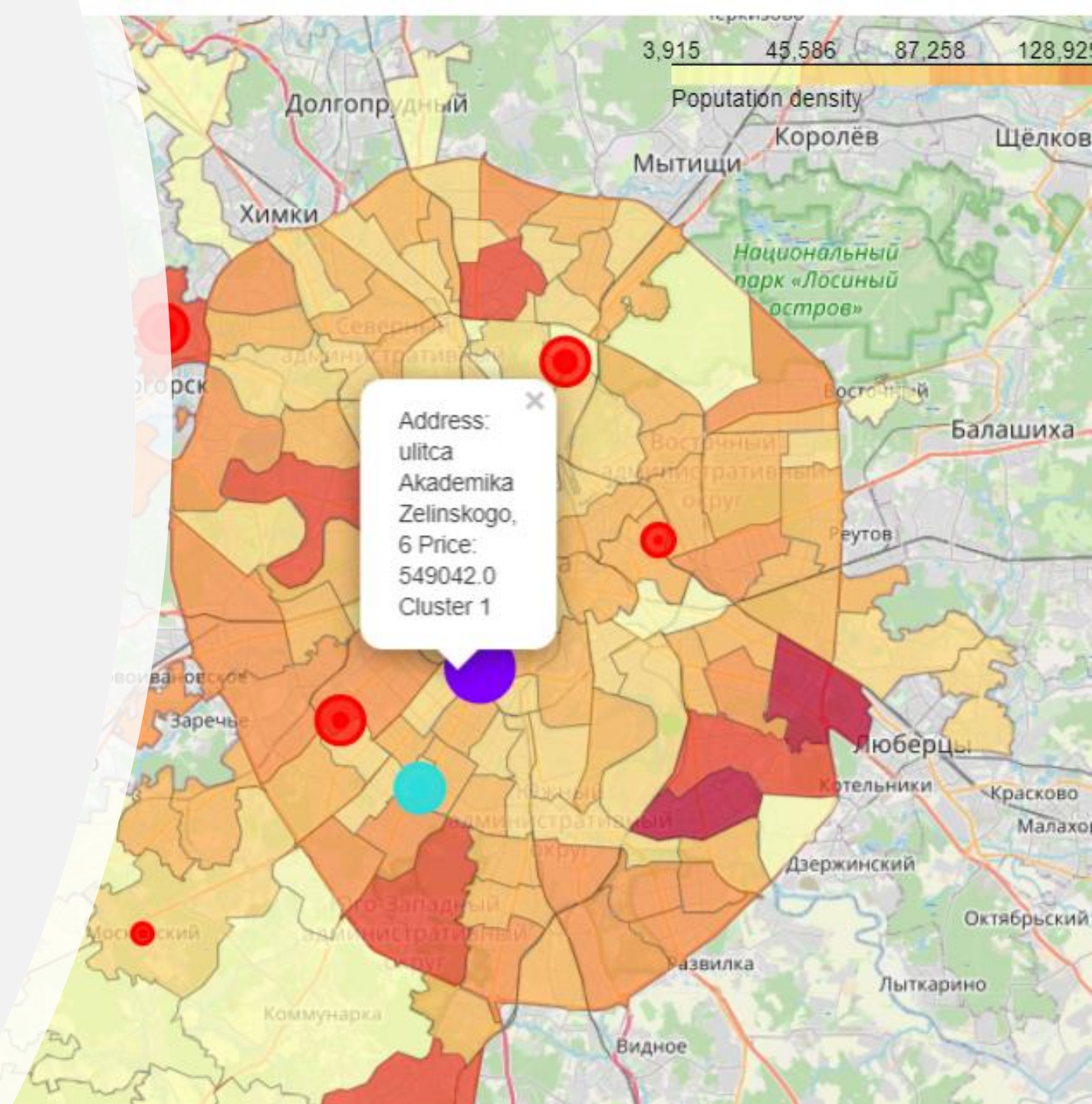
 Gym / Fitness Center 4bf58dd8d48988d175941735
 Boxing Gym 52f2ab2ebcbc57f1066b8b47
 Climbing Gym 503289d391d4c4b30a586d6a
 Cycle Studio 52f2ab2ebcbc57f1066b8b49
 Gym Pool

Venues type from FourSquare



Methodology

- Dataframe of possible places for new studio was sorted (with the use of FourSquare were found nearby venues in radius 1500m. If in this venues were dance studio the place was excluded from consideration)
- Then were made clusters of venues nearby places for rent and then they were drawn on Map of Moscow
- On Map of Moscow were drawn density of population of each borough
- On this map showed only places for rent that are not situated nearby dance studios.
- The bigger diameter of a circle the less time you need to get to a metro station
- Then were found the best suitable examples for best clusters





Result

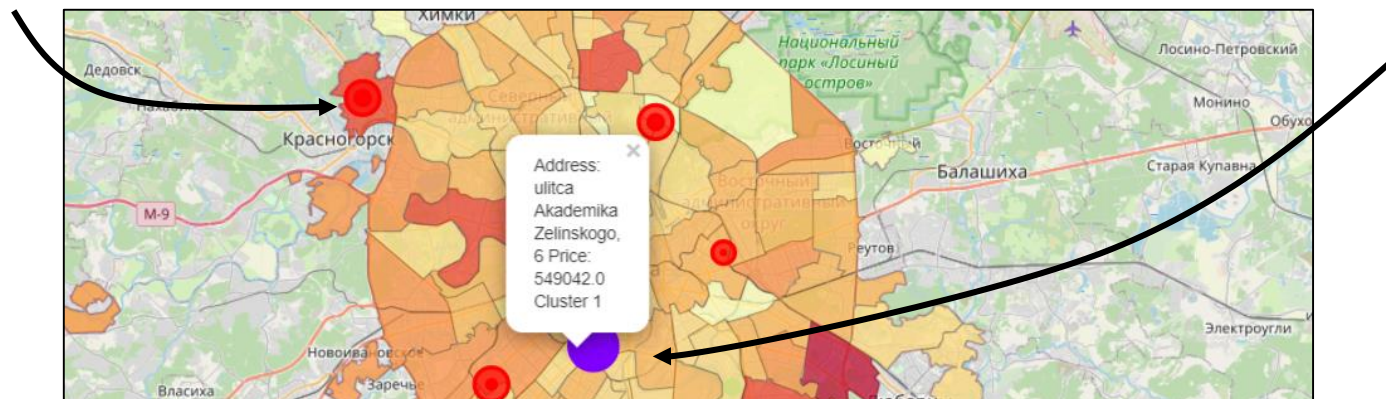
Two leaders

After examining, I have chosen two locations that meet the requirements which will assess to make a choice:

- **First one place.** The first venue has a good description and position.
- The price is good and situated nearby metro. The population density is high as it could be seen on map
- **Second one place.** It is situated in quit popular place in center
- The price is not extremely high, situated nearby metro. There is no indoor gym nearby.

geo_adress	time_to_metro	time_to_metro_un	time_to_metro_for_circle	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	price_per_meter
2-я Магистральная улица, Хорошёвский район, Мо...	8	8	8	0	Coffee Shop	Auto Workshop	Café	Cosmetics Shop	Dance Studio	1200.000000
25 к1 с1, Митинская улица, Митино, район Митин...	2	12	12	0	Gym	Pedestrian Plaza	Supermarket	Sushi Restaurant	Cosmetics Shop	723.684211

Long	geo_adress	time_to_metro	time_to_metro_un	time_to_metro_for_circle	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	price_per_meter
37.566483	Новый Арт Театр, Ленинский проспект, Донской р...	0	17	17	1	Park	Health Food Store	Wine Shop	Furniture / Home Store	Outdoor Gym	1716.586562
37.572352	6. улица Академика Зелинского	13	5	5	1	Soccer Field	Park	Furniture / Home	Health Food	Outdoor Gym	1487.918699





Selection

- **Choosing the best place**

- Using the “Moscow map” above, I was able to explore all possibilities since the popups provide the information needed for a good decision.
- **Place 1** has area 152 m*m and rent cost is 110000 Rub per month. Place 1 is located in 2 minutes from metro station. Nearby venues shows that there is gym nearby. According to website of this gym there is no dance classes in this gym.
- **Place 2** has area 203 m*m and rent cost is 350000 Rub per month. It situated in a less populated borough. Nearby venues shows that there is now popular indoor gym and dance studio.

Based on research, Place 1 is a better choice since the extra monthly rent is worth the conveniences it provides, it has better conditions.





Discussion

- In general, I grateful to Coursera IBM Certification Course.
- I feel this project presented me a great opportunity to use knowledge
- I have created my first project working during and I a bit proud of it, cause it helped me to believe in myself.



Conclusion

This project has shown me a practical application to resolve a real situation that has impacting personal and financial impact using Data Science tools.

A group of three people are standing on a grassy hill, looking out over a vast landscape at sunset. The sun is low on the horizon, casting a warm, golden glow over the scene. The person on the left is a woman with long dark hair, wearing a light-colored jacket and dark pants. The person in the middle is a man with short dark hair, wearing a dark jacket and light-colored shorts, with his arms raised in a celebratory gesture. The person on the right is a man with short dark hair, wearing a light-colored shirt and dark shorts, also with his arms raised. In the foreground, there is a backpack, a water bottle, and some other items on the ground. The background shows rolling hills and a clear sky with a few clouds.

Thank you!