

Best place for a new sporting facility in Košice

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Introduction

We will focus on the second largest city in Slovakia, Košice. In the current pandemic situation, many people decreased their physical activity that would probably affect their health condition. After the world came back to 'normal', it may happen that even more people than in the times before Covid-19 would look for some sporting activity.

For adults in such a small city the distance does not play the role, but for children and youths it is an important parameter whether the sporting facility is in the walking distance or not. The adults may use their cars but especially for small children the most appropriate way to visit a sporting facility is by walk, here we for the sake of simplicity omit the possibility of public transport. Therefore, we assume that a people are willing to use the sporting facility if and only if it is located in the same borough.

Let us suppose that some investor is interested in building a new sporting facility in Košice to support this growing future demand. The criteria for a location is simple – there must be a sufficient demand and it should be in a reasonable distance from other facilities to be sufficiently attractive among other competitors. Our aim is to give her a few streets that fits those criteria.

Data sources

At first, we have to search for all available sporting facilities in Košice using Foursquare service. There are different possibilities for search query like gym, fitness, court, stadium, arena etc. All records with those search queries are supposed to be used. Cleaning of those records is a must because at least one type of high school/grammar school in Slovakia is called "Gymnázium" so we have to carefully look through those records. There could be also a misinterpretation of "food court" or "county court" as well.

The demand in a simplistic way is given by the population of particular borough divided by the number of available facilities in that borough. The population in boroughs of Košice corresponding to 2018 can be found here¹. Some of them are tiny so we have to filter them somehow out based on the population and number of available facilities.

In order to cover distance from each street in a borough with a largest demand to the existing sporting facility we plan to use a catalog of all streets in Košice² with their precise location³. The street with a largest distance to the closest sporting facility in that borough should be the best locations where to build a new sporting facility. Note that distance between two facilities would be measured by Euclidian distance; we do not cope with walking routes because many shortcuts for pedestrians are not recorded on the google.maps.com or other map portals.

¹ https://sk.wikipedia.org/wiki/Mestsk%C3%A9_%C4%8Dasti_Košice

² <https://www.kosice.sk/mesto/katalog-ulic>

³ <https://www.gps-latitude-longitude.com/address-to-longitude-latitude-gps-coordinates>