The new Shopping Mall in Hamburg

Introduction

Business Problem

Europa Passage is one of the most famous shopping malls in Hamburg. It is also the most reviewed shopping center in Hamburg based on Google Maps. Due to its success, its owner wants to open another shopping center in Hamburg, and he wants to make sure that the new shopping mall would also be as successful as Europa Passage. The question is, which location should be chosen for the new shopping mall in Hamburg?

Data

We will use the location data for each region via Foursquare. For each region, the statistics of the venues will be stored. The regions will be determined by postal codes. The data about the postal codes and their coordinates will be gathered from geonames.org. Moreover, population and area of each postal code will be gathered postal-codes.cybo.com, because these two parameters have a great impact on the success of a shopping mall and therefore they should be considered.
In order to have a better understanding of the data, some screenshots are presented below from parts of the data sets which will be used in this project. The first rows of the data set regarding the postal codes and their coordinates are as follows:

Hamburg - postal codes

	Place	Code	Country	Admin1	Admin2	Admin3	Admin4
1	Hamburg 53.552/10	20095	Germany	Hamburg		Hamburg, Freie und Hansestadt	Hamburg, Freie und Hansestadt
2	Hamburg 53.548/10.019	20097	Germany	Hamburg		Hamburg, Freie und Hansestadt	Hamburg, Freie und Hansestadt
3	Hamburg 53.558/10.011	20099	Germany	Hamburg		Hamburg, Freie und Hansestadt	Hamburg, Freie und Hansestadt
4	Hamburg 53.567/9.98	20146	Germany	Hamburg		Hamburg, Freie und Hansestadt	Hamburg, Freie und Hansestadt
5	Hamburg 53.567/9.998	20148	Germany	Hamburg		Hamburg, Freie und Hansestadt	Hamburg, Freie und Hansestadt

As you may notice, we only need the first two columns, namely Place and Code for the coordinates and the postal code, respectively.
The data set gathered from geonames.org gives us information about the population and the area of each postal code in Hamburg. The data set looks like as follows:

Postal Code △	City	Administrative Region	Population △	Area △
20038	Hamburg	Hamburg	—	—
20095	Hamburg	Hamburg	3,574	0.855 km²
20097	Hamburg	Hamburg	12,023	2.179 km²
20099	Hamburg	Hamburg	4,612	1.49 km²
20144	Hamburg	Hamburg	5,893	1.196 km²
20146	Hamburg	Hamburg	4,402	1 km²

As you see, the area's unit is kilometer square and we need all the columns except Administrative Region which is always Hamburg. Some rows may contain no information and they shall be removed from the data.
Eventually, we gather information about the venues in each postal code via Foursquare. Each venue has its own categories and we will make a profile for each postal code based on the venues inside it. The data set will look like the following table:

Accessories Store	Afghan Restaurant	Airport	Airport Food Court	Airport Gate	Airport Lounge	Airport Service	Airport Terminal	American Restaurant	Antique Shop	Aquarium	Art Gallery	Art Museum	Arts & Crafts Store
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.000000	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.045455	0.0	0.0	0.0	0.0	0.0

As you notice, every column corresponds a venue category and each row stands for a region or a postal code. There are thousands of categories available in total.
Based on the data about the venues, the population and the area, we hope to find the optimal location/postal code for the new shopping mall in Hamburg.