**The restoration of the playground or the construction of a shopping center**

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May 7, 2020

**1 Introduction**

**1.1 Background**

In Shchelkovo, Moscow region, Russia, at 55.916471°N, 37.994031°E, a children's playground was closed [1], [2] and trees were cut down in preparation for the construction of a shopping center. The situation caused a public outcry and construction was stopped for a final decision.

**1.2 Problem**

The question being addressed in this analysis is: should a playground be restored at this location, or should the construction of a shopping center continue?

**1.3 Interest**

The stakeholder is the city administration, which manages the sustainable development of the city and decides on further construction. The city administration tries to avoid social discontent in society in the face of irritated mothers with children. On the other hand, it seeks to develop businesses that lead to the prosperity of the city, create new jobs and increase tax revenues to the budget, including increasing the welfare of townspeople’s and the prestige of the city administration.

**2 Data acquisition and cleaning**

**2.1 Data sources**

The following information is used to solve the problem:

* all-Russian statistics on the level of education, which shows the number of children in Russia aged 2 months to 7 years, and the number of kindergartens [3];
* all-Russian statistics on the birth rate, which shows the total number of Russians [4];
* the number of townspeople’s in the study, for example, Shchelkovo [5];
* normative document on the average number of children in kindergarten [6];
* Python library for determining the geographical coordinates of the city under study [7];
* Foursquare to search for research objects and determine geographical coordinates, for example, kindergartens in the city of Shchelkovo [8];
* Yandex for in-depth search of research objects and determining geographical coordinates, for example, kindergartens in the city of Shchelkovo [9];
* Geojson.io for plotting on a map the boundaries of the city in the format GeoJSON [10].

2.2 Data cleaning

Foursquare search queries are reinforced by Yandex, which is more confident in finding the objects under study in Russia.

Research objects located outside the city limits were removed from the data frame.

Below is the result of a search query, represented as 10 lines of a data frame, for example, kindergartens in Shchelkovo.



Responses to search queries in the “Name” and “Address” columns are accepted in Cyrillic and are not displayed on folium maps. They are saved in the data frame for reference.

Responses to search queries in the "latitude" and "longitude" columns are displayed on folium maps.

The data frame stores data from a single class, such as a kindergarten. In the economic sense, the term kindergarten is understood as a municipal (budget-funded) institution where parents can leave their child under the supervision of a tutor from 7 am to 7 PM while working.

The search result represents a broader class, where there are both municipal kindergartens with a population of 150 to 350 children, and private kindergartens with a smaller number. In addition, there are other categories of education related to children, such as "children's clubs", among the objects studied. This may lead to a significant difference from the normative document [6].

In an economic sense, a playground is a free outdoor playground with benches for parents.

In contrast, the search result returns a smaller number of mostly paid playgrounds that better fit the definition of "amusement park". The ratio of the number of children to the number of playgrounds is not normalized, but it turns out to be excessively high.

A shopping center is a multi-store, several-story building of an individual project.

**X References:**

1. <https://ru.foursquare.com/explore?mode=url&near=Щёлково%2C%20Россия&nearGeoId=72057594038423280&q=детская%20площадка>
2. <https://yandex.ru/maps/10765/shelkovo/search/55.916471°N%2037.994031°E/?ll=37.993265%2C55.916741&sll=37.994031%2C55.916471&source=wizgeo&utm_medium=maps-desktop&utm_source=serp&z=18>
3. <https://rosinfostat.ru/uroven-obrazovaniya/>
4. <https://rosinfostat.ru/rozhdaemost>
5. <https://ru.wikipedia.org/wiki/Щёлково>
6. <http://mtsk.mos.ru/Handlers/Files.ashx/Download?ID=11293>
7. <https://geopy.readthedocs.io/en/stable/>
8. <https://ru.foursquare.com/explore?mode=url&near=Щёлково%2C%20Россия&nearGeoId=72057594038423280&q=детский%20сад>
9. <https://yandex.ru/maps/10765/shelkovo/search/детский%20сад/?clid=2270456&ll=38.005283%2C55.924296&sctx=ZAAAAAgBEAAaKAoSCT%2F%2FPXjt%2FkJAER1aZDvf9UtAEhIJS2z9%2F3%2BNzz8RFe5RP6nTtD8iBQABAgQFKAowADiPptOJ5NiwkoQBQI1USAFVzczMPlgAagJydXAAnQHNzEw9oAEAqAEAvQG0mY5xwgGAAZ%2BLi8AElamf640CucDJvgSl35a%2FBvS9qPauA6yk548E%2F6z73wPJgLL0A%2BbZveIDgevDjwSIva3sA%2Bj9r7kE6Y2C08gB8Ij6kQTF1%2BD6A9PHo48Gouu0nASrpJmdBIDowt0D143inATY6ci2BInygOYE0K%2FerwTym7T1BeCPxscE&sll=38.005283%2C55.924296&sspn=0.141580%2C0.046722&z=13.8hgjl>

1. <http://geojson.io/>